Abstracts from the 36th Annual Meeting of the Society of General Internal Medicine

ABSTRACTS OF SUBMISSIONS ACCEPTED FOR PRESENTATION

SCIENTIFIC ABSTRACTS

"MY CLIENTS FALL THROUGH EVERY CRACK IN THE SYSTEM": ASSESSING THE NEED FOR GERIATRICS HEALTH TRAINING AMONG LEGAL PROFESSIONALS Tacara N. Soones[1]; Cyrus Ahalt[2]; Sarah Garrigues[2]; David Faigman[3]; Brie Williams[2]. [1]University of California- San Francisco, San Francisco, CA; [2]University of California-San Francisco, San Francisco, CA; [3]UCSF/UC Hasting Consortium on Law, Science & Health Policy, San Francisco, CA. (Tracking ID #1607152)

BACKGROUND: Older adults (age 55+) represent the fastest growing age group in jail. While attorneys, judges, and other legal professionals are not generally considered healthcare team members, they provide front-line identification and response to age-related health conditions affecting legal outcomes. For example, cognitive impairment can affect the ability to access adequate legal representation, participate in one's defense, or follow court orders; and physical impairment can jeopardize safety in jail. However, legal professionals' knowledge of age-related health issues is unknown.
METHODS: This was a cross-sectional, qualitative study of legal professionals in San Francisco County's criminal justice system. Questionnaires included open and close-ended questions to assess demographics, attitudes towards older adults (validated Geriatrics Attitudes Scale) and self-reported knowledge of geriatrics topics relevant to legal services, including cognitive and sensory impairment, legal competency, and knowledge of community resources. Questionnaires also elicited recommendations for closing geriatrics knowledge gaps. We analyzed questionnaires using standard grounded theory principles and conducted in-depth interviews with 9 participants to ensure that questionnaires were interpreted accurately.
RESULTS: Seventy-two of 83 legal professionals participated (87 % participation), including judges (6 %), District Attorneys (25 %), Public Defenders (58 %), and Pretrial Diversion case managers (11 %). Most legal professionals (73 %) worked with older adults on at least a monthly basis and 100 % had positive attitudes towards aging (Geriatrics Attitudes Scale >3). Self-reported geriatrics knowledge gaps were greatest in 3 areas: (1) General aging-related health- 14 % rated themselves as knowledgeable about age-related health issues, 74 % had never received training in aging; (2) Cognitive impairment-55 % did not feel knowledgeable at explaining how delirium, dementia and depression might affect behavior or the ability to follow instructions, and (3) Safety assessment-61 % felt unprepared to identify older adults at high safety risk and 62 % could not describe types of surrogate decision-makers, including public guardians or appointed power of attorneys. Five recommendations to close these knowledge gaps emerged: (1) educate legal professionals about aging-related health; (2) develop checklists to identify older adults at risk of health decline or poor safety; (3) train to assess older adults for cognitive and sensory impairments before legal proceedings; (4) create communication mechanisms between legal professionals, clinicians, and social services providers about client needs during and after detainment; and (5) encourage multidisciplinary research to improve health outcomes in older adults.
CONCLUSIONS: This study identifies critical gaps in the geriatrics knowledge of legal professionals in the criminal justice system and proposes recommendations to address these knowledge gaps, minimize adverse health outcomes, and improve legal outcomes for older adults.

"WHO'S ON FIRST?" IN THE CHAOS OF SHARED DECISION MAKING: A STUDY OF DOCTOR, PATIENT, AND OBJECTIVE RATINGS OF SHARED DECISION MAKING USING DIRECTLY OBSERVED ENCOUNTERS Patrick G. O'Malley[1,2]; Dorothy Becher[1]; Gretchen Rickards[2,1]; Janice L. Hanson[3,1]; Jeffrey L. Jackson[4,1]. [1]Uniformed Services University, Bethesda, MD; [2]Walter Reed National Military Medical Center, Bethesda, MD; [3]University of Colorado School of Medicine, Aurora, CO; [4]Medical College of Wisconsin, Milwaukee, WI. (Tracking ID #1639946)

BACKGROUND: Shared decision making involves complex patient-physician interaction, yet patient encounters tend to be chaotic, without coherent direction or dyad symmetry. We sought to explore how patients and doctors perceive the degree of shared decision making in the same chronic care encounters, and how well their perceptions correspond with objective assessments of the interaction.
METHODS: Prospective, observational study of audiotaped encounters, with surveys of patients and physicians before and after the encounter. We enrolled a consecutive sample of 120 participants aged 40–80 y.o. with ≥3 additional chronic medical conditions (excluding dementia), and scheduled for a routine appointment with their primary provider. Immediately after the visit, patients and doctors were independently surveyed to assess the decision making style of the encounter along a 20-point spectrum ranging from "doctor-dominant" (0–6) to "shared" (7–13) to "patient-dominant" (14–20) decision making. The scale included behavioral descriptors in order to anchor one's choice. Three raters (PO, DB, GR) dual-rated transcriptions independently on the level of decision making complexity (low, medium, high), and the degree of shared decision making (20-item scale), blinded to the patient and doctor ratings; disagreements were reconciled through consensus. Agreement between patient, doctor, and objective ratings were measured using the intraclass correlation coefficient (ICC).
RESULTS: Of the 105 patients who completed the visit, complete data was available on 98. The demographics were as follows: 53 % F, 56 % AA, mean age: 66 yo, 88 % were on 5 or more medications, only 8 % had poor health literacy, and 30 % had a very good or excellent functional status. The physician profile (N=11) was: 55 % F, 28 % AA, mean age: 48 yo, and mean time since graduation: 19 yrs. The level of decision making in the encounters was low in 61 %, and mod/high in 39 %. Categorical ratings of encounters (by collapsing scores into 3 groups), stratified by perspective (doctor, patient, objective), is presented in the table (below). Immediately after the visit, there was no agreement between patients and physicians on the degree of shared decision making during the visit (ICC=0.06, P=0.37). By objective measurement, 88 of the 98 encounters were dominated by the physician (ie, scores from 0 to 9), and only 27 of those could be categorized as relatively "shared" (ie, scores of 7–9). When compared to objective ratings, physicians' ratings of shared decision making correlated more strongly (ICC=0.55, P<0.001) than patients' ratings (ICC=0.39, P=0.01).
CONCLUSIONS: Immediately after participating in the same chronic care encounter of mostly low to moderate decision complexity, both patients and physicians overestimated the degree of shared decision making, and neither agreed on the degree of shared decision making of the same encounter. Interventions to improve shared decision making will need to address 1. Physician lack of awareness of their tendency to dominate encounters, and 2. both parties' ability to engage in true shared decision making.

Shared Decision Making Spectrum

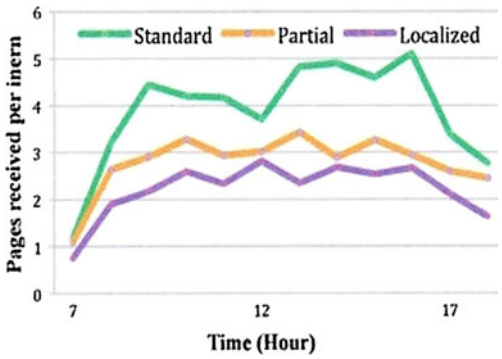
Perspective	Doctor Shared	Patient
Doctor	34 %	47 % 19 %
Patient	22 %	69 % 9 %
Objective	81 %	15 % 4 %

Ratings of the Same Encounter (N=98)

(RE)TURNING THE PAGES OF RESIDENCY: THE IMPACT OF LOCALIZING RESIDENT PHYSICIANS TO HOSPITAL UNITS ON PAGING FREQUENCY Laura Fanucchi[1]; Lia S. Logio[2]. [1]University of Kentucky College of Medicine, Lexington, KY; [2]Weill Cornell Medical College, New York, NY. (Tracking ID #1634924)

BACKGROUND: Pagers are ubiquitous, yet fundamentally flawed, as they do not prioritize, lead to communication errors, and interrupt patient care and educational activities. Given duty hour restrictions, there is concern that residents experience increased workload due to having fewer hours to do the same amount of work. Geographic localization of physicians to patient care units is thought to improve communication and agreement on goals of care, and also to reduce workload by decreasing paging and other inefficiencies attributable to traveling throughout the hospital. We investigated whether interns on geographically localized teams received fewer pages than interns on teams that were not localized.
METHODS: We conducted a retrospective analysis of the number of pages received by interns on 5 general medicine teams from Oct. 17–Nov. 13, 2011 at New York Presbyterian Hospital/Weill Cornell. Two teams were in a Geographically Localized Model (GLM), two in a Partial Localization Model (PLM), and one Standard Model (SM) team admitted patients irrespective of their assigned bed location. ANOVA and standard multivariate linear regression techniques were used to analyze the relationship between the number of pages received per intern and the type of team.
RESULTS: Over 28 days, 10 interns on 5 teams received 6652 pages. Eighty-five percent of patients in the GLM were on the designated unit, compared to 45 % in the PLM, and 37 % in the SM. The number of pages received per intern per hour, adjusted for team census and number of admissions, was 2.18 in the GLM, 2.77 in the PLM, and 3.87 in the SM. All of these differences were statistically significant in the linear regression analysis (p<0.0001). Figure 1 shows the pattern of paging for the three types of teams.
CONCLUSIONS: Geographic localization of resident teams to patient care units is associated with significantly fewer pages received by interns during the day. Previous research suggests that geographic localization decreases perceived paging frequency. We show a statistically significant relationship with a dose–response effect. We also demonstrate that interns whose patients are scattered throughout the hospital may experience five pages per hour, or an interruption by pager every 12 min. Geographically localized patient care models may improve resident workload in part by mitigating paging. Decreased resident workload has potential to improve both clinical and educational outcomes. A working environment that facilitates in-person communication decreases not only pager interruptions, but the latent communication errors inherent in unidirectional alpha-numeric paging, which may improve patient safety.

Figure 1. Average number of pages per intern per hour for each care model.



24 MONTH METABOLIC BENEFITS OF A COMMUNITY-BASED TRANSLATION OF THE DIABETES PREVENTION PROGRAM Carolyn F. Pedley[1]; Doug Case[1]; Mara Z. Vitolins[1]; Jeffrey A. Katula[1]; Caroline S. Blackwell[1]; Scott Isom[1]; David C. Goff[2]. [1]Wake Forest University, Winston-Salem, NC; [2]Colorado School of Pulbic Health, Denver, CO. (Tracking ID #1642380)

BACKGROUND: The practice of general internal medicine involves treating a high percentage of individuals with hypertension, increased waist circumference, glucose intolerance, hypertriglyceridemia and decreased HDL cholesterol. These individuals with metabolic syndrome are at an increased risk of developing cardiovascular disease and diabetes. Although several large-scale clinical trials have demonstrated that weight loss achieved through diet and physical activity can reduce the incidence of diabetes, translating lifestyle weight loss programs to general practice has been difficult. Numerous studies have attempted to translate the Diabetes Prevention Program (DPP) to community-based and primary care settings and have documented modest success. However, no translational studies to date have documented the impact of diabetes prevention interventions on aspects of the metabolic syndrome. The Healthy Living Partnership to Prevent Diabetes study (HELP PD; NIDDK) tested the impact of a community-based translation of the DPP on fasting blood glucose in participants at high risk for diabetes. The impact of HELP PD on fasting

blood glucose and waist circumference have been published previously. The purpose of the present study is to examine the HELP PD intervention on features of the metabolic syndrome.
METHODS: The study randomly assigned 301 overweight volunteers with fasting blood glucose 95–125 mg/dl and BMI 25–40 kg/m2 to two treatment groups: enhanced usual care (EUC vs DPP LWL (Lifestyle, Weight Loss) intervention. Ages ranged from 34 to 81 years with a median of 58 years; 57 % were female, 26 % minority and 73 % obese. The LWL intervention was administered through a local diabetes education program and participants met in 14 groups of 8–12 delivered by community health workers (CHW) in community locations. CHWs were volunteers with well-controlled diabetes.
RESULTS: Duriing 24 months of follow-up there were significant between group differences in metabolic parameters: fasting blood glucose, waist circumference, HDL and DBP differed significantly between the LWL and EUC groups, all in favor of the LWL. SBP and triglycerides were lower in the LWL group but the differences were not statistically significant. Fasting blood glucose decreased by 2.2 mg/dl in the LWL group and increased by that amount in the EUC group for a difference of 4.4 mg/dl at 24 months (p=.001). Waist circumference decreased by 3.4 cm in the LWL group and remained relatively unchanged in the EUC group (0.2 cm decrease) for 3.2 cm difference at 24 weeks (p<.001). HDL increased by 0.4 mg/dl in the LWL group while decreasing by 2.7 mg/dl in the EUC group (p=.004). Diastolic blood pressure decreased by 1.6 mmHg in the LWL group and increased by 0.5 mmHg in the EUC group (p=.024) while systolic blood pressure decreased by 2.3 mmHg in the LWL group and 1.0 mmHg in the EUC group (p=.437). Triglycerides decreased by 23.4 mg/dl in the LWL group compared to the 10.8 mg/dl in the EUC group (p=.083).
CONCLUSIONS: This study demonstrates that community-based partnerships can successfully deliver effective, affordable behavioral lifestyle weight loss programs in general medical patients who have several metabolic risks for diabetes and heart disease with resultant metabolic benefits. Utilizing community-based volunteers in community settings to deliver diabetes prevention programs has the potential to reduce health disparities in accessing such care.

"AM I CUT OUT FOR THIS?" UNDERSTANDING THE EXPERIENCE OF DOUBT AMONG FIRST YEAR MEDICAL STUDENTS Rhianon Liu; Jorie Colbert-Getz; Robert Shochet. Johns Hopkins University School of Medicine, Baltimore, MD. (Tracking ID #1628595)

BACKGROUND: Research on medical student wellbeing shows high rates of distress, yet doubt as a distinct phenomenon remains poorly understood. The purpose of our study was to examine how first year medical students experience and respond to doubt, and how doubt relates to other aspects of student distress.
METHODS: We conducted a mixed methods study involving a survey and focus groups examining the phenomenon of doubt among first year medical students at the Johns Hopkins University School of Medicine (JHUSOM). Students were asked to answer 14 questions about doubt embedded in an online advising program survey in June, 2012. Doubt survey items were developed and revised based on literature review, and included four questions from a validated wellbeing index. Results were analyzed by grouping students into categories of high, moderate, low, or no doubt. For each doubt item, logistic regression was used to compare the proportion of students who "agreed" among moderate/high doubters vs low/no doubters. For wellbeing questions, total doubt scores and total wellbeing scores were correlated with Spearman's rho. In addition, four 90-min focus groups were conducted with a convenience sample of students in June–July, 2012. Focus group questions were written by the authors, then pilot-tested and revised prior to use. Digital recordings were transcribed, independently coded, and iteratively reviewed by the authors to identify major themes.
RESULTS: 114/119 (96 %) students completed the survey. 20 % had high doubt, 29 % moderate doubt, 22 % low doubt, and 29 % no doubt. Compared to those with low/no doubt, students with moderate/high doubt were 5 to 13 times as likely to question their personal purpose, to question who they were, to struggle with coping with doubt, and to perceive the JHUSOM climate as discouraging them from expressing doubt, There was moderate correlation between total doubt and wellbeing scores (spearman's rho=0.36). 34 students participated in the focus groups. Three major themes were identified: types of doubt, ways of coping with doubt, and impact of doubt. Types of doubt were related to two main questions: -Do I want to become a doctor? Subtheme example: the opportunity cost of pursuing medicine -Am I capable of becoming a doctor? Subtheme example: concerns about one's ability to succeed and maintain work-life balance Ways of coping with doubt included: -Relying on supportive relationships -Maintaining perspective through a focus on long-term goals The impact of doubt included positive and negative aspects: -Positive examples: motivation and resilience in the face of uncertainty -Negative examples: burnout, stress, and poor academic performance
CONCLUSIONS: Doubt is prevalent among first-year medical students, affecting students' sense of confidence, identity, and purpose, and has both positive and negative consequences. Students also experience other forms of distress, which may be related to doubt. Doubt among medical students merits awareness and further study, as it may be an important mediator of students' emerging sense of identity and personal wellbeing.

A BEFORE/AFTER TRIAL OF A DECISION AID ON MAMMOGRAPHY SCREENING FOR WOMEN AGED 75 AND OLDER Mara A. Schonberg; Mary Beth Hamel; Roger B. Davis; Edward R. Marcantonio. Beth Israel Deaconess Medical Center, Boston, MA. (Tracking ID #1636857)

BACKGROUND: Guidelines state there is insufficient evidence to recommend mammography screening for women aged >75 years. Instead, they encourage clinicians to discuss the potential benefits and risks of screening and engage older women in shared decision-making. We aimed to design and evaluate a decision aid (DA) for women >75 years to inform their decision-making around mammography screening.
METHODS: We designed the DA based on international standards and included data from medical literature review. An expert panel reviewed iterative versions of the DA and it was then reviewed for acceptability by 15 patients and 5 of their primary care physicians (PCPs). The 10-page DA (written at a 6th grade reading level) includes information on breast cancer risk, life expectancy, competing mortality risks, likely outcomes if screened or not screened over 5 years, and a values clarification exercise. We evaluated the DA in a before/after trial at a large academic primary care practice in Boston. Eligible women were >75 years, spoke and read English fluently, had not had a mammogram in the past 9 months but were screened in the past 3 years, did not have a history of invasive or non-invasive breast cancer or dementia, and were scheduled for a routine visit with their PCP within 8 weeks. Participants came early to their PCP appointment to complete a "before" survey and to read the DA. After the visit, they completed an "after" survey. The surveys included 10 knowledge questions, the 16-item decisional conflict scale (DCS, 0–100, lower scores = less conflict), and a question that assessed screening intentions. Participants were followed by medical record for up to 1 year to examine whether there was a note documenting a discussion of the pros/cons of screening and to abstract receipt of mammography. We used the signed rank test and McNemar's test to compare before/after responses. We also asked PCPs to complete a survey about using the DA in their practice.
RESULTS: Forty-nine before/after trial participants (from 26 PCPs) had median age of 79 years; 70 % were Non-Hispanic white; 63 % had attended some college; and 24 % had <7 year life expectancy. Comparison of "after" to "before" survey results found: 1) participants answered on average 1 more question correct (interquartile range 0–2) on the 10 item index from 6 to 7 questions correct, p<0.001; 2) decisional conflict declined by 4.8 points (range −10.2 to +4.7 points, mean DCS scores before = 20.1, p=0.03); and 3) fewer participants intended to be screened (59 % compared to 82 % before, p=0.01). In the following 6 months, 61 % of participants had a PCP note documenting a discussion of the pros/cons of screening compared to 10 % in the previous 5 years, p<0.001. While 86 % had been screened within 2 years before participating only 61 % were

screened within 1 year after, $p<0.001$ (a similar decline was found among women with <7 year life expectancy). Overall, 94 % reported that they would recommend the DA, 94 % found it helpful, and 78 % found the amount of information just right. PCPs (17/26) reported that using the DA would result in their patients making more informed (74 %) and value laden (79 %) decisions.

CONCLUSIONS: We developed a DA for women aged >75 years contemplating mammography screening. Our before/after trial demonstrates that this DA allows women to make more informed, preference-sensitive decisions around mammography screening. Next, we plan to test the effectiveness of the DA in a large randomized control trial.

A CENSUS OF STATE-BASED CONSUMER HEALTH CARE PRICE WEBSITES Jeffrey T. Kullgren[1]; Katia A. Duey[2]; Rachel M. Werner[3]. [1]Ann Arbor VA Healthcare System and University of Michigan, Ann Arbor, MI; [2]University of Pennsylvania, Philadelphia, PA; [3]Philadelphia VA Medical Center and University of Pennsylvania, Philadelphia, PA. (Tracking ID #1642367)

BACKGROUND: As Americans' out-of-pocket health care costs continue to rise, many health plans, consumer groups, and state governments are reporting health care price information directly to patients. Though there is broad recognition that this information must be relevant, accurate, and usable to improve the value of patients' out-of-pocket spending, it is currently unknown what information is actually being reported to patients. The objective of this study was to describe the types of information that are currently being reported on state consumer health care price websites and identify opportunities to improve the usefulness of this information for patients.

METHODS: We conducted a systematic internet search to identify patient-oriented, state-based health care price websites that were operational in early 2012. We chose to focus on state-based websites since states are a focal point for health care price transparency initiatives and often publicly report the health care price information they collect under legislative or regulatory authority. For each website we identified, we classified the type of organization that reported the information, the kinds of health care services for which prices were reported, the type of price information that was reported (e.g., out-of-pocket cost, allowable charge, or billed charge), the patient-level factors that were incorporated in the estimate, and the presence of quality information alongside the reported price information. We then calculated frequencies for each of these characteristics.

RESULTS: We identified 62 state health care price transparency websites, most of which were provided by either a state government agency (46.8 %) or state hospital association (38.7 %). Most websites reported information on prices of inpatient care for medical conditions (72.6 %) or surgeries (71.0 %); prices for outpatient services such as diagnostic or screening procedures (37.1 %), radiology studies (22.6 %), prescription drugs (14.5 %), or laboratory tests (9.7 %) were reported less often. The reported prices usually reflected only billed charges (80.6 %). For outpatient services that commonly include both facility and professional fees (e.g., diagnostic procedures or radiology studies), the majority of price estimates (66.0 %) included just facility fees. Only a small minority of prices were tailored to individual circumstances that commonly affect what a patient is truly expected to pay out-of-pocket for a service, such as their insurance status (9.7 %) or specific health plan (8.1 %). For services where price and quality information together could help patients assess value across providers (e.g., outpatient clinician services or outpatient surgeries), quality information was infrequently portrayed alongside prices (13.2 %).

CONCLUSIONS: Most states now have websites that report health care prices directly to patients. However, the information being reported on these state health care price websites is unlikely to be useful for most patients, and often fails to reflect the true prices they would actually face for services. Improvements in the relevance, accuracy, and usability of publicly reported health care prices could help this information reach its full potential to improve the value of out-of-pocket health care spending for patients.

A HIGH RISK OF HOSPITALIZATION FOLLOWING RELEASE FROM CORRECTIONAL FACILITIES AMONG MEDICARE BENEFICIARIES Emily A. Wang[1]; Yongfei Wang[2]; Harlan M. Krumholz[1,2]. [1]Yale School of Medicine, New Haven, CT; [2]Yale-New Haven Hospital Center of Outcomes Research and Evaluation, New Haven, CT. (Tracking ID #1642216)

BACKGROUND: Healthcare is constitutionally guaranteed in correctional facilities, but not upon release, which could increase the risk of acute events. We studied the risk for hospitalizations among former inmates soon after their release from correctional facilities.

METHODS: We conducted a retrospective cohort study using data from Medicare administrative claims for all fee-for-service beneficiaries who were released from a correctional facility from 2002 to 2010. Using McNemar's test and condition logistic regression, we compared hospitalization rates after release among former inmates 7, 30, and 90 days after release to beneficiaries matched based on age, sex, race, Medicare status, and residential zip code. We also compared hospitalizations with the specified diagnosis codes between the two groups and examined whether being released from a correctional facility was associated with different risks for hospitalizations for ambulatory care-sensitive conditions compared with the matched control. We used Kaplan Meier survival analyses to compare time to the first hospitalization and death between the two matched groups after release. Data were censored at the time of death or the end of the observation period.

RESULTS: Of 110,419 released inmates, 1559 individuals (1.4 %) were hospitalized within 7 days after release; 4285 individuals (3.9 %) within 30 days; and 9196 (8.3 %) within 90 days. The odds of hospitalization was higher for released inmates compared with matched controls (within 7 days, odds ratio (OR) 2.5, 95 % confidence interval [CI] 2.3, 2.8; 30 days, OR 2.1, 95 % CI, 2.0, 2.2; and 90 days, OR 1.8, 95 % CI 1.7, 1.9). Compared with matched controls, former inmates were more likely to be hospitalized for ambulatory care-sensitive conditions (within 7 days, OR 1.7, 95 % CI 1.4, 2.1; 30-days, OR 1.6, 95 % CI 1.5, 1.8; and 90-days, OR 1.6, 95 % CI 1.5, 1.7). Mental health conditions were the most common reason for hospitalizations among former inmates 30 days post release (22.1 %). Diseases of the circulatory system (14.0 %), injury and poison (12.7 %), and disease of the respiratory system (10.5 %) were also common reasons for hospitalization among released inmates. In event-free analyses, former inmates were more likely to be hospitalized compared with the control group within a year following release.

CONCLUSIONS: About one in 70 former inmates are hospitalized for an acute condition within 7 days of release, and one in 12 by 90 days, a rate much higher than the general population. Transitions between correctional facilities and the community are a high-risk period; correctional and community healthcare systems should collaborate to reduce morbidity for this vulnerable population.

A META-ANALYSIS OF THE RAPID ANTIGEN STREPTOCOCCUS TEST Emily Stewart; Brian Davis; Lee Clemans-Taylor; Robert M. Centor; Carlos Estrada. The University of Alabama at Birmingham, Birmingham, AL. (Tracking ID #1624984)

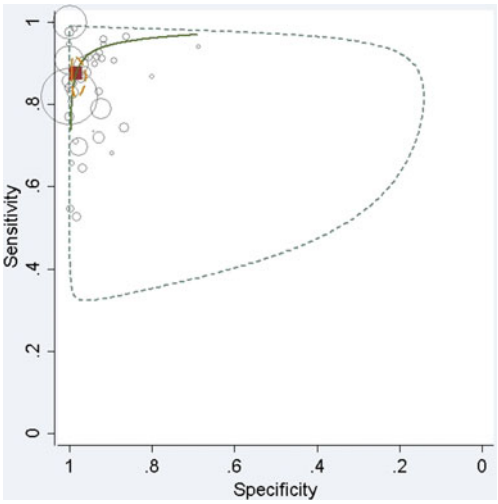
BACKGROUND: Current guidelines to diagnose and treat group A streptococcal (GAS) pharyngitis do not take into account the uncertainty of rapid testing. We examined the accuracy of the rapid antigen streptococcus test (RAST) to diagnose GAS pharyngitis.

METHODS: Systematic review and meta-analysis. MEDLINE search and reference lists, 2000–2012. We included clinical studies using RAST and a reference standard. We assessed quality with Quality Assessment of Diagnostic Accuracy Studies (QUADAS) criteria. We obtained hierarchical summary receiver operating characteristic (HSROC) curve and obtained adjusted estimates of test characteristics.

RESULTS: We included 41 of 728 studies; the overall prevalence was 28 % (13,588/48,377 patients; range 4–67 %). The setting was solely in the emergency department (27 %) or outpatient clinic (56 %); 22 % were solely in children; and 14 % were retrospective. Of 14 QUADAS criteria, eight

were fulfilled by over 90 % of studies, five by 60–80 %, and one by 22 %. The Deek's funnel plot was asymmetric ($p<0.001$) suggesting the presence of publication bias. Studies were heterogeneous as illustrated by a wide 95 % prediction region in the HSROC curve (Figure, dashed line) and high inconsistency estimates for sensitivity (I2=94.4 %) and specificity (I2=98.2 %). The adjusted pooled sensitivity was 88.2 % (95 % confidence interval [CI], 83.9 to 91.4 %; range 52.6 % to 99.9 %). The pooled specificity was 98.5 % (95 % CI, 96.7 to 99.3 %; range 68.8 % to 100 %). Inconsistency between studies remained high for sensitivity and specificity in sub-group analyses for location of test performance (point-of-care, laboratory), pediatric population, setting (outpatient, emergency department), study design (prospective, retrospective), study methodological quality (verification bias, non-differential bias, non-incorporation bias), and funding (commercial or not)(all I2>80 %).

CONCLUSIONS: The RAST is moderately sensitive and highly specific to diagnose group A streptococcal pharyngitis. However, significant heterogeneity and publication bias were observed among studies. Guidelines should incorporate uncertainty in estimates for rapid tests for the diagnosis of GAS pharyngitis.



A MIXED-METHODS RANDOMIZED CONTROLLED TRIAL OF EMPLOYER MATCHING OF DEPOSIT CONTRACTS TO PROMOTE WEIGHT LOSS Jeffrey T. Kullgren[1]; Andrea B. Troxel[2]; George Loewenstein[3]; Laurie Norton[2]; Dana Gatto[2]; Yuanyuan Tao[2]; Jingsan Zhu[2]; Heather Schofield[4]; Judy A. Shea[2]; David A. Asch[5]; Thomas Pellathy[6]; Jay Driggers[7]; Kevin G. Volpp[5]. [1]Ann Arbor VA Healthcare System and University of Michigan, Ann Arbor, MI; [2]University of Pennsylvania, Philadelphia, PA; [3]Carnegie Mellon University, Pittsburgh, PA; [4]Harvard University, Cambridge, MA; [5]Philadelphia VA Medical Center and University of Pennsylvania, Philadelphia, PA; [6]McKinsey & Company, Pittsburgh, PA; [7]Horizon Healthcare Innovations, Newark, NJ. (Tracking ID #1642494)

BACKGROUND: Deposit contracts are behavioral economic devices that ask people to put money at risk that they forfeit if they do not meet a goal. While deposit contracts can effectively promote weight loss, a major challenge to wider impact of these programs is getting more people to participate. The goals of this study were to test whether matching of deposits can increase participation in deposit contracts, characterize the corresponding amount of weight loss, and identify factors associated with non-participation in these programs.

METHODS: We recruited 132 employees of Horizon BCBS of NJ who wanted to lose weight and had a BMI between 30 and 50. Participants were given a weight loss goal of 1 lb per week for 24 weeks and randomized to a monthly weigh-in control group or monthly opportunities to deposit $1 to $3 per day with daily feedback. Deposits were either not matched, matched 1:1, or matched 2:1 and provided back to participants at the end of the month for every day in that month that participant was at or below the goal weight for that day. After the 24-week intervention period, we conducted semi-structured interviews with intervention arm participants to identify factors that influenced their participation in deposit contracts. The primary outcome was weight loss at 24 weeks. Secondary outcomes included deposit contract participation; changes in eating behaviors, physical activity, and wellness program participation at 24 weeks; and weight loss 12 weeks after the interventions ended.

RESULTS: After 24 weeks, control arm participants gained an average of 1.0 lb (SD 7.6), compared to mean weight losses of 4.3 lbs (SD 8.9; P=.03) in the no match arm, 5.3 lbs (SD 10.1; P=.005) in the 1:1 match arm, and 2.3 lbs (SD 9.8; P=.29) in the 2:1 match arm. Overall, 29.3 % of participants in a deposit contract arm made at least one deposit, and there were no significant differences in participation rates across the 3 deposit contract arms. There were also no significant differences in changes in eating behaviors, physical activity, and participation in wellness programs after 24 weeks. In semi-structured interviews, the main factors that limited participation in deposit contracts were a lack of confidence in meeting weight loss goals and fear of losing money. 12 weeks after the interventions ended, control arm participants gained an average of 2.1 lbs from baseline (SD 7.9), compared to mean weight losses of 5.1 lbs (SD 11.1; P=.008) in the no match arm, 3.6 lbs (SD 9.6; P=.02) in the 1:1 match arm, and 2.8 lbs (SD 10.1; P=.12) in the 2:1 match arm.

CONCLUSIONS: Relatively few study participants assigned to deposit contract conditions took up opportunities to enter into deposit contracts designed to promote weight loss, and employer matching of deposits did not increase participation. Approaches to promote confidence in losing weight or seed deposit contract accounts might be alternative ways to increase participation in these programs. Greater weight loss in deposit contract arms at 24 and 36 weeks may have been mediated by the automated daily feedback these participants received, and this approach could be another promising tool to promote behavior change in workplace settings.

A NATIONAL ASSESSMENT ON PATIENT SAFETY EDUCATION IN UNDERGRADUATE MEDICAL EDUCATION: A SURVEY OF CLERKSHIP DIRECTORS IN INTERNAL MEDICINE C. Charles Jain[1]; Meenakshy K. Aiyer[1]; Jean C. Aldag[1]; Eric Alper[2]; Steven Durning[4]; Elizabeth A. Murphy[2]; Dario M. Torre[3]. [1]University of Illinois College of Medicine at Peoria, Peoria, IL; [2]University of Massachusetts, Worcester, MA; [3]Drexel University, Philadelphia, PA; [4]Uniformed Services University of the Health Sciences, Bethesda, MD. (Tracking ID #1638436)

BACKGROUND: Patient safety is an important aspect of quality patient care. For this reason, accreditation bodies emphasize educating learners on patient safety in both undergraduate and graduate medical education curricula. This study looks at the current status of patient safety curricula from the perspectives of internal medicine clerkship directors. In addition, this study compares the current status to what was found in a similar study from 20061.

METHODS: The patient safety survey was a part of the Clerkship Directors in Internal Medicine (CDIM) 2012 annual survey. Questions were identified based on literature review, then modified and edited by the CDIM research committee. 37 patient safety related questions were organized into sections including general information, curriculum content and delivery, learner assessment, and barriers to providing the curriculum. All analysis was done using SPSS with group difference tested with Chi-squares for nominal variables. IRB approval was obtained.

RESULTS: Of the 121 clerkship directors surveyed 99 (82 %) responded. Of those responding 45.6 % (n=41) describe having patient safety curriculum at some point during the 4 years of medical school curriculum. Patient safety curriculum was commonly taught in the third year (30.3 %) of medical school followed by the pre-clinical years (yr1=19.2 %, yr2=28.3 %). The top three content areas included in the curriculum were infection control (54.1 %), handoffs and sign outs (47.4 %), and medication safety (39.5 %). Small groups (42.4 %) followed by lectures (31.3 %), direct observation (30.3 %) and Morbidity and Mortality reports (28.3 %)

were used as educational strategies. Even though strategies such as patient safety project, simulations and OSCE were used for assessment of the curricula, only 20 % of the respondents reported satisfaction with student safety competency assessment during their IM clerkship. Lack of a mandate from their school's dean's office (38 %), lack of physician champions (43.7 %), lack of trained faculty (65.3 %), and lack of time (78.1 %) were cited as barriers to implementation. Schools with female clerkship directors were significantly more likely to have a patient safety curriculum compared to schools with male clerkship directors (p=0.01).
CONCLUSIONS: Less than half of medical school curricula report having patient safety curricula. Even though clerkship directors recognize the importance of teaching patient safety curriculum, barriers exist to implementing the curricula. National guidelines on patient safety curriculum are currently not enough and more needs to be done to bring about the desired changes. 1. Alper MD E, Rosenberg MD, MSPH, Eric I., O'Brien MD KE, Fischer MD MEd M, Durning MD SJ. Patient safety education at U.S. and Canadian medical schools: Results from the 2006 clerkship directors in internal medicine survey. Acad Med. 2009;84:1672–1676.

A NOVEL WEBSITE TO PREPARE DIVERSE OLDER ADULTS FOR DECISION MAKING AND ADVANCE CARE PLANNING: A PILOT STUDY Rebecca L. Sudore[2,1]; Sara J. Knight[2,5]; Anita L. Stewart[4]; Ryan D. McMahan[2,1]; Mariko Feuz[2,1]; Yinghui Miao[2,1]; Deborah E. Barnes[3]. [1]UCSF, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA; [3]UCSF, San Francisco, CA; [4]UCSF, San Francisco, CA; [5]Veterans Health Administration, Washington, DC. (Tracking ID #1638672)

BACKGROUND: Advance care planning (ACP) has typically focused on advance directives and preferences for treatments, such as CPR. We have reconceptualized ACP as a multi-step process focused on preparing patients with skills needed for communication and in-the-moment decision making. To operationalize this paradigm, we created a new ACP website called PREPARE that is interactive, written at 5th-grade reading level, and shows people through videos and a step-by-step process how to communicate what is most important in life and how to make informed medical decisions. To assess the efficacy of PREPARE, we created and assessed the validity of a new survey that detects behavior change in ACP and then conducted a separate pre-to-post efficacy study.
METHODS: Study #1 (Survey Validation) validates the ACP Engagement Survey, which includes Process Measures of behavior change (knowledge, self-efficacy, and readiness, 5-point Likert) and Action Measures (e.g., "Did you do X?" yes/no) of multiple ACP behaviors such as choosing a surrogate, asking someone to be a surrogate, and speaking to surrogates and doctors about one's wishes. We administered surveys at baseline and one-week later to 50 diverse, older adults from San Francisco hospitals. Internal consistency of the Process Measures was assessed using Cronbach's alpha (only for continuous variables) and test-retest reliability for both Process and Action Measures was examined using intraclass correlations. Study #2 (PREPARE Efficacy): Using a separate cohort (n=43) from low-income, San Francisco senior centers, we assessed change in ACP Engagement Survey responses (Process and Action Measures) and change in percentage of participants in the lowest, "precontemplation", behavior stage of change to higher stages (contemplation, preparation, action, maintenance) at baseline and one-week after viewing PREPARE. We also assessed PREPARE's ease-of-use on a 10-point scale, 10 being the easiest. To assess comparisons, we used paired t-tests and McNemar's tests.
RESULTS: Study #1 (Survey Validation): Mean age was 69.3 (SD 10.5) and 42 % were non-White. The internal consistency of the Process Measures was 0.94. Intraclass correlations were 0.70 for the Process Measures and 0.86 for the Action Measures. Study #2 (PREPARE Efficacy): Mean age was 68.4 (SD 6.6) and 65 % were non-White, and 33 % had limited health literacy. Behavioral change Process Measure average Likert scores increased from 3.1 (SD 0.9) to 3.7 (SD 0.7), p<.001. Action Measures did not change significantly in 1 week. However, precontemplation significantly decreased for most ACP actions including asking someone to be a surrogate 39.5 % vs. 23.3 %, p<.04; talking to the doctor about the surrogate, 62.8 % vs. 30.2 %, P,.001; talking with the surrogate and doctor about medical wishes, 46 % vs. 28 %, p=.02 and 61 % vs. 35 %, P=.003, respectively. PREPARE was rated 9 out of 10 (SD 1.9) for ease-of-use.
CONCLUSIONS: A new patient-centered ACP website prepares people for ACP communication and medical decision making and is easy-to-use among older adults from diverse backgrounds. The new ACP Engagement Survey that measures both ACP behavior change and ACP actions demonstrated good reliability and validity. And, the PREPARE website significantly improves individuals' behavior change and engagement in ACP. The website is available at www.prepareforyourcare.org and a clinical trial is underway.

A PEER-LED INTERVENTION IMPROVES STROKE SURVIVORS' BLOOD PRESSURE CONTROL Carol Horowitz[1]; Kezhen Fei[1]; Ian M. Kronish[2,1]; Stanley Tuhrim[1]; Rennie Negron[1]. [1]Mount Sinai School of Medicine, New York, NY; [2]NY Presbyterian, New York, NY. (Tracking ID #1641866)

BACKGROUND: Hypertension is a major risk factor for stroke recurrence but it is poorly controlled among stroke survivors, particularly from minority groups. The Prevent Recurrence of All Inner-city Strokes through Education (PRAISE) trial tests whether a community-based, peer-led stroke education intervention improves stroke risk factors, primarily blood pressure control.
METHODS: Using community-based participatory research, clinicians, educators and stroke survivors developed a six-session peer-led workshop to help stroke survivors understand their illness, and identify and manage their recurrent risks, particularly hypertension. We recruited 600 individuals with a history of stroke or TIA within the past 5 years who were randomized to the intervention or a wait-list control group. At baseline, 6 and 12 months, we measured participants' blood pressures, sociodemographics, beliefs and behaviors.
RESULTS: Participants have a mean of 63 years, the majority are female (60 %), Black or Latino (81 %) and live in poverty (56 %). At baseline, 31 % in both groups had uncontrolled blood pressure (<140/90 mmHg). At 6 months, the intervention group demonstrated better blood pressure control when compared to the control group, 76 % vs. 65 % (p=0.01). The intervention group also had a significant blood pressure reduction of 3.6/2.0 mmHg (p=0.005/p=0.04) compared to the control group (+0.5/−0.5 mmHg).
CONCLUSIONS: A peer-led educational program developed through a community-academic partnership was successful in improving blood pressure control at 6 months. While 12-month data will confirm the longevity of this impact, PRAISE is simple, culturally appropriate and inexpensive, and may represent an important and sustainable secondary stroke prevention strategy.

A PILOT STUDY OF A COMPUTER-BASED RELATIONAL AGENT TO SCREEN FOR SUBSTANCE-USE PROBLEMS IN PRIMARY CARE Steven R. Simon[1,5]; Kyle Checchi[1,2]; Sarah S. McNair[1,2]; Amy Rubin[3,4]; Thomas Marcello[1,5]; Timothy Bickmore[6]. [1]VA Boston, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Boston University, Boston, MA; [4]VA Boston Healthcare System, Boston, MA; [5]Brigham and Women's Hospital, Boston, MA; [6]Northeastern University, Boston, MA. (Tracking ID #1638383)

BACKGROUND: Because of time constraints in delivering office-based primary care, interventions are needed to offload some tasks from primary care clinicians. Relational Agents - computer characters that simulate face-to-face conversation using voice, hand gesture, gaze cues and other nonverbal behavior, and that use simulated social behaviors to establish trust and therapeutic alliance - can provide education and counseling. Patients may find this type of computerized system suitable for "discussing" sensitive topics, although empirical data are lacking. We therefore conducted a pilot study - the first in the Veterans Health

Administration (VA) - to test the feasibility of using this technology to screen for substance use problems in primary care.
METHODS: We recruited 24 male Veterans from VA Boston. Each participant completed the National Institute on Drug Abuse-Modified Alcohol, Smoking and Substance Involvement Screening Test (NM-ASSIST), administered once by a research assistant and once by the Relational Agent, with the order randomly counter-balanced. Following both screenings, the research assistant conducted a semi-structured interview that solicited the Veteran's perspectives of the Relational Agent for screening, strengths and weaknesses of the Relational Agent compared with live interaction, suggestions for improving the Relational Agent, and potential applications in primary care. We conducted a content analysis of transcribed interview notes, employing standard qualitative research techniques to identify dominant themes.
RESULTS: Among the 24 participants, 19 (79 %) expressed positive impressions of answering the NM-ASSIST with a Relational Agent, while 3 (13 %) were neutral and 2 (8 %) were negative. A total of 14 (58 %) reported being comfortable completing the NM-ASSIST with the Relational Agent. Only 6 participants (25 %) indicated that they preferred the Relational Agent over a live interviewer, while 11 (46 %) preferred the live interviewer and 7 (29 %) were indifferent. Live interviewer was generally preferred because of greater depth of interaction, ability to clarify questions and responses or unease with technology. In contrast, participants who favored the Relational Agent appreciated its ease and efficiency of use, privacy and lack of judgmentalism, and clear answer choices. Among 18 Veterans expressing an opinion, similar percentages favored the use of Relational Agents to ask questions about benign (diet and exercise [16/18, 89 %], family history [15/18, 83 %]), and sensitive (sexual history [15/18, 83 %]) topics. Participants offered constructive feedback on the Relational Agent's behavior, particularly her eye movements; speech, being unnatural and computerized; and relatively unsophisticated graphics. Veterans generally favored the Relational Agent's appearance (attractive woman dressed casually but modestly) and did not express a preference for other characteristics. Veterans frequently voiced concerns about how the Relational Agent would maintain confidentiality of their responses.
CONCLUSIONS: Although participants preferred a live interview to interaction with a computerized Relational Agent, a majority of Veterans were comfortable with the Relational Agent and would be willing to engage with it for counseling and screening for sensitive topics such as substance use and sexual history. Future randomized trials will test the effectiveness of Relational Agents in both screening and brief intervention for substance use problems.

A RANDOMIZED CONTROLLED TRIAL OF AN EVIDENCE-BASED TOOLBOX AND GUIDE TO INCREASE PRIMARY CARE CLINICIANS' RATES OF COLORECTAL CANCER SCREENING IN DIPLOMATES OF THE ABIM Lorna A. Lynn[2]; Carmen E. Guerra1; Kathryn M. Ross[2]; Eric Holmboe[2]; Kaitlin Woo[1]; Daniel F. Heitjan[1]; Debbie Kirkland[3]; Durado Brooks[3]. [1]Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA; [2]American Board of Internal Medicine, Phiadelphia, PA; [3]American Cancer Society, Atlanta, GA. (Tracking ID #1642572)

BACKGROUND: Colorectal cancer screening (CRCS) is effective, cost-effective and consistently recommended by clinical guidelines, yet only 64.5 % of Americans aged 50–75 years have been screened. Recommendation from a physician is the most influential factor in determining whether a patient is screened for CRC. This study was undertaken to determine whether the Evidence-Based Toolbox and Guide to Increase Primary Care Clinicians' Rates of CRCS, developed by the Centers for Disease Control and American Cancer Society, could help diplomates of the American Board of Internal Medicine (ABIM) recertifying for the Internal Medicine boards increase their practice rates of CRCS. The main study aim was to compare practice rates of CRCS in the the control (PIM only) and study (PIM + toolbox) arms.
METHODS: In this randomized controlled trial diplomates who are primary care providers for patients over age 50 and who were enrolled in ABIM's Maintenance of Certification program were invited to participate. Participants had to enroll in the Cancer Screening Practice Improvement Module (PIM), which requires physician-directed measurement of their performance and design of a quality improvement plan. Diplomates were randomized to the PIM or the PIM + toolbox arm. The toolbox consists of four essential sections and evidence-based tools: Your Recommendation, An Office-based Policy, a Reminder System and an Effective Communication System. Analysis was based on the intention-to-treat principle. An external auditor determined the validity of self-reported CRCS rates in a random sample of 20 % of the participants.
RESULTS: A total of 2288 recruitment emails were sent to ABIM diplomates who met the inclusion/exclusion criteria of whom 160 diplomates expressed interest in participation and 144 enrolled in the study. Of these, 79 diplomates completed the study. The CRCS rates declined in 17 of the 79, but improved in the remaining 62. We conducted an analysis of covariance, a GEE and mixed logistic regression models. All final CRCS were adjusted for the baseline performance and all results showed a non-significant treatment effect. In the final mixed logistic regression model adjusted for the baseline performance rate and treatment group of the physician and shown in Table 1, we determined the strength of various physician characteristics in predicting the probability of a successful screening that was performed post-treatment. Medical school country was the only predictor of improved screening rates post-treatment.
CONCLUSIONS: These results demonstrated that while most diplomates improved their CRCS rates from baseline during the study, the improvement was not significantly different in the control arm (PIM only) compared to the study arm (PIM plus toolbox). Medical school country was the only predictor of success rate, with those physicians who attended medical school abroad having an odds ratio of 4.32 (95 % CI: 1.75–10.65) of performing a successful screening than those physicians who attended medical school in the U.S.
Odds ratio estimates and 95 % confidence intervals
Effect Odds Ratio Estimate 95 % CI
Baseline Performance Rate 1,010 (1.00, 1.03)
Treatment vs. Control Arm 1.680 (0.88, 3.19)
Solo vs. Group Practice 1.463 (0.57, 3.76)
Female vs. Male 1.263 (0.65, 2.44)
Foreign vs. U.S. Medical School 4.318 (1.75, 10.65)
Age 0.950 (0.90, 1.01)
Years until MOC Expiration 0.990 (0.77, 1.28)

A RANDOMIZED TRIAL OF TWO APPROACHES TO TRAINING VETERANS AFFAIRS (VA) MEDICAL HOME HEALTHCARE PROVIDERS ON MOTIVATIONAL INTERVIEWING FOR TOBACCO CESSATION Steven Fu[1,2]; Craig Roth[2]; Catherine Battaglia[4]; David Nelson[1]; Melissa Farmer[5]; Tam Do[1]; Michael Goldstein[6]; Rahul Kavathekar[2]; Rachel Widome[1]; Hildi Hagedorne[1]; Alan Zillich[3]. [1]Minneapolis VA Health Care System, Minneapolis, MN; [2]Minneapolis VA Health Care System, Minneapolis, MN; [3]Roudebush VA Medical Center, Indianapolis, IN; [4]VA Eastern Colorado Health Care System, Denver, CO; [5]VA Greater Los Angeles Health Care System, Los Angeles, CA; [6]VHA National Center for Health Promotion and Disease Prevention, Durham, NC. (Tracking ID #1638026)

BACKGROUND: Tobacco cessation counseling from a clinician doubles a patient's odds of quitting. Motivational interviewing (MI) is an effective communication skill in tobacco cessation counseling, but strategies to train providers on MI are needed. This study evaluated a high-intensity versus moderate-intensity MI training program to improve delivery of tobacco cessation care.
METHODS: VA Patient Aligned Care Team (PACT) members at 2 VA facilities were randomized to moderate- or high-intensity MI training. Both training models included the following 3 components: 1) 3-day intensive MI training for site-based MI clinical champions and a site-based MI expert consultant, 2) Half day on-site training workshop for PACT members, and 3) self-study materials. The high-intensity model added 6 booster sessions coached by champions. Three booster sessions used telephone interactions with simulated patients and occurred at 4, 8, and 12 weeks after the initial training. Three additional booster sessions (at 2, 6, and 10 weeks) used small group coaching facilitated by the champions. Each 1-h booster

session focused on specific MI skills. To evaluate the 2 training models, a structured clinical evaluation (OSCE) was conducted with providers in each group before and 12 weeks after the onsite training. The OSCEs assessed provider competence with and acquisition of MI and tobacco cessation skills through interaction with a simulated patient. A trained, blinded rater assessed the provision of MI skills by listening to the audio-recorded OSCEs. The primary outcome was the Motivational Interviewing Treatment Integrity (MITI) scale scores, a validated assessment of MI skills. Hierarchical models compared the average changes in MITI scale scores from the pre-training OSCE to the 12 week post-training OSCE for the moderate intensity and the high intensity groups. The models incorporated random effects for study site and participant and fixed effects for simulated patient and pre-training OSCE MITI scores.

RESULTS: Thirty-five PACT members were enrolled in the study and 18 members were randomly assigned to the high intensity group. Compared to the moderate intensity group, the high intensity group scored significantly higher for 5 of the 10 MITI scales (Table 1). For 3 of the other 5 MITI scales, a non-significant improvement was seen in the high intensity versus the moderate intensity group.

CONCLUSIONS: A training model using several booster sessions incorporating telephone interactions with simulated patients, in addition to MI champions, expert consultant, ½day training and study materials,was effective for sustaining and enhancing providers' MI skills in the delivery of tobacco cessation care.

Table 1

MITI Scales	Training Group	Pre-MITI Score (SD)	Post-MITI Score (SD)	Model Estimated Change (SE)	p-value
Global Spirit	High Intensity	2.89 (0.61)	3.20 (0.77)	0.31 (0.20)	
	Moderate Intensity	2.67 (0.81)	2.50 (0.72)	−0.26 (0.21)	
	Difference			0.57 (0.20)	0.0091
Percent Open Questions	High Intensity	0.32 (0.21)	0.48 (0.23)	0.17 (0.04)	
	Moderate Intensity	0.27 (0.18)	0.32 (0.24)	0.03 (0.05)	
	Difference			0.14 (0.06)	0.0336
Percent MI Adherence	High Intensity	0.50 (0.37)	0.90 (0.19)	0.31 (0.11)	
	Moderate Intensity	0.62 (0.38)	0.57 (0.39)	−0.00 (0.12)	
	Difference			0.32 (0.10)	0.0047
Evocation	High Intensity	2.75 (0.88)	3.00 (1.22)	0.33 (0.22)	
	Moderate Intensity	2.40 (1.05)	2.00 (0.87)	−0.54 (0.27)	
	Difference			0.87 (0.35)	0.0211
Collaboration	High Intensity	2.69 (0.93)	3.16 (1.02)	0.38 (0.33)	
	Moderate Intensity	2.68 (1.13)	2.32 (1.04)	−0.43 (0.35)	
	Difference			0.81 (0.28)	0.0083

A STRATEGY TO ENGAGE COMMUNITY BASED ORGANIZATIONS IN BUILDING RESEARCH CAPACITY Crispin N. Goytia[1]; Barbara Brenner[2]; Peggy M. Shepard[3]; Lea Rivera-Todaro[1]; Carol Horowitz[1]. [1]Mount Sinai School of Medicine, New York, NY; [2]Mount Sinai School of Medicine, New York, NY; [3]WE ACT for Environmental Justice, New York, NY. (Tracking ID #1642376)

BACKGROUND: Building and sustaining community-academic research partnerships is a challenge for both academic institutions and for community based organizations (CBOs). Each partner comes to the relationship with differing expertise and gaps in knowledge. Many Clinical and Translational Science Award (CTSA) sites are working to build CBO capacity to engage in research, but information about needs and goals of CBO's in this regard is lacking. Therefore, our CTSA's community and academic partners aimed to conduct a community research needs assessment.

METHODS: Based on literature review, informal interviews with research-interested CBOs locally and nationally, and with community-engaged research groups from other CTSAs, we developed a needs assessment survey. Key domains of this survey included experience and interest in research collaboration, skill development and program evaluation. The team identified a preliminary list of 80 eligible CBOs through network analysis and a list from the Foundation Center's Directory of New York City organizations that received grants in 2009–2010 in health services or research. We trained Community Health Workers (CHWs) to recruit a senior leader from each site and the CHW's encouraged them via mail, email and telephone over a 90-day period to complete the survey.

RESULTS: Fully 76 % (61) CBOs completed the needs assessment. Most (69 %) reported involvement with research or evaluation in the last 2 years, 42 % were currently involved in research or program evaluation and 33 % had some funding for research. Fully 75 % had collaborated with academic institutions in the past. Most were interested in collaborating or working as partners on research, with a mean score of 6 on a scale of 1 = not interested, to 8 = the most interested. The average experience with collaboration in research was unimpressive: "good" on a scale of "poor, fair, good, very good, excellent". The four areas of greatest interest were program evaluation, developing a needs assessment, statistical analysis and survey development. There was less interest in how to establish a research collaboration with academics. Respondents preferred a hybrid format of online and in- person workshops to other options to either format on its own.

CONCLUSIONS: A formal needs assessment of the research training and education needs of CBO's in New York City revealed that, despite underwhelming experiences with collaboration, most had significant interest in future collaboration and learning about research. CBO leaders were particularly interested in learning about how to conduct research and evaluation, and less interested in learning how to partner with academics to collaborate on research. Community representatives from the CTSA will use these findings to: develop a research capacity building course. Other partnerships should consider building or making use of such assessments to transform the capacity of community organizations to be active research partners and leaders.

A SUCCESSFUL COMMUNITY PARTNERSHIP MODEL FOR RECRUITING PUBLIC HOUSING RESIDENTS INTO RESEARCH Tracy A. Battaglia[1]; Jo-Anna L. Rorie[2]; Sarah W. Primeau[1]; Sarah E. Caron[1]; Sarah G. Bhosrekar[2]; Bing L. Chen[1]; Sharon Bak[1]; Gerry Thomas[3]; Rachel Goodman[5]; Eugenia Smith[4]; Deborah J. Bowen[2]. [1]Boston University School of Medicine, Boston, MA; [2]Boston University School of Public Health, Boston, MA; [3]The Boston Public Health Commission, Boston, MA; [4]The Community Committee for Health Promotion, Boston, MA; [5]The Boston Housing Authority, Boston, MA. (Tracking ID #1612855)

BACKGROUND: The Boston University Partners in Health and Housing Prevention Research Center (PHH-PRC), a partnership between the School of Public Health, Community Committee for Health Promotion, Boston Housing Authority and Boston Public Health Commission, aims to improve the health of Boston's Public Housing residents through research. This study aims to demonstrate the Center's ability to recruit and retain a representative sample of residents in the community setting to participate in a research study.

METHODS: An ongoing community engagement activity of the PHH-PRC is the conduct of monthly, on-site educational health screenings conducted in collaboration with housing development residents and research center staff. We conducted a descriptive analysis of enrollment outcomes from these community-based health screenings held across 6 housing developments from April 2011 through June 2012. The outcome of interest was enrollment into Project HHEART (Heart Health Equality Among ResidenTs), a patient navigation intervention study designed to improve clinical and community program participation among housing development residents at risk for cardiovascular disease. All those attending the health screenings completed a survey, underwent an evaluation for cardiovascular risk factors and received written educational materials. Those eligible for enrollment into Project HHEART were ≥18 years of age, spoke English or Spanish, resided in the respective housing development and screened positive for ≥1 risk factor (overweight/obese, hypertension, hypercholesterolemia, diabetes, tobacco use). We compared socio-demographic and risk factor characteristics of those eligible vs. ineligible for Project HHEART enrollment. Among those eligible, we compared characteristics of those who enrolled vs. declined.

RESULTS: 610 residents participated in screenings April 2011–June 2012. Most were female (74 %), non-White (30 % Black, 44 % Hispanic, 15 % other), had public (84 %) or no health insurance (10 %), reported a clinical visit with a primary care provider in the past 3 months (62 %) and screened positive for >1 risk factor (92 %). About half spoke a language other than

English (50 %), were foreign-born (49 %), and had less than high school education (45 %). Overall, 451 (74 %) of participants were eligible for enrollment. Reasons for ineligibility included: not living on site (n=106), no positive screens for risk factors (n=32) and significant language barriers (did not speak English or Spanish) (n=21). Compared to those ineligible for Project HHEART, eligible participants were more likely to be older (mean age 50 v. 49 years, p<0.01), Hispanic (48 % v. 33 %, p<0.01), and have public or no health insurance (93 % v. 86 %, p=0.05). Of the 451 eligible participants, 326 (72 %) agreed to participate and were enrolled into Project HHEART. Compared to those who declined to participate, enrolled subjects were slightly younger (mean age 50 v. 53, p<0.01), but did not differ in any other socio-demographic or health risk factor status. Of those enrolled (n=326), 80 % completed 3-month follow-up surveys.
CONCLUSIONS: Socio-demographic differences in eligibility reflect the study design. Among those eligible, we enrolled and retained a representative sample of public housing residents and engaged them into prevention research. This program serves as one viable model to engage a diverse population in research.

A TECHNOLOGY-BASED APPROACH TO IDENTIFYING UNDIAGNOSED HYPERTENSION Christopher Masi[1]; Michael Rakotz[1,2]; Ruth Ross[1]; Ari Robicsek[1]; Chad Konchak[1]; Bernard Ewigman[2]. [1]NorthShore University HealthSystem, Evanston, IL; [2]NorthShore University HealthSystem, Evanston, IL. (Tracking ID #1633262)

BACKGROUND: Affecting 30 % of all U.S. adults 18 years and older, hypertension is the leading modifiable risk factor for coronary artery disease, stroke, and congestive heart failure. According to the 2008 National Health and Nutrition Examination Survey, approximately 19 % of U.S. adults with hypertension are unaware of their diagnosis. Our goal was to identify primary care patients with suspected but undiagnosed hypertension and then clarify their status using an automated office blood pressure (AOBP) device.
METHODS: We queried the electronic health records (EHR's) of patients who receive care at one of twenty-three health system-affiliated primary care clinics to identify adults aged 18 to 79 years who had at least one primary care office visit within 12 months of the query, had elevated blood pressure readings as identified by at least one of five hypertension screening algorithms, and did not have a diagnosis of hypertension recorded in the EHR. Individuals who met these criteria were considered at-risk for undiagnosed hypertension and were invited to complete a clinic-based AOBP measurement using a BpTRU device which averages five readings over a five-minute period. Since each patient had one or more previously documented elevated blood pressure readings, we classified patients based upon their AOBP mean: hypertension if BP≥140/90 mmHg; prehypertension if BP≥120/80 mmHg and <140/90 mmHg; and white coat hypertension if BP<120/80 mmHg. The positive predictive value (PPV) of the hypertension screening algorithms was calculated by dividing the number of individuals with an AOBP mean in the prehypertension or hypertension ranges (true positives) by the number of individuals identified by at least one of the hypertension screening algorithms (all positives).
RESULTS: Of the 139,666 adults who receive care at one of the participating clinics, 1,586 met our inclusion criteria. After confirming the appropriateness of study participation with each patient's primary care physician, attempts were made to recruit 1,432 patients. 475 of these patients agreed to participate in the study and undergo a clinic-based AOBP measurement. Among participants, the median age was 54.4 years, the mean BP recorded in the EHR was 136/82 mmHg, and the mean BMI was 29.6 kg/m2. Fifty-two percent of participants were male. Participants identified themselves as Caucasian (70.9 %), African American (6.1 %), Hispanic/Latino (3.4 %), Asian (2.7 %), or other (16.8 %). Comparing the 475 participants to the 957 non-participants revealed the participants were older (54.4 vs. 50.0 years, p<0.001) but were similar in all other respects, including distribution of ethnicities, and prevalence of co-morbidities, including diabetes, congestive heart failure, and COPD. Based upon AOBP means among participants, 183 (39 %) had hypertension, 196 (41 %) had prehypertension, and 96 (20 %) had white coat hypertension. The positive predictive value for detecting prehypertension or hypertension using our technology-based approach was 80 %.
CONCLUSIONS: Essential elements of our approach included an EHR, computer-based screening algorithms, and an established AOBP protocol. Results from this study confirm the notion that technology-based strategies have significant potential to detect undiagnosed chronic disease - a critical first step toward enhancing chronic disease management.

A VALID MEASURE OF HEALTH-RELATED TRUST FOR USE IN DIVERSE POPULATIONS Rebecca J. Schwei[1]; Paul Rathouz[2]; Seung W. Choi[3]; Elizabeth A. Jacobs[1]. [1]University of Wisconsin School of Medicine and Public Health, Madison, WI; [2]University of Wisconsin School of Medicine and Public Health, Madison, WI; [3]McGraw-Hill Education, Monteray, CA. (Tracking ID #1640804)

BACKGROUND: Varying levels of distrust in health care among racial/ethnic groups are hypothesized to contribute to health disparities in the US. However, few measures of trust and distrust have been developed and validated for use across racial/ethnic groups to allow adequate exploration of this hypothesis. The objective of the study was to develop a measure of health-related trust in the 3 major racial/ethnic groups in the US: African Americans, Hispanic-Mexicans, and non-Hispanic whites.
METHODS: We developed candidate items through extensive qualitative work, cognitive testing, piloting, and rigorous translation into Spanish. We administered the 81 candidate items to a convenience sample of African American (n=142), Hispanic-Mexican (n=143), and non-Hispanic white (n=155) individuals at Chicago-area supermarkets. Participants responded using a 5-item Likert response scale: never true, a little true, half the time true, mostly true, always true. We conducted exploratory and confirmatory factor analyses using Mplus. We also asked "In the past 5 years, have you had a negative health care experience you considered to be bad or negative?" (Y/N).
RESULTS: The final instrument contained 36 items and 7 factors: Discrimination (3 items), Equity (6 items), Hidden Agenda (4 items), Insurance (3 items), Negative Physician Perceptions (5 items), Positive Physician Perceptions (12 items) and System Welcoming (3 items). A higher trust score indicated increased trust. The instrument (α=.94) and individual factors performed well overall and in each racial/ethnic group (α=.61 to .94) The 7-factor CFA model provided reasonable fit statistics (CFI=.964, TLI=.961, RMSEA=.055) and evidence for construct validity. Across all racial/ethnic groups individuals reporting a negative health care experience had lower levels of institutional trust.
CONCLUSIONS: Our measure of health-related trust performed well across racial/ethnic groups while including constructs that may vary considerably across groups (e.g., Discrimination). There was increased trust in groups without a reported previous negative health care experience. We found trust in health care to be multi-faceted, incorporating perceptions about physicians, health care systems, and insurance. This measure has the potential to advance the field studying how health-related trust contributes to health disparities in the US.

A CASE METHOD EDUCATION ON MANAGEMENT OF DISCHARGE PLANNING FOR HEALTHCARE PROFESSIONALS Yukio Tsugihashi[1,2]; Noriko Kawai[2]; Hitoshi Ishii[2]. [1]Tenri Hospital, Tenri, Japan; [2]Tenri Hospital, Tenri, Japan. (Tracking ID #1627411)

BACKGROUND: In collaborative healthcare systems, reducing length of stay has been a priority for general hospitals. There is concern that the reduction may provide low-quality transitional care for the patients and the families. In order to secure the quality for the patients and the families, hospital workers should effectively acquire a management skill for discharge planning. A case method is a teaching method that is widely used in business schools. Students can enhance their leadership and management skills through discussion about a teaching case. The case is a document that objectively illustrates business cases to be solved and includes information for classroom discussion. Both business and discharge planning, there are no simple solutions. We hypothesized that the case method could be adjusted into education in discharge planning. Therefore, we developed a novel educational program for the discharge planning using

a case method education. The purpose of this study was to (1) develop educational strategies and (2) assess the learning outcomes of this program.
METHODS: This study was conducted from April 2012 to July 2012 at one general hospital in Japan (Tenri Hospital, Tenri City, Nara, Japan). Cornerstones of the program are provided in Table 1. The Participants were provided with a case method education consisting of following three steps: 1) Preparing their opinions for teaching cases before the classes. 2) Discussing with other participants in small groups and a classroom, 3) A short lecture summarizing key points in the cases. A medical doctor and a registered nurse specialized in care transition prepared four cases based on actual care transition in Tenri Hospital. In order to evaluate learning outcomes of the program, we performed questionnaire surveys after each lecture, including descriptive analyses about participants' satisfaction and qualitative content analysis focused on their self-awareness through the program.
RESULTS: This study enrolled 57 healthcare providers working in Tenri Hospital and affiliated care institutions. With regard to the occupation, 31(54 %) were registered nurses, 7 (12 %) were medical social workers, and 19 (38 %) were other occupations including physical therapists, long-term care support specialists, medical doctors, pharmacists, certified care workers, medical college teachers and medical secretary. Over 90 % of the participants were satisfied with the program. The participants' self-awareness was identified to the following three categories: acquiring core competencies for discharge planning, problem extraction through active interaction among the participants, and precious opportunities for inter-professional communications in the related institutions.
CONCLUSIONS: A case method by the discussion-based education using actual cases successfully contributed to enhance the participants' awareness for management of discharge planning in addition to obtaining the core competency. Furthermore, the program itself could promote inter-professional communications among the hospital workers.
Table 1. Cornerstones of a case method education on management of discharge planning
Teaching method A case method education with 3 h session per a month (Small group discussion: 60 min, Classroom discussion: 60 min, Short lecture: 30 min)
Duration/Frequency 4 months/One Saturday afternoon per month
Titles of teaching cases Case 1. An elderly woman emergently admitted to a hospital with acute pyelonephritis
Case 2. An elderly patient with advanced dementia and bilateral leg gangrenes
Case 3. A patients who can't eat by mouth because of severe neurological disease
Case 4. Tohoku earthquake. Effort of medical support teams from Nara prefecture
Learning outcomes Satisfaction level (descriptive analysis)/Self-awareness (qualitative analysis)

A MULTI-INSTITUTION RETROSPECTIVE STUDY ON CAUSATIVE DISEASES AND DIAGNOSTIC METHODS FOR FEVERS OF UNKNOWN ORIGIN IN JAPAN: A PROJECT OF THE JAPANESE SOCIETY OF GENERAL HOSPITAL MEDICINE

Toshio Naito[1]; Fujiko Mitsumoto[2]; Hiroyuki Morita[3]; Masafumi Mizooka[4]; Shiro Oono[5]; Akira Ukimura[6]; Keito Torikai[7]; Kenji Kanazawa[8]; Masashi Yamanouchi[1]; Susumu Tazuma[4]; Jun Hayashi[2]. [1]Juntendo University School of Medicine, Tokyo, Japan; [2]Kyushu University Hospital, Fukuoka, Japan; [3]Gifu University Graduate School of Medicine, Gifu, Japan; [4]Hiroshima University Hospital, Hiroshima, Japan; [5]Nara Medical University, Nara, Japan; [6]Osaka Medical College, Osaka, Japan; [7]St. Marianna University School of Medicine, Tokyo, Japan; [8]Kobe Universtiy Hospital, Kobe, Japan. (Tracking ID #1634255)

BACKGROUND: Fevers of unknown origin (FUO) are caused by a wide range of diseases, and they occur in a variety of regions and age groups. In Japan, research on the topic has been limited to single facilities/regions, and no national surveys have been conducted. Analysis is important, as causes may differ with race, region and era. Further, few studies have evaluated the usefulness of diagnostic exams, and FUO is diagnosed according to guidelines specific to each facility. In particular, there has been very little research on the efficacy of recently developed diagnostic methods, such as blood procalcitonin analysis and positron emission tomography (PET). Here, we conducted a national survey at facilities belonging to the Japanese Society of General Hospital Medicine, to clarify what exams are useful and what diseases deserve attention in the differential diagnosis and treatment of FUO.
METHODS: Seventeen facilities were surveyed nationwide from January to December 2011. The subjects were patients who were 18 years or older and diagnosed with "classical FUO (a fever with an axillary temperature of 38 °C or higher and measured 2 times or more in a period of 3 weeks or longer, and where the cause was unclear after 3 outpatient visits or a 3-day hospital stay)." Subject data were recorded in a common case report form and tallied using FAX.
RESULTS: A total of 121 FUO cases were recorded, with a median age of 59 years (19–94 years). The causative disease was infection in 28 cases (23.1 %), noninfectious inflammatory disease in 37 cases (30.6 %), malignant tumor in 13 cases (10.7 %), something else in 15 cases (12.4 %), and unknown in 28 cases (23.1 %). "Something else" included causes such as drug-induced fevers. The median number of days from fever onset to first examination was 28 days. A case of familial Mediterranean fever took the longest days to be diagnosed. Blood cultures were performed at 86.8 %, blood procalcitonin values measured at 43.8 %, and PET performed at 29.8 %.
CONCLUSIONS: With the increased use of computed tomography, FUO due to deep abscesses or solid tumors have declined markedly. The causative disease with the largest proportion was polymyalgia rheumatica (9 cases), reflecting the aging of the society. The relatively small number of cases due to an unknown cause was possibly attributable to the bias of the retrospective study. HIV/AIDS caused 4 FUO cases, showing that this has become an important cause of FUO in Japan. This study clarified diseases that deserve attention when differentiating FUO. We have a plan to analyze the usefulness of exams and create guidelines for diagnosing FUO.

A NATIONAL STUDY OF INTERNISTS' POINT OF CARE LEARNING

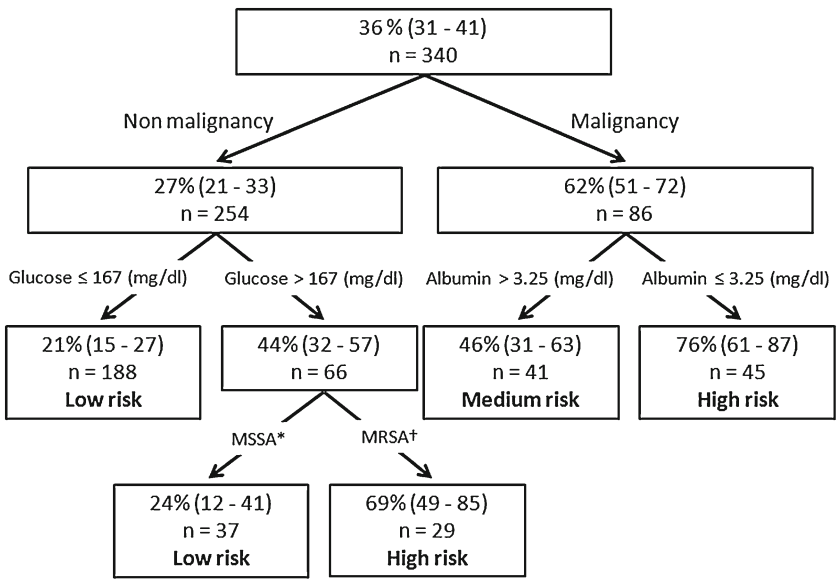
Michael Green[1]; Siddharta Reddy[2]; Eric Holmboe[2]. [1]Yale School of Medicine, New Haven, CT; [2]American Board of Internal Medicine, Philadelphia, PA. (Tracking ID #1639990)

BACKGROUND: Physicians frequently encounter clinical questions at the point of care (POC), which represent opportunities for learning, immediate application of new knowledge, and longer term performance improvement. An understanding of these POC learning episodes would inform continuing medical education programs, electronic information resources, evidence-based practice training, and reflective practice. Previous studies of POC learning have been confined to small numbers of physicians in limited geographic areas.
METHODS: We studied internists enrolled in the ABIM Maintenance of Certification (MOC) program who registered for and entered at least one question in the ABIM Point-of-Care Clinical Question Module between November 2010 and December 2012. To complete this web-based module, internists documented the characteristics, information seeking, learning, practice impact, and barriers of at least 20 point of care clinical questions. We compiled descriptive statistics for the module data.
RESULTS: Four-hundred-seventy-two internists entered at least one clinical question (224 completed the module, 188 are currently working on it, and 60 cancelled). Among those who completed the module, 197 (88 %) spent more than 30 h per week in patient care activities, 66 (28 %) were generalists, and 108 (48 %) worked in academic settings. The internists documented 5187 POC learning episodes over periods ranging from 1 to 19 months. The episodes most commonly were stimulated by direct patient care in the ambulatory setting, with or without a trainee (57 %); involved cardiovascular disease (21 %) or gastroenterology (14 %) content; represented foreground questions (58 %); and concerned therapy (55 %) or diagnosis (14 %) questions. The internists spent a median of 30 min looking up medical information, most often some time after the clinical encounter (61 %); using a median of 2 resources; and most commonly consulting UpToDate® (25 %) and articles retrieved via PubMed (17 %). The internists planned to change their practice based on 40 % of the point of care learning episodes. Among the remainder, they

reported that the information supported their current practice (47 %), they required more information before making a change (9 %), or the practice change was not feasible (3 %). Internists encountered barriers during 11 % of the learning episodes, including limited access to information resources (17 %), uncertainty about the sufficiency of the information initially obtained (13 %), difficulty searching information resources (11 %), and difficulty appraising the validity or usefulness of the information (8 %).
CONCLUSIONS: Using a novel web-based portfolio for MOC, internists' report POC learning episodes that most commonly occur in the ambulatory setting, involve cardiovascular disease or gastroenterology content, and concern questions of therapy and diagnosis. They consult an average of two information resources per episode, most commonly UpToDate and PubMed. Forty percent of POC learning episodes result in a planned practice change.

A PREDICTION RULE FOR MORTALITY FOR INPATIENTS WITH STAPHYLOCOCCUS AUREUS BACTEREMIA: A CLASSIFICATION AND REGRESSION TREE (CART) ANALYSIS Daiki Kobayashi[1,2]; Kyoko Yokota[4]; Osamu Takahashi[2,3]; Hiroko Arioka[2]; Tsuguya Fukui[2]; Christina C. Wee[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]St Luke's International Hospital, Tokyo, Japan; [3]St Luke's Life Science Institute, Tokyo, Japan; [4]Kagawa University, Takamatsu, Japan. (Tracking ID #1641328)

BACKGROUND: Staphylococcus aureus bacteremia (SAB) is one of the most common types of bacteremia in both community and healthcare settings. Previous studies suggest that the mortality associated with SAB is significant rangeing from 20 to 40 %. Although mortality is high, the risk factors for mortality among patients with SAB have not been sufficiently evaluated.
METHODS: This was a retrospective cohort study of all adult patients with SAB at a large community hospital in Tokyo, Japan, from April 1, 2004 to March 31, 2011. All patients with fever and afebrile patients who were suspected of having a bacterial infection had 2 sets of blood cultures sent at the time of admission. SAB was determined based on at least one positive blood culture. The primary outcome was death within 90 days. Baseline data and clinically relevant factors were collected from the electronic chart. All candidate predictors were included in a Classification and Regression Trees (CART) analysis to create a prediction rule to identify risk factors of mortality among patients with SAB. A receiver operating characteristic (ROC) curve was drawn, and the area under the curve (AUC) was obtained.
RESULTS: 340 patients had SAB during the study period. Of these, 121 (36 %) patients died within 90 days. Among 41 potential variables examined, the CART analysis revealed that underlying malignancy, serum blood glucose level, methicillin resistance, and low serum albumin were predictors of mortality. Our results suggest that patients can be categorized in 3 risk groups: low (< 30 % mortality), medium (40–60 %), and high (> 60 %) (see fig). For patients without underlying malignancy, the next best predictor was serum blood glucose level, where patients with a blood glucose level >167 mg/dl had higher risk of mortality (see fig). Methicillin resistance predicted mortality risk only among patients who had a glucose level higher than 167 mg/dl. For patients with malignancy, serum albumin was the most important predictor; patients with <3.25 mg/dl albumin were placed in the high risk group. The AUC was 0.76 (95 %CI: 0.70–0.81).
CONCLUSIONS: We propose a prediction model for mortality of patients with SAB consisting of 4 predictors: underlying malignancy, low serum albumin, high glucose, and methicillin resistance. This model, if validated in other populations, may facilitate appropriate preventative management for patients with SAB who are at high risk of mortality.
Decision tree for 90 Day Mortality (95 % Confidence Interval) Among Patients with Staphylococcus aureus Bacteremia. Results are derived from CART Analysis. Low risk = <30 % mortality, medium risk = 40–50 %, high risk = > 60 % MSSA* refers to Methicillin-sensitive Staphylococcus aureus, MRSA† refers to Methicillin-resistant Staphylococcus aureus



A RANDOMIZED CONTROLLED TRIAL OF A COMMUNITY HEALTH WORKER POST-HOSPITAL CARE TRANSITIONS INTERVENTION FOR LOW SOCIOECONOMIC STATUS PATIENTS Shreya Kangovi[1,6]; David Grande[2,3]; Nandita Mitra[4]; Jeffrey Sellman[1]; Mary L. White[6]; Sharon McCollum[6]; Richard Shannon[2]; Judith A. Long[5,2]. [1]Philadelphia Veterans Affairs Medical Center, Philadelphia, PA; [2]Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA; [3]University of Pennsylvania, Philadelphia, PA; [4]University of Pennsylvania, Philadelphia, PA; [5]Philadelphia Veterans Affairs Medical Center, Philadelphia, PA; [6]Spectrum Health Services, Inc., Philadelphia, PA. (Tracking ID #1631341)

BACKGROUND: The post-hospital transition is a focus of national policy attention. Low socioeconomic status (SES) patients are more likely to report poor quality of discharge planning, lack of social support during recovery and inability to access outpatient follow-up after hospitalization. Low-SES patients have an elevated risk of all-cause readmission and post-hospital death. Existing post-hospital transition interventions often employ clinical personnel and neglect socioeconomic factors that are important to low-SES patients. To address these issues, we performed a randomized controlled trial comparing a community health worker (CHWs) intervention (IMPaCT-Individualized Management towards Patient-Centered Targets) to usual discharge care.

METHODS: Participants were recruited from two academically affiliated hospitals in Philadelphia, PA. Eligible patients were:1)admitted to the General Medicine service; 2)uninsured or insured by Medicaid; 3)18–64 years old and 4)residents of low-income ZIP codes. Eligible patients were randomized to receive usual discharge care or IMPaCT. Patients randomized to IMPaCT received structured CHW social support, advocacy and health system navigation from the time of hospitalization until post-hospital primary care follow-up. CHWs were recruited through a network of community-based organizations, underwent a month-long training and were paid $15 per hour. The primary outcome of the trial was the proportion of patients who completed primary care follow-up within 2 weeks of hospital discharge. Secondary outcomes, which each ranged from 0 to 100, were: self-rated health (SF-12), quality of discharge communication (Consumer Hospital Consumer Assessment of Healthcare Providers and Systems-HCAHPS- discharge communication items), patient activation (Patient Activation Measure score) and readmission rate at 14,30,60 and 90 days. Patient-reported outcomes were measured by a blinded assessor 2 weeks after index discharge. We compared outcomes between control and intervention groups using an intention to treat analysis.
RESULTS: 442 patients were enrolled from May 15th, 2011 to December 1st, 2012. 86.6 % of participants completed the trial. The intervention group had a higher proportion of patients who engaged in post-hospital primary care than the control group (59.4 % vs. 48.4 %, p=0.03). Patients in the intervention group had higher self-rated health mental component summary scores (49.2 vs. 46.3, p=0.02), were more likely to report high-quality discharge communication (91.3 % vs. 78.3 %, p=0.002) and had higher levels of patient activation (64.0 vs. 60.3, p=0.04). At 14 days readmission rates were not different between groups (9.9 % vs. 7.2 %, p= 0.60). 30, 60 and 90-day readmission rates are pending.
CONCLUSIONS: A brief transitions intervention performed by CHWs can improve a variety of post-hospital outcomes for low-SES patients. 14-day rates of readmission are low and not different between groups. CHWs, who are inexpensive and rapidly trained, are well-suited to provide post-hospital support to a high-risk, underserved population.

Secondary Patient-Reported Outcomes*

	Control (n=221)	Intervention (n=221)	P Value
Self-rated health			
Mental Component Summary	46.3±12.9	49.2±12.4	0.02
Physical Component Summary	38.2±11.8	38.4±11.1	0.89
HCAHPS high-quality discharge communication	78.3 %	91.3 %	0.002
Patient Activation Measure	60.3±15.9	64.0±17.4	0.04
14-d Readmission	7.2 %	9.9 %	0.60

*Values are expressed as percentage or mean ± SD

A RANDOMIZED CONTROLLED TRIAL OF PRIMARY CARE BASED PHARMACIST-PHYSICIAN COLLABORATIVE MEDICATION THERAPY MANAGEMENT FOR HYPERTENSION Jan D. Hirsch[1]; Neil Steers[2]; David S. Adler[1]; Grace M. Kuo[1,4]; Candis M. Morello[1]; Megan Lang[6]; Renu F. Singh[1]; Yelena Wood[3]; Robert M. Kaplan[5]; Carol Mangione[2]. [1]University of California San Diego, La Jolla, CA; [2]University of California Los Angeles, Los Angeles, CA; [3]University of California San Diego, San Diego, CA; [4]University of California San Diego, La Jolla, CA; [5]University of California Los Angeles, Los Angeles, CA; [6]University of California San Diego, San Diego, CA. (Tracking ID #1634599)

BACKGROUND: Managing patients with chronic diseases to achieve therapeutic goals such as blood pressure (BP) control is challenging for busy primary care physicians. Collaborative care models that fully integrate pharmacists within the primary care team may help address this problem by giving patients better access to highly trained provider teams. We conducted a randomized controlled trial (RCT) evaluating BP control for hypertensive patients collaboratively managed by a pharmacist-primary care physician team versus those who were solely managed by their primary care physician (PCP).
METHODS: Patients with BP>140/90 mmHg or BP>130/80 mmHg with a diagnosis of diabetes mellitus were randomized to treatment by a pharmacist under a collaborative pharmacist-physician medication therapy management (MTM) protocol versus usual care in an academic General Internal Medicine practice. Patients were scheduled for pharmacist appointments independent of physician visits. Pharmacist actions included drug therapy monitoring, physical assessment, laboratory test review and order, medication adjustments (dosage change, initiation, discontinuation), and patient education. The primary outcome was mean change in systolic blood pressure (SBP) at 6 and 9 months after initial visit. Secondary outcomes were percent achieving BP goal, mean change in diastolic blood pressure (DBP), LDL and HDL cholesterol.
RESULTS: At baseline the MTM group (n=76) was similar to the Usual Care group (n=91) for all eight measured clinical markers; however MTM patients were slightly younger 65.4 (13.0) vs. 69.6 (11.4) years, had lower Charlson Comorbidity Index 3.1 (1.9) vs. 4.1 (2.6), and had more men (53.3 % vs. 31.9 %). Mean change in SBP in the MTM group was significantly greater at 6 months −7.1 (19.4) vs. +1.6 (21.0) mm Hg, (p=0.008) but the difference was no longer statistically significant at 9 months −5.2 (16.9) vs. −1.7 (17.7) mmHg, (p=0.22). The mean change in SBP from initial visit to 9 months for patients who had returned to their PCP after 6 months was +1.9 (13.8) compared to −7.8 (17.3) for those who continued to see the MTM pharmacist through the 9-month visit (p=0.03). Compared to Usual Care patients, a greater percentage of MTM patients were at goal at 6 months (81 % vs. 44 %, p< 0.001) and 9 months (70 % vs. 52 %, p=0.02). No significant difference in change in LDL or HDL was detected at 6 or 9 months between groups.
CONCLUSIONS: A pharmacist-physician collaborative medication therapy management service was more effective in lowering blood pressure than usual care at 6 months and at 9 months for patients who continued to see the pharmacist. Given the shortages of PCPs and the aging population, incorporating pharmacists in the primary care team can be a successful strategy for managing medication therapy, improving patient outcomes and extending primary care capacity.

A RANDOMIZED TRIAL OF A COMMUNITY HEALTH WORKER LED INTERVENTION USING HPV SELF-SAMPLING TO INCREASE CERVICAL CANCER SCREENING AMONG MINORITY WOMEN: PRELIMINARY FINDINGS Olveen Carrasquillo; Brendaly Rodriguez; Erin N. Kobetz-Kerman. University of Miami, Miami, FL. (Tracking ID #1642511)

BACKGROUND: Cervical cancer disproportionately affects minority and immigrant women. Among this population, there are multiple barriers to Pap smear screening including knowledge, limited access to care and cultural norms. In 2012, the USPSTF noted that self sampling for the human papilloma virus (HPV) holds great promise as a screening strategy among hard to reach populations. We present preliminary findings from our ongoing randomized trial testing this approach in three minority communities in Miami.
METHODS: The South Florida Center for Reduction of Cancer Disparities is a comprehensive NCI initiative aimed at reducing cervical cancer disparities in South Florida through community based participatory research. Using community health workers (CHWs) our community partners are recruiting 600 minority women ages 30–65 who had not had a Pap smear in the last three years into the study. Following a baseline intake, women are randomized into one of three arms. Group one receives culturally tailored cervical cancer education materials. Groups 2 and 3 receive a 1 hour CHW home health education session. CHWs subsequently refer and navigate women in group 2 to Pap smear screening at community based facilities that perform free or low cost testing. Women in group 3 have the option of Pap smear or doing HPV self sampling after a brief CHW instruction session. A research assistant blinded to study allocation performs a 6 month follow-up visit to assess screening status. A formal interim analysis was not part of the study design. However, we are able to present preliminary baseline data as well as follow-up status in Groups 2 and 3 based on CHWs logs. We do not include any hypothesis testing.
RESULTS: To date, using various community outreach strategies, CHWs have assessed 2,601 women for study inclusion. Of these 515 are study eligible; most ineligibles are due to being screened already or age exclusion. Less than 5 % of eligible women have declined to participate. Among the 280 women we have already randomized, 51 % are Hispanic, 39 % Haitian, and 11 % African American. Over half are uninsured. Among the 70 women randomized to group 2 and having already received the educational session, 48 % have obtained a subsequent Pap smear.

Among the 64 women randomized to Group 3 who have received the education, 95 % have been screened. Of these 69 % preferred to have the HPV self-sampling at time of CHW session over being referred for a Pap smear. In Little Haiti, 10 of 21 (48 %) HPV samples have been positive for high risk HPV versus 18 % in the other two communities.

CONCLUSIONS: Using the CBPR framework, in a 14 month period we have been able to recruit and randomize almost half of our planned 600 "hard to reach" study population with almost no women refusing to participate. Our rates of Pap smear completion among women in group 2 compares very favorably with data from other similar CHW led programs. Our preliminary data also makes an extremely strong case for HPV self-sampling as a strategy for cervical cancer screening among unscreened minority women.

A RANDOMIZED TRIAL OF A WEB-BASED VERSUS COUNSELOR-BASED INTERVENTION TO REDUCE CHD RISK Stacey L. Sheridan; Thomas C. Keyserling; Lindy B. Draeger. University of North Carolina at Chapel Hill, Chapel Hill, NC. (Tracking ID #1642611)

BACKGROUND: Coronary heart disease (CHD) is the leading cause of death in the United States and effective interventions are available to reduce CHD risk. However, the best way to implement risk reduction strategies is yet to be determined.

METHODS: We developed two versions of a combined lifestyle and medication intervention (counselor intevention (CI) and web intervention (WI)) to reduce CHD risk and compared their effects in a randomized trial conducted at five socioeconomically diverse clinics in a practice-based research network. Both interventions were tailored to participants' baseline risk factors and treatment preferences and included similar content: a web-based decision aid, 4 monthly contacts during an intensive intervention phase (4 months) and 3 brief contacts at 2 month intervals during a maintenance phase (8 months). The primary outcome was within group change in 10 year predicted risk by Framingham score at 4 month follow-up. Secondary outcomes included between group difference in predicted CHD risk and within group changes in CHD risk factors, lifestyle behaviors, and medication adherence. Cost-effectiveness from a societal perspective was also assessed.

RESULTS: We randomized 389 participants with no known CHD and 10-year Framingham CHD risk > or =10 % to either the CI (n=195) or the WI (n=194). Mean age was 63. 49 % were female, 25 % were African-American and 75 % white. Mean 10-year predicted CHD risk was 16.9 %. 14 % read at less than a 7–8th grade reading level. 88 % had health insurance. At 4 month follow-up, the CI reduced CHD risk by 2.2 percentage points (p<.0001) and the WI by 1.4 percentage points (p<0.001; adjusted mean difference between groups: 0.8 percentage points, p 0.04). These changes resulted from small changes in systolic blood pressure (CI: −2.85 mmHg; WI −1.1 mmHg), total cholesterol (CI: −8.4 mg/dL; WI −3.8 mg/dL), HDL cholesterol (CI: +1.4 mg/dL; WI: +1.8 mg/dL), smoking cessation (CI: −3 %; WI −2 %) and aspirin use (CI: +10 %; WI: +11 %). Small statistically significant changes were also noted in self-reported fruit and vegetable intake (CI: +0.4 servings/day; WI: +0.2 servings/day), walking (CI: +54 min/week; WI: +30 min/week), and adherence (% with high adherence in CI: +14 %; WI: +18 %). The incremental cost-effectiveness ratio for a 1 percentage point reduction in CHD risk was $129 for the WI compared with usual care, and $159 for the CI compared with the WI.

CONCLUSIONS: Both counselor and web interventions reduced CHD risk compared to baseline. The counselor intervention was somewhat more effective than the web intervention, but the web intervention was incrementally more cost-effective.

A RANDOMIZED, CONTROLLED TRIAL OF ALTERNATIVE FORMS OF FEEDBACK ON GLYCEMIC CONTROL IN PATIENTS WITH POORLY CONTROLLED DIABETES Anjali Gopalan[1,3]; Emin Tahirovic[2]; Haley Moss[2]; Andrea B. Troxel[2]; Jingsan Zhu[2]; Kevin G. Volpp[1,2]. [1]Philadelphia VA Medical Center, Philadelphia, PA; [2]Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA; [3]Robert Wood Johnson Clinical Scholars Program, Philadelphia, PA. (Tracking ID #1633742)

BACKGROUND: Prior work has indicated that understanding of the hemoglobin A1c (A1c) among diabetic patients is low. A 2008 study in the British Medical Journal by Parkes et al. showed the potential effectiveness of translating poorly understood medical values into more universally understood forms. This study expressed FEV1 in terms of "lung age" to active tobacco users. Patients given their "lung age" in place of their FEV1 value had significantly higher rates of smoking cessation at study completion. This approach may hold promise for improving feedback for diabetic patients on glycemic control.

METHODS: We randomly assigned 177 poorly controlled diabetics seen at University of Pennsylvania outpatient practices to receive a "diabetes report card" with individualized information about glycemic control in one of three study arms: (1) letter grades ranging from A-F (grade arm); (2) faces whose emotion reflected current glycemic control (face arm) or (3) actual A1c value (control arm) (Figure 1). The primary study outcome was change in A1c values between baseline and 6 months. Secondary outcomes were changes in participant perceptions of their current diabetes control, disease severity, and future risk of associated complications.

RESULTS: The average A1c for enrolled participants was 9.9±1.7 % and did not differ significantly between study arms. The pre-intervention survey confirmed high levels of misunderstanding of current glycemic control, with the majority (63 %) of participants describing their control as 'moderate' or 'good'/'excellent' in spite of an average A1c of 9.8 % and 10.2 %, respectively. We noted no significant differences in change in A1c at 6 months between the control arm and the experimental arms. Using multiple imputation to handle missing A1c values, the change in A1c for the grade, face, and control arms was −0.55±0.3 %, −0.89±0.3 %, and −0.74±0.37 %, respectively (p=0.67 for grade vs. control, p=0.76 for face vs. control). We found no significant differences between study arms for the changes in perceptions of current diabetes control, severity, and future complication risk.

CONCLUSIONS: Letter grades and faces did not differentially affect A1c at 6 months or participant perceptions of current control in this population of poorly controlled diabetics. This may reflect the particular alternatives tested in this study, without invalidation of the concepts that improving communication and patient understanding of disease management targets could significantly improve diabetes outcomes.

Hemoglobin A1c	Grade Equivalent	Face Equivalent
≤7%	A	
7.1-8%	B	
8.1-9%	C	
9.1-10%	D	
>10%	F	

A SYSTEMATIC REVIEW OF INTERVENTIONS TO IMPROVE PALLIATIVE CARE REFERRAL Irene Kirolos[1]; Leonardo Tamariz[1]; Barbara A. Wood[2]; Ana M. Palacio1. [1]University of Miami-Miller School of Medicine, Miami, FL; [2]University of Miami-Miller School of Medicine, Miami, FL. (Tracking ID #1642043)

BACKGROUND: Palliative care is underutilized among patients at the end of their lives despite evidence that it improves patient satisfaction and that it reduces costs. The purpose of this study is to synthesize the evidence regarding interventions to increase palliative care usage.
METHODS: We performed a MEDLINE database search (1979 to November 2012) supplemented by manual searches of bibliographies of key relevant articles. We selected all studies in which an intervention was used in palliative care or hospice. Study design, quality criteria, population, interventions and outcomes for each study were extracted. The main outcome evaluated was increase in hospice/palliative care referral.
RESULTS: Our search strategy yielded 412 studies, of which only five met our eligibility criteria (table). Three studies included nursing home populations and only one study reported on heart failure patients. Three studies had a cohort design, one had a pre-post design and only one study had a randomized design. The specific intervention differed in each study. The cohort studies that implemented a palliative care program that ranged from a facilitator to a comprehensive program had a median increase in referrals of 14 %. The randomized study that included a triage system to identify patients' needs and preferences increased referral by 19 %. Similar trends were seen in the pre-post design.
CONCLUSIONS: Interventions of different levels of complexity can improve the use of palliative and hospice services among subjects with high mortality risk, particularly nursing home patients. More data is needed on the impact of interventions targeting high risk groups in other clinical environments.

Study design	Number of studies	Population	Intervention	% Referral to palliative care in intervention group	% Referral to palliative care in control group
Cohort	3	At risk of death	Palliative care program	47(31–56)	33(7–37)
Pre-post	1	Nursing home	Educational	7	4
Randomized	1	Nursing home	Triage system	20	1

A WEB-BASED LIFESTYLE INTERVENTION TO DECREASE POSTPARTUM WEIGHT RETENTION IN WOMEN WITH RECENT GESTATIONAL DIABETES MELLITUS: THE BALANCE AFTER BABY PILOT RCT Jacinda M. Nicklas[1,2]; Chloe A. Zera[3]; Bernard A. Rosner[4,5]; Sue E. Levkoff[6,7]; Ellen W. Seely[2]. [1]University of Colorado School of Medicine, Aurora, CO; [2]Brigham and Women's Hospital, Boston, MA; [3]Brigham and Women's Hospital, Boston, MA; [4]Harvard Medical School, Boston, MA; [5]Harvard School of Public Health, Boston, MA; [6]Brigham and Women's Hospital, Boston, MA; [7]University of South Carolina, Columbia, SC. (Tracking ID #1631193)

BACKGROUND: Women with a history of gestational diabetes mellitus (GDM) have a 7-fold increased risk for developing type 2 diabetes (T2DM). A post-hoc analysis of women with self-reported history of GDM in the Diabetes Prevention Program (DPP) demonstrated that an intensive face-to-face lifestyle intervention focused on weight loss significantly decreased the incidence of T2DM by 53 % over 3 years. However, face-to-face weight loss interventions in postpartum women in general have demonstrated poor adherence and efficacy. We sought to develop and test a postpartum lifestyle intervention based on the DPP and modified for women with recent GDM.
METHODS: After conducting focus groups and informant interviews with women with prior GDM, we developed a web-based program named Balance after Baby. Key modifications from the DPP included web-delivery to allow 24-h access, lifestyle coaching by phone/email, and content tailored for the postpartum period. Women with GDM in their most recent pregnancy were recruited during pregnancy or early postpartum and randomized into the Balance after Baby program or enhanced control arm (glucose tolerance tests) 4–12 weeks postpartum. Pre-pregnancy weight was self-reported at recruitment; gestational weight gain and insulin use were extracted from medical records. We administered demographic questionnaires and measured height, weight, and response to a 2 h 75 g oral glucose tolerance test, at 6 weeks, 6 months, and 12 months postpartum. We compared mean weight changes using an intent-to-treat model by t-tests and by estimating a mixed-effects regression model using a random intercept and an unstructured covariance matrix. We conducted structured exit interviews with women completing the program.
RESULTS: 75 women with recent GDM were randomized (mean age 33.4 ±5.4 years; BMI 31.4 (±5.6) kg/m2; 57 % White, 29 % African-American, 15 % Asian, with 20 % Hispanic; 34 % low-income). There were no significant differences between groups at baseline for age, race, education, income, weight, BMI, pre-pregnancy weight, gestational weight gain, insulin use in pregnancy, breastfeeding, or glucose tolerance. Clinically determined weights were collected 12 months postpartum for 95 % of eligible participants. Women assigned to the Balance after Baby arm lost a mean 5.0 (±13.5) lbs compared to women in the control arm who gained 1.3 lbs (±9.8) (p=.0223) between 6 weeks and 12 months postpartum. Women in the Balance after Baby arm were at their pre-pregnancy weight (mean −0.2±15.4 lbs) at 12 months postpartum vs. the control arm (+7.9±15.3 lbs) (p=0.025). In a longitudinal mixed model controlling for pre-pregnancy weight, assignment to the Balance after Baby arm resulted in greater loss at 6 (mean 8.5 lbs, SE 2.7, p=0.002) and 12 months (mean 7.0 lbs, SE 2.9, p=0.0175) compared to women in the control arm. While there were no significant group differences in glucose tolerance at 12 months, 3 women in the control group developed T2DM compared to none in the intervention group. Women randomized to the Balance after Baby program expressed a high degree of satisfaction with the program.
CONCLUSIONS: The web-based Balance after Baby program is feasible, acceptable, and resulted in greater postpartum weight loss in women with recent GDM. If confirmed and found cost-effective in a longer study, the Balance after Baby program could be used at the population level to increase postpartum weight loss and potentially delay or prevent development of T2DM in women with recent GDM.

ACADEMIC DETAILING TO TEACH AGING AND GERIATRICS Cathryn Caton; Ashley Duckett; Theresa Cuoco; Pamela Pride; Patty J. Iverson; William P. Moran. Medical University of South Carolina, Charleston, SC. (Tracking ID #1643098)

BACKGROUND: Detailing has been employed by the pharmaceutical sales industry to increase physician knowledge about new medications. Work hour rules have challenged residency training programs to develop and utilize efficient and effective teaching methods. We chose to employ academic detailing as a teaching intervention in our residents' clinic and on the general medicine inpatient wards to improve clinical knowledge and skills in geriatric care.
METHODS: Aging Q3 - Quality Education, Quality Care and Quality of Life- is a longitudinal curriculum focusing on improving geriatric knowledge in the residency program at the Medical University of South Carolina. Sixteen geriatric topics were chosen based on the Assessing Care of Vulnerable Elder (ACOVE) paradigm and each topic was delivered over 3 months. For each ACOVE, faculty workgroups of 6 members identified key educational messages and skill instruction to teach residents over a three-month intervention period. Each workgroup created one page academic detailing sheets with specific knowledge and skills to be reviewed. Residents were detailed at the time of encounters with geriatric patients with key messages of the current ACOVE by faculty using the provided detailing sheets. By design, the one-on-one detailing process took about 5 min, thereby ensuring that residents were not significantly delayed on rounds or in their clinics.
RESULTS: Over three years noon conference attendance for Aging Q3 topics ranged from 20 % to 51 %, while the percentage of residents detailed by faculty ranged from 61 % to 93 %. ACOVEs with the highest rates of resident detailing had statistically significant increases in medical knowledge, as measured by pre-test/post-test. For ACOVEs with the highest resident detailing rates, general medicine faculty participation in the detailing process ranged from 60 % to 86 %. In some instances, despite good detailing rates and improvement in self-efficacy, there was not a statistically significant improvement in medical knowledge.
CONCLUSIONS: We found that academic detailing is an efficient way of reaching a high percentage of residents and increasing knowledge in aging and geriatrics. Topics with a narrow focus are best taught in this format.

ACOVE Detailing Rates and Resident Knowledge
ACOVE Detailing Rates (%) Pre-test (%) Post-test (%) p-value
Pressure Ulcers/Malnutrition 93 6 41 <0.0001
Falls 86 16 49 <0.0001
Osteoporosis 85 29 62 <0.0001
Screening & Prevention 78 16 40 <0.0001
Continuity of Care 88 46 31 0.0419
Vision 84 63 71 0.2489
Dementia 82 41 32 0.2558
Pain Management 80 1 15 0.1579
End of LIfe Care 78 55 51 0.6907
Hospital Care & Transitions 73 38 57 0.0163
Medication Use & Safety 61 28 36 0.5174
ACOVE Detailing Rates and Resident Self Efficacy
ACOVE Detailing Rates (%) Pre-test Mean Confidence Score Post-test Mean Confidence Score Paired *t*-test on mean change in reported confidence p value
Continuity of Care 88 - - - n/a
Dementia 82 - - - n/a
End of Life Care 78 8.72 9.55 0.83 0.0013
Falls 86 9.71 11.08 1.37 <0.0001
Hospital Care & Transitions 73 11.25 11.98 0.73 0.0056
Medication Use & Safety 61 - - - n/a
Osteoporosis 85 2.45 3.83 1.38 <0.0001
Pain Management 80 9.87 10.48 0.61 0.0039
Pressure Ulcer/Malnutrition 93 2.82 3.6 0.7765 <0.0001
Screening & Prevention 78 2.72 2.4 0.3167 0.0106
Vision - - - - n/a

ACCESS TO SUBSPECIALTY CARE FOR PATIENTS WITH MOBILITY IMPAIRMENT Tara Lagu[1,2]; Nicholas S. Hannon[1]; MIchael B. Rothberg[8]; Annalee S. Wells[9]; K. Laurie Green[3,4]; McAllister O. Windom[5]; Katherine R. Dempsey[1]; Penelope S. Pekow[1,6]; Jill S. Avrunin[1]; Aaron Chen[7]; Peter K. Lindenauer[1,2]. 1Baystate Medical Center, Springfield, MA; [2]Tufts University School of Medicine, Boston, MA; [3]Baystate Medical Center, Springfield, MA; [4]Baystate Medical Center, Springfield, MA; [5]Duke University School of Medicine, Durham, NC; [6]University of Massachusetts-Amherst, Amherst, MA; [7]University of New England College of Osteopathic Medicine, Biddeford, ME; [8]Cleveland Clinic, Cleveland, OH; [9]Dorchester House, Dorchester, MA. (Tracking ID #1615945)

BACKGROUND: The Americans with Disabilities Act (ADA) states that all medical practitioners are required to provide "full and equal access to their health care services and facilities," yet adults who use wheelchairs have difficulty accessing physicians and receive less preventive care than their able-bodied counterparts. We aimed to describe access to medical and surgical subspecialists for patients with mobility impairment.
METHODS: Using a standardized script, we called subspecialty (endocrinology, gynecology, orthopedic surgery, rheumatology, urology, ophthalmology, otolaryngology, psychiatry) practices in four metropolitan areas in the United States and attempted to make an appointment for a fictional patient who used a wheelchair and was unable to transfer from chair to exam table. If a practice reported that they were able to make an appointment for the patient, the investigator would then probe to clarify that both the building and office were accessible and to determine the method by which the practice planned to transfer the patient from the wheelchair to the exam table. If the practice was unable to accommodate the patient, the investigator responded with the question, "Can you please explain why you are unable to accommodate this patient?" We calculated summary statistics and conducted a qualitative analysis of the responses.
RESULTS: Of 256 practices, 56 (22 %) reported they could not accommodate our fictional patient. Only nine of these reported that the building was inaccessible. The remaining 47 reported that they were unable to transfer a patient from a wheelchair to an exam table. Reasons for the inability to transfer the patient included a lack of staff who could perform the transfer (37 practices), a concern about liability (five practices), or that the "patient was too heavy" (five practices). Inaccessibility varied by subspecialty: only 6 % of psychiatry practices were inaccessible, while gynecology was the subspecialty with the highest rate (44 %) of inaccessible practices. The other subspecialties had proportions of inaccessible practices ranging from 13 to 28 %. Of 200 accessible practices, 67 (33 %) reported they had equipment that could adjust to the patient while sitting in the wheelchair (e.g., otolaryngology, ophthalmology) or, in the case of psychiatry, that they did not need to move the patient for an exam. 103 practices (51 %) reported they planned to "manually transfer" the patient from her wheelchair to a non-accessible high table without the use of a lift. Only 22 practices (11 %) reported the use of accessible tables or use of a lift for transfer.
CONCLUSIONS: More than 20 years after the passage of the ADA, many subspecialty practices were unable to accommodate a patient with mobility impairment. This was rarely due to building inaccessibility. More frequently, practices were inaccessible because they were unable to transfer the patient to perform an exam. A minority of accessible of practices possessed equipment that would facilitate the safe transfer (from chair to table) of our fictional patient. Instead, a majority of accessible practices reported transfer methods that have been deemed to be unsafe by disability experts. These results provide one possible explanation for the health care disparities observed in this population and identify the need for better awareness among physicians about the requirements of the ADA and the standards of care for patients with mobility impairment.

ACCULTURATION AND RISK FACTORS FOR HYPERTENSION AMONG A HETEROGENEOUS POPULATION OF BLACK MEN Candace Tannis; Jessica M. Forsyth; Joseph Ravenell. NYU School of Medicine, New York, NY. (Tracking ID #1638147)

BACKGROUND: Black men are at increased risk for developing hypertension and consequent morbidity compared to other racial/ethnic groups. The composition of the Black population in the United States is diversifying rapidly, with many implications for the prevention and management of hypertension. This study seeks to examine the role of acculturation on engagement in therapeutic lifestyle changes (TLCs; healthy diet, physical activity, smoking and alcohol consumption, and medication adherence) to lower blood pressure (BP).
METHODS: Participants were recruited during health screening events for a larger clinical trial at barbershops and churches. All adult men who self-identified as Black were eligible. Acculturation, the main predictor variable, was measured using a single item regarding place of birth and a 10-item questionnaire adapted from two measures: the Cultural Lifestyle Inventory (CLSI); and the Measures of Acculturation Strategies for People of African Descent (MASPAD). Items taken from the CLSI and MASPAD were measured on 5-point and 6-point Likert scales respectively with items summed to create scale scores. Outcome variables included 1) diet, measured using the National Cancer Institute fat screener and a 2-item modified Food Frequency Questionnaire measuring daily fruit and vegetable consumption; 2) physical activity, measured with the shortened International Physical Activity Questionnaire; 3) medication adherence, measured with the 4-item Morisky scale; and 4) smoking and alcohol consumption, measured using items adapted from the Behavioral Risk Factor Surveillance Survey. BP was measured using an automated BP cuff, and co-morbidity was measured using the Charlson Co-morbidity Index. We utilized ANCOVA to test group differences in outcome variables between foreign-born and US-born at baseline, and linear regression to examine relationships between acculturation and outcome variables at baseline. All analyses controlled for age, income, employment status and education level.
RESULTS: 171 men completed the survey. 26 % were foreign-born. The mean age of participants was 53.6 years (SD=10.24) and the median annual income was $11,400. Twenty-seven percent of men in the study reported having less than a high school education, and 75 % of the men were currently unemployed. Foreign-born participants had lower percentage of fat in their diets (p=0.003). There were no differences between foreign-born and US-born men in mean BP, presence of co-morbidity, and lifestyle behaviors other than fat consumption. However, among partici-

pants who reported taking BP medication, foreign-born blacks had poorer adherence (p=0.028). Medication non-adherence was also associated with the "traditionalist" MASPAD dimension (p=0.015, R2adj .333), as well as positively with the individual item corresponding to ethnic pride (p=0.021) and negatively with maintenance of cultural practices (p=.035). There was no relationship between acculturation and the TLCs other than medication adherence or measured BP.

CONCLUSIONS: This study provides evidence that nativity and acculturation among Black men may play a role in engagement in certain TLCs to lower BP. More research is needed to determine how best to tailor TLC interventions to control hypertension for the rapidly diversifying population of Black men, the highest risk group in the United States.

ACCURACY OF RACE/ETHNICITY AND LANGUAGE PREFERENCE IN AN ELECTRONIC HEALTH RECORD Sara V. Carlini[1]; Elissa Klinger[1]; Irina Gonzalez[1]; Jeffrey A. Linder1; Elyse R. Park[2]; Emily Kontos[3]; Nancy A. Rigotti[2]; Jennifer Haas[1,3]. [1]Brigham and Women's Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA; [3]Harvard School of Public Health, Boston, MA. (Tracking ID #1634097)

BACKGROUND: Eliminating health care disparities requires accurate data on race/ethnicity and language preference. Health care organizations that receive federal funds are required to record information about patient race/ethnicity and language preference, yet little is known about the accuracy of these electronic health record (EHR) data.

METHODS: We compared the accuracy of race/ethnicity and language preference data recorded in an EHR, compared to self-reported race/ethnicity and language preference (English, Spanish) from an Interactive Voice Recognition (IVR) survey as part of a randomized controlled trial of a telephone-based tobacco treatment program. Using IVR, we called 6,771 low-income (by zip code) white, black, or Latino smokers who were listed in the EHR as English or Spanish-speaking and had made a primary care visit in the preceding 60 days; 2,189 (32 %) answered the phone and selected a language preference, and 434 (6 %) enrolled and provided information about race/ethnicity.

RESULTS: Median age was 51 years; 53 % self-reported race/ethnicity as white, 26 % as African-American, and 21 % as Hispanic; and 10 % reported that they were Spanish-speaking. Overall agreement between EHR-recorded and self-reported race/ethnicity information was excellent (Kappa 0.84; p<0.001). However, the sensitivity and positive predictive value (PPV) for EHR-recorded race/ethnicity compared to self-report varied by race/ethnicity: 82 % and 97 % for Hispanics, 78 % and 95 % for African-Americans, and 100 % and 87 % for whites, suggesting that for both Hispanics and African-Americans, some individuals are misclassified in the EHR as white. For language preference, EHR-documentation and self-report showed good overall agreement (Kappa 0.74, p<0.001), but the PPV for an EHR-documented language preference of Spanish was only 68 % with a sensitivity of 86 %. While only 1.2 % of EHR-documented English speakers elected to hear the IVR call in Spanish, 31.9 % of EHR-documented Spanish speakers elected to hear the call in English.

CONCLUSIONS: We demonstrate strong agreement between EHR-recorded and self-reported race/ethnicity and language preference. However, there were inaccuracies that indicate the need to investigate how EHR data are obtained and perhaps systems to improve EHR documentation. The results also demonstrate the importance of offering services that respond to multilingual patients, who may have differing preferences based on the specific content and method of contact.

ACCURATE DISEASE ATTRIBUTION IS A HURDLE FOR DEVELOPMENT OF A PAY FOR PERFORMANCE REIMBURSEMENT MODEL Jennifer Zreloff; Jillian Gaumond; Jason Higdon. Emory University, Atlanta, GA. (Tracking ID #1642285)

BACKGROUND: With medical reimbursement shifting away from fee for service and toward quality incentives, it is important to understand the accuracy of data being used by insurance companies and clinics for quality incentive payouts.

METHODS: In the setting of a university-based and NCQA recognized Patient-Centered Medical Home with a single payer, we sought to reconcile quality reports generated by our payer versus by our clinic's data warehouse. Lists of patients were generated with diabetes, CHF, and COPD. Our private payer generated its list based on their methods that utilize billing data.. Lists generated by the PCMH were generated by diagnoses on the "problem list" in the EMR and diagnosis billing data specific to that clinic. The two lists were compared and evaluated by chart review when they were discordant. Chart review included all data available such as labs, echo, radiology, specialty clinic notes, and PCP notes. Patients were then divided into groups of inclusion error by insurance, inclusion error by PCP, exclusion error by insurance, and exclusion error by PCP

RESULTS: Percentage of times that the Private Payer and the PCMH agreed varied by disease state. Based on the total number of patients included in a disease group by either the insurance company or the PCMH, 61.2 % of the patients on the diabetes list, 32.1 % of those on the CHF list, and 21.2 % of those on the COPD list, were agreed upon by both the insurance company and the clinic. There were both errors of omission and inclusion by the insurance company. Errors of inclusion (those attributed to have the disease that did not actually have it) occurred for diabetes in 16.9 % of the total attributed patients, 32.1 % for CHF, and 78.8 % for COPD. Errors of exclusion (those that had the disease but were not listed by the insurance company) occurred for 21.9 % of diabetics, 35.7 % of patients with heart failure, and 0 % with COPD. A small percentage of errors of exclusion occurred with the PCMH. There were no errors of inclusion by the PCMH. Looking at only the data generated by the insurance company, 21.7 % of insurance-attributed diabetic patients were incorrect, and 26.3 % of the patients on the final, verified diabetic list were missing. For CHF, 50 % of insurance-attributed patients were incorrect, and 52.6 % of patients on the verified CHF list were missing. COPD had the worst data accuracy with 78.8 % of insurance-attributed patients being incorrect, and with no missing patients.

CONCLUSIONS: When entering the world of pay for performance, it is important to recognize the inherent inaccuracies of data based primarily on claims data. This clinic had the added luxury of a separate attribution process which allowed both sides to agree on the total pool of patients. For most clinic sites the quality data would be expected to have more errors due to discrepancies of attribution to PCP. For these reasons, it is important for clinics to have opportunities to collect their own quality data specific to disease attribution, and have a reconciliation process with payers participating in pay for performance initiatives.

ACETAMINOPHEN RECEIPT AMONG HIV-INFECTED PATIENTS WITH ADVANCED HEPATIC FIBROSIS E. J. Edelman[1]; Kirsha S. Gordon[2]; Vincent Lo Re[3]; Melissa Skanderson[4]; David A. Fiellin[1]; Amy C. Justice[2,1]. [1]Yale University, New Haven, CT; [2]VA Connecticut Healthcare System, West Haven, CT; [3]University of Pennsylvania, Philadelphia, PA; 4VA Pittsburgh Healthcare System, Pittsburgh, PA. (Tracking ID #1642388)

BACKGROUND: HIV-infected (HIV+) patients may be at particular risk for acetaminophen-induced hepatotoxicity given their underlying risk of liver disease, high prevalence of hepatitis C virus (HCV) coinfection, differences in acetaminophen metabolism, and exposure to antiretroviral therapy. However, acetaminophen overuse (greater than 2 g per day) in the context of liver injury has been incompletely examined among HIV+ patients. Among a cohort of HIV+ patients, our aims were to: 1) describe the patterns of acetaminophen receipt; 2) assess the cross-sectional association between acetaminophen receipt and advanced hepatic fibrosis; and 3) determine whether factors associated with acetaminophen overuse varied by HCV status.

METHODS: We performed a cross-sectional analysis of the Veterans Aging Cohort Study-Virtual Cohort. We excluded patients who had a cancer diagnosis other than non-epithelial skin cancers; no inpatient or outpatient visit in FY2006; or missing laboratory or pharmacy data.

Outpatient acetaminophen receipt among HIV+ patients in the cohort was categorized as: 1) no acetaminophen use, 2) appropriate use (<2 g/day); or 3) overuse (> 2 g/day). The primary independent variable was advanced hepatic fibrosis, defined as a FIB-4 > 3.25. The FIB-4 score is a validated non-invasive index that identifies advanced fibrosis/cirrhosis using age, alanine aminotransferase, aspartate aminotransferase, and platelet count. We evaluated acetaminophen daily dosage stratified by FIB-4 status. We then performed multivariable ordered polytomous logistic regression to determine adjusted odds ratios (AOR) for acetaminophen daily dosage, classified as a three level outcome variable. The final model included patients characteristics that were clinically relevant or significant at the $p<$ 0.05 level. Results were stratified by HCV status.

RESULTS: Our sample included 14,885 HIV+ patients, 4,592 (31 %) of whom received at least one acetaminophen prescription and 1,885 (41 %) of whom were HIV/HCV-coinfected. Among those receiving acetaminophen, 1,442 (31 %) patients were identified with acetaminophen overuse, with no differences observed between HIV-monoinfected and HIV/HCV-coinfected patients (846 [31 %] vs. 596 [32 %], p=0.59). Among HIV-monoinfected patients, the average daily acetaminophen dose was not significantly different between those with a FIB-4 < 3.25 and those with a FIB-4 > 3.25 (1.50 vs. 1.20 g/day, p=0.08); results were similar for HIV/HCV-coinfected patients (p=0.14). After adjusting for age, gender, race/ethnicity, HCV status, alcohol use disorders, and pain-related diagnoses, FIB-4 was associated with a decreased odds of acetaminophen overuse (AOR [95 % CI] = 0.80 [0.65, 1.00]). After stratifying by HCV status, HIV+ patients with advanced hepatic fibrosis were equally likely to receive acetaminophen. Further, HIV-monoinfected patients with an alcohol use disorder were more likely to have acetaminophen overuse (AOR [95 % CI] = 1.56 [1.21, 2.02]).

CONCLUSIONS: Acetaminophen overuse was common in this sample of HIV+ patients. Strategies to minimize acetaminophen exposure in HIV+ patients are warranted.

ACHIEVING COMMUNICATION BETWEEN PRIMARY CARE AND MENTAL HEALTH: WHY IS IT SO DIFFICULT, EVEN IN THE VA? A QUALITY IMPROVEMENT APPROACH Evelyn Chang[1]; Kenneth B. Wells[5,4]; Alexander S. Young[3,2]; Susan E. Stockdale[3]; Jacqueline Fickel[3]; Megan Johnson[2,3]; Kevin Jou[2]; Lisa V. Rubenstein[3,4]. [1]VA- Greater Los Angeles, Los Angeles, CA; [2]VA- Greater Los Angeles, North Hills, CA; [3]VA- Greater Los Angeles, North Hills, CA; [4]RAND, Santa Monica, CA; 5UCLA, Los Angeles, CA. (Tracking ID #1624000)

BACKGROUND: Research shows that bi-directional communication between mental health (MH) and primary care (PC) clinicians is critical for improving patient outcomes, yet achieving this in health care organizations is challenging. In the Veterans Administration (VA), the high prevalence of co-occurring physical and mental illnesses can make PC-MH collaboration essential for providing effective care. Despite extensive national VA efforts to integrate PC and MH, however, local settings continue to experience barriers to effective communication and collaboration.

METHODS: We proposed a project to the local VA site's quality improvement (QI) council directed at improving communication between PC and MH providers. We used QI diagnostic tools to understand barriers to PC/MH communication and to initiate a change strategy in a multi-specialty academic community-based outpatient clinic serving 16,000 veterans in Los Angeles. The clinic has two PC teams with five to six teamlets each using the patient-centered medical home model. We recruited 11 on-site PC and MH clinical providers, administrators, and researchers for our workgroup, which held 4 monthly meetings. The workgroup constructed fishbone diagrams of causes of poor communication and mapped communication flow among providers for emergent and non-urgent situations for the VA site. We performed chart reviews on patients with established PC and MH providers to assess documentation of communication. We conducted a rapid literature review of interventions for improving PC/MH communication and identified potentially feasible evidence-based interventions to address the problems we found.

RESULTS: PC providers were frustrated by inconsistent access to psychiatrists for emergent and routine situations. MH providers did not respect PC management of uncomplicated depression. Key communication barriers included geographic distance, cultural differences, and lack of standardized communication processes. A key facilitator was personal relationships across disciplines. Chart review confirmed considerable between-provider variation in documenting MH and medical problems and in communication strategies. Literature review, combined with the workgroup's assessments, identified joint care planning and joint case conferences as two feasible interventions. While these interventions were developed, the site began to collocate MH specialists to PC.

CONCLUSIONS: QI tools suggested that there were procedural, cultural, and structural factors affecting communication and respect. Clarifying these factors helped to initiate an ongoing change strategy. A locally tailored QI process focusing on communication helped initiate change strategies that had not originated from policy or health information systems.

ADEQUACY AND CORRECTION OF MEDICAL RECORD DOCUMENTATION IN PATIENTS WITH A PRIOR ADMISSION FOR ACE-INHIBITOR ANGIOEDEMA IN AN URBAN ACADEMIC MEDICAL CENTER: A PATIENT SAFETY INTERVENTION Andrew M. Davis[1]; Eric R. Yoo[3]; Cheryl Nocon[2]; Jacquelynne P. Corey[2]. [1]University of Chicago, Chicago, IL; [2]University of Chicago, Chicago, IL; [3]University of Illinois College of Medicine, Chicago, IL. (Tracking ID #1626449)

BACKGROUND: Angiotensin-converting enzyme inhibitor (ACEI) induced angioedema affecting the upper airway is a potentially life-threatening condition, occurring in 0.1 to 2.2 % of recipients, with a higher incidence in African-American patients. Over 40 million patients in the U.S. currently take a medication in this class. Recurrent ACEI-induced angioedema is readily preventable, but requires proper allergy documentation in the medical record after the first event. Our institution's transition from Oacis to an Epic Electronic Medical Record (EMR) in 2008 improved clinician training and engagement with the EMR. This transition provided an opportunity to assess allergy documentation following episodes of ACEI-induced angioedema requiring inpatient admission, and to correct deficits in EMR allergy documentation in our urban academic medical center.

METHODS: We reviewed charts of patients with inpatient encounter codes for "angioneurotic edema, NOS" (ICD 995.1), hereditary angioedema (277.6), anaphylactic shock (995.0), anaphylactic shock due to food reaction (995.6), or anaphylactic shock due to serum (995.4). Cases with clear corroboration of ACEI-induced angioedema in the clinical notes were split by admit dates: 2000–2007 (n=372 total, 82 ACEI related) and 2008–2011 (n=139 total, 37 ACEI related). We also reviewed a random sample of 30 ED cases (2008–2011) with ACEI-related angioedema not requiring admission. The current Epic allergy and problem lists were examined for each case; elements abstracted included documentation of the ACEI allergy, the severity of reaction, and presence of the name of the specific causative agent. As a patient safety intervention, incomplete allergy documentation in the EMR was corrected.

RESULTS: Overall 95 % of the admitted patients were African American and 66 % were female; the median age was 64. The severity of angioedema in admitted patients was quite high, with 43 % requiring intubation in 2000–2007, and 59 % during the 2008–2011 period. Before current EMR implementation in 2008, 60 (73.2 %) of charts for admitted patients were completely missing ACEI-allergy documentation and 17 (20.7 %) had incomplete allergy lists. After transition to the current EMR, inpatient charts (2008–2011) markedly improved in ACEI allergy documentation ($p<.001$), though 5 (13.5 %) of the 2008–20011 admitted patients were completely missing data, and 29 (78.4 %) had incomplete allergy lists, lacking the specific agent or reaction severity. Patients treated and released from the ED were more likely to have absent documentation (23.3 %). In several instances, the ACEI remained on patient medication list, but review of recent notes found that ACEI had actually been discontinued, and that the medication list was in error.

CONCLUSIONS: ACEI-allergy documentation markedly improved following transition to a newer EMR; however, an unacceptably high number of patients with an admission for ACEI angioedema continued to have no documentation of this reaction on their current allergy list, and missing agent or severity data remained common. Urban medical centers should regularly review ACEI allergy angioedema events, and establish a redundant patient safety process to confirm event documentation in the EMR allergy list.
Admitted 2000–2007 (n=82) Admitted 2008–2011 (n=37) ED only 2008–2011 (n=30)
Category n % n % n %
Full data at baseline 5 6.0 % 3 8.1 % 5 16.7 %
Partial data 17 20.7 % 29 78.4 % 18 60.0 %
No mention of ACEI allergy 60 73.2 % 5 13.5 % 7 23.3 %

ADHERENCE TO PRESCRIPTION OPIOID MONITORING GUIDELINES AMONG RESIDENTS AND ATTENDING PHYSICIANS IN THE PRIMARY CARE SETTING Laila Khalid; Jane M. Liebschutz; Christopher W. Shanahan; Shernaz Dossabhoy; Yoona R. Kim; Karen E. Lasser. Boston Medical Center, Boston, MA. (Tracking ID #1636318)

BACKGROUND: Prescription opioid misuse is a significant public health problem, with primary care providers being the principal prescribers of opioids for chronic non-cancer pain. While one study showed that residents provide higher quality primary care than attendings, opioid prescribing practices have not been compared between resident and attending physicians. We compared adherence to opioid prescribing guidelines as well as evidence for potential patient misuse of prescribed opioid medications between resident and attending physician.
METHODS: We conducted a retrospective cross-sectional study at a primary care practice of a large Northeastern safety-net hospital using data abstracted from the electronic medical record through the institution's clinical data warehouse. Patients included were 18–89 years old, who had at least one visit to primary care and were prescribed long-term opioid treatment (3 or more opioid prescriptions written at least 21 days apart within 6 months) for chronic non-cancer pain from 8/31/11 to 9/1/12. The primary outcome was adherence to any one of two key American Pain Society Guidelines; 1) documentation of at least one opioid agreement (contract) ever, and 2) any urine drug testing in the past year; and evidence of potential prescription misuse with 1, 2 or more than 2 early refills. Early refill was a prescription written 7–25 days after the previous prescription of the same drug. Patients were classified as a resident patient if they received 2, or more prescriptions from a resident physician. Statistical analysis was performed using chi-square tests.
RESULTS: 96 residents prescribed opioid prescriptions to 136 patients, while 49 attendings prescribed to 609 patients. The results are summarized below.
CONCLUSIONS: Despite the low numbers of contract documentation in resident and attending patients, the majority of the patients did receive urine drug testing. It is not clear whether the documentation of a contract indicates guideline adherence. Evidence for potential misuse of prescription opioids, indicated by two or more early refills, was significantly higher in resident patients relative to attending patients. Features of a resident-based practice that may be associated with prescription opioid misuse need to be explored.

Variable	Resident Patients n=136 (%)	Attending Patients n=609 (%)	p-value
Documentation of contract ever	46 (33.8)	136 (22.3)	0.005
Urine drug screen in past year	93 (68.4)	445 (73.1)	0.27
Early refill(s) in past year			
0	35 (25.7)	299 (49.1)	<0.0001
1	42 (30.9)	157 (25.8)	0.22
≥2	59 (43.4)	153 (25.12)	<0.0001

ADMISSION TO TEACHING HOSPITALS AND WEEKDAY DISCHARGES ARE ASSOCIATED WITH BETTER OUTCOMES IN HEART FAILURE PATIENTS Anita G. Au; Raj S. Padwal; Erik Youngson; Sumit R. Majumdar; Finlay A. McAlister. University of Alberta, Edmonton, AB, Canada. (Tracking ID #1635314)

BACKGROUND: It is unclear whether hospital teaching status or the day of discharge influences post-discharge outcomes for patients hospitalized with heart failure (HF).
METHODS: We linked four population-based databases in Alberta, Canada to identify adults hospitalized for HF who were discharged alive between 1999 and 2009. We conducted a retrospective cohort study comparing outcomes between patients discharged from teaching versus non-teaching hospitals and on weekends versus weekdays. The primary outcome was the composite of death or non-elective readmission 30-days post-discharge.
RESULTS: Over 10 years, 12,216 HF patients were discharged from teaching hospitals and 12,157 from non-teaching hospitals; 21,001 (86 %) discharges occurred on weekdays. Although they had greater comorbidity and used more health care resources in the year prior to HF hospitalization, patients discharged from teaching hospitals exhibited significantly lower rates of 30-day death or readmission than those discharged from non-teaching hospitals (17.4 % vs. 22.1 %, aHR 0.83, 95 % CI 0.77–0.89). Patients discharged on weekdays were older and had greater comorbidity, yet exhibited significantly lower rates of death or readmission at 30-days than those discharged on weekends (19.5 % vs. 21.1 %, adjusted hazard ratio [aHR] 0.87, 95 % CI 0.80–0.94). Compared to weekend discharge from a non-teaching hospital (reference), the 30-day risk of death or readmission was lower for weekday discharge from a non-teaching hospital (aHR: 0.85, 95 %CI 0.77–0.94), weekend discharge from a teaching hospital (aHR: 0.79, 95 %CI 0.69–0.92), and weekday discharge from a teaching hospital (aHR: 0.71, 95 %CI 0.63–0.79, with p<0.001 for trend).
CONCLUSIONS: Patients discharged from non-teaching hospitals or on weekends exhibited poorer risk-adjusted outcomes than those discharged from teaching hospitals or on weekdays. The structures and processes which may have yielded better outcomes for those admitted to teaching hospitals and those discharged on weekdays should be studied and possibly emulated in order to optimize heart failure related outcomes.

ADVERSE OUTCOMES OF POLYSEDATIVE USE IN VETERANS WITH PTSD Brian C. Lund[1,2]; Stephen L. Hillis[1]; Elizabeth A. Chrischilles[2]. [1]Center for Comprehensive Access & Delivery Research and Evaluation, Iowa City, IA; [2]University of Iowa College of Public Health, Iowa City, IA. (Tracking ID #1628276)

BACKGROUND: While department of Veterans Affairs (VA) clinical practice guidelines recommend against their use, benzodiazepines are prescribed to 30–40 % of veterans with posttraumatic stress disorder (PTSD). Nationally, opioid abuse has been labeled as epidemic, and inpatient chemical dependency admissions involving the combination of opioids and benzodiazepines have risen more than 500 % in the last decade. Therefore, our objective was to determine whether benzodiazepines, opioids, and other sedatives - particularly in combination - are associated with adverse events in veterans with PTSD.
METHODS: National VA administrative data were used to identify veterans with PTSD. Among these patients, new benzodiazepine starters during FY04-09 (N=66,406) were matched to nonusers (N=128,062) using high dimensional propensity scores. Adverse events were based on prior work involving sedative use in veterans and included emergency visits and hospitalizations for wounds/injuries, drug-related accidents/overdoses, and self-inflicted injuries identified by ICD-9 coding. One year adverse event risk was determined using a stratified Cox proportional hazards model. Exposure to opioids and other sedatives was modeled with time-dependent covariates. Prazosin use was included as a control exposure because it is prescribed in PTSD for the treatment of nightmares and other sleep disturbances but does not have significant sedating properties.

RESULTS: Adverse events occurred within 1 year in 2,926 (1.5 %) patients. Hazard ratios (95 % C.I.) for adverse events were: benzodiazepines, 1.8 (1.6–2.0); opioids, 1.4 (1.2–1.7); atypical antipsychotics, 1.9 (1.7–2.1); and hypnotics, 1.4 (1.1–1.8). In addition, the benzodiazepine-opioid interaction was significant ($p<.001$), indicating a multiplicative effect where the hazard ratio for this combination was 3.8 compared to nonusers of both. Among dual users of benzodiazepines and opioids, 78 % were prescribed by different providers. Prazosin exposure and other interaction terms were not significantly associated with adverse events.
CONCLUSIONS: Polysedative use in veterans with PTSD leads to incremental risk for serious adverse events. The combination of benzodiazepines and opioids is particularly troublesome given the synergistic interaction and the tendency toward being prescribed by different providers. The clinical complexity of caring for veterans with PTSD creates an environment that, without careful coordination of care, can lead to high-risk polysedative use.

AFTER THE FACT: EDUCATING WOMEN INCARCERATED IN JAIL ON THE USE OF MEDICAL THERAPIES TO PREVENT HIV ACQUISITION FOLLOWING A RISKY EXPOSURE Neha Gupta[3]; Heidi Schmidt[3]; Timothy Buisker[2]; Mi-Suk Kang Dufour[2]; Janet Myers[2]; Jacqueline P. Tulsky[1]. [1]University of California San Francisco, San Francisco, CA; [2]University of California San Francisco, San Francisco, CA; 3University of California San Francisco, San Francisco, CA. (Tracking ID #1634988)

BACKGROUND: Women incarcerated in jail face increased risk of HIV infection because they over represent members of communities at risk. Antiretroviral therapy following an HIV exposure–non-occupational post-exposure prophylaxis (nPEP)–has been endorsed by federal guidelines as an effective HIV prevention strategy since 1997. However, there is little information regarding nPEP awareness or its use among women leaving jail. This study assessed baseline awareness and knowledge regarding nPEP among women incarcerated in a local jail and evaluated the effectiveness of a brief educational intervention in increasing nPEP awareness and knowledge.
METHODS: A 15-min lesson was developed to teach principles of nPEP to detained women at the San Francisco jail. Participants were recruited from September 2012 to January 2013, and the intervention was delivered in small groups. Prior to the intervention, participants completed a survey (T1), reflecting demographics, HIV risk factors and nPEP awareness, knowledge and attitudes. The nPEP section was repeated immediately after the program (T2) and at one week (T3). Knowledge scores were calculated and assessed in 2 domains: risky behaviors and nPEP logistics (initiation timeframe, duration of use, side effects). Baseline knowledge scores and awareness were compared to answers at T2 and T3 using paired t-tests. Linear regression analysis was used to identify predictors of baseline awareness, baseline knowledge and improvement in knowledge scores.
RESULTS: Of 62 women enrolled, 53 completed T1, 48 completed both T1 and T2, and 34 completed both T2 and T3. 43 % identified themselves as black or African American, 21 % as white, 13 % as Hispanic, and 23 % as other. The mean age was 34 years, and mean total time incarcerated was 5.8 years. 32 % of the women had less than a high school education. 83 % of women were tested for HIV in the past year. 82 % reported sex-related HIV exposures in the past year, yet only 38 % perceived themselves at risk. Similarly, 28 % reported drug-related HIV exposures, while only 10 % perceived themselves as at risk. Baseline awareness of nPEP's existence was 55 %. Increased education was associated with improved risk knowledge and overall knowledge (β=0.252, p=0.015 and β=0.291, p=0.011). Additionally, while knowledge scores increased in both domains after the intervention (see Table 1), the increase in nPEP logistics knowledge was greater than the increase in behavioral knowledge ($p<0.001$). The percent of participants who would "definitely seek out nPEP after a risky exposure" was high at baseline (77 %), and remained high at T2 and T3 (83 % and 95 %, respectively), despite possible side effects and the need to take medications for 4 weeks.
CONCLUSIONS: Despite the high rates of recent HIV testing and engagement in high-risk behaviors, awareness of individuals' own risk and the existence of nPEP as an HIV prevention strategy was low among women in this study. A 15-min educational intervention is an effective means of delivering HIV prevention information to women in jail, but may be more useful for teaching basic information about taking nPEP than changing knowledge about risk behaviors.

Table 1
Knowledge Domain Average Knowledge Score (%)
N=48 *N*=34
T1 T2 P value T2 T3 P value
Risky behaviors 46.6 74.0 < 0.001 80.5 66.2 < 0.001
nPEP logistics 27.5 81.5 < 0.001 79.4 74.7 = 0.230
Overall 41.4 76.0 < 0.001 80.2 68.5 < 0.001

AGING, CHRONIC HEALTH CONDITIONS, AND SEXUAL FUNCTION IN WOMEN Ayesha A. Appa[1]; Jennifer Creasman1; Jeanette S. Brown[1]; David Thom[1]; Stephen K. Van Den Eeden[2]; Leslee L. Subak[1]; Alison J. Huang[1]. [1]University of California, San Francisco, San Francisco, CA; [2]Kaiser Permanente Division of Research, Oakland, CA. (Tracking ID #1633496)

BACKGROUND: Sexual function in women is thought to decline with age, yet some women report preserved sexual function in older age. Changes in health, such as the development of chronic health conditions, may play an important role in determining whether sexual desire, activity, or satisfaction decrease in women in middle and older age.
METHODS: Sexual function was evaluated prospectively in a multiethnic, population-based cohort of 2,270 women aged 45 to 80 years randomly selected from age and race/ethnicity strata from an integrated healthcare delivery system in California. Using structured-item, self-administered questionnaires, women described their level of sexual desire, frequency of sexual activity, and overall sexual satisfaction at baseline and after 5 years. Additional questionnaires assessed participants' detailed medical histories, medication use, and health-related behaviors, including diagnosed chronic conditions such as cancer and cardiometabolic, colorectal, neuropsychiatric, respiratory, and urogynecological disorders. Repeated measures multivariable models were developed to assess the relationship of age and chronic conditions to self-reported sexual desire, activity, and satisfaction, adjusting for race/ethnicity and relationship status.
RESULTS: Of the 2,270 participants (1007 White, 443 Black, 419 Latina, and 401 Asian), 54 % reported low sexual desire, 50 % reported less than monthly sexual activity, and 46 % reported low sexual satisfaction at baseline. Over 5 years of follow-up (N=1,395), 34 %, 26 %, and 38 % of women reported decrease in sexual desire, frequency of sexual activity, and sexual satisfaction, respectively. In repeated measures analyses using data from all study visits and controlling for age, race/ethnicity, and relationship status, greater number of chronic conditions was independently associated with low sexual desire (OR 1.14 [1.09–1.19] per condition), less than monthly sexual activity (OR 1.14 [1.09–1.19] per condition), and low overall sexual satisfaction (OR 1.13 [1.08–1.18] per condition). Women with neuropsychiatric conditions in particular (stroke, dementia, Parkinson's disease, depression) were more likely to report low sexual desire (OR 1.55 [1.31–1.83]), less than monthly sexual activity (OR1.41 [1.18–1.68]), and low sexual satisfaction (OR 1.44 [1.21–1.71]), independent of other types of chronic conditions. Age persisted as a significant predictor of low desire, lower frequency of sexual activity, and low overall sexual satisfaction even after adjustment for number and types of chronic conditions ($P<0.001$ for all).
CONCLUSIONS: Decline in sexual desire, activity, and satisfaction appear common but not inevitable as women age. Sexual function may decrease as women acquire chronic conditions, although differences in the number and type of conditions do not fully explain differences in sexual function with aging. Clinicians caring for female patients across the aging spectrum should consider the specific impact of chronic conditions, particularly neuropsychiatric conditions, on women's interest in and ability to enjoy sexual activity.

AMBULATORY RESIDENT PRACTICE REDESIGN: THE CREATION OF PRACTICE TEAMS WITHIN A 6+2 MODEL Christina Harris; Lauren Acinapura; Johanna Martinez; Judy Tung; Cathy Jalali. Weill Cornell Medical College, New York, NY. (Tracking ID #1642447)

BACKGROUND: Calls for Internal Medicine residency redesign have emphasized the strengthening of ambulatory education with the IM Residency Review Committee specifically mandating that programs "develop models and schedules for ambulatory training that minimize conflicting inpatient and outpatient responsibilities". In response, in 2011 we restructured our residency program away from traditional block time with weekly half day continuity clinics to a model where inpatient and outpatient time were independent of each other in a 6+2 model (6 weeks inpatient followed by 2 weeks of ambulatory practice) and created resident teams ("pods") of four residents each.
METHODS: We implemented a 6+2 scheduling template at the start of the 2011–2012 academic year for all 130 residents across 3 continuity practices. In order to ensure adequate coverage of patient care matters during the 6 weeks away from practice, we created pods of four residents who hand off to each other every 2 weeks. The resident on ambulatory block functions as the "pod leader" and is responsible for ensuring that all direct and indirect patent care needs of the pod are met. Resident surveys were administered prior to the block restructuring and 1 year after implementation. Residents were asked to rate their satisfaction in four main areas including clinical and learning environment, personal experience and satisfaction with ambulatory preceptors using a 5-point rating scale. In addition, individual resident visit volume and patient continuity data were obtained for the main resident practice.
RESULTS: The survey data, analyzed using Wilcoxon Signed Rank Test, revealed that the scheduling template and creation of resident teams significantly improved resident satisfaction with their overall clinical environment (3.33 vs 4.13; $p<.005$) and learning environment (3.55 vs 4.16; $p=.002$), as well as personal reward (3.68 vs 4.11;$p=.041$) from their ambulatory practice. Residents reported improved satisfaction with their ability to focus while on the wards (2.68 vs 4.33; $p<.005$) and as well while on outpatient rotation (3.65 vs 4.51; $p<.005$). The repetitive nature of the schedule resulted in residents feeling significantly more connected to each other (3.81 vs 4.43, $p=.003$), however, without a similar increase in satisfaction in the exposure to their assigned continuity preceptor (4.13 vs 4.21; $p=.732$). With the creation of coverage pods, there was in improvement in resident satisfaction in how patient calls were answered (3.21 vs 3.82; $p=.006$), as well as with how patients results were managed (3.54 vs 4.08; $p=.009$) for the resident practice. The patient volume lost by the elimination of weekly afternoon continuity clinics was offset almost exactly with the increase in ambulatory block from 8 to 12 weeks per year (15,822 vs 15,972 resident visits/year). Despite an increase in satisfaction with the sense of patient ownership (4.17 vs 4.47; $p=.029$) individual resident-patient continuity remained unchanged (47 % vs 46 %). No change in resident reported spectrum of type patient care issues was seen.
CONCLUSIONS: Utilizing a 4 resident pod team approach, our residency program was able to effectively decouple the inpatient and outpatient residency experience in a way that improved the residents' perceived ambulatory experience without negatively impacting patient volume or continuity of care. Future efforts to improve resident-patient continuity both within their individual panel and within the pod are underway.

AN EHR-BASED INTERVENTION TO PROACTIVELY IDENTIFY AND MITIGATE DELAYS IN CANCER DIAGNOSIS: A RANDOMIZED CLINICAL TRIAL Daniel R. Murphy[2,1]; Louis Wu[2,1]; Archana Laxmisan[2,1]; Eric J. Thomas[3]; Samuel N. Forjuoh[4]; Hardeep Singh[2,1]. [1]Baylor College of Medicine, Houston, TX; [2]Michael E. DeBakey VA Medical Center, Houston, TX; [3]University of Texas Houston Medical School and the UT-Memorial Hermann Center for Healthcare Quality & Safety, Houston, TX; [4]Scott & White Healthcare, Texas A&M Health Science Center, Houston, TX. (Tracking ID #1642092)

BACKGROUND: Delays in cancer diagnosis can results in poor patient outcomes and increased malpractice litigation. Many of these delays are related to "missed" follow-up of non-life threatening abnormal clinical findings such as positive cancer screens (i.e. red flags). Methods to identify patients at risk for delayed diagnosis due to missed follow-up are in their infancy and have not been evaluated thus far.
METHODS: We conducted a randomized clinical trial to test the effectiveness of an intervention using EHR-based triggers (i.e., specific set of data signals that prompt record review) to improve follow-up of red flags related to colorectal, breast, and prostate cancer. The two-part intervention included: (1) using an electronic trigger to identify high-risk patients with missed red flags suggestive of the cancer, and (2) communication of information about high-risk patients to primary care providers (PCPs). Study settings included a large urban VA facility and a large private health system. PCPs were the unit of randomization and were randomly assigned to intervention or controls using a randomized block design. Triggers identified patient records with red flags that had no EHR evidence of follow-up action. Red flags included a positive fecal occult blood test (FOBT), labs consistent with iron deficiency anemia, new diagnosis of hematochezia, imaging study with a lung mass, and an elevated prostate specific antigen. Triggers were prospectively applied every 2 weeks to EHR data of all patients assigned to an intervention provider. Each triggered chart was manually reviewed initially to determine whether follow-up was truly delayed per a priori definitions (e.g. no colonoscopy within 60 days of positive FOBT). If so, the respective provider was contacted by secure email. One week later, if no action was taken, the provider was called. The primary outcome was a documented follow-up action in response to the red flag, which was determined through blinded final reviews performed 7 months after the date of red flag. A chi-squared analysis was performed to test if the intervention improved follow-up.
RESULTS: A total of 72 PCPs participated in the study, and 36 were randomly assigned to each group. Seven PCPs left their facility during the study period. The intervention was applied to all patients seen at the study sites for 15 months from April 20, 2011 to July 19, 2012 and identified a total of 1257 high-risk patients. After initial review, 376 (29.9 %, 210 intervention and 166 control) records were excluded because they did not meet study criteria (e.g., patient declined follow-up or pursued outside care), leaving 881 patients with confirmed delays. Patients assigned to an intervention provider were more likely to receive subsequent follow-up (RR:1.22; 95 % CI:1.002,1.485; $p=0.047$).
CONCLUSIONS: A proactive EHR-based intervention to identify patients at risk for delays in cancer diagnosis has potential to improve their follow-up. Similar EHR-based interventions could be applied to other conditions where delays in diagnosis and/or follow-up are a problem.

AN ITERATIVE, COMMUNITY FEEDBACK-DRIVEN APPROACH TO HOUSEHOLD SURVEY DESIGN Lujia Zhang[1]; Dennishia Banner[2]; Rachelle Bross[5]; Nell Forge[4]; Felica U. Jones[2]; Loretta Jones[2,4]; Katherine L. Kahn[1]; Roberto Vargas[1]; Keyonna M. King[1]; Aziza L. Wright[2,4]; Sigrid K. Madrigal[2]; D'Ann M. Morris[3]; Keith C. Norris[4]; Orwilda L. Pitts[4]; Ibrahima Sankare[1]; Arleen Brown[1]. [1]UCLA, Los Angeles, CA; [2]Healthy African American Families, Los Angeles, CA; [3]Los Angeles Urban League, Los Angeles, CA; [4]Charles Drew University, Los Angeles, CA; [5]Los Angeles Biomed, Los Angeles, CA. (Tracking ID #1641961)

BACKGROUND: While household surveys are common in epidemiologic research, few studies have employed community partnered participatory research (CPPR) in the research design phase. The Healthy Community Neighborhood Initiative (HCNI) is a collaborative effort between the Los Angeles Urban League, and Healthy African American Families (HAAF), Charles Drew University, and University of California in Los Angeles (UCLA) to improve health and health care in a South Los Angeles community disproportionately affected by preventable chronic conditions. Community-academic input informed survey development and study design to build capacity for community engaged research to reduce health disparities.
METHODS: HCNI members identified key topics for the interview and examination and then iteratively ranked items, refined and piloted elements

of the survey and clinical examination; obtained community input on the informed consent form, the survey, and the clinical and laboratory data collection protocols; and piloted household surveys. After each household visit, observer and participant recommendations were incorporated into the protocol for the next visit.

RESULTS: Over six household visits ($n=11$), changes to the data collection instruments and protocols enhanced participant understanding of the informed consent form (ICF) and survey questions, reduced time spent "in-home" by 30 min, and streamlined the protocol to facilitate fewer surveyors in the household.

CONCLUSIONS: An iterative, community-academic feedback-driven revision process resulted in substantive changes to the ICFs, surveys, and data collection protocols that reflected the unique characteristics of the community and its residents. By emphasizing community engagement early in the study design phase, we established bidirectional knowledge exchange between researchers and the community.

AN UNDER-APPRECIATED ETHICAL PROBLEM: DELAYS IN DEATH CERTIFICATE COMPLETION Philip C. Carullo[1]; Daniel Sulmasy[2]. [1]University of Chicago, Chicago, IL; [2]University of Chicago, Chicago, IL. (Tracking ID #1627627)

BACKGROUND: Death certificates are legal documents that permit families to finalize a multitude of end-of-life tasks. Physicians play a key role in generating these documents, in partnership with hospital staff, funeral directors, and state health departments. While delays and errors in the completion of a death certificates increase waiting times for families and, anecdotally, have been reported to cause great anguish, there have been no systematic studies of delays in death certificate completion by physicians, especially the impact of such delays on families. The purpose of this study was to gain broad insight into the phenomenon of delayed death certificate completion by physicians, especially the impact of such delays on families.

METHODS: The authors selected 12 academic medical centers dispersed throughout the US and interviewed 30 participants, including hospital staff dedicated to death certificate paperwork, and local funeral parlor and medical examiner office personnel to understand the phenomenon and the impact of delays in death certificate completion by physicians. They used a phenomenological, qualitative approach; 2 independent coders analyzed the interview data and jointly resolved coding disagreements; no more interviews were conducted once thematic saturation was reached.

RESULTS: Delays of several days were reported to be as common as 10–20 % of all deaths by some informants. Delays were noted to be associated with adverse emotional, bureaucratic, and even financial consequences for families, to result in delayed funeral arrangements, and to cause consternation for responsible hospital staff, funeral parlor personnel, and medical examiners' offices. Quotes such as the following from a hospital "expiration clerk" help illustrate the problem: "I have had one doctor say I'll fill it out when I get to it. He said he believes that the death certificate is a bureaucratic and political thing and that he didn't like the idea of being told what to do."

CONCLUSIONS: While generalizability is limited in a qualitative study, this investigation provides evidence for a long neglected problem in medical ethics, namely, that physicians are often remiss in their death certificate responsibilities and some do not understand this procedure as a final act of care for their patients and their grieving families. Educational and policy improvements could help rectify this situation.

AN ANALYSIS OF PATIENT AND PHYSICIAN PERSPECTIVES OUTPATIENT ADVERSE DRUG EVENTS: "I KNEW SOMETHING WAS WRONG SO I HAD TO GO" Urmimala Sarkar; Sarah Gertler; Zlatan Coralic; John Stein; Andrea Lopez. University of California, San Francisco, San Francisco, CA. (Tracking ID #1641555)

BACKGROUND: Adverse drug events (ADEs) which occur when patients or caregivers administer medications are a significant cause of emergency department (ED) visits. Although root cause analysis is required by the Joint Commission for in-hospital adverse events, this approach is seldom applied to understand ADEs that happen in outpatient settings. We conducted root cause analysis for outpatient adverse drug events that led to ED visits.

METHODS: Trained pharmacists identified ADEs and then enrolled adult patients 18 years of age and older (or their primary caregivers), who presented to an urban academic medical center's ED with symptoms or diagnoses consistent with ADEs. We conducted semi-structured interviews of the patients and physicians and reviewed ED records. The interview questions were about patient, provider, or health system factors affecting the administration of medications- all with respect to adverse drug events and the injury prevention framework. Interviews were audio-taped, transcribed verbatim, and subsequently de-identified. All transcripts were coded by two investigators (SG, AL), with differences finalized via discussion.

RESULTS: A total of 25 patients were consented and enrolled over 18 months while pharmacist coverage was available. Of these, a total of 17 patients or caregivers, and 11 physicians were interviewed, representing a total of 18 ED visits, 13 for chronically and 5 for acutely prescribed drugs. Our analysis identified the following themes within the injury prevention framework: Agent (drug) factors including high risk drugs, with narrow therapeutic indices. Host (patient) factors: patient capacity or understanding of how to use medications, awareness of side effects, mistrust of the medical system, and clinical acuity including patients with multiple comorbidities on multiple drugs, and difficult risk-benefit assessment. Environment (social and physical factors): lack of social support for medication management or basic needs, and health systems issues including access to care, access to specialists, and lack of continuity.

CONCLUSIONS: Our analysis identified several common root causes of outpatient ADE's, particularly high-risk drugs being used chronically in medically and socially complicated patients, with clear difficulties in daily self-management. We identified limitations in continuity, access to care, and communication between providers.

Themes with Clinical Scenarios and Representative Quotes

Theme Clinical scenario Representative quote

Patient factor: Patient capacity or understanding of how to use drugs A patient with diabetes presented with hypoglycemia after giving himself his insulin prior to eating breakfast. Patient expressed persistent confusion regarding proper insulin administration \"I still don't know what causes it (low blood sugar) or how it comes on. They showed me about eating, I should eat first, then my shot. Before, it was my shot, then eat. I don't know which is right?\"

Social factor: Lack of social support for drug management or basic needs A patient with diabetes, on insulin, who presented with hypoglycemia, identified poor oral intake when he runs out of money at the end of the month. A patient with diabetes, on insulin, who presented with hypoglycemia, identified poor oral intake when he runs out of money at the end of the month. \"So sometimes at the end of the month I don't have a lot to eat and then I got out and I eat inexpensive food…at the time I was eating a lot of candy.\"

Healthcare System factor: Access to care (appointments, prescriptions, and pharmacist education) A patient with diabetes and vision impairment had insurance difficulties which caused a delay in receiving her insulin pen prescription. A stressful housing situation prevented her from getting to an appointment to learn how to use it, and she became hypoglycemic when attempting to use them on her own. \"We had some trouble with her insurance to get her insulin supplies. And when we were finally able to do that, she was supposed to come into clinic so she could be taught how to use them but she didn't do that. So she missed a couple of appointments, and she finally got the insulin supplies but, instead of coming to clinic, she decided to try to use them on her own.\"

Limitations in continuity A patient with chronic migraines had an insurance change and had been unable to get a referral to a new neurologist Therefore when she got a migraine, she took a friend's medicine, which may have interacted with her SSRI causing an ADE. \"I'm planning to see my primary care doctor so she can refer me to a neurologist because the one I saw before was from another insurance. So the last time I saw a neurologist was 2010.\"

Access to care A patient with diabetes and vision impairment had insurance difficulties which caused a delay in receiving her insulin pen prescription. A stressful housing situation prevented her from getting to an appointment to learn how to use it, and she became hypoglycemic when attempting to use them on her own. \"We had some trouble with her insurance to get her insulin supplies. And when we were finally able to do that, she was supposed to come into clinic so she could be taught how to use them but she didn't do that. So she missed a couple of appointments, and she finally got the insulin supplies but, instead of coming to clinic, she decided to try to use them on her own.\"
Communication between providers A complicated patient with memory loss, and a recent hospitalization had a seizure, likely related to buproprion. Diagnosis was made more difficult by patient's memory loss, and incomplete records from her hospitalization. \"According to her social working and doctor down at (outside hospital) it's imperative that she have this doctor, but they don't seem to feel that it's imperative that her medical records get up here. She's been up here for 2 weeks and they still have not gotten her medical records up here.\"

ANTIBIOTIC PRESCRIBING FOR ADULTS WITH ACUTE BRONCHITIS IN THE UNITED STATES, 1997–2010 Michael L. Barnett; Jeffrey A. Linder. Brigham and Women's Hospital, Boston, MA. (Tracking ID #1638813)

BACKGROUND: Guidelines state and performance measures assert that antibiotics are not indicated for acute bronchitis. Efforts to decrease antibiotic prescribing for acute bronchitis have been underway for over 15 years. We used nationally representative surveys to examine the rates and types of antibiotics prescribed for acute bronchitis in outpatient primary care practices and emergency departments (EDs) from 1997 to 2010 in the US.
METHODS: We performed a cross-sectional analysis of the National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey of visits by adults aged 19–64 years old with a diagnosis of acute bronchitis (ICD-9 codes: 466.x or 490.x) to office-based primary care physicians and emergency departments (EDs) between 1997 and 2010 in 2-year periods (n=9,266). We excluded visits by patients with concomitant diagnoses of chronic lung disease, cancer, antibiotic-appropriate conditions, or immunosuppression. We examined the overall antibiotic prescribing rate as well as the prescribing rate for extended spectrum macrolides. We calculated weighted numbers of visits, prescribing rates, and their standard errors taking account of the multistage probability design of the surveys. We tested prescribing trends over time using survey-weighted logistic regression.
RESULTS: Between 1997 and 2010, there were 97 million (95 % confidence interval [CI], 87 to 106 million) visits to outpatient offices and EDs for acute bronchitis. Visits for acute bronchitis decreased from 18.5 million (95 % CI 14.3–22.6) in 1997–1998 to 9.8 million (95 % CI 6.7–12.9) in 2009–2010 (p<0.001). Patients made 76 % of visits for bronchitis to office-based primary care offices and 24 % of visits to EDs. Patients with acute bronchitis had a mean age of 39, were 61 % female, 77 % white, and 48 % with private insurance. Physicians prescribed antibiotics at 74 % (95 % CI, 71 to 76) of visits. During this time period the overall national antibiotic prescribing rate did not change (p=0.47) though the prescription rate in EDs increased from 66 % to 71 % (p<0.001). Adjusting for patient demographic factors, EDs prescribed antibiotics significantly less often than office-based physicians (OR 0.92; 95 % CI, 0.88–0.97). The most commonly prescribed antibiotics were extended spectrum macrolides (35 % of visits; 95 % CI, 33 to 38), fluoroquinolones (10 % of visits; 95 % CI, 8 to 12), and aminopenicillins (9 % of visits; 95 % CI, 7 to 10). Macrolide prescribing rates increased from 34 % to 42 % of all bronchitis visits from 1997 to 98 to 2010–11 (p=0.04).
CONCLUSIONS: Despite guidelines and performance measures stating that antibiotics are not indicated for acute bronchitis, physicians prescribed antibiotics at 74 % of visits for acute bronchitis from 1997 to 2010. Physicians frequently prescribed broad-spectrum, expensive antibiotics for acute bronchitis. The number of acute bronchitis visits halved between 1997 and 2010, which may signal patients making fewer visits or physicians selecting alternative diagnoses.

ANTIBIOTIC PRESCRIBING FOR ADULTS WITH SORE THROAT IN THE UNITED STATES, 1997–2010 Michael L. Barnett; Jeffrey A. Linder. Brigham and Women's Hospital, Boston, MA. (Tracking ID #1638786)

BACKGROUND: Among adults with sore throat, the prevalence of group A streptococci (GAS) - the only common cause of sore throat for which antibiotics are indicated - is about 10 %. Penicillin, to which GAS is universally susceptible, remains the antibiotic-of-choice.
METHODS: We performed a cross-sectional analysis of the nationally representative National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey examining visits by adults with a chief complaint of sore throat to office-based primary care physicians and emergency departments (EDs) between 1997 and 2010 in 2-year periods (n =8,191). We examined the overall antibiotic prescribing rate and the prescribing rate for penicillin, erythromycin, azithromycin, amoxicillin, and non-recommended antibiotics. In addition, we examined antibiotic prescribing for the three most common primary diagnoses: acute pharyngitis, non-specific upper respiratory infection, and streptococcal sore throat. We calculated weighted annual numbers of visits, prescribing rates, and their standard errors taking account of the multistage probability design of the surveys.
RESULTS: Between 1997 and 2010, there were 94 million (95 % confidence interval [CI], 86 to 102 million) visits by adults with a chief complaint of sore throat in the United States. Patients made 82 % of sore throat visits to office-based primary care physicians and 18 % to EDs. Patients had a mean age of 35 years old, 65 % were women, 84 % were white, and 65 % had private insurance. Physicians prescribed antibiotics at 60 % (95 % CI, 57 to 63) of visits. From 1997 to 1998 to 2009–2010, the overall antibiotic prescribing rate did not change (p=0.31). In the same time period, there was no change in the rate of antibiotic prescribing (both p>0.35) by office-based physicians (61 %; 95 % CI, 58 to 64) or EDs (55 %; 95 % CI, 53 to 57). Penicillin prescribing averaged 9 % during the study period and did not change significantly: 13 % in 1997–1998 and 7 % in 2009–2010 (p=0.27). Erythromycin prescribing was consistently below the threshold of reliability set by the CDC. Azithromycin prescribing increased from less than 5 % in 1997–1998 to 15 % of visits in 2009–2010 (p<0.001). There was no change in the prescribing rate for amoxicillin (17 %, p=0.32) or non-recommended antibiotics (15 %, p=0.37). For visits with a primary diagnosis of acute pharyngitis, antibiotic prescribing rates decreased from 78 % of visits in 1997–1998 to 58 % of visits in 2009–2010 (p=0.002). There was no change in the antibiotic prescribing rate for visits with the primary diagnoses of non-specific upper respiratory infection (43 %; p=0.32) or streptococcal sore throat (89 %; p=0.66)
CONCLUSIONS: Physicians prescribed antibiotics to 60 % of adults with sore throat between 1997 and 2010. Physicians continue to prescribe broad-spectrum, expensive, or non-recommended antibiotics at the majority of sore throat visits. Prescribing for penicillin, the antibiotic-of-choice, was stable and infrequent at 9 %.

ANTIRETROVIRAL THERAPY USE AND ADHERENCE AMONG PLWHAS WHO HAVE PANIC DISORDER Tanyka S. Sam[1]; Heidi Hutton[2]; Jeanne C. Keruly[1]; Richard D. Moore[1,3]; Geetanjali Chander1,3. 1The Johns Hopkins University School of Medicine, Baltimore, MD; [2]The Johns Hopkins University School of Medicine, Baltimore, MD; [3]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD. (Tracking ID #1642198)

BACKGROUND: Mental disorders are twice as common in persons living with HIV/AIDS (PLWHA) than the general population and are associated with decreased adherence to antiretroviral therapy (ART). However, there are few studies exploring the relationship between individual mental disorders and HIV adherence outside of depression. Among these disorders

is anxiety, of which approximately 16 % of PLWHAs are estimated to be afflicted. Within the spectrum of anxiety disorders, panic disorder is five times more common in PLWHA than the general population. The objective of this study is to investigate the association between panic disorder, ART use, and adherence in an urban HIV outpatient setting.

METHODS: In an observational cohort study of HIV-infected persons in care in Baltimore, MD, we prospectively assessed alcohol use, illicit drug use, panic, depressive symptoms, ART use, and medication adherence at 6 month intervals using audio computer assisted interviews (ACASI). Our outcomes of interest were ART use, defined as the use of ART at the time of the interview, and self-reported ART adherence using a visual analog scale, with <90 % defined as non-adherent. Current panic disorder was assessed using the 4 panic items from the Patient Health Questionnaire (PHQ). Individuals were classified as having panic if they responded positively to all items. Depressive symptoms were characterized via the PHQ with a score greater than 8 being classified as positive. Alcohol use was classified as hazardous, moderate or none, per NIAAA guidelines and illicit drug use was defined as current, past, or never use. We used generalized estimating equations to analyze the association between the independent variables and outcomes. Analyses were adjusted for age, sex, race, drug use, alcohol use, and depressive symptoms.

RESULTS: Between June 2010 and September 2012, 1533 individuals participated in 3292 ACASI interviews. 63.1 % were male and 83.7 % were African-American with a mean age of 40.6 years. 15.5 % of participants were current drug users and 5.9 % of individuals engaged in hazardous drinking. Depressive symptoms were endorsed by 9.5 % of participants. The overall prevalence of current panic disorder was 5.9 % with 91.5 % of individuals on ART at the time of the visit and 75.9 % of participants with greater than 90 % adherence. Panic disorder was negatively associated with ART use (AOR 0.64; 95 % CI 0.41 to 1.01) but was not associated with decreased adherence (AOR: 0.79; 95 % CI 0.53 to 1.16) when adjusted for depressive symptoms, alcohol, and illicit drug use.

CONCLUSIONS: Panic disorder was associated with decreased ART use independent of depressive symptoms, alcohol, or illicit drug use. Panic disorder was not associated with adherence. Future work should continue to delve into the determinants of ART usage in people with panic disorder as well as the relationship between ART usage and adherence with psychiatric intervention. Given the potential for disrupted medical treatment that may contribute to disease progression, early clinical detection and management, including social and psychological support and the development of coping strategies and stress management techniques, are of tantamount importance to patient success in the management of HIV.

ARE CLINICIANS OVERESTIMATING THE HEALTH LITERACY OF THEIR PATIENTS? Marianne Camargo; Alex Federman; Carol Horowitz. Mount Sinai Hospital, New York, NY. (Tracking ID #1632907)

BACKGROUND: Low health literacy (HL) is prevalent in the United States (US), especially among people of lower socioeconomic status, racial minorities, and the elderly. Previous studies have found that low HL is associated with worse health outcomes, and some have suggested that clinicians are unable to identify low HL patients. The objective of our study is to investigate clinicians' ability to detect low HL patients, and factors associated with HL overestimation.

METHODS: We administered the Short Test of Functional Health Literacy in Adults (S-TOFHLA) to heart failure patients at an urban academic medical center. In a complimentary survey, the clinician who most frequently cared for each patient (internist, cardiologist, geriatrician or nurse practitioner) was asked to estimate the patient's HL level based on the S-TOFHLA scale (low, marginal or proficient). For analysis, we used bivariate and multivariate methods to evaluate factors associated with overestimation of patients' HL level.

RESULTS: We collected data from 193 patients and 85 clinicians. Patients were mainly Black and Latino (72 %), and of lower socioeconomic status (40 % did not finish high school, and 60 % earned less than $15 K/year). Clinicians were mainly White (80 %), US trained (90 %), and in internal medicine (55 %). Nearly half (47 %) of patients had low HL. Of these, 73 % had a clinician overestimate their HL by at least one full category. Patients with low HL were more likely to be older ($p<0.001$), less educated ($p<0.001$), poorer ($p<0.001$), and non-White ($p=0.014$). In an adjusted analysis, clinicians trained in the US were less likely to overestimate their patients' literacy level (odds ratio [OR]: 0.255, 95 % CI 0.066–0.988). Other clinician factors (age, race, gender, specialty) did not correlate with overestimation of HL. Older and less educated patients were more likely to have their HL overestimated by their clinicians (OR: 1.037, CI: 1.008–1.068, and OR: 3.793, CI: 1.490–9.655 respectively).

CONCLUSIONS: Our study found that clinicians often overestimate their own patients' HL, especially among vulnerable populations. A high index of suspicion for low HL is warranted, and further work should explore interventions aimed at improving clinician HL assessment.

ARE PHYSICIAN-REPORTED BARRIERS TO SPECIALIST REFERRAL AN IMPORTANT PREDICTOR OF CAREER SATISFACTION AMONG PHYSICIANS CARING FOR CANCER PATIENTS? Daniel Kwon[1]; Diana Tisnado[2]; John Adams[3]; Afshin Rastegar[3]; Carrie Klabunde[7]; Mark C. Hornbrook[4]; Nancy L. Keating[5,6]; Katherine L. Kahn[3,2]. [1]David Geffen School of Medicine at UCLA, Los Angeles, CA; [2]UCLA, Los Angeles, CA; [3]RAND, Santa Monica, CA; [4]Kaiser Permanente Center for Health Research, Los Angeles, CA; [5]Brigham and Women's Hospital, Boston, CA; [6]Harvard Medical School, Boston, CA; [7]National Cancer Institute, Bethesda, MD. (Tracking ID #1641815)

BACKGROUND: Referrals to specialists are important in ensuring that patients with complex conditions receive the technical expertise required, but little is known about barriers to referrals for newly diagnosed cancer patients. We assessed the prevalence of, and physician and practice characteristics associated with, physician-reported barriers to cancer patient's referrals for more specialized care. We also assessed the impact of referral barriers on physician career satisfaction in light of increasing rates of physician burn-out.

METHODS: We used data from 4,372 surgeons, medical oncologists, radiation oncologists and non-cancer specialists responding to the multi-regional Cancer Care Outcomes Research and Surveillance Consortium (CanCORS) Physician Survey (response rate 61 %). We first assessed the prevalence of five physician-reported barriers to referring cancer patients: 1) restricted provider networks; 2) pre-authorization requirements; 3) patient lack of ability to pay; 4) lack of surgical sub-specialists; and 5) excessive patient travel time, using a 5-point Likert scale from never (1) to always (5); we then calculated a barrier score by averaging the 5 items. We used multivariable linear regression to analyze physician and practice site predictors of the barrier score. Finally, for modeling the association between barriers and physician report of career satisfaction, we used a propensity score approach to adjust for potential selection effects in physician and practice setting characteristics associated with physician reports of barriers.

RESULTS: One in five physicians reported always or usually encountering any barrier to cancer patient referrals to specialists. The mean referral barrier score was 2.0 (SD 0.50, range 1.0–5.0). Multivariable regression showed physician age <40 years, oncologist specialty type (vs. PCP), foreign medical school graduate, and small practice size predicted more frequent reports of referral barriers (all $p<0.01$). Physicians in practices with high proportions of managed care patients, multi-specialty physician-owned offices, and government-owned practices were less likely to report referral barriers (all $p<0.01$). Almost half of physicians (45 %) reported very high career satisfaction. Logistic regression models weighted for the propensity of physician-reported barriers showed a significant association between a higher barrier score and a lower report of career satisfaction (odds ratio 0.711, 95 % CI 0.65–0.78). A one SD increase in the average barrier score was associated with a 36 % reduction (.50 SD × .71 OR= 0.36) in very high career satisfaction.

CONCLUSIONS: A fifth of physicians reported always or usually encountering barriers to referring cancer patients for more specialized care. Barriers to referrals varied across physician and practice setting characteristics and were significantly associated with lower physician-reported career satisfaction. Physicians caring for cancer patients in practices with established strategies to facilitate referrals across disciplines (e.g., HMO,

multi-specialty practices) reported fewer barriers to referring to cancer specialists than did physicians in smaller, less integrated practice settings. Practices that implement strategies to improve timely referrals for cancer patients may also improve physician career satisfaction.

ARE BIOMARKERS USEFUL TO IDENTIFY HEAVY DRINKING AMONG PEOPLE WITH ALCOHOL DEPENDENCE? Nicolas Bertholet[1]; Michael Winter[5]; Debbie M. Cheng[2,4]; Jeffrey H. Samet[2,6]; Richard Saitz[2,3]. [1]Alcohol Treatment Center, Lausanne, Switzerland; [2]Section of General Internal Medicine, Boston University and Boston Medical Center, Boston, MA; [3]Department of Epidemiology, Boston University School of Public Health, Boston, MA; [4]Department of Biostatistics, Boston University School of Public Health, Boston, MA; [5]Data Coordinating Center, Boston University School of Public Health, Boston, MA; 6Department of Community Health Sciences, Boston University School of Public Health, Boston, MA. (Tracking ID #1635024)

BACKGROUND: Managing patients with alcohol dependence includes assessment for heavy drinking, often done by asking patients. Biomarkers have been recommended to detect heavy drinking but evidence of their accuracy is limited. We assessed the operating characteristics of disialo-Carbohydrate-Deficient Transferrin (%dCDT), gamma-glutamyltransferase (GGT), %dCDT and GGT together, and breath alcohol for identifying heavy drinking among people with dependence.
METHODS: We used cross-sectional data from 402 adults with alcohol dependence and current heavy drinking. Subjects were referred to primary care and assessed with biomarkers 6 months after enrollment. For %dCDT a cutoff point of ≥1.7 % defined a positive test; a positive GGT was ≥66 U/L; the combination test was defined as positive if either individual test was positive; a positive breath alcohol test was >0. We assessed biomarker performance for detecting three heavy alcohol use levels over the past 30 days as determined using the Timeline Follow-back calendar method reference standard in confidential research interviews : 1) any heavy drinking (≥4 drinks in a day or >7 drinks/week for women, ≥5 drinks in a day or >14 drinks/week for men), 2) recurrent heavy drinking (≥5 drinks in a day on at least 5 days) and 3) persistent heavy drinking (≥5 drinks in a day on at least 7 consecutive days).
RESULTS: By self-report reference standard, the prevalence of any heavy drinking, recurrent, and persistent heavy drinking was 54 %, 34 %, and 17 % respectively. The Table displays the performance of each studied test (%dCDT, GGT, both, breath alcohol) for each of the three self-reported heavy alcohol use levels over the past 30 days.
CONCLUSIONS: %dCDT alone yielded the best likelihood ratio positive for each alcohol use level, however it was not adequately sensitive to detect any, recurrent, or persistent heavy drinking. A non-invasive breath alcohol test was comparable to GGT but neither of these two was sufficiently sensitive (both tests missed 70–80 % of the cases). Although biomarkers may provide useful information, determination of their role and incremental value over self-report in clinical settings is needed.
Table: Performance of biomarkers to detect three heavy alcohol use levels
Target condition and test Sensitivity Specificity Likelihood Ratio + Likelihood Ratio-
Any heavy drinking
%dCDT 40.7 95.7 9.47 0.62
GGT 20.0 86.1 1.44 0.93
%dCDT+ or GGT + 52.6 82.3 2.97 0.58
Breath alcohol 19.9 96.6 5.85 0.83
Recurrent heavy drinking
%dCDT 52.5 90.3 5.41 0.53
GGT 19.3 83.9 1.20 0.96
%dCDT + or GGT + 60.0 75.2 2.42 0.53
Breath alcohol 26.0 94.4 4.64 0.78
Persistent heavy drinking
%dCDT 66.1 84.2 4.18 0.40
GGT 29.3 85.1 1.97 0.83
%dCDT + or GGT + 74.6 70.9 2.56 0.36
Breath alcohol 30.7 91.4 3.57 0.76

ARE PHYSICIAN AND NURSE PRACTITIONER TRAINEES BUILDING AN INTERPROFESSIONAL MICRO-CULTURE? A QUALITATIVE ANALYSIS OF PROFESSIONAL AND GROUP IDENTITY DEVELOPMENT AT THE VETERANS HEALTH ADMINISTRATION CONNECTICUT HEALTHCARE SYSTEM CENTER OF EXCELLENCE IN PRIMARY CARE EDUCATION (COEPCE) Emily M. Meyer[1,3]; Rebecca Brienza[1,2]. [1]VA Connecticut Healthcare System, West Haven, CT; [2]Yale University, New Haven, CT; [3]Yale University, New Haven, CT. (Tracking ID #1623929)

BACKGROUND: The United States Department of Veterans Affairs Connecticut Healthcare System (VACHS) is home to one of five Centers of Excellence in Primary Care Education (CoEPCE). Our CoEPCE employs an innovative approach to post-graduate health professional education by training resident physicians and nurse practitioner (NP) fellows to function effectively in teams and provide exceptional patient-centered team-based care. Based on four core domains of shared decision making, sustained relationships, performance improvement and interprofessional collaboration, the CoEPCE is one of the first national efforts to embrace an interprofessional training approach that directly addresses divergence in nursing and medical care models.
METHODS: Qualitative methods were used to assess how our first cohort of VACHS trainees developed personally and professionally over time. Three sets of semi-structured interviews were conducted at discrete data collection time points to assess individual and group growth (n=20). Interviews were transcribed and uploaded into Atlas.ti 9.0. Implementing theoretically-grounded qualitative methods, we assessed how CoEPCE NP fellows and residents' professional and team identities developed over an academic year of training. The data underwent three phases of reduction, which resulted in several distinct themes and sub-themes.
RESULTS: Findings indicate that NP Fellows and Residents entered the CoEPCE with a strong sense of self; however an understanding of how they complement other professionals in an educational and clinical environment was less apparent. Over time, both groups demonstrated increased understanding of others' roles and were able to reflect on how differences/similarities informed interprofessional patient-centered care: "I just think it's great to have the opportunity [to debate] issues and figure out how different people are coming at [patients] and have differences and work them through and really challenge your own assumptions about how you practice." Trainees' thoughts on how the CoEPCE team evolved from an "artificial group" to one with shared meaning and goals were of particular interest. An intern remarked at midyear, "I feel very comfortable managing patients and I feel comfortable working on a team. I feel comfortable working with a diverse set of practitioners, whether they be NPs or even PAs and… understanding where they're coming from and being able to arrive at a mutually acceptable conclusion for patients." His colleague commented at year-end, "what I really value about this group is that everybody's open to it. Everybody seems quite open and we were just like at it and all going at it as equals… there was… no hierarchy."
CONCLUSIONS: This study investigated group formation and meaning-making in order to capture the experiences of a non-traditional, team-based approach to post-graduate primary care training. We found evidence supporting a shift in how trainees perceive their professional roles and connections to other clinical colleagues. This mutual understanding appears to contribute to a novel 'micro-culture' of post-graduate health professional training in that CoEPCE teams not only share patients, but through this model develop understanding and trusting practice partnerships. The insights and experiences of this inaugural group of interprofessional trainees can be used to inform research, along with program and curricula development as the VACHS program grows.

ASSESSING QUALITY OF CARE TO ADOLESCENTS USING STANDARDIZED PATIENTS IN REAL CLINIC SETTINGS Kathleen Hanley[1]; Angela Burgess[1]; Shoshanna Handel[3]; Elet Howe[3]; Richard Zapata[3]; Colleen Gillespie[1]; Jean-Marie Bruzzese[2]; David Stevens[3]; Sondra Zabar1. [1]NYU School of Medicine, New York, NY; [2]NYU Child Study Center, New York, NY; [3]NYC Health and Hospitals Corporation, New York, NY. (Tracking ID #1640548)

BACKGROUND: Clinicians' effectiveness eliciting and counseling on high-risk behaviors, such as unsafe sexual practices, and patient-centeredness of the clinician and the setting are essential to providing high quality care for adolescents. Improving the quality of care requires efficient, valid measurements. We created a novel program enlisting adolescent standardized patients (SPs) to evaluate pediatricians' competencies in real-life settings.
METHODS: Twenty-five pediatricians volunteered to see one standardized patient during primary care clinic. The physicians knew when they would see the SP but were unaware the SP case would focus on risk reduction counseling. Twelve young men were trained to portray a 16-year-old new patient with high-risk sexual behavior whose explicit agenda was obtaining a pre-employment physical. SPs were trained to reveal risk behavior only if pediatricians took specific steps to put them at ease, including clarifying confidentiality protections and demonstrating non-judgmental behavior. SPs were trained to assess providers' communication skills (data gathering, relationship building, counseling; 13 items; Cronbach's alpha for internal consistency = .88); risk assessment (16 items; alpha = .87); risk counseling (16 items; alpha = .87); treatment plan (3 items; alpha = .81); and patient-centeredness (3 items; alpha = .71) using a behaviorally-anchored checklist, and to provide verbal feedback on providers' specific communication skills (behaviors that helped SPs feel comfortable discussing risk and sexual history).
RESULTS: Providers at seven public hospital primary care clinics (mean 3.8 physicians/clinic, range 1–7) participated. They performed well in listening without interrupting, using understandable words, and discussing condom use (84 %, 88 %, 92 % well done respectively). SPs system-wide reported a need for more detailed information about confidentiality (44 % well done), a more collaborative approach to developing a plan (32 % well done), more detailed information about reducing risk (36 % well done), and more screening for specific sexual risks (e.g. 8 % screened for sex while high/drunk, 12 % screened for intimate partner violence, 28 % screened for male sex partners). SP satisfaction with pediatrician communication skills was mixed (24 % excellent, 32 % good, 36 % okay, 8 % poor). Strengths and weaknesses of individual pediatricians varied widely, suggesting a need for targeted feedback and coaching in individual physicians. Scores in communication, screening, and counseling did not vary significantly between the seven clinical sites. Participating pediatricians reported the experience to be useful in a post-program survey (46 % very useful; 31 % somewhat useful). All 25 agreed that the experience would help improve the care they provide. The SPs agreed (1/3 somewhat, 2/3 strongly) they would take greater responsibility for their health after participating in the program. Average cost for each visit (SP compensation and transportation) was $50.35.
CONCLUSIONS: This adolescent SP model effectively identified health system and individualized areas for improving pediatrician communication with adolescents about health risk, despite the physicians' awareness that the visit was an evaluated simulation. These findings support the case for wider-spread implementation. Previous evidence suggests that participation enhances health outcomes among SPs themselves; further investigation will explore whether this effect will be observed among adolescent SPs.

ASSESSING STUDENT NEEDS FOR LEADERSHIP SKILLS TRAINING IN MEDICAL SCHOOL April S. Fitzgerald; Redonda G. Miller; David M. Levine; Mary Catherine Beach; Bimal Ashar. Johns Hopkins University, Baltimore, MD. (Tracking ID #1640800)

BACKGROUND: Studies in the medical literature validate the importance of effective teams and leaders on clinical outcomes including patient safety, satisfaction, and hospitalization rates. The ACGME incorporates teamwork as a common program requirement and encourages residency programs to develop leadership and followership ability beyond on-the-job training. However, the medical literature is lacking information on a needs assessment or effective curriculum to teach these skills to physicians and trainees. The goal of our study is to perform a medical student needs assessment and pilot a leadership skills curriculum.
METHODS: Students in the Johns Hopkins School of Medicine voluntarily participated in a leadership skills questionnaire upon matriculation to medical school and. Students rated their level of comfort on a 5-point scale from 0 (not at all comfortable) to 4 (extremely comfortable) with leadership skills focused in the areas of teamwork, negotiations, feedback, and networking. Students were then offered leadership skills training as an elective during the fall of their first year, which included four 1-h sessions, each devoted to one of the four leadership skills.
RESULTS: Overall, 419/480 students from the classes of 2013–2016 completed the leadership questionnaire upon matriculation (87 %). Most student respondents were male (53 %) with a mean age of 23.1 years (range 21–38). Most students reported that leadership was very (47 %) or extremely (40 %) important to the practice of medicine. Less than half (47 %) of matriculating students reported having any form of leadership training prior to arriving at medical school. Students were more comfortable working alone than working in teams (mean 3.54 vs. 2.97, $p<0.001$); and when working on a team they were more comfortable leading than following (mean 2.9 vs. 2.6, $p<0.001$). Students were more comfortable negotiating on behalf of another than for themselves (mean 2.5 vs. 2.3, $p<0.001$), and more comfortable accepting criticism than providing negative feedback (2.4 vs. 1.8, $p<0.001$). Students with previous leadership training were significantly more comfortable than those without training in working on a team (mean 3.18 vs. 2.79, $p<0.001$), leading a team (mean 3.16 vs. 2.69, $p<0.001$), negotiating for another (mean 2.74 vs. 2.39, $p<0.001$), giving negative feedback (mean 1.99 vs. 1.62, $p<0.001$), and networking with other professionals (mean 2.37 vs. 1.86, $p<0.001$). Students in the leadership skills elective ($n=37$) rated the course as an outstanding (74 %) or excellent (21 %) learning experience.
CONCLUSIONS: Matriculating students rate leadership as important to the practice of medicine, yet the majority arrive without prior leadership training and are more comfortable working alone than in teams. Students without training are less likely to feel comfortable with basic leadership skills, and an elective curriculum on the leadership skills of teamwork, negotiations, giving peer feedback, and networking was well received. Continuation of the curriculum and further study is necessary to see if leadership skills training subsequently impacts student attitudes and performance.

ASSOCIATION BETWEEN A HOSPITAL'S QUALITY PERFORMANCE FOR IN-HOSPITAL CARDIAC ARREST AND COMMON MEDICAL CONDITIONS Lena M. Chen[1,5]; Brahmajee K. Nallamothu[1,5]; Harlan M. Krumholz[2]; John A. Spertus[3,4]; Fengming Tang4; Paul S. Chan[3,4]. [1]University of Michigan, Ann Arbor, MI; [2]Yale University, New Haven, CT; [3]University of Missouri-Kansas City, Kansas City, MO; [4]Saint Luke's Mid-America Heart and Vascular Institute, Kansas City, MO; 5VA Ann Arbor Healthcare System, Ann Arbor, MI. (Tracking ID #1635203)

BACKGROUND: Public reporting on hospital quality has been widely adopted for a few medical conditions. Broadening the scope of these efforts to include cardiac arrest is now being considered. Given growing evidence that hospital organization and culture can have hospital-wide effects on quality of care, it is unknown if a measure of inpatient survival after cardiac arrest would be redundant.
METHODS: Using data between 2007 and 2010 from a large, national in-hospital cardiac arrest registry, we calculated risk-standardized in-hospital survival rates for cardiac arrest at each hospital. We then obtained risk-standardized 30-day mortality rates for acute myocardial infarction (AMI), heart failure (HF), and pneumonia from Hospital Compare for the same time period. The relationship between a hospital's performance on cardiac arrest and these other medical conditions was assessed using weighted Pearson correlation coefficients.
RESULTS: Among 26,270 patients with in-hospital cardiac arrest at 130 hospitals, survival rates varied across hospitals, with a median risk-standardized hospital survival rate of 22.1 % and an inter-quartile range (IQR) of 19.7 % to 24.2 %. Similarly, there was site-level variation in hospital outcomes for common medical conditions, with median risk-standardized

30-day mortality rates at hospitals of 15.4 % (IQR: 14.4 % to 16.6 %) for AMI, 11.3 % (IQR: 10.3 % to 12.3 %) for HF, and 11.9 % (IQR: 10.7 % to 13.0 %) for pneumonia. There were no significant correlations between a hospital's outcomes for its cardiac arrest patients and its patients admitted for AMI (correlation of −0.12; P=0.16), HF (correlation of −0.05; P=0.57), or pneumonia (correlation of −0.15, P=0.10).
CONCLUSIONS: Hospitals that performed better on publicly reported outcomes for three common medical conditions did not necessarily have better cardiac arrest survival rates. Public reporting on cardiac arrest outcomes could provide new information about hospital quality. _____ Note: The authors are submitting this study for the American Heart Association's Get With the Guidelines®-Resuscitation (formerly the National Registry of Cardiopulmonary Resuscitation) Investigators.

ASSOCIATION BETWEEN MULTIMORBIDITY AND THE QUALITY OF PRIMARY CARE IN A COUNTRY WITH UNIVERSAL HEALTHCARE COVERAGE Sven Streit[1]; Stefan Weiler[2]; Tinh-Hai Collet[3,4]; Douglas Bauer[5]; Lukas Zimmerli[6]; Peter Frey[1]; Jacques Cornuz[3]; Jean-Michel T. Gaspoz[7]; Edouard Battegay[6]; Eve A. Kerr[8]; Drahomir Aujesky[2]; Nicolas Rodondi[2]. [1]University of Bern, Bern, Switzerland; [2]University Hospital Bern, Bern, Switzerland; [3]University Hospital Lausanne, Lausanne, Switzerland; [4]University Hospital Lausanne, Lausanne, Switzerland; [5]University of California, San Francisco, CA; [6]University Hospital of Zurich, Zurich, Switzerland; [7]University Hospitals of Geneva and Faculty of Medicine, Geneva, Switzerland; [8]University of Michigan, Ann Arbor, MI. (Tracking ID #1625309)

BACKGROUND: Clinical trials often exclude patients with comorbidities, but caring for patients with multimorbidity is very common for general internists. Data on the impact of multimorbidity on quality of care are conflicting. In Switzerland, a country with universal health coverage, little is known about the prevalence of multimorbidity and its impact. We aimed to analyze the association of multimorbidity and quality of preventive care.
METHODS: In a random sample of 1002 patients attending four Swiss university primary care settings, we abstracted medical charts over 2 years to build a retrospective cohort. The inclusion criteria were patients aged between 50 and 80 years followed for at least 1 year. As published definitions of multimorbidity are inconsistent, we derived a new set of comorbidities based on previous studies and added comorbidities used for the Charlson index and psychiatric diseases (e.g. schizophrenia) as an important comorbidity, finally leading to 17 conditions as comorbidities. To evaluate the quality of preventive care and care for cardiovascular risk factors, we searched medical charts for indicators from RAND's Quality Assessment Tool. We calculated the percentage of provided care as recommended care divided by patients who were eligible for each indicator. We calculated two aggregate scores of quality of preventive care and care for cardiovascular risk factors. Data were adjusted for possible confounders.
RESULTS: The mean age was 63.5 years, 44 % were women. Participants had a mean of 2.6 (SD 1.9) comorbidities, while only 7.6 % had no comorbidities. The mean Charlson index was 1.8 points (SD 1.9). Overall, participants received 69 % of recommended preventive care and 84 % received recommended care for cardiovascular risk factors. Quality of care remained stable with increasing number of comorbidities both for prevention and for cardiovascular risk factors. Results were similar in analyses limited to Charlson index and after adjusting for age, gender, civil status, legal status, work, center and number of visits. Among subgroups of diseases (cardiovascular disease, psychiatric disorders, chronic pulmonary disease, cancer or depression), we found similar quality of care.
CONCLUSIONS: In university primary care settings in Switzerland, multimorbidity was very common and less than 10 % of participants had no comorbidities. Quality of care for preventive care as well as for cardiovascular risk factors was independent of increasing number of comorbidities. These findings confirm the high prevalence of patients with multimorbidity in primary care and demonstrate that a high level of preventive care is possible despite multimorbidity.

ASSOCIATION BETWEEN RESIDENT LABORATORY TEST UTILIZATION, UNCERTAINTY & THE BIOPSYCHOSOCIAL MODEL OF PATIENT CARE Jessica R. Singer[1,2]; Deborah Jones[1,2]; Nancy Chang[1,2]; Rafael A. Lantigua[1,2]; Steven Shea[1,3]. [1]Columbia University College of Physicians and Surgeons, New York, NY; [2]NewYork Presbyterian Hospital, New York, NY; [3]Mailman School of Public Health, Columbia University, New York, NY. (Tracking ID #1626640)

BACKGROUND: There is significant variation in physician laboratory test utilization, with potential negative consequences for patients, provider organizations and the health care system from over- and under-utilization. Prior studies have found that some variation is explained by patient factors, physician demographic factors, or physician characteristics including clinical competencies and personality; however, much of the variation remains unexplained. Additionally, previous research has focused largely on attending physician and inpatient utilization. Our interest was in factors accounting for utilization that are potentially modifiable during residency, specifically how residents deal with uncertainty in primary care settings and their comfort with the biopsychosocial model. We aimed to assess the relationship between resident physician outpatient laboratory test utilization and reaction to uncertainty in the clinical encounter and to investigate whether this relationship was modified by belief in the biopsychosocial model of care.
METHODS: We conducted a cross-sectional study of internal medicine residents at an urban academic medical center. Residents were asked to complete a self administered web-based survey. Uncertainty was measured using an 8-item version of the Physician Reaction to Uncertainty Scale (PRUS) which measures anxiety due to uncertainty and concern over bad outcomes. To measure beliefs about the biopsychosocial model we used the 32-item Physician Belief Scale (PBS). Additional survey items included post graduate year (PGY) and gender. The outcome of laboratory test utilization was operationalized as the number outpatient of laboratory tests ordered by each resident during the academic year 6/15/11–6/14/12 divided by the total number of patient visits to that provider in that same academic year. Analyses were conducted using correlation, ANOVA and multivariable linear regression.
RESULTS: The survey response rate was 53 % (n=62). Respondents were 59 % male and about equally distributed between each post-graduate year (PGY1 31 %, PGY2 37 %, PGY3 32 %). The PRUS was normally distributed with mean 27.2±6.1 and cronbach alpha 0.86. The PBS was normally distributed with mean 73.6±15.0 and cronbach alpha 0.90. The mean laboratory test utilization was 2.5±0.9 tests ordered per patient visit. Interns ordered more laboratory tests per patient compared with PGY2 residents (3.0±1 vs. 2.3±0.8 p=0.04); gender was not associated with laboratory utilization (p=0.60). Resident discomfort with uncertainty was associated with increased laboratory utilization (r=0.3 p=0.03). After adjusting for PGY, discomfort with uncertainty remained associated with laboratory utilization (p=0.02). Together, PGY and reaction to uncertainty explained approximately 13 % of the variability in laboratory utilization. The association between physician reaction to uncertainty and laboratory utilization was not modified by belief in the biopsychosocial model (p interaction = 0.55).
CONCLUSIONS: Residents who were more comfortable with uncertainty in the clinical encounter ordered fewer laboratory tests. This association between uncertainty and laboratory utilization did not depend on degree of agreement with the biopsychosocial model of care. Further research should continue to assess the unexplained variation in utilization and design medical education interventions to support resident decision analysis and uncertainty in primary care settings with the goal of promoting safe and effective test utilization.

ASSOCIATION BETWEEN THE PATIENT-CENTERED MEDICAL HOME AND QUALITY OF CARE Lisa M. Kern[1,2]; Alison M. Edwards[1,2]; Rina V. Dhopeshwarkar[1,2]; Rainu Kaushal[1,2]. [1]Weill Cornell Medical College, New York, NY; [2]Health Information Technology Evaluation Collaborative, New York, NY. (Tracking ID #1639909)

BACKGROUND: The Patient-Centered Medical Home (PCMH) model of primary care is being implemented widely, although its effects on quality

are not yet clear. The PCMH model typically involves electronic health records (EHRs) but goes beyond that to include changes in the responsibilities of physicians and staff, including for care coordination. Our objectives were to compare the quality of care provided by physicians in PCMHs to the quality of care provided by: 1) physicians using paper medical records, and 2) physicians using EHRs without a PCMH model.
METHODS: We conducted a prospective cohort study from 2008 to 2010 in the Hudson Valley, a multi-payer, multi-provider, 7-county region in New York State. We included 388 primary care physicians (109 physicians in the PCMH group, 194 in the paper group and 85 in the EHR group), and 110,314 patients. The physicians in the PCMH group implemented the PCMH model in the Hudson Valley in 2009 and all achieved Level III Patient-Centered Medical Home, as defined by the 2008 standards of the National Committee for Quality Assurance. We used claims data to assess 10 quality measures from the Healthcare Effectiveness Data and Information Set (HEDIS). We used restricted maximum likelihood estimates to determine differences in quality, adjusting for 9 physician characteristics.
RESULTS: In 2010, PCMH physicians performed significantly better than physicians using paper records on 5 of the 10 quality measures: hemoglobin A1c testing, LDL testing, and nephropathy screening for patients with diabetes; breast cancer screening and colorectal cancer screening ($p<0.01$ for each comparison). The absolute effect size was 5–15 percentage points per measure. PCMH physicians similarly outperformed physicians using EHRs alone. Study group was not associated with a change in the rate of quality improvement over time.
CONCLUSIONS: Although this study does not prove that the PCMH model caused higher quality, it suggests that early adopters of the PCMH model are practicing differently from and better than physicians using either paper or EHRs alone. For patients and payers, the implication is that higher quality is more likely to be found in the PCMH practices.

ASSOCIATION BETWEEN WEIGHT LOSS AND THE PATIENT-PROVIDER RELATIONSHIP IN THE POWER WEIGHT LOSS TRIAL Wendy L. Bennett[1]; Yi-ting Chang[1]; Kimberly Gudzune[1]; Nae-Yuh Wang[1]; Arlene Dalcin[1]; Sara N. Bleich[2]; Lawrence J. Appel[1]; Jeanne M. Clark[1]. [1]Johns Hopkins School of Medicine, Baltimore, MD; [2]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD. (Tracking ID #1643416)

BACKGROUND: Despite recommendations for primary care providers (PCPs) to counsel obese patients on weight management, few studies have examined the influence of the PCP on patients' weight loss. Our objective was to understand the association between the patient-PCP relationship and weight loss in a practice-based weight loss trial.
METHODS: We performed a cross-sectional analysis using data from the Hopkins POWER Trial, a 24 month practice-based randomized controlled behavioral weight loss 3 armed trial comparing the effectiveness of an in-person or telephone-based intervention to a control group in obese adults who had an additional cardiovascular disease risk factor. All participants completed an end of study questionnaire with 8 questions about their relationship with their PCP, based on the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey and we calculated a summary score. Participants in the intervention arms additionally completed a survey assessing the helpfulness of their PCP in the trial (scale: 0 = not helpful to 4 = extremely helpful). Our main outcome was the mean percent weight loss from baseline to 24 months. We used a likelihood-based approach to general linear mixed models with an autocorrelation covariance structure among repeated-measures, adjusting for participant race, gender, age and clinical site, stratified by the 2 intervention arms combined and the control arm.
RESULTS: Of the 415 participants enrolled in the POWER trial, 347 (239 in the combined 2 intervention arms) completed these surveys and were included in this analysis. Overall, mean age was 54.8 years, mean baseline weight and BMI were 103.3 kg and 36.3 kg/m2, respectively, and mean 24 month percent weight loss was 3.9 %. 11 % reported changing PCPs during the study. All participants in the sample reported high quality patient-PCP relationships, with mean scores ranging from 3.3 to 3.8 (out of a maximum of 4) on all 8 relationship questions, and 29.1 for the summary score (range 14–32). There was no significant association between mean percent weight loss in the trial and the 8 patient-PCP relationship questions or summary score in control or intervention arms. Participants in the 2 intervention arms who rated their PCPs' involvement as "extremely helpful" compared to "not helpful" had 4.5 % ($p=0.02$) more weight loss at 24 months.
CONCLUSIONS: Participants reported high quality patient-PCP relationships and their relationships were not associated with 24 month weight change. Rating their PCPs as extremely helpful in the intervention was associated with significantly greater weight loss. We need further research to identify PCP and practice characteristics associated with higher patient satisfaction with the PCP role and greater weight loss. Understanding the PCP's role in weight management, including the quality of the patient-PCP relationship and patient's satisfaction with the PCP's involvement, will inform broader implementation of practice-based weight loss programs.

ASSOCIATION OF HOSPITAL VOLUME WITH RISK-STANDARDIZED READMISSION RATES Leora I. Horwitz; Zhenqiu Lin; Jeph Herrin; Chohreh Partovian; Jacqueline N. Grady; Julia Montague; Lisa G. Suter; Joseph S. Ross; Susannah Bernheim; Harlan M. Krumholz; Elizabeth E. Drye. Yale School of Medicine, New Haven, CT. (Tracking ID #1639577)

BACKGROUND: A large literature has demonstrated a positive association of hospital or operator volume with patient outcomes. Large volume centers produce fewer complications and deaths following surgical procedures, and fewer deaths from major medical conditions. Whether there is a similar relationship for readmissions is uncertain.
METHODS: We identified all hospitalized patients over 65 with Medicare fee for service who were discharged alive, not against medical advice, and not transferred out in 2010. We excluded patients admitted for medical treatment of cancer or primary psychiatric disease. We used the National Quality Forum-endorsed hospital-wide readmission measure to calculate overall risk-standardized readmission rates (RSRRs) for all hospitals, adjusting for age, principal diagnosis and comorbidity. We also calculated specialty cohort-specific standardized readmission ratios (SRRs) for five mutually exclusive cohorts within each hospital: surgery/gynecology, cardiorespiratory, cardiovascular, neurology and medicine. An SRR of 1 indicates the hospital is at expected readmission rate; SRR>1 indicates having greater than expected readmission rate. We divided hospitals into strata based on yearly volume of index admissions and compared RSRRs or SRRs for each strata, omitting hospitals with fewer than 25 cases.
RESULTS: We studied 7,678,216 discharges from 4,821 hospitals. Overall, higher volume hospitals had higher RSRRs. The mean RSRR for hospitals in the lowest quartile of index admissions ($N=1,073$, median 127 admissions) was 16.12, compared to 16.34 for those in the highest decile ($N=482$, median 5,782 admissions). A total of 39.0 % of hospitals in the lowest quartile of admissions had SRR>1, compared to 50.6 % of hospitals in the highest decile. Within specialty cohorts, this association held for cardiorespiratory, neurology and medicine patients. However, the surgery/gynecology cohort showed no association and the cardiovascular cohort an inverse relationship. The largest difference between volume strata in specialty cohorts was in the cardiorespiratory cohort (mean SRR 0.99 for hospitals in the lowest half [$N=1,185$] vs 1.02 for top decile [$N=200$]). In the cardiorespiratory cohort, 39.5 % of hospitals in lowest half of admissions had SRR>1, compared to 57.1 % of hospitals in highest decile of annual volume. By contrast, in the cardiovascular cohort, the mean SRR for hospitals in the lowest half of admissions but with at least 25 cases ($N=943$) was 1.00 compared to 0.98 for those in top decile ($N=456$). In this cohort, 51.5 % of hospitals in bottom half of volume had SRR>1 compared to 43.4 % of those in top decile.
CONCLUSIONS: In contrast to findings for other outcomes, higher hospital volume is associated with slightly worse overall risk-adjusted readmission rates. This relationship is modest and not consistent across all specialty cohorts. The care processes that lead to high quality transitional care may be more difficult to achieve in high volume institutions.

ASSOCIATION OF POSTTRAUMATIC STRESS DISORDER AND INCIDENT CEREBROVASCULAR DISEASE IN A VETERANS ADMINISTRATION POPULATION Beth Cohen[1,2]; Thomas Neylan[1,2]; Daniel Bertenthal[1]; Kristine Yaffe[1,2]. [1]San Francisco VA Medical Center, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA. (Tracking ID #1633684)

BACKGROUND: Several studies have demonstrated that patients with posttraumatic stress disorder (PTSD) are more likely to develop and die from ischemic cardiovascular disease. Animal models suggest PTSD may have a similar effect on cerebral arteries, leading to increased risk of stroke, but this has not been well-studied in humans. Understanding the association of PTSD and cerebrovascular disease, a costly, debilitating disorder, is particularly important for healthcare systems such as the Department of Veterans Affairs (VA) that care for a large population of aging patients with PTSD. Therefore, we evaluated the association of PTSD and incident cerebrovascular disease in a large, national VA sample.
METHODS: We used national Veterans Affairs electronic medical records to examine the association of PTSD and incident cerebrovascular disease diagnoses, restricting our analyses to patients aged 45 and over. We used data from 10/1/1996–9/30/2000 to identify 185,911 patients with a diagnosis of PTSD and 371,231 patients without a diagnosis of PTSD who were free of cerebrovascular disease diagnoses during this baseline period. We then used Cox proportional hazards models to evaluate the association of PTSD and incident cerebrovascular disease diagnoses during a follow-up period from 10/1/2000–3/31/2011. We used a previously validated ICD-9 coding algorithm to identify cerebrovascular disease from inpatient and outpatient records. We found a significant interaction with gender, and therefore examined men and women separately. We constructed hierarchical regression models serially adjusting for age, traditional cardiovascular risk factors (hypertension, tobacco use, diabetes, dyslipidemia, and obesity), and depression.
RESULTS: The mean age of the overall study population was 61 years (62 for men and 59 for women). 43,393 (7.8 %) patients received a cerebrovascular disease diagnosis during follow-up. In unadjusted analyses, cerebrovascular disease was significantly more common among patients with PTSD (for men: 9.5 % in those with PTSD versus 7.4 % in those without PTSD, $p<.001$; for women: 7.2 % in those with PTSD versus 2.2 % in those without PTSD, $p<.001$). The association of PTSD and incident cerebrovascular disease remained significant after adjusting for traditional cardiovascular disease risk factors and depression (see Table). The magnitude of all associations was stronger in women than in men.
CONCLUSIONS: PTSD is prospectively associated with increased incident cerebrovascular disease diagnoses in VA patients, particularly in women, independent of traditional cardiovascular risk factors and depression. Future epidemiologic and neuroimaging studies should further explore this association as well as the gender differences. Though additional research is needed, our results highlight the potential adverse physical health consequences of PTSD.

Association of PTSD with incident cerebrovascular disease diagnoses

	Men HR (95 % CI)	Women HR (95 % CI)
Adjusted for age	1.32 (1.30–1.35)	3.10 (2.74–3.50)
+Traditional cardiac risk factors	1.31 (1.29–1.34)	1.96 (1.72–2.24)
+ Depression	1.30 (1.25–1.33)	2.04 (1.59–2.64)

ASSOCIATIONS BETWEEN PROCESSES OF CARE AND MORTALITY IN A NATIONAL COHORT OF ELDERLY PATIENTS HOSPITALIZED FOR PNEUMONIA Jonathan S. Lee[1]; Wato Nsa[2]; Leslie R. Hausmann[1,3]; Amal N. Trivedi[4]; Dale W. Bratzler[5]; Dana Auden[2]; Kate Goodrich[6]; Fiona M. Larbi[6]; Michael J. Fine[1,3]. [1]University of Pittsburgh Medical Center, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Oklahoma City, OK; [3]VA Pittsburgh Healthcare System, Pittsburgh, PA; [4]Alpert Medical School of Brown University, Providence, RI; [5]Oklahoma University Health Sciences Center, Oklahoma City, OK; 6Centers for Medicare and Medicaid Services, Baltimore, MD. (Tracking ID #1638617)

BACKGROUND: While often used as proxies for healthcare quality, it is not clear whether processes of care are associated with improved survival for patients with community-acquired pneumonia (CAP). Our aim was to assess independent associations between publicly reported processes of care and short-term mortality for elderly patients hospitalized for CAP.
METHODS: We studied elderly patients (age ≥ 65) hospitalized for CAP in U.S hospitals participating in the CMS Inpatient Quality Reporting program from 2006 to 2010, who met eligibility criteria for the CMS inpatient pneumonia process measures. We linked patient-level performance rates for these 7 publicly reported process measures (i.e., timely and appropriate antibiotics, blood cultures in the ED and for ICU patients, smoking cessation counseling, and pneumococcal and influenza vaccination) to 30-day all-cause mortality using Medicare administrative data. We used multivariable logistic regression to assess independent associations between all individual and an all-or-none composite measure of processes of care and mortality for each study year, controlling for baseline patient and hospital characteristics.
RESULTS: From 2006 to 2010, 1,818,979 elderly patients with CAP were admitted to 4,740 unique hospitals (range 326,956 to 399,243 patients per year). Overall mortality was 10.4 %, ranging from 9.2 to 11.4 % per year. Absolute mortality was significantly lower for each study year for patients who received (versus did not receive) appropriate antibiotics (difference −3.7 to −5.9 % per year), blood cultures in the ED (difference −0.7 to −1.2 % per year), smoking cessation counseling (difference −2.3 to −3.2 % per year), pneumococcal vaccination (difference −0.9 to −1.6 % per year), and influenza vaccination (difference −1.4 to −2.0 % per year) [$p<0.05$ for each measure, each year]. As shown in the Table, adjusted odds ratios demonstrated similarly significant reductions in mortality each year for these processes of care with the exception of blood cultures in the ED, which was only associated with reduced mortality in 4 study years. While absolute unadjusted mortality was 1 to 3.1 % higher for patients who received all processes for which they were eligible, adjusted odds ratios demonstrated decreased mortality for this all-or-none composite measure.
CONCLUSIONS: Appropriate antibiotic therapy and 3 preventive measures (smoking cessation counseling, and pneumococcal and influenza vaccination) were consistently associated with improved short-term survival in this large national cohort of elderly patients hospitalized for pneumonia. While these findings support the ongoing use of these process measures in public reporting and pay-for-performance programs, they also suggest removal of measures such as timely antibiotic initiation that are not consistently associated with improved patient survival.

Table. Multivariable associations between processes of care and mortality

Process measure	Study Year 2006 AOR (95 % CI)	2007 AOR (95 % CI)	2008 AOR (95 % CI)	2009 AOR (95 % CI)	2010 AOR (95 % CI)
Timely antibiotics (<6 h)	1.01 (0.96–1.06)	0.96 (0.90–1.02)	0.96 (0.91–1.02)	0.96 (0.90–1.03)	0.99 (0.91–1.07)
Appropriate antibiotics	0.77 (0.73–0.82)*	0.81 (0.76–0.87)*	0.86 (0.80–0.92)*	0.81 (0.76–0.88)*	0.82 (0.75–0.89)*
Blood cultures for ICU patients	0.95 (0.88–1.04)	0.84 (0.76–0.93)*	1.02 (0.92–1.12)	0.87 (0.78–0.98)*	0.97 (0.86–1.11)
Blood cultures in the ED	0.93 (0.89–0.98)*	0.90 (0.85–0.95)*	0.96 (0.91–1.02)	0.91 (0.85–0.98)*	0.89 (0.82–0.96)*
Smoking cessation counseling	0.68 (0.59–0.78)*	0.72 (0.63–0.84)*	0.73 (0.62–0.87)*	0.66 (0.53–0.82)*	0.56 (0.43–0.73)*
Pneumococcal vaccination	0.79 (0.76–0.82)*	0.81 (0.78–0.85)*	0.79 (0.76–0.83)*	0.83 (0.79–0.89)*	0.85 (0.79–0.92)*
Influenza vaccination	0.78 (0.74–0.83)*	0.77 (0.72–0.81)*	0.80 (0.75–0.84)*	0.80 (0.74–0.86)*	0.82 (0.76–0.90)*
All-or-none composite	0.83 (0.80–0.86)*	0.84 (0.81–0.86)*	0.84 (0.82–0.87)*	0.85 (0.82–0.89)*	0.87 (0.83–0.91)*

*$p<0.05$

ASSOCIATIONS OF MATERIAL HARDSHIP WITH GESTATIONAL WEIGHT GAIN AND POST-PARTUM WEIGHT RETENTION Audrey M. Provenzano[1]; Sheryl M. Rifas-Shiman[2]; Sharon J. Herring[3]; Janet Rich-Edwards[4]; Matthew W. Gillman[2]; Emily Oken[2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Department of Population Medicine, Harvard Medical School and Harvard Pilgrim Health Care Institute, Boston, MA; [3]Temple University School of Medicine, Philadelphia, PA; [4]Harvard School of Public Health, Boston, MA. (Tracking ID #1627766)

BACKGROUND: Inadequate gestational weight gain (GWG) is associated with lower fetal weight gain, whereas excessive GWG is associated with macrosomia, birth complications, and post-partum weight retention (PPWR). Only 30–40 % of pregnant women gain within Institute of Medicine (IOM) guidelines. Women entering pregnancy with elevated BMI are more likely to have inadequate or excessive GWG and PPWR. Although researchers have identified some social factors related to these indicators of weight status, the influence of recent and especially remote material hardship is not clear.
METHODS: We studied 1714 women enrolled in the Project Viva birth cohort who received prenatal care between 1999 and 2002 at a multispecialty practice in eastern Massachusetts. Main outcome measures were GWG (inadequate, adequate, or excessive) and substantial PPWR (≥ 5 kg difference between self-reported weight at 1 year post-partum and pre-pregnancy weight). The main exposure was maternal report in early pregnancy of having experienced material hardship, i.e., receiving public assistance, welfare, or lack of basic necessities such as food, rent, or medical care in 3 time periods: childhood: before age 18; adulthood: between age 18 and the current pregnancy; or during pregnancy. We used multivariable logistic models, adjusted for age, race/ethnicity, and parity, to examine the extent to which hardship exposure during each of the 3 time periods was associated with pre-pregnancy BMI, GWG, and SPPWR.
RESULTS: Among 1714 women, mean age was 32.4 years (SD 4.7). Mean pre-pregnancy BMI was 24.6 kg/m2 (SD 5.2), and 13.9 % of women were obese (BMI≥30 kg/m2). 72.6 % were white, 11.3 % Black, 6.1 % Hispanic, 5.9 % Asian, 3.5 % other race/ethnicity; 51.6 % were parous. 139 (8.1 %) reported material hardship in childhood, 61 (3.6 %) in adulthood, and 22 (1.3 %) in pregnancy. Rates of excessive (49.8 %) and inadequate (14.5 %) GWG and of SPPWR (15.7 %) were similar to other studies. Pre-pregnancy obesity was more common among women who experienced hardship in adulthood (odds ratio [OR] 2.54, 95 % confidence interval [CI]: 1.33, 4.83), but not during childhood (OR 1.33, 95 % CI: 0.81, 2.18). Women with childhood hardship were more likely to have excessive (vs. adequate) GWG (OR 1.70, CI: 1.12, 2.60) and SPPWR (OR 1.58, CI: 0.93, 2.67) but not inadequate GWG. In contrast, women with hardship exposure in adulthood were more likely to have inadequate GWG (OR 2.04, CI: 1.05, 3.97) but not excessive GWG (OR 0.78, CI: 0.42, 1.46) or SPPWR (OR 1.69, CI: 0.74, 3.90). Results were similar for hardship exposure during pregnancy for inadequate GWG (OR 3.15, CI: 0.99, 9.98), excessive GWG (OR 1.34: 0.44, 4.1), and SPPWR (OR 1.23, CI: 0.34, 4.43). Examination of hardship exposure limited to one period of life yielded similar results.
CONCLUSIONS: The timing of hardship exposure may differently influence weight status before, during, and after pregnancy. Material hardship in adulthood predicted obesity and inadequate GWG, whereas childhood hardship exposure, even if limited to early life, may increase risk for excessive GWG and SPPWR.

ASTHMA BELIEFS AND SELF-MANAGEMENT BEHAVIORS AMONG OLDER ASTHMATICS Alex Federman[1]; Michael S. Wolf[2]; Anastasia Sofianou[1]; Melissa Martynenko[1]; Ethan Halm[3]; Howard Leventhal[4]; Juan P. Wisnivesky[1]. [1]Mount Sinai School of Medicine, New York, NY; [2]Northwestern University, Chicago, IL; [3]UT Southwestern Medical Center, Dallas, TX; [4]Rutgers, The State University of New Jersey, New Brunswick, NJ. (Tracking ID #1636505)

BACKGROUND: Older adults with asthma experience high rates of poor asthma outcomes and the reasons they fare poorly remain vague. Misconceptions about asthma are common among older adults and associated with low adherence to controller medications. In this analysis, we examined the association of asthma health beliefs with other key asthma self-management behaviors (SMB) such as self-monitoring, inhaler technique (metered dose inhaler [MDI], and trigger avoidance in a cohort of older asthmatics.
METHODS: Asthmatics ages ≥60 years were recruited from hospital and community practices in New York, NY and Chicago, IL (n=420). Validated instruments derived from the Common Sense Model of Self Regulation were used to assess asthma beliefs. We examined three beliefs that are commonly held by older adults and have been associated with poor asthma outcomes: no symptoms means no asthma (asthma is an episodic disease); physician (MD) can cure my asthma (unrealistic curability expectations); and will not always have asthma (illness is transitory). Multiple SMB were assessed in three categories: self-monitoring (has an action plan, peak flow meter [PFM] use, has a regular doctor for asthma care), inhaler technique (metered dose inhaler [MDI] and dry powder inhaler [DPI]), trigger avoidance (use of allergy covers, sheets washed in hot water, others clean the home, windows kept closed in spring and summer months, smoking not allowed in the home, avoid animals with fur, and does not live with pets). The association of beliefs with SMB was tested with univariate statistics with 2-tailed p-values.
RESULTS: Self-management was generally poor: 63 % had poor MDI technique, 73 % had poor DPI technique; 77 % had no self-monitoring plan, and 39 % had no regular physician for asthma care. Trigger avoidance varied: 91 % did not allow smoking in the home, and 72 % did not live with pets; however only 43 % avoided animals with fur and 36 % used allergy covers on their beds. Patients with the no symptoms no asthma belief (n=234, 53 %) and those who believe they will not always have asthma (n=128, 29 %) were less likely to correctly use a DPI (47 % vs. 67 %, p=0.04, and 43 % vs. 58 %, p=0.04, respectively). For those with the MD can cure asthma belief (n=89, 20 %), there were no significant differences in DPI performance (p>0.05), and there were no significant differences for MDI use by any belief category. Patients with the no symptoms no asthma and the MD can cure asthma beliefs were less likely to have a regular physician for asthma care (54 % vs. 71 %, p=0.0004, and 52 % vs. 64 %, p=0.03, respectively). In contrast, patients with the no symptoms no asthma and MD can cure asthma beliefs were significantly more likely to live without pets (p<0.05). There were no significant associations between the remaining asthma trigger avoidance behaviors and asthma beliefs.
CONCLUSIONS: Common misconceptions about asthma among older asthmatics were associated with reduced likelihood of having a regular asthma care provider and with poor DPI technique, but were otherwise inconsistently associated with other asthma self-management behaviors. Regular asthma care and DPI technique, in addition to asthma controller medication adherence, may be appropriate teaching points in educational interventions aimed at addressing asthma misconceptions.

ASTHMA SEVERITY AND CONTROL AND COGNITIVE IMPAIRMENT IN A COHORT OF ELDERLY PATIENTS Maile Ray[1]; Juan Wisnivesky[1]; Anastasia Sofianou[1]; Melissa Martynenko[1]; Michael S. Wolf[2]; Alex Federman[1]. [1]Mount Sinai School of Medicine, New York, NY; [2]Feinberg School of Medicine, Northwestern University, Chicago, IL. (Tracking ID #1640842)

BACKGROUND: The prevalence of cognitive impairment increases with age and may impact self-management of patients with chronic disease such as asthma. We assessed the association of asthma severity with three measures of cognitive function in a cohort of older asthmatics.
METHODS: Asthmatics ages 60 and older were recruited from inner-city primary care practices in New York City and Chicago. Patients with a documented or self-reported history of dementia, other chronic respiratory illnesses, or ≧ 10 pack-years were excluded from the study. We measured asthma control using percent predicted FEV1 and the Asthma Control Questionnaire (ACQ), a five-item questionnaire, modified from the original seven-item version, that assesses specific control symptoms, timing of symptoms, and activity limitation using a seven-point scale for each item. Cognitive function was assessed with three measures: (1) the Mini-Mental State Examination (MMSE; general cognitive function), (2) the Wechsler Memory Scale IV Delayed Recall Story A (delayed memory), and (3) the Trail Making Test A (executive function). Logistic and linear regression analyses were performed to test the association of asthma control with general cognitive function (MMSE ≦ 27), delayed recall, and executive function, respectively, adjusting for education, English-speaking ability, race, age, and sex.

RESULTS: The sample consisted of 441 patients, 84 % of whom were female; mean age was 68 years. Fifty-nine percent of patients had impaired cognition based on the MMSE. In adjusted analyses, worse asthma control (higher ACQ score) was associated with worse Trail A scores (β=0.0455, p=0.009) and higher odds of an abnormal MMSE score (OR=1.44, 95 % CI=1.14, 1.81, p=0.0004). There was no significant association with delayed recall (β=−0.26, p=0.11). Percent FEV1 was significantly associated with all three measures of cognitive function in univariate analysis, but were no longer significant after confounder adjustment: MMSE, OR=0.99, 95 % CI=0.98, 1.01, p=0.35; delayed recall, β=0.01, p=0.29; (ln) Trail A, β=−0.001, p=0.33.
CONCLUSIONS: Poorer asthma control is associated with worse general cognitive function and executive functioning in older adults with asthma. Clinicians of older patients with asthma should consider screening for cognitive impairments, especially among those with poorer asthma control.

AT EASE AND DIS-EASE: PATIENT REQUESTS FOR REASSURANCE
Carter Neugarten1; Somnath Saha[3,4]; Deborah Roter[2,1]; Philip T. Korthuis[4]; Jonathan A. Cohn[6]; Victoria L. Sharp[5]; Richard D. Moore[1]; Mary Catherine Beach[1,2]. [1]Johns Hopkins University, Baltimore, MD; [2]Johns Hopkins University, Baltimore, MD; [3]Portland VA Medical Center, Portland, OR; [4]Oregon Health & Science University, Portland, OR; [5]St. Lukes Roosevelt, New York, NY; [6]Wayne State University, Detroit, MI. (Tracking ID #1640977)

BACKGROUND: Reassurance is an important mechanism by which physicians can reduce anxiety among patients, but little is known about the circumstances under which patients explicitly request reassurance. Our study examined how and when patients make requests for reassurance from their physicians in routine outpatient encounters.
METHODS: We analyzed audio-recorded and transcribed encounters between 45 providers and 418 HIV-infected adult patients. We used the Roter Interaction Analysis System (RIAS) to identify all explicit patient requests for reassurance, defined as "questions of concern that convey the need or desire to be reassured or encouraged [considering] voice tone, intonation and emotional content." We qualitatively analyzed these requests within the visit context, and then used logistic regression models with generalized estimating equations to account for clustering of patients within providers while adjusting for study site to compare characteristics of patients who made vs. did not make a request for reassurance.
RESULTS: In 418 encounters, there were 53 encounters with at least one request and 72 total patient requests for reassurance. There were no differences between patients who did versus did not ask for reassurance in age, gender, race/ethnicity, education, health literacy or social support. However, patients who asked for reassurance reported more depressive symptoms than those who did not (OR 2.3 95 % CI 1.1–4.9 for middle vs. low and OR 2.2 95 % CI 1.1–4.6 for high vs. low depressive symptom tertile), and visits with a patient request for reassurance were longer than those without such a request (21.8 without vs. 28.6 min with a patient request, p<0.001). Our qualitative analysis generated eight categories describing the topic of patient requests: overall health, symptom/illness, physical exam, therapy, testing logistics, interpreting personal data, general information, and administrative. The most common type of request (n=19) was about the interpretation of one's own personal data such as vital signs and test results (e.g. P"I gained 5 lb"/D "Is that right?"/P "So that's…that's a good thing, right?"), followed by requests regarding therapy (n=12, "Is this a permanent thing though for me, forever? I mean if I'm taking the Fuzeon, is it gonna be forever?") and symptoms or illness (n=10, "Do you all think I might have cancer of my stomach?"). While there were only four requests regarding overall health, these carried a great deal of emotional weight (e.g. "Am I gonna ever have the days again where I just feel good?" and "I just want to know when I can…will I be all right?").
CONCLUSIONS: Our study demonstrates that while patients may wish for reassurance for a variety of reasons, they do not often request reassurance directly, even in the context of a chronic, life-threatening illness. Future studies could examine the value of physicians' providing reassurance when appropriate, even if not requested, particularly among patients with depressive symptoms.

ATHEROSCLEROTIC RENAL ARTERY STENOSIS (ARAS): WHO SHOULD BE SCREENED AND BY WHOM?
Ralph DeBiasi[1]; Srinath Adusumalli[1]; Robert Schainfeld[2]; Michael R. Jaff[2]. [1]Massachusetts General Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. (Tracking ID #1635349)

BACKGROUND: The prevalence of hypertension (HTN) due to atherosclerotic renal artery stenosis (ARAS) is unknown and screening for ARAS remains challenging. Clinical clues suggestive of ARAS among patients with uncontrolled HTN are often used as indicators for diagnostic testing and possible subsequent revascularization. The incidence of ARAS is higher in patients with peripheral (PAD) or coronary artery disease (CAD) but little is known about the predictive value of other clues suggesting ARAS. It is believed that subspecialists are more accurate in predicting ARAS than generalists; however, this has never been studied. We assessed the predictive power of accepted clinical clues to diagnose ARAS using renal artery duplex ultrasonography (RADUS). We also determined whether generalists or subspecialists had a higher diagnostic yield when screening for ARAS.
METHODS: We retrospectively identified 207 patients referred to a quaternary medical center's (Massachusetts General Hospital) accredited vascular diagnostic laboratory from 2011 to 2012 for RADUS testing for ARAS. We excluded patients with known ARAS, renal artery fibromuscular dysplasia, or prior renal revascularization. Thirty-two patients had ARAS while 175 patients did not. Using an internal informatics tool we reviewed records to determine age, gender, smoking status, blood pressure, serum creatinine, multivessel CAD, PAD, abdominal aortic aneurysm (AAA), diabetes mellitus, hyperlipidemia, and history of myocardial infarction or cerebrovascular accident. Additionally, we identified the specialty of the ordering provider. We performed statistical comparisons with the SAS platform (SAS Institute, Cary, NC) utilizing Chi-square, Fisher's exact and Wilcoxon signed-rank tests. A multivariate stepwise logistic regression model identified characteristics predictive of ARAS.
RESULTS: The only two predictors of ARAS were multivessel CAD (OR 2.8, p=0.01, 95 % CI 1.3–6.2) and female gender (OR 2.5, p=0.02, 95 % CI 1.1–5.6). Traditional clinical clues for ARAS screening including severe HTN (>160/90 mmHg), use of three or more anti-hypertensive medications (one being a diuretic), AAA, and PAD were not associated with ARAS. As compared to internists, subspecialists (including vascular specialists, cardiologists, and nephrologists) did not identify a greater percentage of patients with ARAS. Cardiologists were much more likely than internists or other subspecialists to screen patients with known multivessel CAD (p=.000003) but not those who were female (p=0.19).
CONCLUSIONS: Only multivessel CAD and female gender were predictive of ARAS in our cohort. Generalists demonstrated similar predictive accuracy as subspecialists when screening for ARAS even though cardiologists screened a much higher proportion of patients with multivessel CAD. These results suggest that more clinically useful clues to detect ARAS are needed.

ATTENDING USE OF THE ELECTRONIC HEALTH RECORD AND IMPLICATIONS FOR HOUSESTAFF SUPERVISION: PRELIMINARY RESULTS FROM A MIXED METHODS STUDY
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BACKGROUND: With current health information technology, the electronic health record (EHR) is accessible to review clinical information from remote locations. Though patterns of remote EHR access by residents have been described, little information exists regarding usage by attending physicians. We hypothesized that the EHR may be a novel tool already in use for housestaff oversight. We aimed to assess how attending physicians are using the EHR remotely, and how they may use it to provide supervision to trainees.
METHODS: Attendings on the general medicine teaching service for 2–4 weeks at a single institution from January to November 2012 were

contacted for participation. Participants were consented and privately interviewed and surveyed regarding use of EHR. Descriptive statistics were obtained for preliminary analysis. Interview transcripts were reviewed in anticipation of qualitative analysis to follow.

RESULTS: Response rate was 83 % (59/71). 97 % of attendings used EHR from home. Over 70 % of attendings spent at least 60–90 min daily using EHR in total, and at least 30–60 min using it remotely. EHR was most commonly accessed remotely for signing notes (88 %), monitoring vital signs and test results (83 %), reviewing consultant notes (76 %), and reviewing past history (59 %). With respect to clinical oversight involving EHR, 93 % used EHR to confirm clinical information received by housestaff, and 54 % reported this frequently (i.e., at least 3 times per week). 89 % had discovered information upon personal review of EHR that housestaff had not relayed adequately, with 33 % noting this frequently. With respect to actions taken due to EHR oversight, 93 % reported changes in management as a result of these discoveries, with 20 % noting this frequently. Nearly all attendings reported management changes the following day due to viewing EHR from home (52 % frequently), and 54 % had management changes at the time of reviewing EHR from home via immediate communication to housestaff (13 % frequently). Preliminary qualitative analysis revealed several major themes regarding attending use of the EHR for housestaff supervision that were closely aligned with ACGME competencies and milestones. These themes included patient care (EHR use as a safety net check, verification of information received by trainees, use when there is need for urgent intervention), medical knowledge (trainee utilization of appropriate tests, prioritization of problems in assessment and plans), intrapersonal communication (documentation timeliness and accuracy) and professionalism (transparency, respect for resident autonomy, trust in team and assessment of skill level).

CONCLUSIONS: Attendings commonly access the EHR remotely, and report a high frequency of electronic oversight supervision activities, including confirmation of clinical data. Discovery of information not adequately relayed by housestaff often occurs, as do attending-driven changes in management as a result of these discoveries. It will be important to understand implications of this practice for housestaff autonomy and attending provision of supervision, and future qualitative work will more closely examine motivating factors behind attending EHR use. Furthermore, this attending practice of "electronic observation" may be an untapped resource for more useful and meaningful milestones-based evaluation of trainee patient care skills (PC-C1, C2, C3), medical knowledge (MK-B1, B2), intrapersonal communication (ICS-F1, F2) and professionalism (P-A1, F3).

ATTENDING AND INTERN EVALUATIONS OF RESIDENTS Cynthia Kay[1]; Michael Frank[1]; Jeffrey L. Jackson[1,2]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]Zablocki VAMC, Milwaukee, WI. (Tracking ID #1625536)

BACKGROUND: Residents are evaluated in medicine residencies by attendings using questions developed by the ACGME. Many programs also evaluate residents using ratings by interns. We sought to answer several questions: 1) the factor structure of attending and intern evaluations, 2) the correlation between evaluations and ABIM certifying exam scores, 3) whether interns and attendings agreed on resident evaluations and value the same characteristics.

METHODS: We included internal medicine residents at the Medical College of Wisconsin between 2004 and 2012. Attending evaluations assessed residents on 6 ACGME domains (patient care, medical knowledge, interpersonal communication, professionalism, practice-based learning and improvement, systems based practice). Intern evaluations rated residents using 12 questions, many modified from ACGME attending questions. Both interns and attendings provided an "overall" rating of residents. In addition, we had ABIM certifying examination scores for most residents. Analyses included principal component factor and regression analysis, adjusted for clustering on resident.

RESULTS: There were 232 residents who had 6345 attending and 6817 intern evaluations. Both attending and intern evaluations were consistent (Cronbach's α=0.96 for both). The correlation between all questions were high for questions asked of attendings (r=0.69–0.86) and interns (r=0.56–0.86), but there was little correlation between intern and attending ratings (r=0.09–0.20), even when of the same construct (medical knowledge: r=0.11). Both intern and attending evaluations had a single factor solution. Aspects Interns valued included being supportive (β=0.22, 95 % CI: 0.14–0.31), explaining decisions (β=0.28, 95 % CI: 0.17–0.40), being organized (β=0.23, 95 % CI: 0.14–0.33), enthusiasm (β=0.23, 95 % CI: 0.14–0.33) and medical knowledge (β=0.18, 95 % CI: 0.17–0.29). Attendings valued all the ACGME domains, but resident knowledge (β=0.20, 95%CI: 0.17–0.22) and interviewing skills (β=0.23, 95 % CI: 0.19–0.25), were the two most important variables. Of all questions asked of interns and attendings, no intern questions and only one attending question (medical knowledge) was associated with performance on the ABIM examination (β=9.6, 95 % CI: 4.9–14.4), but attending ratings of resident medical knowledge only explained 2 % of the variance in ABIM scores.

CONCLUSIONS: Interns and attendings value different characteristics in residents and had low agreement, even on common questions such as resident medical knowledge. While the ACGME form evaluates residents on multiple domains, attending evaluations suggest they are only evaluating residents on a single construct. this suggests that attendings either don't understand or are not assessing residents on the multiple ACGME domains. Only medical knowledge ratings by attendings correlated with resident performance on the ABIM certifying examination, though it was a very poor predictor. This suggests that neither attending nor intern evaluations can help program directors predict residents at risk of failing their boards.

Factor Analysis

Variable Factor 1 Factor 2

Attending Evaluations

Interviewing PE Knowledge PBL Communication Professionalism SBP Overall 0.05 0.03 0.04 0.06 0.08 0.08 0.05 0.06 0.91 0.89 0.88 0.90 0.85 0.82 0.88 0.95

Intern Evaluations

Organized Enthusiastic Involve Interns Knowledge Describe procedures Explain decisions Emphasized concepts Communication Feedback Approachable Supportive Overall 0.81 0.86 0.82 0.82 0.84 0.91 0.86 0.85 0.81 0.86 0.85 0.91 0.10 0.07 0.03 0.11 0.05 0.08 0.04 0.02 0.03 0.05 0.03 0.07

ATTITUDES AND BELIEFS TOWARDS EVIDENCE BASED MEDICINE IN HEALTH Marilyn M. Schapira[1]; Eric Oh[2]; Diana Imbert[1]; Elena Byhoff[1]. [1]University of Pennsylvania, Philadelphia, PA; [2]Swarthmore College, Swarthmore, PA. (Tracking ID #1639755)

BACKGROUND: Significant resources in the United States and other countries are being directed to comparative effectiveness research. Medical care decisions arising from evidence based medicine involve input from policy makers, clinicians, and patients. The degree to which the methods and results of scientific studies in health are of interest to patients is not known. The objectives of this study are to describe patient attitudes and beliefs towards evidence based medicine in health.

METHODS: A focus group study was conducted. Participants were recruited from a primary care population in the urban community of West Philadelphia. Purposeful sampling was used to recruit a population that was diverse in race and education. A focus group guide was developed to explore participant attitudes towards science and interest in and value placed on scientific evidence in health. Sessions were audio-recorded, transcribed verbatim, and entered into NVivo10 software for analysis. Transcripts were coded by two independent coders with agreement determined using the Kappa statistic and % agreement. A thematic analysis was undertaken and a theoretical framework developed to describe the relationships and insights gained in the study.

RESULTS: Four focus groups were conducted with a total of 31 participants. Study subjects were diverse in race (71 % African-American, 23 % White, and 3 % Asian), educational background (48 % with only a high school level education) and gender (61 % female). Age ranged from

30 to 68 years. Subjects described a wide range of attitudes towards science and knowledge about the scientific process. The perceived value of scientific studies in health varied according to the medical topic addressed by the study (screening, prevention, or treatment studies), personal relevance of the condition, the organization designing and funding the study, and source of information. Some participants expressed interest in details regarding methods and results of scientific studies while others wanted only general information. Four factors were found to inform attitudes towards scientific studies in health; 1) education and scientific literacy, 2) trust in the medical care system and medical research, 3) cultural and family values, and 4) medical conditions of self and significant others. A theoretical framework emerged in which attitudes regarding evidence based medicine were defined by the following factors; 1) perceived importance of knowledge regarding scientific studies in health, 2) interest in details regarding the methods and results of scientific studies, and 3) perceived value of information about scientific studies from trusted sources.

CONCLUSIONS: The study reports a wide range of attitudes and beliefs regarding scientific studies in health. Attitudes and beliefs were informed by individual factors including scientific literacy, education, culture and family values, and personal health experiences. A segment of the study population expressed a strong interest in detailed information regarding methods and findings of scientific studies in health. These findings have policy implications. Efforts are needed to effectively communicate comparative effectiveness research findings to patient populations who desire and value this information. Communication strategies may include identification of trusted sources and tailoring information to levels of scientific literacy.

AVOIDANCE AND RESILIENCE IN THE MEDICAL ENCOUNTER AMONG PERSONS WHO STUTTER Hector R. Perez[1]; Joanna L. Starrels[2]. [1]Montefiore Medical Center, Bronx, NY; [2]Albert Einstein College of Medicine and Montefiore Medical Center, Bronx, NY. (Tracking ID #1638929)

BACKGROUND: Among persons who stutter, concealment behavior, including fear and avoidance of speaking, can hinder effective communication in various aspects of life. Effective communication between patients and their medical providers is essential to timely and accurate diagnoses, and optimal health outcomes. However, previous studies have not described the experiences of persons who stutter when communicating with their medical providers. We sought to understand how persons who stutter engage with their medical doctors by eliciting their experiences, beliefs, and attitudes about the medical encounter.

METHODS: For this exploratory study using focus groups and basic survey methods, we recruited a convenience sample of adults, 18 years or older, who attended a National Stuttering Association conference and self-identified as stutterers. All participants completed questionnaires about sociodemographic characteristics; self-reported health status; and perceptions of their stuttering along a ten-point Likert Scale, using the 13 item St. Louis Inventory of Life Perspectives and Stuttering (SLILPS), a tool used for measuring the effect of stuttering on one's life. Three focus groups of 4–7 participants were stratified by age to facilitate discussion that reflected shared medical experiences and overall effects of stuttering on health. Transcripts from the focus groups were coded and analyzed using a Grounded Theory approach.

RESULTS: Of the 16 participants, most were below 50 (n=11, 69 %) and employed (n=14, 88 %). Most rated their health status as excellent or very good (n=12, 75 %) and had one person they considered as their primary care doctor (n=12, 75 %). Most participants rated stuttering as a minor concern in their lives (mean score ≤4 on the SLILPS; n=12, 75 %). During focus groups, the majority of participants expressed that they did not have major difficulty communicating with their doctors. Grounded theory analysis revealed several themes, including the importance of continuity of care on strengthening the patient-doctor relationship, the challenges of discussing stuttering with medical doctors, and the impact of subtle avoidance behaviors on making appointments and discussing medical issues, especially amongst those with more severe SLILPS scores. A prominent theme among participants who reported little or no negative impact of their stuttering on their health was "resilience," which manifested as assertiveness in assuring they were properly heard by the medical provider. For example, one participant advised: "You should be strong enough to ask those pertinent questions…I think you have to speak up for yourself."

CONCLUSIONS: In this sample, communication difficulties shared by most participants were largely outside the medical office, but closer analysis revealed competing themes of avoidance and resilience during the medical encounter. Because this is the first study of stuttering in the medical encounter, a convenience sample was appropriate, but our sample of conference attendees who opted to participate might be more resilient than the general population of people who stutter. The true effects of avoidance and resilience during the medical encounter should be investigated further by testing these hypotheses in a more diverse population of persons who stutter.

BARRIERS AND FACILITATORS OF CONTRACEPTIVE COUNSELING BY GENERAL INTERNAL MEDICINE FACULTY AND INTERNAL MEDICINE RESIDENTS Rachael R. Dirksen[1]; Benjamin Shulman[3]; Stephanie B. Teal[4]; Amy G. Huebschmann[2]. [1]University of Iowa Hospitals and Clinics, Iowa City, IA; [2]Univeristy of Colorado School of Medicine, Aurora, CO; [3]Colorado School of Public Health, Aurora, CO; [4]University of Colorado School of Medicine, Aurora, CO. (Tracking ID #1630844)

BACKGROUND: Almost half of US pregnancies are unplanned, resulting in many unintended births and over a million induced abortions each year. Contraceptive counseling (CC) is an effective tool to increase patients' use of contraception and thus decrease the rates of unplanned pregnancies and abortions. Internists are increasingly caring for reproductive age women and contraceptive counseling is a core competency of preventative care in this population, particularly when teratogenic medications are prescribed (e.g., HMG-coA reductase inhibitors and angiotensin-converting enzyme inhibitors). This study's objectives were: 1) evaluate the frequency of contraceptive counseling provided to reproductive age women during a prevention-focused visit by internal medicine faculty and resident providers, 2) identify factors affecting the frequency of CC.

METHODS: University of Colorado internal medicine residents and affiliated outpatient internist faculty working in seven separate metropolitan practice settings were invited to complete a 20 question online survey on demographics and CC-related factors. We asked providers to report the frequency of CC during an "annual physical" for women 15–45 years of age on a 4-point Likert scale with verbal anchors: "rarely ≤ 20 %", "sometimes 21–49 %", "often 50–79 %", "routinely ≥80 %". We also assessed possible facilitators of CC (e.g., high self-efficacy, women's health educational exposures, provider gender) and possible CC barriers (e.g., low frequency of sexual history, low perceived importance).

RESULTS: Our survey response rate was 61 % and responders were demographically similar to nonresponders. Although greater than 95 % of residents and faculty respondents agreed that CC is important, only 33 % of faculty and 19 % of residents reported that they provide CC routinely (≥80 % of the time) to reproductive age women during a prevention-focused visit. Providing CC routinely was strongly associated with taking a sexual history ≥ 50 % of the time (OR=11.6 (3.3 to 39.9)), high self-efficacy to provide CC (OR=6.5 (1.5 to 29.0)), and female provider gender (OR=4.3 (1.9 to 9.8)), all reported as unadjusted odds ratio (95 % CI). Over 80 % of residents and over 60 % of faculty reported they would provide CC more often if they had more knowledge of contraceptive methods. However, educational exposures such as women's health electives during residency were not significantly associated with perceived adequate knowledge regarding contraceptive methods.

CONCLUSIONS: Even considering a "best-case scenario" of prevention-focused visits with reproductive age women, a minority of faculty and resident providers reported routinely providing CC. Obtaining a sexual history and high provider self-efficacy were strongly associated with

providing CC and are likely predictors of provider CC behavior. We need to design and test interventions to increase contraceptive counseling among internists to reduce unplanned pregnancies. Such interventions should include elements to increase provider CC knowledge and self-efficacy, and should also target health care system intake processes and provider preferences to ensure that a sexual history is taken routinely.

BARRIERS AND FACILITATORS TO GOAL-SETTING IN OVERWEIGHT AND OBESE LATINA PRIMARY CARE PATIENTS: A QUALITATIVE STUDY Melanie Jay[1]; Damara N. Gutnick[1]; Lauren Gerchow[1]; Stella Savarimuthu[1]; Maria Barbara Tagliaferro[1]; Adina Kalet[1]; Allison Squires[2]. 1New York University School of Medicine, New York, NY; [2]New York University College of Nursing, New York, NY. (Tracking ID #1641270)

BACKGROUND: The obesity epidemic disproportionately affects Latina women. To address this disparity, primary care providers can employ goal-setting, a central component of the chronic care model and 5As counseling framework and a tool often used for health promotion in primary care. However, little is known about goal-setting for Latina patients around lifestyle changes, barriers to goal-setting, and the types of goals that are most likely to be achieved. The purpose of this qualitative study was to explore overweight and obese Latina patients' culturally specific barriers and facilitators to healthy eating and physical activity and their use and understanding of goal-setting to promote lifestyle behavior change.
METHODS: We recruited women from the Caribbean, Central America, and Mexico in the waiting room of an inner city, New York City public primary care clinic. Women were invited to participate in focus groups scheduled according to their region of origin and conducted in their preferred language. Semi-structured interviews were digitally recorded, transcribed verbatim, and translated into English. To minimize potential bias, the translation was first validated by a single native speaker. Axial coding was then completed by 2 independent investigators in English and by an independent native speaker in Spanish. The research team met regularly during an eight-week period to conduct member checks on the coding process, harmonize language use and correct translation errors, and identify themes. ATLAS t.i. was used to facilitate coding and thematic analysis.
RESULTS: Three Spanish-language groups (1 Caribbean, 1 Mexican/Central American, and 1 heterogeneous) and 1 English-language Caribbean group were conducted. Focus groups had an average of 6 participants (25 total). The mean age was 59 (SD=14); mean BMI was 30 (SD=4.6). The term "goal" resonated with participants who described several short-term and long-term lifestyle and aspirational goals. We identified 4 themes to describe unique barriers and facilitators to achieving lifestyle goals: Migration Experience, Family Dynamics, Social Support, and Interactions with Healthcare Providers. Limited education and English proficiency were common barriers to attaining goals. Time spent in the US also affected responses. While participants acknowledged that traditional foods were often unhealthy, they perceived that the food in the United States had chemicals and caused more weight gain than food from their country of origin. Healthier, "organic," food in the US was prohibitively expensive. Latina women also described multiple familial responsibilities and found it difficult to balance personal goals and family needs. They sought out and relied on support from friends, family, and the healthcare system to maintain motivation. They also valued and desired more advice from healthcare providers, but wanted more group-based, obesity-related activities.
CONCLUSIONS: This study supports the use of goal setting to facilitate treatment and prevention of obesity in Latina women while providing insights for healthcare providers utilizing goal setting in this population. Latina women use goal-setting in their daily lives but encounter unique barriers and facilitators to achieving lifestyle goals. The generalizability of the findings should be tested against other Latin American countries, SES groups, and primary care clinics in different geographic locations.

BARRIERS TO HIV SCREENING IN A COMMUNITY HEALTH CENTER David Feldstein[1]; James M. Sosman[1]; Marge Sutinen[1]; Mandy Kastner[3]; Pamela Wilson[2]. [1]University of Wisconsin School of Medicine and Public Health, Madison, WI; [2]Sixteenth Street Community Health Center, Milwaukee, WI; [3]AIDS Resource Center of Wisconsin, Milwaukee, WI. (Tracking ID #1635067)

BACKGROUND: Patients not aware of their HIV positive status are more likely to transmit HIV and develop HIV related morbidities. Early detection is important to prevent transmission and morbidity. In 2006 the CDC recommended routine HIV screening in all patients ages 13–64 regardless of risk. However, routine screening has not been readily adopted and there is little data published about actual screening rates. Our goal was to determine HIV screening rates and barriers to screening in an urban, Midwestern Community Health Center.
METHODS: The Systems Engineering Initiative for Patient Safety (SEIPS) model was used as a framework for exploring barriers. The SEIPS model is comprised of five components that make up the clinic worksystem: technology and tools; environment; people; organization; tasks. These components lead to processes of care and ultimately outcomes. We used a mixed methods approach with quantitative surveys and semi-structured interviews. Current HIV screening rates were determined from electronic health record (EHR) data. Unique non-pregnant patients age 13–64 with visits during 2010 were included. Patients were considered screened if they had an HIV test recorded during 2010. Providers completed questionnaires of attitudes toward HIV testing, knowledge of CDC recommendations and barriers to HIV screening. Attitude questions used a 7 point Likert scale (1 = strongly disagree, 7 = strongly agree). Semi-structured interviews of providers and medical assistants (MAs) were completed by one of the authors. The interviews were recorded and themes were developed by a single author using content analysis.
RESULTS: 12,615 unique non-pregnant patients age 13–64 visited the clinic. 2488 (20 %) of the patients received an HIV test with 22 % of women and 16 % of men tested. Screening rates varied by age. Questionnaires were completed by 34 providers. Providers felt that routine HIV testing is important (mean 6.4, 7 = strongly agree) and that offering testing to their patients would improve the health of their community (mean 6.3). 68 % of providers were aware of the CDC guidelines and 97 % knew that patients age 13–64 should be tested regardless of risk. Common described barriers were patient reluctance or refusal (65 %), other priorities at time of visit (56 %), lack of time (35 %) and lack of training on offering HIV screening (29 %). Five providers and 12 MAs were interviewed. Common provider themes included: screening at all annual visits; never having a patient test positive; not screening during acute visits; not consistently using the EHR's preventative health reminders. Common themes from the MA interviews included: varying roles of MAs across departments; inconsistent use of EHR health reminders; positive attitudes toward routine screening of patients; comfort with asking patients about HIV screening.
CONCLUSIONS: In a Community Health Center with excellent attitudes toward HIV screening and where providers felt they were screening regularly actual screening rates were still relatively low. This demonstrates the importance of a mixed methods approach and a framework for determining barriers to HIV screening across the multiple area of the clinic worksystem. The next step is developing interventions to affect the various aspects of the worksystem and measure changes in HIV screening rates. Interventions like audit and feedback may be particularly useful to demonstrate to providers actual screening rates. These methods should be generalizable to other Community Health Centers.

BEGINNING WITH THE END IN MIND: A QUALITATIVE ANALYSIS OF PERSONAL RETIREMENT SPEECHES WRITTEN BY MEDICAL INTERNS Eunice Yu; Scott Wright. Johs Hopkins Bayview Medical Center, Baltimore, MD. (Tracking ID #1633549)

BACKGROUND: Beginning with the end in mind is a time honored strategy for achieving success and it is the second principle covered in

Covey's acclaimed book The 7 Habits of Highly Effective People. Medical training is fast paced and there may not be ample time for planning and goal setting. To facilitate reflection on their futures, we invited new interns to write and share comments that they hope might be used to introduce them at their retirement luncheon.

METHODS: Groups of 6–7 interns participated in a two-week curriculum during the first third of the internship year that focused on professional development. This optional exercise was introduced on day 1 of the rotation. The analogy of writing one's own eulogy was shared. On the final day of the rotation, an hour was set aside for interns to read what they had composed to the group. Qualitative methods were used to analyze the data. The written introductions were independently coded by two investigators. Content analysis identified several themes related to aspirations of these new doctors who were looking ahead.

RESULTS: Eighteen of 20 interns in our internal medicine residency program participated in the exercise (one missed the rotation due to illness, one declined to participate). Thirteen (65 %) of these new doctors are women. The average year of the retirement celebrations was 40 years in the future and the individuals making introductory comments about the retirees varied widely - spouses, children, mentees, and both physician and nurse staff colleagues. Thematic domains related to: (i) virtuous personal qualities such as integrity, dedication, and compassion; (ii) academic successes including advancing science, clinical excellence, and accomplishments as teacher or mentor, (iii) making the world a better place and giving back through actions like advocating for vulnerable populations and improving systems of care; and (iv) valuing relationships and realizing work-life balance. Every single intern expressed a deep sense of appreciation for having had a fulfilling career in the profession of medicine. This representative quote nicely captures the sentiments expressed by many: "Dr. X remains a role model for each of us, an astute physician, a meticulous researcher, an outstanding teacher and a wise mentor. He was a keen observer, and has always had the vision to think ahead, constantly improving the medical system through simple yet innovative ways… The cancer screening model established by Dr. X …has led to a substantial decline in cancer related mortality in these countries over the last few decades. Despite his numerous engagements as a Professor of Oncology and Global Health…he was a great friend, an inexhaustible resource of information and a raconteur par excellence…I join his admiring students and colleagues in thanking him…" In debriefing, interns were glad to have participated in this exercise and were inspired by learning about the ambitions of their colleagues.

CONCLUSIONS: Encouraging new doctors to imagine what they hope to accomplish at the beginning of their careers can be a powerful experience. Such an exercise has several potential benefits: 1) clarity about goals, 2) reinforced commitment to these goals, and 3) opportunity for teachers to make connections with other mentors who may be able facilitate the initial steps on the long path toward realization of their dreams.

BEHAVIORS OF PREGNANT WOMEN WHO ACHIEVE AND EXCEED RECOMMENDED GESTATIONAL WEIGHT GAIN Cynthia H. Chuang[1,2]; Jennifer Kraschnewski[1,2]; Michael Stengel[1]; Sandra Hwang[3]; Diana Velott[2]; Kristen Kjerulff[2]. [1]Penn State College of Medicine, Hershey, PA; [2]Penn State College of Medicine, Hershey, PA; [3]Cornell University, Ithaca, NY. (Tracking ID #1643104)

BACKGROUND: Excessive gestational weight gain (GWG) results in increased risk for pregnancy-related complications, postpartum weight retention, and long-term obesity. The majority of U.S. pregnant women gain more than the Institute of Medicine recommended GWG guidelines (25–35 lb, 15–20 lb, and 11–20 lb for pre-pregnancy normal weight, overweight, and obese women, respectively). Little is known about the specific behavioral habits of pregnant women who achieve vs. exceed GWG recommendations. Our objective was to identify habits of overweight and obese women who achieve and exceed current GWG recommendations.

METHODS: In 2011, we conducted semi-structured interviews with 29 women following the birth of their first child. Participants were overweight or obese prior to pregnancy. Using principles of positive deviance—an inductive approach of identifying the effective practices of people who have succeeded at a task that many people fail—we describe the diet, physical activity, and self-monitoring habits of women who achieve and exceed GWG recommendations.

RESULTS: Of the 29 women interviewed, 14 women were overweight and 15 were obese before pregnancy. Eighteen (62 %) exceeded the GWG recommendations. Women achieving appropriate GWG reported deliberate planning to avoid gaining too much weight with only modest increases in caloric intake (if at all) and careful meal and snack planning ("I put more time and effort in my eating choices, it was definitely a conscious decision.") Women with excessive GWG described liberalized eating ("I had the mindset that I was eating for two, so I could eat double. I allowed myself to eat way more than I ever would had I not been pregnant, thinking I will show quicker, I can eat whatever I want.") Nearly all women with excessive GWG reported exercising less during pregnancy (or remaining sedentary), while women with appropriate GWG largely increased or maintained pre-pregnancy physical activity levels. About half of the sample reported self-monitoring weight gain during pregnancy, but women achieving recommended GWG tied their weight monitoring with GWG goals consistent with recommended guidelines.

CONCLUSIONS: Women who were overweight or obese prior to pregnancy and achieved appropriate GWG reported deliberately planned diet and physical activity habits, in addition to appropriate GWG goals during pregnancy. Women exceeding recommended GWG described "eating-for-two," were sedentary, and either had no goals for GWG or intended to gain more than recommended.

BLIND SPOT: ASSESSING AND CORRECTING VISION AMONG HOSPITALIZED PATIENTS-AN UNDER-RECOGNIZED RISK FACTOR FOR SENIORS Valerie G. Press[1]; Madeleine I. Shapiro[2]; Alisha S. Ranadive[2]; Kristin L. Constantine[1]; Ainoa M. Mayo[1]; Gavin W. Hougham[1]; Seenu M. Hariprasad[3]; David Meltzer[1]; Vineet Arora[1]. [1]University of Chicago Medical Center, Chicago, IL; [2]University of Chicago, Chicago, IL; [3]University of Chicago, Chicago, IL. (Tracking ID #1639455)

BACKGROUND: Hospitalized seniors are especially vulnerable to the many well-known hazards of hospitalizations, including delirium and falls; impaired vision increases the risk for these hazards. However, the prevalence of poor vision among hospitalized patients, particularly for older inpatients, has not been characterized. Therefore, our objective was to quantify the prevalence of poor vision among hospitalized patients and to test an innovative, low cost bedside approach to improve vision among hospitalized inpatients.

METHODS: General medicine inpatients were enrolled from an ongoing study of resource allocation and quality of care at two academic medical centers beginning in June 2011. Eligible patients were asked if they wear corrective lenses and were instructed to use them if available prior to vision screening (Snellen Eye Chart). Sufficient vision was defined 20/50 or better in at least one eye. Beginning June 2012, eligible participants at one institution with insufficient vision (i.e. did not have bilateral eye disease, not already wearing lenses) were fitted with readers titrated from +2 to +3.25 and retested to determine the proportion of participants whose vision could be corrected at bedside.

RESULTS: Vision screening was completed in 1139 participants, of whom 79 % were African-American and 56 % were female. The mean age was 56 years. One third of participants had insufficient vision (33 %, 372/1139). More than 1/3 of the cases of insufficient vision were due to participants not having their glasses in the hospital (38 %; 141/372); the rest were due to inadequate baseline corrective lenses (31 %, 114/372) or not having been prescribed corrective lenses (29 %, 106/372). As of June 2012, 118 participants were screened for eligibility for testing with readers (insufficient vision, not wearing corrective lenses, absence of bilateral eye disease). Compared to participants with sufficient vision, participants with insufficient vision were more likely to be 65 or older ($p=0.02$), to have cataracts ($p=0.01$), to have last seen an eye doctor two or more years ago

(p=0.01), and to feel they needed to see an eye doctor soon (p=0.02). Forty-five participants in this cohort had insufficient vision; of these 28 remained eligible and 26 participants consented. Overall, 75 % (21/28) of eligible participants' vision was corrected to 20/40 or better in at least one eye using a non-prescription readers. Using the lowest calibration readers (+2), 14 (54 %) participants corrected, and an additional 7 participants corrected using the next-highest calibration (+2.25). Nearly 1/3 of participants in this cohort were ≥65 (7/26); older participants were as likely as younger participants to correct their vision with readers.
CONCLUSIONS: Impaired vision appears to be an under-recognized risk factor for hospitalized patients, particularly older patients. Our results to date indicate, however, that an simple, in-hospital screen and low cost innovative intervention may be useful to improve hospital care. Further, by recognizing a missed opportunity to assess and potentially correct vision care needs, this approach may this approach may improve health and wellbeing of patients both in the hospital and after they return to their community.

BOSNIAN, IRAQI, AND SOMALI REFUGEE WOMEN SPEAK: A COMPARATIVE STUDY OF REFUGEE HEALTH BELIEFS ON PREVENTIVE HEALTH AND BREAST CANCER SCREENING Sanja Percac-Lima[1,3]; Barbara Bond[2]; Altaf Saadi[3]. [1]Massachussetts General Hospital, Chelsea, MA; [2]Massachusetts General Hospital, Boston, MA; [3]Harvard Medical School, Boston, MA. (Tracking ID #1638329)

BACKGROUND: Despite evidence that reductions in breast and cervical cancer morbidity and mortality can be achieved through early detection and treatment, patients continue to present with advanced cancer without prior screening. This is particularly true for thousands of recent immigrants and refugees to the United States. The migration experience may have varied impacts on health practices and attitudes of refugees, while the impact of prior trauma and current resettlement makes these among the most vulnerable members in our society. To understand documented disparities in use of preventive cancer care, we studied refugee women receiving care in an urban community health center which delivers state funded health assessments for refugees. The objective of the study was to assess their perspectives on preventive care and perceived barriers to breast cancer screening.
METHODS: The three groups selected for study (Somali, Iraqi and Serbo-Croatian/Bosnian) belong to refugee communities whose emigration to the United States came as a result of extremely violent conditions of war in their countries of origin. Women included in the study were a convenience sample of 57 women, 30–74 years of age, self-identified as speaking Serbo-Croatian (Bosnian), Somali, or Arabic, receiving primary care at the health center. In-depth, semi-structured, one-on-one interviews were conducted by native language speakers. Interviews were transcribed, translated and coded according to best practices for content and thematic analysis in development of grounded theory. We compared the responses of the three refugee groups of women studied, as part of a larger study of their participation in health screening patient navigation programs.
RESULTS: Of 57 women included in the study 20 spoke Arabic, 17 Somali and 20 Serbo-Croatian. Interviews were conducted from 2010 to 2011. Similarities included (1) personal and psychosocial barriers to care such as fear of pain, fear of diagnosis, work or childcare commitments, and culturally mediated beliefs that define illness as symptomatic; (2) facilitative factors to care such as appreciation of community-based outreach efforts, appointment reminders and personal contact and education from health care providers; (3) comparisons of medical infrastructures between their home countries and the United States, the former which were deemed to have fewer resources; and (4) an overall positive attitude toward medicine and the healthcare profession. On the other hand, the refugee women had differing health beliefs and experiences pertaining to (1) medical exposure to doctors in their home countries and the centrality of war in their experience of health systems; (2) their understanding of preventive health; (3) the use of herbal and traditional medicines; and (4) knowledge of mammography. Notably, there was a trend toward heightened awareness of preventive health practices with increased time in the US.
CONCLUSIONS: Knowledge of both similarities and differences in health beliefs, health information and behavior are crucial to enable design and delivery of individualized, culturally appropriate health care services to these varied refugee populations.

BREAST CANCER PATIENTS' BELIEFS AND ADHERENCE TO HORMONAL THERAPY Jenny J. Lin; Jennifer Chuang; Liliana Serrano; Nina A. Bickell; Juan P. Wisnivesky. Mount Sinai, New York, NY. (Tracking ID #1642405)

BACKGROUND: In women with estrogen receptor-positive (ER+) breast cancer, hormonal therapy (HT) has been shown to reduce breast cancer recurrence and mortality rates. However, studies have demonstrated that early discontinuation and non-adherence to HT are common. Negative beliefs about medications and bothersome side effects may increase medication non-adherence, whereas positive patient-physician interactions may improve adherence. Using the framework of the Self-regulation Model, we conducted a survey of women with ER+ breast cancer who were recommended to take HT, to assess if medication beliefs were associated with patient reports about side effects and medication adherence.
METHODS: Women with ER+ breast cancer currently on HT were invited to participate in a survey after an outpatient visit with either their medical oncologist or breast surgeon. Questions assessed women's reasons for taking HT, side effects, and patient-physician communication. Medication adherence was assessed with the 4-item Morisky medication adherence scale; non-adherence was defined as a positive answer to >2 questions. Beliefs about HT were assessed using the Beliefs about Medicines Questionnaire (BMQ), which consists of two 5-item scales that assess patients' beliefs about the necessity of taking medication and their concerns about possible adverse effects of medication. Medication beliefs, adherence, side effects, and discussion about side effects with medical providers were compared using t tests or Fisher's exact test.
RESULTS: 33 women have completed the survey thus far. The mean age of respondents was 59 years (34–82 years) and the mean duration of taking HT were 23 months, respectively. Twenty-four women (73 %) reported having side effects from HT, although only two-thirds of these 24 women reported they had discussed side effects with their medical provider. Nineteen (58 %) were classified as non-adherent by self-report via the Morisky medication adherence scale. Women who had greater concerns about HT (higher scores on the BMQ-concerns scale) were more likely to report side effects (p=0.01). Presence of side effects and discussing side effects with medical providers did not differ by age, race/ethnicity, education level or reason for taking HT, but women who had been on HT longer were less likely to discuss side effects with their medical providers (p=0.03). However, medication non-adherence was not associated with report of side effects, discussion with medical providers or medication beliefs (p>0.05 for all comparisons).
CONCLUSIONS: Non-adherence with HT is prevalent but does not appear to be associated with presence of side effects, beliefs about medication or discussion of side effects with medical providers. Further research is needed to explore other reasons for HT non-adherence in breast cancer patients.

BREAST CANCER SCREENING BEFORE AND AFTER THE 2009 USPSTF GUIDELINE CHANGES James F. Wharam[1]; Fang Zhang[1]; Bruce E. Landon[2]; Claire Canning[1]; Steve Soumerai[1]; Dennis Ross-Degnan[1]. 1Harvard Medical School, Boston, MA; [2]Harvard Medical School, Boston, MA. (Tracking ID #1640358)

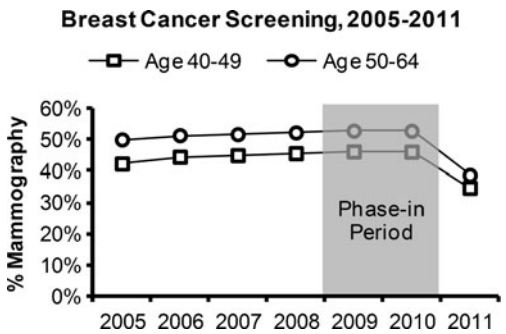
BACKGROUND: Major controversy surrounds the issue of appropriate breast cancer screening intervals for women over 40. Some authorities believe that overuse of mammography creates unacceptably high rates of false positive detection, anxiety, and morbidity. Prior to 2010, the United States Preventive Services Task Force (USPSTF) recommended screening

every 1–2 years for women 40 and older. New USPSTF guidelines published in December 2009 recommended no screening in women 40–49 and screening every 2 years among women 50–75. The impact of these recommendations in unknown

METHODS: We examined annual mammography rates from 2005 to 11 among women age 40–64. Our data source was administrative and claims data from a large US health plan with a total sample of 56 million members. We included women continuously enrolled for at least 11 months and our outcome was receipt of a yearly mammogram. For women whose enrollment spanned calendar years, we used their person time in a given calendar year to generate the denominator. We used a time-series display to examine annual breast cancer screening rates from 2005 to 11. We assigned 2005–9 as the baseline period and 2010–2011 as the policy change period. We used stepwise autoregressive forecasting to calculate the baseline trend and determine the expected rates in 2010–2011. We stratified results by age 40–49 and 50–64 and compared the 2011 predicted results to the observed values.

RESULTS: Subjects were from all 50 states and the mean annual denominator was 1.2 million women during 2005–11. In 2005, women from the West, Midwest, Northeast, and South represented 13.7, 28.9, 9.9, and 47.5 % of the sample, respectively; 78.2 % were white and 5.8 % were black. Women age 40–49 and 50–64 experienced upward trends in mammography rates from 2005 to 9 but a flattened trend and relative decline in 2010–2011 (Figure). Observed rates in 2011 for women age 40–49 and 50–64 were 48.5 % and 53.0 %, respectively, while projected rates were 51.6 % and 56.8 %. Women age 40–49 and 50–64 had 2011 screening rates 6.2 % and 6.8 % below expected, respectively.

CONCLUSIONS: Mammography rates climbed from 2005 to 2009 but flattened during 2010–2011 after publication of new UPSTF guidelines in late 2009. This resulted in 6–7 % relative reductions in breast cancer screening by 2011 among women age 40–49 and 50–64. Advocates of the USPSTF guidelines would consider the reductions in women age 40–49 appropriate or even too small, but longer-term studies should assess impacts on quality of life, mortality, and costs. Among women age 50–64, subsequent analyses should determine if the reductions we observed in 2010–2011 decrease recommended biennial screening rates.



BREASTCARE: A PRIMARY CARE CLINIC-BASED RCT TO INCREASE BREAST CANCER KNOWLEDGE AND DISCUSSION OF RISK AND LIFESTYLE BEHAVIORS Celia P. Kaplan1; Jennifer Livaudais-Toman[1]; Steven Gregorich[1]; Jeffrey A. Tice[1]; Karla Kerlikowske[1,2]; Rena Pasick[1]; Alice H. Chen[1,3]; Eliseo J. Perez-Stable[1]; Leah Karliner[1]. 1University of California San Francisco, San Francisco, CA; [2]Veterans Affairs Medical Center, San Francisco, CA; [3]San Francisco General Hospital, San Francisco, CA. (Tracking ID #1629493)

BACKGROUND: Despite the availability of breast cancer risk assessment tools and interventions for risk reduction, these tools are not well integrated into clinical practice. As a result, many women do not engage in a discussion of their breast cancer risk with their physician, which may lead to underuse of effective risk reduction interventions.

METHODS: We conducted a randomized controlled trial comparing usual care to a tablet-PC based breast cancer risk assessment and education intervention (BreastCARE) delivered in a primary care setting. We enrolled women aged 40–74 years with no personal breast cancer history prior to their scheduled primary care visits at two clinics (one academic medical center, one safety-net) between June 2011 and August 2012, and randomized them to Intervention or Usual Care (UC) arms, stratified by race/ethnicity. The Intervention group completed the BreastCARE intervention at the clinic just prior to their visit and women and physicians received tailored risk reports. The UC group completed a telephone-based risk assessment after their visit. We categorized women as high or average risk based on family history using the Referral Screening Tool (RST) or breast cancer risk factors using the Gail/Breast Cancer Surveillance Consortium (BCSC) models. We contacted all women for a follow-up telephone survey 1 week after risk assessment. We used generalized estimating equations to account for clustering by physician, and to estimate differences at follow-up between Intervention and UC groups in above average knowledge of breast cancer risk factors (cut-point based on mean knowledge score in sample), and discussion of breast cancer risk and lifestyle behaviors with physician.

RESULTS: A total of 1,278 women completed risk assessments and signed consent forms (596 Intervention and 665 UC) and 1,235 (97 %) completed follow-up interviews (580 Intervention and 655 UC). The mean sample age was 56 years (SD=9) with 35 % non-Latina White, 23 % Latina, 22 % African American, 18 % Asian/Pacific Islander and 2 % Native American/other. Demographic characteristics and breast cancer risk distributions were well-balanced between Intervention and UC groups. Nine percent of women qualified for high-risk referral based on RST score and 16 % qualified based on Gail/BCSC models. Compared to women receiving UC, those in the Intervention group reported greater knowledge of breast cancer risk factors (69 % vs. 55 %), and more discussion of breast cancer risk (41 % vs. 14 %), exercise (75 % vs. 61 %) and weight (67 % vs. 57 %). Discussion of risk was greatest among women at highest risk for breast cancer who received the intervention (51 % Intervention vs. 18 % UC). Multivariable analysis results are presented in Table 1.

CONCLUSIONS: Our primary care based intervention increased discussion of breast cancer risk and lifestyle behaviors with physicians and improved women's knowledge of breast cancer risk factors. Our findings support integration of health-related information technology in a clinic setting to enhance individualized risk assessment and promote patient-physician discussion, particularly for women at highest risk for breast cancer.

Table 1. Multivariable Analysis at Follow-up*

	Above average knowledge of breast cancer risk factors	Discussed breast cancer risk with physician	Discussed regular exercise with physician	Discussed weight with physician
	OR (95 % CI)	OR (95 % CI)	OR (95 % CI)	OR (95 % CI)
(ref = UC) Intervention group	1.78 (1.37–2.31)°	3.94 (2.90–5.37)°	1.95 (1.51–2.51)°	1.60 (1.26–2.02)°

*Analyses account for clustering of observations by physician and are adjusted for clinic site and objective breast cancer risk °$p<0.001$

BUILDING COST-CONSCIOUSNESS THROUGH COST TRANSPARENCY: IS THIS THE RIGHT APPROACH? THE CLINICIAN PERSPECTIVE L. E. Goldman[1]; Jenna Kruger[1]; Alice H. Chen[1]; Alex Rybkin[2]; Kiren Leeds[1]; Dominick Frosch[3,4]. 1University of California, San Francisco, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]University of California, Los Angeles, Los Angeles, CA; [4]Palo Alto Medical Foundation Research Institute, Palo Alto, CA. (Tracking ID #1642532)

BACKGROUND: The demand for radiologic imaging studies has increased dramatically, contributing to rising health care costs and exposing patients to radiation. Medicare and Medicaid reimbursement policies are moving towards global payments and capitation, increasing pressure on health systems relying on these payers to increase clinicians' cost-consciousness. One strategy to increase clinician cost-consciousness is greater cost transparency when clinicians order imaging studies. We sought to evaluate (1) clinician attitudes and practices toward considering cost information when ordering diagnostic imaging studies in an urban outpatient safety-net setting; and (2) clinician reactions to a planned intervention posting Medicare reimbursement information for imaging studies at the point of clinician electronic order entry.

METHODS: We conducted a qualitative study consisting of 9 focus groups among a diverse group of salaried clinicians representing 12 safety-net clinics using a common electronic order entry system (6 focus groups with primary care clinicians and 3 with subspecialty physicians in nephrology, pulmonary, and neurology, total *N*=44 clinicians). Focus group guides focused on clinician attitudes about how costs to patients and to society affect their practice, potential harms and benefits of posting Medicare reimbursement information at clinician electronic order entry for imaging studies (ultrasound, cat scan, and magnetic resonance imaging), and suggestions to improve the intervention. Focus groups were audio-recorded and transcribed. Two researchers (JK, LG) systematically coded the transcripts, and discussed differences to reach consensus using an inductive thematic analysis framework to identify emergent themes.
RESULTS: Clinician responses to incorporating cost in clinical decision-making varied widely. Some clinicians reported regular discussions with patients about costs (to patients and to society) while others were highly concerned about cost influencing individual patient care decisions. In general, clinicians believed that they only ordered clinically impactful tests due to resource constraints in the safety-net and lack of personal financial incentives to order imaging, yet most noted that the lack of patient co-pays in their practice limited their consideration of costs in clinical decisions. Several clinicians expressed ethical concerns with posting reimbursement information at the site of electronic order entry; they worried that it could lead to inappropriate rationing of care, and if viewed by patients, could exacerbate patient perceptions of receiving "second class" care. Many clinicians emphasized the limitations of an intervention focused on the costs of imaging tests without a global understanding of other health system costs. Clinicians recommended that cost-consciousness be promoted through system-wide education and peer-practice feedback rather than a point of service intervention, particularly in safety-net settings.
CONCLUSIONS: Initiatives to increase cost-consciousness in health care should incorporate an educational component relevant to the target audience and should monitor for potential unanticipated adverse consequences for patient care, particularly in safety-net settings where patients may be more vulnerable. System-wide education and peer-practice feedback may be more appropriate tools to building cost-consciousness among clinicians in the safety-net than cost transparency at the site of order entry.

BUILDING THE FOUNDATION FOR A PATIENT-CENTERED MEDICAL HOME IN A LARGE VA ACADEMIC MEDICAL CENTER Jane Forman[1]; Molly Harrod[1]; Claire H. Robinson[1]; Jessica Ott[1]; Ann Annis-Emeott[1,3]; Darcy Saffar[1]; Leo Greenstone[1,2]. 1VA Ann Arbor Healthcare System, Ann Arbor, MI; [2]University of Michigan, Ann Arbor, MI; [3]University of Michigan, Ann Arbor, MI. (Tracking ID #1642228)

BACKGROUND: The Department of Veterans Affairs (VA) has launched an initiative to transform primary care using the patient-centered medical home (PCMH) model, which features the following principles: care is patient-driven, team-based, continuous, comprehensive, coordinated, efficient and effective, with frequent communication among the health care team and with patients. It requires redesign of the system of care delivery (formation of small interdisciplinary teams called teamlets that work closely together to deliver care to a prescribed patient panel), as well as practice redesign involving changes in roles and work processes. The current literature on PCMH implementation has focused largely on relatively small private practices, and has not examined implementation in larger, more complex settings. A high proportion of VA primary care is delivered in medical centers, most of which are academically affiliated. These clinics have part-time physicians and residents providing the majority of patient care, and large staffs and patient populations. We conducted an in-depth qualitative study of early PCMH implementation in a large VA academic medical center to identify the barriers and facilitators to transforming primary care in this complex setting.
METHODS: We conducted 33 semi-structured interviews with leadership, providers, and staff, and observations of nurse staff meetings, during the first year of PACT implementation (February to December 2011), in one VA academic medical center. Interviews were audio-recorded and transcribed; staff meeting field notes were handwritten. We coded data using selected constructs from the Consolidated Framework for Implementation Research, which consists of common constructs from the implementation science literature, and developed findings through constant comparison to inductively identify themes within, and interactions between, constructs.
RESULTS: We identified several contextual factors that presented barriers to implementing the PCMH model in a large VA academic medical center. These included: 1) Part-time providers and residents had multiple roles outside the clinic, which delayed communication with nurses and clerks about clinical issues and changes in work processes. 2) The complexity of garnering and reconfiguring space in a large institution delayed co-location of teamlets, further impeding communication essential to meeting PCMH goals such as interdisciplinary discussion of patient needs and improving access to care. 3) Doubling the number of clinic staff to fully staff teamlets, combined with having multiple part-time providers on each teamlet, made teamlet formation logistically complex. Further, the need to train and integrate new staff into the clinic at a time of rapid change made it more challenging for staff to establish relationships with multiple providers.
CONCLUSIONS: Large academic medical centers may face special challenges in implementing the medical home model. The presence of part-time providers and residents and large size make their existing care model less compatible with the PCMH model than settings in which PCMH was initially conceived and implemented. Delays in building a foundation for teamwork make it difficult to redesign practices to attain key PCMH goals. Our framework to identify barriers and facilitators to PACT implementation in large academic medical centers should be tested and expanded, and strategies developed based on this knowledge to foster successful implementation in these settings.

BURDEN OF MENTAL ILLNESS AMONG VA PRIMARY CARE PATIENTS Ranak Trivedi[1,2]; Dan Kivlahan[5]; John McCarthy[3,4]; Edward P. Post[3,4]; Andrew J. Saxon[1,2]; Andrew Pomerantz[5,6]; Haili Sun1; John D. Piette[3,4]; Stephan D. Fihn[7,2]; Karin M. Nelson[1,2]. 1VA Puget Sound Health Care System, Seattle, WA; [2]University of Washington, Seattle, WA; [3]VA Ann Arbor Health Care System, Ann Arbor, MI; [4]University of Michigan, Ann Arbor, MI; [5]VA Office of Mental Health Services, White River, VT; [6]Dartmouth College, Hanover, NH; [7]VA Office of Analytics and Business Intelligence, Seattle, WA. (Tracking ID #1634680)

BACKGROUND: Although data regarding prevalence are limited, primary care is often the first opportunity to treat patients with for common mental illnesses. The patient centered medical home provides an opportunity to integrate psychiatric care within primary care settings. VA is the largest integrated health care system to widely implement this model. Known as the Patient Aligned Care Team (PACT), the VA patient centered medical home provides an opportunity to estimate the prevalence of common mental illnesses and associations with patient outcomes.
METHODS: We examined the VA's corporate data warehouse to identify all Veterans who made at least one face-to-face to a primary care provider during the year prior to PACT implementation. We determined the prevalence and co-occurrence of 5 common psychiatric conditions: depression, post-traumatic stress disorder (PTSD), substance use disorders (SUD), anxiety, and serious mental illness (SMI; consisting of bipolar disorder and schizophrenia). We considered a Veteran to have a diagnosis of depression, PTSD, anxiety, or SMI if he or she had ≥2 outpatient or ≥1 inpatient diagnosis of the relevant ICD9 codes. A patient was deemed to have SUD if there was ≥1 inpatient or outpatient diagnosis based on ICD9 codes. Multivariate regression models were used to assess associations between presence of psychiatric conditions hospitalization or death during the subsequent year.
RESULTS: Of 4,273,729 Veterans included, 58 % were White, 94 % were male, and 59 % were married. The prevalence of the 5 mental conditions was: depression (12 %), PTSD (8 %), SUD (5 %), anxiety (4 %), and SMI (4 %). 29 % were diagnosed with 1 of these 5 mental illnesses. 14 % had 2 mental illnesses and 3.65 % had 3 illnesses. The most common co-occurring mental illnesses were depression and PTSD (4 %). Among Veterans with depression, 31 % also had PTSD and 17 % had SUD. Among Veterans with SMI, 28 % also had depression, 23 % had SUD and 21 % had PTSD. Chronic medical problems were also common among Veterans with mental illness is high including diabetes (25 %), hypertension (>50 %) and ischemic heart disease (17 %). Hospitalizations within

1 year ranged from 14 % for patients with PTSD to 24 % for those with SUD. One-year mortality ranged from approximately 2 % (PTSD) to 3.5 % (SUD). After adjustment for age, co-morbidity, and primary care utilization, the presence of SUD (OR=2.0; 95%CI=1.9, 2.1) and depression (OR=1.3; 95%CI=1.3, 1.3) were independently associated with admission. Similarly, the presence of SUD or depression were associated with higher odds of death within 1 year (OR=1.7, 95%CI= 1.6, 1.8 and OR=1.2; 95%CI=1.15, 1.22 respectively).
CONCLUSIONS: Mental health conditions are common among Veterans receiving primary care and frequently co-occur. Presence of these conditions was associated with a higher risk for hospitalization and mortality.

BURNOUT IN CLINICIAN-EDUCATORS AND THE IMPORTANCE OF LIFELONG LEARNING: FINDINGS FROM A MEDICAL EDUCATION FACULTY DEVELOPMENT PROGRAM Anne Dembitzer[1,2]; Binhuan Wang[1]; Audrey Grask[1]; Colleen Gillespie[1]; Kathleen Hanley[1]; Sondra Zabar[1]; Colleen Gillespie[1]; Mark D. Schwartz[1,2]. [1]NYU School of Medicine, New York, NY; [2]NY Harbor VA, New York, NY. (Tracking ID #1641509)

BACKGROUND: Clinician-educators (CE) are the primary teachers of medical students and residents, yet most have not had formal training in education. Physician burnout is common and is associated with job turnover, poor morale, and reduced efficiency, and may lead to poorer patient care. We sought to determine how participation in a longitudinal faculty development program (FDP), designed to improve mentoring and teaching skills, is associated with better job-related outcomes for CE, including burnout, commitment to learning, career fit, and job satisfaction.
METHODS: We recruited faculty who teach weekly in an 18-month clinical skills course for medical students. These CE are experienced teachers with extensive outpatient teaching and clinical responsibilities. CE participated in a year-long FDP that met for 1 h each month and focused on medical education skills, academic advancement, and care of vulnerable populations. The format included small group discussions, participation in two three-station Objective Structured Teaching Exercises (OSTE), and individual and group videotape review sessions of small group teaching and OSTE encounters. Participants completed pre- and post-program questionnaires assessing burnout (Maslach), career fit, job satisfaction, teaching confidence, and commitment to lifelong learning (Jefferson Scale of Physician Lifelong Learning). The Maslach burnout inventory assessed three types of burnout - Emotional Exhaustion, Depersonalization, and Personal Accomplishment - in CE's roles as clinicians and as educators. We determined the change in these variables from baseline to post-FDP participation.
RESULTS: Of the 18 CE who completed the program, 13 were internists and 5 were pediatricians. At baseline, 56 % reported emotional exhaustion (EE) burnout as clinicians vs. 6 % as educators, and 22 % experienced depersonalization (DP) burnout as clinicians vs. 0 % as educators. 39 % had personal accomplishment (PA) burnout as clinicians and as educators, 77 % said they were either somewhat or very confident in all teaching domains, 82 % indicated they had good career fit, and 78 % reported they were somewhat or very satisfied with their job. After participating in the FDP, three CE who had reported EE burnout as clinicians were no longer burned out; two CE who had reported DP burnout as clinicians were no longer burned out; and two CE who had reported PA burnout as clinicians were no longer burned out. While commitment to lifelong learning did not change from baseline, CE who no longer met the threshold for DP burnout demonstrated a significant ($p<.05$) increase in lifelong learning scores compared with all other CE. Similarly, while career fit and job satisfaction did not improve for the entire group, CE who reported increased career fit from baseline were more likely to report improved job satisfaction ($p=.01$).
CONCLUSIONS: These experienced clinician-educators in urban, underserved settings had high rates of burnout as clinicians despite reporting high teaching confidence, good career fit, and high job satisfaction. After a year-long FDP, they experienced modest reduction in burnout. Reduction in depersonalization burnout was associated with increased lifelong learning skills. Future FDPs for CE should consider training in lifelong learning skills as this might mitigate burnout.

CHARACTERIZING THE POST-DISCHARGE FOLLOW-UP VISIT Ethel Wu; Cindy Lai; Margaret Fang. University of California, San Francisco, San Francisco, CA. (Tracking ID #1642794)

BACKGROUND: There is increasing emphasis on timely outpatient follow-up visits after hospital discharge. However, there is little consensus regarding what should take place in the follow-up visit. In this study, we described the content documented in post-discharge follow-up visits.
METHODS: We reviewed the medical records of all adult patients discharged to home from the general internal medicine service in June 2012 at a 600-bed academic medical center. Subjects were included if they had at least one outpatient visit with a medical center-affiliated primary care physician (PCP) or specialist within 60 days of discharge. We evaluated the subsequent outpatient note to determine visit content. We measured 5 parameters based on checklists proposed by the California HealthCare Foundation and by other facilities: 1) medication reconciliation or discussion, 2) whether the reason for hospitalization was discussed, 3) follow-up on pending or recommended tests (if recommended by the discharge summary), 4) assessment of functional status, and 5) discussion of advanced directives. T-tests were used to compare the mean parameters documented.
RESULTS: Of the 271 discharges to home during the 1 month period, we analyzed 150 (55 %) follow-up visits of 142 patients (6 individuals had multiple hospitalizations with follow-up in this time period); 9 % of patients had recurrent hospitalizations, ED visits, or died before a follow-up visit, and 36 % had no subsequent visit at the medical center. Of the 142 subjects, the mean age was 61.5±18.7 years, 78 (55 %) were female, and 64 (45 %) were white. Over half, 85 (60 %), had a PCP in the medical center, and the remaining, a specialist. In 97 % of cases, discharge summaries were available and completed prior to the outpatient visit. In 150 follow-up visits, 108 (72 %) visits occurred within 2 weeks of discharge, and 72 (48 %) were performed by specialists. The content of the visit varied (Table). There was no difference in the mean number of content parameters met when visits with PCPs vs. specialists were compared (2.9 vs. 2.8, $p=0.40$), nor was it different when follow-up occurred within 2 weeks compared to more than 2 weeks from discharge (3.0 vs. 2.7, $p=0.21$). There were no significant differences by patient age, gender, or race/ethnicity.
CONCLUSIONS: In the post-discharge follow-up visit, medications and the reason for hospitalization were almost universally addressed; beyond that, visit content varied. Standardization of the post-discharge visit may help the transition between hospital and home.

Table: Content Parameters Met During Follow-up Visits

	Number of Visits
Specific Parameters Met:	
Medications	141 (94%)
Reason for Hospitalization	144 (96%)
Pending Tests	61 (68%)*
Functional Status	56 (37%)
Advanced Directives	34 (23%)
Number of Parameters Met:	
0-1	7 (5%)
2	44 (29%)
3	60 (40%)
4-5	39 (26%)

*out of 90 discharges with pending or recommended tests.

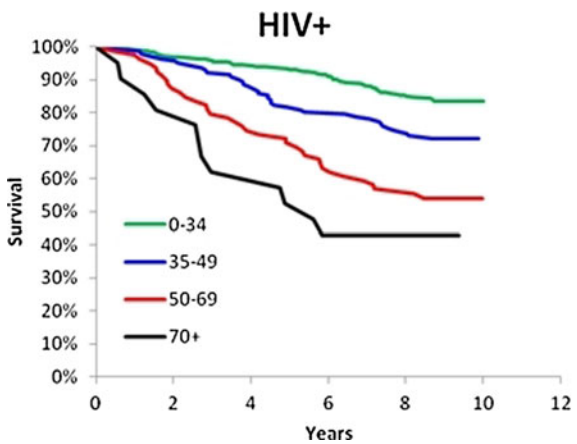
COPD AND COGNITIVE IMPAIRMENT: ASSOCIATIONS WITH INHALER TECHNIQUE Katherine Krauskopf; Alex Federman; Anastasia Sofianou; Melissa Martynenko; Minal Kale; Maile Ray; Juan P. Wisnivesky. Mount Sinai School of Medicine, New York, NY. (Tracking ID #1641346)

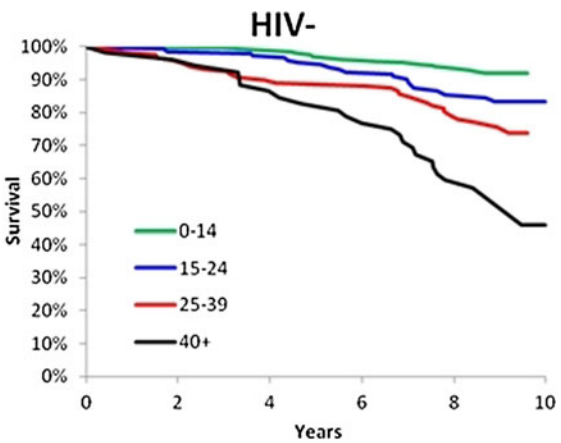
BACKGROUND: Chronic Obstructive Pulmonary Disease (COPD) outcomes are determined, in part, by complex self-management behaviors (SMB), including proper administration of inhaled medications. Cognitive deficits are common among patients with COPD due to chronic hypoxemia. However, little is known about how cognitive impairment affects COPD SMB. We examined the association between cognitive impairment and proficiency with COPD inhaler use.

METHODS: Prospective cohort of patients ≥55 years with COPD, recruited from diverse outpatient practices in New York City and Chicago. Patients with known dementia were excluded. All participants had a physician-derived COPD diagnosis. Cognitive impairment was evaluated with the Mini-Mental Status Exam (MMSE, age- and education-adjusted score <25 indicated impaired cognitive function). Proficiency in metered dose inhaler (MDI) and dry powder inhaler (DPI) use was assessed by observed use of MDI and/or DPI devices using validated checklists. Performing less than 75 % of 8 standard steps correctly was considered poor inhaler technique. The chi-square test and multivariate regression analysis were used to determine associations between cognitive impairment and inhaler technique.
RESULTS: Overall, 166 participants were included (mean age 69±8 years, 61 % female, 44 % Black, 12 % Hispanic); 33 % met criteria for cognitive impairment. MDI technique was performed proficiently by 73 % of participants without cognitive impairment compared to 60 % of those with cognitive impairment (p=0.1). The proportion of participants without cognitive impairment who demonstrated proficient DPI technique was 52 % compared to 33 % in those with cognitive impairment p<0.03). Adjusted analysis demonstrated similar findings showing that participants with cognitive impairment were more likely to have poor DPI technique (odds ratio [OR]: 2.28, 95 % confidence interval [CI] 1.01–5.15), but not poor MDI technique (OR: 1.53, 95 % CI: 0.68–3.46).
CONCLUSIONS: Patients with COPD have high rates of cognitive impairment, which may compromise performance of crucial SMB. Results from this study of urban adults with moderate-severe COPD show that those patients with cognitive impairment were more likely to have poor DPI technique, a commonly prescribed medication device for this illness. Further studies should explore associations between specific domains of cognitive impairment and inhaler technique, as they may identify modifiable targets for interventions to improve COPD outcomes.

CAN THE VETERANS AGING COHORT STUDY INDEX IMPROVE CLINICAL JUDGMENT FOR BOTH HIV INFECTED AND UNINFECTED VETERANS? Amy C. Justice[1,2]; Janet P. Tate[1,2]; Sheldon T. Brown[3,4]; Cynthia Gibert[5,6]; Maria Rodriguez-Barradas[7,8]; David Rimland[9,10]; Kathleen M. Akgün[1,2]; Kendall Bryant[11]. [1]Yale University, West Haven, CT; [2]VA Connecticut Healthcare System, West Haven, CT; [3]James J. Peters VA Medical Center, New York, NY; [4]Mt. Sinai School of Medicine, New York, NY; [5]George Washington University School of Medicine, Washington, DC; [6]Washington DC Veterans Affairs Medical Center, Washington, DC; [7]Baylor College of Medicine, Houston, TX; [8]Michael E. DeBakey Veterans Affairs Medical Center, Houston, TX; [9]Emory School of Medicine, Atlanta, GA; [10]Atlanta Veterans Affairs Medical Center, Atlanta, GA; [11]National Institute on Alcohol Abuse and Alcoholism, Bethesda, MD. (Tracking ID #1640592)

BACKGROUND: The Veterans Aging Cohort Study (VACS) Index, composed of age and 8 routine biomarkers (CD4 count, HIV-1 RNA, hemoglobin, AST, ALT, platelets, creatinine, and HCV serostatus), predicts mortality, hospitalization, and MICU admission among those with HIV infection. With the assumption of a CD4 count >500 cells/mm3 and undetectable HIV-1 RNA, with the assumption of a normal CD4 count and undetectable HIV-1 RNA, it predicts mortality among veterans without HIV with equal accuracy. Since these biomarker values are routinely available to the provider, we asked whether use of the index improves accuracy of risk assessment (clinical judgment) for patients with and without HIV infection (HIV−/+).
METHODS: VACS 8 is an indepth, observational cohort of >7,500 HIV+ demographically matched to HIV- Veterans at 8 sites within the National Veterans Affairs Healthcare System that includes patient and provider surveys and full access to electronic medical records. During a clinic visit from 2002 to 2003, at which providers had access to these biomarkers, we asked them to assess sickness level: "How sick is this patient?" with options of "not sick, somewhat sick, moderately sick, very sick, and on the edge of death"; and prognosis: "What is the probability that the patient will live 10 years?" Accuracy of provider assessments was compared with VACS Index using proportional hazards models to calculate C statistics. We plotted Kaplan Meier curves stratified by sickness level and index score stratified by HIV status. We also calculated risk reclassification using net reclassification improvement (NRI).
RESULTS: Among 1582 HIV+ and 1282 demographically similar HIV- veterans for whom providers completed surveys, there were 424 and 243 deaths during a median of 9 years of follow-up. Provider assessment of sickness level and probability of mortality were correlated (HIV+/−: 0.54, 0.51), but only fairly predictive of mortality (C statistics ranging from 0.63 to 0.66). VACS Index alone was a better predictor of mortality and was equally accurate among HIV+ (C=0.71, 95 % CI 0.69–0.74) and HIV- (C= 0.71, 95 % CI 0.68–0.74). When combined with clinical judgment, accuracy improved (for sickness level C stat: HIV+ =: 0.73, 95 % CI 0.70–0.75; HIV- = 0.73, 95 % CI 0.70–0.76 results were similar for overall prognosis) Findings for "somewhat sick" group–the largest grouping illustrated below. Addition of the VACS Index to either form of clinical judgment resulted in reclassification of >50 % of HIV+ and HIV- subjects with NRI >7 % in all groups.
CONCLUSIONS: Among HIV +/−, clinical judgment of mortality risk can be equally and substantially improved by the VACS Index. Potential applications include informing choice of follow up interval, hospital admission, case management, preventive screening, and end of life decision making—all of which rely upon accurate risk assement.





CAN WE IDENTIFY SUBJECTS AT RISK OF INAPPROPRIATE ANTIPLATELET ADHERENCE AFTER CORONARY STENT PLACEMENT? Leonardo Tamariz; Ana M. Palacio; Hua Li; Olveen Carrasquillo. University of Miami, Miami, FL. (Tracking ID #1642174)

BACKGROUND: Racial minorities who have received coronary stents have lower medication adherence to antiplatelet agents. Certain interventions such as motivational interviewing (MI) could be offered to improve adherence if we could identify those at risk. We report

predictors of adherence to clopidogrel or prasugrel among participants of a randomized control trial who had recently received a coronary stent.

METHODS: We conducted a secondary analysis of a randomized trial of Black and Hispanic patients enrolled in a health benefits plan who had recently received a coronary stent. Study patients were randomly assigned to either a telephone based MI intervention or an educational video. Predictor variables were collected at baseline using a survey and claims data and included demographics, cormorbidities using the Charlson score, depression using the PHQ-9, patient-physician communication, health literacy, income and education. The outcome variable was collected using administrative data and included the medication possession ratio (MPR) of clopidogrel or prasugrel categorized into appropriate/inappropriate based on a previously validated measure that defines appropriate adherence as an MPR>=0.80. Other outcomes were self-reported adherence (Morisky score) and self reported forgetfulness and carelessness when taking antiplatelet medications. We used logistic regression to model predictors of an MPR>=0.80 as well as self reported forgetfulness taking medications.

RESULTS: We recruited 452 minorities with a new coronary stent (44 % Hispanics and 56 % Black). The patients had a mean age of 69.5±8.8, 58 % were males, 78 % had an income inferior to 30 K per year and only 22 % had achieved high school education or higher. At the end of the study period, 12 months post index stent placement, we had claims data available on 422 subjects, 213 had received the MI intervention and 209 had received the DVD. Table 1 reports selected predictors of adequate adherence. A PHQ score of 10 or higher (moderate to severe depression), comorbidity score and randomized group were significant predictors of appropriate medication possession ratio. Depression, health literacy and black race were predictors of self-reported adherence to antiplatelet medications.

CONCLUSIONS: The identification of certain personal characteristics and the screening for depression and health literacy at the time of stent placement can help us identify subjects at risk of inappropriate adherence to antiplatelet medications.

Predictors of appropriate adherence
Predictor OR (95 % CI) p-value
Female gender 1.09(0.68–1.74) 0.71
Age 1.01(0.98–1.03) 0.37
Physician listens 1.47(0.52–4.15) 0.46
Physicians spends enough time 0.86(0.34–2.16) 0.75
Patient beliefs about antiplatelets 1.82(0.71–4.69) 0.20
Confidence in filling out forms 0.95(0.8–1.3) 0.83
Income 1.01(0.57–1.76) 0.31
Higher education 1.1(0.67–1.82) 0.68
PHQ9 score 0.93(0.88–0.99) 0.03
Charlson score 0.87(0.77–0.98) 0.02
Black race 1.06(0.67–1.67) 0.79
Motivational interviewing 1.92(1.1–1.3) <0.01

CANCER TYPE PREDICTS OUTCOMES OF WARFARIN THERAPY

Daniel B. Ambrus; Joel Reisman; Adam Rose. Bedford Veterans' Association, Boston, MA. (Tracking ID #1637579)

BACKGROUND: Patients receiving warfarin who are newly diagnosed with cancer experience poorer anticoagulation control, as summarized by percent time in therapeutic range (TTR), and higher rates of bleeding. Relatively little is known about whether specific types of cancer carry greater risks in this regard.

METHODS: We began with 122,159 patients who received warfarin from the Veterans Health Administration (VA) from October 2006–September 2008. ICD-9 codes were used to define cancer diagnoses. We excluded 20,405 patients who had a cancer diagnosis prior to the study period which limited the study population to patients who either recorded a new cancer during the study or never had cancer. The study was further limited to patients with fee-for-service Medicare (to ensure complete data capture) and to patients who received warfarin therapy both before and after the cancer diagnosis (or the midpoint of the analysis window for those who did not have cancer). New cancers were divided into 29 types, excluding benign neoplasms, carcinoma-in-situ and non-melanoma skin cancers. We compared TTR between the six-month period before and after the cancer diagnosis for cancer patients, and between the analogous time periods for controls. Cox models were used to examine the impact on TTR from each subtype of cancer, and the hazard for major hemorrhage, with adjustments for age and TTR in the bleeding analysis. Major bleeding was defined as bleeding into a critical anatomic site or a bleeding event leading to hospitalization, requiring transfusion, or resulting in death.

RESULTS: After exclusions, there were 27,734 patients without cancer and 2,670 patients with a new diagnosis of cancer. The most common types of cancer were prostate (n=626), lung (n=325), bladder (n=297), colorectal (n=247), and leukemia/lymphoma (n=227). Most types of cancer were associated with decreased TTR during the 6 months following diagnosis (mean for all cancers: −6.6 %) relative to control patients (−0.9 %, p<0.001). The greatest effect was seen for patients with esophageal cancer (−21 %), but patients with cancers of lung (−13 %), melanoma (−12 %), bladder (−10 %) and colorectal (−10 %) also experienced reductions in TTR (all p values<0.001). The most common type of cancer, prostate cancer, was associated with a 0.5 % increase in TTR, which was not significantly different from controls (p=0.32). Similarly, some types of cancer were associated with considerably increased hazard for major hemorrhage compared to patients without cancer. The greatest hazard was seen with colorectal cancer (HR=4.08 compared to no cancer), followed by bladder cancer (HR=3.06) and lung cancer (HR=2.83, all p values<0.001). Effect sizes were smaller, and results were not statistically significant, for leukemia/lymphoma (HR=1.68, p=0.15) and prostate cancer (HR=1.45, p=0.14).

CONCLUSIONS: The impact of a new cancer diagnosis on anticoagulation control among patients who were already receiving warfarin is highly variable depending on the type of cancer that is diagnosed. Among commonly-diagnosed cancer types, the hazard for major hemorrhage is highest with colorectal cancer, bladder cancer and lung cancer. Prostate cancer did not seem to adversely impact either anticoagulation control or bleeding hazard.

CASE MANAGEMENT PERFORMANCE IN A MEDICAL HOME AND ASSOCIATIONS WITH PATIENT SATISFACTION AND HEALTHCARE UTILIZATION

Lindsay E. Jubelt[1,3]; Jove Graham[4]; Daniel D. Maeng[5]; Joshua Metlay[2,1]; Andrew Epstein[2]. [1]Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA; [2]Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA; [3]Philadelphia VA Medical Center, Philadelphia, PA; [4]Geisinger Center for Health Research, Danville, PA; [5]Geisinger Health System, Danville, PA. (Tracking ID #1634384)

BACKGROUND: In traditional medical care models, stronger physician-patient relationships have a positive impact on patient satisfaction with care and subsequent medical outcomes. Despite the heightened role of nurse case managers in many patient-centered medical home models, little is known about the relationship between case management and patient satisfaction or future health behaviors. The first aim of our study was to measure the association between patient perceptions of case manager performance and satisfaction with overall care. The second aim was to determine the association between patient perceptions of case manager performance and subsequent health care utilization.

METHODS: We conducted a retrospective cohort study of 2,147 patients in the Geisinger Health Plan (GHP) who received primary care at a clinic site in the Geisinger Health System and who were exposed to clinic-embedded nurse case managers. We obtained data on patient satisfaction and case manager performance from a patient satisfaction survey based on the CG-CAHPS survey. The survey was administered at approximately six-month intervals starting in 2009 to different cohorts of eligible patients. Claims data from 2006 to 2011 were obtained from the GHP and linked to all survey respondents. From the claims database, we obtained demographic data and MEDai (Medical Artificial Intelligence, Inc., Orlando, FL)

risk adjustment scores. These scores were calculated on a 1–5 scale using MEDai software to perform validity checks and assign a sophisticated severity level to each patient. The patient satisfaction survey included six questions on primary care provider (PCP) performance, four questions on case manager performance, and two questions on satisfaction with care, all using 4-point Likert scales. We generated three new variables based on the average ratings for questions within each of these three domains and used multivariable regression to identify significant predictors of overall satisfaction, including case manager and PCP ratings.

RESULTS: We analyzed six phases of survey data. The mean age of the sample was 74.3 years (sd=10.8 years). 52 % of subjects were female and 93.6 % were of white race. The average MEDai risk score was 3.3 (sd=1.2). Average case manager ratings (mean=3.7, sd=0.4), PCP ratings (mean=3.9, sd=0.3), and overall satisfaction ratings (mean=3.8, sd=0.4) did not differ significantly by age, sex, race, MEDai risk score, or survey phase. In adjusted analysis of predictors of overall satisfaction ratings, a one point increase in case manager rating resulted in a 0.27 point increase in satisfaction rating ($p<0.005$), and at one point increase in PCP rating resulted in a 0.54 increase in satisfaction rating ($p<0.005$).

CONCLUSIONS: Patient perceptions of their case manager are significantly associated with overall satisfaction with care, even after controlling for patient perceptions of their primary care doctor. Given the known effect of primary care doctors on health care utilization, the independent and significant case management finding raises the possibility that case management may also impact patient health outcomes and health behaviors. The next steps in our analyses will focus on examining the associations between patient perceptions of case management and health care utilization patterns.

CAUSES OF READMISSIONS AND THEIR AVOIDABILITY FOR THE MOST COMMON COMORBIDITIES Jacques Donze[1,2]; Stuart R. Lipsitz[1,2]; Jeffrey L. Schnipper[1,2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA. (Tracking ID #1637167)

BACKGROUND: Readmissions to the hospital are costly and sometimes avoidable. A better understanding of the reasons for readmission among different patient populations (e.g., those with different chronic conditions) may lead to more targeted and successful interventions. We aim to describe the proportion and pattern of 30-day readmissions and potentially avoidable readmissions (PAR) in medical patients, according to the most common comorbidities.

METHODS: We included all consecutive discharges from any medical service of an academic tertiary medical center in Boston between July 1, 2009 and June 30, 2010. Potentially avoidable 30-day readmissions to the index hospital or two other hospitals within its network were then identified using a validated computerized algorithm based on administrative data (SQLape®). Most common comorbidities were identified using ICD-9 codes of the index admission. Main cause of readmission was based on patient Diagnosis Related Groups (DRGs). For this analysis, we present the 5 most frequent causes of PAR overall and for each comorbidity separately. We also compared the proportion of readmissions deemed potentially avoidable for patients discharged with and without each comorbidity using logistic regression. Proportions and their 95 % confidence intervals were adjusted for length of stay, mode of admission (elective or not), number of admissions in the previous 12 months, number of procedures during the index admission, hemoglobin and sodium level at discharge of index admission, and number of other comorbidities.

RESULTS: Among 10,731 discharges, 2,398 (22.3 %) were followed by a 30-day readmission, of which 879 (8.5 %) were identified as PAR. The top 5 causes of 30-day PAR were infection, neoplasm, heart failure, gastrointestinal disorder and liver disorder (Table 1). For most chronic conditions except neoplasm (diabetes, heart failure, ischemic heart disease, atrial fibrillation and chronic kidney disease), the first two causes of PAR were heart failure (12.2 to 25.5 %) and infection (8.02 to 11.5 %). Only patients discharged with a diagnosis of diabetes or chronic kidney disease had a significantly higher proportion of readmissions deemed potentially avoidable than those without those comorbidities: 39.4 vs 34.8 %, p-value 0.03 for diabetes vs no diabetes; 44.2 vs 33.7 %, p-value 0.005 for chronic kidney disease vs no chronic kidney disease.

CONCLUSIONS: Interestingly, this study shows that patients with diabetes or chronic kidney disease have a higher proportion of potentially avoidable readmission than patients without each of these comorbidities. The main causes of PAR for most of the common comorbidities are heart failure and infection. Together, these findings may help hospitals target interventions to populations most likely to benefit from them.

Most frequent causes of potentially avoidable readmission for common comorbidities

Comorbidity 1st cause 2nd cause 3rd cause 4th cause 5th cause

Diabetes mellitus (n=2,639) Heart failure (12.2 %) Infection (9.4 %) Neoplasm (6.1 %) IHD (4.5 %) Liver disorder (4.5 %)

Heart failure (n=2,308) Heart failure (25.5 %) Infection (8.02 %) IHD (7.6 %) Renal failure (3.3 %) Arrhythmia (2.8 %)

Ischemic heart disease (n=2,823) (IHD) Heart failure (13.3 %) Infection (11.4 %) IHD (9.5 %) Arrhythmia (5.2 %) Renal failure (3.3 %)

Atrial Fibrillation (n=1,832) Heart failure (17.3 %) Infection (11.5 %) Stroke (8.6 %) Arrhythmia (7.9 %) GI disorder (3.6 %)

COPD (n=1,078) Infection (15.9 %) Heart failure (15.9 %) Neoplasm (9.1 %) COPD (5.7 %) VTE (3.4 %)

Neoplasm (n=4,129) Neoplasm (16.1 %) Infection (12.9 %) Metabolic disorder (5.0 %) GI disorder (3.9 %) Renal failure (2.6 %)

Chronic Kidney Disease (n=1,776) Heart failure (19.9 %) Infection (7.9 %) Renal failure (7.3 %) IHD (5.8 %) Liver disorder (2.6 %)

All (n=10,731) Infection (11.7 %) Neoplasm (8.4 %) Heart failure (6.9 %) GI disorder (4.6 %) Liver disorder (3.9 %)

COPD = chronic obstructive pulmonary disease; GI = gastrointestinal; IHD = ischemic heart disease; VTE = venous thrombo-embolism event.

CHALLENGES TO CONTROLLING HYPERTENSION IN MINORITY MEN OF LOW SOCIOECONOMIC STATUS Stewart B. Reed[1]; Jose J. Escarce[1]; Suzanne B. Shu[1,2]; Craig R. Fox[1,2]; Noah J. Goldstein[1,2]; Ronald G. Victor[3]; Estivali Villa[1]; Rocio Castaneda[1]; Chi-Hong Tseng[1]; Martin F. Shapiro[1]. [1]UCLA David Geffen School of Medicine, Los Angeles, CA; [2]UCLA Anderson School of Management, Los Angeles, CA; [3]Cedars-Sinai Medical Center, Los Angeles, CA. (Tracking ID #1641817)

BACKGROUND: Hypertension remains untreated or inadequately treated in the majority of affected people. It disproportionately affects African-Americans, and Latinos are at greater risk than Whites of having uncontrolled hypertension. We studied persons with uncontrolled hypertension in two clinics caring for indigent persons in South Los Angeles and evaluated the differences between men and women in their levels of blood pressure at baseline and 6 months after initiation of an intervention to improve blood pressure control.

METHODS: We identified subjects with uncontrolled hypertension (at levels consistent with conducting interventions to achieve meaningful improvement, defined in the study as 149 mmHg systolic or greater and/or 94 mmHg diastolic or greater). Those eligible and consenting were randomized into two groups. The control arm received educational materials on blood pressure as well as home blood pressure monitors along with training in their use. The enhanced intervention arm received the control interventions, but also received contingent payments (based on improvement in blood pressure) as well as an intervention to identify and reinforce reasons for staying healthy. Both groups came in for monthly blood pressure checks. The study is still in progress, so results on the impact of the enhanced intervention are not yet available. We report here on the impact of gender on change in blood pressure for the 125 subjects who have completed 6 months of follow-up to date.

RESULTS: Of the 125 total subjects, 59 were assigned to the enhanced intervention arm and 66 to the control arm. The study population included 71.2 % Latinos and 25.6 % African-Americans; 59.8 % were born outside of the United States; 88.8 % had mean family incomes less than $30,000; 58.2 % had not completed high school. The mean age was 54.0 years;

49.6 % of subjects were female. At baseline, mean systolic blood pressure was higher in women (164.1 mmHg in women versus 161.0 mmHg in men, $p=0.050$), and mean diastolic blood pressure was higher in men (86.0 mmHg in women versus 94.4 mmHg in men, $p=0.001$). After 6 months, mean change in systolic blood pressure was −22.1 mmHg in women and −14.0 mmHg in men ($p=0.007$). Mean change in diastolic blood pressure was −10.7 mmHg in women and −7.3 mmHg in men ($p=0.069$). In separate multivariable analyses for systolic and diastolic blood pressures at 6 months, controlling for baseline blood pressure values, experimental arm assignment, race/ethnicity, age, income, country of birth, and gender, blood pressure at 6 months was lower in women than in men: adjusted systolic blood pressure was 7.95 mmHg lower in women than in men ($p=0.025$); adjusted diastolic blood pressure was 6.00 mmHg lower in women than in men ($p=0.007$).

CONCLUSIONS: In this South Los Angeles community clinic-based minority patient population, men were less responsive to interventions to improve blood pressure control than were women. This suggests that more intensive interventions or combinations of interventions may be necessary to control hypertension in men relative to women in similar patient populations.

CHALLENGING THE ASSUMPTION THAT TEAMWORK ALWAYS PROMOTES SAFETY: A STUDY OF TEAMWORK IN AN EMERGENCY DEPARTMENT Deborah Hutchinson; Katherine M. McKinney. VA Medical Center, Lexington, KY. (Tracking ID #1641878)

BACKGROUND: Healthcare facilities rely on surveys such as the AHRQ's Patient Safety Culture Survey or the Safety Attitudes Questionnaire (Sexton et al.) to assess staff's perception of facility culture. These instruments focus on a variety of dimensions, including questions about teamwork within and between units. While surveys do provide useful information, qualitative methods often augment what is known regarding social phenomena such as teamwork. Using anthropological research methods, we explored how healthcare providers negotiate working together and overcoming barriers to teamwork in a high stress, high acuity environment.

METHODS: This study was conducted over a six-month period in a 15-bed Veteran's Administration Emergency Department with average of 20,000 patient visits per year. We utilized ethnographic participant-observation of the daily routines of Emergency Department staff [$N=46$] via shadowing physicians, nurses, and ancillary staff members during their daily activities and engaging in informal, non-structured interviews about their work-related experiences. These observations were supplemented with audio-recorded, semi-structured, open-ended interviews conducted with 22 staff members. Ethnographic field notes generated during observation and transcripts from interviews were analyzed for themes and patterns utilizing Atlas.ti qualitative data management software. Sampling for this study was purposive and opportunistic with the aim of reaching informational saturation.

RESULTS: The following patterns/themes related to teamwork emerged from data analysis: 1) The importance of communication for successful teamwork: both physicians and nurses were emphasized verbal communication, but unexpectedly physicians mentioned nonverbal communication issues as a barrier more frequently than nurses. 2) "Us vs Them:" Staff frequently engaged in dichotomous identification when referencing teamwork issues. Among these references, was the common assertion that physician and nurses worked better as a team on the night shift. And 3) Use of humor to diffuse tense situations. Both interviews and observations revealed generally good teamwork among staff. However, observational findings uncovered situations that challenge the premise that teamwork is always positive in creating a culture of safety.

CONCLUSIONS: This study reveals the limitations of safety culture surveys by challenging the assumption that teamwork always contributes positively to patient care and that the better the teamwork, the safer the care. Further assessment of teamwork approaches utilized within both emergency department and other clinical units may provide new insights into how to provide safe and effective clinical care.

CHANGES IN MORTALITY AFTER MASSACHUSETTS' HEALTH CARE REFORM Benjamin D. Sommers[1,2]; Sharon K. Long[3]; Katherine Baicker[1]. [1]Harvard School of Public Health, Brookline, MA; [2]Brigham & Women's Hospital, Boston, MA; [3]Urban Institute, Washington, DC. (Tracking ID #1637574)

BACKGROUND: Massachusetts' health reform of 2006 has been called the model for national health reform under the Affordable Care Act. The law attained near-universal insurance coverage in the state, as well as well-documented gains in access to care. The policy's impact on population health is less clear, as prior work has relied on self-reported health measures. Our objective was to determine whether Massachusetts' health reform was associated with any change in all-cause mortality and in mortality amenable to health care.

METHODS: We used a quasi-experimental differences-in-differences design, comparing the change in mortality rates for Massachusetts from 2001 to 2005 (pre-reform) to 2007–2009 (post-reform) versus a propensity-score matched group of U.S. counties similar to Massachusetts in the pre-reform period. Analyses used multivariate regression to further control for population demographics, local economic factors, and county/state of residence. The primary outcome was annual all-cause mortality, obtained at the state- and county-level, in sex-age-race specific cells ($n=32,121$ for state-level analyses, $n=323,538$ for county-level analyses). Secondary analysis examined deaths from causes more likely amenable to health care, using a definition adapted from previous research. The primary study sample contained non-elderly adults (ages 20–64) in Massachusetts and in the control group. Subgroup analyses examined outcomes based on age, race/ethnicity, and local area pre-reform insurance coverage rates and median income. Data were from the CDC's Compressed Mortality File.

RESULTS: Massachusetts' health reform was associated with declines in all-cause mortality of 13.0 per 100,000 (relative decline 4.6 %; $p=0.003$) and deaths amenable to health care of 10.2 per 100,000 (relative decline 5.5 %; $p<0.001$), compared to matched controls in states without expansions. The greatest changes occurred for adults in areas with lower incomes and lower insurance coverage rates pre-reform, and among those ages 35–64. We found mixed evidence on whether the reform narrowed racial disparities in mortality. Our results imply that for every 600 adults who gained insurance under the state's health reform law, one death was prevented per year.

CONCLUSIONS: Massachusetts' 2006 health care reform was associated with significant declines in all-cause mortality compared with matched controls in states without a reform. Those declines were concentrated in causes of death amenable to timely health care and in populations most likely to benefit from expanded access, including residents of areas with lower pre-reform insurance coverage and demographic groups with higher baseline mortality. Our results offer encouraging evidence that the Affordable Care Act - modeled after the Massachusetts law and slated to extend health insurance to over 30 million Americans beginning in 2014 - may not only affect coverage and access, but also objective health measures such as mortality.

CHANGES IN SODIUM DURING HOSPITALIZATION IS ASSOCIATED WITH INCREASED IN-HOSPITAL MORTALITY IN HYPO- AND NORMONATREMIC PATIENTS Valeria C. Pazo; David W. Bates; Gordon D. Schiff. Brigham and Women's Hospital, Boston, MA. (Tracking ID #1637412)

BACKGROUND: Hyponatremia is the most prevalent electrolyte abnormality in hospitalized patients and is associated with increased inpatient mortality. Further, sodium levels at the low end of the normal range or slightly below it are also associated with increased mortality. Because few data about the impact of change in sodium are available, we sought to evaluate whether sodium change in hypo- and normonatremic patients is associated with in-hospital mortality.

METHODS: We assembled a retrospective cohort of adult patients admitted between July 1, 2007 and September 30, 2007. Pregnant women as well as surgical and dialysis patients were excluded. Only first

admissions were considered and data on the following variables were gathered: age, gender, race, admit/discharge dates, Deyo-Charlson Score, comorbidities, in-hospital mortality and [Na+] on admission and at discharge to calculate the Delta [Na+]. [Na+] values were adjusted to concomitant glucose levels. Delta [Na+] was considered the exposure regardless of the circumstance under which the sodium changed. The association between Delta [Na+] and in-hospital mortality was evaluated by fitting logistic regression models, stratified by normo- ([Na+] levels of 135–145 mEq/L) and hyponatremic ([Na+] ≤134 mEq/L) status upon admission. A stepwise forward approach (inclusion and exclusion thresholds $p=0.2$ and $p=0.1$, respectively) was utilized for model building. Final models included age, gender, admission [Na+], Charlson score, and length of stay (LOS). Variance inflation factor was used to assess possible collinearity between admission [Na+] and Delta [Na+].

RESULTS: The study period included 8,966 hospitalizations. Of these, 3078 (34 %) had [Na+] measurements on admission and discharge. Overall, there were 2697 (88 %) normonatremic, 353 (11 %) hyponatremic and 28 (1 %) hypernatremic patients. Mean admission [Na+] in hyponatremics was 131.2 mEq/L (SD=3.4). Compared to normonatremics, they had a higher comorbidity score (mean: 1.8 vs 1.5; $p<0.001$), longer LOS (mean 4.6 vs. 4.0; $p=0.01$) and a mean change in delta [Na+] of 3.7 vs −0.3 mEq/L ($p<0.001$). They had higher crude in-hospital mortality (6.8 % [95 % CI 4.6–9.7]) vs 2.0 % [95 % CI 1.5–2.6]). Delta [Na+] was independently associated with increased in-hospital mortality in both hypo- (OR 1.16; 95 % CI 1.05–1.2; $p=0.001$) and normonatremics (OR 1.17; 95 % CI 1.10–1.24; $p<0.001$). There was a trend towards significance for admission [Na+] and in-hospital mortality in both hypo- (OR 0.91; 95 % CI 0.81–1.01; $p=0.09$) and normonatremics (OR 1.12; 95 % CI 0.99–1.28; $p=0.08$). No significant collinearity between admission [Na+] and Delta [Na+] was observed. The graphic relationship between in-hospital mortality and Delta [Na+] demonstrated a U-shape, with the lowest mortality found in those with relatively stable Delta [Na+].

CONCLUSIONS: Sodium change is associated with increased in-hospital mortality both in hypo- and normonatremic patients, even after adjusting for baseline sodium and comorbidities. These data suggest that Delta [Na+] provide additional predictive power in terms of in-patient mortality in hypo- and normonatremic patients in addition to that obtained by admission sodium. Furthermore, the causal implication of these associations should be explored in future studies.

CHARACTERISTICS OF OLDER ADULTS WHO USE THE EMERGENCY ROOM PRIOR TO JAIL DETAINMENT Anna H. Chodos[1]; Cyrus Ahalt[1]; Irena Stijacic Cenzer[1]; Brie Williams[1]; Joe Goldenson[2]. [1]UCSF, San Francisco, CA; [2]San Francisco Department of Public Health, San Francisco, CA. (Tracking ID #1626484)

BACKGROUND: In jails, older adults are the most rapidly growing population and have the worst health. Nearly all inmates are released within 6 months and jail is increasingly a place to link older adults to needed healthcare and social services. However, little is known about their healthcare needs or utilization, and characteristics associated with expensive emergency room (ER) use are unknown. We describe older jail inmates' ER use prior to detainment, characteristics associated with ER use, and plans for post-release healthcare.

METHODS: Cross sectional study of 244 inmates age 55 or older (82 % participation) who spent ≥1 night in the San Francisco Jail. Questionnaires included validated items about demographics, health, persistent distressing symptoms, past and future healthcare use. ER use was defined as answering yes to: "In the 3 months before jail, did you ever visit an emergency room?" Characteristics associated with ER use were examined using chi-square tests.

RESULTS: Overall, 118 participants (48 %) visited an ER within 3 months of jail detainment. Participants were more likely to report ER use if they also reported recent homelessness or marginal housing (50 % vs. 46 %), or lacking money for medicine (60 % vs. 41 %) or food (54 % vs. 40 %). Those with "poor" or "fair" health (56 % vs. 40 %), screened positive for depression (59 % vs. 40 %), or reported a heart condition (66 % vs. 43 %) were also more likely to report ER use, as were participants with persistent distressing symptoms including pain (58 % vs. 38 %), lack of energy (69 % vs. 43 %), or shortness of breath (65 % vs. 45 %). All associations were significant with $p<0.05$. Chronic conditions not associated with ER use included COPD, HIV, diabetes, hypertension, mental health, substance use, and abnormal MOCA cognitive screen (all $p>0.1$). Many (53 %) who used ER before jail planned to seek care primarily in ERs upon release.

CONCLUSIONS: Nearly half of older jail inmates reported using an ER within 3 months of arrest. Most factors associated with increased ER use related to lack of social support (homelessness, poor access to medications, food insecurity) and persistent distressing symptoms. This suggests that jails may be a critical healthcare site for addressing symptoms and social service needs for older adults to reduce ER use in this population.

CHARTING THE DIVERSITY OF INTERNAL MEDICINE: RESULTS OF A NATIONWIDE PRACTICE ANALYSIS Steven A. Haist[1,2]; Gerard Dillon[1]; Janet Mee[1]; Mark Raymond[1]. [1]National Board Medical Examiners, Philadelphia, PA; [2]Drexel University, Philadelphia, PA. (Tracking ID #1643022)

BACKGROUND: NBME conducted a national survey to identify the practice characteristics of physicians entering unsupervised practice. The survey provided the opportunity to determine how practice profiles of newly licensed internists compare to other specialists.

METHODS: Questionnaires were mailed in May 2011 to a national sample of 8000 recently licensed physicians (unrestricted license 4 years or less). The survey included questions related to training and practice setting, followed by a list of 58 tests and procedures. Respondents indicated if they ordered, performed, and/or interpreted each of the 58 procedures. The survey excluded routine activities all physicians perform (e.g., physical exam), while focusing on nonroutine activities intended to sample the boundaries of general, undifferentiated medical practice. Logistic regression was used to compare internists to other specialists on their specific responsibility (order, perform, interpret) for each the 58 procedures.

RESULTS: 2448 usable surveys were returned (response rate 31 %), including surveys from 499 internists. Two-thirds of recently licensed physicians were still residents or fellows, while one-third had completed training and entered independent practice. Internists were comparable to other specialists in the percentage who moonlight, although they devoted slightly more hours to moonlighting. Internists spent less time in outpatient settings and emergency departments than other specialists, and more time in inpatient settings. Internists were far more likely to order the various tests/procedures. The largest odds ratio was for "order cardiovascular stress test" which was endorsed by 77 % of internists and only 33 % of other specialists. In contrast, internists were less likely to actually perform some procedures, being less likely to perform 25 of them and more likely to perform 17. The procedure with the largest difference favoring internists was pulsus paradoxus measurement (48 % vs. 10 %), while the largest difference favoring other specialists was repair obstetric laceration (1 % vs. 17 %). Meanwhile, internists were more likely to interpret the results of procedures (e.g., interpret paracentesis, 58 % vs. 21 %). The exception was for interpreting the various medical imaging procedures, which internists were less likely to interpret. The broader practice profile for internists was more pronounced when residents/fellows were compared to physicians who had completed training and entered independent practice. For example, 43 % of independent practice internists performed central line placement compared to 32 % of other specialists. However, in the resident/fellow group the corresponding percentages were 81 % and 43 %.

CONCLUSIONS: The fact that internists engage in a broader range of clinical activities has implications for residency training, initial licensure, and maintenance of certification (MOC). First, the broad practice patterns argue for a wide range of content on USMLE. The NBME is currently investigating the extent to which procedural skills can be addressed at entry into unsupervised practice. The fact that newly licensed internists see a large proportion of inpatients argues for a similar balance during their residency training. The extent to which the practice profiles of internists remain broad, or tend to narrow as internist become more seasoned, should be the study of future research as it will have implications for the focus of assessments intended to ensure MOC.

CHRONIC OPIOID THERAPY IN HOSPITALIZED PATIENTS: COMMON BUT NOT IMMUTABLE Hilary Mosher[1,2]; Lan Jiang[2]; Mary Vaughan Sarrazin[2]. [1]University of Iowa Hospitals and Clinics, Iowa City, IA; [2]Iowa City VA Healthcare System, Iowa City, Iowa City, IA. (Tracking ID #1629933)

BACKGROUND: Chronic opioid therapy has grown more prevalent over the last two decades, as have concerns about effectiveness and adverse events. While a robust literature is emerging regarding outpatient management of pain conditions and chronic opioid therapy, there is little to guide management during hospitalization of patients on chronic opioid therapy. Some practitioners are concerned that this paucity of evidence may contribute to ineffective acute management or inappropriate dose escalation at hospital discharge. This study aims to define the prevalence of chronic opioid therapy among patients admitted to hospital, as well as describe the effect of hospitalization on the trajectory of chronic opioid therapy.
METHODS: This secondary analysis of Veterans Administration inpatient hospitalizations from 2004 to 2011 included all patients with an index admission, defined as a medical or surgical hospitalization occurring following a minimum 30-day hospitalization-free period. In the case of patients with multiple index admissions, one index hospitalization was chosen at random. Opioid-use status was determined using outpatient prescription records. Patients were classified into one of three categories: 1) no opioid use, defined as no outpatient opioid prescriptions in 6 months prior to hospitalization; 2) chronic opioid use, defined as 90 or more days supply of opioids prescribed within the 6 months preceding index hospitalization and 3) occasional opioid use, defined as patients who received any opioid prescription during the 6 months prior, but did not meet definition of chronic use. Opioid-use status in the 6 months post-discharge was defined similarly. Frequencies pre- and post-discharge and change in opioid-use status following hospitalization were calculated.
RESULTS: A total of 1,341,073 patient hospitalizations were included. In the 6 months prior to admission 847,664 (63.2 %) of patients had no opioid use, 232,211 (17.3 %) had chronic opioid use, and 261,198 (19.5 %) had occasional opioid use. In the 6 months following hospital discharge, 803,969 (60.0 %) had no opioid use, 232,040 (17.3 %) had chronic opioid use, and 305,064 (22.7 %) had occasional opioid use. Although the total percentages were fairly stable, a substantial number of patients transitioned between opioid use categories before and after index hospitalization (Table).
CONCLUSIONS: In this large sample of hospitalized Veterans, nearly 1 of 5 patients was on chronic opioid therapy at the time of admission, emphasizing the scope of the challenge posed by pain management for inpatients on prior chronic opioid therapy. Hospitalization appears to be a factor in both initiation and cessation of chronic opioid therapy for some patients, suggesting the hospital stay plays an under-recognized role in chronic pain management. Future work will examine opioid use by indication, compare dose intensity of opioid therapy pre- and post-hospitalization, and better characterize patients who transition between opioid-use categories.
No opioid therapy on admission N (%) *N*=847,664 Chronic opioid therapy on admission N (%) *N*=232,211 Occasional opioid therapy on admission N (%) *N*=261,198
No opioid therapy post discharge N (%) 644,834 (76.1) 37,226 (16.0) 121,909 (46.7)
Chronic opioid therapy post discharge N (%) 35,409 (4.2) 152,681 (65.8) 43,950 (16.8)
Occasional opioid therapy post discharge N (%) 167,421 (19.7) 42,304 (18.2) 95,339 (36.5)

CLINICAL DECISION-MAKING AFTER PORTABLE CHEST X-RAYS WITH 'RETROCARDIAC INFILTRATE' IN ADULT INPATIENTS Samuel E. Cohen; Calie Santana. Montefiore Medical Center, New York, NY. (Tracking ID #1642680)

BACKGROUND: As opposed to a PA/Lateral chest x-ray, the portable chest x-ray is a view from a single direction. Consequently, the retrocardiac area, seen in one dimension, is particularly difficult to evaluate. It is unclear what types of clinical decisions are made based on the limited interpretation of retrocardiac findings. Our objective was to assess how patients with portable x-rays read as equivocal or positive for 'retrocardiac infiltrate' are affected in their hospital course compared to patients with 'atelectasis', a non-specific finding.
METHODS: Our large urban academic medical center in New York performs more than 20,000 portable chest x-rays yearly. We selected adults admitted in 2011 to the inpatient medicine/surgery service who had a portable chest x-ray during their admission. We randomnly selected 100 patients whose results had the word 'retrocardiac' using our clinical information system. For comparison, we randomly selected 100 patients with x-rays that were negative for any infiltrate but positive for atelectasis. Patients were excluded if they had an ICU admission during their hospital course, if the retrocardiac/atelectatic findings were explicitly compared to similar findings reported in past imaging, or if the x-ray report included additional findings that were pathologic. We extracted clinical characteristics (inpatient service, presence of fever, elevated white count, and respiratory symptoms) and aspects of hospital course (subsequent PA/Lateral chest x-ray, CT Thorax, and antibiotic use) from our information system and via chart abstraction. The main outcomes were administration of pneumonia-related antibiotics or subsequent PA/Lateral chest x-ray or CT Thorax within 2 days of the portable x-ray. We compared differences in outcomes between our patient groups using chi-square tests.
RESULTS: Among patients with retrocardiac infiltrates, 51 % received pneumonia-related antibiotics compared to 28 % of patients with the finding of 'atelectasis' ($p<0.01$). In terms of follow-up imaging, 37 % of patients with retrocardiac infiltrates underwent follow-up PA/Lateral chest x-ray while this occurred in 10 % of patients with 'atelectasis' ($p<0.01$). Follow-up CT Thorax was performed in 11 % of patients with retrocardiac infiltrates compared with 8 % of patients with findings of 'atelectasis,' which was not significantly different.
CONCLUSIONS: There is an association between the finding of retrocardiac infiltrates on portable chest x-ray and both increased use of antibiotics and increased rates of follow-up imaging with PA/Lateral chest x-rays but not CT. Although we excluded patients in the ICU, where physicians might react more aggressively to a non-specific finding, it remains to be determined if this association is strictly due to clinical characteristics. It is also unknown if the increased treatment and testing among this group of patients is warranted or if it is excessive. Still, our findings are evidence of the current use of a limited imaging modality (portable x-rays) in clinical decision-making.

CLINICIANS AND NUMBERS: USABILITY AND VALIDITY OF A MEASURE OF CRITICAL RISK INTERPRETATION (CRIT) Tanner Caverly[1]; Allan V. Prochazka[1]; Brian P. Lucas[2]; Shane Mueller[1]; Ingrid A. Binswanger[1]; Jean Kutner[1]; Brandon Combs[1]; Daniel Matlock[1]. [1]University of Colorado Denver, Denver, CO; 2Stroger Hospital of Cook County, Chicago, IL. (Tracking ID #1631294)

BACKGROUND: Misinterpretation of benefits and harms can bias testing and treatment decisions and communication with patients. A valid measure of clinician risk interpretation is needed to assess the effect that risk interpretation has on clinical performance. We sought to determine the acceptability and validity of a measure of critical risk interpretation among different groups of clinicians.
METHODS: The critical risk interpretation test (CRIT) was developed by the authors to measure a clinician's ability to: 1. modify interpretation based on meaningful differences in the type of outcome or timeframe of a risk, 2. maintain a stable interpretation when a risk is framed in different ways and 3. correctly interpret how testing modifies risk (Table 1). Questions were developed and revised based on literature review and expert feedback. Each item was made up of 2 or more separated survey questions with items scored as correct based on the ideal responses presented in Table 1. Items with missing answers were counted as incorrect and each of the 10 items counted for 1 point. Scores on the 10 items were then transformed onto a 100 point scale. We recruited 380 clinicians at educational conferences to take a self-administered paper test: 115 nurse practitioners (NPs), 131 third year medical students, and 134 residents in

internal medicine at 2 institutions. Using a web-based survey, we administered the same test to 17 national experts (7 physicians and 10 non-physician researchers) in critically evaluating health news. We aimed to explore the test's usability, content validity, convergent validity, and predictive validity and used linear regression to test trends of test scores across groups.

RESULTS: Item usability was excellent (< 3 % non-response for each item). Item difficulty was broad (proportion of respondents who answered items correctly was 7 % to 56 %). The mean score was 42 on a 100 point scale (standard deviation 13; range 11–82). Experts had favorable views of the CRIT's clarity and content validity (Table 2). Supporting convergent validity, scores on our test correlated with other tests of related abilities - Berlin Numeracy Test (r=0.28, p<0.001); Cognitive Reflection Test (r=0.18, p=0.004). Mean test scores varied as expected among groups with differences in prior evidence-based medicine training (35 for NPs, 43 for medical students, 45 for residents, and 59 for physician experts; p<0.0001).

CONCLUSIONS: Our test of critical risk interpretation is usable, discriminates among clinicians, and demonstrates content, convergent, and predictive validity.

Table 1. Critical Risk Interpretation Test Items.

Items, Grouped by Concept
Modify interpretation based on meaningful differences
Rate a risk over the next 10 years more important than the same risk over a lifetime.***
For a screening test, understand that mortality reduction is a better end-point than disease detection rates or improved 5-year survival rates.**
Rate the risk of dying from a disease more important than the risk of getting the disease.***
Understand that a patient-oriented end-point is a better than a surrogate end-point.**
Understand that all-cause mortality is a better end-point than disease-specific mortality.**
Understand that a patient-oriented end-point is better than a composite containing surrogate end-points.**
Maintain a stable interpretation when the same risk is framed in different ways
Rate an absolute number the same as a proportion when they are equivalent.***
Rate an absolute risk reduction, a number needed to treat, and a relative risk reduction the same when they are equivalent.**
Correctly interpret how testing modifies a risk
Understand that changing a test-cutoff affects both false-positives and false negatives.*
Understand how the prevalence affects the predictive value of a test.*

*Multiple-choice questions with 4 options. **10-point response scale from 1 ("no proof") to 10 ("good proof"). ***10-point response scale from 1 ("not important") to 10 ("very important").

CLINICIANS RARELY MAKE CHANGES IN TREATMENT FOLLOWING MONITORING DENSITOMETRY IN WOMEN ON THERAPY FOR LOW BONE MINERAL DENSITY Michelle Rappaport; Brandon Combs; Tanner Caverly; Trina C. Mizrahi; Daniel Matlock. University of Colorado School of Medicine, Denver, CO. (Tracking ID #1594564)

BACKGROUND: Approximately 98 % of patients on bisphosphonates experience an increase in bone mineral density (BMD) suggesting that routine monitoring with repeat densitometry may not be necessary. Furthermore, guidelines for monitoring low BMD therapy vary widely, ranging from recommending yearly monitoring to no monitoring at all. This study explored clinician rationale for ordering monitoring dual-energy X-ray absorptiometry (DXA) scans and the management changes that follow in an average risk population on treatment for low BMD.

METHODS: We identified 1782 unique patients with more than 1 DXA between January 1, 2003 and August 1, 2011 who had been to one of 5 primary care clinics at the University of Colorado Hospital within the past 18 months. Men (n=120) and patients on medications or with conditions known to cause secondary osteoporosis (n=580) were excluded. Of 1082 patients remaining, 552 had exposure to treatment defined as: bisphosphonates, teriparatide, raloxifene, denosumab, calcitonin, hormone replacement therapy, or ergocalciferol 50,000 IU. We reviewed charts on a random sample of 92 women, collecting data on clinician rationale for ordering monitoring DXA and the management changes that followed. We defined monitoring DXA as any subsequent DXA after initiating treatment for low BMD with bisphosphonates or teriparatide. Management changes due to DXA were defined as: a) change in drug class in setting of decrease in BMD; b) stopping drug in the setting of stable or increased BMD; or c) stopping drug in a patient with osteopenia whose FRAX® score would not merit treatment. We considered changes as being due to factors other than monitoring DXA if: a) change occurred due to drug side-effects or payment issues; b) medication change in the setting of a stable or increased BMD; c) or drug holiday in the setting of decreased BMD.

RESULTS: Average age of our population was 68.4 years and mean calculated 10-year probability of hip or combined major osteoporotic fracture (by FRAX®) was 3.46 % and 13.31 % respectively. Ninety-one (99 %) patients were treated with bisphosphonates. Our population received 196 monitoring DXA scans during the study period and clinicians ordered scans out of a sense that they were "due" 90 % of the time. Most scans (n=165, 84 %) resulted in no change in management. Fifteen (8 %) scans resulted in changes not due to DXA. There were 16 changes due to DXA (8 %), and of those, 5 (3 %) were starting a drug or changing drug class and 11 (6 %) were drug stoppages. Thirty-six scans showed a significant decrease in BMD and most (n=26, 72 %) led to no change in therapy. Of the 10 changes that occurred when BMD decreased, half were not due to DXA.

CONCLUSIONS: Our data indicate that clinicians frequently order monitoring DXA scans out of a sense they are "due" and rarely make changes in treatment based on the results. When treatment changes occur, approximately half are not due to DXA and thus could have been made without additional testing. Even when DXA showed significant decline in BMD, changes were uncommon. We conclude that monitoring DXA scans could be done less often. This study highlights the need for additional research to assess the value of monitoring DXA scans before this practice can be justified.

COLORECTAL CANCER SCREENING IN A VULNERABLE POPULATION: CAN PROVIDERS PREDICT WHO IS LIKELY TO COMPLETE FECAL OCCULT BLOOD TESTING? Matthew Chin[1]; Dana Romalis[1,2]; Sara Doorley[1,2]; Angela Bymaster[1,2]; Halley Tsai[1]; Ahmad Kamal[1,3]; Cheryl Ho[1,2]. [1]Santa Clara Valley Medical Center, San Jose, CA; [2]Santa Clara Valley Medical Center, San Jose, CA; [3]Santa Clara Valley Medical Center, San Jose, CA. (Tracking ID #1621779)

BACKGROUND: Colorectal cancer (CRC) screening is a cornerstone of preventative medicine and an important component of primary care. Studies have shown that the rates of CRC screening are lower in the uninsured and marginalized patient populations. Fecal occult blood testing (FOBT) is part of one strategy for CRC screening, but requires that a patient be counseled annually on the proper collection of three consecutive stool samples after the visit. Given the unique barriers to care in the homeless population, screening is often overlooked in favor of more acute concerns. The purpose of this study is to identify if providers are able to predict which patients are most likely to complete FOBT, to determine if alternative screening modalities may be more practical in this population.

METHODS: Providers at a multidisciplinary safety-net healthcare system servicing an ethnically diverse homeless population were included in the study. Over a 6-month period, all patients eligible for FOBT were offered screening. After each encounter, providers were asked to rate, on a Likert scale of 1–5, how likely it was that they felt patients would complete screening. Demographic data, including age, sex, ethnicity (by patient self-report), and number of psychiatric conditions (by billing data), was collected. Actual rates of test completion were determined at the end of the study period

RESULTS: 110 patients (71 male, 39 female, mean age 55 years), were offered screening. 35 (32 %) patients successfully completed the screening. 37 (34 %) patients were judged to have a low likelihood of compliance (score of 1 or 2), of which 4 (11 %) completed the screening. 44 (40 %) patients were judged to have a high likelihood of compliance (score of 4 or 5), of which 18 (41 %) completed the screening. 85 % of patients had at least 1 psychiatric diagnosis. 46 patients, with an average likelihood score of 3.3, had 1 or fewer psychiatric diagnoses, of which 15 (33 %) completed the screening. 45 patients, with an average likelihood score of 2.5, had at least 3 psychiatric diagnoses, of which 10 (22 %) completed the screening.
CONCLUSIONS: Overall rates of FOBT compliance in our study were low, but appeared to be twice as high as that reported in other studies which examined similar populations. Patients with a low likelihood score were less likely to complete screening than those with a high likelihood score. Psychiatric disease, which is common in this population, is also a predictor of poor patient compliance. One of the barriers to quality care in a vulnerable population is the irregular schedule of patient visits, perhaps making annual FOBT a less practical strategy for CRC screening. Over the past decade there has been a nationwide trend away from the strategy of annual FOBT in tandem with sigmoidoscopy every 5 years in favor of colonoscopy, which, in an average risk population, is required once every ten years, independent of annual FOBT, and has the potential to be both diagnostic and therapeutic. In a safety net healthcare system with limited resources, FOBT is used as a tool to determine which patients are most likely to benefit from endoscopic CRC screening. Further studies may be useful to determine if provider predictability of patient compliance could be a valid measure to determine which patients would be most likely to take advantage of more involved CRC screening strategies.

COMMUNITIES IMPACT DIABETES CENTER'S VISION HEALTH TOOLKIT: UTILIZING LAY HEALTH SOCIAL SERVICE PROVIDERS AS MESSENGERS OF VISION HEALTH INFORMATION Michelle A. Ramos[1]; Ashley Fox[1]; Brett Ives[2]; Carol Horowitz[1,3]. [1]Mount Sinai School of Medicine, New York, NY; [2]Mount Sinai School of Medicine, New York, NY; [3]Mount Sinai School of Medicine, New York, NY. (Tracking ID #1640432)

BACKGROUND: Racial and ethnic disparities in vision impairment are prevalent as are low rates for recommended eye screenings, such as annual dilated eye exams for people with diabetes (40–65 %). A community-academic partnership aimed to improve vision screening in a low-income, minority neighborhood by developing a multi-component vision health toolkit for social service providers to promote comprehensive vision exams among their consumers.
METHODS: The team developed and tested a bilingual toolkit that included posters, brochures, table tents and magnifier cards. Thirty-seven local social service agencies (i.e., senior centers, food pantries), faith-based organizations and health centers were recruited to adopt the toolkit and have at least one staff member or volunteer serve as a Vision Health Champion for that site. We surveyed a subset of consumers at 15 intervention and 3 control sites before and 6 months after disseminating the toolkits to assess receipt of comprehensive eye exams, vision knowledge and comorbidities, and surveyed Vision Health Champions to assess implementation and provider knowledge at these same times.
RESULTS: The 156 consumers surveyed were largely female (68 %), Black (55 %) and had high diabetes (23 %) and hypertension (33 %) rates. At baseline, 72 % reported an eye exam in the past year and vision knowledge was fairly high (91 % correctly answered 3 or more out of 7 vision knowledge items). There was no baseline difference between intervention and control sites self-reported eye exam rates in the past year. Six month follow-up surveys were completed with 62 % of consumers. People at intervention sites were more likely to report a comprehensive eye exam in the past 6 months (45 % vs. 24 %, $p=0.06$). Those with diabetes at intervention sites were also more likely to have had an eye exam in the past 6 months than those with diabetes at control sites (66 % vs. 33 %, $p<0.01$). With respect to 44 of 61 Vision Health Champions surveyed at follow-up (72 % response rate), 80 % stated that the toolkit was easy to implement, 32 % integrated it into pre-existing programming and 90 % planned to continue using it.
CONCLUSIONS: Even in a small pilot project, we demonstrated a significant increase in comprehensive eye examinations at intervention sites compared with control sites and among the targeted group - individuals with diabetes. We further demonstrated the feasibility of implementing a sustainable community-based intervention in a low-income setting at locations where people frequently congregate and interact with a range of social service providers. Novel, scalable approaches such as the use of Vision Health Champions in social service settings are a viable means of preventing and controlling diabetes complications, including vision loss.

COMMUNITY PARTNERED PARTICIPATORY RESEARCH (CPPR) AS AN EFFECTIVE METHOD FOR DEVELOPING NEW PARADIGMS FOR THE RECRUITMENT AND RETENTION OF UNDERREPRESENTED POPULATIONS IN MEDICAL RESEARCH Ibrahima Sankare[1]; Rachelle Bross[2]; Arleen Brown[1]; Keyonna M. King[1]; Loretta Jones[3]; D'Ann Morris[4]; Keith C. Norris[5]; Felica U. Jones[3]; Aziza L. Wright[3,5]; Sigrid K. Madrigal[3]; Dennishia Banner[3]; Roberto Vargas[1]; Nell Forge[5]; Lujia Zhang[1]; Katherine L. Kahn[1]. [1]UCLA, Los Angeles, CA; [2]Los Angeles Biomedical Research Institute, LOS ANGELES, CA; [3]Healthy African American Families, LOS ANGELES, CA; [4]Los Angeles Urban League, LOS ANGELES, CA; [5]Charles Drew University, LOS ANGELES, CA. (Tracking ID #1640988)

BACKGROUND: Low levels of recruitment, retention and participation of minority populations in medical research studies hinder efforts to address and reduce ethnic and racial disparities in health care and health status. As part of the Healthy Community Neighborhood Initiative (HCNI) community-partnered study that aims to improve health and health care in a community in South Los Angeles, we (1) identified barriers to participation of minority populations in research, and (2) identified effective recruitment and retention strategies for use with predominantly African American and Latino residents in South Los Angeles.
METHODS: Using the PubMed database, we conducted a literature review and found 20 articles specifically related to the recruitment and retention of federally underrepresented minorities (African Americans/blacks, Latinos/Hispanics). We evaluated each article based on: (1) the use of a CPPR process to design the recruitment and retention strategies, (2) the effectiveness of reported strategies in yielding positive outcomes in a predominantly Latino and African American populated area, and (3) the effectiveness of these strategies in generating trust among these demographics that have historically mistrusted health-related studies due to negative historical precedents. The findings of the selected articles were summarized in an oral presentation to community and academic partners. To reflect the diversity of the HCNI partners in the selection of recommended strategies, 13 HCNI community and academic partners subsequently ranked each of the identified strategies. The HCNI partners then applied the highest ranked strategies to recruitment efforts in South Los Angeles and queried enrolled study participants about what motivated their study participation.
RESULTS: We identified 10 recruitment and 17 retention strategies that had been proven to increase participation of underrepresented populations in medical research by maximizing the quality of a research participant's experience through (1) meaningful interactions with study team members, (2) demonstration of appreciation for the participant's efforts and (3) the provision of feedback throughout and upon the completion of the research study. The three highest ranked recruitment strategies were: word of mouth, use of newsletters, and postings of fliers on bulletin boards. The highest ranked retention strategies were: compensation through gift cards, mailing of holiday cards, and provision of certificates of study completion. To date, the HCNI partners have contacted 90 potential participants and enrolled 79 participants using a combination of the cited strategies. Sixty percent of the enrolled

participants cited word of mouth as the strategy that most motivated their interest in study participation.
CONCLUSIONS: CPPR provides an extraordinary opportunity to identify relevant and effective mechanisms for recruiting underrepresented populations. After applying recruitment strategies supported by the literature and by a diverse set of community-academic partners, we learned from enrolled study participants that "word of mouth" involving personal interaction was the most effective recruitment strategy in this community. While initially, this recruitment strategy may cause selection bias as we disrupt the mistrust barrier, with time, the development of trust between community and academia is likely to facilitate building a highly engaged and unbiased population-based sample.

COMMUNITY CHARACTERISTICS ASSOCIATED WITH THE LOSS OF LOCAL RURAL HEALTH CLINICS AND CENTERS
Michelle Ko[1]; Janet R. Cummings[2]. [1]UCSF, San Francisco, CA; [2]Emory University, Atlanta, GA. (Tracking ID #1642708)

BACKGROUND: The Rural Health Clinics (RHCs) and Federally Qualified Health Centers (FQHCs) programs provide critical support for primary care services to underserved rural areas. In the past decade, both RHCs and FQHCs received considerable expansions in federal investment. Nevertheless, these providers face substantial challenges to survive, including limited outside funds, difficulties in staff recruitment, isolation from larger health systems, and lack of community support. We examined associations between community characteristics and loss of rural health centers from 2000 to 2007.
METHODS: We conducted a retrospective cohort study of 1354 U.S. rural counties from 2000 to 2007 using the Area Resource File 2008. Rural counties were defined as those not located in Metropolitan or Micropolitan Statistical Areas. Rural health center supply was measured as the total number of RHCs and FQHCs in the county. The primary outcome was whether the county experienced a net loss in the number of rural health centers from 2000 to 2007. We performed logistic regression models to estimate associations between the outcome and multiple community characteristics, including percent urbanized population, poverty rates, percentage of non-white minorities, elderly population and infant mortality rates. Models controlled for total population, physician supply, the number of hospitals, and the baseline number of clinics/centers. We estimated two models: (1) community characteristics at baseline in 2000, and (2) measures of change over time from 2000 to 2007. For significant characteristics, we calculated predicted probabilities of loss of centers for high (95th percentile) versus low (5th percentile) counties. In secondary analyses, we also tested associations between community characteristics and gains in the number of rural health centers. Models adjusted for within-state correlation using state-level clustered robust standard errors.
RESULTS: In 2000, 917 rural counties maintained at least one rural health center. As of 2007, 197 counties lost one or more centers. In multivariate analyses, the percentage of minority residents was positively associated with loss of rural health centers (OR: 1.018, $p<0.001$), whereas the poverty rate was negatively associated (OR: 0.948, $p=0.025$). The predicted probability of loss of rural health centers was 22.1 % for counties with a high minority population, vs. 8.6 % for low minority counties ($p<0.001$ for both). The effects of other community characteristics, including urbanization and elderly population, were not significant. Likewise, measures of change in community characteristics over time were also not significant. In the same period, 464 counties experienced a net increase in the number of rural health centers. Controlling for other community characteristics, minority percentage was associated with lower odds of addition of a new health center (OR: 0.982, $p<0.001$).
CONCLUSIONS: Rural minority populations may be at increased risk of loss of access to primary care safety net providers. In the absence of rural health centers, the potential for improved access to care, as a result of coverage expansions under the Affordable Care Act, may not be fully realized.

COMMUNITY-PARTNERED CLUSTER-RANDOMIZED COMPARATIVE EFFECTIVENESS TRIAL OF COMMUNITY ENGAGEMENT AND PLANNING OR PROGRAM TECHNICAL ASSISTANCE TO ADDRESS DEPRESSION DISPARITIES
Michael Ong[10]; Kenneth B. Wells[1,2]; Loretta Jones[5,6]; Bowen Chung[1,7]; Elizabeth Dixon[8]; Lingqi Tang[2,4]; James Gilmore[9]; Cathy Sherbourne[1]; Victoria K. Ngo1; Susan E. Stockdale[2,12]; Esmeralda Ramos[2]; Thomas R. Belin[3,11]; Jeanne Miranda[2,4]. 1RAND Corporation, Santa Monica, CA; 2UCLA, Los Angeles, CA; 3UCLA, Los Angeles, CA; [4]UCLA, Los Angeles, CA; [5]Healthy African American Families II, Los Angeles, CA; [6]Charles R. Drew University of Medicine and Science, Los Angeles, CA; [7]Harbor-UCLA Medical Center, Torrance, CA; [8]QueensCare Health and Faith Partnership, Los Angeles, CA; [9]Behavioral Health Services, Gardena, CA; [10]UCLA, Los Angeles, CA; [11]UCLA, Los Angeles, CA; [12]Greater Los Angeles VA Health Care System, Los Angeles, CA. (Tracking ID #1640930)

BACKGROUND: Depression contributes to disability and there are ethnic and racial disparities in access to and outcomes of care. Quality improvement (QI) programs for depression in primary care improve outcomes relative to usual care, but little is known about whether implementing them across health and social service programs in under-resourced communities improves outcomes. This study compared the effectiveness of two approaches to implement depression QI, a community-based participatory approach promoting multi-sector collaboration (community engagement or CE) compared to a typical QI approach focused on individual programs(technical assistance or TA), at improving client health and quality of life outcomes.
METHODS: We conducted a group-level randomized comparative effectiveness trial in two under-resourced communities. We identified and enrolled 93 programs from health, social and other services sectors using a community partnered approach; matched programs were randomized to the CE or TA trial arms. Of the 4,440 clients screened from 93 programs, 1,322 were eligible by PHQ-8>= 10; 1,246 enrolled and 1,018 completed baseline or 6 month follow-up. Primary outcome measures were self-reported mental health quality of life and depressive symptoms. We conducted intent-to-treat analyses using logistic regression models for dichotomous measures and loglinear models for counts, adjusting for baseline status of the dependent variable and covariates (age, sex, >=3 chronic conditions, education, race/ethnicity, family poverty, past-year alcohol abuse or illicit drug use, past-year depressive disorder, and community). All analyses accounted for clustering of clients within programs, weighting to characteristics of the eligible sample, and item-level imputation for missing data and wave-level imputation for missing surveys.
RESULTS: Of 1,018 depressed clients, 57 % were female, 87 % were Latino and/or African American; 44 % had less than a high school education, 74 % had income below the poverty level, 20 % worked and 54 % were uninsured. The percentage having past-year depressive disorder was 62 %, while 39 % had substance abuse and 55 % had multiple chronic conditions. Over half had risk factors for homelessness. There were no significant differences by intervention status. Community engagement was significantly ($p<0.05$) more effective than program technical assistance at reducing poor mental health quality of life (odds ratio or OR: 0.74), improving physical activity (OR: 1.50), reducing risk factors for homelessness (OR: 0.61), reducing hospitalizations for behavioral health conditions (OR: 0.51) and medication visits among mental health specialty users (OR: 0.49), while increasing depression care visits in primary care/public health (OR: 2.63), faith-based (OR: 2.84), and park/community center (OR: 6.20) settings. Employment, antidepressant use, and total depression contacts were not significantly affected ($p>0.05$).
CONCLUSIONS: Community engagement to collaboratively address depression across multiple sectors was more effective than individual program technical assistance in improving mental health quality of life, physical activity and homelessness risk factors while shifting utilization away from hospitalizations and mental health specialty medication visits toward primary care and community-based sectors, offering a partnership model to address multiple outcome disparities for depressed clients in under-resourced communities.

COMMUNITY-PARTNERED EVALUATION OF DEPRESSION SERVICES FOR CLIENTS OF COMMUNITY-BASED AGENCIES IN UNDER-RESOURCED COMMUNITIES IN LOS ANGELES
Michael Ong[3]; Jeanne Miranda[1,2]; Loretta Jones[4,5]; Bowen Chung[6,7]; Elizabeth Dixon[8]; Lingqi Tang[1,2]; James Gilmore[9]; Cathy Sherbourne[6]; Victoria K. Ngo[6]; Susan E. Stockdale1,[10]; Esmeralda Ramos1; Thomas R. Belin[11,12]; Kenneth B. Wells[1,6]. [1]UCLA, Los Angeles, CA; [2]UCLA, Los Angeles, CA; [3]UCLA, Los Angeles, CA; [4]Healthy African American Families II, Los Angeles, CA; [5]Charles R. Drew University of Medicine and Science, Los Angeles, CA; [6]RAND Corporation, Santa Monica, CA; [7]Harbor-UCLA Medical Center, Torrance, CA; [8]QueensCare Health and Faith Partnership, Los Angeles, CA; [9]Behavioral Health Services, Gardena, CA; [10]VA Greater Los Angeles Healthcare System, Los Angeles, CA; [11]UCLA, Los Angeles, CA; 12UCLA, Los Angeles, CA. (Tracking ID #1636684)

BACKGROUND: As medical homes are developing under health reform, little is known regarding depression services need and use by diverse safety net populations in under-resourced communities. For chronic conditions like depression, primary care services may face new opportunities to partner with diverse community service providers, such as those in social service and substance abuse centers, to support a collaborative care model of treating depression. This study aimed to understand the distribution of need and current burden of services for depression in under-resourced, diverse urban communities.
METHODS: We analyzed data from client screening and follow-up surveys from the baseline phase of a community-based participatory research trial to improve depression services within two under-resourced, diverse communities. 93 programs, including 17 primary care/public health, 18 mental health, 20 substance abuse, 10 homeless services, and 28 social/other community services were identified through a community-partnered process and participated in the trial. 4,440 clients were screened from the 93 programs, 1,322 were potentially depressed by PHQ-8 and gave contact information; 1,246 enrolled and 981 completed surveys. We conducted univariate analyses to describe the sample and bivariate analyses to compare types of screening locations. Significance testing ($p < 0.05$) was conducted accounting for intra-class correlation within program using Chi-square tests for bivariate analyses. To control for potential response bias, attrition weights were constructed by fitting logistic regression models stratified by intervention condition to predict enrollment status and baseline completion from screener predictors. For item level missing data (<5 % for all variables except 10–15 % for income and mental health disorders assessed by the Mini-international neuropsychiatric interview), we used an extended hot-deck multiple imputation based on the predictive mean matching methods. We imputed 5 data sets, averaged results and adjusted standard errors for uncertainty due to imputation. We conducted 3 sensitivity analyses: 1) multiple imputation for missing surveys to the full eligible sample (1,322); 2) raw data; and 3) sex and age adjustment.
RESULTS: Overall, 69.2 % (SE: 2.5 %) of clients had a primary care/public health visit in the prior 6 months. Depression prevalence ranged from 51.9 % (SE: 3.7 %) in mental health programs to 36.2 % (SE: 2.5 %) in primary care/public health programs to 17.2 % (SE: 2.2 %) in social-community programs. 41.7 % (SE: 2.4 %) of clients had primary care/public health visits for mental health/depression. However, primary care/public health settings had only 7.7 % and mental health specialty care settings had only 26.6 % of the total volume of depression contacts. Clients received most of their depression services (65.8 %) outside of traditional healthcare settings, and in multiple program settings (2.0, SE=0.1). More clients preferred counseling (90.0 %, SE: 1.1 %) over medication (59.9 %, SE: 2.7 %) for depression treatment.
CONCLUSIONS: Need for depression care was high and a broad range of agencies provide depression-related care. Although most participants had contact with primary care, most depression services occurred outside of primary care settings and the majority preferred counseling over medication for depression treatment, emphasizing the need to coordinate and support the quality of community-based services across diverse community settings.

COMMUNITY-BASED VERSUS RANDOM DIGIT DIALING SAMPLES IN CHRONIC DISEASE PREVALENCE ESTIMATES AMONG OLDER BLACK MEN IN NEW YORK CITY
Helen Cole. New York University School of Medicine, New York, NY. (Tracking ID #1641743)

BACKGROUND: Accurate assessment of the prevalence of chronic diseases and health behaviors among underserved populations is essential for addressing disparities. Previous research suggests probabilistic sampling modalities such as random digit dialing (RDD) may yield different epidemiologic estimates than diverse venue-based sampling in minority populations. We aimed to compare these sampling approaches in older black men in New York City (NYC).
METHODS: A short survey was administered to Black men age 50 and over intercepted in community-based venues including barbershops, mosques, churches, soup kitchens, and social service agencies throughout New York City as part of eligibility screening for two large randomized-control trials. Survey data included self-reported hypertension, diabetes, high cholesterol and history of timely colorectal cancer (CRC) screening. We used descriptive statistics to calculate prevalence rates within our community-based sample, and compared them to estimates from the NYC Community Health Survey (CHS), a population-based RDD survey.
RESULTS: Among 4,888 survey respondents recruited from community-based sites, prevalence rates for self-reported hypertension, diabetes and high cholesterol were 58.6 %, 21.1 % and 31.3 % respectively. Prevalence rates for hypertension, diabetes and high cholesterol among black men over 50 in the CHS were 55.9 %, 26.5 % and 43.5 %. Compared to 75 % of black men >50 in the CHS, only 48.0 % of the community-based sample reported having ever having had a screening colonoscopy. Differences in prevalence estimates between the CHS and the community-based sample were statistically significant for diabetes, high cholesterol and history of CRC screening ($p<0.0001$). In the venue-based sample, over 9 % of the screened individuals did not have a working telephone. Almost one third of the venue-based sample had less than a high school education compared to only 20 % of the CHS sample. However, demographic variables did not explain the difference in self-reported prevalence estimates for diabetes, high cholesterol, or high blood pressure or in self-reported CRC screening history.
CONCLUSIONS: The prevalence of certain chronic diseases and health behaviors among older Black men recruited from community-based settings in NYC differed substantially from population-based estimates. This marked discordance is particularly important for CRC screening; since black men have the highest CRC mortality rates, potentially due to lack of timely screening. Research is needed to improve health assessment in black men who may not be captured by conventional population-based survey methods.

COMORBID DEPRESSION AND SUBSTANCE ABUSE IN SAFETY-NET CLIENTS OF HEALTH AND COMMUNITY-BASED AGENCIES IN LOS ANGELES: CLINICAL NEEDS AND SERVICE USE PATTERNS
Evelyn Chang[1]; Bowen Chung[3]; James Gilmore[4]; Lingqi Tang[3]; Anna Morgan[5]; Kenneth B. Wells[2,3]. 1VA- Greater Los Angeles, Los Angeles, CA; [2]RAND, Santa Monica, CA; [3]UCLA, Los Angeles, CA; [4]Behavioral Health Services, Inc., Los Angeles, CA; [5]Harbor- UCLA, Torrance, CA. (Tracking ID #1624043)

BACKGROUND: Depression and substance use disorders (SUD) are common among low-income, minority adults who may receive services from health and other community-based sectors. Depending on the sector visited, this population may receive screening, treatment or referral for depression or substance use but rarely integrated services. Little is known about the level of comorbidity across a range of service sectors supporting safety-net clients or use of services for depression in the context of substance abuse comorbidity for clients across diverse community-based settings. This study describes clinical characteristics and service utilization for low-income, primarily African-American and Latino, adults with depression with and without comorbid substance abuse in under-resourced communities.

METHODS: The study uses baseline data from Community Partners in Care (CPIC), a Community-Partnered Participatory Research initiative to improve depression services in two under-resourced communities in Los Angeles County: Hollywood-Metro and South Los Angeles. Clients were screened for depression (PHQ 8>=10) in primary care/public health (PC), mental health (MH), substance abuse (SA), and social services (SS), and other community-based settings such as churches and senior centers. Eligible depressed clients enrolled and completed a baseline survey (n=845). We conducted univariate and bivariate analyses to describe the sample and compare those with and without comorbid SA in clinical need and services utilization in the past 6 months.
RESULTS: Across sectors, 48.5 % (n=407) had co-morbid substance use disorder (SUD); most (n=323, 79.4 %) were receiving SUD treatment, but less than half (46.0 %) had health insurance. Most (73.8 %) had family incomes below poverty levels with no significant difference by presence of co-morbid SUD. Clients with co-morbid SUD were more likely than those without to be in transitional housing (21.3 % vs 3.8 %, p<0.001) and had a higher rates of arrests (39.9 % vs 7.3 %, p<0.001), 12-month depressive disorder (73.5 % vs 53.8 %, p<0.001), post-traumatic stress disorder (57.8 % vs 39.9 %, p<0.001), and mania/psychosis (60.8 % vs 27.7 %, p<0.001). A greater proportion of clients with both depressive symptoms and SUD went to the ER for any health problems (59.1 % vs 46.7 %, p<0.001) and were significantly more likely to be admitted for an alcohol, drug, or emotional problem than those without SUD (23.0 % vs 7.9 %, p<0.001). Clients with both depressive symptoms and SUD had more MH specialty visits (70.4 % vs 50.6 %, p<0.001) and fewer PC visits (65.6 % vs 74.9 %, p=0.006) than those without SUD. Those with comorbid SUD received depression services during 67.9 % of visits to outpatient MH clinics, 65.0 % of visits to PC, 73.4 % of visits to SA agencies, 56.6 % of visits to SS agencies, 44.6 % of visits to churches, and 19.0 % of visits to senior centers.
CONCLUSIONS: Half of low-income minority adult clients across health and community-based agencies with depressive symptoms were found to have co-morbid SUD. These individuals have significant psychosocial stressors, including lack of housing, insurance and arrests. Depressed clients with co-morbid SUD utilized emergency, MH, and SS agencies at higher rates than those without SUD and had higher admission rates. The high prevalence of comorbid substance abuse across diverse agencies supporting safety net clients suggests that a community-wide approach may be needed to stabilize health and social outcomes for this vulnerable population.

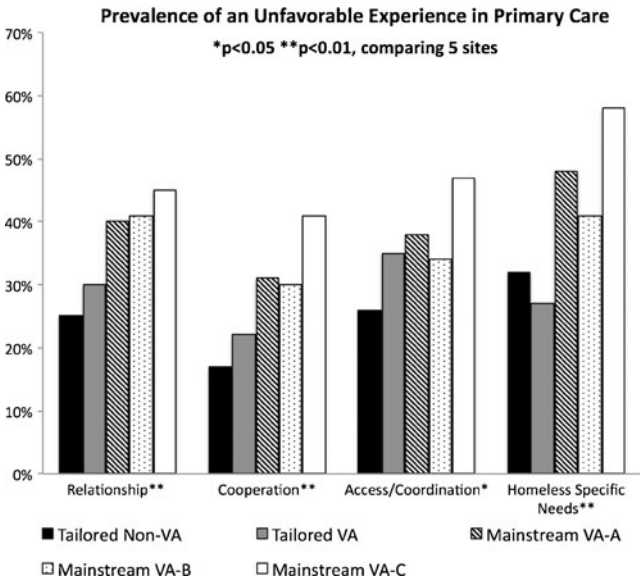
COMPARATIVE EFFECTIVENESS OF PHARMACOLOGIC AND MECHANICAL STRATEGIES FOR PREVENTION OF VTE AMONG SPECIAL POPULATIONS Sonal Singh[1,4]; Elliott R. Haut[2]; Daniel Brotman[1,3]; Ritu Sharma[4]; Yohalakshmi Chelladurai[4]; Kenneth M. Shermock[3]; Sosena Kebede[1,3]; Kent A. Stevens[2]; Luis J. Garcia[2]; Kalpana Prakasa[1,3]; Hasan M. Shihab[4]; Jodi B. Segal[1,4]. [1]Johns Hopkins University, Baltimore, MD; [2]Johns Hopkins University, Baltimore, MD; [3]Johns Hopkins University, Baltimore, MD; [4]Johns Hopkins University, Baltimore, MD. (Tracking ID #1626687)

BACKGROUND: Venous thromboembolism is a prevalent and avoidable complication of hospitalization. Patients hospitalized with trauma, traumatic brain injury, burns, or liver disease; patients on antiplatelet therapy, obese or underweight patients, those having obesity surgery, or with acute or chronic renal failure have unequal risks for bleeding and thrombosis and may benefit differently from prophylactic medication. Our objective was to systematically review the comparative effectiveness and safety of pharmacological and mechanical methods of prophylaxis of VTE in these special populations
METHODS: We searched MEDLINE®, EMBASE®, SCOPUS, CINAHL®, www.clinicaltrials.gov, International Pharmaceutical Abstracts (IPA), and the Cochrane Library in July 2012. This was complemented by hand searches from the reference lists and unpublished studies provided by sponsors. We included randomized controlled trials on these special populations. Since these populations may be excluded from trials, we also included controlled observational studies of pharmacologic agents, and uncontrolled observational studies and case series of inferior vena cava filter use. Two reviewers evaluated studies for eligibility, serially abstracted data using standardized forms, and independently evaluated the risk of bias in the studies and strength of evidence for major outcomes and comparisons. We qualitatively synthesized the evidence and also pooled the relative risks from the controlled studies.
RESULTS: After a review of 30,902 unique citations, we included 102 studies of which just 8 were trials. Fifty eight studies reported on patients with trauma, thirteen studies reported on patients with traumatic brain injury, one study reported on patients with burns, two studies reported on patients with antiplatelet agents, twenty one studies reported on patients having bariatric surgery, two studies reported on obese patients and five studies reported on patients with renal failure. We found no studies that reported on patients with liver disease or those who were underweight. The majority of observational studies had a high risk of bias. The strength of evidence is low that IVC filter placement is associated with a lower incidence of PE and fatal PE in hospitalized patients with trauma compared to no IVC filter placement. The strength of evidence is low that enoxaparin reduces DVT and that UFH reduces mortality in patients with TBI when compared to patients without anticoagulation. Low grade evidence supports that IVC filters with usual care are associated with increased mortality and do not decrease the risk of PE in patients undergoing bariatric surgery compared to usual care alone. All other comparisons, for all of the key questions, had insufficient evidence to permit conclusions.
CONCLUSIONS: Our comparative effectiveness review demonstrates that there is a paucity of high quality evidence to inform treatment of these special populations. Future research using robust observational studies that control for confounding by indication and disease severity are needed as randomized controlled trials typically exclude or do not report on these populations

COMPARING HOMELESS PERSONS' CARE EXPERIENCES IN TAILORED VERSUS NON-TAILORED PRIMARY CARE SETTINGS Stefan Kertesz[1]; Theresa W. Kim[2]; Adam Gordon[3]; Alexander S. Young[5]; David E. Pollio[4]; Richard N. Jones[8]; Cheryl L. Holt[6]; Erika L. Austin[1]; David Roth[7]. [1]Birmingham VA Medical Center & U. Alabama Birmingham, Birmingham, AL; [2]Boston University, Boston, MA; [3]VA Pittsburgh Health System and U. Pittsburgh, Pittsburgh, PA; [4]U. Alabama, Tuscaloosa, AL; [5]VA Greater Los Angeles, Los Angeles, CA; [6]U. Maryland, Baltimore, MD; [7]Johns Hopkins University, Baltimore, MD; [8]Hebrew SeniorLife, Boston, MA. (Tracking ID #1638015)

BACKGROUND: Although the Affordable Care Act's expansion of coverage may increase access to primary care (PC) for vulnerable populations, like the homeless, a key challenge will be to promote innovative delivery models that can sustain their engagement in PC. Some agencies tailor PC services for homeless patients in ways that include outreach, care in shelters or streets, team-based care, co-location of providers, provider education, tangible items (i.e. clothing, food), or a consumer governance role. To date, there has been no study of whether these "tailored" service designs yield a better patient experience. Using a new survey we developed for this population, we compared homeless patients' perceptions of PC across settings that differed in the degree of PC service tailoring.
METHODS: We surveyed homeless-experienced patients at 3 mainstream PC settings in the Veterans Administration (VA) (n=312), a homeless-tailored VA clinic (n=94), and a highly tailored non-VA Health Care for the Homeless Program (n=195). Patient ratings were obtained with the 33-item Primary Care Quality-Homeless (PCQ-H) survey. Derived from interviews and the application of Item Response Theory, the PCQ-H survey results in 4 scales: 1) Patient-Clinician Relationship, 2) Cooperation among clinicians, 3) Accessibility/Coordination, and 4) Homeless-Specific Needs. A categorical "unfavorable experience" was defined by the number of "negative" responses in the top 33 % for each scale. A negative response is agreement with a negative item (e.g. "It is often difficult to get health care at this place") or disagreement with a positive item. In comparing sites, we

adjusted for patient health and demographic characteristics with linear and logistic regression.
RESULTS: Mean PCQ-H scores at the tailored non-VA site were higher than those from 3 Mainstream VA sites ($p<0.001$). Adjusting for patient characteristics, these differences remained significant for scales assessing Patient-Clinician Relationship ($p<0.001$) and Cooperation ($p=0.004$). In categorical analysis, an unfavorable experience was 1.5–2 times more common at Mainstream VA sites compared to the Tailored non-VA site (all $p<0.05$, Figure), remaining significant after adjusting for patient characteristics for the Relationship, Cooperation and Access/Coordination scales.
CONCLUSIONS: Tailored primary care service design is associated with a superior experience for homeless patients. Further research will need to identify which aspects of tailoring matter most, and are most readily adopted in new settings.



COMPARING SELF-PERCEIVED CROSS-CULTURAL SKILLFULNESS BETWEEN PHYSICIANS AND NURSES AT A SWISS UNIVERSITY HOSPITAL: DOES PROVIDER ROLE MAKE A DIFFERENCE? Alejandra Casillas[1,3]; Sophie Paroz[1]; Alexander Green[2]; Hans Wolff[3]; Patrick Bodenmann[1]. [1]Lausanne University Hospital, Lausanne, Switzerland; [2]Harvard Medical School, Boston, MA; [3]Geneva University Hospital, Genève, Switzerland. (Tracking ID #1618344)

BACKGROUND: As the diversity of the Swiss population evolves, measuring providers' cultural competency and understanding what contextual factors may influence this skillfulness is necessary. We compared perceived skillfulness and explanatory predictors between physicians and nurses at one of five university hospitals. Given a lack of study on the effect of provider role, this was doubly relevant from a Swiss perspective, where nurse practitioners are increasingly assuming clinical responsibilities for vulnerable patients.
METHODS: A 64-item cultural competency questionnaire, including translated/back-translated items from the validated survey, "Residency training in cross-cultural care," was mailed in November 2010 to residents, chief residents and nurses working in patient-care units at Lausanne's university hospital. Using Student's t-tests, we compared physicians' and nurses' mean composite scores for the nine self-perceived skillfulness items (4-point Likert-scale), and proportion of "3-good/4-very good" responses using Chi-square tests. We used linear regression to examine how provider role (physician vs. nurse) was associated with composite scores, adjusting for demographics (gender, non-French dominant language), workplace (time at institution, work-unit "sensitized" to cultural-care), items on reported cultural-competence training, and on cross-cultural care problem-awareness. We subsequently stratified analyses to physicians and nurses, alone. We present results significant at the $p=0.05$ level.
RESULTS: Of 885 mailed questionnaires, 371 individuals (41.2 %) returned the completed survey: 123 (33.6 %) physicians and 239 (66.4 %) nurses, reflecting the distribution of providers in the institution. Physicians were more likely to be male, have worked at the institution for less than 5 years, have more training experiences, and more problem-awareness regarding cross-cultural care. They had better mean composite scores for perceived skillfulness than nurses (2.7 vs. 2.5, $p=.0005$), and significantly higher proportion of "good/very good" responses for 4/9 items. After adjusting for explanatory variables, physicians remained more likely to have higher skillfulness ($\beta=0.13$, $p=.049$). Among all, two problem-awareness items were significantly correlated with higher skillfulness: inadequate cross-cultural training ($\beta=0.14$, $p=.012$) and lack of practical experience caring for diverse populations ($\beta=0.11$, $p=.040$). Among physicians alone, having a non-French dominant language ($\beta=0.34$, $p=.000$), and problem-awareness about inadequate cross-cultural training ($\beta=0.22$, $p=.003$), were positively correlated with skillfulness. Among nurses alone, having received training on the history/culture of a specific group ($\beta=0.25$, $p=.016$) was associated with skillfulness, as was problem-awareness about the lack of practical experience caring for diverse populations ($\beta=0.16$, $p=.037$).
CONCLUSIONS: Overall, perceived cross-cultural skillfulness among Lausanne providers was low. Physicians had higher skillfulness than nurses, even after adjustment. Having a non-native dominant language was associated with skillfulness among physicians, emphasizing diversity in the medical workforce as important for improving patient care. Among all providers, problem-awareness about cross-cultural care was positively associated with skillfulness. Thus, attuning providers' awareness to the surrounding problems in cross-cultural patient-care, can improve skillfulness- especially among nurses with rising responsibilities.

COMPARING THE TIME REQUIRED TO COMPLETE RISK ASSESSMENT MODELS FOR VENOUS THROMBOEMBOLISM Kassem Bourgi[1]; Matthew George[1]; Rami Abboud[1]; Sana Ali[1]; David Paje[1]; Scott Kaatz[2]. [1]Henry Ford Hospital, Detroit, MI; [2]Hurley Medical Center, Flint, MI. (Tracking ID #1635115)

BACKGROUND: Venous thromboembolism (VTE) is one of the most preventable causes of hospital acquired mortality. Recent guidelines by the American College of Chest Physicians suggest using risk assessment models to help determine which non-surgical hospitalized patients should receive pharmacologic VTE prophylaxis. However, some risk assessment models tend to be cumbersome and time consuming and may not be practical to implement, while others may be more pragmatic but are not as widely recognized. This study sought to assess and compare the time needed by admitting physicians to complete two different VTE risk models, individually and in combination with a bleeding risk model in non-surgical patients.
METHODS: Adult patients newly admitted for non-surgical conditions were assessed by one of four medical interns who were randomly assigned to complete either a VTE risk assessment tool (Padua or Maynard), a bleeding risk tool (IMPROVE), or a combination of a VTE risk tool and bleeding risk tool. The clinical data necessary to determine the risks were obtained in a manner that closely approximated what happens during routine admissions, which included brief reviews of the electronic medical record and direct patient interviews. Data elements required for risk assessment were clearly defined at the beginning of the study by adopting descriptions from the derivation and validation studies, and by corresponding with the primary authors when necessary. The amount of time to complete the risk assessment tools individually and in combination were compared using the two sample *t*-test.
RESULTS: In the assessment of VTE risk alone, 25 patients were evaluated using the Maynard tool with a mean time of 56.6 s (95 % CI: 46.2–67.1), and in another 25 patients the Padua score was completed in an average time of 237.3 s (95 % CI: 200.2–274.5), $p<0.001$. When the risks for both VTE and bleeding were both assessed in 25 patients using the combination of Maynard and IMPROVE tools, it took a mean time of 211.5 s (95 %: 178.0–245 .0); but when both Padua and IMPROVE scores

were calculated in another 25 patients, it took an average of 336.5 s (95 % CI: 293.9–379.2) to complete, $p<0.001$.

CONCLUSIONS: The Padua VTE risk assessment model requires significantly more time to complete compared to the simplified Maynard tool, and thus may not be practical to implement unless the collection of some of its elements can be automated through an electronic medical record system. The inclusion of bleeding risk assessment incurs additional time to the admission process.

Time Needed for Different Risk Assessment Scores

Time to Complete Risk Assessment (in seconds)

Risk Assessment Model	N	Mean	95 % Confidence Interval Around the Mean		p-value
Maynard (VTE)	25	56.6	46.2	67.1	<0.001
Padua (VTE)	25	27.3	200.2	274.5	
IMPROVE (Bleed)	25	186.1	165.7	206.6	
Maynard (VTE) + IMPROVE (Bleed)	25	211.5	178.0	245.0	<0.001
Padua (VTE) + IMPROVE (Bleed)	25	336.5	293.9	379.2	

COMPARISON AND ACCURACY OF LIFE EXPECTANCY PREDICTIONS BY PATIENTS, PHYSICIANS, AND PROGNOSTIC MODELS IN OLDER PATIENTS WITH TYPE 2 DIABETES Claire E. O'Hanlon[1]; Sang Mee Lee[2]; Priya John[1]; Marshall Chin[1]; Elbert S. Huang[1]. [1]University of Chicago, Chicago, IL; [2]University of Chicago, Chicago, IL. (Tracking ID #1638605)

BACKGROUND: Diabetes care guidelines have called for the individualization of care goals for older patients (e.g., A1C) based on life expectancy (LE). To carry out these recommendations, the estimation of LE is critical for setting appropriate diabetes care goals. We compared LE predictions in a cohort of older patients with type 2 diabetes with actual mortality. The prognostic estimates were made by the patient, the patient's physician, Vital Statistics life tables, and the Chicago Type 2 Geriatric Diabetes Simulation Model.

METHODS: The cohort of older (65+ years of age) type 2 diabetes patients were enrolled in a study of treatment preferences between 12/2000–1/2003. During this study, each patient and his/her physician provided a life expectancy prediction in separate surveys. The CDC Vital Statistic life tables were used to obtain life expectancy estimates based on age and sex of the patients. The Chicago Type 2 Geriatric Diabetes Simulation Model, a combination of diabetes complication and geriatric mortality prediction models, was used to calculate LE based on patient demographics, duration of diabetes, risk factor levels, functional status, and comorbid illnesses. We also considered the predictive performance of the average of physician and model estimates. Observed survival time was determined with data from the National Death Index through December 31, 2010. Each estimate of five-year mortality and LE was compared to observed survival. We compare the sensitivity, specificity, and c-statistic from logistic regression for prediction of 5-year mortality. Harrell's c-statistic and standard deviation for survival time were also calculated.

RESULTS: 447 patients had both patient and physician estimates. 63 % were female and 79 % were Black. The mean (standard deviation) age of the cohort was 73.4 (5.9) years and duration of diabetes was 13.2 (10.4) years. At 5 years, 108 (24 %) had died and 201 (45 %) had died by the end of the period of observation. For estimating 5 year mortality, the worst performing individual prognostic method according to the c-statistic was Vital Statistics (0.599), followed by patients (0.625). Both had very low sensitivities and high specificities. Physician estimates had one of the highest c-statistics (0.692) with a sensitivity of 0.528 and a specificity of 0.755 for predicting 5-year mortality. The simulation model had a similar c-statistic (0.683) but had a high sensitivity (0.907) and low specificity (0.307). The average of the physician and model estimates generated a higher c-statistic (0.733) than any individual prognostic method. The hierarchy of predictive performance according to Harrell's c-statistic was similar.

CONCLUSIONS: Physicians and a diabetes simulation model provided LE estimates that performed similarly well in this cohort, although physicians were more optimistic and the model more pessimistic than observed mortality. The average of these estimates had a higher c-statistic than any individual prognostic method. This result suggests that diabetes prediction models may complement and support the intuition of physicians as they make treatment decisions for older diabetes patients.

5-year mortality Survival time

Sensitivity	Specificity	c-statistic (logistic regression)	Harrell's c-statistic	St. dev. Harrell's c-statistic
Patient	0.444	0.791	0.625	0.611	0.020
Physician	0.528	0.755	0.692	0.650	0.019
Vital Statistics	0.009	0.985	0.599	0.594	0.020
Model	0.907	0.307	0.683	0.650	0.019
Average of Physician and Model Estimates	0.602	0.687	0.733	0.684	0.019

COMPARISON OF CHRONIC PAIN MANAGEMENT IN A LEVEL 3 PATIENT CENTERED MEDICAL HOME BETWEEN RESIDENT PHYSICIANS, FACULTY PHYSICIANS, AND A DEDICATED CHRONIC PAIN MANAGEMENT PROGRAM Kathryn Sweeney; Shana Ratner; Brooke B. McGuirt. UNC Chapel Hill, Chapel Hill, NC. (Tracking ID #1633982)

BACKGROUND: Safe and effective pain management involves careful considerations of controlling pain, improving function, choosing efficacious therapies, as well as attention to misuse, abuse, and diversion of controlled substances. The North Carolina State Medical Board gives detailed recommendations for evaluation and management of chronic pain. A subset of patients with chronic pain in our clinic are managed by a pharmacist-run chronic disease management program. Our aim was to review and compare adherence with these recommendations in our Internal Medicine practice among resident physicians, faculty physicians, and the embedded pain clinic.

METHODS: We reviewed charts for patients seen in the Internal Medicine Clinic (IMC) from 8/1/2011–8/1/2012 who had been given ≥3 prescriptions for Schedule II–III controlled substances for the management of chronic pain during that time period. After reviewing 299 charts, 150 met our inclusion criteria. Fifty charts each were reviewed from resident, faculty, and pain clinics. Each chart was assessed for patient demographics, opiate prescriptions, documentation of drug monitoring (urine toxicology screens and NC Controlled Substance Reporting System [NCCSRS] database queries), adjuvant pain therapies, depression screening, and patient education. Each patient was subsequently reviewed in the NCCSRS Database to determine the number of Schedule II–III controlled substance prescribers per patient in the past year. We used descriptive statistics to compare averages.

RESULTS: Fifty charts each (150 total) were reviewed from the following subsets of our practice: resident, faculty, and pain clinic. The average patient age was 56, with an older population in faculty clinic (average age 53 resident clinic, 60.5 faculty clinic, 55 pain clinic). Resident and pain clinic patients were more likely to be male (46 % resident, 34 % faculty, 40 % pain clinic). More pain clinic patients had a history of substance abuse (26 % resident, 10 % faculty, 40 % pain clinic). A urine toxicology screen had been obtained in 60 % of total patients in the past year, with large differences between settings of care (52 % resident, 28 % faculty, 100 % pain clinic). A pain contract had been documented in half of all patient charts with much higher adherence in pain clinic (32 % resident, 12 % faculty, 100 % pain clinic). Twenty-eight percent of patients had received prescriptions for opioid analgesics from 3 to 5 different prescribers (range of 0–16) during the year reviewed. Review of the NCCSRS Database was documented in very few patient charts (4.7 %). Seventy-nine percent of patients were screened for depression, and 37 % were given a decision aid about chronic pain treatment options.

CONCLUSIONS: In an era of ever-increasing demands on the primary care physician, the complex and time-consuming nature of safe chronic pain management continues to become more difficult. We found deficiencies in documentation and adherence to monitoring guidelines in the resident and faculty continuity clinics when compared to the embedded pain clinic. Practices should explore the creation of structured chronic pain management programs embedded within the primary care clinic, similar to a model of warfarin management in anti-coagulation clinics.

COMPARISON OF HIV TESTING WITH OTHER MARKERS OF CHRONIC DISEASE SCREENING Bradley C. Fetzer[1]; Florence Momplaisir[2]; Judith A. Long[1]. [1]University of Pennsylvania, Philadelphia, PA; [2]Temple University School of Medicine, Philadelphia, PA. (Tracking ID #1638481)

BACKGROUND: Routine opt-out HIV testing has been recommended by the CDC since 2006 with the aims of identifying infected persons early and decreasing transmission rates as well as missed opportunities for treatment. Low risk persons should be screened at least once in their lifetime, while higher risk individuals should be screened annually with opt-out testing strategies. Since these guidelines were released, overall rates of HIV testing in the U.S. have been increasing. Data suggests that these increases are largely attributable to community clinics and emergency departments, outside the traditional primary care setting, and that primary care providers face a number of barriers to routine opt-out testing. However, data regarding actual HIV testing practices of primary providers is lacking. Our aim was to compare how rates of HIV testing compare with other routine screening measures overall and in the primary care setting.
METHODS: We used data from the 2002–2010 Southeastern Pennsylvania (SEPA) Household survey to evaluate how HIV testing compared with other markers of chronic disease screening. The SEPA Household survey is the largest and most comprehensive health survey of the Philadelphia region; it is administered every two years to evaluate respondent's health status and health care experiences. Weighted survey data were used to compare the number of people who had ever been tested for HIV with those who had received age and sex appropriate screening for chronic disease including hypertension, cervical cancer, breast cancer, and colorectal cancer. Further, logistic regression was performed to determine the likelihood of ever having received an HIV test and chronic disease screening between respondents by primary source of care.
RESULTS: Between 2002 and 2010, 50,698 individuals 18 and over were surveyed, approximately 10,000 per survey year. Participants had a mean age of 40, were majority Caucasian (69.2 %) and female (53.3 %). The primary source of medical care was a private clinic for 79.1 % of respondents compared with 4.2 % reporting a community health clinic, 2.5 % emergency department (ED) care, and 14.2 % as none or 'other'. The percentage of respondents who had ever been tested for HIV (44.4 %) was noticeably lower when compared with other markers of blood pressure and cancer screening (62.2 % to 95.9 %). Compared with private clinics, respondents had a higher likelihood of ever having received an HIV test if their primary source of care was a community clinic (OR 1.94 95 %CI 1.51–2.51), the ED (OR 3.33 95 %CI 0.92–8.28), or listed as none or 'other' (OR 1.49 95 %CI 1.23–1.52). Conversely, the majority of blood pressure and cancer screening measures had a lower likelihood of being reported if the source of care was not a private clinic, however community clinics were not significantly different.
CONCLUSIONS: HIV testing rates fall well below the rates of other chronic disease screening in this cohort. Populations whose primary source of care lies in community health clinics, emergency rooms, or other non-private clinics are more likely to receive HIV testing compared with traditional private clinics. Physicians providing primary care in private clinics adhere well to screening guidelines for blood pressure and cancer screening, but may neglect appropriately screening their populations for HIV.

COMPARISON OF THE QUALITY OF PATIENT REFERRALS FROM PHYSICIANS, PHYSICIAN ASSISTANTS, AND NURSE PRACTITIONERS TO AN ACADEMIC GENERAL INTERNAL MEDICINE PRACTICE Thomas J. Beckman; Robert Lohr; Colin P. West; Margaret Beliveau; Paul Daniels; Mark Nyman; William Mundell; Nina M. Schwenk; Jayawant N. Mandrekar; James M. Naessens. Mayo Clinic, Rochester, MN. (Tracking ID #1633875)

BACKGROUND: Physician Assistants (PAs) and Nurse Practitioners (NPs) are increasingly utilized to improve healthcare access. There has been limited research on the abilities of PAs and NPs to care for complex medical patients and we are unaware of any studies examining the quality of patient referrals from PAs and NPs to academic medical centers. Our objectives were to compare referrals to the Mayo Clinic Rochester General Internal Medicine (GIM) regional practice from physicians, PAs and NPs regarding: 1) quality of patient management and referrals based on a validated measure, 2) patient complexity determined by the Charlson Index and 3) treatment costs during the first 30 days after the referral visit.
METHODS: We conducted a retrospective comparison study of all 160 patients of NPs and PAs, and a random sample of 160 patients of physicians, who were referred to the GIM regional practice from 2009 to 2011. Eight physicians, each with over 10 years practice experience and blinded to the identities of referral sources and patients, used a seven-item instrument with five-point scales (1 = strongly disagree; 5 = strongly agree) to assess the appropriate management and referral of patients. Internal consistency and interrater reliability were determined using Cronbach alpha and intraclass correlation coefficient (ICC) respectively. Factor analysis with an adjusted correlational matrix to account for non-independent data was used to ascertain the dimensionality of item scores. Differences between item scores for patients referred by physicians, versus PAs and NPs combined, were verified using multivariate ordinal logistical regression, adjusted for patient age, gender, referral distance and Charlson Index. Differences between groups for Charlson Indices and total costs were determined using ANOVA. The sample size of 160 patients per group provided 80 % power to detect a small-to-moderate Cohen's effect size of 0.32. Two-tailed statistical significance was set at alpha = 0.05.
RESULTS: Factor analysis revealed a one-dimensional measure of the quality of patient referrals by physicians, PAs and NPs. Interrater reliability (ICC) for all individual items (range 0.77 to 0.93) and overall (0.92), and internal consistency for all items combined (Cronbach alpha = 0.75), were very good. Physicians scored significantly higher (% agree/strongly agree) than PAs and NPs for each of the following instrument items: referral question clearly articulated (86.3 vs 76.0; p=.0007), clinical information provided (72.6 vs 54.1; p=.0033), documented understanding of the patient's pathophysiology (51.0 vs 30.3; p<.0001), appropriate evaluation performed locally (60.3 vs 39.0; p<.0001), appropriate management performed locally (53.5 vs 24.1; p<.0001), referral was unnecessary (30.1 vs 56.2; p<.0001), and confidence returning patient to referring provider (67.8 vs 41.4; p<.0001). There were no significant differences between groups regarding patient complexity or costs of outpatient treatment, hospitalization, laboratory testing or consultations.
CONCLUSIONS: This is the first study to demonstrate that the quality of referrals to an academic medical center, as determined by a panel of experienced and blinded internal medicine faculty members, is significantly higher for physicians as opposed to PAs and NPs with respect to several characteristics including clarity of the referral question, understanding of pathophysiology, and adequate pre-referral evaluation and documentation.

COMPASSION FATIGUE, PROFESSIONAL BURNOUT AND SELF-CARE AMONG MULTIDISCIPLINARY PROVIDERS WORKING IN OUTPATIENT PRIMARY CARE SETTINGS Christopher J. Koenig[1,2]; Shira Maguen[1,3]; Jose D. Monroy[1]; Karen H. Seal[1,3]. [1]San Francisco Veterans Affairs, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA. (Tracking ID #1637822)

BACKGROUND: Health care providers manage complex medical, psychological, and social health problems of their primary care patients. Regular exposure to patient trauma narratives associated with gang violence, experiences of war, or other violent social problems can lead to compassion fatigue and professional burnout. Self-care for providers is recognized as critical in the prevention of compassion fatigue and burnout that may affect both professional and personal well being. This study examines self-care strategies among multidisciplinary providers working in outpatient primary care settings who care for retuning Iraq and Afghanistan veterans.
METHODS: We conducted qualitative, semi-structured interviews with 31 multidisciplinary providers in Veterans' Affairs outpatient clinics serving

returning Iraq and Afghanistan veterans. One clinic fully integrated primary care, mental health, and social work providers for comprehensive multidisciplinary care, and another clinic co-located multidisciplinary providers for referral. We purposively sampled providers who saw at least two returning veterans within a six-month period. Interviews were transcribed verbatim and uploaded into Atlas.ti software for qualitative data management. All self-care segments were identified and analyzed using Grounded Practical Theory to develop a descriptive framework of self-care communication among multidisciplinary providers as part of a research interview.

RESULTS: Preliminary analyses show that sampled providers were aware that regular contact with veterans returning from Iraq and Afghanistan who experienced war trauma may lead to compassion fatigue and professional burnout. Provider groups shared some general strategies for managing negative psychological consequences associated with regular contact with returning veterans, including physical exercise, personal reflection, such as journaling, and discussion with professional colleagues. However, provider groups also differed according to the norms of their respective training cultures. For example, primary care providers (PCPs) were more likely to manage negative emotions through discussion outside of work with close personal relationships, such as a spouse, partner, or close friend. In contrast, mental health providers (MHPs) and social work providers (SWPs) were more likely to share negative feelings by debriefing with their professional colleagues during work hours. Further, MPHs and SWPs were aware that PCPs may not have adequate training to deal with strong negative emotions as a result of close professional contact with veterans who have firsthand experience of war trauma.

CONCLUSIONS: Debriefing with colleagues is a routine practice that both MPHs and SWPs learn as part of their professional training, however PCPs are not typically trained to debrief with colleagues during work hours. Training norms associated with different provider types may have an important impact on the day-to-day management of work-related psychological risk involving violent trauma. When faced with compassion fatigue and professional burnout, primary care training culture may emphasize independence, whereas other provider cultures may emphasize interdependence. Primary care providers may learn from other disciplines to improve self-care strategies that prevent compassion fatigue and professional burnout, which may lead to increased professional development, personal job satisfaction, retention, and, ultimately higher quality health care.

CONSIDERING RADIATION EXPOSURE TO PATIENTS WHEN ORDERING CAT SCANS: THE CLINICIAN PERSPECTIVE L. E. Goldman[1]; Jenna Kruger[1]; Alice H. Chen[1]; Alex Rybkin[2]; Kiren Leeds[1]; Dominick Frosch[3,4]. [1]University of California, San Francisco, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]University of California, Los Angeles, Los Angeles, CA; [4]Palo Alto Medical Foundation Research Institute, Palo Alto, CA. (Tracking ID #1642618)

BACKGROUND: The rise in cat-scan use over the past decade is associated with a substantial increase in medically-associated radiation exposure. To increase safe use of imaging, starting in 2012 California legislation required the inclusion of cat scan radiation dose metrics in radiology reports. We sought to examine (1) outpatient clinician attitudes regarding the consideration of radiation exposure when ordering cat scans; and (2) clinician reactions to a planned intervention posting radiation exposure information for cat scans at the point of clinician electronic order entry in an urban safety-net setting.

METHODS: We conducted a qualitative study consisting of 9 audio-taped focus groups of salaried clinicians working in an urban safety-net setting. To obtain diverse opinions, 6 focus groups were with primary care clinicians and 3 were with subspecialty physicians in nephrology, pulmonary, and neurology across 12 clinics (total N=44 clinicians). Focus group guides focused on clinician knowledge and attitudes about how radiation exposure from cat scans affect their ordering practices, barriers to considering radiation exposure in clinical decisions, potential harms and benefits of posting radiation exposure information at the site of order entry for cat scans, and suggestions for improvement of the intervention. Focus groups were audio-recorded and transcribed. Two researchers (JK, LG) systematically coded the transcripts, and discussed differences to reach consensus using an inductive thematic analysis framework to identify emergent themes.

RESULTS: Clinicians expressed a general awareness of the radiation risks with cat scans, although most felt uncomfortable with their knowledge of the clinical implications of radiation exposure from particular studies. Most primary care clinicians believed clinically relevant information such as the increased risk of malignancy from a given cat scan would be useful to inform decision-making and patient discussions, although reported that patients in their practices seldom raised concerns about radiation exposure. Clinicians felt that patient-level cumulative radiation exposure would be most useful, though not currently available. Clinicians also noted that long wait times for imaging studies with less radiation exposure (such as MRI or ultrasound) often acted as a barrier to minimize patient radiation exposure from cat scans and felt that to effectively limit radiation exposure would require a system-wide approach that included emergency room and hospital-based clinicians.

CONCLUSIONS: Posting radiation exposure information at the site of clinician electronic order entry may improve clinician knowledge and inform clinician discussions with patients regarding risks and benefits of various imaging studies. However, limitations in access to tests with lower radiation exposure and lack of a system-wide approach that includes emergency room, hospital, and outpatient clinicians may trump efforts to minimize unnecessary patient radiation exposure. Clinician decision-aids regarding cat scan use in safety-net settings should consider issues of wait times for various imaging studies and should incorporate clinician education regarding cumulative patient radiation exposure once this information is available.

CONTRACEPTIVE ADHERENCE AMONG WOMEN VETERANS: DIFFERENCES BY RACE/ETHNICITY AND CONTRACEPTIVE SUPPLY Sonya Borrero[1,2]; Xinhua Zhao[2]; Maria Mor[2]; E. Bimla Schwarz[1]; Chester Good[2,1]; Walid F. Gellad[2,1]. [1]University of Pittsburgh, Pittsburgh, PA; [2]VA Pittsburgh, Pittsburgh, PA. (Tracking ID #1637423)

BACKGROUND: Contraception, when used consistently and correctly, can prevent unintended pregnancy. As the number of women of reproductive age rises in the VA, contraceptive care is a growing priority, yet little is known about contraceptive use patterns among female patients. The objective of this study was to assess contraceptive adherence among women Veterans and examine the relationships between race/ethnicity and months of contraceptive supply dispensed with contraceptive adherence.

METHODS: We used national VA databases to examine contraceptive adherence over a 12-month period among women Veterans aged 18–45 who received primary care from VA and had hormonal contraceptive (pills, patch, injection, or vaginal ring) coverage during the first week of FY08. Women who were sterilized or used a long-acting, highly effective contraceptive method in FY 2008 were excluded from analysis. We examined several adherence indicators including gaps of ≥7 days between refills, total months of contraceptive coverage over the year, and whether the woman had contraceptive coverage during the last week of FY 2008. For those women who had contraceptive coverage during the last week of FY 2008, we distinguished between coverage with gaps from continuous coverage over the year (perfect adherence). Descriptive statistics and multivariable models were used to examine the associations between race/ethnicity and months of contraceptive supply dispensed with adherence.

RESULTS: Our cohort included 6,946 women on hormonal contraception: 47 % were white, 6 % Hispanic, 22 % black, and 25 % were other race or had missing race information. Most women (83 %) consistently received 3-month supplies at each fill over the year, 4 % consistently received 1-month supplies, and 13 % received varied months of supply over the course of the year. Over 64 % of women had at least one gap in coverage of ≥7 days. Only 22 % of women received a full 12 months of contraception without any gaps (perfect adherence). Compared to whites, Hispanics were

significantly more likely to experience gaps (64 % versus 70 %; $p=0.02$), and Hispanics and blacks received fewer months of contraceptive coverage (9.3 versus 8.9 and 9.0, $p<0.001$). Compared to women receiving 3-month supplies, those receiving 1-month supplies had a higher likelihood of a gap (63 % versus 72 %, $p<0.001$), fewer months of coverage (9.3 versus 6.9, $p<0.001$), and lower likelihood of perfect adherence (22 % versus 11 %, $p<0.001$). In multivariable Cox regression analysis, Hispanics remained significantly more likely to experience a gap than white women (HR:1.18, 95 % CI:1.03–1.35). Women who received 1-month supplies also remained more likely to experience a gap than women who received 3-month supplies (HR:1.63, 95 % CI:1.39–1.99). In the adjusted logistic regression model for perfect adherence, there were no statistically significant differences by race/ethnicity. Women receiving 1-month supplies were significantly less likely to achieve perfect adherence than those receiving 3-months supplies (OR:0.45; 95 % CI:0.30–0.68).
CONCLUSIONS: Contraceptive adherence among women Veterans is poor. Interventions to enhance contraceptive adherence and lower the risk of unintended pregnancy among female Veterans are needed. Such strategies may include enhanced provision of long-acting, reversible methods that do not have adherence requirements (i.e., IUDs and implants) and/or dispensing more months of supply for hormonal methods.

COST SAVINGS ATTRIBUTABLE TO A CONTINUOUS MONITORING SYSTEM IN A MEDICAL-SURGICAL UNIT Sarah P. Slight[1,2]; Calvin Franz[3]; Michael Olugbile[1]; Harvey V. Brown[4]; David W. Bates[1,2]; Eyal Zimlichman[1,2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Eastern Research Group, Inc., Lexington, MA; 4UCLA, Los Angeles, CA. (Tracking ID #1628795)

BACKGROUND: As many as 80 % of critically ill patients will have had abnormal values for heart rate, respiratory rate and oxygenation in the 24 h prior to Intensive Care Unit (ICU) admission. Monitoring systems can help facilitate timely interventions for these high-risk patients by drawing attention to these signs of deterioration. This study evaluated the cost savings attributable to the implementation of a continuous monitoring system in a medical-surgical unit, and determined the return on investment (ROI) associated with its implementation.
METHODS: We performed a return on investment (ROI) analysis with the primary outcome measure of net cost savings per patient per year. The ROI model was framed from the perspective of the health care organization, and data on costs and outcomes obtained from a before-and-after controlled study conducted at a 316-bed community hospital. This hospital includes a 33-bed medical-surgical unit, which typically cared for medical, surgical or trauma patients. Costs and benefits were converted to 2011 U.S. dollars and discounted at a 7 % annual percentage rate. The ROI was calculated by subtracting the total discounted implementation costs from total discounted cost savings, then dividing the amount by total costs. The hospital research committee approved the study protocol for this analysis.
RESULTS: We constructed two models: a base case model (Model A) in which we estimated the total cost savings of intervention effects (i.e., reduction in length of stay (LOS), ICU LOS and treatment of pressure ulcers), and a conservative model (Model B) in which we only included the direct variable cost component for the final day of length of stay and treatment of pressure ulcers. In the 5-year Model, the hospital spent a total of approximately $273,570 on capital costs, one-time noncapital costs, and ongoing operational costs to implement the system. The system saved between $3,268,000 (Model B) and $9,089,000 (Model A), and resulted in a net benefit of between $2,687,000 and $8,508,000, respectively. An annual ROI of 292.8 % (Model A) and 92.5 % (Model B) was shown, with the hospital breaking even on the investment after 0.5 and 0.75 of a year, respectively. The average net benefit of implementing the system ranged from $224 per patient (Model B) to $710 per patient (Model A) per year. We performed a multi way sensitivity analysis, varying annual average admissions, the real discount rate, the rate of direct variable costs, and the proportion of patients in prospective payment systems, to reflect the rates of most U.S. community hospitals.
CONCLUSIONS: Implementation of a continuous monitoring system at one community hospital was associated with a highly positive ROI, when applying cost savings attributable to a reduction in LOS, ICU LOS, and pressure ulcers. Even greater cost savings may be realized if the hospital had high numbers of admissions and greater than 80 % prospective reimbursement rate. The use of such monitoring technologies has the potential to both improve safety and save money.

COST-EFFECTIVENESS OF NOVEL ORAL ANTICOAGULATION STRATEGIES FOR TREATMENT OF ATRIAL FIBRILLATION William Canestaro[1,2]; Amanda R. Patrick[2]; Jerry Avorn[2]; Kouta Ito[2]; Olga S. Matlin[4]; Troyen A. Brennan[3]; William Shrank[2]; Niteesh K. Choudhry[2]. [1]University of Washington, Seattle, WA; [2]Brigham and Women's Hospital and Harvard Medical School, Boston, MA; [3]CVS Caremark, Woonsocket, RI; [4]CVS Caremark, Northbrook, IL. (Tracking ID #1635728)

BACKGROUND: Oral vitamin K antagonists such as warfarin dramatically reduce the risk of thromboembolism in patients with atrial fibrillation (AF) but are challenging to use. The new anticoagulants and using genetic information to guide warfarin dosing appear to result in superior clinical outcomes but it is unclear whether their use is cost-effective.
METHODS: We created a Markov state transition to compare five scenarios in patients with newly diagnosed AF at high risk of thromboembolic stroke with no contraindications to warfarin: dabigatran 150 mg twice daily, apixaban 5 mg twice daily, rivaroxaban 20 mg once daily, genotypically-guided warfarin dosing and standard warfarin therapy. The effectiveness of these strategies was based upon data from randomized controlled trials. Other parameters were derived from the peer-reviewed literature. The model was run from a societal perspective with a lifetime horizon. Effectiveness was measured in quality-adjusted life-years (QALYs) and costs in 2011 US dollars.
RESULTS: Compared with standard warfarin therapy, genotypically-guided warfarin was more effective and less costly while the cost of apixaban, rivaroxaban, and dabigatran were $93 062, $111 465, and $140 557 per additional QALY gained, respectively. At a threshold of $100 000 per QALY, apixaban provided the greatest absolute benefit while still being cost-effective, although genotypically-guided warfarin would be superior if apixaban was 2 % less effective than observed in the ARISTOTLE trial. While apixaban was the optimal strategy in our base case, in probabilistic sensitivity analysis, genotypic warfarin was optimal in a greater number of iterations at a cost-effectiveness threshold of $100 000 per QALY.
CONCLUSIONS: While at a standard cost-effectiveness threshold of $100 000 per QALY, apixaban appears to be the optimal anticoagulation strategy, this finding is sensitive to assumptions about its efficacy and cost. In sensitivity analysis, genotypically-guided warfarin appears to be the optimal choice in the greatest number of simulations. As a result, the novel oral anticoagulants may not represent as good a value as strategies to improve INR control with warfarin.

COST-CONSCIOUS MEDICAL DECISION-MAKING: PATIENTS' PERSPECTIVES ON SCREENING AND PHYSICIANS' ROLES REGARDING COST BARRIERS David Grande[1,2]; Margaret Lowenstein[3]; Madeleine P. Tardif[4]; Carolyn C. Cannuscio[5,2]. [1]University of Pennsylvania, Perelman School of Medicine, Philadelphia, PA; [2]Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, PA; [3]University of Pennsylvania, Perelman School of Medicine, Philadelphia, PA; [4]University of Pennsylvania, Philadelphia, PA; [5]University of Pennsylvania Perelman School of Medicine, Philadelphia, PA. (Tracking ID #1641316)

BACKGROUND: As costs rise and high deductible health plans proliferate, patients increasingly face financial barriers to care. Prior research has shown that: patients want to have cost conversations with their doctors; doctors feel these conversations are important; and these conversations rarely happen. Little is known regarding how patients want

their doctors to consider cost-efficacy tradeoffs. We evaluated patients' preferences regarding novel strategies to screen for financial barriers to care. We also conducted an experiment to assess patients' preferences regarding physician engagement in cost-conscious medical decision-making.

METHODS: We conducted a mail survey with an embedded randomized experiment in a sample of 1,400 individuals who had applied for financial support from a patient assistance foundation (HealthWell Foundation). A total of 842 responded (107 incorrect addresses, 6 deceased; response rate: 65 %). Our instrument focused on three domains: a) patient comfort with health care team members screening for cost barriers; b) patient comfort with tools to screen for cost barriers; c) patient comfort with physician decision making styles in the context of cost barriers. For the latter, we randomized respondents to receive 1 of 3 vignettes depicting physician decision styles for initiating a new medication with a cost-efficacy tradeoff: 1) cost conscious choice (physician chooses cheaper) 2) cost indifferent choice (physician chooses more expensive) 3) patient directed choice (physician presents options and defers to patient). All respondents were then asked to rate a version of the vignette that was modified to reflect a shared decision style. On a 10-point Likert scale, scores >7 reflected that patients were "very comfortable" with the screening method or doctor's approach.

RESULTS: Among respondents, 81 % were very comfortable with their doctor asking about problems paying for medications. Fewer patients were very comfortable being asked by pharmacists (75 %, $p=0.002$), nurses (69 %, $p<0.001$), professional counselors (68 %, $p<0.001$), and trained volunteers (51 %, $p<0.001$). 59 % were very comfortable with their doctor's office reviewing medical records to screen for cost barriers. In comparison, 53 % were very comfortable with insurers ($p=0.026$), 62 % with pharmacies ($p=0.17$), 62 % with completing a form in their doctor's office ($p=0.16$), and 48 % with a screening email from their doctor ($p<0.001$). Overall, patients who trusted their doctor more were more likely to be comfortable with all team members and screening tools ($p<0.001$ for all). In our randomized experiment, respondents were uncomfortable deferring decisions to their physician. Only 25 % of patients were very comfortable with the vignette in which a physician made a cost-conscious decision to prescribe a less expensive drug. In comparison, 33 % of patients were very comfortable with the cost indifferent vignette, in which the doctor prescribed the most expensive drug ($p=0.055$) and 58 % were very comfortable with the vignette in which the patient directed the decision ($p<0.001$). 85 % reported that they were very comfortable with the doctor and patient making a shared decision.

CONCLUSIONS: In our sample of patients experiencing financial barriers to care, participants were generally comfortable with diverse strategies to screen for cost barriers. Regarding decisions with cost-efficacy tradeoffs, patients preferred to engage in shared decision-making with their doctors.

COST-CONSCIOUSNESS AMONGST INTERNISTS AT AN ACADEMIC TRAINING PROGRAM; A BRIEF SURVEY OF PRACTICES AND ATTITUDES Jonas Z. Hines[1,2]; Justin L. Sewell[2,1]; Claire Horton[2,1]; Niraj Sehgal[1]; Christopher Moriates[1]; Naama Neeman[3,1]; Alice H. Chen[2,1]. [1]University of California San Francisco, San Francisco, CA; [2]San Francisco General Hospital, San Francisco, CA; [3]Veteran Administration Medical Center, San Francisco, CA. (Tracking ID #1640465)

BACKGROUND: Healthcare expenditures in the U.S. are the largest in the world, a large portion of which is waste. Addressing such waste could decrease costs while improving healthcare quality. We sought to further evaluate characteristics associated with cost-consciousness within our three-hospital system, with a focus on elements of the Choosing Wisely campaign.

METHODS: We developed a survey with elements capturing practice, attitudes, behaviors and perceived drivers of unnecessary care and invited all internal medicine physicians at our institution to participate. Questions included 8 low-value diagnostic scenarios, 6 questions assessing attitudes toward cost-consciousness and 4 questions predicting personal and national patterns and drivers of unnecessary care. We also asked respondents how often they consider cost in decisions they make. We asked level of training, practice site, inpatient versus outpatient and generalist versus specialist. We used two-tailed t-tests and ANOVA for bivariate characteristics and performed a linear regression for factors associated with the composite unnecessary care score.

RESULTS: Among the 920 potential respondents, 279 (30 %) completed the survey. 110 (39 %) were trainees and 169 (61 %) were faculty. 171 (62 %) were generalists and 153 (56 %) primarily practiced in an inpatient setting. Cost-consciousness did not differ among generalists versus specialists, inpatient versus outpatient, or by site of practice. However, level of training was strongly associated with cost-consciousness, with faculty overall being more cost-conscious. In linear regression analysis, only level of training was associated with cumulative unnecessary care score (coefficient 3.14, $p<.001$). Attitudes concerning cost-consciousness were similar between trainees and faculty. However, trainees less frequently considered cost as a factor in patient care decisions (data not shown).

CONCLUSIONS: In our large university setting including three different practice sites (university, county, and Veterans Affairs), we found that level of training was a driver of perceived and actual cost-consciousness. While trainees believed they were less cost-conscious than faculty, they did not differ significantly in their attitudes toward cost-consciousness. One possible explanation for this difference is tolerance of uncertainty, which may increase with experience and would impact cost-consciousness. The survey indicated that internists are supportive of cost-consciousness, feeling quite strongly about the physicians' role in controlling cost and teaching trainees about cost, while eschewing that cost must be pitted against patient welfare. A low response rate and single institution limit the generalizability of the study. Moreover, cost-consciousness is complex and difficult to assess using a survey. However, our findings underscore the importance of integrating cost-consciousness into post-graduate medical training.

Table. Selected data from survey, Low-value diagnostic scenarios

	Trainee	Faculty	All respondents
Scenario 1 ECG in low-risk patients, mean (SD)	3.3 (1.4)	3.9 (1.4)*	3.6 (1.4)
Scenario 2 BNP in typical heart failure, mean (SD)	3.1 (1.4)	3.3 (1.3)	3.2 (1.3)
Scenario 3 Echo for syncope, mean (SD)	3.7 (1.3)	3.6 (1.4)	3.7 (1.3)
Scenario 4 Annual lipids in low-risk, mean (SD)	3.4 (1.4)	4.0 (1.3)*	3.7 (1.4)
Scenario 5 Imaging for nonspecific back pain, mean (SD)	3.4 (1.4)	4.0 (1.3)*	3.8 (1.4)
Scenario 6 ANA for non-specific symptoms, mean (SD)	3.3 (1.4)	3.8 (1.3)*	3.6 (1.4)
Scenario 7 Perioperative coagulation studies for low-risk patients, mean (SD)	3.2 (1.2)	3.5 (1.4)**	3.4 (1.3)
Scenario 8 Screening spirometry, mean (SD)	3.5 (1.6)	4.1 (1.5)*	3.8 (1.6)
Composite unnecessary care score (based on scenarios 1–8)	3.3 (0.8)	3.8 (0.9)*	3.6 (0.9)

*$P<0.01$ **$P<0.05$

COST-EFFECTIVENESS OF SINGLE- AND MULTI-COMPONENT VACCINATION PROGRAMS TO ELIMINATE DISPARITIES IN INFLUENZA AND PNEUMOCOCCAL VACCINATION RATES IN ELDERLY MINORITIES Constantinos I. Michaelidis[1]; Richard K. Zimmerman[2]; Mary Patricia Nowalk[2]; Kenneth J. Smith[3]. [1]University of Pittsburgh School of Medicine, Pittsburgh, PA; [2]University of Pittsburgh School of Medicine, Pittsburgh, PA; [3]University of Pittsburgh School of Medicine, Pittsburgh, PA. (Tracking ID #1610220)

BACKGROUND: Although disparities exist in influenza and pneumococcal vaccination rates among elderly minority groups, there is little guidance as to which intervention or combination of interventions to eliminate these disparities is likely to be most cost-effective. We evaluate the cost-effectiveness of four hypothetical single- and multi-component vaccination programs designed to eliminate disparities in elderly influenza and pneumococcal vaccination rates in the practice setting.

METHODS: We developed a Markov cost-effectiveness model in which we assumed a societal perspective, 10-year vaccination program and

lifetime time horizon. The cohort was the combined African-American and Hispanic 65 year-old birth cohort in the United States in 2009. We evaluated five different vaccination strategies: no vaccination program and four vaccination programs that varied from "low intensity" (one intervention) to "very high intensity" (four interventions) based on the number of interventions deployed in each practice-based program, their cumulative cost and their cumulative impact on elderly minority influenza and pneumococcal vaccination rates. Three component interventions (patient reminders, practice standing orders and practice audit and feedback) were selected for inclusion because they are well-studied, effective and inexpensive. One intervention (practice vaccination champion) was selected for inclusion as a hypothetical solution to loss of gains in vaccination rates that can occur in later years of an initially high-performing vaccination program due to provider fatigue. We measured costs in 2011 U.S. dollars and effectiveness in quality-adjusted life years (QALYs).

RESULTS: The very high intensity vaccination program cost $24,479/QALY gained compared to the high intensity program and was the preferred strategy at willingness-to-pay-thresholds of both $50,000 and $100,000/QALY, preventing 37,178 influenza cases, 342 influenza deaths, 1,158 invasive pneumococcal disease (IPD) cases and 174 IPD deaths over the birth cohort's lifetime compared to no program. In one-way sensitivity analyses, the very high intensity program only became cost-prohibitive (>$100,000/QALY) at less likely values for the influenza vaccination rate achieved in the high (>73.5 %, base case estimate 71 %) or very high (<76.8 %, base case estimate 81 %) intensity vaccination programs. In probabilistic sensitivity analyses, varying all parameters simultaneously over distributions, the very high intensity program was preferred if willingness-to-pay thresholds were >$21,000/QALY gained.

CONCLUSIONS: For practices planning to deploy interventions to increase elderly minority vaccination rates and reduce disparities, a very high intensity vaccination program that includes four different interventions would be cost-effective. This analysis will provide assistance to community-based practices seeking cost-effective combinations of interventions targeting disparities in elderly minority vaccination rates.

COURTING MALPRACTICE RISK: FAILURES IN HIGH RISK OUTPATIENT TEST AND REFERRAL MANAGEMENT AND DOCUMENTATION Gordon D. Schiff[1,3]; Namara Brede[1]; Sara Singer[1,4]; Cathy A. Foskett[1]; Harry Reyes Nieva[1]; Caitlin A. Colling[1]; Diana L. Whitney[1]; Judy Ling[2]; Nicholas Leydon[2]; Endel J. Orav[1,3]; David W. Bates[1,3]; Madeleine Biondolillo[2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Massachusetts Department of Public Health, Boston, MA; [3]Harvard Medical School, Boston, MA; 4Harvard School of Public Health, Boston, MA. (Tracking ID #1641768)

BACKGROUND: The PROMISES (Proactive Reduction of Outpatient Malpractice: Improving Safety, Efficiency, and Satisfaction) Project is an AHRQ-funded initiative to reduce malpractice risks in Massachusetts, one of seven national malpractice risk reduction projects, and the only one to focus exclusively on primary care. As part of the project's baseline evaluation component, chart review was conducted at 15 intervention sites (14 using electronic medical records and 1 using paper charts). Documentation was assessed in three key areas known to pose risks for malpractice suits in primary care: management of high risk medications, critical abnormal test results, and high risk referrals. Charts were retrospectively reviewed for a one-year study period preceding an 18-month PROMISES intervention. This report analyzes baseline findings related to test result and referral management.

METHODS: Practices identified an enriched sample of up to 100 patients triggered by the following abnormal test results: Cr > 1.8, K+ > 5.4, TSH > 10, INR > 4, and PSA > 5. Reviewers examined the charts to determine if results were noted and documentation of follow-up was present for these as well as other high-risk test results found in the charts (pulmonary nodule, abnormal colonoscopy, abdominal mass, positive stool guaiac, and abnormal pap smear). For high risk referrals, documentation of follow-up was assessed for the following clinical problems: suspicious breast mass, abnormal Pap smear, suspicious skin lesion, and chest pain or new cardiac arrhythmia. A Microsoft Access database was used for data entry and analysis. Charts were reviewed by trained reviewers and an experienced RN using previously validated instruments/criteria, and potential adverse findings were further assessed by a general internist and fed back to the practices in cases where there were active patient safety concerns.

RESULTS: Across 15 practices, 765 charts were reviewed, in which we identified a total of 1533 abnormal test results and 72 high-risk referrals. The practices varied in size from 1 to 9 physicians; the number of charts identified per practice ranged from 17 to 100. The most commonly encountered abnormal test results were Cr > 1.8 (521; 34 % of all tests), K+ > 5.4 (299; 19.5 %), TSH > 10 (255; 16.6 %), INR > 4, (214; 14 %), and PSA > 5 (158; 10.3 %). Of these abnormal tests, 107 (7 %) were not acknowledged by the responsible provider, and documentation of patient notification could not be found in 290 (18.9 %). No action or treatment plan was documented in 283 (18.5 %), and no indication of follow-up/treatment completion could be found (independent of plan documentation) in 256 (16.7 %). Documentation failure was even more common among high-risk referrals: a returned consultation note did not appear in the chart in 16 cases (22 %), the PCP failed to note specialist recommendations in 31 (43 %), and no action was taken on specialist recommendations in 32 (44 %).

CONCLUSIONS: We found serious gaps in documentation and follow-up of multiple abnormal lab tests and high risk referrals. Striking findings included no documentation of provider notification of patients for 1/5 of the abnormal test results, and a significant number (7 %) of tests entirely unacknowledged. This study highlights referral management as an important area of focus for quality improvement to reduce malpractice risk in the primary care setting, and provides the basis for various quality improvement interventions that we are undertaking in the PROMISES malpractice risk reduction project.

CROSSING BOUNDARIES: WHAT IS NEEDED TO REALIZE A COMPREHENSIVE MODEL OF ADVANCE CARE PLANNING? Sangeeta Ahluwalia[1,2]; David Bekelman[3,4]; Thomas J. Prendergast[5]; Alexis K. Huynh[1]; Karl Lorenz[1,6]. [1]Veterans Administration Greater Los Angeles, Los Angeles, CA; [2]UCLA Fielding School of Public Health, Los Angeles, CA; [3]VA Denver, Denver, CO; [4]University of Colorado, Denver, CO; [5]VA Portland, Portland, OR; 6UCLA School of Medicine, Los Angeles, CA. (Tracking ID #1624034)

BACKGROUND: Advance care planning (ACP) should optimally occur early and regularly over the course of an illness. Because patients with advanced illness are often cared for by multiple providers, effective ACP demands a level of coordination and information transfer across the healthcare system that has thus far proven difficult to achieve. We sought to identify the barriers and facilitators to an iterative and comprehensive model of ACP by characterizing the ACP experiences, practices, and perspectives of healthcare providers across settings and disciplines.

METHODS: We conducted multidisciplinary focus groups with providers at a single VA medical center. Participants were purposively sampled by discipline from the internal medicine, geriatrics, palliative care, social work, and intensive care departments. The following topics were covered with the aid of a semi-structured guide: provider conceptualization of and approach to ACP with their patients, beliefs about the objectives of ACP, challenges to engaging in ACP, and beliefs about gaps in ACP and on ways to improve ACP. Focus groups were audiotaped, transcribed, and qualitatively analyzed into categories and themes using the method of constant comparison.

RESULTS: Twenty providers (attending/resident physicians, nurses, chaplains, social workers) representing internal medicine, hospitalists, intensive care, geriatrics/continuing care, cardiology, and palliative care, participated in 2 focus groups (n=17) or individual interviews (n=3). Participants described divergent approaches to and definitions of ACP by specialty; e.g. while primary care providers described ACP as "life planning" and focused on eliciting their patients' values for healthcare, intensivists described it as part of end-of-life care and focused on identifying code status. Participants across specialties agreed that informa-

tion about their patient's broader life goals and values would be more useful at guiding decision-making than the narrowly specified treatment choices used in most living wills. Participants also agreed that primary care providers were best-suited to lead and coordinate the ACP process but acknowledged that in light of increasing workload in primary care, there is a need to test more efficient approaches to ACP, including group visits and the use of non-physician facilitators.

CONCLUSIONS: Differences in providers' understanding of and approaches to ACP may hinder a more seamless and coordinated model of ACP that happens regularly over the course of an illness. Healthcare providers across multiple specialties and disciplines recommend that primary care providers lead and coordinate ACP by eliciting information about patient values that can be usefully applied to a range of clinical scenarios. However, questions remain about how to do this efficiently and effectively, including how to usefully document and transfer qualitative information about patient values across providers, and how to design a more scalable approach to the time-intensive ACP process.

Exemplar Quotes Representative of Themes

Theme Exemplar Quote

Differences in approaches to ACP by specialty (Participant 2) I would say in the ICU we're most concerned with code status and code status only…I think we're certainly focused on the bottom line. (Participant 4) I think from the primary care perspective, it includes things like: where are you gonna live, what's your retirement gonna look like; what are your support services; what kinds of things do you need to make your life livable before you get to the point that you need to fill out a no code.

Utility of information on patient values (Participant 5) What I want is for that document to be about your life and what gets you through the day and what you look forward to. That would be a million times more helpful than those box-based like form that's there. (Participant 3) I think actually kind of a values statement- what do you value in life? What do you treasure in life? What would you not be willing to give up? What would you be willing to settle for? I think that those sorts of things are very helpful to providers about figuring out how far do we go with what we have available.

Critical role of primary care providers (Participant 12) We're often thrown into a situation where I don't know this patient. But I'm supposed to sit down and have this conversation with him about this most intimate and important topic. Most hospital providers feel that it's pro'lly a better thing to talk about in a primary care setting. And my guess is most primary care people feel that way too. (Participant 4) In an ideal world people would all have primary care providers with a long-term relationship and they would best hear it from them because this is the person that's going to be the one to break bad news if you will. And then tell you, \"this is where we're gonna go from here.\"

Need for more efficient approaches to ACP (Participant 1) I think it would be great if we could have some kind of educational visit. Heart patients come in and do a post-CBAG class. We could say \"You've been hospitalized three times for your disease, you've been slated to come in to this post-hospitalization like…the mandatory advanced care plan visit\". (Participant 2) And we probably could use our social workers more for some of those types of things. I could envision looking at a patient visit and saying, \"Well, maybe I'll have my social worker contact them and just, you know, get a sense of where they are.\" 'Cause they could at least talk about advanced directives -in a more kind of general way, but also be able to get sort of a sense of whether the patient started to think about those type of things.

DECISIONS ABOUT MEDICATION USE AND CANCER SCREENING AMONG ELDERLY ADULTS IN THE UNITED STATES Kathleen Fairfield[1]; Bethany Gerstein[3]; Carrie A. Levin[3]; Mary McNaughton-Collins[3,2]. [1]Maine Medical Center, Portland, ME; [2]Massachusetts General Hospital, Boston, MA; [3]Informed Medical Decisions Foundation, Boston, MA. (Tracking ID #1629383)

BACKGROUND: Elderly adults frequently encounter medical decisions, yet little is known about the process and quality of these decisions. Improved decision making about medication use and cancer screening may have relevance in preventing harm from over-screening, over-treatment, and polypharmacy.

METHODS: The TRENDS study is a survey of adults aged 40 and over in the US conducted in 2011 via an Internet panel. A "decision" for the purposes of this study includes whether the respondent had or discussed having a cancer screening test (breast, prostate, or colorectal cancer) or whether the respondent started or stopped, or discussed starting or stopping a medication for hypertension, cholesterol, or depression within the past 2 years. Respondents who made either one or two of the targeted medical decisions were asked a series of questions about each decision. Respondents who made three or more of the targeted medical decisions were asked about the two that are the least common based on U.S. prevalence rates. Respondents were queried about decision process (such as whether pros and cons were addressed, whether their opinion was sought, and who made the final decision), knowledge about the treatment, decisional regret, and perceived benefit and costs (including side effects, out of pocket costs, having to take medication, false alarms, and having to deal with a cancer that might not cause any harm). We calculated a net benefit value score from reported benefits and costs. Age was the primary variable of interest (<60, 60–74, 75+) for this analysis. We used ANOVA to analyze data as appropriate.

RESULTS: Among 2462 respondents, 1382 (56 %) were <60, 816 (33 %) were aged 60–74 and 265 (11 %) were aged 75+. Decision process scores were similar (and generally low) across age groups for medication and cancer screening indicating that all groups had poor involvement in medical decision making. Knowledge about medications was higher than for screening tests, yet did not vary significantly by age. For cholesterol medication decisions, respondents in the 75+ age group with no risk factors for heart disease had significantly higher net benefit value scores (mean 3.0, SD 2.6) compared with the <60 group (mean 1.7, SD 2.6), $p<0.001$ indicating that the oldest respondents perceived more possibility of benefit than harm. Similar trends were observed among respondents with 1 or more risk factors for heart disease, and for decisions about hypertension medication. We did not observe age differences in net benefit value scores for screening decisions, as all age groups tended to place positive value on screening. Decisional regret was generally low and did not vary by age group.

CONCLUSIONS: Elderly respondents to this national survey report weak decision processes when facing choices about common medications and cancer screening, despite little evidence of benefit for some interventions (cancer screening, cholesterol lowering medicines in low risk elderly) and possibility of harm (overdiagnosis, overtreatment, and polypharmacy in elders). Older adults also tend to place greater emphasis on benefit compared with harm when making medication choices. This represents an opportunity to educate elders and medical professionals who care for them more accurately about competing risks and estimated benefits for common medications and screening tests.

DECLINE IN INTERNAL MEDICINE RESIDENTS' ACLS EXPERIENCE IN THE MODERN TRAINING ERA Eric A. Young[1,2]; Kristin A. Stratton[1,2]; Michael Brin[1]. [1]Denver VA Medical Center, Denver, CO; [2]University of Colorado Denver, Aurora, CO. (Tracking ID #1633052)

BACKGROUND: Trainees must demonstrate competence in Advanced Cardiac Life Support (ACLS) to become board-certified in Internal Medicine. Duty hour restrictions may hinder the development of competence by minimizing exposure to "real world" codes. Our study seeks to quantify Internal Medicine residents' exposure to "real world" codes at a large academic training center and determine the relationship between that exposure and residents' confidence in code team leadership.

METHODS: We performed a cross-sectional email survey of second and third year Internal Medicine residents at the University of Colorado Denver, a large multi-site academic training center. Survey questions assessed the number of codes the residents had led in the past 12 months, their level of confidence in leading in-hospital codes on a 1–10 scale (10

being most confident), and when they most recently received ACLS training or a refresher course. A Spearman correlation coefficient was used to analyze the relationship between the number of codes the resident led in the last 12 months and self-reported confidence in ACLS leadership. Mean differences in self-rated confidence were compared among residents who had exposure to ACLS training in the last 1–6 months, 6–12 months, and over 12 months ago using Tukey's studentized range test.

RESULTS: A total of 71 residents responded for an overall survey response rate of 78 %. The mean number of codes run in the previous year was 3.4 with less than 10 % of residents running more than seven codes (SD 3.1; range 20). The mean confidence level was 6.1 (SD 2.0; range 9). Self-reported confidence was strongly correlated with "real world" code experience (R2 0.71; $p<0.0001$). Time since last ACLS training did not significantly affect level of self-reported confidence ($p=0.078$).

CONCLUSIONS: Our results suggest that Internal Medicine residents have limited exposure to "real world" code scenarios and that the amount of exposure is highly variable. The mean number of codes run annually (3.4) was lower than described in prior research. In a study by Hayes. et. al. in 2007, 80 % of surveyed Internal Medicine residents reported attending 1–5 codes per month during their 3–4 months of inpatient service. Our upper level residents complete 4–7 inpatient months annually. Thus, the average number of codes led per month was 0.6, well below the level reported by Hayes et. al. in 2007. The ideal number of codes one must lead to gain competence is not known. The mean confidence level in our cohort (6.1 out of 10) was also relatively low for such a critically important skill set. Self-reported confidence scores were highly correlated with "real world" code experience; however, this finding must be interpreted cautiously in the context of our study, as we did not directly assess competence. Previous research has demonstrated that there is not a direct correlation between confidence and competence in regards to ACLS leadership skills. Nevertheless, our results suggest that traditional residency training may provide inadequate opportunity to gain the ABIM-required competence in ACLS. In 2007, Wayne et. al. demonstrated that simulation-based training with deliberate practice was superior to traditional residency training in developing competence in ACLS leadership. Our study indicates that exposure to "real world" codes in traditional residency training has declined in the era of duty hour restrictions; therefore, the need for simulation-based training is even more pronounced.

DEFICIENT CANCER SCREENING DISCUSSIONS: RESULTS FROM A NATIONAL SURVEY Richard Hoffman[1]; Joann G. Elmore[2]; Kathleen Fairfield[3]; Bethany Gerstein[4]; Michael Pignone[5]; Carrie A. Levin[4]. [1]Albuquerque VA Medical Center, Albuquerque, NM; [2]University of Washington, Seattle, WA; [3]Maine Medical Center, Portland, ME; [4]Informed Medical Decisions Foundation, Boston, MA; [5]University of North Carolina, Chapel Hill, NC. (Tracking ID #1628074)

BACKGROUND: Cancer screening decisions are considered preference-sensitive, and providers are expected to help patients achieve informed decisions. We evaluated the content, processes, and outcomes of cancer screening discussions.

METHODS: The TRENDS study is an Internet-based survey of US adults aged ≥ 40 conducted in 2011. Respondents in this analysis reported discussing screening for breast (BrCa), colorectal (CRC), or prostate (PCa) cancer with a health care provider within the past 2 years. We queried respondents about the content of screening discussions (addressing pros and cons of screening), the decision-making process (did providers ask respondents whether they wanted a test, did providers explain that respondents could choose whether to have a test, did providers express opinions and recommend screening, who made the final decision), and discussion outcomes (testing decisions and whether respondents would make the same decision again). We analyzed data with descriptive statistics and chi-square tests.

RESULTS: Overall, 1382 respondents discussed cancer screening. The mean (SD) age was 59.9 (10.8), 74 % were non-Hispanic whites, 33 % were college graduates, and 46 % reported excellent/very good health. Nearly all discussions addressed the pros of screening, but only one-third addressed cons. Respondents reported that providers explained that they could choose whether to be screened in 67 % of the discussions, and were asked whether they wanted to be screened in 56 % of discussions. In 73 % of discussions, respondents reported that providers recommending testing. About 60 % reported that the decision was mainly their own, while 33 % made the decision together with their provider, and 7 % reported that the provider mainly made the decision. Only 8 % of discussions presented pros and cons of screening, explained that respondents had a choice whether to be screened, and asked respondents for their input. Overall, the majority of respondents underwent screening (77 %) and would definitely make the same decision again (69 %). The Table shows selected results by type of cancer screening discussion.

CONCLUSIONS: Cancer screening discussions often failed to provide balanced information by not addressing the cons of screening. Respondents did not routinely participate in shared decision-making, particularly for breast cancer screening. Supporting shared decision-making could improve the quality of cancer screening decisions and increase patient satisfaction.

Cancer screening discussions: content, processes, and outcomes

Survey item	Total (N=1382)	BrCa (N=516)	CRC (N=678)	PCa (N=188)	P-value*
Discussion Content and Processes					
Discussed pros	94 %	89 %	97 %	98 %	<0.001
Discussed cons	33 %	19 %	42 %	39 %	<0.001
Health care provider explained that respondents could choose whether to be screened	67 %	61 %	71 %	72 %	0.01
Health care provider requested input on screening decision	56 %	42 %	63 %	70 %	<0.001
Discussed pros/cons, explained choices, and requested input	8 %	5 %	9 %	11 %	<0.001
Decision made together by respondent and provider	33 %	26 %	38 %	44 %	<0.001
Outcomes					
Underwent screening	77 %	84 %	69 %	89 %	<0.001
Would definitely make same decision again	69 %	76 %	66 %	57 %	<0.001

*Comparisons across screening type

DEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF VETERANS WITH A HISTORY OF INCARCERATION Nicole Redmond[1]; Mark S. Litaker[2,3]; Michael Conner[3]; Stefan Kertesz[3,1]. [1]University of Alabama at Birmingham, Birmingham, AL; [2]University of Alabama at Birmingham, Birmingham, AL; 3Birmingham VA Medical Center, Birmingham, AL. (Tracking ID #1640495)

BACKGROUND: Prior studies show that recently released inmates have a 12.7 times higher risk of death in the 2 weeks after release (Binswanger IA et al., NEJM 2007) and report poor access to health care both pre- and post-incarceration (Conklin TJ et al., AJPH 2000). In the last quarter of 2007, the Veteran's Administration (VA) Healthcare for Homeless Veterans (HCHV) program began the Health Care for Re-Entry Veterans (HCRV) program. The goal of the HCRV program is to connect incarcerated veterans with treatment and rehabilitative services upon release as a strategy to prevent homelessness. To better understand potential health care and support service needs of the re-entering veterans, we compared demographics, indicators of socioeconomic vulnerability, and clinical characteristics of HCRV veterans with non-HCRV veterans.

METHODS: Using the Veterans Health Administration (VHA) Medical SAS datasets, which contain national administrative data on both inpatient and outpatient patient care encounters, all male veterans with at least 1 HCRV visit from January 1, 2008 through September 30, 2012 were identified as cases. A control group was randomly selected from the same age range as the cases by selecting male veterans without an HCRV visit during the study time period. Period prevalence of demographic characteristics and clinical diagnoses were compared between the cases and controls using t-tests or chi-square tests.

RESULTS: A total of 24,622 veterans had at least one HCRV visit during the study period. Compared to the control group (n=50,140), higher proportions of HCRV veterans were in their 40s (29 % vs. 11 %) and 50s

(40 % vs. 20 %) with fewer in their 60s (13 % vs. 25 %) and 70s (2 % vs. 17 %). Higher proportions of HCRV veterans were of Black race (31 % vs. 12 %). Vulnerability factors most evident among HCRV veterans were a greater prevalence of at least 1 episode of homelessness (47 % vs.5 %), divorced/unmarried/separated/widowed status (79 % vs.38 %), low annual income (<$10,000; 83 % vs. 42 %), and lack of insurance beyond VA benefits (84 % vs. 52 %) compared to the controls. HCRV veterans had slightly higher proportions with PTSD diagnoses (16 % vs. 13 %), but lower proportions with hypertension (33 % vs. 58 %) and diabetes (11 % vs. 25 %) diagnoses. $p<.001$ for all comparisons.

CONCLUSIONS: Consistent with prior literature on former non-veteran inmates, HCRV veterans are more likely to be younger and of Black race compared to their counterparts in the general veteran population. HCRV veterans have higher prevalence of PTSD but lower prevalence of hypertension and diabetes; this finding requires further analyses that control for key covariates including age and race. In addition, veterans with prior incarceration history have significant vulnerability factors that may influence their health care utilization including a) an almost 10-fold elevated prevalence of homelessness, b) a high prevalence of poverty, and c) lack of social support from a spouse or partner. Future work should focus on understanding what types of social and medical interventions may enable VHA, the sole source of health care for most HCRV veterans, to promote the healthy re-integration of these individuals into the community.

DEPRESSION CARE MANAGEMENT EFFECTIVELY SUPPORTS AND PROMOTES SELF-MANAGEMENT AMONG PATIENTS IN PRIMARY CARE Ramona S. DeJesus; Kristin Vickers Douglas; Lisa Howell. Mayo Clinic, Rochester, MN. (Tracking ID #1641876)

BACKGROUND: The collaborative care model, using allied health personnel, to act as care managers, has been consistently shown in studies to be effective in achieving sustained treatment outcomes in chronic disease management such as depression. Prior research had shown patient willingness to work with care managers but little is known on their satisfaction with this model. This study evaluated patient perceived satisfaction with care management and opinions on effectiveness of care management in promoting self-management.

METHODS: Adult patients seen at four primary care sites who had been enrolled in care management for depression and who has had at least 4 contacts with a care manager as identified through the registry, were asked to participate. A questionnaire with consent form was mailed out to 500 eligible patients. Qualitative and quantitative responses were collected from 125 responders. Qualitative responses were coded with methods of content analysis by two independent analysts.

RESULTS: Mean age of participants was 46 years (79 % female) and majority has a diagnosis of recurrent depression (65 %). Interestingly, the mean age among patients when they first experienced depression symptoms was 26 but mean age at time of initial diagnosis was 34. Results indicated that patients were satisfied with depression care coordination (M=8.5 [SD=2]; 10=very good). Predominant themes viewed care managers as caring and supportive. They created accountability for patients ("someone you can be accountable to"), and were knowledgeable experts ("knowledgeable in what you're struggling with") on depression care. Care managers were viewed as supporting self-management by collaborating to find solutions rather than fixing the issue for the patient. Although patients were satisfied with care management relationship and focus, logistical challenges associated with a telephonic intervention were problematic for some.

CONCLUSIONS: Patients with depression who worked with care managers under the collaborative care management program report very positive experience and high rate of acceptance to the model. There is a need to diagnose depression earlier and treat it using effective care models such as this. Barriers in care coordination, such as scheduling telephone calls, should be addressed in future care management implementation and study.

DESCRIPTIVE STUDY OF AFRICAN AMERICAN MEN SUCCESSFUL AT LONG-TERM WEIGHT LOSS MAINTENANCE Ann S. Barnes[1]; Rachel T. Kimbro[2]. [1]Baylor College of Medicine, Houston, TX; [2]Rice University, Houston, TX. (Tracking ID #1641804)

BACKGROUND: Overweight and obesity are highly prevalent in African American men: 70 % of non-Hispanic Black men have a BMI>25. However, there is limited data regarding weight loss and maintenance among this high risk group. The purpose of the current analysis is to describe a sub-sample of African American men who participated in a larger study about African American weight loss maintenance. The parent study (DK064898) identified a large sample of African American adults who intentionally achieved clinically significant weight loss of 10 % and maintained that weight loss for at least 1 year and compared them to individuals who achieved 10 % weight loss but regained the weight.

METHODS: A cross-sectional study design was used. Participants were recruited through various modalities. Eligible participants were asked to complete survey instruments about themselves and their weight history including demographic and weight characteristics, weight-loss and maintenance approaches. Participants completed the International Physical Activity Questionnaire. Responses from individuals who maintained weight and those who regained weight were compared using t-tests. All analyses were completed using STATA.

RESULTS: One thousand two hundred eighty African Americans completed surveys in the parent study. Of those, 133 were men (47 weight-loss maintainers and 86 weight-loss regainers). The average age for men was 42 years. Male weight-loss maintainers lost an average of 25 % of their body weight and maintained ≥ 10 % weight loss for an average of 6.8 years. Men who maintained most or all of the weight they lost reported limiting carbohydrates (42.4 % vs 22.7 %, $p\leq.05$) or using a food exchange or point system diet (15.6 % vs 4.0 %, $p\leq.05$) for initial weight loss when compared to those who regained weight. More male maintainers chose walking for physical activity for their initial weight loss than did regainers (77.8 % vs 47.7 %, $p\leq.010$). They also reported exercising at home (52.8 % vs 23.1 %, $p\leq.010$), outside in their neighborhood (38.9 % vs 18.5 %, $p\leq.05$), or during breaks on the job (33.3 % vs 13.9 %, $p\leq.05$) more frequently than did male weight-loss regainers. In terms of current maintenance habits, male weight-loss maintainers reported eating at fast food restaurants <1 time weekly more often than male regainers (59.6 % vs 30.2 %, $p\leq.001$). Likewise, more male maintainers are currently engaging high levels of physical activity as measured by the International Physical Activity Questionnaire when compared to regainers (66.6 % vs 32.6 %, $p\leq.001$).

CONCLUSIONS: Although small, this sample of African American men successful at long-term weight loss offers preliminary findings about weight-loss and maintenance in this understudied group. These limited findings suggest that low carbohydrate and/or exchange/point diet programs and walking in routine daily settings are relevant for initial weight loss in this group. Maintenance was associated with limiting fast food and engaging in high levels of physical activity. In clinical practice, providers may consider discussing one or more of these specific strategies for weight loss and maintenance with African American men.

DEVELOPING A CURRICULUM FOR MEDICINE RESIDENTS ON INCORPORATING PROGNOSIS IN THE CARE OF OLDER ADULTS WITH MULTIMORBIDITY Nancy L. Schoenborn; Matthew McNabney; Danelle Cayea; Cynthia M. Boyd. Johns Hopkins University School of Medicine, Baltimore, MD. (Tracking ID #1629769)

BACKGROUND: Multimorbidity (2 or more chronic conditions) is a common problem that affects over one in four Americans. Older adults are particularly affected, with half of older adults having three or more chronic conditions. Patients with multimorbidity (MM) are extremely vulnerable. Multimorbidity is associated with higher mortality, disability, institutionalization, decreased quality of life, and higher rates of adverse effects of treatment or interventions. Central to caring for patients with MM is adequate training specific to caring for this population. Guiding principles

for caring for older adults with MM were developed and published by the American Geriatrics Society. We describe a curriculum for internal medicine (IM) residents to teach these guiding principles, with a focus on prognosis.

METHODS: Our curriculum development process follows the 6-step method described by Kern et al. To assess general needs, we searched the literature for current approaches to teaching about caring for patients with MM and about assessing, discussing, or incorporating prognosis into clinical decision making. We assessed the needs of our targeted learners (IM residents at our institution) by gathering information on existing curricula, meeting with key stakeholders, and surveying a subset of residents at a teaching conference where we facilitated case discussions on MM and prognosis.

RESULTS: We found no described curriculum on caring for patients with MM. Some taught about caring for patients with chronic diseases, but focused on single diseases. The few that addressed prognosis existed within curricula on palliative care and oncology. None focused on assessing, discussing, and incorporating prognosis into managing patients with MM. Similarly, our targeted learners have had little teaching on integrating prognosis into caring for patients with MM. Fourteen IM residents attended the teaching conference [44 in program] and responded to our survey on using prognosis in the care of patients with MM. Two-thirds of the respondents reported that they did not regularly assess prognosis in their continuity clinic; none regularly discussed prognosis with patients. The main barriers cited were lack of knowledge and competing demands in clinic.

CONCLUSIONS: There are significant gaps in the education of clinicians on how to incorporate prognosis in the care of patients with MM. Residents who responded to our survey reported knowledge deficiency in this area. We are in the process of designing a curriculum to address this gap. We will focus on integrating prognosis into preventive care and management of certain common chronic diseases, and on recognizing when to consider palliative care. We plan to integrate didactic and case-based teaching methods, and reinforce learning longitudinally through supervised problem-solving in clinical practice.

DEVELOPING AN EFFICIENT SCREENER FOR TOBACCO, ALCOHOL, AND DRUG USE IN PRIMARY CARE: RESULTS OF QUESTION TESTING AND TEST-RETEST RELIABILITY STUDIES OF THE 'SUBSTANCE USE BRIEF SCREEN (SUBS)'

Jennifer McNeely[1,2]; Perry N. Halkitis[3,1]; Shiela Strauss[4]; Ariana Horton[4]; Rubina Khan[1]; Marc N. Gourevitch[1]. 1NYU School of Medicine, New York, NY; [2]NYU School of Medicine, New York, NY; [3]NYU Steinhardt School, New York, NY; 4NYU College of Nursing, New York, NY. (Tracking ID #1641225)

BACKGROUND: A major impediment to implementation of substance use screening and brief interventions in general healthcare settings is the lack of a truly efficient yet precise screening instrument that is compatible with clinical workflows. As a first step toward addressing this need, we developed the Substance Use Brief Screen (SUBS); a 4-item screener for tobacco, alcohol, illicit drugs, and nonmedical use of prescription drugs that is short, self-administered, and could be easily integrated with electronic health records.

METHODS: This was a two-phase instrument development study. Potential participants were approached consecutively in the waiting area of a large urban safety-net primary care clinic and screened for eligibility. Basic eligibility criteria were: current clinic patient, English speaking, age 18–65. In the initial phase, 27 participants completed a 30–40 min cognitive interview to assess item comprehension and acceptability. Detailed field notes were analyzed for comprehension of the screening items and participants' accuracy in classifying substances according to these categories, and the instrument was adapted based on these findings. In the following test-retest reliability phase, a second group of 61 participants completed the SUBS as a self-administered questionnaire on a touchscreen tablet computer, and were asked to return 1–2 weeks later to repeat it. Agreement between responses at the first versus second administration was evaluated with the phi coefficient and McNemar's tests.

RESULTS: The 88 total participants were 51 % male, with mean age 45 years (range 19–65, SD=12). 52 % were black, 22 % white, and 20 % Hispanic; 24 % were foreign born. 39 % had a high school education or less. Reported rates of past year use were 36 % for tobacco, 57 % for alcohol (4+ drinks/day), and 42 % for drugs (30 % illicit drugs only, 23 % prescription drugs only, 14 % both). Cognitive interviews in phase one (n=27) indicated that most participants were comfortable with the questionnaire, but many inaccurately estimated the quantity of alcohol in 'one drink' and misclassified medications without abuse potential (including over the counter medications) as nonmedical use of prescription drugs. In the test-retest reliability study (phase two, n=61), 54 (89 %) participants completed both visits. SUBS responses were 100 % complete. Correlation between screening results on the first and second administration was excellent for tobacco (phi=.96) and drugs (phi=.78), and good for alcohol (phi=.63). When illicit and prescription drugs were examined as independent categories of drug use, reliability was better for illicit drugs (phi=.73) than for prescription drugs (phi=.36). There were no significant differences between test administrations in detecting use, based on McNemar's tests, for any substance.

CONCLUSIONS: The Substance Use Brief Screen (SUBS) facilitated reporting of high levels of substance use, had good test-retest reliability, and was feasible in this sample of primary care patients. More work is needed to improve the clarity of the prescription drug misuse screening item, and further research is required to evaluate the validity of the SUBS for detecting unhealthy use and substance use disorders. If it is shown to have sufficient sensitivity and specificity for detecting clinically relevant substance use, this brief, self-administered instrument could facilitate routine integrated screening for tobacco, alcohol, and drug use in primary care settings.

DEVELOPMENT OF AN INSTRUMENT TO MEASURE THE QUALITY OF TREATMENT DECISIONS FOR ASYMPTOMATIC CAROTID ARTERY DISEASE

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BACKGROUND: Patients (Pts) with asymptomatic carotid stenosis have 3 treatment options: carotid endarterectomy (CEA), carotid artery stenting (CAS), and medical therapy alone (Med)–each with its own benefits and risks. The quality of a decision about whether to undergo elective carotid revascularization depends on the extent to which the treatment reflects what's most important to an informed Pt. Valid measures of Pts' knowledge about treatments options and preferences are needed to assess decision quality and guide Pt education strategies about this common asymptomatic condition. We sought to identify a set of key facts, goals and concerns relevant to each treatment decision (CEA, CAS, Med) and assess differences in Pt and physician (MD) perspectives.

METHODS: We identified candidate 'Facts' (knowledge items about carotid disease, treatment options, and their associated short and long term benefits and risks) and 'Goals' (preferences for avoiding short/long term problems, invasive procedures) via literature review and qualitative work with Pts and MD experts. A written survey was mailed to Pts with carotid disease managed medically and surgically, and national experts (surgeons and non-surgeons). Respondents assessed and ranked the accuracy, importance and completeness of proposed decision quality instrument items with Likert scales.

RESULTS: We obtained 31 surveys from Pts with asymptomatic carotid disease-16 had CEA and 15 chose Med (69 % responded) and 30 surveys from international experts (US, Canada, UK) in vascular surgery, neurosurgery, neurology, and internal medicine (64 % responded). A core

set of 27 Facts (knowledge items) and 6 Goals (preference statements) were identified as important and comprehensive. The set of Facts were rated accurate, important and complete. For Facts, Pts rated as more important than MDs: explaining stenosis, trade-off of higher short term risk of stroke due to CEA/CAS in return for lower long term risk, need for Med after revascularization, short term risks of CEA/CAS, and lack of mortality benefit with CEA ($p<.05$). For Goals, Pts rated as more important than MDs avoiding invasive procedures and procedure complications ($p<.05$). Pts who had CEA had similar rankings as those who chose Med. Non-surgeons (compared to surgeons) rated as more important understanding that: carotid stenosis does not require CEA and treatment choice depends on medical factor and Pt preferences ($p<.05$) and trended towards having more concerns about risk of stroke due to CEA ($p=.08$).
CONCLUSIONS: A new decision quality instrument about asymptomatic carotid artery disease decision making was deemed by Pts and MDs to be accurate, important, and complete. Because Pts, surgeons, and non-surgeons perspectives are different, it is vital that a measurement tool include items reflecting all 3 views.

DEVELOPMENT OF THE TOOL TO ASSESS INPATIENT SATISFACTION WITH CARE FROM HOSPITALISTS (TAISCH) Haruka Torok[1]; Eric Howell[1]; Regina Landis[2]; Susrutha Kotwal[1]; Scott Wright[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Johns Hopkins Bayview Medical Center, Baltimore, MD. (Tracking ID #1632948)

BACKGROUND: Service excellence in U.S. hospitals, as measured by patient satisfaction scores, is receiving more attention with the results being reported publicly and affecting reimbursement rates. Ideally, accurate feedback could be given to individual providers to improve their performance; however the current survey data collection methods have significant limitations that lessen their usefulness.
METHODS: We developed an 18-item survey instrument, TAISCH, whose blueprint was built upon the theoretical underpinnings of the quality of care measures that are recommended by the Society of Hospital Medicine Membership Committee Guidelines for Hospitalists Patient Satisfaction. Other existing validated measures of the quality of patient care were reviewed and items related to the physician's care were included to further substantiate content validity. Input from experts was also solicited. The preliminary instrument was pilot tested on numerous inpatients and TAISCH was iteratively revised. The final version of TAISCH was administered to inpatients after they had been cared for by the same hospitalist provider for at least 2 consecutive days. The patients were enrolled only if they could correctly identify their hospitalist provider. TAISCH specifically asked the patients to rate their hospitalist provider's performance along multiple domains. Only hospitalist providers for whom at least 4 surveys were collected were included in the analysis. Reliability and validity testing were performed. Correlations between composite TAISCH score and Press Ganey (PG) physician score (comprised of 5 questions) were assessed.
RESULTS: Of 257 inpatients approached, 30 patients (12 %) refused to participate. Among the 227 consented patients, 24 (9 %) were excluded as they were unable to correctly identify their hospitalist provider. A total of 203 patients were enrolled and rated one of the 29 hospitalists. The patients' mean age was 60, 114 (56 %) were female, and 61 (30.5 %) were of a non-white race. Two hospitalists with fewer than 4 surveys collected were excluded from the analysis. Two hundred unique patients assessed one of the 27 hospitalists (Mean 7.4 surveys per hospitalist). The hospitalists' TAISCH score ranged from 55 to 69 (mean: 60.9, Standard deviation: 10.2, possible score range: 16–80). Reliability of TAISCH was very good (Cronbach's alpha=0.88). Pearson's correlation coefficient showed statistically significant correlation between TAISCH and the Jefferson Scale of Physician Empathy ($p<.001$, convergent validity). The correlation between TAISCH score and PG physician score was assessed for 20 out of 27 hospitalists for whom both data were available. The Pearson's Correlation coefficient was low at 0.15 ($p=.53$).
CONCLUSIONS: TAISCH allowed us to obtain patient satisfaction data that is undeniably attributable to specific hospitalist providers. TAISCH's strong correlation with the empathy scale and the lack of correlation with PG score calls into question our current methods for assessing patient satisfaction regarding hospitalist's quality of care. The timeliness of the TAISCH assessments also makes it possible for real-time service recovery which is impossible with other commonly used metrics evaluating patient satisfaction.

DIABETES CONTROL: IS TRAVEL TIME TO PRIMARY CARE PROVIDER ASSOCIATED WITH CHANGES IN HEMOGLOBIN A1C? A PRELIMINARY GEOSPATIAL ANALYSIS Andrew P. Wilper; Rick Tivis. University of Washington School of Medicine, Boise, ID. (Tracking ID #1643228)

BACKGROUND: Long term complications of diabetes are a major source of morbidity, mortality and cost. Diabetes management remains challenging even in the best circumstances. Continued search for modifiable variables associated with disease control is warranted. In our study, we analyzed the effect of drive time to primary care provider on diabetes control.
METHODS: We used data from the Veterans Integrated Service Network 20 Corporate Data Warehouse for this study. We identified diabetics by ICD-9 codes between 2008 and 2011. Our sample included 7,459 patients from the Boise VA catchment area. Using geocoded street address, we calculated both driving distance and drive time from the patient's home to their VA primary care facility. This distance and drive time analysis was calculated for each quarter year, as patient address is updated every 3 months. Therefore, change in address, and therefore change in drive time, is accounted for in this analysis. The Hemoglobin A1c (A1c) measures for an individual were averaged over each quarter of the year to coincide with the format of the distance data. Analysis was performed using a modified linear regression via SAS proc mixed to account for the repeated and variable nature of this data. Separate analyses were conducted for the 4th and 1st quarters (fall/winter) and the 2nd and 3rd quarters (spring/summer) as drive time in Idaho is more of a consideration in the winter months. We used SAS 9.2 (Cary, NC) for the statistical analysis. The distance and drive time analysis was provided by the Veterans Administration Planning Systems Support Group, Gainesville, Fl, using ESRI ARCGIS suite (Redlands, CA) and NAVTEQ street map premium (Chicago, Il). The Puget Sound IRB approved this study.
RESULTS: The study population was overwhelmingly male, 97 % ($n=$ 7,204), with an average age in 2008 of 65 years (standard deviation (SD)= 12 years). Sixteen percent died during the study period. The mean driving distance was 52 miles (SD=123 miles) miles and the mean drive time was 51 min (SD=143 min). The mean A1c was 7.2 (SD=1.4). Repeated measure regression analysis revealed a significant positive relationship between time traveled and A1c (F statistic 4.63, $p=0.0315$) in the fall/winter months while there were no significant relationship in the spring/summer months. This translates to a 0.03 increase in A1c for every hour of drive time. There was no significant ($p>.50$) relationship during the spring/summer quarters.
CONCLUSIONS: We demonstrate a small but significant relationship between diabetes control and drive time during the winter months. This suggests that increased travel time may be a risk factor for uncontrolled diabetes. Next steps in this analysis include adjustment for demographics and medical co morbidities, as well as analysis of mortality, blood pressure and lipid control. Should a relationship between drive time and disease control persist, we will search for a threshold drive time beyond which patients may need additional support for diabetes management.

DIAGNOSTIC UTILITY OF CTA CHEST IN "PE UNLIKELY" PATIENTS Kasaiah Makam[1]; Ashok Akula[1]; Alan Greenberg[2]. [1]University of Nevada School of Medicine, Las Vegas, NV; [2]University Medical Center, Las Vegas, NV. (Tracking ID #1642785)

BACKGROUND: Acute Pulmonary embolism (PE) affects approximately 69 persons per 100,000 people annually and is a major problem if not diagnosed in timely fashion. Clinical value of CTA (Computed tomography angiography) is similar to conventional angiography in diagnosing acute PE. Modified Wells score stratifies the patients at risk of acute PE into PE likely (score>4) and PE unlikely (</=4) groups. The combination of a score </=4.0 and a negative D-Dimer result may safely exclude PE in a large proportion of patients with suspected PE. We and others have observed frequent utilization of CTA in PE unlikely group. We wondered whether there is any clinical utility in obtaining CTA chest in PE unlikely patients.
METHODS: This was a single center, retrospective analysis based on results of CTA chest, CXR (chest x-ray) and chart review. Based on chart review modified Wells score was determined. Patients divided into PE likely and PE unlikely groups. For this study, "operationally" PE likely group was defined as score>4 or score </=4 with positive D-dimer and PE unlikely group was defined as score </=4 with negative D-dimer if available. The presence or absence of PE was determined based on CTA chest results. Clinically relevant alternative diagnoses (AD) made on CTAs were ascertained. CXR reports were reviewed and compared to CTA chest results. Prevalence of PE and net diagnostic utility were determined for defined PE unlikely group estimated as the outcome measures of the study. Prevalence of PE = Number of PE/total CTAs performed in defined PE unlikely group. Net diagnostic utility = AD-CXR/total CTAs performed in defined PE unlikely group (AD-CXR- Clinically relevant alternative diagnosis not discernible on CXR other than acute PE)
RESULTS: 268 patient charts were reviewed between age groups 18–65 who underwent CTA chest within 24 h of admission. Two patients were excluded from study. 16 patients were in PE likely group and 250 in PE unlikely group. D-dimer was performed in 51 patients of 250 in PE unlikely group and 43 were D-dimer positive. Therefore defined PE unlikely group included 207 patients. In this group 3 patients had acute PE and prevalence of PE was 1.44 % (3/207). 7 patients had clinically significant alternative diagnoses not discernible on CXR and Net diagnostic utility of CTA chest in PE unlikely group was 3.38 % (7/207, AD-CXR = Pneumonia-3, Pneumothorax-2, Lymphoma-1, skeletal metastasis-1). None of the patients in defined PE unlikely group had acute PE with negative D-dimer (8 patients = Wells score <4 and negative D-dimer).
CONCLUSIONS: Our results indicate that performance of CTA chest in the defined PE unlikely group has little diagnostic utility. In-fact only 1 in 33 CTAs has yielded clinically useful information, therefore our data does not support regular use of CTA chest in PE unlikely group. Routine incorporation of modified Wells score and D-dimer assay in the initial evaluation of patients in whom PE is diagnostic consideration should lead to significant decrease in CTA chest examinations.

DIFFERENCE OF SELF-REPORT COMPETENCY CONFIDENCE SCORES AND NUMBERS OF EXPERIENCED CASES BETWEEN TWO TYPE OF ROTATION PROGRAM AMONG JAPANESE JUNIOR RESIDENTS: NATION-WIDE SURVEY Sachiko Ohde; Osamu Takahashi; Gautam A. Deshpande; Tsuguya Fukui. St. Luke's International Hospital, Chuo Tokyo, Japan. (Tracking ID #1642966)

BACKGROUND: Japanese physicians experience their first clinical practice in the junior residency program (1st- and 2nd-year residents). The junior residency program has been mandatory for all physicians since 2004. From 2004 to 2009, this "core-based" curriculum required trainees to rotate in major departments (internal medicine, 6 months; surgery, 3 month;, anesthesiology, 1 month; OBGYN, 1 month; pediatrics, 1 month; psychiatry, 1 month; rural medicine, 1 month). In 2010, the Ministry of Health and Welfare allowed residents in some programs to choose a larger number of selectives ("selective-based curriculum"), reducing the number of required core departments. Despite resident freedom to choose preferred rotations, there are growing concerns about deterioration of basic clinical skills by young doctors.
METHODS: A nationwide cross-sectional study was conducted in March 2011. A standardized survey was distributed to all 2nd year residents in Japan, which included the type of curriculum (core-based or selective-based), self-reported competency scores for 98 clinical items, and number of cases experienced for 85 diseases. Competency scale scores and number of cases experienced was compared by curricular type.
RESULTS: Among a total of 7506 Japanese residents, 5052 residents replied to the survey (67.3 %); 3265 were males (64.6 %) and mean age was 283 years. 1206 (23.9 %) residents were in selective-based rotation programs. Out of 98 clinical competency items, residents in selective-based programs reported lower confidence scores in 12 items compared to those in core-based programs. Out of the 85 diseases assessed, selective-based residents reported less experience in 11 diseases. OBGYN- and pediatrics-related items and cases were particulary low.
CONCLUSIONS: Residents who are in selective-based curricula reported less confidence and less case experience, especially in OBGYN and pediatrics. To achieve primary care competency, junior residency program should maintain a core-based curriculum

DIFFERENCES IN CERVICAL CANCER KNOWLEDGE AMONG MINORITY WOMEN IN MIAMI Kumar Ilangovan[1]; Tulay Koru-Sengul[2,3]; Erin N. Kobetz-Kerman[2,3]; Olveen Carrasquillo[1]. 1University of Miami Leonard M. Miller School of Medicine, Miami, FL; [2]University of Miami Leonard M. Miller School of Medicine, Miami, FL; [3]University of Miami Sylvester Comprehensive Cancer Center, Miami, FL. (Tracking ID #1637087)

BACKGROUND: Minority women suffer disproportionately from cervical cancer incidence and mortality. Education initiatives aimed at improving cervical cancer knowledge may lead to increased appropriate screening and reductions in morbidity. Baseline data describing the variable levels of knowledge among specific minority and underserved communities will aid the design of such programs.
METHODS: The South Florida Center for Reducing Cancer Disparities is a comprehensive NCI initiative focused on the reduction and ultimate elimination of cervical cancer disparities in Miami-Dade County. As part of an ongoing randomized intervention study, we collected baseline data on cervical cancer knowledge among three minority communities: Little Haiti, Hialeah (90 % Latino), and West Perrine (mixed community). Eligibility criteria included women aged 30–65 years and not having had a Pap smear in the past 3 years. Knowledge was assessed using questions from the NCI's Health Information National Trends Survey (HINTS), which we translated and back translated into Haitian Kreyol and Spanish. We used Fisher's exact test to examine differences in knowledge across minority subgroups. We then used univariate and multivariate logistic regression models to control for additional sociodemographic correlates of higher cervical cancer knowledge.
RESULTS: Among the 202 women enrolled to date, 50 % are Latina, 40 % Haitian, and 10 % African American (AAs). We found 51 % of Latinas answered > 50 % of questions correctly versus 20 % of AAs and only 9 % of Haitians ($P<0.05$ for each group versus Latinas; see table 1 for examples of individual questions). Years of education and being married, but not age, were positively correlated with higher levels of knowledge ($P<0.05$). In multivariate analysis, adjusting for these potential confounders, Haitians remained less likely to answer > 50 % of questions correctly (OR 0.22, 95 % CI 0.08–0.63). The smaller sample size limited the statistical power of our comparison for AAs (OR 0.37, 95 % CI 0.10–1.39).
CONCLUSIONS: Among minority women in Miami who had not been adequately screened for cervical cancer, Haitians had the lowest levels of

cervical cancer knowledge. As more women are enrolled in our study (target 600) we will have greater power to detect potential differences among AAs. We have developed and are now testing culturally tailored educational interventions in these vulnerable groups.

Table 1

Question	Percent Answering > 50% Correctly		
	Latina	Haitian	African American
Do you think that most women diagnosed with cervical cancer die from the disease?	54%	6%	35%
Do you think that being hit in your lower abdomen can cause cervical cancer?	34%	6%	30%
Have you ever heard of HPV? HPV stands for Human Papillomavirus.	67%	20%	45%
* P <0.0001 for all group comparisons			

DIFFERENTIAL ADHERENCE TO MEDICATIONS BY OLDER ADULTS WITH MULTIPLE COMORBIDITIES Alex Federman[1]; Michael S. Wolf[2]; Anastasia Sofianou[1]; Melissa Martynenko[1]; Juan P. Wisnivesky[1]. [1]Mount Sinai School of Medicine, New York, NY; [2]Northwestern University, Chicago, IL. (Tracking ID #1636465)

BACKGROUND: Elderly patients with chronic diseases, such as asthma, frequently have multiple coexisting illnesses requiring daily adherence to medications. In this study we examined the extent of agreement of adherence across multiple medications in these patients.

METHODS: Asthmatics ages ≥60 were recruited from hospital and community practices in New York, NY and Chicago, IL (n=420). We administered the Morisky Medication Adherence scale, a validated 5-item assessment (score range, 0–4) to measure adherence to medications for up to 4 conditions: asthma (n=370, 88 %), hypertension (n=323, 77 %), hyperlipidemia (n=200, 48 %), and diabetes (n=128, 30 %). For patients on multiple medications for the same condition the average of scores was used. We utilized correlation analyses to assess the association of continuous adherence scores for asthma vs. other medications and calculated kappa statistics for agreement of adherence to these medications (good adherence defined as a score of 4).

RESULTS: Rates of medication adherence for each condition varied: for asthma, 41 %; hyperlipidemia, 70 %; diabetes, 66 %; and hypertension, 62 %. The correlation (r) of the continuous measures of adherence to asthma and hyperlipidemia, diabetes, and hypertension medications was relatively low (r=0.28, p=0.004; 0.13, p=0.35; 0.20, p=0.01; respectively). Similarly, k levels of agreement were low (0.17, 0.02, and 0.13, respectively; all p<0.01). In contrast, co-adherence was more likely for the non-asthma medications: hyperlipidemia and hypertension, k=0.45, r=0.50, p<0.0001; hyperlipidemia and diabetes, k=0.39, r=0.36, p<0.0001; diabetes and hypertension, k=0.27, r=0.36, p<0.0001.

CONCLUSIONS: Good adherence to hyperlipidemia, diabetes, and hypertension medications does not predict adherence to asthma medications. Optimizing the management of patients with multiple chronic diseases will require a better understanding of how and why patients adhere differentially to their medications.

DISABILITY BETTER PREDICTS LENGTH OF STAY THAN COMORBIDITY IN PATIENTS ADMITTED TO INTERNAL MEDICINE Chunzhen Tan[1,2]; Yee Sien Ng[2]; David Matchar[1]; Gerald Choon Huat Koh[3]; Young Kyung Do[1]. [1]Duke-NUS Graduate Medical School Singapore, Singapore, Singapore; [2]Singapore General Hospital, Singapore, Singapore; [3]Saw Swee Hock School of Public Health, Singapore, Singapore. (Tracking ID #1624134)

BACKGROUND: Clinical management and resource allocation for Internal Medicine (IM) patients are currently based on their presenting diagnosis, with little attention paid to the impact of disability and comorbidity. The primary aim of this study was to examine the association of disability and comorbidity with the length of stay (LOS) and their relative importance.

METHODS: Over 2 consecutive years, the study recruited consecutive unselected patients from an academic tertiary hospital who were admitted to the IM Department under a single medical team for a month. Explanatory variables charted included demographic, disease type, biochemical markers, social factors (e.g., financial difficulties and caregiver availability), comorbidities and functional disability. Our measure for functional disability was the Functional Independence Measure (FIM) recorded at inpatient discharge, a standardized measure consisting of 13 motor and 5 cognitive items ranging from 18 (totally dependent) to 126 (totally independent). Comorbidity was measured using the Charlson Comorbidity Index (CCI). Multiple regression analysis was conducted to examine independent associations of FIM and CCI with the length of hospital stay controlling for confounders such as demographics and social factors.

RESULTS: Among 248 patients included in the study (age 65.9 ±18.4, male 51.5 %), the mean LOS was 11.2±32.9 days with the median of 4.0 days. The average inpatient total FIM score was 92.3 ±37.2 with the mean motor FIM and cognitive FIM scores being 64.7±28.5 and 28.0±9.8, respectively. The mean unadjusted and adjusted CCI was 2.51±2.60 and 4.47±3.66 respectively. Sixty-three (34.1 %) patients had various social issues including financial difficulties and caregiver availability. The majority of patients (79.4 %) were discharged home. Multiple regression analysis results showed that greater functional dependence represented by a lower total FIM score (p=.006) and the

presence of social issues (p=.001) were positively and statistically significantly associated with the length of stay, while age (p=.119), gender (p=.555) and the CCI (p=.931) were not.
CONCLUSIONS: Disability may be a better predictive factor than comorbidity for the length of stay in IM patients. Optimal health care management could consider the benefit of incorporating disability in resource allocation in addition to the presenting diagnosis.

DISPARITIES IN SURGERY FOR EARLY STAGE LUNG CANCER: DO COMORBIDITIES AFFECT SURGICAL SURVIVAL DIFFERENTLY? Samuel Cykert[1]; Lloyd Edwards[2]; Paul Walker[3]; Franklin McGuire[4]; Peggye Dilworth-Anderson[5]. [1]University of North Carolina, Chapel Hill, NC; [2]University of North Carolina School of Public Health, Chapel Hill, NC; [3]Brody School of Medicine, Greenville, NC; [4]University of South Carolina School of Medicine, Columbia, SC; [5]University of North Carolina School of Public Health, Chapel Hill, NC. (Tracking ID #1637808)

BACKGROUND: Our recent, prospective cohort study confirmed the many reports using administrative data showing that African-Americans (AA) with early stage, non-small cell lung cancer receive potentially curative surgery less often than similar white patients (W). We found that AA with 2 or more comorbid illnesses only rarely went to surgery while W still proceeded to surgery regularly. As part of a lung cancer disparities intervention trial, we performed a retrospective chart review to determine the baseline rate of lung cancer surgery at the 3 participating institutions and to identify predictors of mortality for all patients. We also determined how comorbid conditions affected mortality in the surgical group. These data will be used for provider feedback as part of the multi-modal intervention approach.
METHODS: We performed a retrospective chart review of patients with biopsy proven early stage, non-small cell lung cancer at 3 academic institutions in the Southeast. Local cancer registries were used to identify patients then trained research associates extracted predetermined data. Note that one institution has a functional data warehouse and the data elements there were extracted in an automated fashion after which the RA performed regular sample checks to ensure accuracy. Elements of the chart review included demographic information, smoking status, pulmonary function tests, comorbid illnesses, date of death if applicable, surgical status, and cancer stage. Comorbid illnesses were used individually in the analyses when possible and were also compiled in other analyses as part of a Charlson Score. Descriptive statistics were compiled and bivariate analyses were performed with particular attention to receipt of surgery and 1 year mortality as outcomes. Regression analyses were performed using these same outcome variables and stratified analyses were done according to race and surgical status.
RESULTS: The cancer registries at the 3 institutions identified 714 early stage lung cancer patients during the 3 years of interest. 55 % of patients were male, 25 % AA, and the median age was 68 years. Although 68.5 % of W had lung cancer surgery compared to 65.7 % of AA, controlling for age, comorbidities, COPD, and other demographics the OR for surgery for AA was 0.64 (95 % CI 0.43, 0.96). The overall mortality rate was 14 % and did not differ by race. When considering the entire cohort, a Charlson Score>2 was associated with twice the chance of dying (OR 2.1, 95 % CI 1.4, 3.4) and surgery was associated with half the chance of dying (OR 0.55, 95 % CI 0.35, 0.89). When broken into individual components ef <40 % and known CAD were significantly associated with death. Examining the surgical group alone and the AA lung cancer group, these results remained consistent.
CONCLUSIONS: The tradeoff between surgery and comorbid illness continues to be the perplexing area in lung cancer surgery decision making. The diagnosis of COPD was not associated with an increase in 1 year mortality while cardiac illness was. AA did not differ in this regard. Instead of lower surgical rates among AA, perhaps more aggressive preoperative cardiac evaluation could optimize surgical outcomes and narrow disparities in care.

DO LETTERS OF RECOMMENDATION PREDICT SUCCESS IN MEDICAL SCHOOL? Elexis McBee[2,1]; Gretchen Rickards[2,1]; Nathalie Paolino[2,1]; Charles D. Magee[1,2]; Kent DeZee[1,2]. [1]Uniformed Services University, Bethesda, MD; [2]Walter Reed National Military Medical Center, Bethesda, MD. (Tracking ID #1641782)

BACKGROUND: Letters of Recommendation (LORs) are a time-honored aspect of the medical school application process, but their utility has been poorly studied. We sought to determine how well LORs predict performance during medical school.
METHODS: Three consecutive medical school classes (2007–2009) at the Uniformed Services University were retrospectively studied. Up to three LORs for each student in the top 1/6 of the class (Alpha Omega Alpha (AOA) graduates, n=27 per class) were compared to those in the bottom 1/6 of the class (determined by final grade point average, n=27 per class). Each letter was de-identified prior to independent coding by two investigators using a piloted data abstraction form, with differences resolved by consensus. Comparisons between AOA and bottom of the class LORs were made for 46 a priori categories using Chi square, Fisher's Exact Test, or Students' T-test, as appropriate.
RESULTS: We coded 437 letters (214 AOA and 223 bottom of the class LORs). Of the 46 categories coded, 7 categories were significantly different (p<0.05) between the two groups. AOA LORs were more likely than the bottom of the class LORs to have been written by an employer (including a research lab supervisor; 36 % vs. 22 %), to have recommended for employment promotion (16 % vs. none), to have stated the student was the "best" among their peers (41 % vs. 17 %), or to have indicated the student was known "very well" by the writer (41 % vs. 23 %). Conversely, AOA LORs were less likely to have been written by a classroom instructor (56 % vs. 65 %), to have a less than a top choice rating on a standardized LOR form (3 % vs. 19 %), or to have non-positive comments (6 % vs. 13 %).
CONCLUSIONS: In this hypothesis generating study, most variables in LORs did not forecast success during medical school. However, we identified several measures, such as being considered the "best" among peers, that may provide value in predicting medical school performance and warrant further investigation.

DO PHYSICIANS UNDER-RECOGNIZE OBESITY? Rachana Thapa[1]; Jennifer Friderici[1]; Reva Kleppel[1]; Janice Fitzgerald[1]; MIchael B. Rothberg[2]. [1]Baystate Medical Center, Springfield, MA; [2]Cleveland Clinic, Cleveland, OH. (Tracking ID #1641931)

BACKGROUND: Obesity is associated with adverse health outcomes including diabetes, sleep apnea, hypertension and osteoarthritis. Physician advice is among the strongest predictors of weight management effort by patients, yet only a minority of obese patients receive such advice. One contributor might be a failure to recognize obesity. Our objective was to assess physicians' ability to recognize obesity and identify factors associated with recognition and documentation of obesity.
METHODS: Cross-sectional survey of Internal Medicine and Family physicians at two urban, adult outpatient health centers. At the end of each session, physicians were instructed to categorize patients seen that session as normal weight (BMI<25 kg/m2), overweight (BMI 25–29.9) or obese (BMI≥30) based on recall. Physicians also provided personal demographics and answered 7 questions measuring attitudes about obesity and its treatment. The corresponding patient charts were abstracted for demographics, anthropometrics, and obesity-related comorbidities (diabetes, osteoarthritis, hyperlipidemia, coronary disease, and sleep apnea). We also reviewed whether patients had obesity documented as a problem within the last 3 visits. Proportion

comparisons were performed using Poisson regression, with standard errors adjusted to account for within-physician clustering. Each physician also received a proportion score (# of patients correctly identified as obese/# of obese patients seen). Proportion scores were compared by physician characteristic using Spearman's correlation (continuous) or Wilcoxon Rank Sum (binary). P-values of ≤0.05 were considered statistically significant.

RESULTS: A total of 62/62 physicians who were contacted completed weight assessments for 368 patients; 2 physicians declined to submit the attitudes questionnaire and 11 submitted incomplete questionnaires. The average patient was 50.7±16.1 years old; 56 % were female, 67 % were Hispanic, and 67 % had ≥1 obesity-related comorbidity. There were 175 (48 %) obese patients. Physicians identified 138 (67 %) of these as obese, 49 (28 %) as overweight and 9 (5 %) as normal weight. They identified as obese 85 % (82/96) of those with BMI ≥35, but only 44 % (35/79) of those with BMI of 30–34.9 ($p<0.0001$). Obese Hispanic patients were significantly less likely to be identified as obese than were non-Hispanic ones (62 % vs. 76 %, $p=0.03$). US-trained physicians recognized a higher proportion of obese patients than did international graduates (74 % vs. 53 %, $p=0.08$), and female physicians recognized more than males did (75 % vs. 55 %, $p=0.06$). No other physician factors or attitudes were associated with recognizing obesity. Physicians documented obesity as a problem for 99 (57 %, 95 % CI 49 %, 64 %) obese patients. Documentation was more likely among patients who physicians recalled as being obese (64 % vs. 41 %, $p=0.006$); Attending physicians documented obesity in the patient record more frequently than residents (67 % vs.50 %, $p=0.05$). Physicians documented obesity for 58 % of patients with at least 1 obesity related comorbidity vs. 52 % without ($P=0.59$).

CONCLUSIONS: Physicians have difficulty recognizing obesity unless the patients are morbidly obese. Physicians are less likely to identify Hispanic patients as obese than non-Hispanic patients. Residents documented obesity less often than attending physicians. Physicians should be trained in the recognition and documentation of obesity, especially in Hispanic patients.

DO PHYSICIANS AND PATIENTS DISCUSS THE HOSPITAL PLAN OF CARE? Zackary Berger; Sosena Kebede; Mary Catherine Beach. Johns Hopkins School of Medicine, Baltimore, MD. (Tracking ID #1636967)

BACKGROUND: Hospitalization presents a number of challenges to patients' exercise of autonomy. Little is known about the content of patient-physician dialogue concerning the hospital plan of care, and in particular whether physicians and patients discuss the plan explicitly. Our aim was to assess the discussion of the plan of care between inpatients on a hospitalist service and their physicians.

METHODS: We conducted a qualitative study of patient-doctor communication on an inpatient medicine hospitalist service. A research assistant digitally recorded and transcribed daily doctor-patient dialogue on walk rounds and daily semi-structured interviews with patients and doctors separately. Patient and physician statements were coded using a modified discourse analytic approach; coding categories were collaboratively determined by two of the authors.

RESULTS: Fifty-two encounters for 13 distinct patients were analyzed. Physicians did not discuss the plan of care at any point with seven patients, and acknowledged this in semi-structured interviews ("Sometimes I don't want to discuss everything about the plan because there is a fair amount of uncertainty…so I wouldn't want to be explicit with the patient every single time throughout their stay."). Physicians did discuss the plan of care with six patients (Physician: "I'm not sure that we need to put you through another stress test." Patient: "I want to at least, I want to at least be straight before I'm out of here." Physician: "Ok. Alright, so let me take a look at some of your other labs, and I'll get back to you on that."). In three of these six, the physicians indicated that in the discussion with the patient they obtained patient consent or agreement, but the audiorecorded dialogue revealed that this process was implicit. (Physician: "They are also cardiologists, they're specialists, so they will come and talk to you and then see whether you will [benefit] from the pills." Patient: "Ok." Physician: "Ok. So that's the plan for today.") No physicians discussed the discharge plan with patients.

CONCLUSIONS: While some physicians discuss the plan of care with patients, in some cases this is limited to patient agreement or consent. The discharge plan might be an area in which physicians can communicate more explicitly with patients. Further research should elucidate which communication practices, and characteristics of doctor and patient, act as facilitators or barriers for such explicit discussion.

DOES STRESS TESTING BEFORE ELECTIVE HIP FRACTURE SURGERY INCREASE LENGTH OF STAY AND/OR ALTER PATIENT MANAGEMENT? Elizabeth C. Gadziala[1,2]; Velair Walton[1]; Michael P. Carson[1]. [1]Jersey Shore University Medical Center, Neptune, NJ; [2]Axelrod Research Foundation, Neptune, NJ. (Tracking ID #1631170)

BACKGROUND: Retrospective studies suggested that pre-operative cardiac stress testing could identify patients at high risk for peri-operative myocardial infarction who might benefit from coronary revascularization, but a prospective randomized trial demonstrated that revascularization of high risk patients did not decrease mortality. The accepted approach to patients with acute non-traumatic hip fracture is surgery within 24–48 h of admission. Stress testing is unlikely to alter management, but could cause delays in patient care. The objective was to determine if a preoperative stress test administered to patients with acute hip fractures was associated with a longer length of stay (LOS), and if an abnormal result was associated with an alteration of the care plan.

METHODS: Retrospective case–control study of patients seen at our hospital 2006–2011. Patients were identified by ICD-9 for hip fracture and procedure codes for persantine or dobutamine stress tests. Patients were matched by age and gender.

RESULTS: 42 patients who had a pre-operative stress test (STRESS) were matched to 42 controls (CONTROLS). The mean age was 81 years in both groups, and 70 % were female. The respective mean values (days) for the STRESS group vs. CONTROLS were: LOS 8.3 vs. 4.7 ($p=0.0002$); Time to Operating Room 2.5 vs. 1.4; Time from surgery to discharge 5.7 vs. 3.2. The LOS was 3.6 days longer for the STRESS group [95%C.I. (1.7, 5.5)]. When a cardiologist was consulted 73 % had a stress test ($n=48$) vs. vs. 20 % when they were not (Risk Ratio 3.8 [95 % CI (1.9, 7.5)]), and the mean LOS was 7.9 vs. 4.5 days ($p=0.0004$). Among the STRESS group, the time to the operating room for those with ($n=5$) or without ischemia was 2.6 days, suggesting that an abnormal stress test result did not alter management. 60 % of patients were on beta-adrenergic blocking agents, and this was true for those with and without ischemia on the stress test. Neither of the patients who died had asthma or COPD, but only 1 was on a beta-blocker. The following were associated by Logistic Regression with stress testing: cardiology consultants, COPD, atrial fibrillation and hypercholesterolemia. Surprisingly, diabetes and a known history of coronary disease were not associated with testing.

CONCLUSIONS: In acute hip fracture patients, preoperative stress tests were associated with a longer length of stay, delays in getting to the operating room, and longer time from surgery to discharge. Abnormal results did not prompt alterations in management such as revascularization and beta-blockers were not prescribed to 2 patients with stress-induced ischemia. This study is limited by the retrospective design that could not identify other factors associated with testing or delays. This data suggests that such testing in this population increased LOS without affecting clinical decision making, and education of cardiologists could significantly decrease this "lets just be safe" practice style.

DOES THE MEANINGFUL USE OF ELECTRONIC HEALTH RECORDS IMPROVE CHRONIC CARE ABOVE STANDARD QI INTERVENTION? Samuel Cykert1,2; Ann Lefebvre2; Thomas Bacon2. 1University of North Carolina, Chapel Hill, NC; 2University of North Carolina, Chapel Hill, NC. (Tracking ID #1640879)

BACKGROUND: Care for chronic illness accounts for over 60 % of healthcare spending. Through the Health Information Technology for Economic and Clinical Health Act, 677 million dollars have been allocated to Regional Extension Centers (REC) to help primary care providers adopt electronic health records and achieve Stage 1 Meaningful Use (MU) functionality as defined by CMS. In this report, we consider the question, "Does adding Meaningful Use to quality improvement (QI) interventions achieve better chronic care results in disparate, independent primary care practices?"
METHODS: Through the Robert Wood Johnson funded Improving Performance in Practice Program (IPIP), rapid cycle QI techniques for chronic care improvement were disseminated to 180 North Carolina primary care practices by the end of 2009. The North Carolina Area Health Education Centers Program (AHEC) served as the organizational home for these efforts. Later, AHEC was also designated then funded as the REC for the state of North Carolina beginning February of 2010. Participating IPIP practices report diabetes population measures monthly to the AHEC database. Here, we report the results for practices that have reported these data for at least the last 6 months who have signed up for the REC. These practices are divided into 3 groups: Group 1 consists of practices that do not yet have automated quality reporting; Group 2 practices have instituted electronic prescribing + automated quality reporting; Group 3 practices have fully achieved Stage 1 Meaningful Use.
RESULTS: Participating practices average 3.8 providers per practice and 44 % were rural. Baseline percentages for population control (pre-IPIP) of diabetic care measures were 24 % for HGB A1c<7, 24 % for HGB A1c> 9,and 38 % for LDL-C<100. As of December of 2012, 21 practices were in Group 1. In these practices, HGB A1c<7 improved to 40.6 % while 23 % of patients still had HGB A1c>9. For Group 1 patients, LDL-C<100 remained at 38 %. Group 2 consisted of 26 practices covering 12,126 diabetics. Eleven practices covering 7,417 diabetics achieved full meaningful use and met Group 3 criteria. Diabetes chronic care results are shown in the Table.
CONCLUSIONS: Early data show that achievement of Stage 1 Meaningful Use through the REC program is associated with substantial gains in diabetes care measures in small, independent primary care practices who also engage in QI. These improvements are greater than those obtained through automated quality reporting alone and may be attributable to the organizational and workflow changes necessary to implement all facets of MU.
Diabetes Care Measures for Practice Groups 2 and 3
Group + Diabetic Care Measure Before EHR with Automated Reports After Automated Quality Reports After Achievement of MU
Group 2 HGB A1c<7 39.6 % 45.1 % -
HGB A1c>9 19.4 % 23.1 % -
LDL-C<100 42.7 % 45.7 % -
Group 3 HGB A1c<7 53.7 % 53.0 % 61.5 %
HGB A1c>9 25.4 % 15.5 % 13.9 %
LDL-C<100 46.5 % 52.4 % 62.0 %

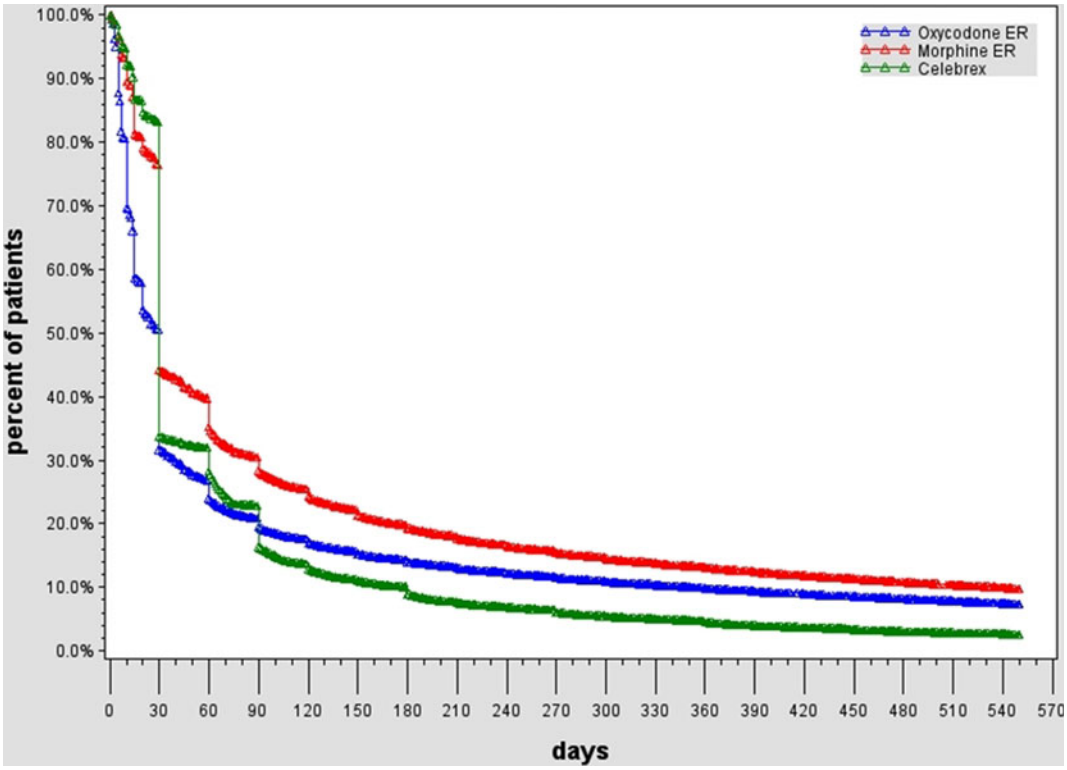
DOSE AND DURATION RELATIONSHIP BETWEEN PIOGLITAZONE AND ASSOCIATED RISK OF BLADDER CANCER: A SYSTEMATIC REVIEW AND META-ANALYSIS Sonal Singh[1]; Yoon Loke[2]; Chun Shing Kwok[2]; Chen Chen-Turner[2]; Richard M. Turner[2]; Chinedu A. Maduakor[2]. 1JHU, Baltimore, MD; [2]Norwich Medical School, Norwich, United Kingdom. (Tracking ID #1641914)

BACKGROUND: Pioglitazone is a widely used thiazolidinedione. There have been some concerns about its potential association with bladder cancer. To determine whether pioglitazone is associated with an increased risk of bladder cancer, we performed a systematic review and meta-analysis with a focus on investigating dose and duration effects, and whether risk with pioglitazone differs from rosiglitazone.
METHODS: We searched MEDLINE, EMBASE and regulatory documents in June 2012 and conducted meta-analysis on the overall risks of bladder cancer with pioglitazone or rosiglitazone and the risk with different categories of cumulative dose or duration of pioglitazone use
RESULTS: 14 studies were included: 5 RCTs (total >16,000 participants) and 9 observational studies (pooled cohort >1.5 million). There was a significantly higher overall risk of bladder cancer with pioglitazone (RCTs: OR 2.51, 95 % CI 1.09–5.80, p=0.03, I2=27 %; cohort studies: OR 1.20, 95 % CI 1.07–1.34, p=0.001, I2=0 %) but not rosiglitazone (RCTs: OR 0.84, 95 % CI 0.35–2.04, p=0.71, I2=0 %; cohort studies: OR 1.08, 95 % CI 0.95–1.23, p=0.24, I2=0 %). Subgroup analysis by cumulative dose showed the greatest risk with >28.0 g of pioglitazone (OR 1.64, 95 % CI 1.28–2.12, p=0.0001, I2= 0 %) which differed significantly from <10.5 g (p=0.02). Similarly, there was a significant difference with the risk of longer (>24 months) compared to shorter (<12 months) cumulative durations (p=0.004) of pioglitazone use. Direct comparison of pioglitazone and rosiglitazone yielded an OR of 1.25 (95 % CI 0.91–1.72, p=0.16).
CONCLUSIONS: A modest but clinically significant increased risk of bladder cancer with pioglitazone was found that appears related to cumulative dose and duration of exposure. We recommend prescribers consider alternative oral hypoglycaemics and limit pioglitazone use to shorter durations.

DURATION OF USE OF EXTENDED-RELEASE (ER) OXYCODONE, ER MORPHINE, AND CELECOXIB AMONG ADULTS WITH CANCER AND NON-CANCER PAIN Angela DeVeaugh-Geiss; Aditi Kadakia; Howard D. Chilcoat; Paul Coplan. Purdue Pharma LP, Stamford, CT. (Tracking ID #1618955)

BACKGROUND: Duration of use of extended-release (ER) opioids in US clinical practice has not been extensively published in the literature. The objective of this study was to assess duration of ER oxycodone and ER morphine use, two commonly used ER opioids, among cancer and non-cancer pain patients. Celecoxib was included as a non-opioid comparator.
METHODS: Using data from a national commercial insurance database (MarketScan; January 2008 through September 2011), patients ≥18 years old with a new ER oxycodone/ER morphine/celecoxib prescription and 24 months insurance enrollment (6 months before and 18 months after index prescription) were identified. Existing patients (those with prior prescriptions in the 6 month baseline period) were excluded. The primary measure was duration of continuous use (no gaps in supply ≥15 days; sensitivity analysis ≥30 days). Survival analysis was used to compare time to discontinuation of continuous use.
RESULTS: There were 43,519 new ER oxycodone users; 22,414 new ER morphine users; and 129,956 new celecoxib users. Cancer diagnoses were identified for 9 % of ER oxycodone, 10 % of ER morphine, and 5 % of celecoxib patients. Most patients discontinued use by 3 or 6 months (ER oxycodone: 80 % and 86 %, respectively; ER morphine: 72 % and 81 %, respectively; celecoxib: 84 % and 94 %, respectively). Time-to-event analysis across all drugs studied indicates a rapid drop in continuous use in the first month (>50 % decline), a less rapid decline between months 1 and 6 (approximately 15 % to 25 % decline), and appear relatively stable (approximately 5–20 %) thereafter, indicating that patients treated for 6 months will likely continue for up to 18 months (Figure). ER oxycodone and celecoxib results were similar regardless of cancer diagnosis; ER morphine patients without a cancer diagnosis were slightly more likely to continue longer term treatment than those with a cancer diagnosis.
CONCLUSIONS: Overall, most patients dispensed a new ER oxycodone, ER morphine, or celecoxib prescription had a non-malignant pain condition and fewer than one in five received continuous treatment for >6 months.

Time to event analysis: duration of continous use over 18 months



EFFECT OF COMORBIDITIES ON CLINICAL OUTCOMES IN LOW-RISK CURB-65 PATIENTS Luis C. Watanabe Tejada; David Paje; Qasim L. Shakeel; Abdul Kareem Uduman; Amit Vahia; Rafael Cabrera. Henry Ford Hospital, Detroit, MI. (Tracking ID #1633992)

BACKGROUND: The CURB-65 score is widely-used to risk stratify patients with community-acquired pneumonia (CAP). When the score is less than 3, the patient is considered to have a low mortality risk and current recommendations suggest that treatment may be provided in the outpatient setting. However, this tool only considers acute findings that reflect severity of illness; whether pre-existing clinical conditions significantly alter the risk of adverse outcomes in pneumonia patients is unknown. Our objective was to evaluate the effect of comorbidities on clinical outcomes in patients admitted with low-risk CURB-65.

METHODS: The medical records of consecutive patients admitted with CAP to a tertiary referral teaching hospital were reviewed to obtain the required clinical information to calculate the CURB-65 score and the age-adjusted Charlson Comorbidity Index (CCI). The performance of CCI in predicting 30-day mortality was plotted on a receiver operator characteristic (ROC) curve, from which a cutoff value was derived to define low and high-risk CCI. Patients with low-risk CURB-65 were stratified into low and high-risk CCI. The rates of 30-day mortality, 30-day readmission, intensive care unit (ICU) transfer, and length of stay (LOS) >7 days were compared between the two groups using Chi-square tests.

RESULTS: 538 patients were included in the analysis, 399 (74.16 %) had low-risk CURB-65. A CCI value of 7 was determined as the cutoff for the CCI risk groups based on the point of maximal sensitivity and specificity on the ROC curve for mortality. Of the patients with low-risk CURB-65, 269 (67.42 %) had CCI scores less than 7 and were classified as low-risk CCI; 130 (32.58 %) had CCI scores of at least 7 and were considered high-risk CCI. The rates of 30-day readmission and ICU transfer during the index admission were similar in both risk groups. The 30-day mortality rate was 19.2 % in high-risk CCI and 4.5 % in low-risk CCI (RR 4.31, 95 % CI 2.24 to 8.30, $p<0.001$). Prolonged hospitalization (LOS>7 days) was 35.4 % in high-risk CCI and 24.9 % in low-risk CCI (RR 1.42, 95 % CI 1.04 to 1.94, $p=0.029$)

CONCLUSIONS: Among patients admitted with community-acquired pneumonia with low-risk acute clinical findings, the presence of pre-existing comorbidities significantly increases the risks of mortality and of prolonged hospitalization. The age-adjusted Charlson Comorbidity Index appears to be a useful tool in further risk-stratifying patients that were identified to be low-risk based on their CURB-65 scores.

Rates of Clinical Outcomes in Patients with Low-Risk CURB-65 (Score<3)

Clinical Outcomes Age-Adjusted Charlson Comorbidity Index p-value RR 95 % CI

< 7 (269) >7 (130)

30-DAY MORTALITY 4.5 % (12) 19.2 % (25) <0.001 4.31 2.24–8.30

30-DAY READMISSION 14.9 % (40) 16.2 % (21) 0.738 1.08 0.67–1.76

ICU TRANSFER 10.0 % (27) 14.6 % (19) 0.180 1.46 0.84–2.52

LOS>7 DAYS 24.9 % (67) 35.4 % (46) 0.029 1.42 1.04–1.94

EFFECT OF COMPUTERIZED CLINICAL DECISION SUPPORT ON APPROPRIATE LABORATORY MONITORING OF MEDICATIONS Amy Linsky[1,2]; Nivethietha Maniam[3]; Lynn A. Volk[3]; Steven R. Simon[1,4]. [1]VA Boston Healthcare System, Boston, MA; [2]Boston University School of Medicine, Boston, MA; [3]Partners Healthcare System, Wellesley, MA; [4]Brigham and Women's Hospital, Boston, MA. (Tracking ID #1641746)

BACKGROUND: Many medications require laboratory testing to assess efficacy or toxicity; however, this recommended monitoring is often not performed, potentially leading to adverse drug events. We sought to determine the effect of a computerized clinical decision support on adherence to recommended laboratory monitoring in ambulatory care settings.

METHODS: We conducted a randomized controlled trial of 11 community-based primary care practices (six randomized to intervention and five to control; $n=17$ clinicians participating) using an electronic health record with clinical decision support alert capability. Baseline period was 6/1/

2010–5/31/2011, and the intervention period was from 6/23/2011–12/22/2011. There were 32 target medications or medication classes, each of which required one to six distinct laboratory tests for appropriate monitoring. When one of these medications was prescribed, the clinical decision support determined if the indicated laboratory test(s) had been performed in the preceding 365 days. If appropriate testing was not found, an alert was presented to the clinician at the time of medication ordering. The primary outcome was the proportion of medications with appropriate laboratory monitoring, defined as the completion of all indicated laboratory testing from 365 days prior to the prescription date until 14 days after medication prescribing. Patient characteristics included age, sex, number of encounters during the time period and number of distinct medication classes of interest during the time period.

RESULTS: During the baseline time period, there were 10,541 unique patient-medication encounters in the control practices and 10,244 in the intervention practices; during the intervention time period, there were 9,535 and 8,066 in the control and intervention practices, respectively. At baseline, practices were generally similar on measured demographic and clinical parameters [e.g., mean age 60 years (SD14) in control practices, compared with mean age 60 years (SD 15) in intervention practices], although some differences were apparent (e.g., mean number of visits was 6.6 in control practices vs. 4.5 in intervention practices). During the baseline period, the primary outcome - complete laboratory monitoring - occurred for 70.7 % of medications in control practices and 79.4 % in intervention practices. In comparison, during the intervention, complete monitoring occurred for 62.4 % of medications in control practices and 77.7 % in intervention practices. For medications requiring three or more laboratory tests (n=555 during the entire study across both control and intervention practices) at most 17.7 % had evidence of complete laboratory monitoring. Medications with associated tests that are more specialized (e.g., digoxin level) similarly had lower rates of complete monitoring.

CONCLUSIONS: In this randomized controlled trial, adherence to laboratory monitoring recommendations decreased over time in both intervention and control practices, although the decline in adherence was less pronounced in the intervention group, suggesting some effectiveness. Interventions may need to target both patients and clinicians to improve the complex behavior of laboratory monitoring of medications.

EFFECT OF PAYMENT CHANGES FOR PRESSURE ULCERS FROM THE HOSPITAL-ACQUIRED CONDITIONS INITIATIVE: A STATEWIDE ANALYSIS Jennifer Meddings[1]; Heidi Reichert[1]; Kyle Grazier[2]; Laurence F. McMahon[1,2]. [1]University of Michigan Medical School, Ann Arbor, MI; [2]University of Michigan School of Public Health, Ann Arbor, MI. (Tracking ID #1641327)

BACKGROUND: Hospital-acquired pressure ulcers are painful, common, costly, and often preventable complications. Since the 2008 Hospital-Acquired Conditions (HAC) Initiative, Medicare uses claims data to deny extra hospital pay for treating certain HACs including pressure ulcers; this policy rapidly expanded to other payers. By the HAC Initiative, advanced stage pressure ulcers (stage 3 or 4) no longer can generate extra pay when hospital-acquired. A lesser-known detail of the HAC Initiative is that earlier stage (stage 1 or 2) and "unstageable" pressure ulcers no longer generate extra pay whether present-on-admission (POA) or hospital-acquired (HA). Whether hospital pay actually decreases with removal of pay for pressure ulcers depends on whether the patient has other comorbidities justifying the higher pay without the ulcer diagnosis. Our objective was to assess the impact of the pressure ulcer pay changes by evaluating pressure ulcer rates and hospital payments before and after the 2008 policy.

METHODS: Utilizing a before-and-after study of all-payer statewide claims data, we identified adult discharges with pressure ulcers (categorized as POA or HA) in >2.4 million annual discharges using the 2007 and 2009 Healthcare Cost and Utilization Project State Inpatient Datasets for 305 nonfederal acute care California hospitals. To assess financial impact, we used MS-DRG grouper software to assess how often and by how much did the HAC Initiative payment changes for pressure ulcers affect hospital pay.

RESULTS: Pressure ulcers were listed as POA diagnoses for 54,820 (2.27 %) discharges in 2007 and 73,908 (2.95 %) discharges in 2009; HA pressure ulcers were listed for 6,522 (0.27 %) discharges in 2007 and 6,573 (0.26 %) discharges in 2009. By clinical stage of pressure ulcer (available in 2009), stage 3 or 4 HA ulcers occurred in 586 cases (0.02 %); stage 1, 2 or unstageable ulcers (including HA or POA) occurred in 56,383 cases (2.25 %). Removal of pay for stage 3 or 4 HA ulcers reduced pay in 71 (12.1 %) pressure ulcer cases with an average pay decrease of $5503 per case, for a total statewide all-payer payment decrease of $390,698 (0.001 %) for all payers including $226,045 (0.002 %) for Medicare. Removal of pay for stage 1, 2, and unstageable ulcers reduced hospital pay in 19,123 (33.9 %) of cases including 17,867 (93.4 % of 19123) cases with present-on-admission ulcers; this resulted in a mean pay decrease of $3,213 per case for a total statewide pay decrease of $61,435,536 (0.20 %) for all payers including $46,156,024 (0.31 %) for Medicare.

CONCLUSIONS: The financial impact of the 2008 pay changes for pressure ulcers was very small on all-payer or Medicare statewide hospital payments. Unexpectedly, the largest proportion of pay change for pressure ulcers resulted from the lesser-known non-payment of all earlier stage and unstageable ulcers (including 93.4 % described as present-on-admission ulcers), which was two hundred times greater than the pay reductions for hospital-acquired stage 3 or 4 ulcers. Hospital-acquired pressure ulcers rates remained low and unchanged in claims data over the study period, but pressure ulcers recorded as present-on-admission increased. This study suggests that the most significant impact regarding pressure ulcers from the Hospital-Acquired Conditions Initiative was no extra pay for cases with present-on-admission earlier stage and unstageable pressure ulcers - rather than prevention or reduced pay for hospital-acquired advanced stage pressure ulcers.

EFFECT OF A MUSCULOSKELETAL OSCE USING SENIOR INTERNAL MEDICINE RESIDENTS AS STANDARDIZED PATIENTS Christina Harris; Johanna Martinez; B. Robert Meyer; Judy Tung; Cathy Jalali; Jessica Clemons. Weill Cornell Medical College, New York, NY. (Tracking ID #1642557)

BACKGROUND: Residents commonly express a lack of comfort evaluating patients with MSK complaints. Due to the complexities of teaching the musculoskeletal examination, traditional didactic teaching sessions are often inadequate and require supplementation with hands-on modeling. In an effort to improve the confidence and knowledge of internal medicine residents in their evaluation of patients with musculoskeletal complaints, we created an OSCE using our senior residents as standardized patients, teachers and evaluators of the interns.

METHODS: The musculoskeletal OSCE was integrated as a required component of the residents' ambulatory block. All senior residents selected a standardized patient scenario which focused on one of 5 common musculoskeletal complaints (neck pain, shoulder pain, back pain, hip pain, and knee pain). Senior residents were expected to: (1) deliver a 15 min hands-on session reviewing how to accurately evaluate a patient with the pain in their selected body region; (2) serve as a standardized patient for all interns rotating through the OSCE; (3) provide immediate formative feedback to each intern. Surveys assessing residents' self confidences in evaluating patients (history, physical examination and treatment) with the 5 common musculoskeletal complaints were completed before and after the OSCE. In addition, a medical knowledge assessment was completed, along with post-OSCE focus groups.

RESULTS: Prior to the OSCE, seniors were significantly more likely to report feeling more confident compared to the interns in all areas of a patient evaluation and across all 5 body areas. Despite this higher self-confidence, seniors did not perform better than the interns on the medical knowledge assessment. After the OSCE, there was an overall significant increase in the confidence level of all residents. Despite the seniors starting with a higher confidence level, post-OSCE data demonstrated an equalization of confidence between years. As a group, all residents universally felt more confident in performing an accurate history in all of the body areas, as compared to performing the physical examination or

delivering the treatment plan. In post-OSCE focus groups, 100 % of the residents reported feeling uncomfortable evaluating patients with musculoskeletal complaints and also felt that there was not enough time dedicated to this over medical school and residency. The majority of interns reported that they preferred learning from a resident rather than an attending as they viewed it as an extension of the intern-resident teaching dynamic in the hospital. Residents perceived the OSCE to be a nonthreatening learning environment for the interns.
CONCLUSIONS: A musculoskeletal OSCE utilizing senior residents as both the educators and the standardized patients is a unique and effective approach to educating residents in the evaluation of patients with musculoskeletal complaints. Interns appreciated the opportunity to learn from the seniors in a non-threatening environment. Future work will focus on methods to reinforce skills in hopes of promoting long-term retention.

EFFECT OF A HOSPITALIST-RUN POST-DISCHARGE CLINIC ON ADVERSE POST-DISCHARGE OUTCOMES Robert Burke[1,3]; Emily Whitfield[2]; Allan V. Prochazka[2,3]. 1Denver VA Medical Center, Denver, CO; [2]Denver VA Medical Center, Denver, CO; [3]University of Colorado School of Medicine, Denver, CO. (Tracking ID #1637820)

BACKGROUND: Hospitalist-run post-discharge clinics (PDCs) are being created to improve transitions in care. However, there are few data on their efficacy. The Denver VA Medical Center is unique in having a well-established hospitalist-run post-discharge clinic, in addition to urgent care and primary care clinics as post-hospitalization follow-up options. We aimed to assess the utility of the PDC compared with follow-up in primary care or with an urgent care provider, in terms of post-discharge outcomes at 30 days.
METHODS: The authors retrospectively reviewed all discharges from the Denver VA Medical Center's general medical service from January 2005 to August 2012 using the VA's Informatics and Computing Infrastructure (VINCI) database. Patients discharged to home in the Denver metro area who had a first follow-up visit with PDC, urgent care, or primary care within 30 days were included. The primary outcome was a composite of Emergency Department visits, hospital readmissions, and mortality in the 30 days following discharge. Outcomes were compared between the three groups in unadjusted analysis; outcomes were compared between PDC and primary care using propensity score-adjusted analyses to adjust for baseline differences in age, gender, comorbidity, previous hospital admissions, number of discharge medications, and time to first post-discharge visit.
RESULTS: 5085 patients were included; 538 who followed up in PDC, 2699 in urgent care, and 1848 in primary care. Patients were older (average age in PDC 67.8 years, urgent care, 67.1, primary care, 64.8, $p<0.0001$ for comparison) and predominantly male (95 %, p=NS). They also had high levels of baseline comorbidity as reflected in Elixhauser comorbidity index scores (PDC, 0.80, urgent care, 0.69, primary care, 0.75, $p=0.02$ for comparison), number of discharge medications (approximately 10 in each group, p=NS), and prior hospital admissions (18–23 % with an admission in the prior year, p=NS). Hospital length of stay (LOS) significantly varied between groups, with LOS 2.4 days shorter in PDC than primary care follow-up (PDC, 3.8 days, urgent care, 5.0 days, primary care, 6.2 days, $p=0.04$ for comparison). Despite this, outcomes at 30 days were not statistically different between the groups in unadjusted analysis (19.9 % in PDC, 18.3 % in urgent care, and 17.5 % in primary care, $p=0.42$); there was similarly no difference between PDC and primary care follow-up in propensity-adjusted multivariate analysis, adjusting for baseline differences between groups. The time to the first outpatient visit was 5.0 days in PDC, 9.4 in urgent care, and 13.7 in primary care.
CONCLUSIONS: Our results suggest a hospitalist-run post-discharge clinic is associated with an index hospital length of stay that is 2.4 days shorter, with equivalent outcomes at 30 days, to follow-up in primary care, despite an older and sicker population seen in the clinic. Increased access to early post-discharge follow-up may be linked to shorter lengths of stay. It is notable our results occurred in a healthcare system with robust primary care access and a shared electronic medical record (EMR); the effect of a hospitalist-run PDC may be increased in systems without these advantages. Further study of the impact of PDC clinics is needed.

EFFECTIVENESS OF AN INTERVENTION TO TEACH PHYSICIANS IN A MIDDLE-INCOME COUNTRY HOW TO HELP THEIR PATIENTS QUIT SMOKING Raul Mejia[2]; Celia P. Kaplan[1]; M. Alderete[2]; L. Peña[2]; Steve Gregorich[1]; V. Schoj[2]; Ethel Alderete[2]; Eliseo J. Perez-Stable[1]. [1]Division of General Internal Medicine, Department of Medicine, Medical Effectiveness Research Center for Diverse PopulationsUCSF, San Francisco, CA; [2]Universidad de Buenos Aires, Centro de Estudios de Estado y Sociedad, Buenos Aires, Argentina. (Tracking ID #1644240)

BACKGROUND: Physicians who routinely identify smokers and provide cessation advice with or without pharmacological treatment, can increase the quit rate of their patients. In Argentina, where 30 % of the adult population smokes, fewer than 30 % of primary care physicians have received any training in counseling patients on tobacco cessation. We tested whether a short evidence-based intervention to teach physicians how to help their patients who smoke quit, would result in higher cessation rates compared to usual care in Argentina, a middle-income country.
METHODS: General internists, family physicians and gynecologists were recruited from five clinical systems in the cities of Buenos Aires, La Plata and Olavarria (private practices, HMOs, and public clinics) and randomized to intervention or usual care. The physician intervention consisted of two three-hour sessions including a standard didactic curriculum and referral resources designed to teach them how to help patients quit smoking. Next, smoking patients who saw participating physicians within 30 days of physician training (index visit) were randomly sampled and interviewed by telephone at 1, 6 and 12 months after their visit to the physician. No single physician had more than 6 patients sampled. The main outcome was tobacco abstinence at 6 and 12 months; secondary outcomes were number of quit attempts, cigarettes per day, and use of pharmacological aides. Repeated measures on the same participants were accommodated via Generalized Estimating Equations.
RESULTS: 254 physicians (124 internists, 57 family physicians, 73 gynecologists) were randomized; average age was 44.6 years, 52 % women and 12 % smoked. While 24 % reported no previous training on tobacco cessation, 41 % reported good or excellent previous training. A total of 1,378 smoking patients were surveyed; 81 % were women, 46 % had >12 years of education, 81 % had rated their health status as good or excellent, and 63.1 % had access to Internet. At 1 month, most (76 %) reported daily smoking, 21 % smoked some days and 3 % had already quit smoking. Mean number of cigarettes per day was 12.9 (SD=8.8) and 63 % thought they would quit within the next 6 months. Outcomes at 6 months: Cessation Had Quit Attempt Used Meds Mean Cigs Intervention 13.8 % 12.2 % 9.9 % 12.4 Control 12.1 % 11 % 9.1 % 12.8 Quit rates at 12 months increased to 16 % in both groups; there was no intervention by month effect at 6 months ($\chi 2$ (df=2)=2.89, $p=0.24$. Pooling across intervention groups, patients seen by internists or family physicians were more likely to quit among daily and non-daily smokers ($\chi 2$ (df=1)=13.6, $p=0.0002$ and ($\chi 2$ (df=1)=10.03, $p=0.002$, respectively).
CONCLUSIONS: Providing standardized training in tobacco cessation to physicians did not improved the cessation rates among their patients at 6–12 months. It is necessary to explore other interventions to increase cessation rates of patients in primary care.

EFFECTIVENESS OF MAILED FECAL OCCULT BLOOD TEST CARDS AND OR A DETAILED COLON CANCER SCREENING BROCHURE VS A REMINDER LETTER FOR INCREASING COLORECTAL CANCER SCREENING RATES AT A PRIMARY CARE CLINIC SERVING MEDICALLY VULNERABLE PATIENTS. MICHAEL A. SOLIMAN, MD, DANNY MCCORMICK, MD, MPH AND WILLIAM ZINN, MD Michael Soliman; Danny McCormick; William Zinn. Cambridge Health Alliance, Cambridge, MA. (Tracking ID #1643000)

BACKGROUND: Colon cancer remains the 3rd most common cause of cancer mortality in the US. However, colorectal cancer (CRC) screening rates, particularly for medically vulnerable patients such as low income,

uninsured, racial/ethnic minority and immigrant patients are suboptimal. Previous studies have demonstrated the effectiveness of interventions using telephonic reminders at increasing CRC screening rates; however, such interventions are labor intensive and thus costly.

METHODS: We sought to identify an intervention that requires low labor intensity and cost but that is effective in increasing colon cancer screening rates among medically disadvantaged patients who previously did not respond to screening outreach attempts via mailed letter. The study setting was a single internal medicine primary care clinic at an urban public hospital in Massachusetts (MA) caring for a diverse and medically vulnerable population. The study sample consisted of 756 adults aged 51–75 who had no record of having had CRC screening (in the electronic medical record) according to current CRC screening guidelines. All patients had been contacted at least once by mail in the last year to encourage CRC screening. We conducted a comparative effectiveness randomized trial of 4 mail-based interventions using a 2×2 factorial design. Each intervention group received a letter encouraging CRC screening by fecal occult blood testing (FOBT) or colonoscopy. Group 1 received this letter only, Group 2 received 3 FOBT cards and pre-paid return envelope, Group 3 received a detailed 12 page CRC screening brochure with graphic depictions of a patient receiving colonoscopy and a description of FOBT that was produced by the MA state department of public health and Group 4 received the 3 FOBT cards and the brochure. At 6 months we assessed whether or not screening by FOBT or screening by colonoscopy had occurred.

RESULTS: The study sample consisted of 49.66 % women and 50 % >60 years of age. There were no statistically significant differences in patient characteristics among the 4 study groups. Patients receiving FOBT cards and a letter were more likely be screened by FOBT than patients receiving the letter alone (21 % vs. 13 %; P=0.038), but not by colonoscopy (6 % vs. 7 %, p=0.84). Patients receiving the brochure were neither more likely to be screened by FOBT (13 % vs. 13 %, p=1.0) nor colonoscopy (8 % vs. 7 %, p=0.69). Patients receiving FOBT and the brochure were neither more likely to be screened by FOBT (20 % vs. 19 %, p=0.79) nor colonoscopy (7 % vs. 7 %, p=1).

CONCLUSIONS: Although more resource intensive interventions that result in higher screening rates may be preferable, for resource-poor primary care practices mailed FOBT cards may be a feasible and effective option to improve CRC screening among medically disadvantaged patients who did not respond to previous outreach attempts. Detailed printed materials with graphic depictions of CRC screening procedures do no appear to be effective in this setting.

Screening by FOBT
No Brochures Brochures
No Cards 24/189 24/189 48/378
Cards 39/189 30/189 69/378
63/378 54/378

EFFECTIVENESS OF TRAINING MEDICAL STUDENTS AS TEACHERS USING THE STANFORD FACULTY DEVELOPMENT CENTER (SFDC) CLINICAL TEACHING CORE COMPETENCIES Jessica Schmitt; F Stanford Massie. University of Alabama School of Medicine, Birmingham, AL. (Tracking ID #1642100)

BACKGROUND: The University of Alabama School of Medicine (UASOM), Clinical Skills Teaching Associate (CSTA) program uses fourth year medical students (MS4s) as teachers for first year medical students (MS1s) in the Introduction to Clinical Medicine course. CSTA training has not been evaluated. We aimed to see if working as CSTAs increases MS4s' comfort with teaching. As training was changed prior to 2010, we wanted to compare final teaching comfort level for CSTAs of 2008–2009 to CSTAs of 2010–2012. Some CSTAs reviewed training material individually, giving us the ability to see if any difference exists in self-taught versus faculty-trained student teachers.

METHODS: MS4s were CSTAs for elective credit and were trained in components of the SFDC curriculum for Clinical Teaching. In 2008–2009, CSTAs attended 2 training sessions, covering 4 of 7 cores; in 2010–2012, they attended 3 sessions addressing 5 of 7 cores. Sessions were led by author FSM, a UASOM faculty member trained in the SFDC Clinical Teaching framework. CSTAs unable to attend sessions reviewed material alone and completed a questionnaire. CSTAs taught 9–10 small group sessions for their MS1s. CSTAs completed 2 surveys during the elective, an initial and final survey. CSTAs ranked their comfort level with 5 SFDC corse, their overall teaching ability and their overall comfort with teaching on a scale of 1–5. They specified which faculty-led training sessions they attended.

RESULTS: In 6 of 7 areas, the change from initial to final comfort level was significant. CSTAs in 2010–2012 were more comfortable evaluating students and giving feedback than CSTAs in 2008–2009. Whether self-taught or faculty-trained, final comfort levels in teaching skills were similar among CSTAs.

CONCLUSIONS: The increase from initial to final comfort level in most areas suggests that CSTA training is effective. Increased comfort for 2010–2012 CSTAs in critiquing students may be due to increased training with more time available. The data suggests, but cannot conclude absolutely due to small sample size, that student teachers can be adequately trained with handouts and questionnaires and do not require formal training by a faculty member.

Comparison of 2008–2009 and 2010–2012 CSTA Survey Results
2008–2009 vs 2010–2012 Initial Survey 2008–2009 vs 2010–2012 Final Survey
Overall teaching ability 0.17 (0.18) −0.01 (0.90)
Overall comfort with teaching 0.28 (0.14) 0.07 (0.41)
Creation of an appropriate learning climate NA −0.02 (0.88)
Communication of goals 0.00 (1.00) 0.03 (0.78)
Promotion of retention NA NA
Evaluation 0.14 (0.35) 0.25 (0.01)
Giving feedback 0.15 (0.32) 0.23 (0.02)
The table shows the difference in mean comfort level for the two groups. The first value is the mean comfort level of the CSTAs from 2010 to 2012 minus the mean comfort level of the CSTAs in 2008–2009. The p-value between the two groups is in parentheses. Significant values are bolded.

Initial and Final Trained Group and Self-Taught Group Results
Self-Taught vs Trained Group: Initial Results Self-Taught vs Trained Group: Final Results
Creation of an appropriate learning climate 0.11 (0.35) 0.11 (0.28)
Communication of goals 0.19 (0.15) 0.14 (0.35)
Promotion of retention −0.04 (0.76) −0.15 (0.43)
Evaluation 0.09 (0.44) −0.01 (0.91)
Giving feedback 0.16 (0.22) 0.00 (0.99)
The first value in each table cell is the mean comfort level of the Trained Group minus the mean comfort level of the Self-Taught Group. The p-value between the two groups is in parentheses.

EFFECTS OF PERCEIVED HEALTH DISCRIMINATION AMONG OLDER ADULTS Stephanie E. Rogers[1]; Angela D. Thrasher[2]; Yinghui Miao[1]; Alexander K. Smith[1]. [1]UCSF, San Francisco, CA; [2]UNC Gillings School of Global Public Health, Chapel Hill, NC. (Tracking ID #1626804)

BACKGROUND: Little is known about the relationship between perceived health discrimination and global geriatric health outcomes.

METHODS: We used data from the 2008 and 2010 waves of the Health and Retirement Study (HRS), a nationally represented longitudinal study of adults over age 50. A 2008 question assessed how frequently subjects perceived receipt of poorer service or treatment by doctors or hospitals than other people, and the reasons for perceived health discrimination. Based on conceptual considerations we divided our predictor into three levels: never perceived health discrimination, infrequently perceived (less than once per year), and frequently perceived (multiple times per year to almost every day). Our primary outcomes were: (1) report of a new or worsened disability at 2 years (difficulty or dependence in any of 6 activities of daily living [ADL = bathing, dressing, toileting, eating, transferring, and ambulating]); and (2) mortality over 2 years. We analyzed disability using a log-binominal regression and mortality using Cox proportional hazards.

Because it is unclear if conditions such as depression are confounders or mediators, we present models with and without adjustment for comorbidities (depression, high blood pressure, diabetes, cancer, lung disease, heart disease, and stroke). We used survey weights to produce national estimates.

RESULTS: There were 6,146 respondents (mean age 67, 56 % female, and 83 % white). Of the 19 % of the sample who reported discrimination in the healthcare setting, 13 % perceive discrimination infrequently and 6 % frequently. The most common reasons for discrimination were ageism (28 %), gender discrimination (12 %), and financial discrimination (12 %). Compared to subjects who never perceived health discrimination, those who reported any history of health discrimination were more likely to be younger (mean 65 years vs. 67), non-white (22 % vs. 16 %), depressed (32 % vs 18 %), diabetic (23 % vs 18 %), and have ADL difficulty at baseline (22 % vs 14 %) (all $p<.001$). Compared to the group that never perceived discrimination, there was no association between infrequently perceived discrimination and disability or mortality. Frequently perceived discrimination, however, predicted the development of new or worsened disability at 2 years in all models (RR adjusted for age, gender, race/ethnicity, and comorbidities 1.66, 95 % CI 1.13–2.44). Frequently perceived discrimination was associated with mortality in models adjusted for age, gender, and race/ethnicity (aHR 1.80, 95 % CI 1.14–2.84), but not after further adjustment for comorbidities (aHR 1.27, 95 % CI 0.81–2.00).

CONCLUSIONS: One out of 5 adults over age 50 reports experiencing discrimination in health care settings, most commonly ageism. One in 17 experience frequent health care discrimination and this is an independent predictor of new or worsened disability at 2 years, and possibly death.

EFFECTS OF WEIGHT LOSS ON PREVENTION OF TYPE 2 DIABETES MELLITUS IN SUBJECTS WITH PREDIABETES USING PHENTERMINE AND TOPIRAMATE EXTENDED-RELEASE FOR 2 YEARS Robert F. Kushner[1]; W. Timothy Garvey[2]; Craig A. Peterson[3]. [1]Northwestern University Feinberg School of Medicine, Chicago, IL; [2]University of Alabama at Birmingham, Birmingham, AL; [3]VIVUS, Inc., Mountain View, CA. (Tracking ID #1624578)

BACKGROUND: Obesity is associated with Prediabetes and an increased risk of progression to type 2 diabetes mellitus (T2DM). Weight loss in obese patients with Prediabetes reduces progression to T2DM. When used in conjunction with lifestyle changes, including reduced caloric intake and increased physical activity, phentermine and topiramate extended-release (PHEN/TPM ER) demonstrated significant weight loss and improvements in glycemic parameters in obese and overweight subjects with ≥2 weight-related comorbidities in a 56-week Phase 3 study (CONQUER). These benefits were maintained through an additional 52 weeks in the SEQUEL extension study.

METHODS: CONQUER completers at a subset of sites were offered participation in the SEQUEL extension study and remained on their original randomized, blinded treatment of placebo, PHEN 7.5 mg/TPM ER 46 mg (7.5/46), or PHEN 15 mg/TPM ER 92 mg (15/92). In this analysis, weight loss, fasting glucose, HbA1c, and annualized incidence rate of T2DM at week 108 were assessed in subjects with Prediabetes (fasting glucose ≥100 to ≤125 mg/dL or 2-h oral glucose tolerance test ≥140 to ≤199 mg/dL).

RESULTS: At baseline (CONQUER week 0), 316 of the 675 subjects (46.8 %) enrolled in SEQUEL had Prediabetes, mean age was 52.5 years, 63.3 % were female, 84.8 % were Caucasian, and mean weight was 103.1 kg. In these subjects, least-squares mean percent weight loss was significantly greater with PHEN/TPM ER vs placebo at week 108 ($P<.0001$; ITT-LOCF): −2.2 %, −11.1 %, and −12.7 % for placebo ($n=103$), 7.5/46 ($n=83$), and 15/92 ($n=130$), respectively. This translates to a least-squares mean absolute weight loss of −2.5 kg, −11.4 kg, and −13.1 kg for placebo, 7.5/46, and 15/92, respectively. This weight loss was associated with improvements in HbA1c and fasting glucose (Table) and with markedly reduced annualized incidence rates of T2DM by 49 % and 89 % in subjects receiving 7.5/46 and 15/92, respectively, compared with placebo ($P=.0125$ for 15/92 vs placebo; Table). Common adverse events in the Prediabetes SEQUEL safety population were constipation, dry mouth, and paraesthesia.

CONCLUSIONS: PHEN/TPM ER, when used as an adjunct to lifestyle modification, led to significant weight loss, which was sustained over 2 years. This weight loss was associated with improved HbA1c and fasting glucose and with reduced progression to T2DM in obese and overweight subjects with Prediabetes. Treatment of excess weight in obese and overweight patients with Prediabetes may help reduce new-onset T2DM in this at-risk population.

Table. Improvements in glycemia from baseline to week 108 (Prediabetes; ITT-LOCF).

	Placebo (n=103)	PHEN/TPM ER 7.5/46 (n=83)	PHEN/TPM ER 15/92 (n=130)
HbA_{1c}, %			
Baseline (SD)	5.7 (0.4)	5.7 (0.4)	5.7 (0.4)
Mean change (SE)	0.08 (0.02)	-0.01 (0.03)*	-0.08 (0.02)†
Fasting glucose, mg/dL			
Baseline (SD)	103.8 (8.7)	104.7 (9.2)	104.1 (8.8)
Mean change (SE)	-1.0 (1.0)	-3.1 (1.2)	-7.6 (0.9)†
Annualized incidence rate of T2DM	3.5	1.8	0.4‡§

*$P<.01$ vs placebo; †$P<.0001$ vs placebo; ‡$P=.0125$ vs placebo; §1 subject in the 15/92 group did not have an end point measure for glucose

EFFICACY AND CLINICAL RELEVANCE OF VILAZODONE IN THE TREATMENT OF MAJOR DEPRESSIVE DISORDER: A POOLED ANALYSIS OF PHASE III CLINICAL TRIALS Larry Culpepper[2]; Arif Khan[1]; Adam Ruth[3]; John Edwards[4]. [1]Northwest Clinical Research Center, Bellevue, WA; [2]Boston University School of Medicine, Boston, MA; [3]Prescott Medical Communications Group, Chicago, IL; 4Forest Research Institute, Jersey City, NJ. (Tracking ID #1640055)

BACKGROUND: Beyond efficacy, the clinical relevance of antidepressant treatment has been evaluated using measures such as response, remission, and the number needed to treat (NNT) or harm (NNH). Vilazodone, a serotonin reuptake inhibitor and 5-HT1A receptor partial agonist, is FDA approved for treatment of major depressive disorder (MDD) in adults. Data from two Phase III trials (NCT00285376; NCT00683592) were pooled to evaluate efficacy across depressive symptoms and clinical relevance relative to placebo.

METHODS: Data from 2 double-blind, randomized, placebo-controlled trials of similar design and conduct (one-week screening followed by eight-week double-blind treatment) were pooled for analyses. Participants were 18–70 years of age with DSM-IV-TR-defined MDD and a minimum score ≥22 on the 17-item Hamilton Depression Rating Scale (HAMD17). Patients randomized to vilazodone were titrated to a target dose of 40 mg, taken once daily (QD) with food, over a two-week period (10 mg QD for 7 days, 20 mg QD for the next 7 days, and 40 mg QD thereafter). The primary efficacy parameter was Montgomery-Asberg Depression

Rating Scale (MADRS) total score change from baseline to Week 8 analyzed using an analysis of covariance (ANCOVA) model based on the Intent-to-Treat (ITT) population and the last observation carried forward (LOCF) approach. Response (MADRS ≥50 % improvement from baseline; HAMD17 ≥50 % improvement from baseline; CGI-I score ≤2) and remission (MADRS ≤10; MADRS ≤12) were analyzed. Post hoc analyses estimated the treatment effect of vilazodone versus placebo on MADRS single items, the number needed to treat (NNT) for response (MADRS ≥50 % improvement) and remission (MADRS ≤10), and the number needed to harm (NNH) for adverse events (AEs) and AE discontinuations.

RESULTS: The ITT population comprised 431 vilazodone- and 432 placebo-treated patients. Vilazodone significantly improved MADRS total score relative to placebo with a least squares mean difference (LSMD) of −2.79 ($P<.0001$). Response was significantly greater for vilazodone versus placebo on all measures: MADRS (42 % vs 29 %, $P=.0002$); HAMD17 (44 % vs 33 %, $P=.0007$); and CGI-I (49 % vs 35 %, $P<.0001$). Remission was significantly greater for vilazodone versus placebo using both criteria; MADRS ≤10 (29 % vs 20 %, $P=.0041$) and MADRS ≤12 35 % vs 22 %, $P<.001$). Significant improvement in LSMD in favor of vilazodone versus placebo was seen in the change from baseline on every MADRS single item: apparent sadness, -0.24; reported sadness, −0.29; inner tension, −0.31; reduced sleep, −0.30; reduced appetite, −0.20; concentration difficulties, −0.24; lassitude, −0.27; inability to feel, −0.25; pessimistic thoughts, −0.35; suicidal thoughts, −0.29 ($P<.01$ for all). The NNT (95 % CI) for response and remission was 8 (5, 17) and 12 (7, 37), respectively (an NNT ≤10 for response is generally regarded as evidence for clinical relevance in depression treatment); the NNH (95 % CI) for AE discontinuations was 26 (15, 106).

CONCLUSIONS: Vilazodone showed broad efficacy across depression symptoms. Significantly better response and remission indicated clinical relevance for vilazodone; NNT and NNH analyses suggested a lower risk of AE discontinuation relative to clinically meaningful improvement for vilazodone.

ELDERLY ADULTS WITH DEMENTIA AND YOUNG ADULTS WITH DEVELOPMENTAL DISABILITIES: INTERNIST PERSPECTIVES ON SIMILARITIES AND DIFFERENCES IN CARE Sophia Jan[1,2]; Dava Szalda[2]; Manuel E. Jimenez[2,3]. [1]Perelman School of Medicine of the University of Pennsylvania, Philadelphia, PA; [2]Children's Hospital of Philadelphia, Philadelphia, PA; [3]Children's Hospital of Philadelphia, Philadelphia, PA. (Tracking ID #1643123)

BACKGROUND: Over 90 % of pediatric patients with special healthcare needs are living into adulthood necessitating internists to care for a new variety of diagnosis and disease processes. Many of these young adults share similar functional needs limitations and caregiver dependencies as elderly patients with dementia. We examine how clinical needs and practice supports by internists caring for this population may be similar or different from that of geriatric patients with dementia in order to identify barriers and possible interventions to improve care.

METHODS: We conducted semi-structured interviews with a convenience sample of internal medicine physicians. We purposively sampled participants based on their known or reported experience with young adults with pediatric onset chronic illness using a snowball strategy. Open-ended questions explored processes of care around the initial and subsequent visits to internal medicine practices of young adults with developmental disabilities and elderly adults with dementia. Interviews were recorded, transcribed, coded and continued until we reached thematic saturation. We identified themes using modified grounded theory.

RESULTS: Twenty-one practicing physicians in four different states in both academic and private practices were interviewed. Similarities identified include: reliance on caregivers for history; difficulties obtaining prior medical records or appropriate transfer summary for new patients; managing complex drug regimens and coordination among multiple specialists; needed assessments of cognitive skills, personal and family resources, and home living situation; consideration of guardianship, confidentiality, caregiver burden, and health literacy; need for expanded clinic resources, including extended visit time slots, availability of nurses between visits, social work and case management support; need for motility and other assistive technology supports; need for specific community services for transportation, respite care, and care coordination; and reliance on home health, rehabilitation services, and skilled nursing facilities. Differences include prevalence and presentation of specific diseases; predominance of Medicaid for young adult patients and Medicare for elderly patients; type of life stressors and community supports needed, such as vocational and educational for young adults and hospice and end-of-life care for the elderly.

CONCLUSIONS: There are many similarities and differences in needed practice supports for elderly adults with dementia and young adults with developmental disabilities. These similarities should be further explored to determine how the needs for this population of young adults can be served by or adapted from services and supports already available for elderly patients.

ELECTRONIC COMMUNICATION WITH PATIENTS: A KEY TO PATIENT-CENTERED, EFFICIENT CARE Tara F. Bishop; Matthew J. Press; Jayme Mendelsohn; Lawrence P. Casalino. Weill Cornell Medical College, New York, NY. (Tracking ID #1637069)

BACKGROUND: Principles of new primary care models imply that medical practices should use electronic communication more with patients and that this form of communication could sometimes substitute for office visits. However, this is rarely stated explicitly in the literature about these models. We performed a qualitative study to address the following questions: How do practices use electronic communication as a substitute for office visits? What are the perceived advantages and disadvantages of electronic communication with patients? What barriers and facilitators do practices face when implementing programs that substitute electronic communication for office visits?

METHODS: Using the literature and key informants, we identified 78 medical groups that potentially used electronic communication to substitute for office visits. Among the 35 group leaders who responded to our contact, 21 said they used electronic communication to substitute for office visits. We interviewed these leaders. We also interviewed 16 frontline physicians and staff in 6 of these groups (case-study groups) and interviewed a convenience sample of 6 leaders from health plans. We used a semi-structured interview tool and coded interview notes using the constant comparative method.

RESULTS: Among the 6 case-study groups, five were large (>100 physicians). Two were paid via capitation. The other 4 were paid via fee-for-service, but one charged an annual retainer fee and another received government funds to help support its operations. For 3 groups, their payment model (capitation and fee-for-service with a retainer) was a motivator to shift to electronic communication. One group had a formal e-visit program which they differentiated from informal electronic communication. Some private health plans paid for formal e-visits. Only 2 groups had time set aside in the workday for physicians to manage non-visit communication. Interviewees perceived more advantages than disadvantages of electronic communication with patients such as easier access to care for patients, that it saves patients time, and that it improves patient satisfaction. Physicians frequently said that electronic communication was more efficient than telephone communication. The most frequently cited disadvantage was that it created more work for physicians even in practices that had time set aside in the workday. When asked specifically whether electronic communication led to poor outcomes, respondents said no and some argued that care delivered electronically was safer than other modes of care. The most frequently cited barrier to implementation was patient and physician resistance to change. One practice that was paid only by fee-for-service cited lack of payment for electronic communication as a barrier. Interviews with leaders in the 15 additional groups yielded similar information. Interviews with health plan leaders revealed that few health plans reimburse for electronic communication and that some health plans consider hybrid models of payment (e.g. monthly PCMH payments) as the

mechanism to pay for electronic communication. One health plan leader felt there was little demand from physicians for payment for electronic communication.
CONCLUSIONS: The advantages of electronic communication appear to outweigh the disadvantages but physician workday redesign and new payment methods are likely necessary for electronic communication to be used more extensively.

ELIGIBILITY AND RECRUITMENT RATES BY VENUE TYPE FOR TWO COMMUNITY-BASED RANDOMIZED CONTROL TRIALS FOR OLDER BLACK MEN: IMPLICATIONS FOR HEALTH DISPARITIES RESEARCH Jordan Plumhoff. New York University School of Medicine, New York, NY. (Tracking ID #1641776)

BACKGROUND: Black men are often under-represented in research, decreasing the generalizability of results for many studies. Community-based settings such as barbershops and faith-based organizations are pillars of many Black communities, and are essential partners for institutions wishing to engage Black men in research. We comparestudy eligibility rates between various community-based settings in two large community-based randomized controlled trials and discuss implications for disparities research.
METHODS: We assessed 4,888 Black men over 50 at 154 community-based venues (including churches, mosques, barbershops, soup kitchens and food pantries, social services agencies, and community health fairs) in New York City to determine eligibility for two randomized trials to reduce disparities in blood pressure (BP) control and colorectal cancer (CRC) screening.Sites included barbershops, churches, mosques, soup kitchens, senior centers and health fairs. Eligibility included: 1) self-reported black male; 2) English-speaking; 3) uncontrolled BP; 4) in need of CRC screening, and 5) telephone access. Data was analyzed by recruitment location venue type and reason for ineligibility.
RESULTS: Eligibility rates differed by recruitment location. Barbershops and soup kitchens had the highest eligibility rates (29 % and 28 % respectively). Senior centers and churches had the lowest rates (12 % and 11 % respectively). We found a high prevalence of prior CRC screening at senior centers and churches (79 % and 69 % respectively). At health fairs, 68 % had prior CRC screening and 65 % had controlled BP. Mosques had the lowest rates of prior CRC screening (30 %) but had low eligibility rates due to language barriers (23 %).
CONCLUSIONS: To maximize recruitment efforts in community-based research, recruitment locations and characteristics of the populations served must be considered. Barbershops may provide access to participants of greater need compared to men recruited at churches or senior centers. Within faith-based organizations, soup kitchens and mosques may attract men with greater health needs compared to church congregations or health fairs. Future research to reduce health disparities among black men should prioritize high-need community-based settings.

EMAIL AS AN QUALITY IMPROVEMENT LEVER: EVIDENCE OF LACK OF EFFICACY FROM AN ACADEMIC INSTITUTION Ari Geliebter; Robert Sidlow. Jacobi Medical Center, Bronx, NY. (Tracking ID #1635656)

BACKGROUND: Proton pump inhibitors (PPIs) are widely used for the treatment of gastrointestinal disorders and for the prevention of gastrointestinal bleeding in hospitalized patients (i.e. “GI prophylaxis.”) However, studies have shown that there is significant inappropriate overuse of these medications. While PPIs are generally safe, they have been associated with the several complications, including nosocomial pneumonia, C. difficile infection, and increased fracture incidence, thus heightening the need to avoid their inappropriate use. A preliminary study at our institution revealed that approximately 50 % of inpatients had received esomeprazole therapy without having met any evidence-based criteria for PPI prescription. In an attempt to decrease the inappropriate use of these agents, we sought to assess the impact of a educational email intervention on the rate of esomeprazole (the only PPI on formulary) use at our teaching hospital. We hypothesized that, assuming a stable patient mix, overall inpatient esomeprazole usage would decrease as a result of an email-based educational intervention which targeted medical housestaff.
METHODS: Using a hospital-based pharmacy data warehouse, the weekly number of esomeprazole doses (either p.o. or i.v.) administered to patients on each of six inpatient medical units was determined over a 12 week period beginning in August 2012; prescription rates were normalized to the volume of admissions on each of those units. An email was then composed which a) highlighted the safety risks of inappropriate PPI administration in the hospital; and b) outlined evidence and consensus-based guidelines for PPI use in active GI disease and stress ulcer prophylaxis in hospitalized patients. During the intervention phase, the educational message was emailed from a departmental email server to all members of the internal medicine housestaff on a weekly basis for four consecutive weeks. Inpatient esomeprazole administration rates were then compared pre and post intervention.
RESULTS: The average rate of esomeprazole administration remained unchanged pre- and post- intervention (1.64 esomeprazole doses/patient vs. 1.89 esomeprazole doses/patient, $p=0.24$.)
CONCLUSIONS: An educational email intervention which sought to decrease the inpatient prescription of proton pump inhibitors by medical housestaff had no impact on their behavior. At our institution, email was an ineffective means to influence physician prescribing behavior, and thus should be used cautiously as a tool for quality improvement efforts.

ENSURING CULTURALLY COMPETENT FALLS QUESTIONS IN POPULATION-BASED SURVEYS Susan Huang[1]; Thu Quach[1]; Liss Ieong[1]; Joan Abrams[2]; Cary Sweeney[2]; Louise Aronson[2]. [1]Asian Health Services, Oakland, CA, CA; [2]University of California, San Francisco, San Francisco, CA. (Tracking ID #1637947)

BACKGROUND: Falls are the leading cause of injuries among older adults. Yet, relatively little is known about differences in falls among ethnic groups, even though differences have important implications for clinical care and resource allocation. A 2007 California Health Interview Survey (CHIS) study showed significantly lower fall rates in Asian elders than in other ethnic groups, 4.2 % in Chinese Americans vs. 12.4 % for All Races. We hypothesized that Chinese-specific language and/or translation issues might have led to under-reporting of falls. In Chinese, the single word for ‘falls’ is too narrow to capture the different types of falls; instead, the circumstances of the fall should be specified.
METHODS: As part of an academic-community partnership for a falls screening pilot project at a community health center in Oakland, CA, we surveyed 78 elderly Chinese patients about falls in the past year. The survey included the CHIS question “During the past 12 months, have you fallen to the ground more than once?” followed by questions that specified falls subtypes (falls, trip over, slip, faint, loss of balance, involuntary fall). Bilingual medical assistants (MA) conducted the survey as part of routine patient care. Instrument validation consisted of review by academic falls experts and bilingual, bicultural staff and pilot tested with study-eligible patients in the same practice. Questions were translated and back-translated to ensure linguistic accuracy.
RESULTS: All 4 participating MAs initially found the CHIS question impossible to articulate. Of the 78 participants, 12 (16 %) refused to answer the CHIS question because they did not understand it. In reporting whether they had fallen in the past year, 8 (10 %) answered “yes” to the CHIS question while 20 (26 %) answered “yes” to at least 2 falls subtypes. Of the 70 who answered “no” or refused to answer the CHIS question, 13 (19 %) answered “yes” to 2 subtypes and 2 (3 %) answered “yes” to 3 subtypes.
CONCLUSIONS: Falls prevalence in the elderly Chinese population may be under-reported in CHIS and other population-based surveys due to two types of translation issues: the phraseology used and cultural/linguistic differences in how falls are discussed. Providers should ensure that Chinese-speaking patients are asked about falls subtypes, and population-based surveys should ensure linguistic competency for greater accuracy in responses.

EVALUATING A MODIFIED INFORMED CONSENT FOR OLDER ADULTS IN CORRECTIONAL RESEARCH Anna Darby[1]; Cyrus Ahalt[2]; Irena Stijacic Cenzer[2,3]; Rebecca L. Sudore[2,3]; Brie Williams[2,3]. [1]Mount Sinai School of Medicine, New York, NY; [2]University of California San Francisco, San Francisco, CA; [3]San Francisco VA Medical Center, San Francisco, CA. (Tracking ID #1621278)

BACKGROUND: As the number of medically vulnerable older U.S. prison and jail inmates continues to grow, clinical research studies are needed to understand their health and healthcare needs. However, age- and circumstance-related vulnerabilities common in older inmates could lead to poor comprehension of the risks and benefits of participating in research and may necessitate safeguards beyond those required by the federal Office of Human Research Protections for all prisoners. This study assessed: (1) older jail inmates' comprehension of a research consent form designed for a population with low literacy; (2) the appropriateness of a teach-to-goal modified consent process; and (3) whether demographic or health-related characteristics confer added risk for poor consent comprehension in older jail inmates.

METHODS: Cross-sectional study of 251 adults age 55 or older in the San Francisco Jail. Participants were read a research consent form written at the sixth-grade level followed by 9 true/false comprehension statements. Those who could not answer all questions correctly on the first try were re-taught the material using a "teach-to-goal" methodology and re-tested up to three times. Demographic and health-related factors were analyzed for association with performance using bivariate analysis.

RESULTS: Of 251 participants, 55 % could not successfully respond to all comprehension statements on the first attempt. Of these, 75 (54.7 %) responded to more than one statement incorrectly and 18 (13.1 %) required the maximum allowed three passes to respond correctly to all statements. The modified consent process enabled 100 % participation of willing subjects and added <8 min to the consent process on average. No demographic or health-related factors were significantly associated with requiring additional, teach-to-goal education to complete the consent form.

CONCLUSIONS: Though 55.0 % of participants could not correctly respond to nine true/false comprehension statements on the first pass, and more than half of these (54.7 %) answered multiple questions incorrectly, the brief (<8 min) teach-to-goal intervention enabled 100 % participation with demonstrated comprehension of the consent forms. No demographic or health-related factors were significantly associated with poor comprehension, suggesting that a specific group of vulnerable older inmates is not easily identified. Therefore, all incarcerated older adults should receive the teach-to-goal consent process before participating in clinical research.

EVALUATION OF AHA RECOMMENDATIONS FOR CARDIAC MONITORING IN A NONCRITICAL SETTING Matthew T. Cerasale[1]; Carlos Calle[1]; David Paje[2]. [1]Henry Ford Hospital, Detroit, MI; [2]Henry Ford Hospital, Detroit, MI. (Tracking ID #1637364)

BACKGROUND: Cardiac monitoring is often overutilized. The 2004 American Heart Association (AHA) practice standards categorized indications for electrocardiographic monitoring in hospitalized patients based on the potential therapeutic benefit. This study sought to evaluate whether the AHA recommendations could safely guide the selection of patients for cardiac monitoring in a noncritical setting.

METHODS: Clinical data were extracted from the medical records of patients who were admitted to the telemetry unit of a suburban community hospital from January to March 2009. The indications for cardiac monitoring were classified based on the 2004 AHA practice standards: Class 1 includes clinical conditions where cardiac monitoring is indicated in most, if not all patients; Class 2 is when it may be of benefit for some patients, but not considered essential for all; and Class 3 is when it is not indicated. The outcome was the occurrence of new significant cardiac events during the period of monitoring, including acute coronary syndrome, symptomatic or malignant arrhythmias, QT prolongation and sudden cardiac death. Sensitivity, specificity and predictive values were calculated.

RESULTS: There were 505 admissions to the telemetry unit, 93 (18 %) had indications for intensive care and were excluded from further analysis. Of the remaining 412 patients, 186 (45 %) met Class 1 indications, 122 (30 %) were Class 2, and 104 (25 %) were Class 3. Of the Class 1 patients, 82 (44 %) had chest pain, and 73 (39 %) had acute coronary syndrome (ACS). Overall, the significant cardiac event rate was 1.46 % (6/412). The presence of a Class 1 indication was 67 % sensitive (95 % CI: 23–95 %) and 55 % specific (95 % CI: 50–60 %) for predicting an event. Reclassifying syncope from a Class 2 to a Class 1 indication resulted in sensitivity of 100 % (95 % CI: 54–100 %), specificity of 51 % (95 % CI: 47–56 %) and negative predictive value of 100 % (95 % CI: 98–100 %). The potential reduction in cardiac monitoring was 51 % (95 % CI: 46–56 %).

CONCLUSIONS: The overall incidence of significant cardiac events among patients currently placed on electrocardiographic monitoring in a noncritical setting is low. The 2004 AHA practice standards can provide safe and effective guidance on selecting patients who will benefit from monitoring, and may be enhanced if syncope is recategorized as Class 1. Applying these recommendations in clinical practice may help substantially reduce the use of cardiac monitoring.

Test Characteristics of the AHA Practice Standards for Predicting Significant Events on Cardiac Monitoring in a Noncritical Setting

Test Characteristic	Presence of Class 1 Indication Predicting Significant Cardiac Events			
	Original 2004 Practice Standards		Modified with Syncope as Class 1	
	Value, %	95 % CI, %	Value, %	95 % CI, %
Sensitivity	67	23–95	100	54–100
Specificity	55	50–60	51	47–56
Prevalence	1.46	0.54–3.14	1.46	0.54–3.14
Positive Predictive Value	2.15	0.60–5.42	2.96	1.10–6.33
Negative Predictive Value	99.12	96.83–99.87	100	98.23–100

EVALUATION OF CHARLSON COMORBIDITY INDEX AS A PREDICTOR OF ADVERSE OUTCOMES IN PATIENTS ADMITTED WITH COMMUNITY-ACQUIRED PNEUMONIA Qasim Shakeel; Rafael Cabrera; David Paje; Amit Vahia; Abdul Kareem Uduman; Luis C. Watanabe Tejada. Henry Ford Health Systems, Detroit, MI. (Tracking ID #1634966)

BACKGROUND: Patients diagnosed with community-acquired pneumonia (CAP) are commonly risk-stratified using either the validated CURB-65 criteria or the Pneumonia Severity Index (PSI), both of which primarily uses acute clinical findings to predict mortality. The role of chronic comorbidities in predicting outcomes in patients with CAP is unclear. Our goal was to evaluate the ability of the age-adjusted Charlson Comorbidity Index (CCI) to predict adverse outcomes in patients admitted with CAP to a general medical unit and we compared its performance with CURB-65 and PSI.

METHODS: The medical records of consecutive patients admitted with CAP to an urban tertiary referral teaching hospital were reviewed to obtain the required demographic characteristics, acute clinical findings and documented comorbidities to calculate the CURB-65, PSI and age-adjusted CCI scores. The performance of each severity score in predicting 30-day mortality, 30-day readmission, intensive care unit (ICU) transfer and length of stay (LOS) of at least 7 days was evaluated by producing receiver operator characteristic (ROC) curves. The areas under the ROC curves (AUC) were compared using Hailey and McNeil method based on the non-parametric two-sample Mann–Whitney U statistic.

RESULTS: 539 patients were included in the analysis, 85 (15.77 %) died within 30 days, 84 (15.58 %) were readmitted within 30 days, 76 (14.10 %) were transferred to the ICU during the index admission and 172 (31.91 %) had a LOS>7 days. The CURB-65, PSI and CCI scores were all highly significant predictors of 30-day mortality; the AUC for each were 0.735, 0.770 and 0.765, respectively, and were significantly greater than the line of no information ($p<0.001$). All three severity scores were also significant predictors of ICU transfer (CURB-65: 0.603, $p=0.002$; PSI: 0.652, $p<0.001$; CCI: 0.647, $p<0.001$) and of LOS>7 days (CURB-65: 0.578, $p=$

0.003; PSI: 0.607, $p<0.001$; CCI: 0.612, $p<0.001$). None of the severity scores significantly predicted 30-day readmission. When compared to each other, no severity score was significantly more predictive of mortality, readmission, ICU transfer or LOS>7 days than the other.
CONCLUSIONS: When predicting adverse outcomes in patients admitted with community-acquired pneumonia, risk assessment using comorbidities perform similarly when compared to measures that primarily include acute clinical findings. The age-adjusted Charlson Comorbidity Index significantly predicted important clinical outcomes in CAP patients. Future studies are necessary to determine if this tool may be universally applied to predict outcomes in other acute medical conditions.

EVIDENCE-BASED RISK COMMUNICATION: A SYSTEMATIC REVIEW Daniella A. Zipkin[1]; Elizabeth Allen[2]; Rebecca Beyth[3]; Scott Kaatz[4]; Nancy L. Keating[5]; Devin Mann[6]; Jeremy Sussman[7]; Connie Schardt[1]; Craig A. Umscheid[8]; Deborah Korenstein[9]; Avishek Nagi1; Richard Sloane[1]; David Feldstein[10]. [1]Duke University Medical Center, Durham, NC; [2]Oregon Health Sciences University, Portland, OR; [3]University of Florida, Gainesville, FL; [4]Hurley Medical Center, Flint, MI; [5]Harvard Medical School, Boston, MA; [6]Boston University School of Medicine, Boston, MA; [7]University of Michigan, Ann Arbor, MI; [8]University of Pennsylvania, Philadelphia, PA; [9]Mount Sinai School of Medicine, New York, NY; [10]University of Wisconsin School of Medicine and Public Health, Madison, WI. (Tracking ID #1636930)

BACKGROUND: Effectively communicating the risks and benefits of tests and therapies to patients is critical for shared decision-making. The method of communicating risk affects patients' comprehension and perceptions, but the best formats remain unclear. We systematically reviewed the literature on methods of communicating probabilistic information to patients to determine which presentations maximize patients' understanding, satisfaction, and decision-making.
METHODS: We searched Medline, CINAHL, Embase, and Cochrane CENTRAL from 1966 through December 2011 using terms related to patients, communication, risk, and outcomes of comprehension, preferences, and decision-making. We included all cross-sectional or prospective trials with an active control group that compared different methods of communicating the same risk. We excluded studies of health care providers and non-English language studies. One author reviewed titles and abstracts. Two authors independently reviewed full text and disagreements regarding inclusion were settled by consensus. Two authors independently abstracted information about the study population, interventions, and outcomes and assessed risk of bias using standard tools. Data were summarized with descriptive statistics. Study heterogeneity precluded meta-analysis.
RESULTS: Of 20,088 citations retrieved, 604 were selected for full text review. Seventy-six unique citations containing 85 studies (64 randomized trials) were included. The median number of participants was 266 (range 24 to 16,133). The most frequent comparisons were between variations of pictographs or icon arrays (IA) (15 comparisons), IA vs. natural frequencies (number of events out of stated denominator, NF) (8 comparisons), IA vs. bar graphs (7 comparisons), absolute risk reduction (ARR) vs. relative risk reduction (RRR) (6 comparisons), number needed to treat (NNT) vs. RRR (5 comparisons), and NF vs. NNT (4 comparisons). Studies comparing IA to NF and bar graphs had mixed results. With small risks, IA led to less overestimation of risk than NF. Compared with bar graphs, IA improved accuracy for incremental risks but results were split for overall risks. IA were associated with lower confidence in decisions, and sometimes considered confusing. Studies comparing IA presentations had several findings. IA displaying only sick subjects led to poorer risk understanding than those displaying sick and healthy subjects. For IA depicting total populations, there was less participant worry when incremental risk rather than overall risk was presented. Providing baseline and incremental risks in a single IA rather than two separate IA improved comprehension. A horizontal layout was more favorable than vertical. Participants perceived risks more accurately when presented with ARR compared with RRR. RRR was associated with a higher probability of accepting therapy or screening. NNT led to less accurate risk perceptions and less satisfaction with decision-making compared with RRR and NF.
CONCLUSIONS: The literature regarding methods of communicating risk is vast and heterogeneous in terms of formats, specific comparisons, outcomes, and outcome measurement. IA, NF and ARR appear best for overall accuracy of risk estimation, while bar graphs are better understood than IA in some instances. RRR has the greatest impact on behavior. A consensus statement to guide future study methodology would enhance consistency and reproducibility and optimize determinations of comparative effectiveness.

EXAMINING THE INFLUENCE OF A BEHAVIORAL CHANGE ACTIVITY ON SENIOR MEDICAL STUDENT ATTITUDES ABOUT MOTIVATIONAL INTERVIEWING Elizabeth Karwowski[1,2]; Teresa Cheng[1]; Jay D. Orlander[1,2]. [1]Boston Medical Center/Boston University School of Medicine, Boston, MA; [2]VA Boston Healthcare System, Boston, MA. (Tracking ID #1634009)

BACKGROUND: Despite its importance to clinical care and recognition as a core competency, many medical schools lack effective strategies to teach interpersonal communication. This study evaluated the impact of four communication workshops, along with a behavioral change activity, on senior students' valuation of communication and confidence in their communication skills.
METHODS: The curriculum for fourth-year students in a mandatory ambulatory medicine clerkship at Boston University School of Medicine included four communication skills workshops: setting the agenda (SA), motivational interviewing (MI), communication with peers (CP), and dealing with difficult patients (DD). All workshops included a short didactic session followed by skills practice totaling 90 min. Following only the MI workshop, students self-selected a behavioral change activity that they performed for 1 week, after which they completed a brief reflection. The behavioral change did not have to relate to the workshop content. Students completed a supplementary course evaluation at the end of the clerkship to assess the workshops using a seven-point Likert scale. Students rated their attitudes before and after the clerkship in two areas: the 'importance' of each communication skill and 'confidence' in their ability to perform it. Participation was voluntary and anonymous. No incentives were provided. Nonparametric tests including comparison of the means of the differences and Wilcoxon Signed Rank Test were used to analyze the data.
RESULTS: Forty-eight out of 60 (80 %) students completed the course evaluation. The data were not normally distributed. In aggregate, student scores improved for both the 'importance' and 'confidence' categories following each of the workshops. Nonparametric binomial testing showed that the mean positive change in student scores of 'importance' was greater in the MI workshop (1.13, 95 % CI 0.81–1.45) than workshops focused on SA (0.89, 0.62–1.16), CP (0.71, 0.46–0.96) and DD (0.58, 0.38–0.78), as well as the control query on the importance of general communication skills (mean 0.40, 0.21–0.59). Using Wilcoxon Signed Rank Test to compare the mean change in student scores among the workshops, the MI workshop improved scores significantly more than both the DD workshop ($p=0.003$) and the students' perceived importance of general communication skills ($p<0.001$). Binomial testing also showed that the mean positive change in student scores of 'confidence' was greater in the MI workshop (1.34, 95 % CI 1.08–1.60) than the workshops on SA (1.02, 0.76–1.28), CP (0.64, 0.42–0.86), and DD (1.16, 0.91–1.41), and the control query on general communication skills (0.60, 0.43–0.77). These differences in confidence scores were statistically significant for MI vs. SA ($p=0.027$), MI vs. CP ($p<0.001$), and MI vs. general communication skills ($p<0.001$).
CONCLUSIONS: Communications workshops targeting senior medical students improved their valuation of and confidence in these communication techniques. Relative to the other workshops, the larger increases in motivational interviewing scores suggest that continued application of these techniques outside the classroom through a simple activity may further increase student ratings of importance and confidence.

EYE IMAGES IMPROVE HAND HYGIENE COMPLIANCE IN AN EMERGENCY DEPARTMENT Sarah A. Stella1,2; Roger Stace3; Amber Miller1; Angela Keniston1; Marisha Burden1,2; Connie S. Price1,2; Richard K. Albert1,2. 1Denver Health Medical Center, Denver, CO; 2University of Colorado School of Medicine, Aurora, CO; 3University of Colorado Denver School of Business, Denver, CO. (Tracking ID #1638955)

BACKGROUND: Hand hygiene is thought to reduce hospital acquired infections, but multiple studies have found poor compliance with hand washing recommendations among health care workers. Interventions aimed at improving compliance, some requiring considerable effort and expense, have shown mixed results. A number of studies in behavioral science have shown that even subtle cues of 'being watched' appear to inhibit selfish behaviors and increase altruistic ones (e.g., increasing the amount of money contributed to an honor box: Bateson et. al., 2006, Biol.Lett.) and depiction of eye images has influenced these behaviors in both experimental and real-world settings. We hypothesized that displaying eye images in patient care settings would improve compliance with hand hygiene recommendations among health care workers.
METHODS: We placed posters depicting eye images or mountains (as a control), together with a message encouraging providers to wash their hands, next to foam product dispensers at the entrance to patient rooms in the emergency department of a university-affiliated safety net hospital. We employed an interrupted time series design varying the condition every three weeks as follows: baseline (no poster), eye images, washout period, mountains. Covert observation of hand hygiene opportunities was performed remotely via security surveillance cameras that were already in use. These allowed clear vision of the dispensers located outside the rooms but not of those located within all the rooms observed. Data were analyzed by segmented regression analysis.
RESULTS: During the period when no posters were utilized hand washing compliance was only 3.7 % and we saw no change in compliance over the 3 weeks period of assessment (P=0.60). After eye images were posted compliance increased to 11.1 % (P=0.02) and again, no change in compliance was observed over the 3 weeks observation period (P=0.10). At the beginning of the wash-out period compliance was 7.3 % which we did not find different from the 11.1 % measured when eye images were used (P=0.31), but compliance increased to a small extent during this period of observation (7.3 % to 9.2 %, P=0.03). Finally, we found no increase in hand hygiene from that measured at the beginning of the washout period and that measured after displaying the control images (7.3 % versus 7.4 %, P=0.48) and no change in compliance over the final period of measurement was observed (P=0.88). Surveillance cameras revealed multiple instances of misuse of latex gloves through all periods of observation.
CONCLUSIONS: Compliance with hand hygiene recommendations was very low in all periods of study but displaying eye images improved compliance (although still leaving compliance lower than expectations). Although not specifically tabulated, widespread misuse of latex gloves was observed, presumably in lieu of hand hygiene.

FACTORS AFFECTING THE HEALTH LITERACY OF HISPANIC ADULTS LIVING IN THE US Rosette Chakkalakal[1]; Lee Sanders[2]; Shonna Yin[3]; Eliana M. Perrin[4]; Russell L. Rothman[1]. [1]Vanderbilt University, Nashville, TN; [2]Stanford University, Palo Alto, CA; [3]New York University, New York City, NY; [4]University of North Carolina at Chapel Hill, Chapel Hill, NC. (Tracking ID #1643116)

BACKGROUND: Hispanic adults frequently score lower on assessments of health literacy than other racial/ethnic groups. However, individuals who identify as Hispanic often differ in terms of several socio-demographic factors such as acculturation and English proficiency; the extent to which these factors influence the health literacy of Hispanic adults is unknown. We therefore sought to explore the relationship between health literacy and these key factors among a sample of Hispanic adults living in the US.
METHODS: Using logistic regression models, we analyzed data collected from adult Hispanic caregivers participating in the Green Light Obesity Prevention Study to explore the effect of age, gender, education, income, place of birth (foreign-born versus US-born), acculturation, interview language preference, English proficiency, and city of residence on health literacy as measured by the Short Test of Functional Health Literacy in Adults (STOFHLA). We collapsed inadequate and marginal health literacy scores into a single "limited" health literacy category and compared individuals with limited and adequate health literacy. Acculturation was measured using the Short Acculturation Scale for Hispanics (SASH). We created 3 models so we could separately analyze the effect of acculturation, English proficiency, and interview language preference because of collinearity among these variables (model 1 included acculturation, model 2 included English proficiency, model 3 included interview language preference). Results were expressed as the adjusted odds of having adequate health literacy.
RESULTS: 430 Hispanic adults completed the STOFHLA; 14.9 % had limited health literacy and 85.1 % had adequate health literacy. In all 3 models the odds of having adequate health literacy were greater for Hispanic adults who were male, had a high school education or greater, had an income greater than or equal to $20,000, were born in the US, were more acculturated, spoke English, preferred to be interviewed in English, and lived in New York City, NY, Chapel Hill, NC or Nashville, TN. In model 1, the adjusted odds ratios for education (3.6, 95 % CI 1.8–7.2), income (7.2, 95 % CI 2.1–25.1), acculturation (2.1, 95 % CI 1.1–4.0) and city of residence (New York City versus Miami OR=3.6, 95 % CI 1.5–8.8, Chapel Hill versus Miami OR=4.3, 95 % CI 1.5–11.9, Nashville versus Miami OR=12.5, 95 % CI 3.6–43.1) were statistically significant. In model 2, the adjusted odds ratios for education (3.3, 95 % CI 1.7–6.4), income (5.0, 95 % CI 1.7–15.2), English proficiency (not well versus not at all OR=3.7, 95 % CI 1.8–7.6, very well or well versus not at all OR=3.6, 95 % 1.5–8.8), and city of residence (Nashville versus Miami OR=7.7, 95 % CI 2.3–26.3) were statistically significant. In model 3, the adjusted odds ratio for education (3.9, 95 % CI 2.0–7.5), income (6.3, 95 % CI 2.1–18.6), place of birth (5.5, 95 % CI 1.1–27.7), and city of residence (New York City versus Miami OR=2.3, 95 % CI 1.1–5.2, Chapel Hill versus Miami OR=3.6, 95 % CI 1.4–9.4, Nashville versus Miami OR=8.6, 95 % CI 2.7–27.8) were statistically significant.
CONCLUSIONS: Our project demonstrates the need to account for gender, education, income, place of birth, acculturation, language preference, English proficiency, and place of residence as we measure health literacy and design interventions to address literacy-related health disparities facing Hispanic populations.

FACTORS INFLUENCING INCREASING RACIAL DISPARITY IN DIABETIC LDL CHOLESTEROL CONTROL IN A CONTEXT OF ACTIVE QUALITY IMPROVEMENT Stephen D. Persell; Raymond Zhang; Ji Young Lee; Muriel Jean-Jacques; Tiffany Brown. Northwestern University, Chicago, IL. (Tracking ID #1639775)

BACKGROUND: The effects of general quality improvement (QI) approaches on racial disparities are not clear. After implementing multifaceted, physician-directed QI, we observed an increase in the disparity in rates of LDL cholesterol control between white and black diabetes patients. We sought to examine possible causes for the increasing racial disparity.
METHODS: We performed a retrospective observational study of a cohort of 962 black and white diabetes patients treated continuously at a large internal medicine practice between 2008 and 2010. The primary outcome was LDL cholesterol control defined as below 100 mg/dL measured in the past year. We obtained prescription regimens and patient characteristics from electronic health records. We performed multivariable logistic regression stratified by LDL cholesterol control status on 2/1/2008 to examine the association between race and LDL control on 2/1/2010 accounting for factors influencing LDL control including: baseline lipid-lowering medication prescription, medication changes, demographics, comorbidities and geocoded indicators of socioeconomic status. We used chart review to examine the prevalence of physician-documented non-adherence to lipid-lowering medication for patients with uncontrolled LDL cholesterol and examined reasons for non-adherence.

RESULTS: At baseline, 55.0 % of whites and 49.8 % of blacks were controlled (5.2 % disparity). The disparity in LDL cholesterol control increased during the first 2 years of the QI implementation, with 61.8 % of whites and 44.6 % of blacks having LDL cholesterol controlled in 2010, a 17.2 % disparity and a 12.1 % increase in the disparity between 2008 and 2010. Most of the cohort had an LDL test during the year prior to 2/1/2010, and this did not differ significantly by race (75.7 % of white patients and 72.4 % of black patients). Among patients uncontrolled at baseline, whites were more likely to become controlled. Among patients controlled at baseline, blacks were more likely to become uncontrolled. Accounting for patient characteristics and changes in lipid-lowering drug prescription regimens did not attenuate the relationship between black race and LDL control at follow-up for patients who were initially uncontrolled (aOR of 0.52, 95 % CI 0.34–0.80) or controlled (aOR of 0.46, 95 % CI 0.31–0.71). On chart review, among patients with uncontrolled LDL cholesterol in 2010, 40 % of black patients and 29 % of white patients had physician-documented non-adherence. Reasons for non-adherence did not significantly differ between black and white patients. Among those with non-adherence documented, the most common recorded reasons were patient-experienced adverse drug events (32 % for black patients, 35 % for white patients), patient preference to not use medication (27 % for black patients, 35 % for white patients), and financial barriers (24 % for black patients, 18 % for white patients).

CONCLUSIONS: The increased racial disparity was not explained by physician prescribing behavior or measured patient characteristics. Physician-facing, general QI interventions alone may be insufficient to produce equity in LDL cholesterol control. Helping patients maintain their prior success controlling their cholesterol appears to be as important for addressing this racial disparity as helping uncontrolled patients achieve control. Interventions that specifically address patients' perceptions of medication use and their experiences of adverse effects should be tested.

FINANCIAL STRAIN AND MEDICATION ADHERENCE AMONG DIABETES PATIENTS IN AN INTEGRATED HEALTHCARE DELIVERY SYSTEM Courtney R. Lyles[1]; Hilary K. Seligman[1]; Melissa M. Parker[2]; Howard H. Moffet[2]; Nancy E. Adler[3]; Dean Schillinger[1]; Andrew J. Karter[2]. [1]University of California San Francisco, San Francisco, CA; [2]Kaiser Permanente Northern California Division of Research, Oakland, CA; [3]UCSF, San Francisco, CA. (Tracking ID #1631061)

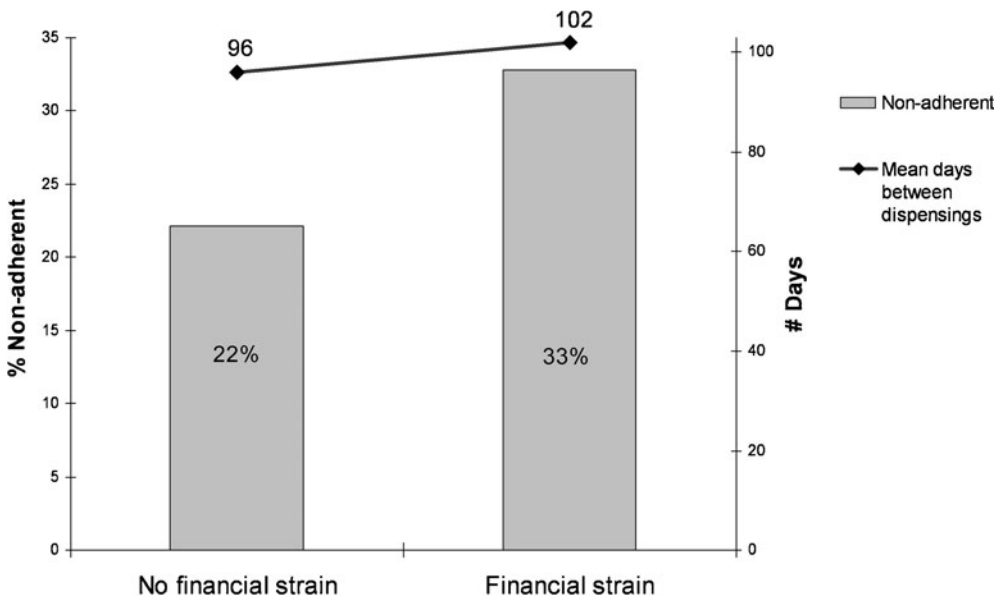
BACKGROUND: Financial strain, or the inability to afford necessary items such as food and clothing, is associated with poor glycemic control. It is hypothesized that this association is partially driven by decreased medication adherence resulting from an inability to afford medication. However, few studies have examined the association between financial strain and objectively-assessed medication refill behaviors.

METHODS: We conducted a race-stratified survey in 2005–2006 of diabetes patients receiving care at Kaiser Permanente Northern California, and linked responses to electronic medical record data. We examined self-reported financial strain ("How often did it happen that you did not have enough money to buy food, clothes or other things you needed?"), dichotomized as never vs. anytime in the previous year. Among patients with a newly prescribed cardiometabolic medication for a 100-day supply (the standard in this system), we examined pharmacy records to assess medication use in two ways. We counted the total days between dispensings and defined non-adherence as a second dispensing ≥2 weeks after the 100-day supply should have run out (i.e., ≥114 days between dispensings). We examined generalized linear models, adjusting for age, gender, education, race/ethnicity, medication type, and co-payment amount.

RESULTS: Among 7,773 individuals with a newly prescribed cardiometabolic medication, 8 % (n=609) reported financial strain. Overall, there were a total of 11,820 prescriptions among these individuals in 2006. Those reporting financial strain had an average of 102 days between dispensings, compared to 96 days among those not reporting financial strain (Figure, p-<0.01). In addition, 33 % of those reporting financial strain were non-adherent, compared to 22 % of those not reporting strain (Figure, p<0.01). These differences remained significant in adjusted models, with those reporting strain having a 4.1 days longer between dispensings (95 % CI: 0.3–7.9) and a 31 % increased likelihood of non-adherence (RR=1.31, 95 % CI: 1.12–1.53).

CONCLUSIONS: In this sample of diabetes patients in an integrated healthcare delivery system, we quantified the degree to which financial strain related to medication refill behaviors. There was a significant association between self-reported financial strain and non-adherence. This may suggest that those reporting difficulty affording necessary items may put off ordering medication refills, with the potential for long-term, negative implications on clinical risk factor control—especially when extrapolating poorer adherence over a longer (e.g., one-year) timeframe and across multiple cardiometabolic prescriptions (e.g., 4 medications, the average within this cohort).

Figure. Medication non-adherence and days between dispensings by financial strain



FRAMING EFFECTS INFLUENCE PHYSICIANS' SENSE OF PROFESSIONAL RESPONSIBILITY REGARDING HEALTH CARE COSTS Tim Mundell[1]; Katherine M. James[2]; Susan D. Goold[3]; Jon C. Tilburt[2,4]. [1]Willliam Beaumont School of Medicine, Rochester, MI; [2]Mayo Clinic, Rochester, MN; [3]University of Michigan, Ann Arbor, MI; [4]Mayo Clinic, Rochester, MN. (Tracking ID #1637538)

BACKGROUND: Health care reform aimed at reducing costs requires active physician participation. There is little, if any, literature regarding framing effects in health care reform language about physicians' responsibilities to reduce costs. We aimed to assess how framing effects might impact physicians' self-described responsibility to address cost issues. We hypothesized that physicians given "wise stewardship" language in a survey item would be most likely to agree with their responsibility, somewhat less likely to agree if given "cost-conscious" language, and least likely to agree if given overt use of "rationing" language in a dose-response fashion.
METHODS: In late May, June, and July of 2012, we mailed a self-administered, 8-page survey entitled, "Physicians, Health Care Costs, and Society" to 3,897 practicing US physicians representing all specialties. In this survey, we embedded an experiment using one survey item. The 3,897 participants were randomly assigned to one of the three following framings of physician obligations related to health care resources and asked to indicate their degree of agreement or disagreement based on a four point ordinal scale (strongly agree, somewhat agree, somewhat disagree, strongly disagree): the "wise stewardship" version ("It is my responsibility to exercise wise financial resource stewardship in my daily care of patients"), the "cost-conscious" version ("It is my responsibility to promote cost consciousness in my daily care of patients"), and the "rationing" version ("It is my responsibility to ration in my daily care of patients").
RESULTS: Overall, 1299 physicians received the "wise stewardship" version with 848 responding (RR=65.3 %); 1298 physicians received the "cost-conscious" version with 861 responding (RR=66.3 %); and 1300 physicians received the "rationing" version with 847 responding (RR= 65.2 %). Respondents in all three groups of the experiment were similar with respect to gender, age, region, specialty, practice setting, compensation model, and political affiliation. 88 % of physicians responding in the "wise-stewardship" language group agreed with the statement; 81 % of physicians responding in the "cost-conscious" language group agreed with the statement; and 22 % of physicians responding in the "rationing" language group agreed with the statement. Chi-square tests comparing distributions of responses to all three framing versions were statistically significant ("wise stewardship" v. "cost-consciousness" p-value=0.0003; "wise stewardship" v. "rationing" p-value<0.0001; "cost-consciousness" v. "rationing" p-value<0.0001).
CONCLUSIONS: Framing does appear to influences physicians' self-described responsibilities to reduce health care costs. Language describing physicians' ethical obligations to control health care resources is morally loaded and susceptible to political manipulation.

FRAMING EFFECTS CHANGE CLINICIAN RISK PERCEPTIONS MORE THAN IMPORTANT CHANGES TO A RISK'S TIME-FRAME AND OUTCOME Tanner Caverly[1]; Allan V. Prochazka[1]; Brian P. Lucas[2]; Shane Mueller[1]; Ingrid A. Binswanger[1]; Jean Kutner[1]; Brandon Combs[1]; Daniel Matlock[1]. [1]University of Colorado Denver, Denver, CO; [2]Stroger Hospital of Cook County, Chicago, IL. (Tracking ID #1631077)

BACKGROUND: In deciding whether the benefits of an intervention outweigh the harms, it is necessary to represent both in comparable formats. To do this a clinician must ask three questions: 1. are both benefits and harms framed as absolute risks? 2. are the time-frames the same? and 3. are the benefits and harms of similar importance to patients? The extent to which clinicians critically answer each of these questions when interpreting the meaning of a benefit or harm is not known. Thus, we conducted a survey to determine the extent to which clinicians modify their interpretation when specific changes are made to the framing, time-frame, and outcome.
METHODS: Survey items were developed and revised based on literature review, cognitive interviews, a focus group with survey experts, and pilot testing. The survey consisted of pairs of scenarios that were identical except for a single modification to framing, time-frame, or outcome (Table 1). Responses were on a 1–10 risk perception scale. Each pair was separated by unrelated survey questions and participants were not aware that items would be paired for scoring. However, participants were able to change responses to earlier questions if they noticed a connection. In this way, we hoped to capture how critically clinicians interpreted the risk information presented. We recruited 380 clinicians and trainees at educational conferences to take an anonymous, self-administered paper test: 115 nurse practitioners (NPs), 131 third year medical students, and 134 residents in internal medicine at 2 institutions. We calculated the mean difference between paired responses (within clinician) and used the paired t-test to assess statistical significance with a two-tailed p value threshold <0.05.
RESULTS: When identical risks were framed differently, clinician's responses differed by 1.5 to 2 points on the 10-point risk perception scale (Table 1). This corresponds to an increase of greater than half a standard deviation (SD) of the mean response on an individual question. In contrast, when clinicians were presented with meaningful increases in risk due to time-frame or outcome changes, responses paradoxically changed by 1 or less.
CONCLUSIONS: Clinicians and trainees do not appear to appropriately reformat risk information for comparisons. This leads them to view identical risks as different and equate importantly different risks.
Changes in clinicians' risk perception on a 10-point scale when responding to a pair of questions presenting risks that differ by framing, time-frames, or outcomes.
Question 1 Mean (SD) Question 2 Mean (SD) Mean within clinician difference (95 % CI)* *P*-value* Ideal difference
Framing Difference
Relative risk reduction of 33 % from baseline of 6 %** 7.0 (2.1) Absolute survival benefit from 94 % to 96 %** 5.0 (2.3) 2.0 (1.8 to 2.5)<0.0001 None, identical risk reduction
Disease kills 1 million people in the US every year*** 6.5 (2.5) Disease kills 0.3 % of the US population every year*** 5.0 (2.4) 1.5 (1.3 to 2.5)< 0.0001 None, identical risk
Time-Frame Difference***
3 % risk of dying from cancer over the next 10 years 6.1 (2.2) 3 % risk of dying from cancer over lifetime 5.1 (2.1) 1.0 (0.8 to 1.6) < 0.0001 > 0, same magnitude of risk over a shorter time-frame
Outcome Difference***
3 % lifetime risk of dying from cancer 5.1 (2.1) 3 % lifetime risk of getting cancer 4.8 (2.0) 0.3 (0.1 to 1.7) 0.0018>0, dying is a more important outcome
* Using the paired t-test, null hypothesis that the pooled mean difference equals zero. ** Response on a 10-point response scale that ranged from 1 to 10 with anchors at 1 ("no proof") and 10 ("good proof"). *** Based on a 10-point response scale that ranged from 1 to 10 with anchors at 1 ("not important") and 10 ("very important").

FREQUENCY OF LABORATORY TESTING AMONG GASTRIC BYPASS PATIENTS Adam G. Tsai[1]; Patrick Hosokawa[2]; Jonathan A. Schoen[3]; Allan V. Prochazka[1]. [1]University of Colorado, Aurora, CO; [2]University of Colorado, Aurora, CO; [3]University of Colorado, Aurora, CO. (Tracking ID #1636990)

BACKGROUND: Bariatric surgery for severe obesity is a common surgical procedure in the United States. An expert panel recommended that patients who have malabsorptive procedures (e.g., gastric bypass) undergo routine laboratory monitoring due to the risk of nutritional deficiencies. The frequency of lab monitoring can be considered a measure of quality of care in this patient population. We tested whether or not patients are undergoing this monitoring at the recommended frequency.
METHODS: Data came from the IMS LifeLink™ Health Plan Claims Database, which includes over 70 million patients. The database contains all records in which a lab test was billed to an insurance payer. Patients were identified by CPT codes for surgical procedure they had. The analysis

included all time after the time of the procedure code and where the patient was covered by one of the over 80 insurance payers in the database. We computed an expected number of tests per patient based on: 1) the duration in months of each patient's presence in the dataset after the index surgery; and 2) the minimum testing frequency recommended by the expert panel. We used adjustable gastric banding as a control group, as there is no recommended frequency of laboratory evaluation after this procedure. We examined testing for anemia, electrolytes, hemoglobin A1c (diabetes patients only), hepatic function, lipids, vitamin D, iron, and vitamin B12, as recommended by the expert panel. We conducted Cochrane-Mantel-Haenszel testing to assess for statistical significance of differences in testing frequency.

RESULTS: We calculated that on average, each gastric bypass patient should have 1.37 tests per year during their observation period in the database. However, the majority of patients (ranging from 50 % for vitamin B12 to 87 % for complete blood count) did not have lab tests done in a given year during the observation period. The percentage of gastric bypass patients that had at least one test per year were: 7.3 % for complete blood count, 29.5 % for iron deficiency, 13.3 % for electrolytes, 17.3 % for hemoglobin A1c, 22.8 % for vitamin B12, 12.5 % for vitamin D, 3.3 % for hepatic function, and 23.0 % for lipids. Gastric bypass patients had significantly more testing than gastric banding patients for vitamin D level, complete blood count, iron studies, electrolytes, and vitamin B12. The two groups had similar numbers of tests for diabetes, lipids, and hepatic function.

CONCLUSIONS: We found that patients who have undergone gastric bypass surgery are not routinely undergoing recommended laboratory monitoring. The results suggest that some patients are at higher risk of developing long-term nutritional deficiencies. However, the higher rate of testing for some nutritional deficiencies in the gastric bypass group suggests that these patients are undergoing some additional monitoring. Patients who undergo malabsorptive weight loss procedures have a lifelong risk of nutritional deficiencies and need long term monitoring. With the increasing frequency of bariatric surgery, surgical clinics will eventually be overwhelmed with follow-up. A better option might be to co-locate bariatric medical providers in surgical clinics, or for patients to be followed by physicians specializing in weight management. An alternative is to improve the education of primary care physicians regarding long-term monitoring of patient undergoing gastric bypass.

FREQUENT USERS OF THE EMERGENCY DEPARTMENT IN A COUNTRY WITH UNIVERSAL HEALTH COVERAGE: A PROSPECTIVE CONTROLLED CROSS-SECTIONAL STUDY
Patrick Bodenmann[1]; Fabrice Althaus[1]; Stephanie Stucki[2]; Corine Ansermet[2]; Sophie Guyot[3]; Katia Iglesias[4]; Sophie Paroz[2]; Lionel Trueb[3]; Olivier Hugli[3]; Jean-Bernard Daeppen[5]. [1]University of Lausanne, Lausanne, Switzerland; [2]University of Lausanne and Lausanne University Hospital, Lausanne, Switzerland; [3]University of Lausanne and Lausanne University Hospital, Lausanne, Switzerland; [4]University of Lausanne and Lausanne University Hospital, Lausanne, Switzerland; [5]University of Lausanne and Lausanne University Hospital, Lausanne, Switzerland. (Tracking ID #1625138)

BACKGROUND: A heterogeneous subgroup of patients account for a substantial proportion of all emergency department (ED) visits. Frequent users of the ED are a vulnerable population, and they are receiving attention in terms of characterisation and targeted interventions. The aim of this study was to systematically describe frequent users of the ED in Switzerland, a country with universal health care coverage.

METHODS: This prospective controlled cross-sectional study compared frequent users of the ED to non-frequent users (control group), and was conducted from November 2009 to June 2010 at the University Hospital of Lausanne, a tertiary care hospital with more than 50,000 annual ED visits. Frequent users were defined as patients with five or more visits to the ED in the previous 12 months. Patients who had not yet passed their 18th birthday at the time of the interview, or who had severe cognitive impairments were excluded from the study. Frequent users of the ED and controls (non-frequent users) were compared in terms of socio-demographic characteristics, medical indicators (somatic, mental and risk-behaviour) and health care use. Outcome measures were obtained through a robust questionnaire using previously validated scales.

RESULTS: During the study period, 24,277 patients attended the ED and 351 met the definition of frequent user (1.4 % of all ED patients). Frequent users made a total of 2,030 visits in the past year, which represented 6.3 % of the 32,441 visits made by all ED users during the same period. A total of 226 frequent users and 173 controls accepted an interview invitation. In a multivariate analysis, adjusted odds ratio of being a frequent user was 23.2 (95 % CI 9.1–59.2) for patients with three or more admissions to hospital, 8.4 (95 % CI 2.1–32.7) for patients who do not have a PCP, 4.4 (95 % CI 2.1–9.0) for patients living close to the ED (less than 5 km), 4.3 (95 % CI 2.0–9.2) for patients with a household income lower than 3,000 Swiss Francs/month (2,800 U.S. Dollars in 2009), 2.7 (95 % CI 1.2–6.1) for patients who had attended other EDs, 2.6 (95 % CI 1.1–5.9) for patients having a moderate to severe tobacco use, 2.3 (95 % CI 1.2–4.7) for patients having at least one mental problem according to the Prime-MD questionnaire (panic, anxiety, or mood disorder), 1.2 (95 % CI 1.1–1.4) with a change of one unit according to the Charlson Index (somatic co-morbidities). The risk of being a frequent user was decreased by 74.8 % (95 % CI 0.1–0.5) for patients with no admission to hospital, 72.5 % (95 % CI 0.1–0.9) for people attending for injuries, and 68.1 % (95 % CI 0.1–0.7) for patients having a chronic somatic condition. Adding marital status, education, country of birth, violence, social position, social support, French proficiency, income source, subjective somatic well-being, subjective mental well-being, chronic mental disease, moderate to severe alcohol consumption, illicit drug use, or number of visits to a specialist to the above model did not add predictive utility.

CONCLUSIONS: Frequent users of the ED are a socially and medically vulnerable population even in a universal health care coverage system. These results are helpful to better target the complex needs of frequent users of the ED: through better connection with a PCP, availability of ED-based case management teams, and as also by informing decisions about further services which should be provided to patients in the emergency department.

FROM ADMISSION TO DISCHARGE: PATTERNS OF INTERPRETER USE AMONG RESIDENT PHYSICIANS
Amy Shen[1]; Jenna Kruger[2]; Alicia Fernandez[1,2]. [1]University of California, San Francisco School of Medicine, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA. (Tracking ID #1627409)

BACKGROUND: Underuse of professional interpreters adversely affects quality of care to patients with limited English proficiency (LEP). Communication with hospitalized LEP patients relies on individual providers' decisions to use professional interpreters. Building on qualitative literature suggesting that resident physicians make conscious decisions about whether to use interpreters, we surveyed residents to determine if interpreter use varied by the type of hospital encounter.

METHODS: We conducted a cross-sectional survey study of internal medicine, general surgery, and family medicine resident physicians from one academic medical institution who care for LEP patients across four hospitals. Residents reported on interpreter use with their last hospitalized LEP patient with whom they experienced a language barrier. Regression models were used to determine the independent contribution of clinical site, patient characteristics, and physician characteristics to resident physician use of professional interpreters.

RESULTS: 149 residents (73 % response rate) completed the survey. 75 % of residents reported at least 1 h of prior interpreter training. 71 % of residents reported using professional interpreters for less than 60 % of hospital clinical encounters (mean 43 % (10,90) S.D. 26.35). 91 % of residents reported that their quality of communication with hospitalized LEP patients was "slightly worse" (62 %) or "much worse" (29 %) compared to their communication with clinically similar English speaking patients. Patterns of professional interpreter use varied substantially by type of clinical encounter, with more residents reporting getting by with their

own language skills or not talking to the patient due to time constraints during routine daily rounds than during patient admission or procedural consent discussions (28 % vs. 5 % vs. 2 %, p-value<0.005). Significant predictors of reporting greater professional interpreter use included specialty (family medicine and internal medicine greater than surgery), level of training (beta coefficient=15.7, p<0.001), more hours of interpreter training (beta=3.0, p=0.17), and self-report of growing up with a non-English language at home (beta=0.9, p=0.05). Despite known variation in access to interpreters by site, hospital site was not a predictor of professional interpreter use.
CONCLUSIONS: Residents use different modes of communication depending on the clinical situation and report considerable underuse of professional interpreters and worse communication with their hospitalized LEP patients compared to their communication with English speaking patients. Variation in professional interpreter use by type of clinical encounter and not clinical site underscores the importance of resident decision-making in determining whether LEP patients receive professional interpreter services. While training in interpreter use is associated with greater use of interpreters, more interventions are needed to improve the care of hospitalized patients with LEP, particularly for daily rounds.

FUNCTIONAL DISABILITY IN OLDER ADULTS ADMITTED TO AN URBAN SAFETY-NET HOSPITAL Rebecca T. Brown[1]; David Guzman[2]; Eric R. Kessell[2]; L. E. Goldman[2,3]; Urmimala Sarkar[2]; Edgar Pierluissi[1]; Jeffrey Critchfield[3]; Margot Kushel[2]. [1]University of California, San Francisco, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA. (Tracking ID #1636988)

BACKGROUND: Socioeconomically disadvantaged adults experience accelerated aging, developing geriatric conditions such as functional disability earlier than individuals of higher socioeconomic status. Among inpatients at safety-net hospitals, little is known about the prevalence of accelerated aging or the need for geriatric-focused care. We evaluated rates of functional disability in "young older" patients (age 55–64) and a traditional "geriatric" age group (≥65 years) admitted to an urban safety-net hospital.
METHODS: We enrolled 699 English, Spanish, and Chinese-speaking community-dwelling individuals aged 55 or older admitted to the medical, cardiology, and neurology services at an urban safety-net hospital. Participants completed in-person interviews during hospitalization that assessed demographics and the presence of self-reported functional disability 2 weeks before hospitalization (need for help with ≥1 Katz Activity of Daily Living (ADL); need for help with ≥1 Lawton Instrumental Activity of Daily Living (IADL)).
RESULTS: In both the younger group (N=402, mean age 60 years (standard deviation (SD) 3 years)) and older group (N=297, mean age 75 (SD 8)), slightly more than half of the participants were male, about one-fifth were white, and about half spoke a language other than English at home. Both younger and older participants had high rates of ADL disability (24 % and 34 %, respectively) and IADL disability (42 % and 63 %). The most commonly-reported ADL disabilities were bathing (18 % younger and 24 % older) and dressing (15 % and 26 %), and the most common IADL disabilities were shopping (30 % and 48 %) and meal preparation (27 % and 41 %).
CONCLUSIONS: Rates of functional disability were high among patients aged 55 and older admitted to a safety-net hospital; the rate of ADL disability in patients aged 55–64 was similar to that seen in community-dwelling adults with a mean age of 80, while the rate of ADL disability in the older age group was higher. Our results suggest that patients aged 55 and older admitted to safety-net hospitals may benefit from geriatric models of care that address functional disabilities.

FUNCTIONAL CAPACITY OF OLDER ADULTS UNDERGOING CORONARY ARTERY BYPASS GRAFT SURGERY: A 6 MONTHS FOLLOW-UP Marcio Niemeyer-Guimaraes[1]; Maysa S. Cendoroglo[2]; Clineu Mello-Almada[2]. [1]Quinta D'Or Hospital, Rio de Janeiro, Brazil; [2]EPM Unifesp, Sao Paulo, Brazil. (Tracking ID #1606777)

BACKGROUND: Preservation of autonomy and independence of cardiac older patients becomes the most important outcome, particularly those with borderline functional capacity. Improve function and quality of life should be key-targets, compared to the prolongation of life per se. The aim of study is to determine longitudinal changes in functional status by Functional Independence Measure (FIM) and activities of daily living scales (ADL/IADL) among older adults undergoing coronary artery bypass grafting (CABG).
METHODS: 364 patients aged ≥60 years with proposed cardiac surgery between Jan/2009 and Dec/2011 were prospectively selected according to risk factors for this observational study. It was conduct at 350-beds private hospital. Inclusion criteria were patients aged ≥60 years undergoing elective CABG without other approaches such as valves/aorta and carotid arteries. Thus, 73 patients were assessed before surgery, at discharge and after 1 and 6 months using FIM, ADL and IADL scales, and analyzed for subgroups with and without complications and cardio-pulmonary events during hospitalization. By assuming an estimated proportional change (decline) in FIM in the 6-months follow up, significance level of 5 % (α), statistical test power of 80 % (1-β), and an expected loss of individuals of 30 %, it was determined that an adequate sample should include 32 cases for each group, a total of 64 patients with complete data for the study. Repeated-measurement analysis of variance was used. Data are presented in median ± standard deviation. Significance level was set at 5 %.
RESULTS: Charlson Comorbidity Index was 2.05±1.64. FIM ranged from 121.9±5.1 (pre-admission) to 116±13.5 and 119.8±10.3 (1 and 6 months respectively) (P<.001); ADL from 5.9±0.26 to 5.65±0.82 and 5.90±0.48; IADL scales from 26±2.8 to 21.8±4.9 and 25.4±3.2 (P<.001). When subgroups with (34) and without (39) complications were compared there were no significant changes in FIM (P=.50); and so it was when subgroups with (49) and without (24) cardio-pulmonary events (P=.26). But when subgroups aged up to 70 (38) and less (35) were compared, FIM showed significantly different toward recovery over the time (P<0.02). Delirium (21.9 %); urinary tract infection (13.7 %) and blood transfusion (49.3 %) were intercurrent events found. There was correlation between scales and age (P<.02), mechanical ventilation time (P<.01), intensive care unit length of stay (P<.05).
CONCLUSIONS: FIM monitoring of older patients undergoing CABG surgery showed to be a promising tool of functional recovery over time, especially in subgroup of older people aged ≥70 years. That functional trajectory might help for planning recovery strategies in the 6-first months postoperatively, mainly in older seniors and those with frailty profile, based not only on increase in life expectancy proposal with cardiac surgery but also for functionality and quality of life.

GENDER DISPARITIES IN MEDICAL STUDENTS' COMFORT WITH LEADERSHIP SKILLS April S. Fitzgerald; Redonda G. Miller; David M. Levine; Bimal Ashar; Mary Catherine Beach. Johns Hopkins University, Baltimore, MD. (Tracking ID #1640891)

BACKGROUND: Prior studies have found gender differences in leadership styles, as well as disparities in career achievement for women in medicine. It is unclear if these differences are attributable to tendencies present before entering medical training, or a function of the learning environment and culture of the medical profession.
METHODS: We surveyed medical students from the Class of 2013–2016 at the Johns Hopkins School of Medicine at matriculation and then have thus far surveyed students from the Class of 2013–2014 2 years later upon entry into the clinical years. The questionnaire focused on student comfort in performing various skills related to leadership, including negotiating for oneself, negotiating for another, giving negative feedback, accepting criticism, networking, socializing, working on a team, leading a team, and following on a team. Students rated their level of comfort performing each skill on a 5-point scale from 0 (not at all comfortable) to 4 (extremely comfortable). We used t-tests to assess differences by student gender in comfort for each leadership skill.
RESULTS: Most (419/480) students completed the leadership survey at matriculation (87 % response rate) and most of those eligible (211/240)

from the Class of 2013–2014 completed the survey 2 years later (88 % response rate). At matriculation, the mean student age was 23 years (range 21–38); 47 % were female and 55 % reported having no previous leadership training. At matriculation, there were no differences by student gender in self-reported comfort to negotiate for others but female students were significantly less likely to feel comfortable negotiating for themselves (2.49 male vs. 2.15 female, $p<0.001$). At matriculation, female students were significantly less comfortable giving negative feedback (1.93 male vs. 1.61 female, $p=0.001$), accepting criticism (2.53 male vs. 2.18 female, $p=0.001$), and networking (comfort 2.21 male vs. 1.95 female, $p=0.009$), but had similar levels of comfort as male students in socializing with strangers. There were no significant differences by student gender in self-reported comfort leading or being a follower on a team upon matriculation. Two years later, female students continued to feel less comfort negotiating for oneself, giving negative feedback, and networking; however at this point, female students also felt less comfortable working on (3.06 male vs. 2.85 female, $p=0.042$) and leading a team (2.82 male vs. 2.45 female, $p=0.003$).
CONCLUSIONS: Gender differences in perceived comfort with leadership skills exist at the time of matriculation to medical school and may get worse over time. The pattern of results in which females feel less comfortable negotiating for themselves but not for others, and feel less comfort in networking but not in socializing, suggests that these gender disparities are not underlying differences in skill but are instead related to differences in self advocacy. Interventions to improve female medical student comfort with their own leadership ability are urgently needed, and further study is necessary to assess the impact of such interventions on gender disparities.

GENDER AND LEADERSHIP IN CARDIOPULMONARY RESUSCITATION Christine J. Kolehmainen[1,2]; Meghan Brennan[1,2]; Amarette Filut[1]; Carol Isaac1; Molly Carnes[1,3]. [1]University of Wisconsin, Madison, WI; [2]William S. Middleton Memorial Veterans Hospital, Madison, WI; [3]University of Wisconsin, Madison, WI. (Tracking ID #1642373)

BACKGROUND: In-hospital cardiopulmonary resuscitation (or a 'code') is an emergency requiring a multi-professional team to assemble efficiently and provide coordinated care. Ineffective leadership has been linked to team behaviors that could negatively impact a patient's likelihood of survival. Current guidelines recommend specific training in teamwork and leadership skills, but do not explicate the specific behaviors that comprise these competencies nor the learning methods. Automatic assumptions about what characteristics leaders will possess and how they will enact leadership are strongly influenced by cultural stereotypes. Research finds little if any difference in the effectiveness of male and female leaders. However, leader stereotypes are tightly aligned with "agentic" behaviors associated with male gender stereotypes (e.g. decisive, independent, authoritative) but not the "communal" behaviors associated with female gender stereotypes (supportive, dependent, weak). Based on this previous work and because leadership is critically important in CPR, we undertook the present study to explore leadership in CPR. In most teaching hospitals, internal medicine senior residents lead codes. We wanted to explore their experience with leadership in codes: How they learn to lead codes, what behaviors they associate with effective code leadership, how gender or other personal traits influences their experience with leadership.
METHODS: We conducted individual, semi-structured interviews from May-July 2012 with 23 internal medicine resident physicians at eight U.S. programs chosen to represent a range of geographic regions. We employed inductive and deductive qualitative analysis of text from the transcribed interviews to identify themes around effective code leadership. A total of 81 specific codes were ultimately organized into three major themes.
RESULTS: Several common themes about leadership emerged across all interviews. Leadership was viewed as a critical to a successful code. Residents described the ideal code leader as a person who has an authoritative presence, speaks with a deep, loud voice, uses clear, direct communication, and appears calm. Both men and women struggled to meet these ideals, but women described modifying their "normal day-to-day" behavior more to accommodate these standards. It created extra internal stress and some women worried they were perceived as "bossy". Several women talked about the importance of mentally preparing and "assuming a code persona" before leading. Women felt the institutional imprimatur of the white coat and holding the code pager helped legitimize their power. Some had ritualized behaviors to allow them to suspend their gender expectations to lead codes. Others apologized afterwards for their behavior to mitigate the impact of social reprisals.
CONCLUSIONS: Both men and women describe ideal code leadership behaviors similarly. The predominant view is that those characteristics that are more likely to belong to men, which is congruent with implicit assumptions that men are better leaders. While both men and women achieve those ideal behaviors in codes, women report intentionally altering their persona more. Some residents have adopted techniques to help negotiate gender roles. When residents are trained in how to direct codes, acknowledging the impact of gender stereotypes on expected behaviors might help mitigate female residents' stress from the need to mediate the competing identities of gender and code leader.

GENERIC STATIN PRESCRIBING IN AN INTERNAL MEDICINE RESIDENT CLINIC: IS TEACHING COST-CONSCIOUS MEDICINE IN RESIDENCY TOO LITTLE TOO LATE? Kira L. Ryskina[1]; Michael Pesko[2]; J. T. Gossey[1,3]; Erica Phillips[4]; Tara F. Bishop[2,3]. [1]New York Presbyterian Hospital—Weill Cornell, New York, NY; [2]Weill Cornell Medical College, New York, NY; [3]Weill Cornell Medical College, New York, NY; [4]Weill Cornell Medical College, New York, NY. (Tracking ID #1635179)

BACKGROUND: Several national initiatives aim to teach high-value, cost conscious care at the resident level. While there is growing literature on independent physician ordering practices and factors that influence these practices, little research assesses factors that affect resident ordering practices. In this study, we evaluated brand name statin prescriptions by resident physicians in an academic primary care practice as a proxy of intensive healthcare utilization among internal medicine residents. The objective of this study was to determine whether there was variability in resident prescribing and what resident characteristics were associated with brand name statin prescriptions.
METHODS: We performed a retrospective, cross-sectional analysis of statin prescribing by resident physicians at an urban academic medical practice. We obtained data from our electronic medical record for patient encounters (including office visits, telephone encounters, and order-only encounters) between July 2010 and June 2011. We excluded prescriptions for statin refills and statin prescriptions for new patients because these patients may have been on brand name statins before the encounter. We characterized residents according to their year of training, gender, categorical vs. primary-care track, and their medical school's Hospital Care Intensity (HCI) index (above or below national average). Analyses were at the patient-encounter level. We used multivariate logistic regression with clustering to identify physician characteristics associated with brand name statin prescribing, adjusting for patient-level confounders.
RESULTS: Of the 121 internal medicine residents in the program, 93 met the inclusion criteria and were included in the study. Of the 319 unique patient-resident encounters where statin therapy was initiated, half had brand name statins prescribed. At the resident level, there was considerable variability in the proportion of statin prescriptions that was for brand name statins. Residents in the bottom quartile of brand name prescribing prescribed brand name statins in 13 % of encounters; while residents in the top quartile prescribed brand name statins in 87 % of encounters. There was an association between above-average HCI index for medical school attended and high utilization of brand name statins, however it was not significant (OR=1.58, $p=0.096$, 95 % CI 0.92–2.71). Being in the primary care track was associated with lower odds of prescribing brand name statins (OR=0.42, $p=0.027$, 95 % CI 0.20–0.91).
CONCLUSIONS: We found large variations in brand name medication utilization by residents. Our findings suggest that primary care track experience and possibly exposure to intensive healthcare utilization environments in medical school may influence resident physician prescribing behavior. A better understanding of the factors that influence practice patterns during training can help identify opportunities for educational

interventions which may have lasting implications for how physicians practice later in their careers.

GEOGRAPHIC COHORTING OF MEDICINE PATIENTS AT UMASS MEMORIAL MEDICAL CENTER - IMPLEMENTATION AND SUSTAINMENT Richard M. Forster[1,2]; Tze Chao Chiam[1,2]; LeRoi Hicks[1,2]; Lori Pelletier[1,2]. [1]UMass Memorial Health Care, Worcester, MA; [2]UMass Medical School, Worcester, MA. (Tracking ID #1643131)

BACKGROUND: This study describes the design and implementation of the geographic cohort project at UMass Memorial Healthcare. The project goals were to alleviate waste in the care delivery process and promote inter-professional care models for medicine patients. Previously, patients were assigned to a Hospitalist team before receiving a bed assignment, resulting in a team's patients being geographically scattered around the hospital. This potentially resulted in communication breakdowns, patient safety concerns, long walking distance by the physicians, reduced "touch time" with patients, and delayed discharge planning.
METHODS: A multidisciplinary team was formed to perform the assessment, design, implementation and sustainment of this effort. Multidisciplinary tools such as Lean methods, engineering tools, process design, and clinical expertise were used. A computer simulation (Discrete-event simulation) was used to study the feasibility and quantification of benefits of geographically cohorting patients and physicians. This simulation was also used to perform trade-off analysis of various configurations of geographic placement of Hospitalist/resident teams. Various challenges were faced upfront including data availability. These challenges were amplified due to the transition from a legacy patient record system to a newer electronic health record system. Upfront process design included patients' "port of entry" (e.g., ED, ICU, neighboring hospitals and clinic admits), and assignment algorithms (patient-to-bed and patient-to-physician). Communication and education were developed to ensure system-wide awareness of the new process. The Transitional Care Team (TCT) consisting of a Hospitalist, affiliate practitioner, Case Manager, and Triage Resident was formed and stationed in the ED. The major function of the TCT is to facilitate patients' admission process from the ED to acute care units and to ensure the admitted patient receives a bed assignment prior to a Hospitalist/resident team assignment. Three multidisciplinary rounds were performed daily on each medicine unit to discuss patients' care plans and disposition. Process data and performance feedback were reviewed weekly and improvement ideas were immediately tested.
RESULTS: Informal interviews with staff revealed positive feedback with regards to better communication among care teams and more efficient workflow. Quantitative results showed statistically significant improvement in several measures, including median time between ED admits to head-in-bed from 4.43 h to 3.82 h, with a p-value of 0.05; median length-of-stay from 2.73 days to 1.82 days, with a p-value of <0.001. Discharge time of Hospitalists teams also improved from a median of 5:28 PM to 4:45 PM with a p-value of 0.004.
CONCLUSIONS: Geographic cohorting of Medicine patients at UMass Memorial Healthcare was implemented in order to improve quality of care and workflow within the medical center among Hospitalist teams, nursing, and support staff while providing care for Medicine patients. Various measures put in place to ensure improved quality of care and process flow included the formation of the TCT, daily multidisciplinary rounds, as well as data-driven decision-making for background studies and sustainment. This work has demonstrated the successful use multidisciplinary tools to design process changes in order to improve quality of care and facilitating smoother patient flow in the medical center.

GLUCAGON-LIKE PEPTIDE-1-BASED THERAPIES AND RISK OF HOSPITALIZATION FOR ACUTE PANCREATITIS IN TYPE 2 DIABETES: POPULATION BASED MATCHED CASE-CONTROL STUDY Sonal Singh[1]; Hsien-Yen Chang[2]; Thomas M. Richards[2]; Jonathan Weiner[2]; Jeanne M. Clark[1,2]; Jodi B. Segal[1,2]. [1]Johns Hopkins University, Baltimore, MD; [2]Johns Hopkins University, Baltimore, MD. (Tracking ID #1627572)

BACKGROUND: Acute pancreatitis has significant morbidity and mortality. Previous studies have raised the possibility that glucagon-like peptide-1-based therapies (GLP-1) including the GLP-1 mimetic (exenatide) and the dipeptidyl peptidase 4 inhibitor (sitagliptin) may increase the risk of acute pancreatitis. We aimed to test whether GLP-1 based therapies, such as exenatide and sitagliptin, are associated with an increased risk of acute pancreatitis.
METHODS: We conducted a population based case-control study in a large administrative database in the United States from 2005 to 2008. We included adults with type 2 diabetes aged 18–64; 1269 hospitalized cases with acute pancreatitis were dentified using a validated algorithm and 1269 controls matched on age category, sex, enrollment pattern, and diabetes complications. Conditional logistic regression was used to analyze the data.
RESULTS: The mean age of included individuals was 52 years and 57 % were male. Cases with pancreatitis were significantly more likely than controls to have hypertriglyceridemia (12.9 % vs 8.3 %), alcohol use (3.2 % vs 0. 2 %), gallstones (9.1 % vs 1.3) tobacco abuse (16.2 % vs 5.5 %), obesity (19.6 % vs 9.8 %) biliary and pancreatic cancer (2.8 % vs 0 %), cystic fibrosis (0.8 % vs 0 %) and any neoplasm (29.9 vs 18.0 %). After adjusting for available confounders and metformin use, both current use of GLP-1-based therapies within 30 days (adjusted Odds Ratio [aOR], 2.24, 95 % Confidence intervals 1.36–3.68) and recent use greater than 30 days and less than 2 years (aOR, 2.01, 95 % CI 1.27–3.18) were associated with significantly increased odds of acute pancreatitis relative to the odds in non-users.
CONCLUSIONS: Acute pancreatitis has significant morbidity and mortality. In this administrative database study of US adults with type 2 diabetes, treatment with GLP-1-based therapies, sitagliptin and exenatide, was associated with an increased odds of hospitalization for acute pancreatitis. Clinicians should carefully balance the known benefits of these agents on glucose-lowering along with the risk of acute pancreatitis to determine the optimal therapy for their patients in a shared decision-making context.

GLYCEMIC CONTROL AND URINARY INCONTINENCE IN NURSING-HOME ELIGIBLE PATIENTS WITH DIABETES MELLITUS Sei J. Lee[1]; Jessamyn Conell-Price[2]; Irena Stijacic Cenzer[1]; Catherine Eng[3]. [1]SFVAMC, UCSF, San Francisco, CA; [2]UCSF/UCB, San Francisco, CA; [3]On Lok Lifeways, San Francisco, CA. (Tracking ID #1633505)

BACKGROUND: Although poor glycemic control is thought to worsen urinary incontinence, few studies have explored this relationship in older patients with diabetes and functional disability. Thus we examined the relationship between Hemoglobin A1c (HbA1c) levels and urinary incontinence in nursing-home eligible community-dwelling older adults with diabetes.
METHODS: We examined 571 older adults with diabetes enrolled in On Lok Lifeways between 2002 and 2010. On Lok, like other Programs of All-Inclusive Care for the Elderly, enrolls nursing home-eligible elders and provides comprehensive medical and social services with the goal of delaying or preventing institutional care. HbA1c values (n=2745) were categorized as < 7, 7–7.9, 8–8.9, >9 %. Urinary incontinence was assessed every 6 months by nursing staff; "never" and "seldom" were combined into the No incontinence category and "often" and "catheter" were combined into the Yes incontinence category. Each HbA1c measure was linked to the closest assessment of incontinence and we performed mixed-effects logistic regression to account for clustering by patient. We also accounted for age, gender, race, cognitive status, dependence in ambulating and transferring, depression, diabetic medications and complications, and use of diuretic medications.
RESULTS: Participants were elderly, with a mean age of 81, and most were female (67 %) and Asian (65 %). Thirty-seven percent had moderate to severe cognitive impairment and 24 % had difficulty ambulating. The mean HgbA1c value was 7.4 and 11 % were taking insulin. We found that higher A1c levels were not associated with increased risk for urinary incontinence. In the unadjusted analysis, there was no significant relationship between HbA1c and incontinence. When we adjusted for confounding variables, there was no significant association between

HbA1c and incontinence, and the odds of incontinence was similar at every HbA1c level.

CONCLUSIONS: We found no evidence to suggest that glycemic control is associated with urinary incontinence in nursing-home eligible, community-dwelling older adults with diabetes.

Urinary Incontinence by Hemoglobin A1c Levels in Nursing-Home Eligible Older Adults

Hemoglobin A1c (%) Unadjusted % incontinence Adjusted* Odds Ratio (95 % CI) *p*-value

<7 19 ref ref

7.0–7.9 18 0.88 (0.57, 1.4) 0.57

8.0–8.9 18 1.1 (0.62, 1.8) 0.82

≥9 17 0.98 (0.50, 1.9) 0.95

*Adjusted for age, gender, race, cognitive status, dependence in ambulating and transferring, depression, diabetic medications and complications, and use of thiazide diuretics.

HIT HAPPENS: THE INPATIENT DILEMMA OF HEPARIN INDUCED THROMBOCYTOPENIA Pooja Kumar; Surekha Maddula; Robert E. Graham. Lenox Hill Hospital, New York, NY. (Tracking ID #1642232)

BACKGROUND: Heparin Induced Thrombocytopenia (HIT) is a dangerous and potentially life threatening complication of heparin therapy that results in both thrombocytopenia and severe arterial and venous thromboembolism. The diagnosis of HIT is based on both clinical assessment and laboratory testing. The clinical assessment is based largely on the 4 T score. The laboratory tests include ELISA to detect antibodies formed against a Heparin-PF4 complex, as found in HIT. Due to the high number of false negatives found with the ELISA test, the Serotonin Release Assay (SRA) is considered the gold standard diagnostic test to confirm HIT.

METHODS: Our objective was to review the diagnostic criteria of HIT with emphasis on the clinical assessment of HIT in the inpatient setting. In a retrospective review of 24 Internal Medicine patients with known or suspected HIT over a 4 month period, medical records were evaluated for the assessment of HIT using the 4 T score. The cases were also reviewed for management of HIT to include heparin listed as an allergy, heparin agent stopped, and alternative form of anticoagulation started.

RESULTS: In 12/24 patients, HIT Ab and/or SRA were appropriately sent. In 12/24 patients, HIT Ab and/or SRA were inappropriately sent. 0/24 patients had appropriate diagnosis and management of HIT. 7/24 patients had heparin product stopped, and only 2/24 patients had appropriate anticoagulation started. 0/24 patients had heparin listed as an allergy.

CONCLUSIONS: Based on our data, we plan to institute a HIT protocol that would appear once either the ELISA or SRA was ordered, and not allow for the two laboratory tests to be ordered simultaneously. The protocol would include a 4 T score calculator and mandate that all heparin products be stopped immediately if HIT was appropriately suspected. Heparin would be immediately listed as an allergy, and an alternative form of anticoagulation would be started. This HIT protocol will hopefully help us minimize such a large degree of both the misdiagnosis and the mismanagement of HIT. We hope that this will be cost effective in preventing superfluous laboratory testing and, more importantly, lifesaving by preventing deadly thromboembolism in those with HIT.

HABLAMOS JUNTOS (TOGETHER WE SPEAK): A BRIEF PATIENT-REPORTED MEASURE OF THE QUALITY OF INTERPRETERS Efrain Talamantes[1,2]; Gerardo Moreno[3]; Lourdes R. Guerrero[4]; Carol Mangione[2,4]; Leo Morales[5]. [1]UCLA and U.S. Department of Veterans Affairs, Los Angeles, CA; [2]University of California, Los Angeles, Los Angeles, CA; [3]University of California, Los Angeles, Los Angeles, CA; [4]University of California, Los Angeles, Los Angeles, CA; [5]University of Washington, Seattle, CA. (Tracking ID #1621987)

BACKGROUND: Although research supports the use of trained interpreters when providers care for patients with limited English proficiency(LEP), less is known about the quality of interpretation from the patient's perspective. This study examined the psychometric properties of a patient-reported measure of quality of interpreters and its association with patient's reports of doctor communication and satisfaction with care.

METHODS: We analyzed pooled, cross-sectional survey data collected in two waves between 2003 and 2006 from 1590 Latino adult women and men with LEP who participated in the Hablamos Juntos (HJ) national demonstration project. Quality of interpreters was assessed with four survey items that asked patients about their experiences with interpreters (item 1. listening carefully, item 2. repeating questions to doctor, and item 3. using words that are hard to understand, and item 4. spending enough time with patients). Doctor communication was examined with a multiple-item measure (listening carefully to patients, explaining things in a way patients can understand, showing respect for what patients have to say, and spending enough time with patients), and satisfaction with care was assessed with a single-item measure.

RESULTS: Sixty-nine percent (1,104) of patients surveyed used interpreters. Cronbach's alpha for the three items assessing interpreter quality was 0.31; dropping item 3 resulted in an alpha of 0.56. Items 1 and 2 were moderately correlated with doctor communication and satisfaction with care scores (r=0.21–0.39) supporting construct validity. The associations between interpreter quality and doctor communication and satisfaction with care remained significant in analyses adjusting for sex, gender, education, marital status, income, insurance coverage, health status, survey wave, and site of care.

CONCLUSIONS: Two of three items can be scaled to measure quality of interpretation from the patient's perspective. Quality of interpretation reported by patients is associated with doctor communication and satisfaction with care. More research is needed to fully elucidate how patients with LEP evaluate the quality of interpreters and how it relates to patient outcomes.

HAND HYGIENE BELIEFS AMONG PHYSICIANS IN A COMMUNITY HOSPITAL Amrita John; Aurora Pop-Vicas. Memorial Hospital of Rhode Island, Pawtucket, RI. (Tracking ID #1642777)

BACKGROUND: The cornerstone of infection prevention, hand-hygiene (HH) compliance remains challenging. Exploring physicians' perceptions toward HH can identify opportunities for performance improvement.

METHODS: Setting: 294 bed university-affiliated community hospital. Study design: cross-sectional multiple choice survey, measuring: perceived average physician HH compliance and reasons for non-compliance; perceived need for additional training; and suggested solutions to improve performance. Participants: House officers and attending physicians on staff at the study site.

RESULTS: Of the 119 respondents, 48 % and 52 % were house officers and attending physicians, respectively. Medical, surgical, and other specialties were represented by 81 %, 17 %, and 2 %, respectively. Alcohol-based hand disinfectants were preferred over soap and water (71 % vs. 29 %). The majority (78 %) believed our average HH physician compliance to be between 50 and 89 %. A total of 14 % believed it to be≥ 90 %, with attendings more likely to perceive it as such (OR 3.6, [1.01–15.9], P=0.027). Directly observed physician HH compliance during the 3 months preceding the survey had, in fact, averaged 77 %. The most common survey reasons cited for noncompliance were a high workload (49 %), inadequate access to sinks (31 %), forgetfulness (13 %), and inadequate access to alcohol-based hand disinfectants (10 %). House officers were more likely to believe that entering a patient's room without performing HH is acceptable when no direct patient contact is anticipated (OR 5.3, [1.3–31.5, P=0.008). Attendings were more likely to believe that trainees and other health-care workers model their HH practices after physician behaviour (OR 8.8, [1.8–82.6, P=0.001). A small majority (53 %) believed that further HH training would be of benefit, while surgeons were more likely to consider further HH training unnecessary (OR . 3.0 [1.0–9.4], P=0.02). Most physicians (92 %) believed the medical evidence associating HH with preventing nosocomial infections is excellent, while surgeons tended to rate the evidence as only fair or poor

(OR 3.9, [0.7–18.2], P=0.04). As interventions to increase compliance, most physicians would prefer a system of rewards (63 %) over penalties (17 %). Regular feedback on individual performance was the most common other intervention suggested. Electronic monitoring of HH compliance was favoured by only 48 % of respondents.

CONCLUSIONS: Most physicians in our study were realistic about HH compliance and recognized their role in modelling infection control behaviour to others. Misconceptions regarding HH practices, scepticism over the role of HH in infection prevention, and over-estimation of HH compliance were infrequently found. Addressing these concerns through further training and individualized performance feedback may improve overall HH performance.

HANDS ON THE HOOD, GRANDPA: ASSESSING THE NEED FOR GERIATRICS HEALTH TRAINING AMONG POLICE Rebecca T. Brown; Cyrus Ahalt; Michael A. Steinman; Brie Williams. University of California, San Francisco/San Francisco VA Medical Center, San Francisco, CA. (Tracking ID #1594932)

BACKGROUND: Police are first responders in a variety of emergencies with older adults in which age-related health or social problems play a critical role. For example, police are called for criminal or disruptive behavior related to cognitive impairment or substance use, or to respond to a lonely older adult who calls 911 to create an opportunity for social interaction. Although police play a front-line role in these encounters, their attitudes towards aging, knowledge of age-related health problems such as dementia, and ability to refer older adults to appropriate services are unknown.

METHODS: We administered questionnaires to San Francisco police officers attending mandatory crisis intervention training (participation rate, 92/123 (75 %)). Questionnaires assessed frequency of interactions with older adults, attitudes towards older adults (Geriatrics Attitudes Scale: score ≥3 indicates a positive attitude), and perceived knowledge deficits.

RESULTS: Although 89 % of police reported working with older adults at least monthly, only 33 % considered themselves knowledgeable about age-related health problems. Nearly all participants (95 %) had a positive attitude towards older adults (Geriatrics Attitudes Scale score ≥3), and a similar percentage considered geriatrics training important (95 %). Many police reported having knowledge of age-related health issues; for example, 73 % reported that they could explain the difference between depression, delirium, and dementia. However, several knowledge gaps were identified: 43 % of participants reported that they could not describe how depression, delirium, or dementia affect older adults, 54 % could not describe types of surrogate decision-makers for impaired older adults, and 61 % could not identify local organizations that provided social services for older adults.

CONCLUSIONS: Community police who interact frequently with older adults had positive attitudes towards older adults, but had several self-reported knowledge deficits about age-related health problems and resources. Although police are not traditional health care team members, they may benefit from geriatrics health training to address key knowledge deficits that could adversely affect their interactions with older adults.

HEALTH CENTERS CARE FOR A SICKER POPULATION WITH FEWER CLINIC VISITS AND FEWER HOSPITALIZATIONS Neda Laiteerapong[1]; James Kirby[2]; Yue Gao[1]; Tzy-Chyi Yu[3]; Ravi Sharma[4]; Sang Mee Lee[1]; Marshall Chin[1]; Aviva G. Nathan[1]; Quyen Ngo-Metzger[2]; Elbert S. Huang[1]. [1]University of Chicago, Chicago, IL; [2]Agency For Healthcare Research and Quality, Rockville, MD; [3]NORC, Bethesda, MD; [4]Bureau of Primary Health Care, Rockville, MD. (Tracking ID #1614983)

BACKGROUND: The Health Center (HC) program is a vital primary care safety net program supported by the Health Resources and Services Administration and cares for ~20.5 million people. Understanding how HCs influence utilization and quality of care for the primary care safety net is critical for the program's sustainability. Previous studies have been limited in how they identify HC patients and may not sufficiently address selection issues leading patients to be cared for at HC vs. other sites of care. We used unique geocoding data to more accurately identify HC patients and propensity score methods to address selection issues in order to compare utilization and preventive care receipt between HC patients and comparable outpatients.

METHODS: Pooling five, 2-year panels of Medical Expenditure Panel Survey data (2004–2008), we studied adults, ≥18 years, living ≤20 miles of a HC, with ≥1 outpatient visit in the first panel year. We identified HC patients if ≥50 % of their outpatient care was at HCs (n=1024). Using second panel year data, we compared utilization (office visits, hospitalizations and emergency room (ER) visits) and 10 preventive measures (routine visits, diet/exercise advice, influenza vaccination, dental care and hypertension, cholesterol, cervical/breast/colon cancer screening) between HC and other patients (non-HC, n=32,796). We modeled the overall population and non-dual Medicaid (HC, n=181; non-HC, n=1839), and uninsured (HC, n=349; non-HC, n=3622) subpopulations. Due to small sample sizes, hospitalizations could not be modeled for the Medicaid subpopulation and only 4 preventive measures could be modeled for the Medicaid and uninsured subpopulations. We calculated propensity scores to adjust for 38 characteristics (e.g., sociodemographics, insurance type, comorbidity, quality of life, disability). Analyses accounted for the complex survey design by including survey weights, which were multiplied by inverse probability treatment weights from propensity scores. We modeled utilization using negative binomial regression and preventive care receipt using logistic regression.

RESULTS: HC and non-HC patients differed in 37 out of 38 included characteristics. HC patients were less educated, poorer, more often minority, and had more diseases, more disability, and worse quality of life. Compared to non-HC patients, HC patients had lower rates of office visits (incidence rate ratio (IRR), 0.58, p<.001) and hospitalizations (IRR, 0.28, p<.001), but no difference was detected in ER visits. HC patients received more (2 out of 10 measures) or no different (7 out of 10 measures) preventive care. Among Medicaid patients, HC and non-HC patients had no difference in office visits, but HC patients had higher rates of ER visits (IRR, 1.60, p=.01). There was no difference in preventive care between Medicaid HC and non-HC patients for all measures. Uninsured HC patients had lower rates of office visits (IRR, 0.65, p=.01), but no difference in hospitalizations or ER visits was detected. Uninsured HC patients had more preventive care compared to non-HC patients for 3 out of 4 measures.

CONCLUSIONS: Health Centers care for a socially and medically disadvantaged population; however, HC patients have fewer clinic visits and hospitalizations and receive similar or more preventive care compared to other patients. Further study is needed to understand how Health Centers are able to provide high levels of preventive care with fewer clinic visits and fewer hospitalizations.

HEALTH LITERACY DID NOT INFLUENCE EFFECTIVENESS OF COMPUTER TELEPHONY-BASED POST-DISCHARGE SUPPORT Jessica A. Eng[1]; Joshua S. Richman[2]; Thomas Houston[3]; Christine Ritchie[1]. [1]UCSF/San Francisco VA Medical Center, San Francisco, CA; [2]UAB/Birmingham VA Medical Center, Birmingham, AL; [3]University of Massachusetts, Worcester, MA. (Tracking ID #1637471)

BACKGROUND: The use of technology has been advocated to enhance or replace resource-intensive post-hospitalization interventions for older adults with chronic disease. Interventions using the internet or smart phones are often challenging to those with low health literacy. In contrast, low-cost computer telephony interactive voice response systems (IVRS) allow for interaction between patients and databases using a simple telephone. Because technology-assisted interventions are often less effective in those with low health literacy, we tested to see if health literacy influenced the effectiveness of the intervention in a recent clinical trial using IVRS to support COPD patients.

METHODS: The E-Coach Intervention involved pre-discharge education by a care transition nurse (CTN) followed by post-discharge IVRS calls. The CTNs monitored patient IVRS responses through a web-based

dashboard, and provided telephone-based support as needed. Subjects with COPD at a tertiary care hospital were randomized to the IVRS intervention vs. standard care. Health literacy was measured prior to discharge using the Wallace Health Literacy Screener, which asks "How confident are you filling out medical forms by yourself?" We dichotomized health literacy to "adequate" (extremely/quite a bit) and "low" (somewhat/a little bit/not at all). The main outcome was days out of community (hospitalized or dead) within 30 days of initial hospital discharge. Generalized linear models were used, and adjusted analyses included age, sex, race, marital status, adequate finances, and comorbidity.
RESULTS: 132 subjects with COPD were randomized (46 % female, 33 % nonwhite, 34 % self-reported financial insecurity, 27 % with low health literacy, 99 % Medicare beneficiaries). Although the intervention decreased days out of the community, there was no association between health literacy and intervention effect in the unadjusted or adjusted models. Female sex and financial insecurity were independently associated with increased days out of community.
CONCLUSIONS: We found no difference in response to an IVRS-based post-discharge support intervention across health literacy. For interventions focused on Medicare populations with a broad array of health literacy, simple IVRS-based interventions may be more beneficial than more complex technology-based solutions.

HEALTH STATUS, HEALTH CARE UTILIZATION, AND LEGAL INCIDENTS FOLLOWING TRAUMATIC BRAIN INJURY IN HOMELESS AND VULNERABLY HOUSED ADULTS IN THREE CANADIAN CITIES Matthew To[1]; Kristen O'Brien[1]; Anita Palepu[2]; Anita M. Hubley[3]; Susan Farrell[4]; Tim Aubry[5]; Evie Gogosis[1]; Wendy Muckle[6]; Stephen Hwang[1,7]. [1]St. Michael's Hospital, Toronto, ON, Canada; [2]University of British Columbia, Vancouver, BC, Canada; [3]University of British Columbia, Vancouver, BC, Canada; [4]University of Ottawa, Ottawa, ON, Canada; [5]University of Ottawa, Ottawa, ON, Canada; [6]University of Ottawa, Ottawa, ON, Canada; [7]University of Toronto, Toronto, ON, Canada. (Tracking ID #1642665)

BACKGROUND: The prevalence of traumatic brain injuries (TBI) and its associations with health, subsequent health care utilization, and legal incidents in homeless and vulnerably housed populations have not been widely studied. The objectives of this study are to (1) determine the lifetime prevalence of TBI in homeless and vulnerably housed individuals across three Canadians cities (Toronto, Ottawa, and Vancouver), (2) characterize the associations between a history of TBI and health status at baseline, and (3) characterize the associations between a history of TBI at baseline and subsequent health care utilization, legal involvement, and victimization over a one-year follow-up period.
METHODS: Homeless and vulnerably housed persons aged 18 or older and were single were recruited. Data on demographic characteristics, health status and health conditions, health care utilization, and legal incidents were collected using structured, in-person interviews. Follow-up surveys were administered approximately 1 year after the baseline survey with questions on outcomes of interest including health care utilization (emergency department (ED) use, frequent ED use (≥3 visits per year) and hospital admission), legal incidents (arrests and/or incarcerations), and victimization (physical and sexual assault) over the previous 12 months. Descriptive statistics were used to compare participants with and without a history of TBI. Multivariate logistic regression models were developed to determine whether a history of TBI was associated with health care utilization, legal incidents, and victimization.
RESULTS: 1,182 homeless or vulnerably housed adults were included in the analysis and data for 964 participants were collected at follow-up. Overall, the lifetime prevalence of TBI in our sample was 61 %. Those with a history of TBI were significantly more likely to be male, White, born in Canada, completed some high school, and to have experienced more lifetime years of homelessness. Compared to those without a history of TBI, participants with a history of TBI had lower SF-12 Physical Component Summary scores (mean score 43.2 vs. 46.5, $p<0.001$), lower SF-12 Mental Component Summary scores (mean score 37.7 vs. 41.3, $p<0.001$) and were more likely to be living with another chronic health condition (82.0 % vs. 66.9 %, $p<0.001$). History of TBI was independently associated with ED use (AOR 1.5, 95 % CI 1.10–2.94) but not with frequent ED use (AOR 1.4, 95 % CI 0.96–2.10) or with hospital admission (AOR 1.50, 95 % CI 0.99–2.29) over the subsequent year. A history of TBI was independently associated with being arrested or incarcerated (AOR 1.79, 95 % CI 1.3–2.48) and with being a victim of physical assault (AOR 2.81, 95 % CI 1.96–4.03) but not with sexual assault (AOR 1.63, 95 % CI 0.86–3.09) over the subsequent year.
CONCLUSIONS: A history of TBI is very common among both homeless and vulnerably housed individuals. Individuals with a history of TBI had more comorbidity and poorer health status. Individuals with a history of TBI were also more likely to be ED users, arrested or incarcerated, and victims of physical assault over the subsequent year, highlighting the serious challenges to health and social function that these individuals face.

HEALTH COMMUNICATION QUALITY PREDICTS SELF-CARE BEHAVIORS AND TREATMENT SATISFACTION AMONG LOW-INCOME DIABETES PATIENTS IN A PUBLIC HEALTH SETTING Richard O. White[1]; Ken Wallston[2]; Sunil Kripalani[3]; Russell L. Rothman[3]. [1]Mayo Clinic, Jacksonville, FL; [2]Vanderbilt University, Nashville, TN; [3]Vanderbilt University, Nashville, TN. (Tracking ID #1642330)

BACKGROUND: Despite strong evidence about the optimal treatment of diabetes, care often remains suboptimal particularly for minorities and persons with limited resources. Ineffective health communication between providers and low-literacy patients may contribute to suboptimal care in these settings. The aim of this analysis is to examine the relationship between provider-patient communication and patient outcomes within the context of a low-literacy/numeracy-focused intervention to improve diabetes care and outcomes in a public health setting.
METHODS: Utilizing a cluster-randomized trial design, healthcare providers from 10 public health department clinics were exposed to training in effective health communication and the use of a low-literacy diabetes toolkit versus an active control condition based on content from the National Diabetes Education Program. Baseline patient assessments included: demographics, measure of health communication (Interpersonal Processes of Care Survey (IPC-18)), health literacy (STOFHLA), self-care behaviors (diet, foot care, blood glucose testing), medication adherence (ARMS), treatment satisfaction (DTSQ) and A1C. Continuous and categorical variables were described using means ± SD and percentiles. Multivariable linear regression models were used to evaluate the association between health communication quality (IPC-18) and, self-care behaviors, medication adherence, diabetes treatment satisfaction, and A1C. All models were adjusted for intervention status, age, race, gender, literacy status, income, insurance, insulin status and years since diagnosis.
RESULTS: To date 349 patients have been enrolled: mean age was 49.9± 9.5, 61 % were female, mean A1C was 9.6±2.1, and participants primarily self-reported three racial/ethnic categories (White 63 %, Black 17 %, and Hispanic/Latino 20 %). Most were uninsured (91 %), low income (83 % with <$20 k annually), and had moderate educational attainment (73 %≤ HS). According to the STOFHLA, 17 % had limited health literacy skills and 67 % had poor diabetes-related math skills (DNT). In adjusted analyses, lack of clarity was significantly associated with worse patient foot care ($\beta=-0.21$ [−1.02, −0.09], $p=0.02$), worse medication adherence ($\beta=0.43$ [1.1, 2.7], $p<0.001$), and lower treatment satisfaction ($\beta=-0.24$ [−2.9, −0.4], $p=0.009$). Eliciting concerns (EC), explaining results (ER), and deciding together (DT) were each independently associated with improved medication adherence (EC: $\beta=-0.19$ [−2.2, −0.01], $p=0.04$, ER: $\beta=-0.33$ [−2.8, −0.7], $p=0.001$, DT: $\beta=-0.23$ [−1.6, −0.2], $p=0.009$), and greater treatment satisfaction (EC: $\beta=0.25$ [0.44, 3.9], $p=0.01$, ER: $\beta=0.28$ [0.76, 3.9], $p=0.004$, DT: $\beta=0.15$ [−0.14, 2.1], $p=0.08$]. Communication quality was not significantly associated with glycemic control for any of the examined variables.
CONCLUSIONS: In a sample of adult diabetes patients seeking care in a public health department setting, the quality of provider communication

was independently associated with important self-care behaviors and overall treatment satisfaction after adjusting for potential confounders. Health communication quality may be an important modifiable factor that can help improve the delivery of diabetes care to vulnerable populations at risk of poor control.

HEALTHCARE SYSTEM SUPPORTS FOR INTERNISTS CARING FOR YOUNG ADULT PATIENTS WITH PEDIATRIC ONSET CHRONIC ILLNESS: A QUALITATIVE STUDY Sophia Jan[1,2]; Dava Szalda[2]; Manuel E. Jimenez[2,4]; Jeremiah Long[1]; Amelia Ni[1]; Judy A. Shea[1,3]. [1]Perelman School of Medicine of the University of Pennsylvania, Philadelphia, PA; [2]Children's Hospital of Philadelphia, Philadelphia, PA; [3]University of Pennsylvania, Philadelphia, PA; [4]Children's Hospital of Philadelphia, Philadelphia, PA. (Tracking ID #1631375)

BACKGROUND: Over 90 % of pediatric patients with special healthcare needs are living into adulthood necessitating internists to care for a new variety of diagnosis and disease processes. Previous studies have identified patient and provider characteristics which limit care of these patients. We examined current practices in the care of adolescents and young adults with special healthcare needs by internists in order to identify barriers and possible interventions to improve care.
METHODS: We conducted semi-structured interviews with a convenience sample of internal medicine physicians. We purposively sampled participants based on their known or reported experience with young adults with pediatric onset chronic illness using a snowball strategy. Open-ended questions explored processes of care around the initial and subsequent visits to internal medicine practices. Interviews were recorded, transcribed, coded and continued until we reached thematic saturation. We identified themes using modified grounded theory.
RESULTS: Twenty-one practicing physicians in four different states in both academic and private practices were interviewed. Internists identified several factors that facilitated care for young adult patients with pediatric onset chronic illnesses. These included: requesting medical records and medical summary from pediatric providers at the initial referral contact; screening questions for all new patients by registration staff; having extended time slots for initial visits; setting family and provider expectations at the beginning of the patient-doctor relationship; email and other forms of electronic communications with both family and other members of medical team; availability and proficiency with electronic medical records within the practice; adequate call center, social work, and case-management support. Most providers also commented that being part of an academic practice, rather than private practice, helped shield providers from financial disincentives to accepting and continuing care for these complex patients.
CONCLUSIONS: Internists identified many potential interventions to help support providers caring for young adults with pediatric onset chronic illnesses. These interventions should be further studied to determine their impact on access and quality of care for these complex patients.

HEALTHCARE UTILIZATION BY INDIVIDUALS WITH CRIMINAL JUSTICE INVOLVEMENT: RESULTS OF A NATIONAL SURVEY Joseph W. Frank[1,2]; Jeffrey A. Linder[1,2]; William Becker[3,4]; David A. Fiellin[3]; Emily A. Wang[3]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Yale University School of Medicine, New Haven, CT; [4]VA Connecticut Healthcare System, West Haven, CT. (Tracking ID #1642108)

BACKGROUND: Individuals with criminal justice involvement —those arrested, on parole or probation —have increased morbidity and mortality yet barriers to healthcare exist. Community supervision in the form of parole or probation may positively impact need for and access to care, however. We sought to examine the association between recent criminal justice involvement and utilization of hospital and emergency department (ED) services and to estimate associated expenditures.
METHODS: We conducted a serial cross-sectional analysis of adult respondents in the 2008–2011 National Survey on Drug Use and Health (N=154,356), a nationally representative survey of the non-institutionalized U.S. civilian population. We created three mutually exclusive categories for self-reported past-year criminal justice involvement: 1) any parole or probation, 2) arrest only without community supervision, or 3) no involvement. Our two dependent variables were self-reported past-year hospital and ED utilization. We dichotomized each dependent variable (any vs. no utilization). We used the chi-square test to examine bivariate associations and multivariable logistic regression to adjust for sociodemographic and clinical characteristics. We then estimated annual expenditures using data from the 2008 to 2010 Medical Expenditure Panel Survey, a set of large-scale surveys that provides nationally representative cost estimates, adjusting for age, gender and calendar year.
RESULTS: In the United States, 2.5 % of adults (N=6212) reported past-year parole or probation and 1.7 % (N=4586) reported past-year arrest only. Individuals with any past-year criminal justice involvement (parole, probation or arrest) were more likely to be male (73 % vs. 47 %), members of minority groups (43 % vs. 32 %), publicly insured or uninsured (60 % vs. 28 %) and to report psychiatric (16 % vs. 9 %) and substance use diagnoses (38 % vs. 8 %) (P<.0001 for all comparisons). Hospitalization was more common among individuals with past-year parole or probation (12.3 %) or arrest only (14.3 %) compared to individuals with no past-year criminal justice involvement (10.5 %) (P<.0001). Similarly, ED utilization was more common among individuals with past-year parole or probation (39.3 %) or arrest only (47.2 %) compared to individuals with no past-year criminal justice involvement (26.9 %) (P<.0001). After adjustment for sociodemographic and clinical characteristics, past-year hospitalization was more likely for those with past-year parole or probation (odds ratio [OR] 1.33; 95 % confidence interval [CI] 1.14–1.54) and past-year arrest only (OR 1.51; 95 % CI 1.28–1.78) compared to individuals with no past-year criminal justice involvement. Similarly, past-year ED utilization was more likely among those with past year parole or probation (OR 1.25; 95 % CI 1.13–1.38) and past year arrest (OR 1.68; 95 % CI 1.50–1.88). Individuals with any past-year criminal justice involvement (parole, probation or arrest) accounted for 4.2 % of the U.S adult population but an estimated 7.2 % and 8.5 % of national hospital and ED expenditures, respectively.
CONCLUSIONS: In this nationally representative sample, past-year criminal justice involvement is associated with increased hospital and ED utilization as well as increased expenditures. Individuals with criminal justice involvement are a large, identifiable "high utilizer" group, who may benefit from strategies to decrease need for hospital and ED services.

HELPFUL VS. HARMFUL: SOCIAL NETWORKS AND THEIR ASSOCIATION WITH WEIGHT LOSS Ginger J. Winston; Erica Phillips; Mary Charlson. Weill Cornell Medical College, New York, NY. (Tracking ID #1643698)

BACKGROUND: Obesity has been shown to spread through social networks. However, further data are needed on social network structure and function in weight loss behaviors, particularly in race/ethnic minority populations. The aim of this analysis was to examine social network structure, its influence on eating habits and relationship to weight loss among adults enrolled in a behavior change weight loss study.
METHODS: The Small Changes and Lasting Effects (SCALE) trial is an ongoing 1 year weight loss intervention among non-Hispanic black and Hispanic adults, BMI≥25 kg/m2, living primarily in Harlem and the South Bronx, New York. Participants made small changes in their eating behaviors and set individual physical activity goals. Social network members were defined as people important in the participant's life; for example family, friends, coworkers. Data on participants' social network structure were collected at study close-out using the convoy model of social support. The convoy model consists of 3 concentric circles (Fig. 1); the closest network members were listed in the inner circle (circle 1), members not as close in the middle circle, and least close in the outer circle. Participants identified the network members who influenced their eating habits and if they helped or hindered their eating goals in SCALE. Weight

loss was calculated as the difference between weight measured at study enrollment and close-out. Data were analyzed using chi-square and ANOVA tests as appropriate.
RESULTS: There were 45 index participants included in the analysis (mean age 51 years, 38 % female, 40 % non-Hispanic black, 60 % Hispanic) and 469 social network members. The average network size was 10.4 members, with the largest percent of network members in circle 1 (60 %) followed by circle 2 (25 %) and circle 3 (15 %). The majority of network members were women (62 % circle 1, 77 % circle 2 and 74 % circle 3). 77 % of participants indicated that at least one social network member influenced their eating habits, these members were primarily in circle 1 (74 %). Among the social network members who influenced eating habits, 80 % helped participants with their SCALE eating goals, 8 % made it more difficult, and 11 % had no impact ($p<0.0001$). Network members who helped participants with their eating goals were primarily in circle 1 (74 %). Children and friends were identified as being more helpful than partners/spouses (25 %, 25 % and 8 % respectively). Network members identified as helpful lived primarily outside the home (70 %). There was a trend towards greater weight loss among participants who reported having social network members that helped them with their eating goals compared to those without help (−3.4 lbs vs. + 3.8 lbs, $p=0.06$).
CONCLUSIONS: In SCALE, the majority of participants indicated that social network members influenced their eating habits. There was a trend towards greater weight loss among participants who had social network help in their eating behavior goals compared to those without help. These data provide information on the structure of social networks among overweight/obese adults residing in an urban setting and provide evidence that social networks can be helpful in weight loss efforts.

HELPING FOURTH-YEAR MEDICAL STUDENTS ENGAGE ETHICS AND PROFESSIONALISM: USING THE CHARTER ON MEDICAL PROFESSIONALISM TO PROMOTE REFLECTION ON THE CLINICAL TRAINING ENVIRONMENT AND INDIVIDUAL CLINICAL EXPERIENCE Lauris C. Kaldjian[1,2]; Laura A. Shinkunas[2]; Ellen E. Gordon[1]; Jerold C. Woodhead[3]. [1]University of Iowa, Iowa City, IA; [2]University of Iowa, Iowa City, IA; [3]University of Iowa, Iowa City, IA. (Tracking ID #1631487)

BACKGROUND: We introduced a required Professionalism Seminar for fourth-year medical students, using the 3 fundamental ethical principles and 10 professional commitments of the Charter on Medical Professionalism (Ann Intern Med 2002;136:243–246) to help students assess their experience of the clinical training environment and guide written reflections on ethical and professional challenges encountered as sub-interns. The Seminar involved a pre-Seminar survey, written reflections, group discussion of some written reflections, and a post-Seminar evaluation.
METHODS: During sub-internships in internal medicine, pediatrics, or obstetrics-gynecology in 2011–12, students completed an anonymous, 13-item, pre-Seminar survey to assess the degree to which the principles and commitments in the Charter are taken seriously in their clinical training, using a 5-point Likert scale (all the time, most of the time, some of the time, rarely, never). Students wrote reflections describing and assessing an experience from their sub-internship involving a patient and raising an ethical or professional issue. To guide their writing, students were asked to review the Charter and comment on which principles and commitments seemed most relevant to the experience described. An anonymous, post-Seminar evaluation was conducted. Survey item and evaluation response frequencies were calculated. Directed content analysis of written reflections determined types of ethical and professional issues addressed, using a published taxonomy (J Med Ethics 2012;38:130–132); summative content analysis determined the frequency of references to the Charter's principles and commitments. The study was IRB-approved.
RESULTS: Of 70 eligible students, 67 completed the pre-Seminar survey, 65 completed the post-Seminar evaluation, and 65 written reflections were available for analysis. Survey results showed no students believed any of the principles or commitments are taken seriously in the training environment all the time. Most students believed the principles of primacy of patient welfare, patient autonomy, and social justice are taken seriously most or some of the time (98.5 %, 80.6 %, and 61.2 %, respectively). Commitments least likely to be perceived as being taken seriously most or some of the time were: improving quality of care (73.1 %), improving access to care (61.2 %), and just distribution of finite resources (47.8 %). Written reflections addressed treatment decisions (73.8 %), justice (52.3 %), professional duties (43.1 %), communication (30.8 %), miscellaneous issues (26.2 %), quality of care (13.8 %), and student specific issues (3.1 %). In reflections, references to the Charter's principles (primacy of patient welfare, 43.1 %; patient autonomy, 35.4 %; social justice, 33.8 %) were more frequent than the most commonly cited commitments (honesty with patients, 24.6 %; just distribution of finite resources, 23.1 %; improving quality of care, 21.5 %). The post-Seminar evaluation indicated 60.0 % of students agreed or strongly agreed that the Charter helped them identify more ethical and professional issues when writing their reflections.
CONCLUSIONS: Students are able to use the Charter to assess ethical and professional aspects of the clinical training environment and guide reflection on individual clinical experiences. The Charter should be seen as a practical resource in clinical education to facilitate critical observation, individual reflection, and multidisciplinary group discussion of ethics and professionalism.

HEPATITIS B AND PRISON OFFICERS: FEARS AND KNOWLEDGE ABOUT HBV TRANSMISSION Laurent Gétaz; Alejandra Casillas; Maria Pfefferle; Hans Wolff. University Hospitals of Geneva and University of Geneva, Geneva, Switzerland. (Tracking ID #1639499)

BACKGROUND: It is important to examine the health beliefs of caretakers who are in close contact with populations at high risk of infectious diseases, as is the case with prison officers. Incorrect beliefs among prison officers may affect the efficacy of risk reduction programs for all individuals. The goal of this study was to assess prison officers' knowledge, fears, and protection strategies specific to hepatitis B (HBV) in the prison setting.
METHODS: This descriptive study included prison officers from five prisons in Western Switzerland. Data on demographics, specific fears and knowledge concerning various infectious diseases were collected by an anonymous standardized questionnaire. Here, focusing on questions addressing HBV, we present descriptive analyses about HBV transmission knowledge and protective behaviors, and the associations between fear of infection and incorrect health beliefs.
RESULTS: In 2012, 170 prison officers (96 % participation rate) completed the questionnaire: 88 % were men and 56 % worked at a pre-trial prison; 72 % of correctional officers thought they had a higher risk of infection given their occupation. However, only 72 % thought that they could transmit a disease to an inmate, or ever possibly cause an infectious outbreak (65 %). While the majority (85 %) recognized that contaminated needles could spread HBV, a lower proportion was aware of the risks related to tattooing (72 %), unprotected sexual intercourse (62 %), sharing razors (69 %) and toothbrushes (49 %). Sterile needles and condoms were identified as useful preventive measures by 82 % and 67 % of prison officers, respectively. Concerning incorrect transmission modes, shaking hands, food, and coughing were recognized as false by 70 %, 36 % and 30 % of the prison officers, respectively. In terms of protective behaviors, 43 % of participants stated that they used gloves when intervening in a fight. Most importantly, only 46 % of participants said they were vaccinated, 16 % were sure not to be vaccinated, while 38 % did not know their HBV vaccine status. Regarding perceived fear of HBV, 44 % had a moderate to great fear of HBV infection. There were significantly higher rates of false beliefs among prison officers with moderate to great fear of contracting HBV versus those with little or no fear when asked about handshaking (RR 2.18, 95%CI 1.31–3.62), coughing (RR 1.26, 95%CI1.03–1.55), and sharing food (RR 1.40, 95%CI 1.10–1.77) as possible transmission risks.
CONCLUSIONS: HBV knowledge and protective behaviors are suboptimal among prison officers. As well, fear of HBV infection is associated with incorrect health beliefs. Improving knowledge of HBV transmission and protection modes can decrease fears, and lead to more

efficient health behaviors, such as systematic vaccination and use of gloves. As primary care physicians in prison also rely on prison staff for patient referrals and ancillary medical support, it is increasingly important to address and improve the health knowledge of these close-contact populations, for the benefit of vulnerable patients residing in the prison setting.

HIGH RATES OF DIABETES IN ASIAN SUBGROUPS: A CASE FOR USE OF THE ASIAN BMI CATEGORIES Jane Jih[1]; Alka M. Kanaya[1,2]; Tung T. Nguyen[1,2]. [1]University of California San Francisco, San Francisco, CA; [2]Asian American Research Center on Health (ARCH), San Francisco, CA. (Tracking ID #1624876)

BACKGROUND: Asians are the fastest growing racial group in the US. Their health data are often not disaggregated, and most population-based surveys are not conducted in Asian languages. The California Health Interview Survey (CHIS) provides statewide estimates of major racial/ethnic groups and is conducted in multiple languages including English, Mandarin, Cantonese, Vietnamese and Korean. We used CHIS to study the prevalence of heart disease and its risk factors by Asian American subgroups to inform clinical practice and prioritize targeted interventions.
METHODS: The 2009 CHIS is a population-based, cross-sectional, random-dial telephone survey of non-institutionalized Californians with oversampling of Vietnamese and Korean populations. We restricted this analysis to non-pregnant adults ≥18 years who self-reported being Asian or non-Hispanic whites. Key variables included sociodemographic characteristics, health status, body mass index (BMI) and prevalence of heart disease and risk factors. We conducted weighted analysis with jackknife standard errors according to CHIS guidelines and adjusted for age and gender. We compared rates of overweight and obesity using standard BMI categories and the World Health Organization (WHO) Asian BMI categories.
RESULTS: Table 1 shows prevalence of heart disease and risk factors for non-Hispanic whites, all Asians, and the six largest Asian subgroups. The heterogeneity among Asian subgroups for BMI, diabetes, hypertension and heart disease prevalence was obscured when data were aggregated for all Asians. Using the standard BMI categories, all Asian subgroups had lower rates of overweight/obesity than non-Hispanic whites (54.5 %), but, using the WHO Asian categories, Korean (59.5 %), Filipino (69.6 %), Japanese (62.1 %), South Asian (55 %), and all Asians (54.4 %) had similar or higher rates. All Asian subgroups had higher prevalence of diabetes than non-Hispanic whites (6.0 %), with Filipinos (13.7 %), South Asians (11 %) and Koreans (10.4 %) having much higher rates. Japanese (26.3 %), Vietnamese (27.7 %) and Filipino (37.5 %) reported rates of hypertension similar to or higher than non-Hispanic whites (26.2 %). Japanese (7.1 %) and South Asians (6.4 %) had similar heart disease prevalence to non-Hispanic whites (6.9 %).
CONCLUSIONS: We found marked heterogeneity in the prevalence of obesity, diabetes, hypertension and heart disease among Asian Americans. Findings from this linguistically appropriate population-based survey reveal that Asian Americans have higher rates of diabetes, with the rates about twice as high among Filipinos, South Asians and Koreans, compared to non-Hispanic whites. Asian WHO BMI categories are more consistent with this finding because they show much higher rates of overweight/obesity among Asian Americans than the standard categories. Our findings support the use of in-language surveys, data disaggregation, and the appropriate cutoff points for overweight/obesity in Asian Americans.

Table 1. Prevalence of Overweight/Obesity, Diabetes, Hypertension and Heart Disease from 2009 CHIS

	Non-Hispanic Whites (n=31,085)	Total Asian (n=5,062)	Vietnamese (n=1,413)	Chinese (n=1,055)	Korean (n=950)	Filipino (n=505)	Japanese (n=427)	South Asian (n=411)
Standard BMI (%) Overweight/Obesity (≥ 25)	54.5	34.1	21.7	25.3	33.0	47.3	38.7	39.9
Asian WHO BMI (%) Overweight/Obesity (≥ 23)	71.5	54.4	34.9	46.2	59.5	69.6	62.1	55.0
Diabetes (%)	6.0	9.7	7.0	7.9	10.4	13.7	7.8	11.0
Hypertension (%)	26.2	27.6	27.7	23.9	21.7	37.5	26.3	20.3
Heart Disease (%)	6.9	4.4	3.1	4.5	2.6	4.7	7.1	6.4

BMI = Body Mass Index; WHO = World Health Organization

HIGHER QUALITY COMMUNICATION AND RELATIONSHIPS ARE ASSOCIATED WITH IMPROVED PATIENT ENGAGEMENT IN HIV CARE Tabor E. Flickinger[1]; Somnath Saha[2]; Richard D. Moore[1]; Mary Catherine Beach[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Portland VA Medical Center, Portland, OR. (Tracking ID #1638850)

BACKGROUND: Retention in HIV care is essential to receiving antiretroviral therapy, which dramatically improves morbidity and mortality for patients living with HIV and reduces HIV transmission as a key component of "test-and-treat" prevention strategies. Most prior work on retention in care has focused on patient factors as barriers to appointment adherence, with little attention to the role of patient-provider interactions. We hypothesized that patients' adherence to clinic appointments would be associated with the quality of communication and relationships with their HIV care providers.
METHODS: In an urban, academic HIV clinic, 1363 patients completed interviews assessing demographics, substance use, and patient ratings of the quality of communication and relationships with their providers on five domains: being treated with dignity and respect, being involved in decisions, being listened to, having information explained, and feeling known as a person. We calculated appointment adherence from clinic records as the number of completed appointments divided by the total number of routinely scheduled appointments over 1 year after the patient interview. We used linear regression analysis to investigate associations between appointment adherence and the five communication/relationship domains.
RESULTS: Mean age of the patient sample was 45.8 years; the majority of patients were male (65 %) and nonwhite (85 %). Sixty-six percent of patients were on antiretroviral therapy and 49 % had suppressed viral loads. For all patients in the study, the mean appointment adherence was 65 %. Appointment adherence was significantly higher for male versus female patients, white versus nonwhite patients, and those who had no recent substance use versus those who did. In analysis adjusted for patient race, sex, and substance use, patients kept more appointments if they had stronger relationships with their providers, as indicated by higher ratings on being treated with dignity and respect (p=0.022), being listened to carefully (p=0.009), having information explained in ways they could understand (p=0.003), and feeling known as persons (p=0.001). Being involved in decisions was not significantly associated with appointment adherence.
CONCLUSIONS: Appointment adherence was higher among HIV-infected patients who perceived higher quality communication and relationships with their providers. Enhancing providers' skills in effective communication and relationship-building may improve patient retention in HIV care.

HOME BASED AND OUTPATIENT PALLIATIVE CARE: CHALLENGES, OPPORTUNITIES AND MODELS OF CARE AMONG HOSPICE AGENCIES Allison Stark; Amy Kelley; Diane E. Meier; Melissa Aldridge Carlson. Mount Sinai School of Medicine, New York, NY. (Tracking ID #1638210)

BACKGROUND: The availability of outpatient palliative care services for patients who are not eligible for hospice is limited. This is despite tremendous growth in palliative care programs in U.S. hospitals. Hospice agencies are increasingly expanding service offerings to include palliative care for patients with advanced illness who do not qualify for hospice. The objectives of this study are to characterize models of non-hospice palliative care emerging from hospice agencies and to describe key challenges and opportunities.
METHODS: This study was conducted as a qualitative survey utilizing semi-structured interviews with hospice medical directors or administrators. The interview questionnaire focused on rationale for program development, program structure and strategy, and key challenges to development and sustainability. Hospice agencies in the New York City area were identified on the Hospice and Palliative Care Association of New York State website. A snowball sampling technique was utilized to identify

additional hospice agencies that offer non-hospice palliative care services. Interviews were audio recorded, coded and reviewed collectively to identify themes and trends.

RESULTS: Eighty-two percent (n=11) of hospice agencies contacted to date agreed to participate. Interviews have been conducted with eight hospice agencies thus far, representing both the not-for-profit and for profit sectors. Five of these hospice agencies are located in the New York City area. All hospices that provide non-hospice palliative care services cited meeting the unmet needs of patients with serious illness and improving their quality of life as the key drivers to the development of these services. Most also discussed the opportunity to increase hospice enrollment through transitioning patients from palliative care to hospice as an important value proposition. The most significant challenge described by hospice agencies providing non-hospice palliative care services is financial viability. Home based palliative care services are resource intensive without sufficient reimbursement. Outpatient palliative care services fare slightly better given the opportunity to see higher volumes of patients in a given time period. All agencies reported that their non-hospice palliative care services operate at a loss. Hospice agencies that do not provide palliative care services cited the lack of adequate reimbursement as their key deterrent. Several different models of palliative care service offerings have been developed by hospice agencies. Some offer a full continuum of palliative care services including hospital inpatient consultation, outpatient and home based care. Others have contractual agreements with payers, and in one case, with an accountable care organization, to provide palliative care services for high risk patients focusing on symptom management, advanced care planning and cost avoidance.

CONCLUSIONS: Hospice agencies are developing non-hospice palliative care services to meet the unmet needs of patients with advanced illness because they feel it is part of their underlying mission. The primary barrier to the development and sustainability of non-hospice palliative care programs is financial viability owing to a lack of adequate reimbursement. Selected hospice agencies are developing innovative models of non-hospice palliative care services that involve establishing contractual agreements with payers and accountable care organizations focused on demonstrating value through cost avoidance.

HOMELESSNESS, CIGARETTE SMOKING, AND DESIRE TO QUIT: A NATIONAL STUDY Travis P. Baggett[1,2]; Lydie A. Lebrun-Harris[3]; Nancy A. Rigotti[1,4]. [1]Massachusetts General Hospital, Boston, MA; [2]Boston Health Care for the Homeless Program, Boston, MA; [3]Health Resources and Services Administration, Rockville, MD; [4]Harvard Medical School, Boston, MA. (Tracking ID #1642559)

BACKGROUND: Cigarette smoking is common among homeless individuals, but whether the association between homelessness and smoking is independent of mental illness, substance abuse, and poverty is unknown. Homeless smokers are often assumed to be uninterested in quitting, although clinical experience and small studies suggest otherwise. We used data from a national survey to determine if homelessness is independently associated with current smoking or desire to quit.

METHODS: We analyzed data from the 2009 Health Resources and Services Administration Patient Survey (participation rate 72 %), a nationally representative survey of individuals using community health centers funded through Section 330 of the Public Health Service Act. These health centers target medically underserved populations, providing a sampling frame that includes both homeless and housed low-income individuals. We used multivariable logistic regression to examine the association between homelessness and (1) current cigarette smoking among all adults, and (2) past-year desire to quit among current smokers.

RESULTS: Of 2,678 adult respondents, 4 % were currently homeless and 11 % were formerly homeless. In unadjusted analyses, adults with any history of homelessness were more likely than never homeless respondents to be current smokers (57 % vs 27 %, $p<0.001$). In multivariable models, a history of homelessness was independently associated with current smoking (AOR 2.09; 95 % CI 1.49–2.93), even after adjusting for age, sex, race, veteran status, insurance, education, employment, income, mental illness, and alcohol and drug abuse. Housing status was not significantly associated with desire to stop smoking in unadjusted (p=0.26) or adjusted (p=0.60) analyses; 84 % of currently homeless, 89 % of formerly homeless, and 82 % of never homeless smokers reported wanting to quit in the past year.

CONCLUSIONS: A history of homelessness independently doubles the odds of being a current cigarette smoker. Despite this, homeless smokers do not differ from non-homeless smokers in their desire to quit. Our findings emphasize the need for creative efforts to reduce tobacco use disparities in this vulnerable population.

HORMONE THERAPY USE IN WOMEN VETERANS ACCESSING VA CARE: A NATIONAL CROSS-SECTIONAL STUDY Megan R. Gerber[1,2]; Suzanne Pineles[3]; Sandra Japuntich[3]; Bevanne Bean-Mayberry[4]; Matthew King[3]; Sally G. Haskell[5]. [1]VA Boston Healthcare System, Jamaica Plain, MA; [2]Boston University School of Medicine, Boston, MA; [3]VA Boston Healthcare System, Jamaica Plain, MA; [4]VA Greater Los Angeles Healthcare Sys, Los Angeles, CA; [5]VA Connecticut Healthcare System West Haven Campus, West Haven, CT. (Tracking ID #1638427)

BACKGROUND: The Women's Health Initiative (WHI) (2002) resulted in dramatic decline in hormone therapy (HT) use post menopause. National estimates (NHANES) showed a decline in HT use by women over 45 from 22.4 % in 1999–2000 to 4.7 % by 2009–2010. The sharpest drop occurred in 2003–04 immediately following WHI publication; a study of VA patients found similar rates of HT discontinuation for the same year. Current consensus guidelines advise short-term use of combined estrogen-progestin combinations primarily to treat vasomotor symptoms in women ages 50–59; more flexibility is granted for use of unopposed HT after hysterectomy. The current study aimed to establish the prevalence of 2009–10 HT use in VA and to examine whether co-morbid mental health conditions more common among Veterans, particularly PTSD, may be related to increased HT use in VA patients. We hypothesized that women with PTSD may be more likely to use HT compared to women without the diagnosis as they may perceive vasomotor symptoms as similar to hyperarousal symptoms of PTSD and find them less tolerable. Estrogen also impacts emotion regulation through sympathoadrenal responsiveness which could make discontinuation more difficult for women with mental illnesses.

METHODS: Women Veterans over the age of 45 receiving VA care were identified through the VA Pharmacy Benefits Management Program (PBM) data for 2009–10. HT use was defined as use of any systemic estrogen or estrogen/progestin-containing product. PBM data were linked to the VA National Patient Care Database (NPCD) for demographic and clinical variables. We examined bivariate associations between HT use and demographic/clinical variables using $\chi 2$ statistics for categorical and two-sided t tests for continuous data. To assess predictors of HT use, we estimated a hierarchical logistic regression model controlling for potential confounders including demographics, psychiatric and medical comorbidities.

RESULTS: The sample size was 157,195 women, mean age was 59 and 10.3 % received HT. Depression was the most common psychiatric diagnosis (21 %) followed by substance use disorders (16 %). Nearly 9 % of women had a diagnosis of PTSD. After controlling for demographics and hysterectomy, odds of HT use were increased in those diagnosed with depression (OR 1.5), osteoporosis (OR 1.4), bipolar disorder (OR 1.4) and PTSD (OR 1.3). Breast cancer had the strongest association with non-receipt of HT (OR 0.3).

CONCLUSIONS: The prevalence of HT use among women Veterans using VA care exceeds the general population rate of 4.7 % by more than two-fold. While prior work suggested that women Veterans were discontinuing HT at comparable rates to the general population, these data suggest that the decline was not sustained over time. In VA, mental health

diagnoses exhibited odds comparable to osteoporosis, a driver of HT use. Further study of the impact mental health comorbidity plays in patient decision making about HT could prevent adverse outcomes that may ensue when continuation is medically contraindicated. Quality improvement projects that review guidelines and risks for patients with comorbid mental illness on HT may be warranted.

HOSPICE ENROLLMENT PREFERENCES AMONG PHYSICIANS AND THE TIMING OF THEIR END-OF-LIFE CARE DISCUSSIONS WITH TERMINALLY-ILL CANCER PATIENTS Michael Pang-Hsiang Liu[2]; Garrett M. Chinn[1,3]; Nancy L. Keating[2,3]. [1]VA Boston Healthcare System, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Brigham and Women's Hospital, Boston, MA. (Tracking ID #1635188)

BACKGROUND: Physicians report preferences for care when they die that may be less aggressive than their patients generally receive, but few data are available about physicians' preferences for end of life care. In addition, evidence suggests that physicians often delay in discussing hospice with their terminally-ill patients despite guidelines recommending such discussions for patients expected to die within 1 year. We explored factors associated with physicians' reported preferences for hospice enrollment if they were terminally ill. We also assessed whether physicians who would enroll in hospice if terminally ill differed from other physicians regarding the timing of hospice discussions with their terminally-ill patients.
METHODS: We surveyed physicians caring for cancer patients enrolled in the multiregional population-based Cancer Care Outcomes and Research Surveillance study (response rate 61 %). Physicians indicated on a 5-point Likert scale how strongly they agreed or disagreed with the statement "If I were terminally ill with cancer, I would enroll in hospice." They were also asked to assume they were caring for an asymptomatic patient who they believed had 4–6 months to live and report whether they would discuss hospice with the patient: "now", "when the patient first develops symptoms", "when there are no more non-palliative treatments to offer", "only if the patient is admitted to the hospital", or "only if the patient and/or family bring it up." We used logistic regression to examine physician and practice factors associated with responding "strongly agree" that they would enroll in hospice. In a second model, we assessed if physicians who strongly agreed they would enroll in hospice were more likely than other physicians to report they would discuss hospice "now" with their terminally-ill patients.
RESULTS: The 4,368 respondents had a mean age of 49.4 (SD 10.2), 80 % were men, and 14 %, 6 %, 21 % and 59 % were medical oncologists, radiation oncologists, surgeons, and non-cancer specialists, respectively. Most physicians strongly (65 %) or somewhat agreed (21 %) that they would enroll in hospice if they were terminally ill. In adjusted analyses, physicians caring for a higher proportion of managed care and terminally-ill patients were more likely than other physicians to strongly agree they would enroll in hospice (both $P<.03$), as were female physicians (OR 2.0, 95 % CI 1.6, 2.4). Surgeons (OR 0.6, 95 % CI 0.5, 0.8) and radiation oncologists (OR 0.6, 95 % CI 0.4, 0.8) were less likely than medical oncologists to strongly agree they would enroll in hospice. Age, race, and teaching involvement were not associated with personal preferences for hospice. Overall, 26 % of physicians reported they would discuss hospice "now" with a patient who had 4–6 months to live. Physicians who strongly agreed they would enroll in hospice themselves were more likely than other physicians to report discussing hospice "now" (OR 1.7, 95 % CI 1.5, 2.0) with a terminally-ill patient.
CONCLUSIONS: Most physicians reported they would enroll in hospice if they were terminally ill- particularly female physicians, medical oncologists, and physicians caring for more terminally-ill and managed care patients. Physicians with strong personal preferences for hospice were more likely than others to report discussing hospice with their patients early. Personal preference for hospice may influence physicians' propensity to discuss hospice with their terminally-ill patients.

HOSPITAL READMISSION AND COMMUNICATION BETWEEN HOME HEALTH NURSES AND PHYSICIANS: A MIXED METHODS STUDY Matthew J. Press[1]; Linda M. Gerber[1]; Timothy Peng[2]; Penny H. Feldman[2,1]; Karin Ouchida[1]; Yuhua Bao[1]; Lawrence P. Casalino[1]. [1]Weill Cornell Medical College, New York, NY; [2]Visiting Nurse Service of New York, New York City, NY. (Tracking ID #1626761)

BACKGROUND: Each year, over 2 million episodes of home health care are provided for Medicare beneficiaries recently discharged from the hospital. To coordinate care and potentially prevent hospital readmissions, home health nurses must be able to communicate with their patients' physicians. Yet a few small studies suggest that home health nurses often have difficulty reaching physicians during the course of home care. Our objective was to analyze home health nurse-physician communication, identify failed communication attempts (that is, an unsuccessful attempt by the nurse to reach the physician), and to assess their association with hospital readmission.
METHODS: The study had three components: (1) qualitative analysis, (2) pilot quantitative analysis, and (3) comprehensive quantitative analysis. For the qualitative analysis, we conducted 9 individual physician interviews and 2 focus groups of 12 home health nurses each. For the pilot quantitative analysis, we analyzed electronic documentation of communication attempts made by home health nurses to physicians for 100 patients, 50 of whom were readmitted and 50 of whom were not readmitted. For the comprehensive quantitative analysis, we created a computerized text-processing algorithm to code failed communication attempts for approximately 8,000 Medicare beneficiaries with congestive heart failure who received post-acute home health care in 2008–2009 from a single agency. We will assess the association between failed communication attempts and the likelihood of risk-adjusted, 30-day hospital readmission by linking the agency data with inpatient Medicare claims.
RESULTS: Our qualitative analysis revealed several barriers to effective communication between home health nurses and physicians, which we grouped into three categories: responsibility (that is, identifying the physician who is responsible for the patient's home care), accessibility (that is, finding ways to reach the physician when he/she is unavailable), and collaborative strategy (that is, the attitude, skills, and tools nurses and physicians use to facilitate effective exchange of information). Nurses reported more problems with communication than did physicians. In the pilot quantitative analysis, 13 out of 50 readmitted patients had more than half of all communication attempts fail (89 total communication attempts). Of the 50 non-readmitted patients, only 5 had more than half of all communication attempts fail (108 total communication attempts; $p=0.07$). In the comprehensive quantitative analysis, preliminary results indicate that 2,500 (4.5 %) of 55,141 total communication attempts failed. Analysis of the association between failed communication attempts and hospital readmission is pending at this time but will be completed prior to the SGIM meeting.
CONCLUSIONS: Attempts by home health nurses to communicate with their patients' physicians are often unsuccessful, and our pilot analysis suggests that failed communication attempts may be associated with an increased likelihood of hospital readmission. Nurses and physicians report barriers to effective communication which may be amenable to intervention. Such improvements could enhance the capacity for home health nurses to coordinate care and potentially prevent hospital readmissions.

HOSPITAL READMISSIONS AMONG INDIGENT HIV-INFECTED PATIENTS: A MOVEMENT TOWARD MEDICAL HOME MODEL INTERVENTIONS Reshma Gupta[1]; Shireesha Dhanireddy[2]. [1]University of Washington, Seattle, Seattle, WA; [2]University of Washington, Seattle, Seattle, WA. (Tracking ID #1624160)

BACKGROUND: Hospital admissions related to advanced AIDS have significantly declined in the post-HAART era, though the rate of inpatient readmissions related to chronic illness among HIV positive patients

remains relatively high with a slow rate of decline. The medical home model has been used to improve chronic illness management. However, there are no studies evaluating the role of ambulatory medical homes on hospital readmission rates. In this quality improvement study, we will identify characteristics of hospital readmission to target future evaluation and intervention.
METHODS: We conducted a retrospective cohort study of 850 hospitalized adults from the Seattle Harborview Madison HIV Clinic and determined hospital admission and 30-day readmission rates at Harborview Medical Center between 1/1/2007 and 12/31/2012. Data were obtained via query of hospital MIND database. Readmission was defined as any hospitalization within 24 h to 30 days of hospital discharge.
RESULTS: Between 1/1/2007 and 12/31/12, 850 individual Madison clinic patients were admitted to the hospital, totaling 2234 hospital admissions. 534 of these admissions were considered readmissions occurring within 30 days of discharge. 61 (5.5 %) patients accounted for 669 (24 %) admissions. Six patients had more than sixteen admissions each, and three patients had more than twenty admissions each. Approximately 70 % of readmissions were related to chronic illness. Readmissions associated to chronic disease include respiratory disease, skin infections, mental illness, coronary disease, renal disease, substance use, and liver disease.
CONCLUSIONS: HIV patients are afflicted with multiple chronic illnesses, which are consistently affecting readmission rates. Identifying HIV patients within clinics who are at higher risk of hospital readmissions will help to target readmission prevention resources most efficiently. Developing ambulatory medical home-based interventions from this data will change readmission prevention paradigms so that there is a shared responsibility between clinics and inpatient teams. Ambulatory clinics will likely play a vital role in increasing quality and reducing costs during care transitions.

HOSPITALIST PHYSICIAN WORKLOAD: DOES IT MATTER? Daniel J. Elliott[1]; Paul Kolm[1]; Robert Young[2]; Ruth T. Aguiar[1]; Joanne C. Brice[1]. [1]Christiana Care Health System, Newark, DE; [2]Northwestern University Feinberg School of Medicine, Chicago, IL. (Tracking ID #1640315)

BACKGROUND: Hospital Medicine is the fastest growing medical specialty, in large part due to evidence that hospitalists provide high quality, efficient care. Current reimbursement structures generally incentivize or require increased hospitalist productivity. Increasing workload may negatively impact the quality and efficiency of care, but there is little empirical data to determine this association. We sought to determine the association between hospitalist workload and the quality and efficiency of care.
METHODS: We conducted a retrospective cohort study of inpatients over 18 admitted to a large, private hospital medicine service between February 1, 2008 and January 31, 2011. We excluded patients who were admitted directly to an intensive care unit, were not discharged prior to the end of the study period, or had a hospital length of stay (LOS) <0.5 or >30 days. The exposure was the total daily physician workload on the day of each encounter during the patient's hospitalization. Daily workload was calculated separately as 1) total work Relative Value Units (wRVU) standardized to 2011 values and 2) total patient census. The primary outcomes were hospital length of stay (LOS) and 30-day readmission rate. Key covariates included patient demographics and severity, physician continuity, and hospital occupancy. We used hierarchical time-to-event models clustered by patient and by physician. Workload and hospital occupancy were allowed to vary over the patient's hospitalization for the LOS models and fixed as the value on the day of discharge for readmission models. We tested an interaction term between workload and occupancy in all models.
RESULTS: Overall, 19,558 hospitalizations met study criterion. Median daily physician wRVU was 28.7 (IQR 21.3–35.1) and median daily census was 16 patients (IQR 10–20). Physician workload was strongly associated with LOS, but the effect varied across hospital occupancy. At low levels of hospital occupancy (<70 %), adjusted LOS was 1.5 days longer across the range of daily workload values when measured as wRVU and 2 days longer when measured by census. There was no association between workload and LOS at hospital occupancy above 90 %. The 30-day readmission rate increased from 15.5 % to 17.1 % (difference) as hospitalist workload measured by RVU on the day of discharge increased. The 30-day readmission rate did not vary across patient census on the day of discharge when hospital occupancy was below 80 %. However, at occupancy above 80 %, readmission rates ranged from 15.5 % to 17.2 % (difference).
CONCLUSIONS: Increased Hospitalist workload was associated with increased LOS and increased 30-day readmission rates in our cohort. Importantly, the association was modified by hospital occupancy such that LOS was most sensitive to workload at lower levels of occupancy and 30-day readmissions were most sensitive to workload at higher occupancies. Our findings suggest that hospitalist groups and hospitals need to work together to mitigate the impact of high volumes on the efficiency and quality of delivered care.

HOUSING FIRST AMONG HOMELESS PERSONS WITH CONCURRENT DISORDERS AMONG PARTICIPANTS OF THE VANCOUVER AT HOME STUDY Anita Palepu[1]; Michelle Patterson[2]; Akm Moniruzzaman[2]; Julian M. Somers[2]. [1]University of British Columbia, Vancouver, BC, Canada; [2]Simon Fraser University, Burnaby, BC, Canada. (Tracking ID #1635354)

BACKGROUND: There have been no randomized controlled trials of Housing First among chronically homeless persons with concurrent disorders. We, therefore, examined the relationship between substance use and residential stability among homeless adults with current mental disorders who participated in The Vancouver At Home study.
METHODS: The Vancouver At Home study is part of a multi-site pragmatic, randomized controlled trial of a Housing First intervention among homeless individuals with mental illness in five Canadian cities. Participants were eligible if they were 19 years of age or over, met criteria for a current mental disorder on the MINI 6.0 Neuropsychiatric Interview, and were absolutely homeless or precariously housed. We used the Residential Time-Line Follow Back Inventory to derive our primary outcome variable, residential stability, which we defined as the number of days in stable residences after randomization up to their 12 months visit. Substance dependence was identified at baseline using the MINI 6.0. At baseline self-reported frequency of substance use over the past month was captured using the Maudsley Addiction Profile. We dichotomized frequency of substance use to capture daily substance use versus less than daily or none; this variable was used to reflect severity of substance use and its potential impact on daily function. Mental health symptoms and severity were collected through the Colorado Symptom Index. Two negative binomial regression models were fit to examine independent association between the residential stability and the primary independent variables substance dependence and daily substance use.
RESULTS: A total sample of 497 participants were recruited between October 2009 and June 2011 with 58 % (N=288) meeting criteria for substance dependence and 29 % (N=143) reporting daily substance use. The follow-up rate at 1 year was 96 %. There was no difference in the number of days stably housed by substance dependence (182.1 versus 185.6 days, p=0.787). We found no significant association between substance dependence and residential stability (Adjusted IRR 0.94; 95 % CI 0.68–1.30) or between daily substance use and residential stability (Adjusted IRR 0.86; 95 % CI 0.61–1.22) after adjusting for the type of housing intervention, employment, sociodemographics and mental health.
CONCLUSIONS: People with mental disorders may achieve similar levels of housing stability from Housing First regardless of whether they experience concurrent substance dependence. In contrast to some interventions for homeless persons, HF does not require abstinence from drugs among clients. These findings raise important questions regarding the role and relevance of patient choice in the context of health service delivery and program design.

HOW BEST TO SUSTAIN IMPROVEMENTS IN GLYCEMIC CONTROL ACHIEVED IN DIABETES SELF-MANAGEMENT TRAINING PROGRAMS? A RANDOMIZED CONTROLLED TRIAL COMPARING PEER MENTORING WITH COMMUNITY HEALTH WORKER (CHW) OUTREACH Michele Heisler[1]; Brandy Sinco[1]; Gloria Palmisano[2]; Martha Funnell[1]; Tricia Tang[1]. [1]Ann Arbor VA/University of Michigan, Ann Arbor, MI; [2]Community Health and Social Services Center (CHASS), Detroit, MI. (Tracking ID #1642270)

BACKGROUND: Multiple studies suggest that without sustained follow-up support, diabetes self-management training programs only lead to short-term improvements (less than 6 months) in glycemic control. This is especially the case among low-income ethnic and racial minorities in resource-poor settings such as inner-city communities in which adults with diabetes face multiple challenges to diabetes self-management. Federally qualified health centers serving these communities often lack the resources to maintain intensive care management programs staffed by health care professionals to provide between-clinic visit outreach to adults with diabetes who have completed short-term diabetes self-management programs. Accordingly, we sought to compare a peer mentor program with periodic community health worker (CHW) telephone outreach as two possible means to maintain any gains achieved through an evidence-based diabetes self-management program that we have found in prior RCTs to improve glycemic control compared to usual care.
METHODS: The study was conducted at a federally qualified health center in the very low-income, predominantly Latino Southwest of Detroit. In a parallel randomized controlled trial, we randomized adults with poorly controlled diabetes (A1c>7.5 %) to one of two groups: 1) a six-month CHW-led diabetes self-management program and then 12 months of weekly drop-in group sessions or telephone outreach from an adult with diabetes ("peer mentor") who had completed the diabetes self-management program and 24 h of training in empowerment-based facilitation approaches; or 2) a six-month CHW-led diabetes self-management program and then 12 months of monthly CHW telephone outreach. We conducted intention-to-treat repeated measures assessments of changes in A1c between baseline, six-months (immediately after the diabetes self-management training program), 12-months, and 18-months follow-up. We also examined differences between the two groups.
RESULTS: 116 Latino adults with diabetes were randomized to one of the two arms. There were no significant differences in baseline characteristics between groups. Mean age was 49 years. 77 % had less than a high school education, and 94 % had an annual household income of less than $20,000. 95 % were on oral diabetes medications and/or insulin. In intention to treat analyses, mean A1c in the group randomized to the peer mentoring arm improved from 8.0 % to 7.3 % by the conclusion of the six-month diabetes self-management training, with mean A1cs of 7.5 % at 18-months follow-up, still a clinically significant 0.5 % less than at baseline. In the group receiving monthly CHW follow-up, baseline mean A1cs of 7.7 % decreased to 7.2 % at six-month follow-up and increased slightly to 7.3 % at 18-months, 0.4 % lower than at baseline. The differences between groups were not statistically or clinically significant.
CONCLUSIONS: Among these low-income inner-city Latino adults with diabetes, both peer mentoring in weekly group support sessions or fortnightly telephone outreach from volunteer trained diabetes patients and monthly community health worker telephone outreach led to maintenance of gains achieved in an evidence-based diabetes self-management training program. The sustained improvements in glycemic control we observed are equivalent to those achieved in more resource-intensive health professional-led care management programs. Both of the low-cost strategies evaluated in this RCT appear to be effective in sustaining achieved improvements.

HOW CAN ACADEMIC GENERALISTS CONTRIBUTE TO THE PATENT DEVELOPMENT OF INVENTIONS/INNOVATIONS?: EXPLORING THE U.S. PATENT DATABASE FOR PATENTS RELEVANT TO PRIMARY CARE James L. Wofford; Carolyn F. Pedley; Claudia Campos. Wake Forest University, Winston-Salem, NC. (Tracking ID #1641851)

BACKGROUND: Patents of inventions/innovations is an increasing important source of revenue for academic medical centers and represents a departure from the traditional academic paradigm of grant seeking and publishing. Patentable inventions are most often thought of as advanced technology for specialized settings, but the potential for improvement in health care delivery and revenue enhancement may be through invention/innovation in routine care activities in primary care setting. In an effort to explore how academic generalists in primary care settings can contribute to and collaborate in this new academic mission, we examined the United States patent database in order to determine the relevance of patent applications for the primary care setting .
METHODS: The US Patent and Trademark Office database contains the full text of nearly 200,000 patent applications issued from 1976 to the present. Each patent application has a separate, searchable web page that contains a detailed description and references of the invention/innovation. A search of all patent applications with the free text word "primary care" yielded 1194 patents from which a 10 % random sample was chosen for further review. Three investigators separately examined abstracts of patent applications to determine agreement on relevance to primary care (yes or no) and establish categories of the invention/innovation.
RESULTS: From the random sample of 119 patent applications reviewed, three were repeat applications. Filing dates for the applications ranged from Nov 27, 2000 to May 25, 2012. 59.5 % (69/116) of patent applications identified using the free text word search were actually relevant to primary care activities. The number of occurrences of the phrase "primary care" in the 116 patent documents ranged from 0 to 23, and patents relevant to primary care had more "primary care" occurrences than those judged as not relevant. (mean 1.7 vs 2.9). The most common invention/innovation categories were diagnostics (27.5 %, 19/69), therapeutics (24.6 %, 17/69), computer software 13.0 %, 9/69), health care administration (10.1 %), and communication systems (7.2 %). Specific patent documents better illustrate the relevance and potential for collaboration.
CONCLUSIONS: Primary care seems underrepresented in the U.S. patent database. Exploration of the database for the purpose of seeking primary care relevance is unwieldy. Still, identifiable patents relevant to primary care illustrate the potential for academic generalist to contribute and collaborate in the development of patentable inventions/innovations.

HOW PHYSICIANS' PRESENTATION OF INFORMATION ABOUT PCI TO PATIENTS WITH STABLE ANGINA MAY CONTRIBUTE TO THEIR BELIEF THAT IT IS A LIFE-SAVING INTERVENTION MIchael B. Rothberg[4]; Sarah L. Goff1,[2]; Kathleen M. Mazor[3]. [1]Baystate Medical Center/Tufts University School of Medicine, Springfield, MA; [2]CTSI/Tufts University School of Medicine, Boston, MA; [3]University of Massachusetts Medical School/Meyers PCI, Worcester, MA; [4]Cleveland Clinic, Cleveland, OH. (Tracking ID #1638724)

BACKGROUND: More than 600,000 percutaneous coronary interventions (PCI) are performed annually in the U.S. For patients with chronic stable angina, the benefit of PCI is limited to symptom reduction, yet many patients mistakenly believe that PCI will prevent myocardial infarction or death. We sought to illuminate how physicians' presentations of PCI may contribute to patients' misperceptions.
METHODS: Using the Verilogue Point-of-Practice Database (which includes visits with >600 physicians in 9 geographic regions throughout the U.S.), we searched outpatient/non-acute visit transcripts recorded between March 2008 and August 2012 for mention of PCI, cardiac catheterization, angiogram or stent placement. We included only transcripts of visits in which PCI was discussed with a cardiologist. After we developed an a priori codebook, one team member performed qualitative content analysis on all the transcripts, adding codes iteratively until theoretical saturation was achieved. A second member read a subset of transcripts and recommended revisions to the codebook. Codes were then revised and sorted into pertinent themes.
RESULTS: We analyzed 36 transcripts. Patients ranged in age from 44 to 88 years (median=67) and 9 (23 %) were women. "Rationale for recommending PCI" was identified as a major theme; sub-themes related

to how PCI benefit was presented included items that may contribute to patients' misperceptions. Many physicians informed patients that catheterization was the "only way to know for sure" about their coronary artery disease, suggesting that catheterization would be preferable to uncertainty about the presence, extent and location of disease. The implication was that once they "know for sure", an intervention could improve the patient's outcome; "That will show us for sure…then we can probably just [sic] go ahead….put in a stent… [and] have it taken care of ". Some physicians over-simplified the pathophysiology by using plumbing imagery "… sometimes we can also use a Roto-Rooter [to eliminate a blockage]". They also stated that PCI would "fix" the problem; "the next step forward is a cardiac catheterization, with the intent of fixing a problem if there is a problem". When patients questioned the need for PCI, some physicians overstated PCI benefits both implicitly and explicitly; "You sound good, you look good, but I want to keep it that way… I don't want things to happen to you while you're walking the steps or riding your bike," and "I wouldn't want you to have another heart attack." Only one physician explicitly stated that the only benefit of PCI for stable angina was symptom reduction and there would be no reduction in mortality or risk for MI. Although many physicians informed patients that they would need to take medication, few discussed maximizing medical management as an alternative to PCI. When discussions of alternatives to PCI did occur, it was generally only after a patient expressed hesitation about PCI.
CONCLUSIONS: In this study, some physicians presented information about PCI in a manner that may contribute to patients' misperception of the benefit of PCI for stable angina. A larger quantitative study is required to understand how often physicians may misrepresent the benefits of PCI when discussing it with patients.

HYPOACTIVE SEXUAL DESIRE DISORDER (HSDD): CONSISTENT EFFICACY AND SAFETY OF FLIBANSERIN TREATMENT IN BOTH PRE AND POSTMENOPAUSAL WOMEN James A. Simon[1,2]; Krista Barbour[2]; James Symons[2]. [1]George Washington University, Washington, DC; [2]Sprout Pharmaceuticals, Raleigh, NC. (Tracking ID #1629616)

BACKGROUND: Low sexual desire with personal distress (similar to HSDD) is the most common female sexual dysfunction affecting 10 % of pre and 20 % of postmenopausal women. Flibanserin is a novel 5-HT1A agonist/5-HT2A antagonist with secondary effects on dopamine and norepinephrine which is currently in development for HSDD.
METHODS: To generate long-term efficacy and safety data for flibanserin in pre- and naturally postmenopausal women with HSDD we conducted a 28-week, multicenter open-label extension study of women who completed one of three large, randomized, double-blind, placebo-controlled "parent trials" (n=2777, one in pre- and two in naturally postmenopausal women with HSDD). Subjects in the "extension" (premenopausal: n=346; postmenopausal: n=249) took Flibanserin 100 mg qhs.
RESULTS: Efficacy was assessed using the FSDS-R total score, and FSFI, validated scales for assessing sexual distress, and sexual function in HSDD, respectively. The study demonstrated a consistent reduction in distress (FSDS-R total and Q13), and increase in sexual function on the FSFI (total and desire) for pre- and post-menopausal women. Safety was determined using adverse events (AEs) and serious adverse events (SAEs). The majority of AEs were mild or moderate. None of the SAEs were considered related to treatment. The most common AEs (> 5 % of subjects) were (Pre/Postmenopausal): dizziness (8.7/10.8 %), somnolence (9.0/6.4 %), insomnia (5.2/5.2 %) and nausea (5.5/5.2 %).
CONCLUSIONS: Flibanserin 100 mg qhs was effective in increasing desire and decreasing distress associated with HSDD in both pre and postmenopausal women. Flibanserin's most common AEs are: dizziness, somnolence, insomnia, and nausea. No new AEs or SAEs were reported in this open-label extension. Flibanserin appears to be safe and effective for the treatment of HSDD in both pre and postmenopausal women. Additional studies are underway to confirm and extend these observations.

IDENTIFICATION OF HIGH-NEEDS PATIENTS DURING CARE HAND-OFFS Joshua T. Hanson[1,2]; Joanna Linsteadt1; Luci Leykum[1,2]. [1]UT Heath Sciences Center, San Antonio, San Antonio, TX; [2]South Texas Veteran's Healthcare System, San Antonio, TX. (Tracking ID #1642892)

BACKGROUND: After the 2003 ACGME Common Program Requirements limited duty hours, several studies estimated an increase in the number of patient care hand-offs from 11 % to 40 % in the hospital. It can be assumed that further duty hour restrictions have maintained or increased the number of these hand-offs. There is not a validated system for effective hand-offs despite these increased numbers of hand-offs and calls for such a system. There are widely used idealized systems, which do stress for the identification of patients that may require more attention. The skills necessary to identify these high needs patients have not been delineated. Our goal was to determine whether interns, residents, and attending physicians could identify these high use patients to the nighttime physician.
METHODS: Five housestaff teams were surveyed over eight days in a three-month span. Team members were asked to identify which patients would require the most attention by the nighttime physician responsible for their care. The following morning the nighttime physician would identify these high needs patients.
RESULTS: Complete data, as defined as patients identified from at least one member of the daytime team and the nighttime physician, were obtained from 52 out of a possible 160 encounters. At least one patient was appropriately identified in 37 of the 52 (71.2 %) encounters. Both high needs patients were correctly identified in 7 of 52 (13.5 %) encounters. Interns correctly identified at least one patient in 26 of 34 (76.4 %) encounters, while residents correctly identified at least one patient in 9 of 11 (81.8 %) encounters. Attending physicians correctly identified at least one patient in 2 of 7 (28.6 %) encounters.
CONCLUSIONS: These data suggest physicians may be able to identify some, but not all, of those patients that will require the most clinical care over the course of the night. Additionally, these data suggest that those physicians who provide the closest care, namely interns and residents, may be best able to identify those patient, though the attending data is too sparse to draw definitive conclusions. It would be important to gather this data from senior physicians working without housestaff in a clinical capacity to understand the intersection of experience and proximity to individual patient care. Furthermore, it would be interesting to examine the characteristics of the patients and how the physicians came to their conclusions regarding identification. This may lead to better understanding of how to teach these important skills for patient care transitions.

IDENTIFICATION OF LEARNER NEEDS TO CREATE A CURRICULUM IN HIGH-VALUE CARE Laura Loertscher; Tom Chau. Providence St. Vincent, Portland, OR. (Tracking ID #1641628)

BACKGROUND: Because escalating healthcare costs strain both individuals and society, physicians must curb wasteful practices and teach high-value, cost-conscious care to future providers. While uniquely positioned to advance this national priority, the medical education community knows relatively little about the current understanding and needs of physician trainees regarding cost-effectiveness. We describe resident practices and attitudes surrounding value-based care as well as their perceptions of the primary drivers of over-utilization.
METHODS: We conducted this study at a single, community-based internal medicine program with 26 residents. Prior to implementation of a new curriculum in high-value care, we performed a baseline survey of the residents in July 2012. The questionnaire was designed by the primary investigators with input from experts in medical education and clinical informatics. Responses to 5 case scenarios were used to stratify resident utilization of medical services along a scale of underuse, appropriate use, and overuse. Residents also rated a battery of healthcare utilization behaviors and attitudes on a Likert scale to identify the drivers of overuse. Mean responses are presented and the paired Mann–Whitney U test was used to compare groups of responses. The Binomial Exact Test was used to assess for overuse in the clinical scenarios.

RESULTS: Fourteen of 26 (54 %) eligible residents completed the survey. Residents agreed that health care costs in the US are too high (mean 4.9; 1=strongly disagree, 5=strongly agree) and waste represents a significant portion of the high cost (4.4). Residents reported that they and others frequently order unnecessary or cost-ineffective care, from occasional (about once a week) to often (several times a week). In response to sample clinical scenarios, residents over-ordered interventions more frequently than they under-ordered ($p<0.05$). They identified the most important drivers contributing to overuse as defensive medicine (mean 4.4), discomfort with uncertainty (4.2), patient demands (3.9), physician unawareness of cost (3.9), and reliance on sub-specialists (3.9).
CONCLUSIONS: Response to clinical scenarios and self-report indicate that residents frequently over-utilize interventions. A culture within medical education that rewards intellectual curiosity, thoroughness, and commitment to the individual patient may contribute to the liberal use of resources. However, our findings show that residents perceive defensive medicine, discomfort with uncertainty, patient requests, cost unawareness, and sub-specialty reliance as key drivers. Some of these factors may particularly affect less experienced physicians and represent critical targets when developing curricula for a generation of physicians that must learn to provide high-value care.

IDENTIFYING KEYS TO SUCCESS FOR REDUCING READMISSIONS: USING THE IDEAL TRANSITION IN CARE FRAMEWORK

Robert Burke[1,3]; Ruixin Guo[3]; Gregory J. Misky[2,3]. [1]Denver VA Medical Center, Denver, CO; [2]University of Colorado School of Medicine, Denver, CO; [3]University of Colorado School of Medicine, Denver, CO. (Tracking ID #1637876)

BACKGROUND: Failures during transitions of care from the hospital to the community are common and costly. Though many interventions to improve transitions of care and decrease hospital readmission have been tried, best practices are lacking. A framework for understanding transitions of care may help identify best practices. The Ideal Transition in Care framework proposes ten domains needed for safe transitions, allowing categorization of prior interventions. This framework was used to critically examine prior interventions aimed at reducing readmissions, and to evaluate which domains are most associated with successful interventions that reduce readmission rates.
METHODS: Prospective interventions to reduce readmissions published after January 1995 were reviewed (61 interventions). The authors independently assessed which of the ten domains of the Ideal Transition in Care each intervention included. The relationship between presence of each of the 10 domains aggregated over prior studies and a statistically significant reduction in readmission rates was evaluated in bivariate and multivariate analysis. Multiple logistic regression was used to analyze the relationship between the total number of domains included and reduction of readmissions, adjusted for study size, quality, and duration.
RESULTS: Prior interventions addressed 3.5 domains on average; 23 % addressed five or more. Domains most often included addressed patient education, programs for monitoring and managing symptoms after discharge, and care coordination. Advanced Care Planning was not included in any study, while enhancing communication with outpatient providers and recruiting community supports were rarely included. Educating Patients to Promote Self-Management, Monitoring and Managing Symptoms after Discharge, and Enlisting Help of Social and Community Supports were each associated with a significant reduction in readmissions ($p<0.05$), with the former two showing a trend towards significance after adjustment for multiple comparisons ($p=0.06$). In multivariate analysis, the number of domains included in an intervention was the only significant predictor of successfully reducing readmissions, when adjusting for quality, duration, and size ($R2=0.175$, $p=0.002$). Inter-rater reliability assessing whether a domain was present or not in a given intervention was moderate ($\kappa=0.47$).
CONCLUSIONS: Interventions to reduce hospital readmissions have historically been centered on a few select domains with relative neglect of others. The number of domains included in a given intervention is the most important factor in successfully reducing readmissions. These findings indicate the need for multi-component interventions to improve transitions of care, with particular focus on three key domains: Educating Patients to Promote Self-Management, Monitoring and Managing Symptoms after Discharge, and Enlisting Help of Social and Community Supports.

IDENTIFYING AND OVERCOMING THE BARRIERS TO BEDSIDE ROUNDS: A MULTI-CENTER QUALITATIVE STUDY

Jed Gonzalo[1,2]; Brian S. Heist[2]; Briar Duffy[3]; Liselotte Dyrbye[4]; Mark J. Fagan[5]; Gary S. Ferenchick[6]; Heather Harrell[7]; Paul Hemmer[8]; Walter N. Kernan[9]; Jennifer R. Kogan[10]; Colleen Rafferty[1]; Raymond Wong[11]; Michael Elnicki[2]. [1]Penn State College of Medicine, Hershey, PA; [2]University of Pittsburgh School of Medicine, Pittsburgh, PA; [3]University of Minnesota School of Medicine, Minneapolis, MN; [4]Mayo Clinic College of Medicine, Rochester, MN; [5]Alpert Medical School of Brown University, Providence, RI; [6]College of Human Medicine, Michigan State University, East Lansing, MI; [7]University of Florida College of Medicine, Gainesville, FL; [8]Uniformed Services University of the Health Sciences, Bethesda, MD; [9]Yale University School of Medicine, New Haven, CT; [10]Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA; [11]Loma Linda University School of Medicine, Loma Linda, CA. (Tracking ID #1635018)

BACKGROUND: Bedside rounds in teaching hospitals have declined, despite recommendations from educational leaders to promote this effective teaching strategy. Literature suggests this decline is due to patient discomfort, perceived inefficiencies, and trainee apprehension. We interviewed current-day bedside teachers to identify: 1) actual barriers encountered during bedside rounds, 2) methods used to overcome trainee apprehension, and 3) potential strategies to promote bedside teaching.
METHODS: To address our research questions, we performed a qualitative thematic analysis of transcripts from digitally recorded, one-on-one telephone interviews with 34 bedside teachers. We recruited one co-investigator from 10 U.S. institutions and asked each to recruit three to six bedside teachers who actively served as inpatient attending physician and performed "bedside rounds" a minimum of 3 weekdays while on service. We defined "bedside rounds" as the team presenting the history or reviewing one physical exam component, while also discussing the management plan at the bedside; we explicitly excluded other forms of rounds not meeting these criteria, such as rounds occurring in the hallway. During data collection, the lead investigator took notes and using the process of constant comparative analysis, identified themes and categories and generated a preliminary codebook. Two investigators then analyzed transcripts independently, with regular adjudication sessions to compare codes and modify the codebook. Here we report the themes that emerged from analysis.
RESULTS: The 34 participants averaged 14 years of academic experience and were mostly associate or full professor (51 %). Rather than inefficiency or patient discomfort, the key barriers encountered during bedside rounds included time constraints (work-hour mandates), systems issues (eg. geographic admitting) and productivity demands. Six primary themes to overcome trainee apprehensions were identified: 1) Build a partnership to get "buy-in," 2) Create a safe, non-punitive environment, 3) Overcome with experience, 4) Make bedside rounds educationally worthwhile, 5) Respect house staff time, and 6) Highlight positive impact on patient care. Although numerous strategies to educate faculty on bedside rounds were suggested, one-on-one mentoring strategies, such as a "Two-Way Shadowing Program" allowing for experienced and inexperienced attending physicians to work together in an observatory-feedback relationship, was believed to be high yield.
CONCLUSIONS: Bedside teachers identified barriers encountered while performing bedside rounds, which are not fully commensurate with the

perceived barriers identified in the literature and reflect the increasing pressures of inpatient medicine. Although "trainee apprehensions" has been identified as a major barrier, our participants were less likely to encounter this barrier, likely explained by their employed strategies to focus efforts on trainees' concerns, adjustment period, and steps to increase odds of successful initial encounters. Likewise, prior studies have also found that trainees with more experience with bedside activities were more likely to prefer them. Although "time" was a major barrier identified by our participants, the gains of patient centered, point-of-service care and trainee education outweighed these concerns and did not preclude the occurrence of bedside rounds. These conclusions should inform faculty development efforts aimed at promoting bedside teaching.

IDENTIFYING AND REDUCING BARRIERS TO PAIN MANAGEMENT: A UNIQUE HOSPITALIST/PAIN MEDICINE COLLABORATION Cameron S. Page[1]; Dahlia Rizk[1]; Rebecca Calabrese[1]; Marilyn Bookbinder[2]; Steven E. Flores[2]; Russell Portenoy[2]. [1]Beth Israel Medical Center, New York, NY; [2]Beth Israel Medical Center, New York, NY. (Tracking ID #1642989)

BACKGROUND: Patient satisfaction scores will soon affect hospital reimbursement, and effective pain control is a key element of satisfaction with an inpatient experience. A recent study at a large urban hospital estimated that 40 % of inpatients have moderate-to-severe pain at least once during their stay. Despite many strategies devised to manage these episodes, inpatient pain remains a persistent challenge for hospitals. Categories of barriers to pain control have been identified, but the frequency of individual barriers has not been quantified. We describe the prevalence of barriers and their change over time.
METHODS: A Nurse Practitioner (NP) with experience in pain management visited inpatient units where most patients were cared for by hospitalists. For every patient with uncontrolled pain (defined as three scores greater than five in the past 24 h), the NP spoke with the attending physician, resident, and nurse, and reviewed the chart. This data was coded into discrete barriers to pain control.
RESULTS: Between February and April, 499 patients had pain on one or more days. 52 % were female, and the average age was 55. 44 % had a history of chronic pain, 18 % had a history of psychiatric disease, and 12 % had a history of substance abuse. A total of 56 potential barriers to pain control were initially identified. The most frequent barrier, "Presence of a pre-existing chronic pain syndrome," was recorded 256 times in February and 253 times in May 2012 (1.2 % decline). The second most frequent barrier, "Pain medication not changed due to need to observe current therapy" dropped from 113 occurrences to 2 (99.9 % decrease). 158 patients had uncontrolled pain for three or more days. During the study, the number of patients with uncontrolled pain for three or more days dropped from 47 in February to 33 in May (34 % decline, $p=0.083$). The total number of unique barriers declined from 32 in the first month of the study to 21 in the final month (34 %).
CONCLUSIONS: The presence of a dedicated pain management NP making rounds on patients was associated with a decrease in the recorded barriers to pain control. The large decline in physicians choosing to "observe current therapy" before escalating care has several possible explanations. Informal discussion with a NP experienced in pain management may have given the primary team confidence to more rapidly escalate care. There may also have been a Hawthorne effect, in which providers who know they are being observed are more attentive to pain control. Further research is needed to evaluate the association between change in barriers and pain scores.

Most Frequent Barriers to Pain Cotrol February 2012 May 2012 % Change
Presence of pre-existing chronic pain syndrome 256 253–1.2
Pain medication not changed due to need to observe current therapy 113 2–99.9
Pain control difficult due to severity of medical disease 91 134+48.6
Patient admitted on analgesic therapy 89 103+22.4
MD concerned about medication side effects 23 10–52.1

IDENTIFYING MEDICATION DISCREPANCIES THROUGH LINKED ADMINISTRATIVE PHARMACY CLAIMS Dominique Comer[1]; Joseph Couto[1]; Ruth T. Aguiar[2]; Edward Ratledge[3]; Daniel J. Elliott[2]. [1]Jefferson School of Population Health, Philadelphia, PA; [2]Christiana Care Health System, Newark, DE; [3]University of Delaware, Newark, DE. (Tracking ID #1640924)

BACKGROUND: Medication reconciliation can be used to identify medication discrepancies between what a clinician has documented and what a patient is actually taking. Dramatic improvements in the availability of administrative pharmacy claims in the electronic health record (EHR) may facilitate accurate medication reconciliation, particularly in the ambulatory care setting. The objective of this study is to identify and characterize medication discrepancies through the use of linked pharmacy claims data.
METHODS: We conducted a retrospective cross-sectional study of patients who were prescribed a new antihypertensive agent within a large primary care practice network. Patients were included if they had a diagnosis of hypertension or elevated blood pressure at the time of the new prescription and at least one visit within the previous 18 months. In our system the pharmacy fill history was imported on an ad hoc basis by clinicians and practice staff, so we excluded patients who had not had an imported pharmacy refill history on or after the index visit date. Additionally, because of concerns about the completeness of the pharmacy data, we excluded patients who did not have evidence of at least one claim in the pharmacy fill history prior to the index visit date. All pharmacy claims within the 120 days prior to the new prescription were compared to the medication lists from the physician EHR. Prescribed medications were considered active if the prescriber's history showed that the medicine was still to be taken at the time of the index visit. The primary outcome was the number of medication discrepancies, defined as a medication that appears on either the EHR medication list or the pharmacy fill claims list but not both. Differences in dose were not considered medication discrepancies. Key covariates include patient demographics, previous utilization and count of total medications.
RESULTS: We identified 269 patients who met study criterion. The average age (SD) was 58.5 years (13.8), 65 % were female, 23.1 % of patients were black, and 52.6 % were white, and 24.3 % were of another ethnicity or undetermined. There were a total of 2166 active medications in the EHR prescribed lists (average of 8.1 medications per patient) and 1344 medications in the fill history (average of 5.0 medications per person). Of the active medications in the physician list, 1002 (46.3 %) were matched to a claim in the pharmacy fill history; the remaining 1164 (53.7 %) were not matched to a medication in the fill history. Overall, patients had an average (SD) of 5.6 (4.0) medication discrepancies. Of the unmatched medications found in the pharmacy fill history, 57 (17 %) were controlled substances.
CONCLUSIONS: The real-time availability of pharmacy fill history to providers in clinical practice has the potential to dramatically enhance medication reconciliation by providing objective documentation of what a patient is filling at the pharmacy. In our cohort we identified frequent medication discrepancies between the pharmacy fill history and the prescriber's record. Importantly, there was a high prevalence of medications that patients had filled that were not recorded in the prescribing record, of which many were controlled substances. Our findings suggest that the availability of pharmacy claims may provide valuable information to providers as they conduct medication reconciliation.

IDENTIFYING SUPER DIFFUSERS OF HEALTH INFORMATION: ASSESSING THE RELIABILITY OF THE CONNECTIVITY, PERSUASIVENESS AND MAVEN SCALES AMONG SPANISH- AND ENGLISH-SPEAKERS Kenzie A. Cameron[1]; Vanessa Ramirez-Zohfeld[1]; Francisco Acosta[1]; Alfred W. Rademaker[2]; Franklin J. Boster[3]. [1]Northwestern University, Chicago, IL; [2]Northwestern University, Chicago, IL; [3]Michigan State University, East Lansing, MI. (Tracking ID #1641662)

BACKGROUND: Identifying influential individuals other than providers to promote health behavior change is an alternate route to commonly used

methods of patient education. The expanding use of patient navigators to augment the healthcare system is one prominent example. Individuals who are well-connected to others, are effective persuaders, and are viewed as having subject expertise (i.e., "mavens") may have the ability to reach diverse populations, and could serve as effective diffusers of information. This study assesses the reliability of three influence scales, originally developed and validated in English, which could be of assistance in identifying such influential individuals.

METHODS: Data were extracted from an ongoing study with English and Spanish-speaking patients. We modified existing Connectivity, Persuasiveness and Maven scales by reducing the number of items per scale from five to three, and rephrasing some items to reduce complexity. Items were translated into Spanish. Principal components analysis was used to identify independent factors in scales; Cronbach's alpha examined the reliability of the scales as a whole and by language. To assess ease of understanding of these new items, participants were asked to respond to the item: "Were these questions about how you interact with others easy to understand?" Participant responses were dichotomized (yes, no/don't know) and Fisher's exact test was used to compare ease of understanding of the questions by language.

RESULTS: Mean age among 486 participants was 57.8 (SD=6.1); 72.8 % were female. English-speakers comprised 57.6 % of the sample; 46.3 % were Hispanic/Latino, and 51.9 % African American. Regarding education, 30.9 % of patients reported 0–6 years, 47.5 % reported 7–12 years and 20.8 % had 13 or more years of education. Using principal components analysis (varimax rotation), three factors emerged overall: 1) persuasiveness (Eigenvalue=3.36, 37.3 % variance explained), 2) connectivity (Eigenvalue=1.34, 14.8 % variance explained), and 3) maven (Eigenvalue=1.26, 14.0 % variance explained). The same three factors were identified when assessing English and Spanish-speakers separately; eigenvalues and percentage of variance explained by each factor varied slightly. Scales demonstrated moderate to high internal consistency: persuasiveness Cronbach's α=0.77 (0.70 English subsample, 0.84 Spanish subsample), connectivity Cronbach's α=0.76 (0.68 English, 0.86 Spanish), and maven Cronbach's α=0.68 (0.62 English, 0.74 Spanish). Further, 88.1 % of participants indicated that scale questions were easy to understand, although English speakers were more likely to agree that the items were easy to understand (90.7 %) than were Spanish speakers (84.5 %, $p<0.05$). Mean scores on persuasiveness and connectivity increased with increasing education; a curvilinear relationship was found with maven items, such that participants with 0–6 and with 13+ years were significantly more likely to report higher mean scores than those with 7–12 years of education (all $p<0.005$).

CONCLUSIONS: This study of the modified and translated Persuasiveness, Connectivity, and Maven scales suggests the constructs are measured reliably in both English and Spanish. Being able to identify such super diffusers of health information may help to advance preventive health interventions, particularly those using peer facilitators or peer navigators as well as community based interventions.

IDENTIFYING THE RISKS OF ANTICOAGULATION IN PATIENTS WITH SUBSTANCE ABUSE Lydia M. Efird[2]; Donald R. Miller[1,3]; Arlene S. Ash[1,2]; Dan Berlowitz[1,2]; Al Ozonoff[1,4]; Shibei Zhao[1]; Joel Reisman[1]; Guneet Jasuja[1,3]; Adam Rose[1,2]. [1]Beford VA Medical Center, Bedford, MA; [2]Boston University School of Medicine, Boston, MA; [3]Boston University School of Public Health, Boston, MA; [4]Boston Children's Hospital, Boston, MA. (Tracking ID #1620372)

BACKGROUND: Warfarin is effective in preventing thromboembolic events but concerns exist regarding the risks of its use in patients with substance abuse. Clinicians often confront a dilemma and may choose not to prescribe anticoagulation, realizing that the patient will be at risk for thromboembolic events. Or clinicians may prescribe, without knowing the likelihood of successful anticoagulation control or the risk of hemorrhagic events. The goal of the study is to identify which patients with substance abuse might safely receive warfarin and in which it is best avoided.

METHODS: Among 103,897 patients who received warfarin from the Veterans Health Administration, ICD-9 codes identified 6,781 who abused drugs or alcohol. Specific substance abuse-related diagnostic codes (including number of times coded and outpatient and inpatient diagnoses), as well as lab values (including serum albumin, and highest recorded bilirubin, ALT, AST, ratio of AST:ALT) and other factors were examined as putative markers for disease severity. Outcomes included percent time in therapeutic range (TTR), a measure of anticoagulation control, and major hemorrhagic events. Major hemorrhages were obtained by ICD-9 codes meeting one of following criteria: associated with death within 30 days, blood transfusion, bleeding into a critical site, or cited as the main reason for hospitalization. TTR was compared among groups using ANOVA. Hazard Ratio for major hemorrhage over the 2-year study period was compared using Cox proportional hazards, controlling first for age, and then for age and TTR.

RESULTS: Nonusers had a higher mean TTR (62 %) than those abusing alcohol (53 %), drugs (50 %), or both (44 %, $p<0.001$). Specific diagnostic codes, number of times coded, and other laboratory values offered some ability to predict TTR or hemorrhagic events, but the most profound finding was AST:ALT ratio. Among alcohol abusers, increasing ratio of AST:ALT correlated with inferior control; a normal AST:ALT(<=1.5) predicted a relatively modest decline in TTR (54 %), while elevated ratios (AST:ALT 1.50–2.0 and >2.0) predicted progressively poorer control (49 % and 44 %, both $p<0.001$ compared to nonusers). Compared to nonusers, the age-adjusted hazard ratio for major hemorrhage was 1.93 in those with drug abuse and 1.37 in alcohol abuse ($p<0.001$); these hazard ratios remained significant after also controlling for anticoagulation control (HR 1.69 drugs $p<0.001$, and 1.22 alcohol $p=0.003$). Among patients who abuse alcohol, an elevated AST:ALT >2.0 was associated with a considerable increase in hemorrhagic events (HR 2.26, $p<0.001$), while a normal ratio AST:ALT <=1.5 predicted a hazard similar to that of nonusers (HR 1.03, $p=0.75$).

CONCLUSIONS: Anticoagulation control is particularly poor in patients with substance abuse. Major hemorrhages are more common, which is only partially explained by poorer anticoagulation control. Among alcohol abusers, the ratio of AST:ALT holds promise for distinguishing those at highest risk for adverse events from those whose risk may not differ meaningfully from that of the overall population.

IDENTIFYING THE RISKS OF ORAL ANTICOAGULATION IN PATIENTS WITH LIVER DISEASE Lydia M. Efird[2]; Adam Rose[1,2]. [1]Beford VA Medical Center, Bedford, MA; [2]Boston University School of Medicine, Boston, MA. (Tracking ID #1634419)

BACKGROUND: Chronic liver disease is thought to present a relative or even an absolute contraindication to warfarin therapy, but some patients with liver disease nevertheless will require long-term anticoagulation. The goal of this study is to identify which patients with liver disease might safely receive warfarin and in which patients it is best avoided.

METHODS: Among 102,134 patients who received warfarin from the VA from 2007 to 08, ICD-9 codes identified 1,763 with chronic liver disease. Laboratory values including lowest serum albumin, mean creatinine, highest AST, and lowest total cholesterol were examined as a means of identifying patients at higher risk among this group. Outcomes included percent time in therapeutic range (TTR), a measure of anticoagulation control, and major hemorrhagic events, as identified by ICD-9 codes. Hazard Ratio for major hemorrhage over the 2 year study period was compared using Cox proportional hazards, controlling first for age, and then for age and TTR.

RESULTS: Patients with liver disease of any kind had a lower mean TTR (53.1 %) compared with patients without such diagnosis (61.7 % $p<0.001$), as well as more hemorrhagic events (age-adjusted HR 1.93, $p<0.001$). Of the variables among patients with liver disease, the serum albumin level and the serum creatinine level were the strongest predictors of TTR and major hemorrhage. We created a 4-point composite score based on these

two variables: patients received one point each for mildly abnormal albumin (2.5–3.49 g/dL) or creatinine (1.01–1.99 mg/dL), and two points each for severely abnormal albumin (<2.5 g/dL) or creatinine (≥2 mg/dL). This composite score, which assigned each patient a risk score between 0 and 4 points, predicted both anticoagulation control and hazard for major hemorrhage (see Table). Compared to patients without liver disease, those with a score of zero had only a modest decline in TTR (59 %) and no significant increase in hemorrhagic events (HR 0.73, NS), while those with a score of four had very poor control (41.4 %) and more hemorrhages (HR 5.41 $p<0.001$). The risk of hemorrhage remained significant and was only mildly attenuated after controlling for anticoagulation control.

CONCLUSIONS: Overall, patients with liver disease have an elevated risk for major hemorrhage when receiving warfarin, which is only partly explained by poor anticoagulation control. Among patients with liver disease, a simple four-point composite scoring system using both serum albumin and creatinine identifies those at highest risk for poor anticoagulation control and major hemorrhagic events.

Composite Scoring System, Using Serum Albumin and Creatinine, to Predict the Risk of Major Hemorrhage in Patients with Liver Disease Receiving Warfarin

Liver Disease and Composite Risk Score Number of Patients Mean % Time in Therapeutic Range (TTR)* Number of Major Hemorrhages Hazard Ratio for Major Hemorrhage, Adjusted for Age (95 % CI) Hazard Ratio for Major Hemorrhage, Adjusted for Age and TTR (95 % CI)

No Liver Disease (reference) 85,493 61.5 % 4403 (5.2 %) – –

Liver Disease, 0 point 220 59.0 % 6 (2.7 %) 0.73 (0.33–1.63) 0.71 (0.32–1.59)

Liver Disease, 1 point 550 57.1 % 34 (6.2 %) 1.45 (1.03–2.03)‡ 1.38 (0.98–1.93)

Liver Disease, 2 points 448 50.9 % 42 (9.4 %) 2.35 (1.74–2.03)† 2.06 (1.52–2.79)†

Liver Disease, 3 points 247 46.8 % 28 (11.3 %) 3.27 (2.26–4.75)† 2.75 (1.90–4.00)†

Liver Disease, 4 points 74 41.4 % 12 (16.2 %) 5.41 (3.07–9.54)† 4.10 (2.32–7.23)†

*$p<0.001$ by ANOVA ‡$p<0.05$ compared to reference category †$p<0.001$ compared to reference category

ILLUSTRATED INSTRUCTIONS IMPROVE MEDICATION UNDERSTANDING: A RANDOMIZED CONTROLLED TRIAL Sunil Kripalani[1,2]; M Brian Riley[2]; Dane R. Boyington[2]; Arun Mohan[3,2]. [1]Vanderbilt University, Nashville, TN; [2]PictureRx, LLC, Chattanooga, TN; [3]Emory University, Atlanta, GA. (Tracking ID #1642577)

BACKGROUND: Many patients with chronic disease struggle to understand medication information, which contributes to poor adherence and outcomes. Patients with low health literacy or limited English proficiency are particularly at risk. We tested the effect of providing illustrated, plain language medication instructions on patients' medication understanding, adherence, and satisfaction.

METHODS: Latino patients with diabetes at 2 safety net clinics were randomized to receive usual care or usual care plus a PictureRx illustrated medication schedule. The PictureRx card showed the patient's full medication regimen, including a picture of each medication, its purpose, and a simple grid to show how much should be taken at each time of day (morning, noon, evening, and night). The PictureRx card included medication instructions in plain language, in both Spanish and English. Usual care patients received a list of their medications (text only), which was in their preferred language and also gave the drug indication. Outcomes were assessed by telephone interview approximately 1 week later. The Medication Understanding Questionnaire (MUQ) measured patients' ability to report the indication, strength, dosing, and frequency for up to 5 medications selected at random from their own medication regimen. Self-reported adherence and satisfaction were secondary outcomes. Analysis was performed by intention to treat, using independent samples t-tests.

RESULTS: Of 200 enrolled participants, 197 (98.5 %) completed follow-up. Participants had a mean age of 50 years, and 70 % were women. Most (71 %) had not completed high school, and 59 % had low health literacy. The mean number of prescribed medications was 4. Patients randomized to PictureRx cards had better overall understanding of their medications ($p<0.001$), including greater ability to report the drug indication ($p<0.01$), strength ($p<0.05$), dosing ($p<0.01$), and frequency of administration ($p<0.001$). Self-reported adherence did not differ significantly between study groups. Patients who received PictureRx cards were very satisfied. Nearly all (99 %) reported that the tool was clear and easy to read and that it helped them to remember which medicines to take (96.9 %) and when to take them (96.9 %). About 9 of 10 patients (90.9 %) said that they planned to take the PictureRx card with them to their next medical appointment.

CONCLUSIONS: In this randomized controlled trial, patients who received illustrated, plain language medication instructions demonstrated significantly greater understanding of their medication regimen. Such tools have potential to improve medication use and chronic disease control, as well as reduce health disparities.

IMPACT OF HYPOTHETICAL GENETIC BREAST CANCER RISK INFORMATION ON BEHAVIORAL INTENTIONS Monica Ferguson[1]; E. P. Wileyto[2]; Carrie Inge[3]; Marilyn M. Schapira[1]. [1]University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania, Philadelphia, PA; [3]University of Pennsylvania, Philadelphia, PA. (Tracking ID #1640720)

BACKGROUND: Average lifetime breast cancer risk is approximately 13 % for women in the U.S. A sizeable number of women at increased risk for breast cancer are eligible for early detection and risk reduction strategies such as breast MRI or chemoprevention. Yet, very few women considered high risk adopt these strategies. Breast cancer risk is most often determined by a calculated 5-year or lifetime risk using the Gail or Claus models. However, genetic information is increasingly being used to further define breast cancer risk. The purpose of this study was to evaluate the impact of providing hypothetical genetic breast cancer risk information on early detection and risk reduction behavioral intentions.

METHODS: We conducted a randomized study using breast cancer risk scenarios based on hypothetical genetic test results. Subjects were recruited from seven radiology sites in southeastern, Pennsylvania after presenting for screening mammography. Breast cancer risk was calculated based on the Gail and Claus models and each subject submitted a biological sample to determine risk based on genetic testing. Subjects were contacted by phone 1 year after receiving a letter with their individualized risk profile based on the Gail and Claus models and then randomized to one of three risk scenarios based on hypothetical genetic test results. Subject were asked about their intentions to get an MRI, take tamoxifen, take raloxifene, or consider a prophylactic mastectomy if the genetic test showed their breast cancer risk was increased by 50 %, increased by 20 %, or decreased by 50 %. We used logistic regression to assess the effect of the hypothetical risk scenarios on the outcomes of interest.

RESULTS: Three hundred fifty-two subjects completed the telephone survey. Mean lifetime breast cancer risk was 12 % based on the Gail model and 14 % based on the Claus model. The average age of the subjects was 52 years (SD 8). Sixty-one percent of the subjects were Caucasian and 34 % were African-American. Subjects who were told the genetic test information increased their lifetime breast cancer risk by 50 % or 20 % were significantly more likely to report they would undergo MRI (OR 3.58, 95 % CI 1.86–6.93; OR 1.81, 95 % CI 1.03–3.9) than those who were told their risk was decreased by 50 %. Subjects who were told their risk increased by 50 % were also more likely to consider prophylactic mastectomy (OR 2.33, 95 % CI 1.25–4.36). In multivariate analysis, after controlling for race and baseline 5-yr Gail risk, these significant effects persisted. Black race had a significant association with each intention: MRI (OR 2.28, 95 % CI 1.24–4.19), tamoxifen (OR 2.31, 95 % CI 1.14–3.81), raloxifene (OR 2.11,95 % CI, 1.28–3.81, and prophylactic mastectomy

(OR 3.05, 95 % CI 1.79–5.21). There were no interactions between race and hypothetical risk assignment.
CONCLUSIONS: Our findings suggest that communication of genetic test results with relative risk information has a significant effect on behavioral intentions associated with breast cancer risk reduction. However, the findings were not uniform across interventions. Diagnostic and surgical interventions were more sensitive to the hypothetical genetic test results than intentions to use chemoprevention. The effect of race on the behavioral intentions suggests sociodemographic factors may also be important. These findings highlight the complex nature of communicating cancer risk and the challenges of optimizing personalized breast cancer risk reduction interventions.

IMPACT OF MASSACHUSETTS HEALTH CARE REFORM ON INSURANCE COVERAGE, ACCESS TO AND RECEIPT OF CARE AND HEALTH STATUS AMONG PATIENTS WITH CARDIOVASCULAR DISEASE OR RISK FACTORS Danny McCormick[1,2]; Amresh D. Hanchate[3,4]; Karen E. Lasser[4]; Mengyun Lin[4]; Meredith D'Amore[4]; Nancy R. Kressin[3,4]. [1]Cambridge Health Alliance, Cambridge, MA; [2]Harvard Medical School, Cambridge, MA; [3]VA Boston Healthcare System, Boston, MA; [4]Boston University School of Medicine, Boston, MA. (Tracking ID #1642485)

BACKGROUND: Cardiovascular disease (CVD) is the leading cause of morbidity and mortality in the US, and racial and ethnic disparities in CVD prevalence and treatment disproportionately shorten life expectancy for minorities. Massachusetts (MA) health care reform, the model for US national health care reform, increased insurance coverage rates; however, its impact on coverage, access to care and health status among patients with CVD or cardiovascular risk factors (CVRF) or racial disparities in these outcomes is unknown.
METHODS: We analyzed data from the Behavioral Risk Factor Surveillance System (BRFSS), representative statewide cross-sectional surveys from MA and seven "control" states that did not undergo health reform (RI, VT, NH, CT, NY, NJ and PA), before (2005) and after (2009) MA health reform implementation. The survey sample (n=6,698 in MA, and 28,455 in control states) consisted of adults age 18–64 (those targeted by the reform) who reported having CVD (history of myocardial infarction or stroke) or 2 or more CVRFs (current cigarette smoking, hypertension, hyperlipidemia, obesity [BMI >30] and age>50 for men and >55 for women). We estimated pre- to post- reform absolute differences (AD) and 95 % confidence intervals in MA in the proportion of individuals having insurance coverage, access to care, utilization of care and good/excellent health status using a "difference-in-differences" approach that accounted for secular trends in "control" states and patient demographic characteristics using linear probability models. We also examined changes in racial and ethnic disparities in these outcomes following reform.
RESULTS: We found increases in the proportion of MA respondents reporting having insurance (89.9 to 94.7 %; adjusted AD (aAD), 4.2 % [2.2, 6.2]), a personal doctor (90.6 to 94.2 %; aAD, 2.2 [0.37, 4.0]) and no financial barriers to seeing a doctor (89.1 to 91.4 %; aAD, 3.8 [1.6, 6.0]). We found no statistically significant changes in the proportion reporting a routine check up in the last year (79.9 to 83.4 %; aAD, −0.7 % [−2.8, 2.6]), taking a blood pressure medication among patients with hypertension (69.5 to 73.3 %; aAD, 0.7 % [−2.8, 4.2]), taking a lipid lowering medication among patients with hyperlipidemia (85.2 to 87.2; aAD; 0.35 [−2.6, 3.3]), having excellent/good health (80.0 to 79.8 %, aAD, −1.6 [−4.3, 1.0]), having no activity limitations due to health (75.0 to 73.7 %, aAD, 2.0 [−0.8, 4.8]) and not currently smoking cigarettes (46.1 to 42.3, aAD, −2.5 [1.3, −6.3]). There were no statistically significant changes or consistent trends in black-white or Hispanic-white disparities in insurance coverage (aAD, −4.0 [−13.2, 5.1] and 4.4 [−2.9, 11.7], respectively) or having no financial barriers to seeing a doctor (aAD, 2.7 [−5.3, 10.7] and −4.3 [−15.4, 6.7], respectively).
CONCLUSIONS: For patients with known CVD or CVRFs, MA health reform was associated with modest to small improvements in insurance coverage and access to care but no improvement in receipt of care or health status or in racial and ethnic disparities in coverage or access. Additional health care reform measures may be required to more substantially improve these outcomes for patients who are at high risk for or have CVD.

IMPACT OF MASSACHUSETTS HEALTH REFORM ON HOSPITALIZATIONS, LENGTH OF STAY AND COSTS OF INPATIENT CARE: DOES SAFETY-NET STATUS MATTER? Amresh D. Hanchate[1,2]; Danny McCormick[3]; Chen Feng[2]; Karen E. Lasser[2]; Nancy R. Kressin[1,2]. [1]VA Boston HealthcareSystem, Boston, MA; [2]Boston University School of Medicine, Boston, MA; [3]Harvard Medical School/Cambridge Health Alliance, Boston, MA. (Tracking ID #1641386)

BACKGROUND: There is widespread concern that large-scale insurance expansion—such as that anticipated from the Affordable Care Act—has the potential to cause sharp increases in health care utilization and costs. In the setting of Massachusetts' landmark 2006 health care reform, we estimated pre-reform to post-reform changes in inpatient care volumes and costs, contrasting the experience of safety-net hospitals (SNH) as the predominant providers of care for targeted reform beneficiaries, with that of non-SNH.
METHODS: We analyzed MA Hospital Inpatient Discharge Data on all non-federal MA hospital discharges from 2004 to 2010 for 2,636,326 non-elderly patients (age 18–64) - the population targeted by the reform—across all 66 short-term acute care hospitals. Safety-net hospitals were identified as those in the top quartile of hospitals (N=16) in the proportion of hospital admissions with Medicaid, Free Care (state-funded program for uninsured) and self-pay as the primary payer. Using the quarter as the unit of time, we examined longitudinal hospital-level changes in (a) number of admissions, (b) average length of stay (LOS; days), (c) average charge per day ($; 2010 prices) and (d) average charge per stay ($; 2010 prices), separately for SNH and non-SNH. We also examined changes for acute and non-acute admissions, and for subpopulations by race/ethnicity and socioeconomic status (SES; defined using patient zip code median income). We used linear regression models to estimate the average change between pre-reform (1/2004 to 6/2006) and post-reform (1/2008 to 6/2010) periods, adjusting for longitudinal changes in patient demographics and comorbidities at each hospital. To better isolate the impact of reform from secular state-wide trends, we treated the elderly (age 65+) as the "control" population and used a difference-in-differences model specification.
RESULTS: There was no significant post-reform change in the number of admissions; quarterly number of admissions per hospital were 1,480 pre-reform and 1,520 post-reform (p=0.68). A similar pattern was found for admissions at hospitals by safety-net status, for acute and non-acute admissions, and for minority and low-income subpopulations. Average LOS increased by a smaller amount among SNH (0.20 days; 95 % CI=[0.15, 0.25]) than among non-SNH (0.30 days; 95 % CI=[0.27, 0.33]). Average charges per day decreased among SNH ($-198; 95 %=[$-251, $-145]) and increased among non-SNH ($249; 95 %=[$215, $284]). A similar trend with a larger difference was found for average charges per stay (SNH=$-477; 95%CI=[$-768, $-187] and non-SNH=$1,442; 95%CI=[$1,248, $1,635]). Similar trends were found for both acute and non-acute admissions. Among blacks and Hispanics, none of the measures indicated larger increase in SNH compared to that in non-SNH; for low-income patients, increases in LOS and charges were smaller in SNH.
CONCLUSIONS: Following MA health reform, utilization of inpatient care did not increase at SNH, the predominant providers of inpatient care for populations targeted by the reform, compared to non-SNH. A similar trend was found for acute and non-acute admissions, and for minority and low-income subpopulations. Future analyses in the coming months will test robustness of these findings using the non-elderly patients from comparison states as the control population.

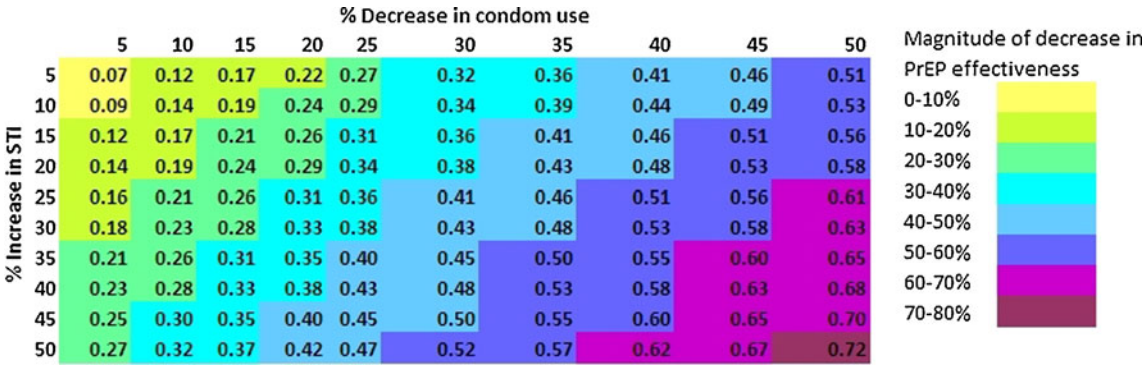
IMPACT OF ORAL HIV PRE-EXPOSUE-EXPOSURE PROPHYLAXIS IN MEN WHO HAVE SEX WITH MEN: A DECISION MODEL THAT INCORPORATES CHANGES IN CONDOM USE AND SEXUALLY TRANSMITTED INFECTIONS Anders Chen[1]; Geetanjali Chander[1]; David W. Dowdy[2]. [1]Johns Hopkins Medical Institutions, Baltimore, MD; [2]Johns Hopkins School of Public Health, Baltimore, MD. (Tracking ID #1632950)

BACKGROUND: In clinical trials, oral Pre-Exposure Prophylaxis (PrEP) reduced HIV transmission in men who have sex with men (MSM). However, condom use may decline in those using PrEP, which may in turn increase the prevalence of sexually transmitted infections (STI); both of these effects could paradoxically increase HIV transmission. We created a decision model that incorporates these effects in a simple framework designed to aid clinical decision-making as oral PrEP becomes more widely available.

METHODS: Using decision analysis, we constructed a model of HIV transmission in MSM ages 13–64 in high income countries. Our primary outcome was the annual probability of HIV infection, comparing PrEP to no PrEP among MSM, after accounting for changes in condom use and STI prevalence. Model parameters were obtained from the literature (including other highly-cited models of HIV transmission) and included baseline risk of HIV transmission per anal sex act (insertive vs. receptive); sexual frequency and partnership; antiretroviral use; and STI (HSV2, gonorrhea, chlamydia, syphilis, and HIV) prevalence. As the effect PrEP may have on condom use and STI prevalence outside of clinical trials is uncertain, we modeled a range of scenarios across a broad spectrum of values for these two parameters, thereby demonstrating the effects that these changes would have on the probability of HIV transmission. We present our results in a simple framework that can be used by clinicians in a variety of epidemiological and sociological conditions.

RESULTS: In the reference scenario, we assumed that oral PrEP reduces HIV transmission by 44 %, condom use reduces HIV transmission by 80 % per protected sex act, and prevalent STI in the HIV-negative partner increases HIV transmission by 3.5 fold. Under these assumptions, we estimated that a 20 % uptake of PrEP would reduce HIV transmission by 9 %, comparable to other models. However, if PrEP also reduced condom-protected sex acts by 10 % and increased STI prevalence by 10 %, this reduction fell to 7 % (a 14 % decrease in effectiveness). A 30 % reduction in proper condom use and a 10 % increase in STI would erase over one third of those gains. Figure 1 shows this anticipated reduction across a range of possible scenarios. On sensitivity analysis, these results were robust to changes in the prevalence of PrEP use, HIV prevalence and other key model parameters.

CONCLUSIONS: PrEP holds significant potential as a means of reducing HIV transmission in MSM, but this impact may be partially eroded by decreases in condom use and increases in STI prevalence. We use a readily-interpreted decision model to illustrate the expected magnitude of these losses in different clinical settings. Clinicians must proactively reinforce condom use, safe sex practices and other HIV prevention strategies in order to maximize the effectiveness of PrEP in reducing HIV transmission.



IMPACT OF PUBLIC REPORTING OF HOSPITAL READMISSION RATES ON EMERGENCY DEPARTMENT ADMISSION DECISIONS Matthew J. Press[1]; Zachary Meisel[2]; Michael Pesko[1]; Andrew Ryan[1]. [1]Weill Cornell Medical College, New York, NY; [2]University of Pennsylvania, Philadelphia, PA. (Tracking ID #1641645)

BACKGROUND: Beginning in July 2009, the Centers for Medicare and Medicaid Services began publicly reporting risk-standardized 30-day hospital readmission rates. Since approximately half of hospitalized patients are admitted through the emergency department (ED), hospitals may have responded to this policy in part by focusing their efforts to reduce readmissions on admission decisions in the ED. Our objective was to determine if public reporting of hospital readmission rates led to: 1) a decrease in the likelihood of admission to the hospital for patients seen in the ED following a recent hospitalization; or 2) an increase in the likelihood of admission to an observation unit for these patients.

METHODS: We performed a difference-in-differences analysis comparing the likelihood of admission to the hospital or to an observation unit for patients who presented to the ED within 7 days of a prior hospitalization versus patients who did not have a prior hospitalization within 7 days, before and after the implementation of public reporting of hospital readmission rates. We used data from 4 years before public reporting and 2 years after from the National Hospital Ambulatory Medical Care Survey, an annual, nationally representative survey of ED visits. We implemented our difference-in-differences model using logistic regression, controlling for patient demographic characteristics, clinical acuity, ED visit diagnosis, and secular trends in the outcomes for patients with and without a prior hospitalization.

RESULTS: We analyzed 97,991 ED visits by patients aged 18 or older, 4,106 of which were by patients who had a prior hospitalization within 7 days and 93,885 by patients who did not. For patients presenting to the emergency department within 7 days of a prior hospitalization, 34 % were admitted to the hospital and 3.4 % were admitted to an observation unit during the period prior to implementation of public reporting of readmission rates, versus 32 % and 2.7 %, respectively, for the period after. For patients without a recent hospitalization, 15 % were admitted to the hospital and 1.7 % were admitted to an observation unit prior to public reporting, versus 16 % and 2.5 %, respectively, after. Difference-in-differences estimates indicate that the changes in admissions to the hospital and to an observation unit for patients with a recent hospitalization compared to those without were not significant (admission to hospital: −0.5 percentage points, 95 % CI: −7.8, 6.9; admission to observation unit: −0.9 percentage points, 95 % CI: −3.1, 1.3). Results did not differ when the study sample was limited to patients with Medicare.

CONCLUSIONS: In the 2 years following its implementation, public reporting of hospital readmission rates did not lead to a change in admission decisions for patients who presented to the ED within 7 days of a prior hospitalization. National policies to reduce readmission rates that extend beyond public reporting—such as financial penalties—may lead hospitals to change processes of care in the ED. Evaluations of the impact of these policies should include an assessment of ED admission decisions.

IMPACT OF WORK CONDITIONS ON ERRORS AND QUALITY: A COMPARISON OF PRIMARY CARE CLINICS SERVING LARGE PROPORTIONS OF MINORITY PATIENTS TO THOSE THAT DO NOT Anita B. Varkey[1]; Linda Baier Manwell[2]; Said A. Ibrahim3; Roger Brown[2]; Neda Laiteerapong[4]; Mark D. Schwartz[5]; Eric Williams[6]; Diana Burgess[7]; Jacqueline Wiltshire[8]; Enid Montague[9]; Sara Poplau[10]; Mark Linzer[10]. [1]Loyola University Medical Center, Maywood, IL; [2]University of Wisconsin-Madison, Madison, WI; [3]VA Philadelphia Medical Center and Perelman University of Pennsylvania School of Medicine, Philadelphia, PA; [4]University of Chicago, Chicago, IL; [5]New York University School of Medicine and VA New York Harbor Health Care System, New York, NY; [6]University of Alabama-Tuscaloosa, Tuscaloosa, AL; [7]University of Minnesota Medical School and Minneapolis VA Health Care System, Minneapolis, MN; [8]University of South Florida, Tampa, FL; [9]Northwestern University, Chicago, IL; [10]Hennepin County Medical Center, Minneapolis, MN. (Tracking ID #1633878)

BACKGROUND: Racial disparities in care may be partly due to differences in work characteristics. We have reported that primary care clinics serving larger proportions of minority patients have less access to supplies, specialists and exam rooms. Also physicians in these clinics report more chaos, more time pressure, and less work control. Whether these work differences mediate quality of care in clinics with large minority populations is unknown. We compared chart audit data from clinics with larger versus smaller proportions of minority patients to assess associations between the work environment, medical errors and care quality.
METHODS: MEMO (Minimizing Error, Maximizing Outcome) is a 4-year longitudinal investigation involving primary care physicians and their adult patients with hypertension and/or diabetes. Chart audit data were contrasted between clinics with ≥30 % minority patients (Minority Clinics = MCs) versus <30 % (Non-Minority Clinics = NMCs). Work conditions considered as potential mediators of care quality included chaos, time pressure, work control, access to clinical resources, specialty referrals and exam rooms. In a series of two-level hierarchical (patient-physician) models, each work condition was tested as a potential mediator between minority clinic status and each error or quality outcome. Outcomes of interest included errors, quality, hypertension control, and diabetes control. An error score assigned a point for each missing care process (e.g., missed diagnosis, medication error, lack of cancer screening). A quality score assigned a point for each element of disease control according to national guidelines: hypertension control was defined as BP<140/90 for ≥50 % of recorded measurements and diabetes control was defined as a hemoglobin A1c ≤7.5 % for ≥50 % of recorded measurements in the 18-month audit period. Scores were normalized to a range of 0–100 by dividing the number of error/quality points by the number of applicable items and multiplying by 100. Models were adjusted for patient age, gender, and comorbidity, and physician age, gender, and specialty.
RESULTS: The sample included 287 physicians and 1207 patients in 73 clinics (26 MCs, 47 NMCs). Fewer rooms were available to physicians in MCs (2.1 vs 2.7 in NMCs, $p<0.001$). Overall adjusted error rates were almost 5 % higher in MCs than NMCs (29.6 % vs 24.8 %, $p<0.05$). While MC status predicted all mediators in the error models, only poor access to clinical resources (eg. supplies and equipment) completely mediated the relationship between MC status and total errors ($p<0.05$). Adjusted quality scores were not significantly different between MCs and NMCs (65.9 % vs 68.6 %, $p=0.38$). Exam room availability, however, was related to care quality in all clinics with each additional room increasing quality scores by almost 6 %. While hypertension control was similar between MCs and NMCs, BP control was lower in MCs with less specialist access (OR=0.33, 95 % CI 0.24, 0.46) and less room availability (OR=0.22, 95 % CI 0.16, 0.29). Diabetes control was worse for patients in MCs than in NMCs (OR= 0.51, 95 % CI 0.35, 0.73); with 24 % of this difference explained by less access to clinical resources.
CONCLUSIONS: Primary care work conditions, including lack of access to supplies, rooms, and referrals, was significantly associated with errors and quality, especially for MCs. Future work should assess if changes in work conditions can improve care quality and decrease medical errors for minority patients.

IMPACT OF A POPULATION MANAGEMENT SYSTEM ON PHYSICIAN PERCEIVED TIME DEVOTED TO PREVENTIVE CANCER SCREENING Jeffrey M. Ashburner[1]; Charlotte E. Ward[1]; Douglas Levy[1]; Adrian Zai[2]; Richard W. Grant[1]; Steven J. Atlas[1]. [1]Massachusetts General Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. (Tracking ID #1636311)

BACKGROUND: Advances in health information technology (HIT) allow the screening of patient populations independent of office visits. The impact of implementing such systems on the time physicians spend on these tasks during office visits is not known.
METHODS: We surveyed primary care physicians (PCPs) before and after implementation of a novel visit-independent, HIT population management system (TopCare—Technology for Optimizing Population Care in a Resource-limited Environment) for preventive cancer screening as part of a randomized trial involving 18 primary care (PC) practices within an academic PC network. PCPs in practices where the HIT intervention was implemented screened a real-time patient roster of their patients who were overdue for screening, and could choose the method of patient contact (reminder letter, refer directly to scheduling delegate or patient navigator) or defer screening. In control practices, PCPs were not involved in screening overdue patients using the HIT intervention. All PCPs (intervention and control) were asked to complete a survey about time devoted to cancer screening tasks before implementation of the HIT system and after 1-year. We hypothesized that the total amount of effort devoted to cancer screening tasks during office visits would decrease over 1-year among PCPs who used the HIT system. PCPs were asked how much time they spent during a typical half-day clinical session on each type of cancer screening (breast, cervical, colorectal), and what proportion of effort took place when the patient was not present. Post-implementation surveys included additional questions about satisfaction with the HIT system for PCPs in the intervention group. Pre and post-implementation survey responses were compared with McNemar's chi-square tests.
RESULTS: Response rates were 76 % (125 of 166) for pre-implementation and 52 % (87 of 166) for post-implementation surveys, with 46 % (76 of 166) PCPs completing both surveys. Among PCPs in the intervention group, the proportion who indicated they spent <10 min per clinical session devoted to cancer screening tasks increased over 1-year for breast (Pre: 49 %, Post: 58 %, $p=0.48$), cervical (Pre: 44 %, Post: 65 %, $p=0.01$), and colorectal (Pre: 26 %, Post: 47 %, $p=0.05$) cancer screening. There were no significant differences in pre and post-implementation survey responses for PCPs in control practices. Among of intervention PCPs who completed the post-implementation survey (47 of 90, 52 %), the proportion who believed the process for managing patients overdue for cancer screening improved over the past year increased from 21 % in the pre- to 79 % in the post-implementation survey ($p<0.001$). Among intervention PCPs who indicated they screened their roster (79 of 89, 89 %) and completed a post-implementation survey (41 of 79, 52 %), 68 % found the system to be easy to use, 63 % indicated it made their time managing cancer screening more effective, and 88 % were satisfied with the HIT system.
CONCLUSIONS: Primary care physicians who screened their roster of patients overdue for cancer screening using a visit-independent, population management HIT system for cancer screening reported less time spent devoted to cancer screening tasks during clinical sessions and no perceived increase in effort outside of a clinic visit.

IMPACT OF A FAMILY HISTORY COLLECTION TOOL, METREE©, IN IDENTIFYING INDIVIDUALS AT HIGH-RISK FOR CANCER AND THROMBOSIS Rebekah R. Wu[1,2]; Tiffany Himmel[3]; Adam Buchanan[4]; Karen Powell[5]; Elizabeth Hauser[6,7]; Astrid B. Agbaje[8]; Geoffrey S. Ginsburg[2,3]; Vincent Henrich[5]; Lori A. Orlando[2,9]. [1]VA Healthcare System, Durham, NC; [2]Duke Health System, Durham, NC; [3]Duke University, Durham, NC; [4]Duke Health System, Durham, NC; [5]UNC Greensboro, Greensboro, NC; [6]Duke University, Durham, NC; [7]VA Healthcare System, Durham, NC; [8]Cone Health System, Greensboro, NC; [9]Duke University, Durham, NC. (Tracking ID #1629461)

BACKGROUND: Family health history (FHH) is the single strongest predictor of disease risk and yet is significantly underutilized in primary care. The Genomedical Connection developed the Genomic Medicine Model for primary care (GMM) to improve collection of FHH and its use in guiding preventive health care strategies. At its core is a patient facing FHH collection tool, MeTree©, with embedded education and just-in time clinical decision support (CDS) for evidence based guideline-directed risk-stratified prevention strategies related to breast cancer, colorectal cancer, ovarian cancer, hereditary cancer syndromes, and thrombosis. To evaluate the impact of the GMM on patients, providers, clinic workflow, and patient care we integrated it into real world clinics and for this abstract we report on newly identifying patients who meet criteria for non-routine (more intensive) preventive care (i.e. at high risk for condition) and genetic counseling.

METHODS: Design: A hybrid implementation-effectiveness study. Setting: two primary care clinics in the Cone Health System. Participants: All non-adopted adult English speaking patients with upcoming appointments and their providers (PCP). Intervention: GMM education about and collection of FHH with entry of FHH into MeTree© prior to appointment, receive CDS and just-in time education about recommendations. Measures: Patient survey at baseline, 3 months, and 12 months. Physician survey at 3 months. Chart review at 1 year. Primary outcome: MeTree© identification as high risk in those not previously identified as high risk. Secondary outcomes: assignment to any non-routine strategy, previous screening performed or not.

RESULTS: Enrollment was 1,184. Participant demographics: age range 18–92 (mean 58.8, sd 11.79), 56 % male, and 75 % white. MeTree© recommended actions other than routine for: 68 in breast cancer; 14 in ovarian cancer; 221 in colon cancer; 42 for thrombosis. In addition MeTree© recommended genetic counseling for: 110 in breast cancer; 15 in ovarian cancer; 126 in colon cancer; 112 in hereditary cancer; 29 in thrombosis. For those who reached the one-year follow-up point and had non-routine recommendations, only 18.35 % (n=20) had received colonoscopies before 50 years old, the age of routine screening for colon cancer and only 16.4 % (n=10) of women had received mammograms before 50 years, the routine screening age for breast cancer. The following had been previously identified as high-risk by their providers: 2 of 68 for breast cancer; 0 of 9 for ovarian cancer; 3 of 126 for colon cancer, and 1 of 18 for thrombosis.

CONCLUSIONS: Collection of a structured FHH prior to a primary care visit uncovers a large number of people at higher than average risk for cancer and thrombosis, the vast majority of whom were previously unrecognized as being at high risk. In addition, most were not receiving the more intensive evidence-based risk-stratified preventive screening they meet criteria for. These data strongly support the need for tools that collect data for risk stratification prior to primary care appointments and provide CDS at the point of care to facilitate the implementation of evidence-based risk stratified primary prevention recommendations.

IMPACT OF THE DIABETES HEALTH PLAN ON CARDIOVASCULAR RISK FACTOR CONTROL AMONG RACIAL MINORITIES AND LOW SOCIOECONOMIC STATUS GROUPS Ekaterina Vaisberg; Carol Mangione; Susan Ettner; Norman Turk; Jinnan Li; Lindsay Kimbro; O. Kenrik Duru. UCLA, Los Angeles, CA. (Tracking ID #1642786)

BACKGROUND: Among patients with diabetes, disparities in A1c control persist for both racial minorities and individuals of lower socioeconomic status (SES). The Diabetes Health Plan (DHP) is a disease-specific health plan which aims to prevent diabetes complications by incentivizing preventive care with several innovative features. We hypothesize that the DHP will help mitigate racial and income-based disparities in A1c control.

METHODS: The DHP includes several enhancements to a standard plan, including financial incentives that minimize/eliminate co-pays to see primary care physicians and co-pays for many chronic medications. For these analyses, we used a longitudinal study design with a before/after comparison group. Patients with diabetes were defined as having any of the following: 1) at least one 250.xx inpatient, outpatient, or ED claim, 2) an A1c value≥6.5 %, or 3) use of insulin or an oral hypoglycemic medication other than metformin. We compared eligible diabetic patients within employer groups that provided the DHP and within employer groups that did not have access to the DHP (controls). We defined comparison groups by race/ethnicity (White, Latino, African American) as well as income (<$30 K, $30–49 K, $50–74 K, ≥$75 K). We applied propensity score matching, using matching variables including mean salary, member count, % female, and % with a chronic condition, to select 5 control employers for each DHP employer. We used a 2 year study window to measure A1c, with a 1-year "pre" period and 1-year "post" period for both the DHP samples but only included patients who had at least 9 months between their "pre" and "post" laboratory values in the analyses. We constructed multivariate linear regressions to estimate study outcomes, controlling for individual-level income, race, education, age and gender, and compared change in the last recorded laboratory value within each period using difference-in-difference analyses to estimate change for each race/ethnicity and income group. Results were expressed as predicted probabilities.

RESULTS: We identified 500 intervention and 751 control group patients with diabetes. In the DHP groups, the racial distribution was 64 % White, 19 % African American and 14 % Latino and the income/SES distribution was 12 % <$30 K, 31 % $30–49 K, 29 % $50–74 K and 27 %≥$75 K. In comparison, the control groups had fewer African Americans (9 %) and more patients with incomes > $75 K (47 %). Both Whites and Latinos in the DHP groups had a significantly greater reduction in A1c when compared to Whites and Latinos in the control groups (change in A1c −0.25, P<0.001 and −0.32, P=0.004, respectively). However, there was no difference in change in A1c among African Americans (p=0.21). When comparing patients by income categories, DHP patients with an income≥$75 K had larger reductions in A1c compared to controls with income > $75 K (change in A1c −0.33, P<0.001). There were no significant differences among the other SES groups.

CONCLUSIONS: Our results suggest that the DHP may potentially be associated with a reduction in disparities for Latinos, but not African Americans, as compared to whites. However, there is no similar effect for low-income patients, and the DHP may actually be associated with a greater effect among higher income groups. Additional studies over a longer follow-up period and examining a wider range of outcomes are needed for a complete evaluation.

IMPLEMENTATION OF INFORMATICS-SUPPORTED CARE MANAGEMENT INTERVENTION FOR HYPERTENSION Elaine M. Fleck[1]; Adam Wilcox[3]; Margaret McDonald[2]; Penny H. Feldman[2]. [1]Columbia University, New York City, NY; [2]Visiting Nurse Service of New York, New York City, NY; [3]Columbia University, New York City, NY. (Tracking ID #1641831)

BACKGROUND: WICER (Washington Heights/Inwood Informatics Infrastructure for Comparative Effectiveness Research) creates a research infrastructure for comparative effectiveness research (CER) with focus on patient centered care. As one of three (CER) studies through WICER, we are conducting a pilot for cross-institutional hypertension care management, supported by health information technology (HIT) and exchange. In this project, care managers at the Visiting Nurse Service of New York (VNSNY), help assess and manage patients with uncontrolled hypertension who are being treated in selected practices of the Columbia University Medical Center (CUMC)-New York Presbyterian (NYP) Ambulatory Care Network (ACN). The aim in this pilot is to asses the feasibility of a cross-institutional "informatics" supported care management intervention that

results in improved communication and coordination with the Primary Care Provider, resulting in more effective hypertension management of patients.
METHODS: Patients were identified with uncontrolled hypertension and a history of home health care service who also had a primary care provider in the CUMC/NYP/ACN. Eligible, consented patients were enrolled in a 6 month intervention and assessed comprehensively. The bilingual care manager (CM) implemented a self-management support program that included on going education and blood pressure monitoring in the home. Data were collected at baseline and at 6 months (results pending). The VNSNY CM then communicated the results of the assessment and home visits via the electronic health record of the patient at the CUMC/NYP-ACN practice. Components of HIT included creation of 1) CM access to electronic health record (EHR) of assigned patients 2) care management ability to transmit electronic secure health message 3) integration of a CM structured note in the electronic medical health record to allow PCP to monitor patient 4) CM ability to assess clinic for appointment 5) CM ability to generate an electronic alert to PCP.
RESULTS: Forty-six patients have been enrolled. Preliminary results show mean age of study participant is 67 years, 67 % female, 81 % Hispanic, 19 % non-Hispanic Black with average BP at enrollment at 153/83. CM components and communication platforms were created with physician input. Technical changes to the CU/NYP EHR were feasible. However, our limitations in facilitating smooth informatics communication were multiple. Due to organizational constraints, many informatics elements were completed via a work-around. A clinic nurse uploaded the information from the CM visit into the EHR for primary care team access. Using a secure web portal, the VNSNY CM has restricted access to the CU/NYP electronic health record, with reading rights only. Data exchange was one sided only. In addition, there was inability to generate visit alerts on the day of the visit.
CONCLUSIONS: This pilot demonstrates the challenge of creating a useful health "informatics" exchange to support care management of hypertension in the primary care setting between unique institutions. Although the technology is available for integration; the reality of aligning the health information technology for access within different organizations in a timely, efficient manner remains a challenge. Acknowledgement: This study was funded by R01 HS019853

IMPLEMENTATION OF A DIABETES SELF MANAGEMENT EDUCATION TEAM IN A PATIENT CENTERED MEDICAL HOME David E. Willens[1,2]; Kirbee Miller[2]; Rebecca L. Gammell[2]; Chandra Y. Osborn[2]; Ruth Lipman[4]; Joan Peterson[3]; Josh F. Peterson[2]. [1]Henry Ford Health System, Detroit, MI; [2]Vanderbilt University, Nashville, TN; [3]Vanderbilt University, Nashville, TN; [4]American Association of Diabetes Educators, Chicago, IL. (Tracking ID #1642406)

BACKGROUND: Type 2 diabetes is epidemic, projected to affect 1 in 3 Americans by 2050. The Patient Centered Medical Home (PCMH) model enhances resources for patient self-management and education. Diabetes Self-Management Education (DSME) improves diabetes knowledge, behaviors and control. A supervised peer coach may improve patient outcomes. We sought to determine the effectiveness, facilitators, and barriers to implementing a peer coach and Certified Diabetes Educator (CDE) team in an existing PCMH.
METHODS: The planning team consisted of a health psychologist, a diabetologist, a primary care physician and health services researcher, a nurse care coordinator (CC) and CDE, and a quality improvement fellow. A bachelor degree-level team member, without prior training in diabetes care, was trained in DSME and motivational interviewing and was added to the existing doctor-CC PCMH team. Each patient watched an educational video and received personalized instruction from the CC and then set a behavior change goal (e.g. diet, exercise, disease monitoring, smoking cessation) with the coach. Patient progress was assessed and coached telephonically to enhance problem solving and healthy coping skills monthly for 6 months. A prospective cohort design evaluated pre-post patient-level and program level outcomes. Eligible adult patients had a recent hemoglobin A1C greater than 7.0, age less than 85 years and no end stage comorbidities. The primary outcome was change in hemoglobin A1C between baseline and 6 months. Secondary outcomes were changes in self-care behaviors, perception of self-care support, diabetes knowledge, satisfaction, and self-efficacy. Patient and staff interviews assessed program implementation barriers and facilitators.
RESULTS: Of a convenience sample of 258 patients from six primary care practices at an academic tertiary care medical center, 102 were eligible and 41 (40.0 %) enrolled. Thirty (73.7 %) completed the six-month program. Most patients chose a goal related to diet or exercise. Hemoglobin A1C did not significantly change, median (IQR): 8.3 (7.4–9.5) to 7.8 (7.0–9.8). Days per week patients reported following a healthy diet improved, 3.5 (2.0–5.5) to 5.25 (4.25–6.0), $p<0.01$. Days following an exercise plan did not improve, 3.0 (1.0–4.5) to 3.0 (2.0–4.5). Scores on a 5 point Likert scale of patient perception of resources for self-management improved, 3.2 (2.6–3.9) to 4 (2.6–4.6), $p<0.05$]. Facilitators to program implementation were expert leadership, established PCMH infrastructure, and engaged CC/CDE and coach. The primary barrier to success was competing demands for patient engagement (e.g. caring for sick family member) causing variable proportions of successful follow-ups.
CONCLUSIONS: A pilot program to add a CDE-supervised diabetes peer coach to a PCMH improved patient self-care behaviors but did not significantly improve hemoglobin A1C over 6 months. Patients perceived the program implementation as a success. Level of patient engagement was variable, indicating that some subpopulations may benefit more than others. Facilitating factors were leadership with expertise in diabetes behavior change and a highly committed coach. Further research should focus on patient characteristics that predict full engagement, impact of intensity of patient contact on outcomes, and the cost-effectiveness of CDE-supervised peer coach programs.

IMPLEMENTATION OF A PROTOCOL FOR ABG USE INCREASES THE DIAGNOSTIC YIELD WHILE REDUCING UNNECESSARY TESTS Jeffrey DellaVolpe; Chayan Chakraborti; Kenneth Cerreta; Lizheng Shi; Nathan Nielsen. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1641638)

BACKGROUND: This study examined indications for arterial blood gas (ABG) use hypothesizing that implementation of a protocol of evidence based indications for ordering ABGs would result in a reduction of the total number of ABGs, ABGs "not indicated" according to the protocol, and routinely ordered ABGs without a specific clinical indication.
METHODS: We developed a protocol for ABG indications based on previously published guidelines and the needs of our institution. Exclusion criteria included age<18, stroke patients, and venous blood gases. Indications were recorded for 6 weeks by respiratory therapists prior to implementation. All staff and residents were then trained on the protocol and indications were recorded for six additional weeks.
RESULTS: After implementation of the protocol, there were significant reductions in total ABGs ($p<0.001$) and "not indicated" ABGs ($p<0.012$). The average ABG/patient/day decreased 24.8 % from 0.353 ABGs/patient/day to 0.265 ABGs/patient/day ($p<0.0003$), with no change in mortality between the study groups. Amongst non-ventilated patients, there was a significant reduction ($p<0.001$) in ABGs ordered for "difficulty oxygenating." In ventilated patients, there was a significant reduction in ABGs ordered for changes in PEEP ($p<0.03$), daily blood gases ($p<0.001$), and weaning trial ABGs ($p<0.004$) after implementation. ABGs ordered for change in minute ventilation increased by 15.6 % ($p<0.004$), while daily ABGs decreased by 14.4 % ($p<0.001$) and weaning trial ABGs decreased by 15.4 % ($p<0.004$). The number of abnormal ABGs increased 16 % when ordered for a change in minute ventilation ($p<0.006$) and decreased 13.5 % when ordered as a daily ABGs ($p<0.001$). There was no change in the number of normal ABGs.
CONCLUSIONS: Developing a clinical rationale for ordering ABGs is a shortcoming in the training of many clinicians. This project offers one approach, as well as empiric data on its effectiveness. Using this protocol, clinicians ordered fewer tests overall and ordered a higher proportion of ABGs based on changes in clinical status. Moreover, those ordered for changes in clinical status were more likely to be abnormal. In addition to facilitating more targeted and appropriate use of ABGs, this approach also reduced ABGs use 24.8 %. Cost minimization analysis estimated national cost savings to be $128 million annually for this intervention. For a test as

prevalent, invasive, and expensive as the ABG this study represents an important step towards judicious and meaningful use of medical resources.

IMPLEMENTATION OF AN EDUCATIONAL INTERVENTION AND AN ELECTRONIC DECISION SUPPORT MODEL WITH COMPUTERIZED ORDER ENTRY TO REDUCE INAPPROPRIATE RED BLOOD CELL TRANSFUSIONS Megha Rao; Jennifer Caceres; Andrew D. Timothy; Leslie Cotto; Salvador R. Garcia. University of Miami, Regional Campu, atlantis, FL. (Tracking ID #1643014)

BACKGROUND: Approximately 15 million red blood cell (RBC) units are transfused annually in the United States. Overuse of blood products is a common problem due to the lack of high quality evidence-based guidelines on RBC transfusions. While optimal RBC transfusions can be lifesaving, inappropriate non-emergent transfusions add to healthcare costs and expose patients to potential infectious and non-infectious risks. Hemoglobin levels between 7 and 9 g/dl require consideration of other clinical circumstances to determine the need for transfusion. We hypothesize that an educational intervention and a decision support (DS) model with computerized physician order entry (CPOE) for physicians will decrease inappropriate RBC transfusions in patients with hemoglobin levels in this range.
METHODS: The study was conducted at John F. Kennedy Medical Center between January 2011 - April 2012. A Phase I chart review of randomly selected patients who received blood transfusions between January 2011 - April 2011 was performed to determine if the RBC transfusions were appropriate following an evidence-based algorithm. In June 2011, the medical staff received a Medical Grand Rounds lecture to educate physicians on the current appropriate indications for transfusions and to introduce a DS model comprising an order set devised to help justify the need for transfusions with CPOE. Six months after the implementation of the DS model intervention with CPOE, a Phase II chart review of randomly selected patients who received RBC transfusions between January 2012 - April 2012 was performed. A subset analysis was performed to determine the predictors of the inappropriate blood transfusions. Patients with coronary artery disease or acute coronary syndrome were excluded due to the lack of consensus on treatment guidelines for this subgroup. We used chi square and multivariate logistic regression with interaction terms to test our hypothesis.
RESULTS: A total of 365 charts were reviewed in Phase I and 463 charts were reviewed during Phase II. Of these charts, 75.8 % (n=277/365) and 64 % (n=297/463) in Phase I and II, respectively, were in the hemoglobin range of 7–9 g/dl. Analysis of the charts within this range revealed that 67.4 % of RBC transfusions were inappropriate in Phase I compared to 43.0 % in Phase II. Hence, there was a 24.4 % reduction in inappropriate blood transfusions in those patients with a hemoglobin between 7 and 9 g/dl after the educational intervention and DS model with CPOE was implemented (p<0.01). Baseline characteristics of the subset analysis included age, gender, symptoms, cancer and chronic kidney disease. The analysis revealed that asymptomatic anemia was a statistically significant predictor of inappropriate blood transfusion with a P<0.01 and an odds ratio of 6.7 with 95 % CI (2.6–17.4)
CONCLUSIONS: The study demonstrated a statistically significant decline in the rate of inappropriate transfusions within the hemoglobin range of 7–9 g/dl. Asymptomatic anemia was a statistically significant predictor of inappropriate blood transfusion. This suggests that an educational intervention followed by implementation of a DS model with CPOE can guide the clinician further to validate the need for transfusion, thereby decreasing the number of inappropriate transfusions.

IMPLEMENTING CHANGE IN PRACTICE IN A FEDERALLY QUALIFIED COMMUNITY HEALTH CENTER: THE OFFICE-GUIDELINE APPLIED TO PRACTICE (OFFICE-GAP) MODEL Ade B. Olomu[1]; Venu Gourineni[1]; Steven Pierce[2]; Margaret HolmesRovner[3]. [1]Michigan State University, East Lansing, MI; [2]Michigan State University, East Lansing, MI; [3]Michigan State University, East Lansing, MI. (Tracking ID #1642726)

BACKGROUND: African Americans and persons with low socio-economic status (SES) suffer an unequal burden of morbidity and mortality from cardiovascular disease and receive less patient-centered care than less vulnerable patient populations. Our objective was to demonstrate the ability to accomplish change in a setting (Federally Qualified Community Health center {FQCHC}) that serves low income populations.
METHODS: This process evaluation tested the impact on medication adherence of a simple training process in routine care. The Office-GAP (Guidelines Applied to Practice) program included provider training, patient education in a group visit, and use of Guidelines Applied to Practice (GAP) checklist/tools during office visits. Two doctors, 1 nurse-practitioner (NP), 8 staff, and 96 patients with a diagnosis of CAD or diabetes mellitus in one FQCHC participated in this study from January 2009 to Dec 2011. After a group visit, patients followed up with physician visits using GAP tools. Multilevel logistic regressions tested whether the probability of aspirin, ACEI, beta blocker, and statin use changed over time.
RESULTS: All providers and staff attended the 90-minute training, 96 patients attended 90-minute group visit; Eighty (83.3 %) and 75 (78.1.0 %) patients completed their first and second follow up visits respectively. Forty-six percent were males, 48 % whites, 35 % blacks and 15 % were from other racial or ethnic backgrounds. The probability of aspirin/plavix use in all eligible patients was 44 % at pre-GAP and increased to 85 % at 3 months (p=.036, OR=6.9), to 95 % at 6 months (p<.001, OR=26.5), and 94 % at 12 months (p=.002, OR=19.5). For eligible diabetic patients, probability of aspirin/plavix use was 28 % in pre-GAP and was 84 % at 6 months (p=.020, OR=16.7) and 81 % at 12 months (p=.045, OR=11.0). Predicted ACEi/ARB use went up from 88 % at pre-GAP visit to 99 % at 6 months (p=.024, OR=15.2) and 99 % at 12 months (p=.042, OR=11.6) in diabetic patients. Statin use was 99 % at 12 months (p=.019, OR=17.2), compared to 86 % at pre-GAP visit. Logistic regression revealed that age and Office-GAP visits predicted aspirin use and having Medicaid/Medicare insurance predicted statin use at 12 months.
CONCLUSIONS: This approach to implement change in a FQCHC using provider/patient training and Office-GAP tools appears feasible. It has the potential to improve evidence-based medication use for patients with heart disease and diabetics. The Office-GAP Program could serve as a model for implementing guideline based care for all chronic diseases in outpatient clinical settings. There is a need to determine effectiveness and cost-effectiveness of this approach.

IMPLEMENTING A TRACKING AND FEEDBACK REGISTRY INNOVATION TO IMPROVE COORDINATION OF ADJUVANT THERAPIES IN BREAST CANCER Nina A. Bickell[1]; Rebeca Franco[1]; Allie Moss[2]; Zoe Lawrence[1]; Ann S. McAlearney[2]. [1]Mount Sinai School of Medicine, New York, NY; [2]The Ohio State University, Columbus, OH. (Tracking ID #1640042)

BACKGROUND: As adjuvant breast cancer treatments are delivered by different specialists, underuse may be worsened by fragmented care, but could be improved by implementing a tool that improves coordination across outpatient specialty care settings. Despite the apparent effectiveness of an innovative Tracking & Feedback (T&F) intervention tool to eliminate racial disparities in and reduce underuse of needed adjuvant breast cancer treatments, uptake and implementation of the tool was poor. We aimed to assess the challenges to and feasibility of implementing a web-based T&F innovation in hospitals that serve large proportions of minority women with breast cancer as a first step toward improving coordination and delivery of needed adjuvant therapies.
METHODS: We interviewed 49 key informants (n=29 clinical; n=20 administrative) from 6 inner-city hospitals with high volumes of minority breast cancer patients to better understand how organizational characteristics might impact coordination of care, implementation and success of the T & F innovation. We used the constant comparative method of qualitative data analysis and standard techniques to code the interview data.
RESULTS: We found considerable variability across hospitals with respect to their reported abilities and approaches to coordinate tracking and delivery of adjuvant therapies for women with breast cancer. All sites have multi-disciplinary Tumor Boards meetings and active Quality Improvement

with many departments focused on improving transitions in care. Yet, for several, specialty care remains siloed and systems for communicating across specialties are poor. Many hospitals have patient navigators, but navigator functions differ across sites. All hospitals have electronic medical records (EMRs) but not all EMRs can "talk" to scheduling software to track requested referrals. Many physicians rely on follow-up appointments to ascertain adjuvant treatment receipt, but sites vary in their abilities to address "no-shows." Several sites rely on staff to identify and follow up with "no-shows," but many of these individuals are overwhelmed with ever-increasing tasks and management responsibilities. Lack of resources, compounded by patient populations who often differ from their providers in language and cultural beliefs, coupled with frequent incorrect contact information make it difficult to follow up with no-shows. While quality and change were important to all, several interviewees felt they were bucking an inflexible system and devised ways to work around the obstacles. Perceived successful coordination factors included strong clinical leadership, designated accountabilities, and flexibility for both clinicians and administrators to work within and around inflexible organizational systems of care.

CONCLUSIONS: As care integration across sites and specialties are encouraged by federal law and regulation, specialty care silos and rigid communication systems still pose barriers to change. Our results suggest that implementing a web-based T&F innovation must be responsive and tailored to individual hospital characteristics, and flexible enough to permit modification of care processes at the organization level.

IMPLICATIONS OF POVERTY, HOSPITAL TYPE, AND A GRASSROOTS COMMUNITY INTERVENTION ON DISSEMINATION OF PHYSICIAN ORDERS FOR LIFE SUSTAINING TREATMENT IN CALIFORNIA HOSPITALS Takehiro Sugiyama[1,2]; David Zingmond[1]; Karl Lorenz[3]; Allison Diamant[1]; Kate O'Malley[4]; Judy Citko[5]; Victor Gonzalez[1]; Neil Wenger[1]. [1]University of California, Los Angeles, Los Angeles, CA; [2]University of Tokyo, Tokyo, Japan; [3]Greater Los Angeles VA Medical Center, Los Angeles, CA; [4]California HealthCare Foundation, Oakland, CA; [5]Coalition for Compassionate Care of California, Sacramento, CA. (Tracking ID #1626524)

BACKGROUND: Clinicians must identify and document patients' goals and wishes in order to assure appropriate treatment in late life. However, decisions such as do not resuscitate (DNR) orders are commonly lost in transition between care venues. Physician Orders for Life-Sustaining Treatment (POLST) is a tool to facilitate continuity of end-of-life decisions across care venues and became legal in California in January 2009. A novel grassroots community coalition intervention was used to disseminate POLST into California hospitals and nursing homes. We surveyed California hospitals to evaluate dissemination of POLST and factors associated with POLST uptake in hospitals.

METHODS: We surveyed all acute care hospitals in California between August 2011 and January 2012. We then linked survey responses with community coalition reports of interaction with hospitals and hospital characteristics from the California Office of Statewide Planning and Development (OSHPD) and Census ZIP Code Tabulation Areas (ZCTAs). Main outcome measures were hospital report of stocking blank POLST forms, staff education about POLST, and appropriate handling of POLST both in the emergency department (ED) and on admission. We described the extent of POLST dissemination and then performed multiple logistic regression analyses to evaluate the independent association of the intervention (community coalitions-hospital interaction) and hospital factors (ownership, size, hospital-area poverty [i.e., proportion of residents with income less than 200 % of federal poverty level], rurality, and proportion of older inpatients with early DNR orders in 2009) associated with POLST uptake in the hospital. We converted odds ratios into risk ratios (RRs) to facilitate interpretation of the results with bootstrapping to compute confidence intervals (CIs).

RESULTS: Of 349 hospitals, 286 (81.9 %) responded to the survey. Eighty-seven percent of hospitals had available blank POLST forms, 84 % had educated staff about POLST and 91 % handled POLST properly in the ED and on hospital admission. In multivariable analyses, the proportion of residents in the area with income below 200 % of the federal poverty level was negatively associated with stocking blank POLST forms (RR 0.97 per 10 % increase in the proportion in poverty, 95 % CI 0.94–0.99), educating staff about POLST (RR 0.96, 95 % CI 0.92–0.99), and appropriate handling of POLST (RR 0.98, 95 % CI 0.94–0.998). For-profit (compared to nonprofit) hospitals were less likely to stock blank POLST forms (RR 0.86, 95 % CI 0.70–0.997) and to have educated staff (RR 0.86, 95 % CI 0.71–0.98). Hospitals with community coalition interaction were more likely to handle POLST forms appropriately (RR 1.09, 95 % CI 1.004–1.21).

CONCLUSIONS: Although POLST is widely used in California hospitals, a significant minority of hospitals remain unprepared to appropriately employ POLST forms 3 years after implementation. Future efforts to improve POLST implementation should emphasize dissemination in hospitals in poorer areas and among for-profit hospitals. A grassroots community-based intervention appeared to facilitate POLST dissemination in California hospitals.

IMPROVEMENT OF DEPRESSION SYMPTOMS WITH VILAZODONE TREATMENT: MADRS SINGLE ITEM SHIFT ANALYSES Larry Culpepper[1]; Anjana Bose[2]; Maju Mathews[2]; John Edwards[2]. [1]Boston University School of Medicine, Boston, MA; [2]Forest Research Institute, Jersey City, NJ. (Tracking ID #1640707)

BACKGROUND: Vilazodone (VLZ) is a serotonin reuptake inhibitor and 5-HT1A receptor partial agonist approved by the FDA for the treatment of major depressive disorder (MDD) in adults. The Montgomery-Asberg Depression Rating Scale (MADRS) is a validated, clinician-rated scale used to measure MDD symptom severity and improvement following treatment; it comprises 10 items (Apparent Sadness, Reported Sadness, Inner Tension, Reduced Sleep, Reduced Appetite, Concentration Difficulties, Lassitude, Inability to Feel, Pessimism, Suicidal Thoughts). Each item score ranges from 0 to 6 with higher score indicating greater severity. The present analyses assessed clinically relevant symptom improvement in MADRS individual items by evaluating baseline to end of study (EOS) shifts from more to less severe symptom categories.

METHODS: The analyses were conducted on pooled data from 2 positive, Phase III, eight-week, double-blind, randomized, placebo (PBO)-controlled trials (NCT00285376, NCT00683592) in outpatients (18–70 years) with DSM-IV-TR-defined MDD. VLZ dose was titrated over a two-week period from 10 mg to a 40-mg target dose taken once daily with food. Post hoc analyses were conducted on study completers with 8 weeks of treatment. The shift analyses were done at two levels: patients with baseline score ≥2 (eg, sad but brightens without difficulty, slightly reduced sleep, occasional edginess) to an EOS score <2 ('minimal to no symptoms') and patients with baseline score ≥4 (eg, unhappy most of the time, sleep reduced by at least 2 h, continuous tension/intermittent panic) to EOS score ≤2. Odds ratios were estimated and Fisher's exact test was used to obtain the 2-sided nominal P values for comparisons between VLZ and PBO.

RESULTS: The percentage of patients with severity category shift from baseline ≥2 to EOS <2 was significantly higher for VLZ vs PBO on all MADRS single items (OR range, 1.4–1.7; $P \leq .05$) except Reduced Appetite (OR 1.3; $P = .232$). In patients with greater symptom severity (baseline ≥4), more VLZ than PBO patients shifted to ≤2 at EOS. Differences were statistically significant for VLZ vs PBO on items of Apparent Sadness (60 % vs 47 %; OR, 1.7; $P = .003$), Reported Sadness (60 % vs 48 %; OR, 1.6; $P = .003$), Inner Tension (58 % vs 41 %; OR, 2.0; $P = .003$), Reduced Sleep (51 % vs 36 %; OR, 1.8; $P = .002$), and Lassitude (57 % vs 47 %; OR 1.5; $P = .029$). For Item 10 (Suicidal Thoughts), OR was not evaluable.

CONCLUSIONS: Significantly greater proportion of patients treated with VLZ compared with PBO achieved a shift from a baseline score ≥2 to EOS score <2 on all MADRS single items except Reduced Appetite. For patients with more severe symptoms (baseline score ≥4), significant improvements were noted on the items of Reported Sadness, Apparent Sadness, Inner Tension, Reduced Sleep, and Lassitude. Shifts to the 'minimal to no symptom' severity category demonstrated that VLZ treatment is associated with clinically meaningful improvement in symptoms of MDD.

IMPROVEMENTS IN QUALITY OF LIFE BY MAGNITUDE OF WEIGHT LOSS IN OBESE AND OVERWEIGHT SUBJECTS
Timothy Church[1]; Barbara Troupin[2]. [1]Louisiana State University System, Baton Rogue, LA; [2]VIVUS, Inc., Mountain View, CA. (Tracking ID #1623811)

BACKGROUND: Obesity has been shown to have a negative impact on quality of life (QOL). Weight loss has demonstrated improvements in QOL among obese and overweight patients. In the EQUIP and CONQUER studies, phentermine and topiramate extended-release (PHEN/TPM ER), when used in combination with lifestyle modifications (including reduced caloric intake and increased physical activity), resulted in significant weight loss over 56 weeks in obese and overweight subjects with comorbidities. This post hoc analysis evaluated weight loss and its effects on QOL over 56 weeks.
METHODS: EQUIP evaluated PHEN 3.75 mg/TPM ER 23 mg (3.75/23) and PHEN 15 mg/TPM ER 92 mg (15/92) vs placebo in 1267 patients with body mass index (BMI) ≥35 kg/m2. CONQUER evaluated PHEN 7.5 mg/TPM ER 46 mg (7.5/46) and 15/92 vs placebo in 2487 patients with BMI ≥27 kg/m2 and ≤45 kg/m2 and ≥2 weight-related comorbidities. A standardized lifestyle intervention consisting of caloric reduction and increased physical activity was introduced for all subjects. In this post hoc analysis, Impact of Weight on QOL-Lite Questionnaire (IWQOL-Lite; EQUIP and CONQUER) and Medical Outcomes Study Short Form (SF-36; CONQUER only) were administered to subjects achieving <5 %, ≥5 % to <10 %, ≥10 % to <15 %, and ≥15 % weight loss at week 56.
RESULTS: In both trials, least-squares mean percent weight loss was significant with PHEN/TPM ER treatment vs placebo at week 56: in EQUIP, −1.6 %, −5.1 %, and −10.9 % for placebo, 3.75/23, and 15/92, respectively at week 56; and in CONQUER, −1.2 %, −7.8 %, and −9.8 % for placebo, 7.5/46, and 15/92, respectively ($P<.0001$ vs placebo, all comparisons). Across all treatment groups, in EQUIP, 57.5 % of subjects lost <5 % of their body weight by week 56, 16.8 % lost ≥5 % to <10 %, 9.8 % lost ≥10 % to <15 %, and 15.9 % lost ≥15 %. In CONQUER, across all treatment groups, 51.2 % of subjects lost <5 % of their body weight by week 56, 19.3 % lost ≥5 % to <10 %, 12.9 % lost ≥10 % to <15 %, and 16.5 % lost ≥15 %. Improvements in QOL increased incrementally with the degree of weight loss. In EQUIP and CONQUER, greater weight loss led to greater numerical improvements in IWQOL-Lite total score (Table). SF-36 Physical Component Summary and Mental Component Summary scores were also numerically improved with increasing weight loss in CONQUER (Table). Numerical improvements were observed in all IWQOL-Lite (EQUIP and CONQUER) and SF-36 (CONQUER) domain scores, with greater weight loss leading to greater numerical improvements (data not shown). PHEN/TPM ER was generally well tolerated, with the most common adverse events being dry mouth, paraesthesia, and constipation in each study.
CONCLUSIONS: Weight loss was associated with improved QOL as assessed by IWQOL-Lite and SF-36, with greater weight loss leading to greater improvements in QOL parameters. Improvements in QOL, through lifestyle modifications alone or in conjunction with a weight-loss therapy such as PHEN/TPM ER, may provide an additional benefit for obese patients.

Table. Improvements in IWQOL-Lite and SF-36 by magnitude of weight loss from baseline to week 56 (ITT-LOCF).

	<5% Weight Loss	≥5% to <10% Weight Loss	≥10% to <15% Weight Loss	≥15% Weight Loss
EQUIP IWQOL-Lite Total Score (n=496, 176, 117, 186)*	7.0	10.6†	15.1‡§	20.0‡§¶
CONQUER IWQOL-Lite Total Score (n=972, 424, 298, 394)*	8.6	13.1‡	15.8‡§	20.2‡§¶
CONQUER SF-36 Physical Component Summary (n=963, 414, 300, 390)*	1.7	4.0‡	5.2‡§	6.7‡§¶
CONQUER SF-36 Mental Component Summary (n=963, 414, 300, 390)*	-0.5	-0.4	0.6†	0.8†§

*n values represent those subjects in the <5%, ≥5% to <10%, ≥10% to <15%, and ≥15% weight loss groups, respectively
†$P<.05$ vs <5% weight loss; ‡$P<.0001$ vs <5% weight loss; §$P<.05$ vs ≥5% to <10% weight loss; ¶$P<.005$ vs ≥10% to <15% weight loss

IMPROVING BED MANAGEMENT BY UTILIZING EARLY INTERDISCIPLINARY DISCHARGE PLANNING
Surekha Bhamidipati[1]; Andrew Abraham[1]; Edith Johnson[2]. [1]Christiana Care Health System, Newark, DE; [2]Christiana Care Health System, Newark, DE. (Tracking ID #1644080)

BACKGROUND: Daily discharge predictions are a necessary activity in busy hospitals and the accuracy of such predictions contributes to hospital preparedness for challenges to bed capacity. Last-minute discharge planning leading to a lack of coordination in the discharge process can lead to inefficiencies and bed management constraints during this vital transition point of patient care. Our study was designed to assess the effect of a 24 h discharge planning tool and a discharge liaison on early discharges while maintaining patient preparedness for discharge.
METHODS: The study was conducted on a single medical unit that is supported by one hospitalist group, i.e. a geographically cohorted patient unit, over a 6 month period. Over 50 % of the patients on the unit were staffed by a single rotating hospitalist and a nurse practitioner. A pre-study assessment of 457 patients was performed to establish baseline parameters that included demographics and hospital metrics such as readmission rates and length of stay. A total of 326 patients were involved in the study. During the study, an interdisciplinary team including the attending physician of record, charge nurse, case manager, social worker and a discharge liaison met at a daily huddle to discuss next day's potential discharges. A checklist tool was created and utilized at the huddle to target patients deemed safe for discharge before 2 PM the next day. The checklist was a list of responsibilities for staff members and consisted of tasks necessary for discharge the next day. The targeted patients were assigned the discharge liaison, and all other patients were discharged as usual and served as a control group. The discharge liaison was a nurse practitioner with clinical responsibilities and helped facilitate the implementation of the tasks on the checklist and spent about 1 h a day performing this job. The study also measured patient preparedness for discharge using a validated and nationally tested survey tool, CTM III. Both the control and the intervention groups received the survey.
RESULTS: The number of early daily discharges (before 2 pm) increased significantly from an average of 2.2 to 4.0 ($p<0.001$) from baseline for the intervention group with no significant change for the control group. No

increase in length of stay or readmission rates was noted during the study period. The discharge survey scores in the intervention group compared to the control group revealed the following: 1. Attention to patient and family preferences increased, 3.26 vs. 3.70 (p=0.002), 2. Patient understanding of their responsibilities regarding personal health management improved 3.26 vs. 3.70 (p=0.002) and 3. Knowledge regarding the purpose of medications increased from 3.27 vs. 3.70 (p=0.002).
CONCLUSIONS: Our 24 h discharge planning tool and use of a discharge liaison are ways to improve staff preparedness for efficient discharges and can facilitate earlier discharges and improve patient preparedness for this important transition. Such an intervention can also result in improved patient flow, hospital bed management and can be easily replicated at any acute care hospital without significant additional expenditure.

IMPROVING RATES OF ANNUAL COLORECTAL CANCER SCREENING AMONG LATINO PATIENTS David W. Baker[1,2]; Tiffany Brown[1,2]; David R. Buchanan[3]; Jordan Weil[3]; Kenzie A. Cameron[1,2]; Lauren Ranalli[3]; M. Rosario Ferreira[4]; Kate Balsley[3]; Shira N. Goldman[1,2]; Ji Young Lee[1]; Michael S. Wolf[1,2]. 1Northwestern University Feinberg School of Medicine, Chicago, IL; [2]Northwestern University Feinberg School of Medicine, Chicago, IL; [3]Erie Family Health Center, Chicago, IL; [4]Northwestern University Feinberg School of Medicin, Chicago, IL. (Tracking ID #1636721)

BACKGROUND: Only 61 % of U.S. adults are adequately screened for colorectal cancer (CRC); rates are lower among Blacks, Latinos, and the poor. Fecal occult blood testing (FOBT) is one recommended screening modality; its effectiveness is contingent on repeating the test every 1–2 years. Many individuals in vulnerable groups face barriers to annual FOBT screening, including lack of a regular source of care, less frequent medical visits, frequent changes in residence, and lack of awareness of the need for annual screening. We describe interim results from a comparative effectiveness study of an intervention to maximize the rate of annual FOBT compared to usual care among vulnerable patients.
METHODS: This is a randomized controlled trial conducted at an urban federally-qualified health center network serving a primarily poor, Latino population. At the start of the study, 42 % of patients were up to date on CRC screening; the rate of annual (repeat) screening (within 18 months of the previous FOBT) was 23 %. We excluded patients with medical conditions that would make CRC screening by FOBT inappropriate. All patients who had a negative FOBT in the previous year and were due for repeat FOBT were identified using electronic health records and randomized (with an IRB-approved waiver of informed consent) to receive either usual care or a multifaceted intervention. Usual care includes computerized reminders, standing orders for assistants to give out a fecal immunochemical test (FIT), and provider feedback on CRC screening rates. The intervention group also receives: 1) a mailed reminder letter to patients from their provider, including a free FIT, low-literacy instructions for completing the FIT, and a postage-paid return envelope, 2) automated phone and text messages after the initial mailing, 3) an automated phone and text reminder 2 weeks later for those who fail to return the FIT, and 4) outreach by a CRC screening coordinator to patients who fail to return the FIT within 3 months. The primary outcome is completion of FOBT within 6 months of the date due.
RESULTS: 175 patients have been randomized to the intervention group; they are primarily Latino (87 %), female (70 %), and Spanish-speaking (83 %), with a mean age of 60 years (SD=6.1). The mailing was returned to sender for 3 %. For the initial automated calls, 57 % were answered in person, 35 % were answered by machine, and 9 % were not completed. The initial text message was sent successfully to 51 % of patients. To date, 134 (77 %) intervention patients completed a repeat FOBT within 6 months; 16 (9 %) completed the FIT prior to their due date (i.e., after a clinic visit); 54 (31 %) completed it within 2 weeks of the mailing and initial call and text, 53 (30 %) between 2 weeks and 3 months (following the reminder call and text), and 11 (6 %) between 3 and 6 months (after the coordinator outreach). Six (5 %) patients had positive FITs.
CONCLUSIONS: This multifaceted intervention has achieved rates of adherence to annual CRC screening far above pre-intervention levels. Moreover, adherence reached the high level needed for FOBT to reduce CRC mortality. Most of the screenings were achieved by the FIT mailing and the automated reminders without the need for the CRC screening coordinator. These interim data suggest that it is possible to dramatically improve annual CRC screening for vulnerable populations with relatively low-cost strategies that can be supported by increasingly available health information and consumer technologies.

IMPROVING RESIDENT UNDERSTANDING OF THE HEALTH LITERACY OF THE COMMUNITY THROUGH THE LAY HEALTH EDUCATOR PROGRAM Panagis Galiatsatos; Rebeca Rios; William D. Hale; Jessica Colburn; Colleen Christmas. Johns Hopkins Bayview Medical Center, Baltimore, MD. (Tracking ID #1638644)

BACKGROUND: Health literacy is defined as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions about one's medical care". While health literacy of individuals has been shown to correlate with positive health outcomes, recognizing health literacy is not rigorously taught in most residency training programs. The Lay Health Educator Program (LHEP), established and hosted by Johns Hopkins Bayview Medical Center, invited religious congregations from nearby communities to send representatives to learn about common medical conditions and health care topics taught in weekly seminars and bring that expertise back to their congregations. The seminars were delivered by residents, followed by a question-and-answer portion so that residents may receive immediate feedback about the community members' comprehension of the seminar. The purpose of this study is to assess if this community engagement impacts residents' perspectives of health literacy and if such an impact is valuable in their medical training.
METHODS: The LHEP was conducted over 10 weeks, one evening a week for 2 hours, covering specific health topics. Resident physicians researched their health topics and presented the information in a PowerPoint format with handouts, speaking for 45 min followed by a 15 min question-and-answer portion with the participants. Prior to the sessions, if requested, coaching was provided for the residents. The impact of these sessions was evaluated with pre- and post-surveys with each question rated on a 1–10 Likert scale (1=not at all, 10=completely).
RESULTS: Twelve residents elected to participate in the LHEP seminars. Resident survey results are presented as a mean (± standard deviation). Prior to the LHEP, the residents rated their comfort in recognizing health literacy as 7.07±0.91. After LHEP, they rated that the LHEP changed their perspective in recognizing health literacy as 8.00±1.34, that knowing their patient's health literacy would influence how they would manage patients at 9.15±1.07, and the degree to which they felt more should be done in residency training to improve learning a patient's and community's health literacy at 9.0±1.36.
CONCLUSIONS: Per the surveys, even though the residents participating in the LHEP initially felt confident in recognizing a patient's health literacy, the LHEP changed their perspectives on the importance of health literacy in patient care. Residents revealed that knowledge of patients' health literacy would impact management. All residents agreed more should be done in residency training to learn about a community's health literacy.

IMPROVING THE QUALITY OF ASTHMA CARE USING THE INTERNET Christopher Sciamanna; Jennifer M. Poger; Andrew Pool; Heather Stuckey; Erik B. Lehman; Timothy Craig. Penn State Hershey, Hershey, PA. (Tracking ID #1621261)

BACKGROUND: Asthma is a significant health burden, as approximately 7 % of Americans are currently diagnosed with this condition. Despite widespread dissemination of evidence-based guidelines, more than half of adults with asthma are uncontrolled. The purpose of this randomized

control trial was to test the efficacy of an intervention designed to help patients know what questions to ask their provider, as well as to know when they need a provider visit sooner than scheduled by providing them with access to an asthma module of a patient activation website.
METHODS: 408 participants were randomized 1:1 to one of two conditions: Participants in the Intervention Condition (IC) received feedback about their asthma control, including questions to ask their asthma care provider at their next visit. Participants in the Control Condition (CC) received feedback about questions regarding preventive services (e.g., cancer screening) that they should ask their primary care provider. The main outcome measure is the change in the percentage of patients in each group whose asthma is controlled (ACT≥20), according to the Asthma Control Test (ACT) and NAEPP guidelines.
RESULTS: 325 participants completed 12 month follow up measures (IC: N=157; CC: N=168). Participants in the IC reported a significantly greater mean change in the overall ACT score than participants in the CC (2.1 vs 1.2; p=.012). Similarly, significant between group differences were observed in the mean change in rescue inhaler/nebulizer use frequency (0.6 vs 0.3; p=.005). Regarding medication use, participants in the IC reported a significant between group mean change in the number of inhaled asthma medications they used between baseline and 12 months (0.4 vs 0.2; p=0.021).
CONCLUSIONS: Participants randomized to the IC reported greater improvement in asthma control compared to the CC. Results indicate that individuals with chronic conditions, such as asthma, may benefit from using patient activation websites with tailored feedback.

IN THE PRESENCE OF A MENTAL HEALTH COMORBIDITY, WHAT PREDICTS GUIDELINE ADHERENCE FOR A CHRONIC CONDITION (TYPE 2 DIABETES)? Leigh H. Simmons[2]; Lisa C. Welch[1]; David M. Pober[1]; Felicia L. Trachtenberg[1]; John B. McKinlay[1]. [1]New England Research Institutes, Watertown, MA; [2]Massachusetts General Hospital, Boston, MA. (Tracking ID #1641823)

BACKGROUND: Evidence-based guidelines are often considered the standard for facilitating and assessing clinical care. Most guidelines are constructed for individual illnesses, but patients often present with multiple comorbidities. This study examines the predictors of guideline adherence for type 2 diabetes in the presence of a mental health comorbidity.
METHODS: A randomized balanced factorial experiment was conducted with 256 primary care physicians who observed video vignettes of an established patient presenting with type 2 diabetes with worsening glycemic control, weight gain, and elevated blood pressure. Vignette patients were systematically varied by age, gender, race, and comorbidity type (depression, schizophrenia with normal affect [SNA] or bizarre affect [SBA], and eczema as control). Verbal presentation was standardized. After viewing the vignette, respondents took part in a structured interview about clinical management, attitudes toward patient, practice culture, disease management tool use, and professional satisfaction. The outcome (higher/lower adherence to diabetes guidelines) was scored on a 0–100 scale summing whether respondents would attend to constructs of published diabetes guidelines: diabetes treatment (glycemic control, self-management, psychosocial care); prevention/management of diabetes complications (cardiovascular disease, nephropathy, retinopathy, foot care/neuropathy); and additional physical and laboratory evaluations for comprehensive diabetes evaluation. A multivariate ANCOVA model with backwards elimination tested for significance of predictors and meaningful interactions with comorbidity, with control for potential confounders.
RESULTS: The average level of guideline adherence was 43.6 (range: 3.0–92.5). Guideline adherence was significantly higher among physicians who reported using more disease management tools (p=.009) and general use of guidelines in their practice (44.9 vs 36.5; p=.048). Compared to patients with eczema, guideline adherence was only 2.1 points higher for patients with depression (95%CI: −9.6,13.9) but lower for patients with SNA (−4.0; 95%CI: −16.6,8.6) or SBA (−4.5; 95%CI: −16.3,7.4). Further, for patients with SBA, physicians ranking schizophrenia higher than diabetes on their problem list exhibited somewhat lower adherence to diabetes guidelines compared to those ranking diabetes higher (−10.6; 95%CI: −18.9, −2.3); for patients with SNA, the trend was the same. Though physician view of patients' ability to self-manage health explained some of the difference in adherence among comorbidities (p=.02), the effect of comorbidity remained significant (p=.008).
CONCLUSIONS: On average, respondents reported low adherence to diabetes guidelines in the presence of a comorbidity (mental health or eczema). That some physicians scored above 90 supports that the outcome variable captured relevant clinical actions, suggesting that low average adherence may reflect substantial clinical inertia. The finding of slightly lower guideline adherence in the presence of comorbid schizophrenia is consistent with literature showing that patients with serious mental illness risk lower quality of care and higher mortality from diabetes. Results identify two practice patterns—using more disease management tools and general use of guidelines in clinical practice—that support guideline adherence for patients with diabetes, providing actionable strategies that healthcare organizations and policymakers can target to enhance guideline implementation.

INCARCERATION IS ASSOCIATED WITH WORSE HEALTH OUTCOMES AND ANTIRETROVIRAL ADHERENCE AMONG HIV-INFECTED PATIENTS Emily A. Wang[1]; Kathleen A. McGinnis[2]; Kathleen M. Akgün[1]; Jennifer Edelman[1]; Amy C. Justice[1,3]; David Rimland[4]; Karen Wang[3]; David A. Fiellin[1]. [1]Yale University, New Haven, CT; [2]VA Pittsburgh Healthcare System, Pittsburgh, PA; [3]VA CT Healthcare System, West Haven, CT; [4]Atlanta VAMC and Emory University School of Medicine, Atlanta, GA. (Tracking ID #1639971)

BACKGROUND: One in seven individuals infected with HIV is incarcerated each year. Compared with HIV-infected individuals who are never incarcerated, individuals released from correctional facilities have worse HIV disease control and increased mortality, although the specific mechanisms for this are unknown. We aimed to measure the impact of incarceration on HIV disease control in released patients and determine whether worse adherence to antiretroviral therapy and/or poor engagement in primary care are contributing to worse disease outcomes following release from correctional facilities.
METHODS: We examined the association between incarceration and measures of HIV disease severity using data from the Veterans Aging Cohort Study (VACS). VACS is a longitudinal, prospective, 8-site observational study of HIV-infected patients seen in Veterans Administration Medical Centers using a combination of self-reported, administrative, and clinical data. During the most recent follow-up examination (2010–2011), participants answered questions about their sociodemographics, history of incarceration, alcohol and illicit drug use, homelessness, and depression. Using multivariate regression, we explored the independent association between having a history of incarceration and low CD4 counts (<200 cells/mL), detectable viral RNA loads (> 500 copies/mL), and the VACS Index, a validated biomarker predictive of morbidity and mortality. We then performed a Baron and Kenny statistical mediation analysis to examine whether antiretroviral drug adherence or engagement in primary care (2+ primary care visits in 12 month period) mediated observed associations, expecting an attenuation of the association after adjustment for the candidate mediators.
RESULTS: Among 1599 HIV-infected male patients, 48 % reported having been incarcerated, 73 % were on HAART and 98 % had 2+ primary care visits in the past 12 months. In unadjusted analyses, participants who reported a history of incarceration were more likely to have a low CD4 count (odds ratio (OR) 1.41, 95 % confidence interval (CI) 1.05, 1.89), a detectable viral load (1.39 OR, 95 % CI (1.02, 1.74), and a higher (worse) VACS Index score, (β 4.11, 95 % CI (2.19, 6.05)) compared with participants who did not endorse a history of incarceration. Adjustment for covariates associated with low CD4 count, including drug use, income, homelessness in the past 4 weeks, attenuated the association (adjusted odds ratio (AOR), 1.19, 95 % CI 0.86, 1.65). Similarly, adjustment for covariates associated with detectable viral load (age, race, drug use, income, homelessness in the past 4 week) attenuated the association of between

incarceration and detectable viral load (AOR 1.12, 95 % CI 0.84, 1.52)). However, adjustment for covariates associated with VACS Index (race, income, drug use, homelessness in the past 4 weeks) attenuated but did not eliminate the association between incarceration and the VACS Index (β 2.2, 95 % CI, 0.16, 4.31). Mediation analysis revealed that HAART adherence attenuates the association by 13 % (β 1.9, 95 % CI −0.29, 4.23) while engaging in primary care does not change the association between incarceration and VACS index (β 2.3, 95 % CI 0.08, 4.59).

CONCLUSIONS: Incarceration is associated with worse health outcomes among HIV-infected veterans. Clinicians should assess incarceration history in HIV-infected patients in order to improve clinical outcomes through improved adherence to antiretroviral therapy.

INCORPORATING A PANEL MANAGEMENT ASSISTANT AND TOOLKIT INTO VA PATIENT ALIGNED CARE TEAMS Katelyn Bennett[1,2]; Ashley E. Jensen[1,2]; Jaclyn Fox[1,2]; Stella Savarimuthu[1,2]; Rachel Blitzer[1,2]; Anne Dembitzer[2,1]; Scott Sherman[2,1]; Mark D. Schwartz[1,2]. [1]NYU School of Medicine, New York, NY; [2]Veterans Affairs New York Harbor Healthcare System, New York, NY. (Tracking ID #1641229)

BACKGROUND: Panel management (PM) is an important tool in patient centered medical home (PCMH) models, but few studies have examined how to implement it effectively. The Program for Research on the Outcomes of VA Education (PROVE) seeks to understand the impact of PM and clinical microsystem education on hypertension and smoking outcomes through the incorporation of a Panel Management Assistant (PMA) into VA's PCMH model, Patient Aligned Care Teams (PACT). We developed a toolkit to address gaps in patient care identified through stakeholder interviews. PMAs used toolkit strategies to enhance primary care for smoking and hypertensive patients. Strategies included broad educational outreach such as mailings about VA resources and self-management tips for hypertension; targeted phone outreach such as follow-up calls to patients with a new smoking cessation medication; and connect to care strategies such as contacting patients who are eligible for programs such as telephone monitoring. We sought to determine which PM strategies were preferred by providers and nurses, and to describe barriers to implementing PM and incorporating PMAs into teams.

METHODS: We hired and trained 6 part-time PMAs and randomly assigned each to 2 teams to perform toolkit strategies for 9 months. Before and after intervention, we surveyed primary care providers and nurses about PM and PROVE implementation. PMAs also completed weekly surveys to capture their use of the PM strategies and on their teams' responses to the interventions.

RESULTS: Most primary care providers (76 %) and nurses (89 %) reported the PM toolkit and PMA were helpful resources. Over 9 months, PMAs performed an average per month of 24 PM interventions per team of which "targeted phone outreach" (33 %), "connection to care" (30 %) and "broad education" (22 %) were most frequent. Most providers and nurses (83 %) found the targeted and broad educational outreach strategies helpful and 80 % found connecting patients to care helpful. Time constraints posed a considerable barrier to toolkit implementation. Each PMA was employed part-time and assisted 2 teams. In 20 h per week, PMAs spent most of their time running data queries (19 %), calling patients (17 %), preparing mailings (17 %), and developing patient materials (15 %). In 9 months, the 6 PMAs completed 793 phone calls (54 % of which reached patients) and 5,024 mailings. On average, PMAs spent about 11 min on the phone per patient and 2 min mailing per patient. Limited interaction between teams and PMAs was an important challenge; both PMAs and teams said more time was needed to establish roles, relationships, and trust.

CONCLUSIONS: Primary care teams preferred that the PMAs focus on preparing educational mailings and connecting patients to care. Increasing intervention length and contact time between PMAs and teams may increase toolkit acceptance and effectiveness. While this toolkit was developed to address care gaps specific to hypertensive and smoking populations, the strategies are generalizable to other diseases and offer PCMH models a more comprehensive method of conducting panel management.

INITIATING A STUDENT-FACULTY COLLABORATIVE PRIMARY CARE PRACTICE FOR CHRONIC DISEASE MANAGEMENT Mitalee M. Patil[1]; John Hegde[1]; Tomi Jun[1]; Sun Yoo[1]; Jane M. Zhu[1]; Jennifer Katz-Eriksen[2,1]; Rebecca Berman[3,1]; Pamela Vohra-Khullar[4,1]; Kristin Remus[4,1]; Amy R. Weinstein[4,1]. [1]Harvard Medical School, Boston, MA; [2]Brigham & Women's Hospital, Boston, MA; [3]Brigham & Women's Hospital, Boston, MA; [4]Beth Israel Deaconess Medical Center, Boston, MA. (Tracking ID #1640846)

BACKGROUND: We conducted a needs assessment of the primary care practice at Beth Israel Deaconess Medical Center (BIDMC) and found areas for improvement in chronic disease management, specifically through patient education. Since patient education is not a core focus in our medical school curriculum, particularly in the pre-clinical years, we developed a new student-faculty collaborative practice to train medical students to become more effective patient educators and to improve chronic care management for patients.

METHODS: Based on results from the needs assessment, we developed care management models for patients with hypertension, diabetes, COPD and obesity in collaboration with the patients' primary care physicians and specialists. Patients are recruited from existing BIDMC patient panels, with a focus on those who may benefit from additional attention to lifestyle modifications, medication titration and adherence, and behavioral counseling. Patients are seen in a weekly evening clinic by a team consisting of a first- or second-year medical student, a third- or fourth-year medical student, and an attending physician. This unique team structure allows the senior student to assume a teaching role and offers the junior student an opportunity to witness disease management prior to clinical rotations. Each hour-long appointment prioritizes patient education.

RESULTS: During the four-month fall clinic period, our practice ran at 78 % capacity, with a no-show rate of 13 % and a same-day cancellation rate of 7 %. Student committees implemented a number of programs to improve and evaluate patient care while educating students. The student education committee instituted a pre-clinic chronic disease lecture series. The chronic care management committee developed disease-specific checklists to optimize and standardize care. Our patient education committee trained student clinicians about methods of motivational interviewing. The research committee identified patient outcomes for evaluation and submitted research protocols currently under review.

CONCLUSIONS: Our collaborative practice has adopted a time-intensive, counseling-intensive approach focused on patient education needs. Next steps in evaluation include analyses of patient outcomes, student educational impact, and patient satisfaction data. However, our practice is not yet running at full capacity. Improving patient recruitment and appointment attendance remains a priority. Longitudinally, this clinic demonstrates a model for student-faculty co-management of patients who have difficult-to-manage chronic diseases and offers students educational opportunities that complement the traditional medical school curriculum.

INITIATING BUPRENORPHINE MAINTENANCE FOR OPIATE-DEPENDENT HOSPITALIZED PATIENTS: A RANDOMIZED CONTROLLED TRIAL Jane M. Liebschutz[1,2]; Denise Crooks[2]; Debra S. Herman[3,4]; Bradley J. Anderson[3,4]; Lidia Meshesha[2]; Shernaz Dossabhoy[2]; Michael D. Stein[3,4]. 1Boston University School of Medicine, Boston, MA; [2]Boston Medical Center, Boston, MA; [3]Butler Hospital, Providence, RI; [4]Brown University School of Medicine, Providence, RI. (Tracking ID #1634852)

BACKGROUND: Opioid agonist treatment (OAT) with methadone or buprenorphine has been shown to reduce mortality and morbidity in opioid-dependent persons; however, barriers exist to entering OAT. Lack of availability of office-based buprenorphine OAT and difficulty keeping outpatient appointments can impede entry into OAT. This study examined whether offering opiate-dependent persons hospitalized for medical conditions initiation and linkage to office based buprenorphine OAT would facilitate entry to and increase engagement in buprenorphine OAT at 6 months post initial hospitalization.

METHODS: A daily chart review of all hospital admissions and clinical interview by an addiction specialist nurse or physician identified opiate-dependent patients admitted to a general medical hospital and not currently in substance abuse treatment. Eligible (not alcohol dependent, no benzodiazepine misuse), and consenting patients were randomized to either a 5-day buprenorphine detoxification protocol (DETOX) or buprenorphine induction, intra-hospital dose stabilization, and post-discharge transition to maintenance buprenorphine OAT (LINKAGE) at an outpatient buprenorphine program affiliated with the hospital's primary care clinic. Intention to treat outcomes at 6 months included entry into outpatient buprenorphine OAT, days receiving OAT, and OAT retention at 6-months. Data were collected via hospital electronic medical records and participant interviews at baseline, 1, 3, and 6 months. Opioid dependency was verified through the Structured Clinical Interview for DSM Disorders (SCID).
RESULTS: Among 119 participants, the mean age was 40.1 (±11.8) years, 85 (71.4 %) were male, 50 (42.0 %) were non-Hispanic Caucasian, 35 (29.4 %) were African-American, and 25 (21.0 %) were Latino. LINKAGE and DETOX arms did not differ significantly (all p values>.4) on demographic characteristics. Compared to those in DETOX (n=58), participants randomized to LINKAGE (n=61) were significantly ($\chi 2$= 43.3, p<.001) more likely to enter buprenorphine OAT (73.8 % vs. 13.8 %) by 6-months. Among persons who entered buprenorphine OAT, mean buprenorphine treatment days were 93.2 (± 57.0) and 57.0 (± 56.7) in the LINKAGE (n=45) and DETOX (n=8) arms, respectively. Six months post enrollment, 2 (3 %) of the DETOX group and 14 (23 %) of the LINKAGE group were actively engaged in buprenorphine OAT ($\chi 2$=9.7, p=0.002).
CONCLUSIONS: LINKAGE was able to enroll 74 % of out-of-treatment, opiate-dependent hospitalized persons in buprenorphine OAT. Compared to standard inpatient detox, initiation of and linkage to buprenorphine treatment is an effective mean for engaging medically hospitalized patients who are not actively seeking care for their substance dependence in long-term addiction treatment. Integrating OAT into inpatient medical care is a promising avenue to reach persons with opioid dependence.

INTENSITY OF OPIOID ANALGESIC PRESCRIBING AND URGENT CARE SERVICES: A NATIONAL COHORT STUDY
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BACKGROUND: Opioid analgesic (OA) prescribing for chronic non-cancer pain (CNCP) has proliferated in recent years. Death from drug overdose is associated with higher dose OA therapy. We hypothesized that 'risk' categories based on both dose and duration of OA therapy would be associated with costly utilization of urgent care services in a national cohort.
METHODS: We examined data from Aetna's health maintenance organization that has approximately 2.1 million enrollees. We identified 279,049 persons aged 18 to 64, enrolled for at least 12 months, from January 2009 to July 2012, receiving pharmacy benefits, and filling at least 2 prescriptions for non-injectable Schedule II or III OAs. We excluded 57,986 persons with: no diagnostic data on claims, a non-basal cell cancer diagnosis within 6 months of an OA prescription; prescriptions for methadone or buprenorphine-naloxone for opioid dependence; or incomplete demographics. Claims and enrollment data included: demographics [age, gender, US region (per CDC categories)], inpatient and outpatient encounters, ICD-9 codes and filled prescriptions for OAs. We classified CNCP as: neuropathic, musculoskeletal, chronic headache, unspecific chronic pain, or multiple. We also identified persons with depression, anxiety disorder, or posttraumatic stress disorder. We characterized OA therapy in 6-month intervals from first OA prescription within the study period to end of enrollment or July 2012. For each 6-month interval, we defined 4 OA risk categories (OARC): NO risk (0d), LOW risk (1–60d at <40 morphine equivalent daily dose in mg (MED)), MEDIUM risk (1–60d at [40–100] MED or >60d at <40 MED), HIGH risk (>=100 MED or >60d at [40–100] MED). We identified our 3 primary outcomes as any hospitalization, any emergency department (ED) visit, and any drug overdose. Using repeated measures logistic regression, we examined the adjusted association of OARC with each outcome adjusting for clinical, demographics, and time interval.
RESULTS: The 221,063 persons in the cohort were characterized by: 57 % female, median age of 45 (IQR: 35–54), and residence in the South (47 %) West (18 %), Midwest (6 %) and Northeast (29 %). The cohort had 881,555 6-month intervals after first OA prescription of which 7 % had at least one hospitalization, 14 % had at least one ED visit and 0.2 % had at least one drug overdose. After adjusting for demographics, clinical conditions and interval, increased OARC was significantly associated with greater likelihood for all 3 outcomes compared with NO Risk as shown in the table.
CONCLUSIONS: Dose and duration of OA therapy are both strongly associated with adverse events in a national privately insured cohort including costly hospitalization and ED visits as well as drug overdose. These risk categories may be useful to prospectively identify patients who need additional support to avoid these adverse events and ideally to reduce the risk of OA therapy.
Adjusted Odds Ratios for Opioid Analgesic Risk Categories and Outcomes
OARC (% of 6-month intervals) Adjusted Odds Ratios (95 % CI)
Hospitalization ED Visit Overdose
High Risk (26 %) 8.19 (7.83–8.56) 3.45 (3.36–3.55) 1.78 (1.46–2.18)
Medium Risk (18 %) 5.67 (5.42–5.94) 3.64 (3.55–3.74) 1.14 (0.90–1.45)
Low Risk (13 %) 2.81 (2.66–2.96) 3.08 (3.00–3.18) 1.04 (0.80–1.36)
No Risk (43 %) 1.00 1.00 1.00
OARC = Opioid Analgesic Risk Categories, CI = confidence intervals

INTERNAL MEDICINE RESIDENTS' TRAINING IN SUBSTANCE USE DISORDERS
Sarah Wakeman[1,2]; Meridale Baggett[1]; Eric Campbell[2,3]; Genevieve Pham-Kanter[3,4]. [1]Massachusetts General Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Mongan Institute for Health Policy, Boston, MA; [4]University of Colorado Anschutz Medical Campus, Denver, CO. (Tracking ID #1643074)

BACKGROUND: Resident physicians are the direct care providers for many patients with Substance use disorders (SUD). Physicians have reported not feeling competent to manage addiction. Lack of post-graduate training and limited attending physician role modeling has been highlighted as reasons for this lack of preparedness.
METHODS: A survey was e-mailed to 184 internal medicine residents. The survey was designed to assess residents' self-reported preparedness to diagnose and treat addiction, their evaluation of the quality of instruction in addictions, and their knowledge of addiction.
RESULTS: Responses were obtained from 101 (55 %) of the residents. Residents estimated that 22 % of inpatients were admitted for a condition directly related to addiction and 26 % met criteria for substance use disorder. 25 % of residents felt unprepared to diagnose addiction and 62 % felt unprepared to treat addiction. Only 13 % felt very prepared to diagnose addiction. No residents felt very prepared to treat addiction. Preparedness to diagnose or treat addiction did not differ significantly across PGY level. 55 % rated the overall instruction in addictions as poor or fair. In the outpatient clinical setting, 72 % of residents rated the quality of addictions training as poor or fair. In the inpatient setting, 56 % rated the quality of instruction as poor or fair. No resident answered all six knowledge questions correctly. Slightly more than half correctly identified the mechanism of buprenorphine and 19 % correctly answered a question regarding the use of naltrexone. 9 % of residents responded that someone had expressed concern about their drinking or drug use.
CONCLUSIONS: Internal medicine residents provide care for a substantial population with active substance use disorders, yet a quarter of residents feel unprepared to diagnose addiction and 62 % feel unprepared to treat it. More than half of residents rate the quality of instruction they receive related to addiction as fair or poor. Structured and comprehensive addictions curriculum and faculty development are needed to address the deficiencies of the current training system.

Characteristics of Survey Respondents
Post Graduate Year 1 Post Graduate Year 2 Post Graduate Year 3 All Post Graduate Years
Personal and Professional Characteristics % (N) Personal and Professional Characteristics % (N) Personal and Professional Characteristics % (N) Personal and Professional Characteristics % (N) Personal and Professional Characteristics % (N)
Gender
Male 60 % (21) 44 % (16) 67 % (20) 56 % (57)
Female 37 % (13) 53 % (19) 33 % (10) 42 % (42)
Location of medical school
US 97 % (34) 89 % (32) 100 % (30) 95 % (96)
Outside US 3 % (1) 11 % (4) 0 % (0) 5 % (5)
Plan career in general medicine
Yes 11 % (4) 22 % (8) 30 % (9) 21 % (21)
No 63 % (22) 67 % (24) 67 % (20) 65 % (66)
Undecided 23 % (8) 11 % (4) 3 % (1) 13 % (13)
Practice Characteristics Mean (sd)
Number of inpatient admissions per day 4.7 (1.0) 4.8 (1.5) 4.7 (0.9) 4.8 (1.2)
Percentage of inpatients admitted for conditions related to addiction 19.6 % (9.0) 23.9 % (13.0) 21.8 % (15.2) 21.8 % (12.6)
Percentage of inpatients admitted meeting criteria for substance abuse 24.3 % (10.4) 29.8 % (12.9) 23.2 % (12.5) 25.9 % (12.2)
Number of clinic patients in panel b 61.9 (39.2) 76.3 (25.7) 79.6 (28.2) 72.3 (32.3)
Percentage of clinic patients meeting criteria for substance abuse c 13.7 % (9.3) 12.2 % (8.7) 11.2 % (7.4) 12.3 % (8.5)
Sample Size 35 36 30 101
a Number of respondents may not add up to total sample size because of missing item responses. Percentages in each category may not add up to 100 % because of missing item responses. bIncludes six respondents who reported having zero clinic patients. cIncludes only those respondents who reported having one or more clinic patients.

INVITING PATIENTS TO READ THEIR DOCTOR'S NOTES: WHO READS THEM AND WHAT HAPPENS OVER TIME? John N. Mafi[1]; Roanne Mejilla[1]; Henry J. Feldman[1]; Jan Walker[1]; Long Ngo[1]; Jonathan Darer[2]; Christina C. Wee[1]; Tom Delbanco[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Geisinger Health System, Danville, PA. (Tracking ID #1638175)

BACKGROUND: Helping patients engage more actively in managing their health and healthcare represents one of the most important challenges of modern medicine. In the OpenNotes project, primary care physicians (PCPs) invited those patients registered to use secure patient portals to read their notes by e-mail once the note was signed, and initial findings suggest enormous patient enthusiasm with little effect on PCP workflow. We evaluated factors that might predict patients viewing their notes and examined to what degree their interest in viewing notes persisted over time.
METHODS: Using data from the Geisinger Health System cohort of the OpenNotes trial, we designed a repeated-measures analysis to evaluate predictors of viewing notes during the 12 month period from 7/1/10 to 7/1/11. Our unit of analysis was the patient visit, and our primary outcome was notes viewed, defined as patients reading their PCP's note within 30 days of receiving an electronic notification inviting the patient to read the note. Using a generalized linear model, we evaluated age, sex, time (in months) since the start of the OpenNotes trial, the lag time between the visit and when the PCP signed the note, and the number of visits prior to a given visit under analysis. We also accounted for clustering by patient visits. In addition, we conducted a separate analysis of those patients who responded to our baseline survey (44 % response rate) in order to adjust for (self-reported) race, education, employment status, and perceptions of general health.
RESULTS: We analyzed 14,323 visits (23 PCPs, 5,816 patients) over 12 months. The mean patient age was 53 years, and 55 % were female. The median number of visits per patient was 2 (IQR 1, 3). PCPs signed their notes a mean of 2 days after the visit (median=1). Among patients with more than one visit (62 %), the unadjusted rate of viewing notes declined by 1 % between the first and last note available, and patients who read at least one note tended to read subsequent notes (R=43 %). Our table summarizes significant predictors of viewing notes. Female and older patients were more likely to view notes, while a more than 2 week delay in PCPs signing their notes reduced the probability of note viewing by nearly 8 %. Patients were also slightly less likely to view their notes with each subsequent visit. In our sub-analysis of survey respondents, we observed similar results, except that visit count's effect on viewing notes no longer reached statistical significance, RR 0.989 [0.978, 1.001]. Patients with fair to poor health were also less likely to read their notes, RR of 0.951 [0.910, 0.994].
CONCLUSIONS: Illness burden and delay in physician note signing independently reduced the likelihood of patients viewing their notes. Although patients in our study were less likely overall to read their doctor's notes with each successive visit, the magnitude of decline was remarkably small, suggesting that patients have a durable interest in accessing their clinical notes.
Adjusted RR of Note Viewing By Predictor (n=5,816)
Predictor Relative Risk [95 % CI] P-value
Age (decades) 1.02 1.01, 1.03] 0.0021
Female Sex 1.04 [1.01, 1.08] 0.0245
Visit Count 0.978 [0.967, 0.99] 0.0003
Timing of PCP signing the note (4 categories)
<48 h (ref) 1.00 [1.00, 1.00]
2–7 days 0.973 [0.918, 1.03] 0.3506
7–14 days 0.965 [0.923, 1.01] 0.1230
>14 days 0.923 [0.89, 0.958] <.0001

IS SATISFACTION WITH ELECTRONIC MEDICAL RECORDS ASSOCIATED WITH OVERALL JOB SATISFACTION IN PHYSICIANS? Christine D. Jones; George M. Holmes; Sarah E. Lewis; Kristie Thompson; Darren A. DeWalt. University of North Carolina at Chapel Hill, Chapel Hill, NC. (Tracking ID #1639737)

BACKGROUND: Electronic medical records (EMRs) are being increasingly adopted nationwide in primary care practices. Though previous work has suggested that the initial implementation of an EMR can be a difficult transition for physicians, little is known about whether physician satisfaction with an EMR is associated with overall job satisfaction. We sought to evaluate whether satisfaction with an EMR is associated with job satisfaction in physicians.
METHODS: A survey was emailed to 738 unique email addresses of practice contacts for 825 primary care practices in North Carolina. Three subsequent reminder and follow up emails were additionally sent. The survey content had been previously been designed to evaluate medical home transformation within primary care clinics actively enrolled in quality improvement initiatives. Physicians who indicated that their practice had an EMR were asked to rate their agreement with three additional statements to assess satisfaction with the EMR: 1) "My clinic's EMR is a big help to me in providing quality care to my patients," 2) "The EMR is well integrated into the practice's daily work flow," and 3) "I can trust the validity of the data in our EMR." Answers to these questions were on a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." The three EMR items were transformed into a summed score. Job satisfaction was assessed with the question "Overall, I am satisfied with my current job." Those who agreed or strongly agreed with this statement were considered to have high job satisfaction. We used least squares regression to compare EMR satisfaction (independent variable) with high job satisfaction (dependent variable).
RESULTS: Surveys were returned from 283 individuals across 214 practices (26 % response rate for practices). Among the respondents, 150 (65 %) were physicians, 55 (24 %) were non-physician clinicians, and 24 (10 %) were administrative employees. We excluded physicians from our analysis who were either missing data (n=6) or who indicated that they did not use an EMR (n=21). Among the remaining 123 physicians who indicated they had an EMR in their practice, 67 % were female, 77 % were

in a private practice, 29 % were Hispanic or nonwhite, and they graduated from medical school an average of 18 years ago. Overall, a majority of physicians (81 %) indicated high job satisfaction. EMR satisfaction was correlated with high job satisfaction (beta=0.359, $p<0.0001$). After adjusting for gender, race/ethnicity, graduation year, and whether the physician was in private practice, EMR satisfaction remained correlated with high job satisfaction (beta=0.344, $p<0.0001$).
CONCLUSIONS: Among primary care physicians who responded to a survey in North Carolina, satisfaction with their EMR was associated with overall job satisfaction, even after adjusting for multiple potential confounders. As EMRs become more prevalent and more integral to daily clinical operations for primary care physicians, satisfaction with EMRs will likely be an increasingly important contributor to overall job satisfaction.

IT'S MIDNIGHT, DO YOU KNOW WHO YOUR PATIENTS ARE? A SURVEY OF HOUSESTAFF ATTITUDES TOWARDS NIGHTTIME HOSPITAL CARE Joshua T. Hanson[1,2]; Sahand Rahnama[1]; Tareq Nassar[1]; Luci Leykum[1,2]. 1UT Heath Sciences Center, San Antonio, San Antonio, TX; [2]South Texas Veteran's Healthcare System, San Antonio, TX. (Tracking ID #1642696)

BACKGROUND: In recent years, increasing attention and efforts have been paid to providing safe and effective care in hospitals during nights and weekends. In academic settings, physician trainees provide the majority of this care. Many investigators have studied the attitudes of trainees towards education and patient care during nightfloat rotations. Furthermore, attempts have been made to measure adverse outcomes during nightfloat rotations. However, there is a paucity of information on the beliefs of physician trainees regarding their role as the nighttime physician and whether the daytime physicians provide adequate information in the care of the patients in the hospital. Our goals were to understand these attitudes and behaviors among the internal medicine housestaff at single academic medical center.
METHODS: A questionnaire was administered to the trainees of a university based internal medicine residency-training program. Respondents could submit their answers electronically or on paper. The questionnaire focused on behaviors and attitudes of housestaff toward transitions in care, nighttime medicine, and the clinical tools that have been implemented in efforts to assist their activities.
RESULTS: Responses from 53 of 89 (59.6 %) residents were obtained from all levels of training. The majority of residents (39/53 [62.3 %]) agreed or strongly agreed that having a nightfloat intern provided safer patient care when compared to the call team and that the checkout procedure currently in place was safe (41/53 [77.4 %] responded frequently or always.) Furthermore, the vast majority (47/53 [88.7 %] responded frequently or always) felt responsible for the patients at night. A minority of respondents were informed of the patient's care plan for the next day (6/53 [11.3 %] responded frequently or always), were given a list of actions to not perform (11/53 [13.21 %] responded frequently or always), and felt that the checkout process informed them of the current clinical care of each patient (14/53 [26.4 %] responded frequently or always.) Thirty-one of fifty-three (58.5 %) respondents stated that they document frequently or always in the electronic medical record (EMR) new events that required action. Finally, 35 of 53 (66.0 %) respondents described the checkout list as a time-saver when compared to finding information in the EMR.
CONCLUSIONS: Reassuringly, physician-trainees felt responsible for the clinical care of patients at night. However, it is striking that the checkout procedure is believed to be safe when the care plans are rarely communicated fully and the written signout is not believed to be an efficient data source when compared with the EMR by more than a third of the respondents. This finding correlates to other findings of written signout usage at this institution. It is also surprising that so many respondents report such a high degree of documentation when a different study of this residency-training program demonstrated an extremely low rate when behaviors were measured in real time. These findings suggest that if hospitals are to achieve safe and effective care around the clock, the behaviors and attitudes of physicians must be examined and adjusted, while efforts to better support nighttime medicine must be undertaken.

KEEPING PATIENTS SAFE: PATIENT SAFETY RESULTS AFTER TWO YEARS OF AN ENHANCED CLINIC HANDOFF Megan Prochaska[1]; Marcus Dahlstrom[3]; Wei Wei Lee[1]; Kimberly Beiting[4]; Shana Ratner[2]; Julie L. Oyler[1]; Lisa M. Vinci[1]; Vineet Arora[1]; Amber Pincavage[1]. [1]University of Chicago, Chicago, IL; [2]University of North Carolina-Chapel Hill, Chapel HIll, NC; [3]University of California San Francisco, San Francisco, CA; [4]University of Illinois-Chicago, Chicago, IL. (Tracking ID #1642350)

BACKGROUND: Internal Medicine resident clinic handoffs are a vulnerable period for patients, and yet few interventions exist to reduce risk during this transition. Two years after implementation of an enhanced handoff protocol, we evaluated its effectiveness and sustainability on patient outcomes for high-risk patients.
METHODS: Based on a needs-assessment in 2010, we formalized a 2011 handoff protocol including resident education, improved scheduling coordination, automatic missed visit rescheduling, safety audits and time for PGY2s to establish care during telephone visits. To facilitate handoffs, graduating residents listed their "high-risk" patients on sign-outs. High-risk patients included patients who have multiple complex problems, frequent hospitalizations, non-adherence, missed visits or challenging social situations. This protocol was again used in 2012. In 2010, 2011, and 2012 we performed chart audits to examine when patients were scheduled, if they saw the correct PCP, if they were lost to follow-up after 6 months, and acute care visits (emergency room visits or hospitalizations) 3 months after the handoff. Descriptive statistics, including chi squared tests and trend analysis for proportions were used to examine differences across years in outcomes of interest.
RESULTS: Nearly all patients ($n=258$ in 2010; 323 in 2011; 264 in 2012) [97 % (250/258) vs. 98 % (217/323) vs. 93 % (246/264)] received follow-up appointments in all 3 years. After 2 years, there was a continued improvement in the number of patients with acute visits in the emergency room or hospital 3 months post-handoff compared with 2010 (26 % (68/258) in 2010 vs. 20 % (64/323) in 2011 vs. 16 % (42/264) in 2012, $p=0.003$). There were significantly fewer patients who were lost to follow up at 6 months by 2012 (19 % (50/258) in 2010 vs. 22 % (71/323) in 2011 vs. 12 % (32/264) in 2012, $p=0.03$). In 2011, significantly more patients saw the correct PCP assigned to them who received the handoff (44 % (113/258 vs. 82 % (265/323), $p<0.001$) and this improvement was sustained in 2012 (71 % (188/264), $p<0.001$ compared to baseline). More patients in 2012 had a "no show" to a PCP visit in the past year then in 2011 and 2010 (42 % (109/258) in 2010 vs. 60 % (192/323) in 2011 vs. 80 % (210/264) in 2012, $p<0.001$) while the numbers of patients missing their first visit with a new PCP after the handoff was unchanged (29 % (75/258) in 2010 vs. 43 % (139/323) in 2011 vs. 31 % (82/264) in 2012, $p=0.65$).
CONCLUSIONS: Two years after implementation of an enhanced clinic handoff quality improvement intervention in an internal medicine residency clinic led to sustained improvements in patient outcomes. Although residents selected a higher risk population with more missed visits each year, the intervention was associated with a significant decline in acute care visits and significantly fewer patients lost to follow up 6 months after the handoff. Given the current national need to reduce health care costs for the sickest patients and improving access to primary care for the newly insured, redesigning clinic handoffs in an urban residency program may be an effective way to improve care for a high-risk patient population.

KNOWLEDGE GAP: LACK OF AWARENESS OF THE CANCER RISK ASSOCIATED WITH OBESITY Ginger J. Winston; Erica Phillips; Carla Boutin-Foster; Mary Charlson. Weill Cornell Medical College, New York, NY. (Tracking ID #1636168)

BACKGROUND: Data are limited regarding knowledge of the health risks of obesity among overweight/obese black and Hispanic adults residing in underserved urban communities, a population disproportionately affected by the obesity epidemic. Education is a cornerstone of health behavior change, therefore, data on obesity risk knowledge are important in order to develop tailored weight loss interventions. The aim of this analysis

was to measure knowledge of the health risks of obesity among non-Hispanic black and Hispanic adults enrolled in a weight loss trial in New York City.

METHODS: The Small Changes and Lasting Effects (SCALE) trial is an ongoing 1 year behavior change weight loss intervention among non-Hispanic black and Hispanic adults with body mass index (BMI)≥25 kg/m2 living primarily in Harlem and the South Bronx, New York. At enrollment participants were asked if obesity increased the risk of hypertension, diabetes, high cholesterol, joint pains/arthritis, breast cancer and obstructive sleep apnea. One point was given for each correct answer, and a risk knowledge score was calculated as a summation of points. Bivariate data were analyzed using student T tests and chi-square tests as appropriate. A multivariate regression model was used to assess the relationship between the risk knowledge score and the following covariates: age, gender, race/ethnicity, BMI at enrollment, education, insurance status and the Charlson comorbidity index. The interaction between race/ethnicity and education was assessed in the fully adjusted model.

RESULTS: Data were available for 275 participants (88 % women, 50 % non-Hispanic black, 50 % Hispanic, mean BMI 34.3 kg/m2, mean age 48 years). The majority of participants indicated that obesity increased the risk of hypertension (95 %), diabetes (97 %), high cholesterol (91 %), joint pains/arthritis (89 %) and sleep apnea (91 %). Only 44 % of participants reported that obesity increased the risk of breast cancer. Hispanics had a higher mean risk knowledge score compared to non-Hispanic blacks (5.3 vs. 4.8, $p<0.002$), though a lower percent of Hispanics completed high school (44 % vs. 75 %, $p<0.0001$). A greater percent of Hispanics compared to non-Hispanic blacks reported that obesity increased the risk of diabetes (99 % vs. 96 %, $p=0.05$), high cholesterol (95 % vs. 85 %, $p<0.01$), breast cancer (51 % vs. 37 %, $p=0.02$), and sleep apnea (96 % vs. 84 %, $p<0.001$). In the fully adjusted regression model, race/ethnicity ($p<0.0001$), gender ($p=0.02$) and education ($p=0.01$) were associated with the risk knowledge score. Specifically, female gender and education beyond high school were associated with a higher score. There was an interaction by race/ethnicity in the relationship between the risk knowledge score and education ($p=0.002$). Non-Hispanic black participants with less than high school education had the lowest mean risk knowledge score.

CONCLUSIONS: In the SCALE trial, a smaller percent of participants were aware of the breast cancer risk associated with obesity than the cardiovascular risks. Hispanics had a higher mean risk knowledge score compared to non-Hispanic blacks, despite lower educational levels. These results indicate a need for increased public health education regarding the non-cardiovascular risks associated with obesity in underserved urban communities. Our results also suggest non-formal sources of obesity risk education among Hispanics, a finding that deserves further investigation.

KNOWLEDGE AND PERCEPTIONS OF NON-PHYSICIAN PRIMARY CARE TEAM MEMBERS REGARDING END OF YEAR PCP TRANSITIONS IN A RESIDENT CONTINUITY CLINIC Emily S. Wang[1,2]; Michelle Conde[1,2]; Bret Simon[2]; Luci Leykum[1,2]. [1]South Texas Veterans Health Care System, San Antonio, TX; [2]University of Texas Health Science Center at San Antonio, San Antonio, TX. (Tracking ID #1640242)

BACKGROUND: Transitioning to a new primary care physician (PCP) is a stressful time for patients; it is also a potential time for increased harm and risk. These risks are amplified in Internal Medicine resident continuity clinics due to the yearly cycle of residents finishing their training and new residents assuming care for this cohort of patients. With the nation-wide movement to the Patient-Centered Medical Home (PCMH), opportunities exist for the team to have a greater role in assisting with this transition, but there are no studies documenting perspectives of the non-physician team members on resident PCP transitions. The objective of this study was to determine the baseline knowledge and perceptions of the non-physician Patient-Aligned Care Team (PACT) members, the Veterans Health PCMH model, regarding the end of year hand-off in a resident continuity clinic.

METHODS: We report a cross-sectional study of clinic member perceptions. An anonymous survey was issued to 24 non-physician PACT team members (physician assistants, nurse practitioners, nurses, medical assistants, pharmacists, psychologists, dieticians, social workers, clerical staff) at the hospital based Internal Medicine Clinic at South Texas Veterans Health Care System in the summer of 2012. Demographic data were obtained including clinic role, number of years working in the clinic, and amount of time spent with patients whose PCPs were residents. Perceptions and attitudes on the transition process were measured based on a 5-point Likert scale ranging from strongly disagree to strongly agree. Questions such as "It is the PCP's responsibility to inform the patient when he/she will be leaving" and "I can help with making the transition easier" were rated.

RESULTS: The response rate was 92 %(22 of 24). All PACT team members were aware the IMC is a resident teaching clinic, but 18 % were unaware that residents had graduated from medical school. This unawareness did not correlate with the length of time working in the clinic. Many of the respondents (13/24) identified that patients voiced frustration with the hand-off process and most (17/24) affirmed there should be a formalized approach of ushering patients through this period. 96 % felt it was the resident PCPs' responsibility to inform the patients they would be getting new PCPs, but 64 % believed they could help make the end of year transition to new PCPs easier.

CONCLUSIONS: While majorities of PACT team members identified problems with end-of-year PCP transitions, nearly all considered the resident responsible for managing these changes. However, two-thirds of PACT team members did recognize that they had the potential to facilitate this process. With the constant changes in PCPs occurring annually in resident continuity clinics, it seems natural for PACT members to assume a greater role in supporting patients through this transition, particularly since they hear concerns from patients about this process. However, an incomplete understanding of residency training is a barrier to overcome. A team approach to collective responsibility for the transition process could be an important strategy for improving the transition process and might reinforce the emphasis on team function, an essential element of the PCMH philosophy. Future studies should investigate possible interventions that can be implemented with clearly defined roles and functions for all members of the PACT to improve patient satisfaction and ultimately, quality of care during transition periods.

KNOWLEDGE IS POWER: PILOT TESTING A BROCHURE TO IMPROVE THE COMMUNICATION OF MAMMOGRAM RESULTS TO URBAN BLACK WOMEN Erin N. Marcus[1]; Tulay Koru-Sengul[2,3]; Feng Miao[3]; Ada P. Romilly[4]; Olveen Carrasquillo[1]. [1]University of Miami Miller School of Medicine, Sylvester Comprehensive Cancer Center, Miami, FL; [2]Sylvester Comprehensive Cancer Center, University of Miami Miller School of Medicine, Miami, FL; [3]Sylvester Comprehensive Cancer Center, University of Miami Miller School of Medicine, Miami, FL; [4]Jackson Health Systems, Miami, FL. (Tracking ID #1640172)

BACKGROUND: Approximately 1 in 10 women are asked to return early for additional imaging after a single routine screening mammogram. Research indicates many women are unaware of the frequency of early recall and experience anxiety when asked to return early. When surveyed, many women voice an incorrect understanding of their mammogram result and follow up. These "result communication failures" are more common among ethnic minority women. With focus group input, we developed a culturally targeted brochure to improve awareness of the frequency of abnormal results and the importance of timely follow-up among black, English-speaking women. In this pilot study, we assess reactions to the brochure and evaluate its effect on women's understanding of their result and mammography-related anxiety.

METHODS: A randomized, two-arm controlled trial is ongoing among black women ages 40–69 with a BI-RADS 0 (incomplete, requiring additional follow-up) screening mammogram result in an urban safety net breast health center. Our pilot study will enroll a minimum of 45 women.

Women randomized to the intervention receive the culturally targeted brochure in addition to the standard result notification letter. Women randomized to the control arm receive the standard result notification letter. Two weeks after the letter is mailed, prior to the scheduled return visit, all participants are asked to complete a phone survey. Frequencies and percentages are calculated for all patients as well as by groups. Chi-square or Fisher's exact test are being used to examine differences in group proportions. Univariate logistic regression models for intervention/control are being fitted to calculate odds ratios (OR) and 95 % confidence intervals (CI).

RESULTS: To date, 33 of a target 45 women have been surveyed, including 15 interventions and 18 controls. 61 % self-identified as African-American and 39 % as Caribbean. 64 % were uninsured and 24 % received Medicaid. 27 % had not completed high school, and 40 % screened positive for low health literacy. Income, education, literacy and ethnicity are similar between the intervention and control groups. Thus far, all respondents have correctly stated their result and follow-up plan. However, 60 % of the intervention group and 22 % of controls said they had not felt anxious since their mammogram (OR 0.19, 95 % CI 0.04, 0.87; p=0.032). Women in the intervention group were also less likely to report perceiving follow up mammograms as "scary" (20 % vs. 78 %, OR 12.8, 95 % CI 2.36, 69.72; p=0.003). Among the intervention group, 12 (of 15) women stated that the brochure increased their knowledge of what happens after a mammogram "a lot" and 3 "somewhat"; 13 (of 15) said they thought the pamphlet should be mailed to all women who need to follow up early after an abnormal mammogram. Representative comments included, "the pamphlet was like a light on me. Now I feel a little better"; and "I didn't know about the numbers. It was good to see the numbers."

CONCLUSIONS: Pilot data suggests that a simple, culturally targeted brochure explaining the frequency of abnormal mammograms is effective in reducing anxiety among low-income black women asked to return early for more imaging studies. Women have been amenable to receiving the brochure along with the result notification letter. Additional pilot testing of the brochure and other mammography educational media, including a web page and video, are ongoing.

LANGUAGE INTERPRETATION ERRORS AND THEIR CLINICAL SIGNIFICANCE IN THE MEDICAL ENCOUNTERS OF SPANISH-SPEAKING LATINOS. Jasmine Santoyo-Olsson; Anna M. Napoles; Leah Karliner; Eliseo J. Perez-Stable. UCSF, San Francisco, CA. (Tracking ID #1637070)

BACKGROUND: Limited English proficient (LEP) patients with language concordant clinicians experience better outcomes of care than LEP patients with discordant clinicians. Due to shortages of language concordant physicians, there is a need to understand the impact of language interpretation on physician-patient communication and quality of care. Across three interpretation modes: professional in-person (PI), remote professional via videoconferencing (VMI), and ad hoc (non-professional, untrained; AH) interpreters, this study compared: 1) the frequency of interpreter communication behaviors, and 2) ratings of the clinical significance of interpretation errors.

METHODS: Selected patients, representing 3 modes of language interpretation (PI=5, VMI=22, AH=5), were recruited from a public hospital primary care clinic in Northern CA between May-Oct 2005 and audio recorded. Verbatim transcripts were independently coded by two investigators using a coding scheme that classified interpreter behaviors into one of eight categories: two positive (non-error) or six negative (error) codes: accurately interprets (+), asks for clarification (+), makes an addition (−), makes a substitution (−), answers for patient or clinician (−), makes an omission (−), editorializes (−), and uses incorrect words (−). The unit of analyses was an identifiable segment of continuous speech or text unit (TU). Two general internists verified the coding of the first two coders and applied independently another coding scheme to the negative behaviors (errors) that assessed their clinical significance on a 1=clinically insignificant to 4=highly clinically significant scale. All coding was adjudicated until consensus was reached.

RESULTS: Mean age of patients (n=32) was 53 years (SD 15.8), 75 % were women, 88 % had < high school education, and 56 % were uninsured. Mean age of clinicians (n=14) was 51 years (SD 11.5), 71 % women, 50 % non-Latino White, 80 % general internists, and 50 % had no previous training on using interpreters. A total of 2,945 TUs were coded; 30 % (N=872) of text units were coded as errors, with an average of 27 errors per visit. Errors of omission were 65 % of all errors coded. Accurate interpretation occurred less frequently in AH interpreted visits (38 % vs. PI=66 % and VMI=65 %; p<.05). The distribution of types of interpreter errors by mode of interpretation was similar except for makes an omission (AH=33 %, vs. PI=16 % and VMI=16 %; p<0.05) and answers for patient or clinician (AH=16 %, vs. PI=1 % and PVC=1 %; p<0.05), which occurred more frequently in AH interpreted visits. Clinically significant errors occurred frequently, (59 % of all errors, although only 7 % were rated as moderately or highly clinically significant). The mean clinical significance rating of errors was 1.67 (SD 0.61).

CONCLUSIONS: Clinically significant errors in medical interpretation are fairly common in primary care visits of Spanish-speaking patients. Ad hoc interpreted visits result in more interpreter errors of omission and answering for patients or clinicians, indicating lower quality interpretation. Expansion of professional interpreter services for LEP patients either through in-person or videoconferencing modes is warranted.

LATINO POPULATION CHANGE AND UNCOMPENSATED CARE IN CALIFORNIA HOSPITALS, 2000–2010 Matthew O'Brien[1]; Jie Chen[2]; Jeremy Mennis[1]; Victor Alos[1]; David Grande[3]; Alex Ortega[4]. [1]Temple University School of Medicine, Philadelphia, PA; [2]University of Maryland School of Public Health, College Park, MD; [3]University of Pennsylvania School of Medicine, Philadelphia, PA; [4]UCLA Fielding School of Public Health, Los Angeles, CA. (Tracking ID #1643376)

BACKGROUND: Uncompensated care provided in hospitals imposes a significant financial burden on the U.S. health care system that is expected to persist after implementation of the Patient Protection and Affordable Care Act. Latinos are more likely than any other demographic group to lack health insurance, and therefore represent a potential driver of uncompensated hospital care. The size of the Latino population and hospitals' uncompensated care costs continue to grow nationally and in many states; however, no studies have examined their potential relationship. The objective of this study was to determine the association between the Latino population growth rate in California, the state with the largest Latino population, and the change in hospitals' uncompensated care costs between 2000 and 2010.

METHODS: Data on all general, acute, short-stay hospitals in California were obtained from the 2000 and 2010 California Office of Statewide Health Planning and Development's hospital survey (100 % response rate). These data were merged with population data from the U.S. Census, which were aggregated into hospital service areas. We adjusted our analysis for hospital characteristics (ownership type, system membership, urban vs. rural location, teaching status, annual emergency department visits, and receipt of Disproportionate Share Hospital payments), market factors (location in a competitive market, presence of other hospitals), and population demographics (poverty, uninsurance, elderly, unemployment, and education). Our main outcome measure was hospitals experiencing the largest change in uncompensated care costs between 2000 and 2010. Chi-square tests were used in bivariate analyses. Logistic regression was used to calculate the odds of hospitals located in communities of medium and high Latino population growth having the largest increase in uncompensated care costs.

RESULTS: During the study period, California's Latino population grew from 31 % to 36 % (p<0.001) and total uncompensated care costs in hospitals rose from $2.7 billion vs. $4.1 billion (in 2010 dollars) (P<0.001). After adjusting for hospital characteristics, market factors, and population demographics, there was no significant association between the Latino population growth rate in California and hospitals' change in uncompensated care costs [medium and high Latino growth, respectively: odds ratio [OR], 2.03; 95 % confidence interval [CI] 0.84–4.88; and OR, 1.97; 95 % CI 0.64–6.03).

CONCLUSIONS: Our study found no association between the growth of California's Latino population and hospitals' uncompensated care costs. This finding provides current evidence to inform rapidly evolving health reform efforts at the state level. Understanding the factors that do and do not impact uncompensated care is important as policymakers explore the financial implications of expanding insurance coverage through the Affordable Care Act.

LATINO STROKE SURVIVORS ARE MORE LIKELY TO EXPERIENCE DEPRESSION Kezhen Fei; Emma K. Benn; Rennie Negron; Stanley Tuhrim; Carol Horowitz. Mount Sinai School of Medicine, New York, NY. (Tracking ID #1641894)

BACKGROUND: Literature suggests that White Americans experience more depression in general, and post-stroke depression than non-White Americans, but depression disparities have not been well-explored. We aimed to characterize this association by applying a novel 'Rank and Match' secondary analytic method, based on the Institute of Medicine's disparity framework to a multi-racial/ethnic stroke cohort.
METHODS: We recruited a cohort of community-dwelling adults who had a stroke in the past 5 years, from Harlem and the South Bronx in New York City, to a recurrent stroke prevention intervention. At baseline, we measured depression using the PHQ-8 scale, and patients' health status, demographics, comorbidities and socioeconomic status (SES), including income and education. We used multivariate logistic regression to evaluate the impact of race/ethnicity, after adjusting for health status and SES, on having depression (using a score≥10 as depressed). Then based on the IOM's disparity framework, we used our "Rank and Match" method to assess racial/ethnic differences in depression after matching Latinos and non-Latinos by their health status rank.
RESULTS: The cohort included 600 participants, with a mean of 1.9 years after stroke, mean age of 63 years, 42 % were Black, 39 % Latino, 60 % female, 56 % lived below poverty, 29 % had Medicaid and 31 % had less than a high school degree. Participants with depression (n=178; 30 %) were more likely young (p=0.002), Latino (p<0.0001), receive Medicaid (p<0.001), and had more comorbidities (p=0.004) than non-depressed participants. The adjusted odds of depression for Latinos was 3.45 (95 % CI: 1.48–8.07) times higher than for Whites and 2.22 (95 % CI: 1.45–3.38) times higher than for Blacks. After applying the "Rank and Match" method, the difference between Latinos and Whites became stronger (OR= 4.65; 95 % CI: 1.91–11.30), and the difference between Latinos and Blacks sustained (OR=2.19; 95 % CI: 1.41–3.40).
CONCLUSIONS: This study newly reveals a high depression burden among Latino stroke survivors, particularly in comparison with non-Latinos. Future research is needed to further study this disparity, and to address depression in this population.

LEARNING ENVIRONMENT ASSESSMENT OF ONE CURRICULUM BEING TAUGHT AT MEDICAL SCHOOLS 10,000 MILES APART Sean Tackett[1]; Robert Shochet[2]; Jorie Colbert-Getz[2]; Krishna Rampal[3]; Nicole A. Shilkofski[3]; Scott Wright[1]. [1]Johns Hopkins Bayview Medical Center, Baltimore, MD; [2]Johns Hopkins University School of Medicine, Baltimore, MD; [3]Perdana University Graduate School of Medicine, Kuala Lumpur, Malaysia. (Tracking ID #1638739)

BACKGROUND: American academic medical centers are expanding their international activities, including those in medical education. Creating an effective learning environment is critical for success in medical education but this may be difficult when cultures collide. Johns Hopkins Medicine is currently building Perdana University Graduate School of Medicine (PUGSOM) near Kuala Lumpur, Malaysia, making PUGSOM the 3rd American medical school situated beyond our borders. In the fall of 2011, the first class of PUGSOM students matriculated. The goal of this study was to compare students' assessment of the learning environment at PUGSOM to that at Johns Hopkins University School of Medicine (JHUSOM), where the curriculum was created and from which most PUGSOM faculty came. A secondary goal of the study was to assess a new learning environment assessment tool, the Johns Hopkins Learning Environment Scale (JHLES), in another context.
METHODS: Students responded anonymously to online surveys during the summer after their first year of medical school. Surveys contained demographic questions and 2 learning environment scales, the Dundee Ready Educational Environment Measure (DREEM) and the JHLES. The DREEM is the most widely-used survey to assess the learning environment; students respond across a 5-point Likert scale with their level of agreement with 50 items, grouped into 5 categories: (1) perception of teachers, (2) perception of teaching, (3) academic self-perception, (4) perception of atmosphere, and (5) social self-perception. DREEM scores range from 0 to 200, and in prior studies, often average ~125. The JHLES is a 28-item survey, also using 5-point Likert scale response options developed at JHUSOM. Factor analysis resulted in 7 domains: (1) community of peers, (2) faculty relationships, (3) academic climate, (4) engagement, (5) mentorship, (6) acceptance and safety, and (7) physical space. Potential scores on JHLES can range from 28 to 140.
RESULTS: Complete surveys were collected from 100/120 (83 %) students at JHUSOM, and 24/24 (100 %) at PUGSOM. A greater proportion of PUGSOM respondents were female (71 % vs. 50 %), but gender did not influence scores on learning environment scales in subgroup analyses. The quality of the learning environment was perceived to be better at PUGSOM than JHUSOM on scores on the DREEM (155 (SD 19) vs. 143 (SD 23), p=0.011) and JHLES (117 (SD 12) vs. 112 (SD 12), p=0.078). Statistically significant differences (p<0.05) between JHUSOM and PUGSOM student responses occurred on 17/50 individual items on the DREEM. PUGSOM students gave more favorable ratings on 13 of these 17 items, including 8 in the "perception of teaching" category. On JHLES, responses differed significantly for 6/28 items; 5 of these 6 had PUGSOM students providing more favorable ratings. Correlation coefficients for scores on the DREEM and JHLES were r=0.80 for PUGSOM and r=0.64 for JHUSOM.
CONCLUSIONS: The DREEM and JHLES were highly correlated in both settings and indicated that the learning environments at PUGSOM and JHUSOM are positive. The high appreciation of the learning environment at PUGSOM, where an American curriculum has been introduced by American faculty, should reassure that high quality education can translate across countries and cultures. Future work will be needed to determine if the quality of the learning environment is maintained over time and how it relates to educational outcomes such as exam scores, residency placement, and quality of patient care.

LET'S TALK! PATIENT ATTITUDES ABOUT TELEPHONE-BASED ALTERNATIVES TO FOLLOW-UP OFFICE VISITS WITH SPECIALISTS Jessica A. Eng[1,2]; Cecily J. Hunter[1]; Laura B. Cantino1; Caterina Yuan[1]; Sunny Lai1; Evie Kalmar[1]; Christy K. Boscardin[1]; Margaret A. Handley[1]; Ralph Gonzales[1]; Sara Ackerman[3]. [1]UCSF School of Medicine, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA; [3]UCSF School of Nursing, San Francisco, CA. (Tracking ID #1633158)

BACKGROUND: The number of specialty care visits in the US is rising, contributing to increased health care costs and delayed access to specialty care. There is a need for new models of care that are less costly and offer alternatives to office visits. However, if not designed with patient attitudes in mind, new models of care could result in significant patient resistance and dissatisfaction. In the context of a clinical operations project aimed at increasing the availability of new patient appointments by reducing unnecessary follow-up visits, we explored patient attitudes about telephone-based specialty follow-up.
METHODS: We observed physician-patient interactions in an urban academic endocrinology clinic from June to October 2012. Observations were discussed at regular team meetings. We subsequently conducted semi-structured interviews from October to November 2012. Interviews were conducted in clinic with a convenience sample of patients following their physician encounter. Interviews included questions on satisfaction with clinic experience and attitudes about a new pilot program consisting of patients leaving office visits with a scheduled follow-up phone call with the clinic medical assistant (MA) instead of a scheduled office visit with the physician. Interviewers explained that information gathered during the MA phone call would be conveyed to the physician, who would then decide whether patients should have another scheduled MA phone call or office visit. Interviewed patients were provided free parking as compensation. Interview notes were iteratively reviewed and discussed by 5 research team members, followed by a conference in which consensus was reached on key findings and themes.
RESULTS: Team members spent 43 h observing physician-patient interactions, and 24 patients (71 % female, aged 22 to 64) were interviewed. Overall, patients were very satisfied with their clinic experiences, in particular their interactions with physicians and office staff. Patients also expressed enthusiasm for alternatives to office-based follow-up. The dominant theme that emerged about the telephone-based follow-up program was patient convenience, including the possibility of saving time and money for travel and not

missing work. Other themes supporting this program included communication facilitation—the anticipation of improved communication with the clinic and altruism—the potential to contribute to increased office visit access for other patients. Patient endorsement of telephone-based follow-up was predicated upon the expectation that physicians continue to have primary responsibility for clinical care. A minority of patients expressed reservations about MA phone follow-up, including concerns about their care potentially "falling through the cracks" and whether the physician would continue to be in charge of medical decisions. Another consideration that emerged was the value of family members or friends in office encounters and how their participation in care might be affected by telephone-based follow-up.

CONCLUSIONS: This study reveals positive patient attitudes towards the concept of telephone-based alternatives to specialty clinic follow-up. Unexpected findings include patient interest in the program's ability to facilitate communication with the clinic and improve clinic access for other patients. Future studies of telephone-based follow-up visits should examine physician attitudes and include patient collaboration in redesign efforts to ensure acceptability.

LIMITED HEALTH LITERACY IS COMMON IN FORMER PRISON INMATES Mim Ari[1]; Joel Hirsh[2]; Brenda Beaty[1]; Ingrid A. Binswanger[1]. [1]University of Colorado School of Medicine, Aurora, CO; [2]Denver Health Medical Center, Denver, CO. (Tracking ID #1638884)

BACKGROUND: Former inmates are a medically vulnerable population. While studies of prisoners have shown limited literacy proficiency, health literacy has not been extensively assessed in this population. The goals of this study were 1) to describe health literacy in former prison inmates, 2) to assess the association between health literacy and demographic variables, self-reported health status, access and barriers to care, and high-risk behaviors.

METHODS: Sixty-eight individuals were recruited within 6 months of release from prison. Participants were interviewed in person using a survey that included questions from well-established and commonly-used data collection instruments, including the Addiction Severity Index, the Short Form-36, and the National Health Interview Survey, as well as questions related to criminal justice history, risk behaviors, past and anticipated health care, and the presence of medical complications of drug use. Additionally, individuals completed two validated health literacy instruments: a single item literacy screener (SILS) that asked participants "how confident are you filling out medical forms by yourself" and the Medical Term Recognition Test (METER) which asked participants to correctly identify 40 medical terms (i.e. kidney, hepatitis, anemia) from a list of 70 terms that included non-medical terms that were similar to medical terms (i.e. blout, cerpes, malories). The health literacy instruments were analyzed using descriptive statistics. The relationships between health literacy and self-reported health status, health care coverage, having a primary care physician, barriers to care, and tobacco use were also explored.

RESULTS: Participants (n=68) were a mean age of 42 years old (SD 10). The median number of months involved in the criminal justice system was 108. Sixty-four percent considered their health to be good to excellent, while 36 % reported poor to fair health. The two health literacy measures revealed a large range of scores. On the SILS, only 48 % felt extremely or quite a bit confident filling out medical forms. The mean adjusted METER score was 29 (SD 8.7). Using a categorization system based on score, 28 % had functional health literacy while 57 % had marginal health literacy, and 15 % had low health literacy. Functional vs. marginal/low health literacy did not show an association with age, sex, education, or time involved in the criminal justice system. On the METER, non-white participants were more likely to have marginal/low health literacy (p= 0.02). A higher percentage of those with functional health literacy reported good to excellent self-reported health status (p=0.07).

CONCLUSIONS: Limited health literacy is common in former prison inmates and, along with other complex social factors, may contribute to decisions related to access to care, participating in high-risk behaviors, and their overall health. A discussion of interventions to improve health outcomes and increase access to care in individuals recently released from prison would be incomplete without taking into account health literacy given the wide breadth of health literacy skills in this population. Our study was limited by small sample size, which makes understanding the contribution that health literacy plays more challenging.

LIMITED PROVIDER RESPONSE TO ABNORMAL MICROALBUMIN TEST RESULTS: IMPLICATIONS FOR THE UTILITY OF SCREENING RATE AS A QUALITY OF CARE METRIC Sonia T. Bajwa-Dulai; Parambir S. Dulai; Kelly A. Kieffer. Dartmouth Hitchcock Medical Center, Lebanon, NH. (Tracking ID #1637899)

BACKGROUND: Annual urine microalbumin testing is recommended in diabetic patients to screen for nephropathy. The rate at which this testing is performed is a process of care quality metric used by health care systems, accrediting organizations, and payors. It is unclear how effectively screening generates meaningful clinical outcomes. Therefore, we studied outcomes of microalbumin testing in the diabetic population of an academic primary care practice, with aims of quantifying the overall frequency of abnormal results and the proportion of patients with abnormal results in whom testing led to a meaningful change in care.

METHODS: The study population included patients receiving primary care from one clinical team at an academic medical center or from a satellite clinic of the medical center. Identical systematic, team-based processes of chronic disease care are utilized at both sites. Our chronic disease registry and laboratory database were searched to identify diabetic patients who had microalbumin testing ordered by a provider on the primary care team during a 1-year period. Retrospective chart reviews were performed for patients with abnormal results to determine whether a meaningful clinical response occurred within 6 months after the test. A meaningful response was defined as: repeat microalbumin testing; addition or increase in angiotensin converting enzyme inhibitor (ACE), angiotensin receptor blocker (ARB), beta-blocker(BB), or calcium channel blocker (CCB); further evaluation of renal function (urine protein/creatinine ratio, renal ultrasound), or nephrology referral.

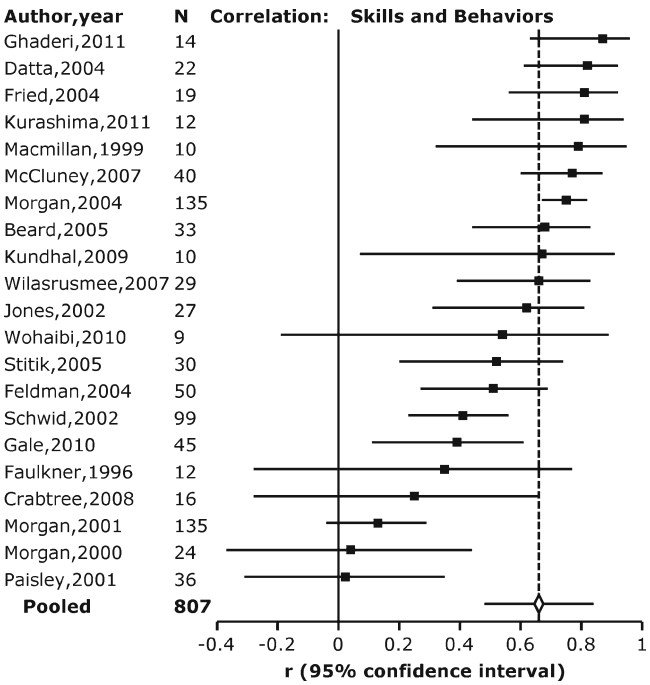
RESULTS: Of 959 diabetic patients in the practice, 50 % (n=478) had at least one microalbumin test in the primary care setting during the study period. 27 % of those tested (n=131/478) had abnormal results; the proportion of patients with abnormal results was similar between clinic sites. A meaningful clinical response occurred in 9 % of patients tested (n=42/478), in 32 % (n=42/131) of patients with abnormal results, and in 28 % (n=19/68) of patients newly diagnosed with microalbuminuria. Clinical responses included: repeat testing (n=21), addition (n=6) or increase (n=8) in ACE/ARB, increase in CCB (n=1), urine protein/creatinine ratio testing (n=6), renal ultrasound (n=2), and/or nephrology referral (n=4). In 43 % (n=56) of patients the ACE/ARB dose was continued without adjustment. Patients in whom a meaningful clinical response occurred had higher baseline creatinine levels (1.14 vs. 0.95; p=0.005), were more often male (p=0.059) and more likely to have macroalbuminuria (p=0.103). On multivariate regression analysis, a meaningful clinical response was more likely in patients with a baseline creatinine >1.4 (OR 3.10, 95 % CI 1.02–9.49) or a resident primary care provider (OR 2.59, 95 % CI 1.06–6.52).

CONCLUSIONS: Abnormal microalbumin results were relatively common in our diabetic population, but rarely led to meaningful changes in care. This may be due to the provider missing the test result, not appreciating its significance, or feeling that a change in care was not appropriate. Any of these factors, if present, would represent opportunities to increase the value of patient care. In our population, an elevated creatinine was more likely to prompt a response, suggesting clinicians may delay action until disease progression has begun. Further interventions focusing on provider education, follow-up protocols, and improved patient selection may allow for this screening measure to be more effectively utilized.

LINKING SKILLS ASSESSMENT WITH PATIENT OUTCOMES: A SYSTEMATIC REVIEW AND META-ANALYSIS David A. Cook[1]; Ryan Brydges[2]; Benjamin Zendejas[3]; Rose Hatala[4]. [1]Mayo Clinic College of Medicine, Rochester, MN; [2]University of Toronto, Toronto, ON, Canada; [3]Mayo Clinic College of Medicine, Rochester, MN; [4]University of British Columbia, Vancouver, BC, Canada. (Tracking ID #1643171)

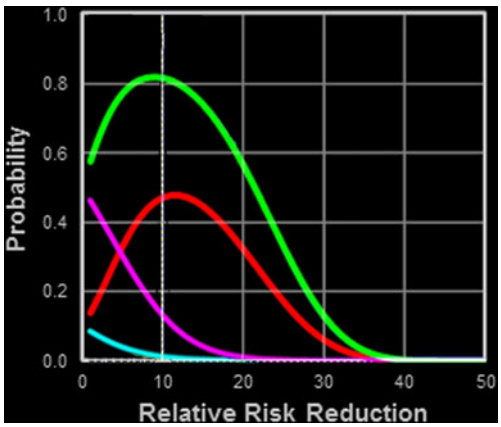
BACKGROUND: Evaluating the patient impact of health professions education is a societal priority, yet directly measuring patient outcomes is often impractical. Establishing links between patient outcomes and easier-to-measure knowledge and skills enables researchers to primarily use these surrogates, reserving for selected situations the more difficult measurement of patient outcomes. However, the strength of such links and the quality of the evidence remain largely unknown. We aimed to explore empiric links between patient outcomes and skills assessed using technology-enhanced simulation, and to identify validity evidence reported.

METHODS: We systematically searched MEDLINE, EMBASE, Scopus, and prior reviews through May 2011. We included all original research studies involving health professionals that a) evaluated the validity of a simulation-based assessment and b) reported a patient outcome. We worked in duplicate to select studies and abstract information on validity evidence and magnitude of correlation. We distinguished patient outcomes of learner behaviors (LB; eg, instructor ratings of learners during patient care), procedure time (PT), and actual patient effects (PE; eg, complications). We pooled correlation coefficients using random effects meta-analysis.
RESULTS: From 10,911 articles screened we identified 34 eligible studies enrolling 1127 participants. Topics included laparoscopic surgery, gastrointestinal endoscopy, airway management, bronchoscopy, and anesthesiology. Participants included resident physicians (*N*=28 studies), practicing physicians (*N*=12), medical students (*N*=4), and nurses (*N*=3). 29 studies reported LB outcomes, 9 reported PT, and 4 reported PE, although not all reported correlation with simulation-assessed skills. For 21 studies that did report correlation of skills with LB, the pooled correlation was 0.65 (95 % CI, 0.48–0.84; see Figure). The pooled correlation for PT was 0.71 (0.43–1.00; *N*=5 studies), and for PE was 0.37 (−0.31 to 1.00; *N*=2 studies). Looking at the validity evidence for patient outcomes, most studies (*N*=28) reported evidence of relations with other variables, while evidence of content (10 studies) and internal structure (*N*=9) were reported less often.
CONCLUSIONS: Simulation-based assessments usually (but not always) correlate with learner behaviors during patient care, with a moderately large pooled correlation. While surrogate outcomes are imperfect, they may be useful in many situations. Validity evidence for patient outcomes is sparse.



LIPID LOWERING THERAPY AND RISK OF PANCREATITIS: A BAYESIAN ANALYSIS TO DISTINGUISH BETWEEN THE CLINICAL IMPORTANCE AND STATISTICAL SIGNIFICANCE KoKo Aung[1]; Sonal Singh[2,3]; George A. Diamond[4]. [1]University of Texas Health Science Center at San Antonio, San Antonio, TX; [2]Johns Hopkins University School of Medicine, Baltimore, MD; [3]Johns Hopkins University School of Public Health, Baltimore, MD; [4]Cedars-Sinai Medical Center and University of California, Los Angeles, David Geffen School of Medicine, Los Angeles, CA. (Tracking ID #1635074)

BACKGROUND: A recently published meta-analysis of 28 large randomized trials concluded that use of statins, but not fibrates, was associated with a lower risk of pancreatitis in patients with normal or mildly elevated triglyceride levels. There was no significant heterogeneity among the trials. The combined risk ratio averaged 0.79 (*P*=.01) in statin trials and 1.39 (*P*=.053) in fibrate trials. The objective of this study was to determine if lipid lowering therapy is associated with a clinically important reduction in the risk of pancreatitis using Bayesian analysis.
METHODS: We re-analyzed the individual trials in the meta-analysis using a formal Bayesian algorithm (Arch Intern Med 2009;169:1431). We quantified clinical importance as the probability of a relative risk reduction (RRR) >10 % using a range of prior distributions (skeptical and enthusiastic).
RESULTS: The table and figure below summarize the range of probability of RRR >10 % (threshold of clinical importance) for a worst case skeptical prior (Pworst) and a best-case enthusiastic prior (Pbest) according to our Bayesian classification algorithm. Nine of the 21 statin trials exhibited insufficient evidence of benefit (Pworst<Pbest<0.5) and 12 exhibited inconsistent evidence of benefit (Pworst<0.5<Pbest) in reducing the risk of pancreatitis. The meta-analytic summary of all 21 statin trials exhibited similarly inconsistent evidence of benefit. In comparison, 5 of the 7 fibrate trials exhibited insufficient evidence of benefit and 2 exhibited inconsistent evidence of benefit. The meta-analytic summary of all 7 fibrate trials exhibited insufficient evidence of benefit.
CONCLUSIONS: The totality of evidence is inadequate to conclude that lipid lowering therapy reduces the risk of pancreatitis to a clinically important degree. Our observations support wider use of Bayesian analysis to distinguish between the clinical importance and statistical significance of conventional meta-analyses.
Lipid lowering therapy and incident pancreatitis
Source Sample Size Risk ratio (95 % CI) Pworse Pbest
Statin vs placebo trials 113,800 0.77 (0.62–0.97) 0.39 0.78
Intensive vs moderate dose statin trials 39,614 0.82 (0.59–1.12) 0.19 0.61
All statin trials 153,414 0.79 (0.65–0.95) 0.47 0.82
All fibrate trials 40,162 1.39 (1.00–1.95) 0.01 0.13
Sensitivity analysis of the probability of a clinically important benefit (y-axis) as a function of the threshold for a clinically important RRR in statin trials (green = enthusiastic prior, red = skeptical prior) and fibrate trials (magenta = enthusiastic prior, cyan = skeptical prior)



LOSING WEIGHTS: FAILURE TO RECOGNIZE AND ACT ON WEIGHT LOSS DOCUMENTED IN AN ELECTRONIC MEDICAL RECORD Robert El-Kareh[1]; Valeria C. Pazo[2]; Adam Wright[2,3]; Gordon D. Schiff[2,4]. [1]UC San Diego, La Jolla, CA; [2]Brigham and Women's Hospital, Boston, MA; [3]Partners HealthCare System, Wellesley, MA; [4]Harvard Medical School, Boston, MA. (Tracking ID #1625879)

BACKGROUND: Involuntary weight loss may be a sign or symptom of a serious or undiagnosed illness. When significant weight loss is unrecognized, an opportunity to make a timely diagnosis may be missed. Routine capture of electronic weight data is a requirement for meaningful electronic health record (EHR) use; however, limited data exist estimating how frequently recorded weight loss is recognized. We sought to use EHR data to estimate the frequency of unrecognized involuntary weight loss and its implications.
METHODS: We analyzed weights recorded in our EHR of a random sample of 100,000 adult outpatients. We found 14,680 patients who had at least one pair of weight measurements showing a 10 pound loss within a year and identified a random subset of 1000 of them. We developed a linear regression-based algorithm to identify the start and end of periods of weight loss at rates of at least 10 % per year.

Within each loss period, we identified an "index visit," defined as the first visit at which the patient had lost 10 % of weight from the start of the loss period. Board-certified internists reviewed 170 charts of patients who experienced these weight loss periods to determine whether: 1) the weight loss was involuntary; 2) the weight loss was recognized and documented by the clinician at the index visit or at the first visit with the primary care provider (PCP) following the index visit; and 3) possible explanations for involuntary weight loss could be identified at the index visit or emerged in the subsequent 2 years. To calculate agreement between reviewers, both reviewed a random subset of 20 of the charts and we calculated kappa statistics for the three main assessments.

RESULTS: We identified 577 weight loss periods in 543 unique patients in the random sample of 1000 patients with a 10 pound weight loss within 1 year. We estimated that 18 % of the adult patient population in our sample had at least one weight loss period meeting our criteria. Of the 170 randomly selected weight loss periods that were reviewed, 22 (13 %) were involuntary, 36 (21 %) were voluntary and 112 (66 %) could not be determined at the index visit. We found that 66 (39 %) weight loss periods were recognized by the clinician at the index visit based on documentation in the chart and an additional 3 (2 %) recognized at the next PCP visit. In the subsequent 2 years following the index visit for 134 non-voluntary weight loss periods, 66 (49 %) were found to have possible explanations involving medical conditions, 19 (14 %) involving psycho-social conditions, 9 (7 %) due to erroneous data entry, 8 (6 %) were actually voluntary, and 6 (4 %) were due to postpartum weight loss. No possible explanations were found in 26 (19 %) of cases. Reviewer agreement as measured by kappa statistics regarding assessment of whether weight loss was voluntary, whether it was recognized, and category of possible explanation in the subsequent 2 years were 0.83, 0.90, and 0.60 respectively.

CONCLUSIONS: Periods of weight loss were common in our adult medical population. These losses were often involuntary and clinicians frequently did not recognize or document them. Many patients with involuntary weight loss had potential explanations at the time of the visit or in the subsequent 2 years. Use of electronic data coupled with clinical decision support to alert for clinically significant weight loss may provide opportunities for earlier detection and thereby reduce delays in the diagnosis or treatment of important underlying conditions.

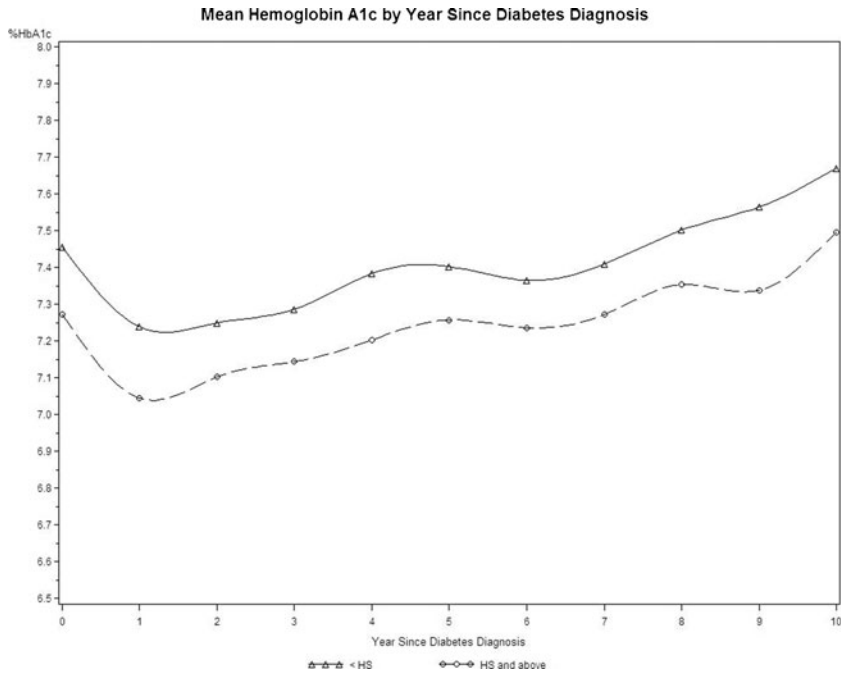
LOW EDUCATIONAL ATTAINMENT IS ASSOCIATED WITH GREATER TIME OUT OF GLYCEMIC CONTROL AND INCREASED KIDNEY DISEASE IN DIABETES PATIENTS: A LONGITUDINAL ANALYSIS Seth A. Berkowitz[1]; Wei He1; Yuchiao Chang[1]; Steven J. Atlas[1]; James Meigs[1]; Deborah J. Wexler[2]. [1]MGH, Boston, MA; [2]MGH, Boston, MA. (Tracking ID #1634575)

BACKGROUND: Patients with low educational attainment, a correlate of low socioeconomic status, have increased diabetes prevalence. However, it is unclear if these patients have worse disease control or microvascular outcomes. We hypothesized that lower education would be associated with worse longitudinal glycemic control and increased risk of developing renal disease.

METHODS: We constructed a cohort of adult patients with diabetes within an 18-practice primary care research network from Jan 1 2003 to Dec 31 2011. Patients diagnosed before age 40 or started on insulin at diagnosis were removed to exclude type 1 diabetes patients. We classified self-reported educational attainment as less than high school diploma (<HS) or high school diploma or greater (≥HS). The primary outcome was proportion of total follow-up time spent with a hemoglobin A1c (HbA1c) above 8.0 %. We defined incident chronic kidney disease stage 5 (CKD5) as at least 1 eGFR<15 ml/min by the CKD-EPI equation occurring for the first time after the diagnosis of diabetes. We performed unadjusted analyses with t-tests, and adjusted analyses with linear regression and Cox regression.

RESULTS: Over a mean follow-up duration of 5.5 (range 0.1–9) years, 13,234 patients contributed 73,424 years of follow-up time. The mean age at cohort entry was 61.1 (SD 11.5) years and 18 % had<HS education. Patients with <HS education were more likely to be non-white, female, and have Medicaid, Medicare, or no, compared to commercial, insurance ($p<$ 0.001 for all comparisons). Figure 1 depicts trends in mean HbA1c. Patients with <HS education spent 23.1 % of their follow-up time with an HbA1c>8.0, compared to 19.6 % of patients with≥HS ($p<.001$) with no difference in number of HbA1c tests per year between the two groups (4.05 in <HS vs. 4.09 in≥HS, $p=0.93$). In a linear regression model adjusted for age at cohort entry, gender, race/ethnicity, duration of diabetes, HbA1c tests per year, and insurance status, <HS remained associated with more time above HbA1c of 8.0 % (adjusted mean 24.8 % vs. 22.9 %, $p=.01$). In time-to-event analyses adjusted for age at cohort entry, gender, race/ethnicity, insurance, HbA1c tests per year, proportion of follow up time with HbA1c>8.0 %, and duration of diabetes, <HS education was associated with increased risk of incident CKD5 (HR 1.31, 95%CI 1.06–1.60).

CONCLUSIONS: Low education is associated with increased hyperglycemia and risk of CKD5, even after adjustment, including for glycemic control. Patients with low education are a high risk subgroup that may benefit from population health interventions to reduce health inequities.



MAJOR BLEEDING RISK IN ANTICOAGULATED PATIENTS RECEIVING CONCOMITANT ANTIPLATELET THERAPY: A PROSPECTIVE STUDY Jacques Donze[1,2]; Nicolas Rodondi[3]; Gerard Waeber[4]; Jacques Cornuz[5]; Drahomir Aujesky[3]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Bern University Hospital, Bern, Switzerland; [4]Lausanne University Hospital, Lausanne, Switzerland; [5]Lausanne University Hospital, Lausanne, Switzerland. (Tracking ID #1623873)

BACKGROUND: There is strong evidence that patients on both oral anticoagulant and antiplatelet therapy have a higher risk of bleeding than patients on antiplatelet therapy alone. However, there are few data comparing the risk between a combination of oral anticoagulant plus antiplatelet therapy, and oral anticoagulant alone. Current data are limited to retrospective studies or specific populations only. We aimed to prospectively evaluate whether unselected medical patients on oral anticoagulation have an increased risk of bleeding when on concomitant antiplatelet therapy.
METHODS: We prospectively studied consecutive adult medical patients who were discharged on oral anticoagulants between 01/2008 and 03/2009 from a Swiss university hospital. The primary outcome was the time to a first major bleeding on oral anticoagulation within 12 months. Major bleeding was defined as a fatal bleeding, a symptomatic bleeding in a critical organ or a bleeding causing a fall in hemoglobin level≥20 g/L or leading to a transfusion≥2 units of packed red cells. Multivariable analyses were performed using the Cox proportional hazards method with the first major bleeding event as the dependent variable and antiplatelet therapy (no one vs. at least one antiplatelet agent) as the independent variable. All important confounders based on a priori knowledge were included in the model: age, target INR at the time of enrollment, total number of medications, history of major bleeding event, and history of myocardial infarction.
RESULTS: Among the 515 included anticoagulated patients, the incidence rate of a first major bleed was 8.2 per 100 patient-years. Overall, 161 patients (31.3 %) were on both anticoagulant and antiplatelet therapy, and these patients had a similar incidence rate of major bleeding compared to patients on oral anticoagulation alone (7.6 vs. 8.4 per 100 patient-years, P=0.81). In a multivariate analysis, the association of concomitant antiplatelet therapy with the risk of major bleeding was not statistically significant (hazard ratio [HR] 0.89, 95 % confidence interval, 0.37–2.10). Only the number of medications (HR 1.13, 95%CI 1.02–1.25) and a higher target INR (HR 3.67, 95%CI 1.56–8.62) remained significantly associated with major bleeding event.
CONCLUSIONS: In this prospective cohort of internal medicine patients, the risk of bleeding in patients receiving a concomitant antiplatelet therapy was similar to patients without antiplatelet therapy, suggesting that the use of antiplatelet therapy in addition to oral anticoagulant in the general population may not be as high as found in previous studies of specific populations.
Cox Bivariate and Multivariable-Adjusted Analyses (n=515)
HR (95%CI)
Variable Bivariate Analyses Adjusted Model*
Concomitant antiplatelet therapy 0.91 (0.42–1.98) 0.89 (0.37–2.10)
Age, per 10 years 1.11 (0.84–1.47) 1.16 (0.85–1.56)
Target INR (≥ 3.0 vs. < 3.0) 3.83 (1.65–8.89) 3.67 (1.56–8.62)
Number of medication(s), per additional drug taken 1.13 (1.02–1.24) 1.13 (1.02–1.25)
History of major bleed 2.66 (1.09–6.48) 2.07 (0.82–5.20)
History of myocardial infarction 0.53 (0.19–1.51) 0.44 (0.14–1.41)
INR = international normalized ratio, HR = hazard ratio. ∗ Adjusted for age, target INR, number of drugs, history of bleed and history of myocardial infarction.

MAKING THE EHR SMARTER: PATIENT AND PROVIDER REPORTED DATA IMPROVE PERFORMANCE ON PREVENTATIVE HEALTH QUALITY MEASURES Michael E. Bowen[1,2]; Jason Fish[1]; Deepa Bhat[1]; Brett Moran[1]; Temple S. Howell-Stampley[1]; Lynne Kirk[1]; Kim Batchelor[1]; Ethan Halm[1,2]. 1UT Southwestern Medical Center, Dallas, TX; [2]UT Southwestern Medical Center, Dallas, TX. (Tracking ID #1639832)

BACKGROUND: Although Electronic Health Records (EHRs) facilitate data collection and management, the ability to capture services delivered in other health systems and patient-centered information is limited. The frequency of such occurrences and impact on performance metrics is unknown. We describe the frequency of provider-reported exceptions to preventative health best practice alerts (BPAs) and examine the impact of patient-centered data exceptions on performance metrics.
METHODS: We implemented 5 visit-based BPAs in our Epic EHR targeting preventative health metrics in 3 general medicine clinics between July 2011 and June 2012. BPAs included: mammography (MAM), colorectal cancer (CRC), cervical cancer (CERV), and osteoporosis (OP) screening, and pneumonia vaccine (PNA). BPAs allowed providers to report patient preferences and medical contraindications to BPAs. BPAs satisfied outside the health system were documented in the BPA or the health maintenance section of the EHR. The study sample included established patients eligible for age-appropriate preventative services with at least one primary care visit in the past year. Baseline performance was calculated as the proportion of eligible patients satisfying measures based on EHR data. Post-BPA measurements were calculated using 3 approaches: 1) Standard: EHR data/measure eligible; 2) Exception: (EHR data + completed elsewhere)/(measure eligible-patient reason-medical reason); 3) Patient-centered: in this approach, patient refusals or medical contraindications counted towards measure completion rates. (EHR data + completed elsewhere + patient reason + medical reason)/measure eligible. Performance before and after BPA implementation was examined for each approach using a chi-square analysis with bonferroni adjustment. A cross-sectional comparison of post-BPA performance between the 3 approaches was also done.
RESULTS: Between July 2011 and June 2012, 23805 encounters were completed by 9780 patients who were eligible for at least one health maintenance measure. A total of 21757 alerts fired. Baseline performance rates were as follows: MAM 71 %, CRC 67 %, CERV 53 %, OP 72 %, and PNA 67 %. For each metric, between 2 and 9 % of patients had services completed elsewhere and between 0.7 and 2.4 % of BPAs were not completed for patient reasons such as patient refusal or medical reasons such as limited life expectancy. In the standard approach, significant improvement from baseline was observed after BPA implementation for CRC (74 %), PNA (73 %), and OP (72 %) (p<0.05 for all). Mammography and cervical cancer screening rates did not change. In the exception approach, all measures improved significantly from baseline: MAM 75 %, CRC 84 %, CERV 62 %, OP 80 %, and PNA 82 % (p<0.05 for all). Similar improvements from baseline were noted with the patient-centered approach: MAM 76 %, CRC 84 %, CERV 63 %, OP 80 %, PNA 81 % (p< 0.05 for all). While no difference in post-BPA performance between the exception and patient-centered approaches was observed in cross-sectional analysis, performance rates in the exception (p<0.05 for all measures) and patient-centered approaches (p<0.05 for all measures) were significantly higher than the standard approach.
CONCLUSIONS: Inclusion of patient and provider-reported data improved performance on preventative health metrics. Service completion in outside systems is common, and failure to account for outside data may underestimate performance.

MANAGING YOUR MEDICATION FOR EDUCATION AND DAILY SUPPORT: THE VALUE OF A CLINICAL PHARMACIST IN PRIMARY CARE PRACTICES TO IMPROVE DIABETES CARE Ekaterina Vaisberg[1]; Gerardo Moreno[2,1]; Chi-Hong Tseng[1]; Douglas Bell[1]; Robin Clarke[1]; Shirley Wong[1]; Jeffery Y. Fu[1]; Carol Mangione[1]. [1]University of California, Los Angeles, Los Angeles, CA; [2]University of California, Los Angeles, Los Angeles, CA. (Tracking ID #1642189)

BACKGROUND: Inclusion of clinical pharmacists on the primary care team has potential for improving the care of complex chronic conditions such as diabetes. A limited number of randomized trials have examined the incorporation of clinical pharmacists to patient care with mixed results, but few pragmatic studies have investigated the impact of the pharmacists in real world settings or community primary care practices. Our objective is to test the value of embedding a clinical pharmacist into the care team in four heterogeneous community-based primary care practices, by evaluating the effect of such a program on cardiovascular risk factors for complex patients with diabetes.

METHODS: We conducted a pre-post cohort study of a clinical pharmacist medication therapy management intervention for patients with type 2 diabetes. Patients were eligible if they fit one of the following criteria: hemoglobin A1c (A1c) >9 %, blood pressure (BP)>140/90 mmHg, LDL-cholesterol (LDL-c) >130 mg/dL or five or more prescribed chronic medications. One-on-one consultations with patients were conducted by the pharmacist at primary care practices in the community. The main components of the consultations were motivational interviewing for personal adherence barriers, medication reconciliation, and medication therapy management. We compared pre-post intervention values for A1c, LDL-c and SBP. We used t-tests and Wilcoxon rank sum tests to compare continuous variables between two groups and chi-squared tests to compare categorical variables. Control subjects have been chosen from 9 additional primary care practices in the same health system but without a clinical pharmacist. If selected for presentation, propensity score analysis comparing the change from pre and post measurements between experimental and matched control subjects will be presented.

RESULTS: Patients that saw the clinical pharmacist (N=89) were 47 % female and had a mean age of 62 ±12 years. The mean baseline A1c was 8.1 % (±12), SBP was 132 mmHg (±32), and the LDL-c was 99 mg/dL (±30). Medication reconciliation was conducted on all patients and the average number of prescribed medications was eight. Patients that consulted with a clinical pharmacist had a mean decrease in A1c of −0.42 % (95 % CI −0.78 to −0.06, P=0.02) while among patients with a baseline A1c>9 %, the decrease in A1c was −1.88 % (n=25, 95 % CI −2.69 to −1.07, P<0.001). There were no significant decreases in overall mean LDL-c and SBP. Among patients with a baseline LDL-c>130 mg/dL, the decrease in LDL-c was −52.75 mg/dL (n=12, 95 % CI −80.94 to −24.56, P=0.002). Among patients with a baseline SBP> 140 mmHg, the decrease in SBP was −6.54 mmHg (n=21, 95 % CI −11.21 to −1.87, P=0.008).

CONCLUSIONS: Clinical pharmacists may be an important addition to clinical care teams in community primary care practices and may help improve intermediate cardiovascular risk factors and glycemia among a subset of patients with uncontrolled diabetes. More pragmatic research studies are needed to investigate the effectiveness of different ways of embedding clinical pharmacists into care teams and to increase our knowledge about which patients benefit the most from consulting with clinical pharmacist.

MEASURING CLINICIAN INFORMATION LITERACY: EXPERIENCES WITH A PANEL MANAGEMENT INTERVENTION

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BACKGROUND: Medicine is an information science. Clinicians receive reams of information from an array of sources that they must process into decisions and prioritized tasks for the clinical team and patient. Health reform policies incentivize clinicians to use health information technologies to coordinate care across a highly fragmented delivery system. For example, the VA is currently implementing a patient-centered medical home initiative known as PACT (Patient Aligned Care Teams) in which primary care teams manage panels of patients. PACT and similar models require clinicians to access, analyze, and apply information from a number of different electronic systems. The information literacy skill of clinicians is unknown and there is little evidence on the impact of programs designed to teach information literacy. We sought to develop a measure of information literacy and describe its variability and change in response to a controlled panel management intervention aimed at PACT.

METHODS: We investigated information literacy among primary care providers (PCPs) and nurses (RNs), as a component of PROVE (Program for Research on the Outcomes of VA Education). The goal of PROVE is to assess the impact of panel management support and education on hypertension and smoking outcomes through the addition of a non-clinical panel management assistant (PMA) randomly allocated to PACT at the VA New York Harbor Health Care System. PMAs served as a liaison to their PACT, providing information on teams' hypertensive and smoking patient panels using VA's panel management tools: PC Almanac and PACT Compass. We surveyed 44 PCPs and 17 RNs, pre- and post-intervention, about their use of the two data tools (each 1 item, 5-point Likert scale). For the post-survey we developed an 8-item measure about use and attitudes toward electronic information resources as a measure of information literacy (mean of 8-items, 5-point Likert scale, Cronbach's α=0.84). We compared scores between study arms and clinician type (PCP and RN) using one-way analysis of variance. To test our hypothesis that the intervention increased the use of panel management data tools, we compared responses pre- and post-intervention using paired t-tests.

RESULTS: Survey response rates were 76 % overall. The mean score for information literacy post-intervention was 3.4 (SD 0.82) out of 5. The mean information literacy was similar for PCPs (3.3, SD 0.83) and RNs (3.8, SD 0.66, p=0.57 for difference), and for intervention (3.6) and control groups (3.1, p=0.12 for difference). Compared to baseline, reported use of the PC Almanac increased from 2.6 to 3.2, mean change (95 % CI) of 0.5 (0.09, 0.94, p=0.02). Reported use of the PACT Compass increased from 2.3 to 3.2, mean change of 1.2 (0.7, 1.6, p<0.001). Information literacy was positively correlated with usage of both panel management tools (r= 0.83 for Almanac, r=0.87 for Compass, p=0.001 for both).

CONCLUSIONS: To be effective innovators and leaders, clinicians must have the information literacy skills necessary to access, analyze, and apply information from electronic clinical systems. This research moves our field closer to measuring information literacy, and it suggests that education interventions and information liaison roles might support access and utilization of technologies designed to enhance care coordination.

MEDICAL EDUCATION IN HEALTH POLICY BEFORE AND AFTER THE AFFORDABLE CARE ACT

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BACKGROUND: The Affordable Care Act is one of the most important pieces of health policy reform to be enacted in US in decades. Meanwhile, our previous work has found that less than 50 % of graduating medical students felt appropriately trained in topics relating to health policy such as medical economics and health care systems.

METHODS: The objective of this study is to determine if medical education in health policy has changed since the Affordable Care Act was passed. The Medical Student Graduation Questionnaire (MSGQ) was obtained from the Association of American Medical Colleges (AAMC) for national data from 2006 to 2012. Responses for perceptions of training relating to topics in health policy were compared to clinical care and clinical decision making using classification methods from our prior work. Pearson chi square statistics were conducted to evaluate changes between 2008 (before) to 2012 (after).

RESULTS: From 2006 to 2012, the percentage of graduating medical students that reported appropriate training was stable for clinical care (83–85 %) and clinical decision making (89–90 %). During that same period, perceptions of training in health policy steadily rose from 58.0 % to 63.9 %. Compared to 2008, chi square analysis found statistically significant changes in 2012 for all 13 components of health policy except medical economics (36.4 to 37.2 %) and law and medicine (48.9 to 48.9 %). The most significant increases were in public health (64.0 to 75.9 %), managed care (47.4 to 57.9 %), and biostatics (72.3 to 79.4 %).

CONCLUSIONS: While the aggregate perceptions of training in health policy increased slightly after the Affordable Care Act was passed, the overall rate of 64 % is still quite low when compared to clinical care or clinical decision making. More study is necessary to evaluate whether these small change are due to improvements in medical school curricula or other reasons.

Graduating Medical Students' Perceptions of Being Appropriately Trained

Domain Topic	2008 (%)	2012 (%)	Difference (%)	P-Value
Systems and Principles Practice Management	48.1	50.3	2.2	<.001
Managed care	47.4	57.9	10.5	<.001
Health care systems	60.5	64.3	3.8	<.001

Public health 64.0 75.9 11.9<.001
Health policy 50.6 59.6 9.0<.001
Quality and Safety Health care quality improvement 69.2 71.0 1.8 0.002
Medical economics 36.4 37.2 0.8 0.183
Decision analysis 82.7 86.6 3.9<.001
Biostatistics 72.3 79.4 7.1<.001
Health and healthcare disparities 76.7 82.7 6.0<.001
Health determinants 76.9 82.2 5.3<.001
Politics and Law Medical licensure / regulation 37.7 35.5 −2.2<.001
Law and Medicine 48.9 48.9 0 0.992
Weighted Aggregate - 59.4 63.9 4.5<.001
(1)Domain: Patel et al. Advancing Medical Education by Teaching Health Policy. NEJM. 2011;364:695–697 (2)Topic: From the Association of American Medical Colleges Medical Student Graduation Questionnaire

MEDICAL STUDENT EMOTIONS EVOKED BY A CURRICULUM IN HEALTH CARE DISPARITIES April S. Fitzgerald; Pamela Lipsett; Mary Catherine Beach; Patricia A. Thomas. Johns Hopkins University, Baltimore, MD. (Tracking ID #1641014)

BACKGROUND: The existence of disparities in health care is a known problem that persists despite many years of active research and intervention. Well-documented reasons for healthcare disparities include patient, provider, and system factors. What is missing from the literature is an understanding of how information gained by students taking a course in healthcare disparities emotionally impacts those students. The goal of our study is to provide educators with guidance and examples of how the healthcare disparities course impacts first year medical students in terms of their emotional response.
METHODS: The Health Care Disparities (HCD) intersession is the first course matriculating students complete at Johns Hopkins University School of Medicine. At the end of the 2010 intersession, students were asked to write a reflective essay describing emotions evoked by the 3-day learning experience. Of the 120 students who completed the course, 25 essays were randomly selected for qualitative evaluation.
RESULTS: In the post-course evaluation, more than 99 % of students reported having a better understanding of social, behavioral, and economic factors affecting the healthcare disparities in Baltimore. Students' reflections described both positive and negative emotions evoked by participating in the course. Recurring negative reactions included feeling alarmed at the degree of disparities "impressed and shocked by the statistics", overwhelmed by the scope of the issues "dizzying array of issues began to obscure my answers", and guilty about their own life circumstances "made me feel ashamed … I have so much." Recurring themes of positive reactions included the thought-provoking nature of the topic "cause me to question my belief system and my concept of self", personal transformation in perspective "challenged my understanding of me," and inspiration to make a difference "motivate us as students to work for change."
CONCLUSIONS: Students have both positive and negative emotional reactions to learning about the existence of healthcare disparities. These strong emotional responses should be considered by educators when presenting health disparity information to students. Educators who better understand the emotional responses of students can better facilitate the cognitive dissonance evoked by this new information and help students constructively adapt to these feelings over time.

MEDICAL AND LEGAL CONSEQUENCES OF ONGOING DRUG USE AMONG YOUNG INJECTION DRUG USERS INFECTED WITH HEPATITIS C VIRUS Joshua A. Barocas[1]; Shawnika J. Hull[3]; James M. Sosman[1,2]; Ajay Sethi[4]; John J. Fangman[5]; Ryan Westergaard[1,2]. [1]University of Wisconsin-Madison, Madison, WI; [2]University of Wisconsin-Madison, Madison, WI; [3]University of Wisconsin-Madison, Madison, WI; [4]University of Wisconsin School of Medicine and Public Health, Madison, WI; [5]Medical College of Wisconsin, Milwaukee, WI. (Tracking ID #1641796)

BACKGROUND: Non-sterile injection practices and unprotected sexual contact place injection drug users (IDUs) at high risk for contracting and transmitting Hepatitis C virus (HCV). Injecting drugs has numerous other infectious and non-infectious medical consequences, which may be preventable with education about safer injection practices and/or addiction treatment. We hypothesized that IDUs who are tested for and receive a diagnosis of HCV may adopt safer behaviors and lower their risk of further negative health consequences.
METHODS: We invited clients at a multisite, free needle-exchange program in Southeastern Wisconsin to complete an anonymous, 88-question, computerized, interviewer-administered survey. The survey assessed frequency of injection, self-reported HCV status, recent hospitalization, incarceration, overdose, and other major injections (e.g. skin abscess, endocarditis). Participants were included if they were over 18, reported active injection drug use in the past week, and could provide informed consent. Respondents were asked to report consequences of their drug use that occurred during the preceding 6 months. Multiple logistic regression was used to assess the association between HCV status and the occurrence of consequences of drug use among HCV positive participants while controlling for potential confounders such as age, gender, and drug use frequency.
RESULTS: The survey was completed by 553 IDUs, of whom 69 % were male, 83 % white, 11 % black and 6 % Hispanic. The median age was 28, and 54 % resided in the Milwaukee metropolitan area. Active HCV infection was reported by 74 participants (13.4 %). Controlling for age, gender, and high frequency drug use, during the preceding 6 months, HCV-positive respondents were more likely to have overdosed on drugs (adjusted odds ratio (OR) 2.67, confidence interval (CI) 1.59–4.47), been put in jail for less than 30 days (OR 1.99, CI 1.19–3.32) or incarcerated for more than 30 days (OR 3.50, CI 1.91–6.33) than their HCV-negative counterparts. The HCV positive and negative groups did not differ significantly with respect to the incidence of passing out while driving (18.9 % and 16.7 %, respectively), infective endocarditis (2.7 % and 0.97 %, respectively), contracting a skin or soft tissue infection (41.9 % vs 27.6 %, respectively), or being hospitalized for another severe infection (12.2 % and 6.8 %, respectively).
CONCLUSIONS: Among this cross-sectional sample of mostly-young, urban IDUs, we found that those known to be infected with HCV were more likely to report recent overdose and becoming incarcerated. Our data do not support the hypothesis that IDUs adopt safer behaviors after receiving an HCV diagnosis. Rather, HCV appears to be a marker of ongoing high-risk drug use. It is not known whether previous or ongoing treatment for HCV correlates with safer practices. Medical providers and prevention specialists should recognize that HCV-infected IDUs remain at high risk for negative consequences of drug use. Prevention strategies should emphasize strategies to reduce overdose and incarceration in addition to avoiding transmission of bloodborne pathogens through the sharing of injection equipment.

MEDICAL DECISION-MAKING PREFERENCE IN VIETNAMESE INPATIENTS VERSUS ENGLISH-SPEAKING, NON-VIETNAMESE INPATIENTS Dan-Vinh Nguyen; Cheryl Ho; Ahmad Kamal; Sara Doorley. Santa Clara Valley Medical Center, San Jose, CA. (Tracking ID #1626382)

BACKGROUND: Santa Clara County, California is home to over 130,000 individuals of Vietnamese origin, comprising a significant portion of inpatients at the county hospital, Santa Clara Valley Medical Center. When hospitalized, patients often face important and complicated medical decisions. Traditionally, physicians have used a paternalistic or physician-directed approach to guide decisions. Yet, a shared model in which patients play a more collaborative role has been increasingly emphasized. To evaluate if culture may influence medical decisions, this study compared Vietnamese patients' preferences of a shared or physician-directed model with English-speaking, non-Vietnamese patients.
METHODS: A validated survey using a modified version of Ende et al's "Autonomy Preference Index" was administered in English and Vietnamese to assess two domains: information-seeking desire and decision-making preference. Powered to reveal a difference in the decision-making domain, two age-matched groups of 30 Vietnamese and non-Vietnamese inpatients

were surveyed. Each domain consisted of a series of statements graded by a five-point Likert Scale. For decision-making, four questions gauged individual preference and four measured preferences with family involvement for a total of eight questions. Individual and family sub-domain scores ranged 4–20 each, totaling 8–40. A median score of 24 (12 in each sub-domain) denoted neutrality, as if all questions were answered with a 3. Scores above or below the median represented a preference for paternalistic or shared decision-making, respectively. The information-seeking domain had seven questions and scores ranged 7–35. Higher scores indicated greater desire for knowledge about one's illness. T-tests were used to evaluate for significance.

RESULTS: Both groups had 16 males, an average age of 59, and approximately three household members. With 17 Vietnamese and 24 non-Vietnamese individuals completing 12th grade or higher, average years of education differed, 11.47±3.40 and 13.47±2.23 years (p=0.05), respectively. Vietnamese patients had a preference for the physician-directed model, scoring 31.13±4.90, while their counterparts scored 24.23±5.93, $p<$ 0.01. This remained significant in both the individual (15.87±2.30) and family (15.27±2.73) sub-domains, $p<0.01$. The non-Vietnamese group had a slight inclination towards paternalism in the individual sub-domain, 12.70±2.64. But a shared model was favored when considering family, 11.53±3.77. Total decision-making scores of gender and education subgroups are seen in the table. With information-seeking, both Vietnamese (30.73±3.45) and non-Vietnamese (32.27±2.36) groups scored highly, p=0.10.

CONCLUSIONS: Vietnamese inpatients preferred a paternalistic style of medical decision-making compared to the non-Vietnamese, even when controlling for gender and education. This may ultimately reflect culture shaping patients' views on medical decisions and the patient-provider relationship. Rather than encourage broad generalizations, providers should be challenged to engage more fully with patients and their families. By understanding a patient's needs and values, patient-centered care can be achieved, regardless of the decision-making model.

	Vietnamese	Non-Vietnamese	p value
Male	31.31±5.23	26.13±6.28	0.08
Female	30.93±4.52	22.07±4.80	<0.01
Education≥12th grade	30.12±5.95	23.79±5.84	0.02
Education≤11th grade	32.46±3.88	26.00±5.33	0.04

MEDICATION USE AFTER DEMENTIA DIAGNOSIS IN AN OBSERVATION COHORT OF DIABETES PATIENTS: THE DIABETES AND AGING STUDY Urmimala Sarkar[1]; Courtney R. Lyles[1]; Michael A. Steinman[2]; Elbert S. Huang[3]; Howard H. Moffet[3]; Rachel Whitmer[3]; Margaret Warton[3]; Andrew J. Karter[3]. [1]University of California, San Francisco, San Francisco, CA; [2]University of Chicago, Chicago, IL; [3]Kaiser Permanente, Oakland, CA. (Tracking ID #1640424)

BACKGROUND: The diagnosis of dementia in older patients requires patients and their doctors to revise the goals of preventive care, due to the high risk of adverse drug events and shortened life expectancy associated with the diagnosis. In particular, dementia diagnosis may alter the role of diabetes and cardiovascular medications designed to prevent long-term complications. Little is known about changes in medication use following diagnosis of dementia. As part of the Diabetes and Aging study, we (1) examined number of medications, and (2) characterized glycemic, blood pressure (BP), and lipid control before and after a diagnosis of dementia, compared to a reference population.

METHODS: Using a pre-post design with controls, we studied diabetes patients aged ≥50 from a race-stratified survey cohort in an integrated healthcare delivery system (Kaiser Permanente). Identification of incident dementia was based on ICD-9 codes 294.1, 294.2, 290.XX, 331.0, 331.1, 331.2, 331.82, and excluded dementia due to substance use or trauma. We excluded subjects with <12 months of continuous follow-up following diagnosis, evidence of prevalent dementia (previous dementia diagnoses), or type 1 diabetes. Using risk-set sampling we randomly selected 4 control subjects per dementia case, group matched on date of dementia diagnosis ("baseline date") to account for temporal variations, 5-year age categories, and sex. We assessed cardio-metabolic medication count and poor risk factor control (hemoglobin A1c >9 %, LDL >130 mg/dL, blood pressure (BP) >140/90 mmHg) at baseline and 12 months post-baseline. We plan to examine specific medication changes and conduct a formal difference-in-differences analysis of changes in medication count and clinical control.

RESULTS: In the eligible cohort (n=1,158 patients), the 4-to-1 matching yielded 193 (17 %) clinically recognized dementia cases. The vast majority (93 %) had diabetes for 5+ years, 75 % were aged 70+, 47 % were female, 50 % had a high school education or less, and 76 % were non-white (25 % Asian, 19 % black, 17 % Latino). At baseline, dementia patients were taking significantly more medications than controls (6.8 vs. 6.3 medications, respectively). One year later the number of medications decreased more in dementia patients vs controls (1.3 and 0.5 fewer medications, respectively). In terms of risk factor control, those with dementia entered the cohort with higher A1c compared to those without dementia, but there were no differences between the groups 1 year post-baseline. In contrast, there were no differences at baseline in lipid or BP control but poorer control among those with dementia at one-year follow-up, when compared to those without dementia.

CONCLUSIONS: Patients in this cohort decreased the number of medications taken over time; moreover, there was a greater decrease in polypharmacy after the recognition of dementia. These findings suggest that providers may be modifying some treatment goals subsequent to recognition of dementia. Future research is needed to understand how dementia affects the thinking of patients and physicians as they confront specific decisions regarding target goal selection and medication use for cardiometabolic control.

	Baseline		12 month follow-up	
	No dementia	Dementia	No dementia	Dementia
Number of meds	6.3	6.8	5.8	5.5
A1c>9	6.5 %	12.4 %*	7.6 %	8.6 %
LDL>130	5.8 %	9.0 %	5.7 %	11.5 %*
SBP>140/90	22.2 %	25.2 %	19.6 %	26.2 %†

MISSED COMMUNICATION - AN ANALYSIS OF UNREAD MESSAGES THROUGH A PATIENT WEB PORTAL Bradley H. Crotty; Bruce E. Landon. Beth Israel Deaconess Medical Center, Boston, MA. (Tracking ID #1642688)

BACKGROUND: Web-based patient portals offer patients a view of their medical record and the opportunity for secure messaging with physicians. Asynchronous communication such as secure messaging outside of visits may be more preferable and efficient to phone calls, and may be an important component of accountable care. Little data are available as to whether these messages are read and received by the recipient. We sought to study unread messages in a mature patient portal to understand their prevalence and patient factors associated with having unread messages.

METHODS: After allowing for a four-year equilibration period, we analyzed messages between attending physicians and patients between 2005 and 2010, evaluating the prevalence of unread messages, and the patient factors associated with these 'missed communications.' Duplicate messages from carbon copies were purged. Messages that were automatically forwarded within a practice were considered read once opened by any staff member. We developed logistic regression models with data from the most recent year to estimate having any unread messages after adjusting for race, age, sex, insurance type, socioeconomic status, and length of portal participation.

RESULTS: Patients and providers both had unread messages, and these decreased each year before plateauing after 6 years for patients and 4 years for physicians. In 2010, 7.3 % of patient messages were unread by the recipient physician, and 18 % of physician messages were unread by the recipient patient. Forty percent of patients who received a message from their doctor in 2010 had at least one unread message. After adjustment, sex, ethnicity, age, and income were significant predictors of having unread messages.

CONCLUSIONS: In a mature patient portal, unread messages are alarmingly prevalent. After adjustment, differences by race, age, and income persist, suggesting a difference in how different patient groups use the tool. These data suggest that physicians and patients should discuss

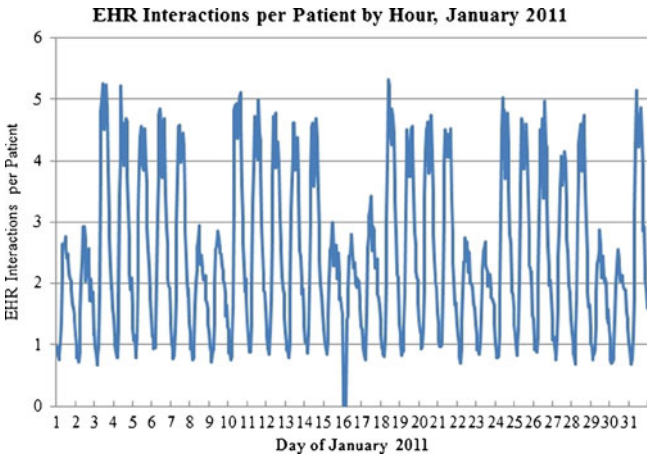
their communication preferences before engaging in messaging. In addition, high rates of unread messages initially suggest that there is an adjustment period for both physicians and patients as they begin using the portal. Further work to characterize the unread messages and reasons for lack of follow-up may shed light on this important communication failure.

MISSED OPPORTUNITIES FOR BREAST CANCER PREVENTION AMONG PRIMARY CARE PROVIDERS Jennifer Corbelli; Melissa McNeil. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1642038)

BACKGROUND: Breast cancer is among the most feared diagnoses of women of all ages. Prior research has suggested that tools to calculate (Gail model) and minimize (chemoprevention) breast cancer risk are infrequently used in primary care. It is unknown whether this practice has persisted in recent years, despite the widespread attention brought to these issues by changes in breast cancer screening guidelines. The primary aim of this study is to examine and compare current attitudes and practices of internists, family physicians, and gynecologists with respect to breast cancer risk assessment and prevention.
METHODS: We conducted a cross-sectional study at a large academic medical center. Both resident and attending physicians in three primary care specialties (gynecology, internal medicine, and family medicine) were electronically surveyed. Our survey was adopted with permission from National Survey of Primary Care Physicians' Cancer Screening Recommendations and Practices. Survey items assessed respondents' practices and attitudes regarding the Gail model and chemoprevention in women of different ages and breast cancer risks. We used descriptive statistics to generate response distribution for each survey item. We used Chi-square tests to compare survey responses across specialties.
RESULTS: Our overall response rate was 55 % (316/575). 40.8 % of providers reported ever having calculated a Gail score. A higher proportion of gynecologists (60.0 %) used the Gail model as compared to internists (36.9 %) and family physicians (33.3 %) (p=0.0018). Among all providers who have used the Gail model, 19.4 % reported regular use ("regular" defined as in >60 % of the time) in women over age 60, and 22.8 % reported regular use in women with a family history of breast cancer. Within the subset of providers who report ever having used the Gail model, the only significant difference among specialties was observed for women over 60, in whom gynecologists (29.7 %) were more likely than internists (13.3 %) to regularly use the Gail model (p=0.048). Only 13.2 % of providers reported ever having prescribed chemoprevention. Gynecologists (30.3 %) reported more frequent prescribing than both internists (8.5 %), and family physicians (8.0 %) (p=<0.001). Eleven percent of all providers who never prescribed chemoprevention agreed with the statement "I do not believe that chemoprophylaxis benefits most women who are eligible to receive it."
CONCLUSIONS: An overall minority of providers across primary care specialties use the Gail model to assess, and chemoprevention to decrease, breast cancer risk. This finding is significantly more pronounced among internists and family physicians as compared to gynecologists. Although the reasons for these findings are multifactorial, provider education is clearly a key factor. Until providers are more informed and comfortable in their use of the Gail model and chemoprevention, opportunities to identify and intervene in women at increased risk for breast cancer will continue to be missed.

MONITORING THE PULSE OF HOSPITAL ACTIVITY: ELECTRONIC HEALTH RECORD UTILIZATION AS A MEASURE OF CARE INTENSITY Saul Blecker; Jonathan Austrian; Daniel Shine; R. Scott Braithwaite; Martha J. Radford; Marc N. Gourevitch. NYU School of Medicine, New York, NY. (Tracking ID #1633574)

BACKGROUND: Hospital care on weekends has been associated with reduced quality and poor clinical outcomes, suggesting that decreases in overall intensity of care may have important clinical effects. Initiatives to address this important safety issue would be strengthened if a shared metric existed to describe the intensity of care provided at a given time of day or day of the week. We describe a new measure of hospital intensity of care based on utilization of the Electronic Health Record (EHR).
METHODS: We measured global intensity of care at our academic medical center by monitoring use of the EHR in 2011. Our primary measure, termed EHR interactions, was the number of accessions of a patient's electronic record by a clinician, adjusted for hospital census, per unit of time; our secondary measure was percent of total available central processing unit (CPU) power used to access EHR servers at a given time. We graphically displayed moment-to-moment intensity of care and calculated the coefficient of correlation between the two measures. Negative binomial regression models were used to determine the relative rate of weekday to weekend EHR interactions per patient for three daily time periods: day, morning/evening, and night.
RESULTS: Tracking EHR usage produced a detailed graphic picture of the hospital day and week, clearly demarcating rounding hours, lunch hours, hospital holidays, and other landmarks (Figure). EHR interactions were lower on weekend days as compared to weekdays at every hour (p<0.0001) and the daytime peak in intensity noted each weekday was blunted on weekends (Figure). The relative rates (RR) of census-adjusted record accessions per patient on weekdays compared with weekends were (95 % CI): RR 1.76 (1.74–1.77), RR 1.52 (1.50–1.55), and RR 1.14 (1.12–1.17) for day, morning/evening, and night hours, respectively. Percent CPU usage correlated closely with EHR interactions (r=0.92).
CONCLUSIONS: EHR usage is a sensitive, convenient and easily reproduced measure of intensity of care in the hospital. Using this measure we identified large, hour-specific differences between weekend and weekday intensity. EHR interactions may serve as a useful measure for tracking and improving temporal variations in care that are common, and potentially deleterious, in hospital systems.
January 1, 2, 8, 9, 15, 16, 22, 23, 29, 30 were weekend days; January 17 was a federal holiday. EHR downtime for maintenance occurred in the early morning of January 15.



MOTIVATION, SELF-EFFICACY, AND WEIGHT LOSS IN A CLINIC-BASED WEIGHT LOSS PROGRAM Stephanie A. Rose[1]; Dominique Zephyr[2]; Tyler Smith[2]; Chrisanthi Masero[1]; Kelly H. Webber[3]. [1]University of Kentucky, Lexington, KY; [2]University of Kentucky, Lexington, KY; [3]University of Kentucky, Lexington, KY. (Tracking ID #1640574)

BACKGROUND: Level and type of motivation can predict completion and success in weight loss programs. We explored motivation, self-efficacy, and perceived autonomy support for patients enrolled in a weight loss program, and assessed BMI change in a subset of patients.
METHODS: Patients enrolled in a 12-week clinic-based medically-managed weight loss program based on the Diabetes Prevention

Program between January 2011 and April 2012 completed a baseline quantitative survey including questions from the Treatment Self-Regulation Questionnaire, the Health Care Climate Questionnaire, the Perceived Competence Scale, and questions regarding their primary care physician's (PCP) obesity treatment practices.
RESULTS: 36 overweight and obese patients (body mass index (BMI) ≥25 kg/m2) agreed to participate. 88.9 % reported having seen their PCP at least once in the past year. All but one reported their PCP had ever told them they needed to lose weight. 62 % felt that their PCP was able to help them with weight loss, but only 44 % felt it was their PCP's responsibility to do so. Mean autonomous motivation (AM) was 6.02 (SD 0.79) (scale of 0 to 7), mean controlled motivation (CM) was 2.70 (SD 1.21), mean self-efficacy was 4.78 (SD 1.32), and mean perceived PCP support of AM was 4.58 (SD 1.69). There was a positive correlation between self-efficacy and AM (r=0.30); and a negative correlation between self-efficacy and CM (r=−0.17), PCP support of AM and AM (r=−0.08), and perceived PCP support of AM and CM (r=−0.39). Patients with linked outcome and survey data (n=8) demonstrated a mean BMI change of −1.44 kg/m2 (range −4.3 to +0.7). For these patients, there was a negative correlation between BMI and AM (r=−0.27), CM (r=−0.10), and self-efficacy (r=−0.14); and a positive correlation between BMI and perceived PCP support of AM (r=0.39).
CONCLUSIONS: Patients reported higher mean levels of AM versus CM and a positive correlation between self-efficacy and AM. The small subset demonstrated an overall mean weight loss. Higher levels of AM and self-efficacy were linked to decrease in BMI, as was higher levels of CM, although the correlation was not as strong. Future goals include expanding the sample size to strengthen the results and an intervention to promote patient and provider self-efficacy and AM.

MOTIVATORS AND BARRIERS TO BEHAVIOR CHANGE AMONG POSTPARTUM WOMEN WITH PRIOR GESTATIONAL DIABETES. Joyce W. Tang[1]; Ronald T. Ackermann[1]; Javiera Pumarino[1]; Alan Peaceman[2]; Kenzie A. Cameron[1]. [1]Northwestern University, Chicago, IL; [2]Northwestern University, Chicago, IL. (Tracking ID #1641703)

BACKGROUND: Gestational diabetes mellitus (GDM) affects approximately 4 % of women, of whom 50 % will develop type 2 diabetes (DM2) within 10 years. Developing effective interventions to prevent development of DM2 among this high risk cohort requires an understanding of the barriers and facilitators to behavior change and preferred sources of support.
METHODS: We conducted semi-structured interviews with a purposive sample of women who were diagnosed with GDM during a recent pregnancy and were within 1 year of delivery; patients diagnosed with DM2 after delivery were excluded. We recruited participants from 3 obstetrics clinics affiliated with Prentice Women's Hospital (Chicago, IL). A programmer analyst identified eligible patients through query of the Electronic Health Record for women with positive glucose tolerance tests. Women were asked open ended questions to elicit knowledge, attitudes, and behaviors related to diabetes prevention. This abstract focuses on women's descriptions of: 1) motivators of and barriers to adopting healthy behaviors and 2) preferences for additional support. All interviews were digitally recorded and transcribed. We developed a set of a priori codes based on our study questions. Using a modified grounded theory approach, we added additional codes that emerged. Two coders independently coded all interviews using NVivo 9. Discrepancies were resolved by discussion.
RESULTS: We interviewed 24 women (8 Hispanic, 8 African-American, 8 Caucasian). Concern for DM2 was an important motivator for behavior change (i.e., desire to avoid use of insulin and avoid complications such as amputation and blindness). Children were frequently mentioned as both motivators of behavior change (e.g., need to stay healthy to care for children; desire to serve as a role model to children), as well as barriers to behavior change (e.g., no time to exercise or cook due to caring for children/lack of reliable childcare; fatigue due to nighttime awakenings; children not liking healthy foods). Lack of motivation was also a commonly raised barrier; however, women infrequently mentioned lack of monetary resources, poor access to healthy foods, or poor knowledge of healthy choices. Although many women desired assistance with child care, some women expressed lack of trust in care provided by non-family members. Even those with relatives available to help with child care often stated they would not ask them for assistance in order to exercise due to concern for overburdening them and guilt for taking time away from their child. Many women described plans to delay behavior change (e.g., until children are sleeping better, until children are old enough to exercise with me). Women expressed interest in receiving information on how to exercise with their baby/children, and for assistance with meal planning/weight loss.
CONCLUSIONS: For women with a history of GDM, important motivators for behavior change include avoiding DM2, staying healthy for their children, and modeling healthy behaviors for their children. Child care appears to be the primary barrier to behavior change. Efforts to engage these women in diabetes prevention interventions should leverage these intrinsic motivators and address both child care needs and women's lack of prioritization of their own health.

MULTIMORBIDITY AND HEALTH CARE UTILIZATION AMONG HIGH-COST PATIENTS: IMPLICATIONS FOR CARE COORDINATION Donna Zulman[1,2]; Jean Yoon[3]; Danielle M. Cohen[1,2]; Todd H. Wagner[3,4]; Christine Ritchie[5,6]; Steven Asch[1,2]. [1]VA Palo Alto Health Care System, Menlo Park, CA; [2]Stanford University, Stanford, CA; [3]VA Palo Alto Health Care System, Menlo Park, CA; [4]Stanford University, Stanford, CA; 5University of California, San Francisco, San Francisco, CA; [6]San Francisco VA Medical Center, San Francisco, CA. (Tracking ID #1637266)

BACKGROUND: Within the U.S. and many subpopulations, the most costly 5 % of patients often account for close to half of total health care expenditures. A number of innovative health care delivery models have recently emerged that aim to enhance these patients' care and optimize their use of services. We sought to inform these programs by investigating multimorbidity patterns, and associated health care utilization, among the costliest 5 % of patients in the Veterans Health Administration (VHA) system.
METHODS: We obtained total health care costs and sources of costs (inpatient, outpatient, pharmacy, and VHA purchase care) for 5.2 million patients who received care within the VHA system in fiscal year (FY) 2010. We identified the costliest 5 % of patients, and examined the proportion of care they received in the inpatient and outpatient setting, as well as their insurance status and sociodemographics (including age, sex, and race/ethnicity). Using Chronic Condition Indicators (CCI) and body system groupings established by the Agency for Healthcare Research and Quality, we assessed the prevalence of 33 chronic conditions and rates of multi-system multimorbidity (presence of conditions affecting more than one body system). We then used multivariate linear regression to examine the association between multi-system multimorbidity and origins of health care costs (i.e., inpatient versus outpatient), after adjusting for age, sex, and health insurance.
RESULTS: The most costly 5 % of patients (n=261,699) accounted for 47 % of total VHA costs in FY 2010. The mean (SD) age of these patients was 63 (13) years, and 41 % were≥65 years. Median and mean (SD) health care costs were $52,807 and $72,977 ($64,040) (total), $26,979 and $42,179 ($58,680) (inpatient), and $12,699 and $19,182 ($30,269) (outpatient), respectively. The most common chronic conditions included hypertension (63 %), diabetes (34 %), ischemic heart disease (27 %), cancer (25 %), and low back pain (21 %), and close to half (47 %) of patients had a mental health condition. Multi-system multimorbidity was extremely common: 85 % had conditions affecting ≥2 body systems (e.g., coexisting cardiovascular and mental health conditions), and 18 % had conditions affecting ≥5 body systems (e.g. coexisting cardiovascular, respiratory, gastrointestinal, genitourinary, and endocrine conditions). There was a positive association between multi-system multimorbidity and total cost of health care, with most of the increased costs originating in the outpatient setting. The mean absolute and relative costs generated in the outpatient setting increased with each additional system affected by chronic conditions (p<0.001), from $16,495 (29 % of total costs) among patients

with one affected system to $22,440 (35 % of total costs) among those with ≥5 affected systems. In contrast, multi-system multimorbidity was associated with a decrease in costs originating in the inpatient setting ($p<0.001$). These relationships persisted when analyses were stratified by age (<65 and ≥65 years).

CONCLUSIONS: Multimorbidity is extremely common among VHA's 5 % highest-utilizing patients, who account for nearly half of the system's total health care expenditures. The observed association between multi-system multimorbidity and proportion of costs originating in the outpatient setting suggests a role for interventions that coordinate primary and specialty care for high-utilizers with multiple chronic conditions.

MULTIPLE BARRIERS ASSOCIATED WITH DELAYS IN CARE AMONG WOMEN WITH ABNORMAL CANCER SCREENING IN THE BOSTON PATIENT NAVIGATION RESEARCH PROGRAM Ambili Ramachandran[1]; Karen Freund[3]; Sharon Bak[1]; Timothy Heeren[2]; Clara Chen[2]; Azadeh Nasseh1; Tracy A. Battaglia[1,2]. [1]Boston University/ Boston Medical Center, Boston, MA; [2]Boston University School of Public Health, Boston, MA; [3]Tufts University School of Medicine, Boston, MA. (Tracking ID #1620566)

BACKGROUND: Patient navigation (PN) programs were designed to address barriers to care among underserved populations as a means to improve access to timely cancer care. While there is widespread dissemination of patient navigation programs nationwide, there is a paucity of research examining the impact that barriers have on time to resolution of an abnormal screening test.

METHODS: We conducted a secondary analysis of the Boston PN Research Program, a quasi-experimental PN intervention across six federally qualified inner-city community health centers (CHCs) conducted from 2007 to 2010. Eligible subjects were women with breast and cervical cancer screening abnormalities in the navigation arm. We examined the effect that the presence of barriers (0, 1, 2, 3+) had on time to diagnostic resolution, defined as the number of days from the index screening event to a final diagnosis of cancer or no cancer. Unadjusted analyses compared the percent of women with diagnostic resolution at 365 days through chi-square tests. Adjusted analyses used multivariable Cox proportional hazards regression with time to diagnostic resolution as the outcome to examine the effects of the number of barriers, controlling for demographic covariates and clustered by patients' primary navigator. Adjusted HR (aHR) less than 1.0 indicated a lower likelihood of timely diagnostic resolution.

RESULTS: There were 1481 women who received navigation; mean age was 40 years, 32 % were White, 27 % were Black, and 31 % were Hispanic. Only 28 % had private health insurance, and 38 % did not speak English. Overall, half of all patients ($n=745$, 50 %) had documentation of one or more barriers to care identified during navigation contacts. Women with barriers were more likely to be older (mean age 41 versus 38 years), non-White race (77 % versus 60 %), non-English language speakers (46 % versus 29 %), and to have public or no health insurance (79 % versus 65 %) compared to women without barriers ($p<0.001$ for all comparisons). At 365 days after the index screening event, 94 % of women without barriers had achieved diagnostic resolution, compared to 90 %, 84 %, and 69 % of women with one, two, or three or more barriers, respectively ($p<0.0001$). Using the multivariable model, we found the likelihood of timely diagnostic resolution decreased as the number of barriers increased [one barrier, aHR 0.81 (95 % CI 0.56–1.17), $p=0.26$; two barriers, aHR 0.55 (95 % CI 0.37–0.81), $p=0.0025$; three or more barriers, aHR 0.31 (95 % CI 0.21–0.46, $p<0.0001$)].

CONCLUSIONS: Within a patient navigation program with proven ability to reduce delays in care, we found that navigated patients with documented barriers to care experience a decreased likelihood of timely resolution of their screening abnormalities; this effect is more pronounced when multiple barriers are present. In the era of accountable care and limited resources, these findings suggest the need to target navigation to those most vulnerable individuals, in this case, those with identifiable barriers.

NATIONAL EVALUATION OF THE EFFECTS ON HEALTHCARE UTILIZATION AND COSTS OF THE VA PATIENT CENTERED MEDICAL HOME INITIATIVE Paul Hebert; Chuan-Fen Liu; Edwin Wong; Susan Hernandez; Adam Batten; Sophie Lo; Jackie Lemon. VA Puget Sound Health Care System, Seattle, WA. (Tracking ID #1633566)

BACKGROUND: The Veterans Health Administration (VA) has committed $2 billion toward transforming healthcare delivery. The centerpiece is an initiative to implement a version of the patient-centered medical home model, entitled patient-aligned care teams (PACT) at each of its 972 outpatient clinics nationwide, beginning in 2010. We evaluated the effects to date of the initiative on health care utilization and costs.

METHODS: Because all VA clinics participated in the PACT initiative the study design is an interrupted time-series analysis. The study sample included 8.5 million patients assigned to a primary care provider at any time from January 2003 through October 2012 at 972 clinics. Utilization outcomes included outpatient visits for primary care, specialty care, urgent care, and mental health; hospitalizations for ambulatory care-sensitive conditions (ACSC); and emergency department visits. Quarterly utilization rates were aggregated to the facility level and modeled as a function of patient demographics and risk factors, time-invariant facility characteristics, the facility-specific area unemployment rate, and time. Statistically significant changes in the intercept and time trend in the post PACT period was interpreted as evidence of an effect of PACT. Separate models were estimated for Veterans age <65 and 65+ to account for non-VA utilization by Veterans with Medicare benefits.

RESULTS: Following initiation of PACT, significant departures from long-run trends in utilization were observed for several categories of utilization. Primary care visits increased by 1.0 % (age <65=−1.2 %, age >65=3.5 %; $p<0.01$), and specialty care visits increased by 2.0 % (age <65 =2.0 %, age>65=2.0 %; $p<0.01$). Utilization decreased by −7.3 % for mental health visits (age<65=−7.8 %, age>65=−5.2 %; $p<0.01$) and by −1.7 % for hospitalizations for ACSC (age<65=−4.2 %, age>65=−0.2 %; $p=0.02$). No significant effects were observed for emergency or urgent care visits, or specialist-provided procedures. $498 million in health care costs were avoided compared with an incremental investment to-date of $822 million (i.e., on top of "baseline" funding), for a net discounted cash flow of −$308 million. We found similar results for all categories of utilization when the study sample was restricted to patients who had at least two primary care encounters. There are important limitations. The lack of a control group of Veterans who were not exposed to the PACT initiative necessitated an interrupted time-series design. The PCMH initiative is not yet fully implemented at all facilities. Variations in coding over time and among VA facilities likely contributed to null findings for emergency department and urgent care visits.

CONCLUSIONS: Modest but statistically significant departures from long run trends in utilization were found in several utilization categories over the first 2 years of the VA PCMH initiative. These changes are consistent with previous studies that found increased access to care and decreased hospitalizations for ambulatory care sensitive conditions associated with the adoption of PCMH. Although the PCMH initiative is still progressing, it has not yet yielded a positive return on investment.

NATIONAL PHYSICIAN SURVEY REGARDING ADULT VACCINE DELIVERY: MISSED OPPORTUNITIES AND A CALL FOR A SYSTEMATIC APPROACH Laura Hurley[1,2]; Carolyn Bridges[3]; Rafael Harpaz[3]; Mandy Allison[4,2]; Sean O'Leary[4,2]; Lori A. Crane[2,5]; Shannon Stokley[3]; Brenda Beaty[2]; Michaela Brtnikova[2]; Andrea Clinger[2]; Faruque Ahmed[3]; Craig M. Hales[3]; Allison Kempe[4,2]. [1]Denver Health, Denver, CO; [2]Children's Hospital Colorado, Aurora, CO; [3]Centers for Disease Control and Prevention, Atlanta, GA; [4]University of Colorado Anschutz Medical Campus, Aurora, CO; [5]Colorado School of Public Health, Denver, CO. (Tracking ID #1633030)

BACKGROUND: Public health experts are recommending more vaccines for adults, and many of these vaccines are being delivered outside the medical home. Our objectives were to assess among general internists

(GIM) and family medicine physicians (FM): 1) practices regarding assessing need for and stocking recommended adult vaccines; 2) barriers to stocking and administering vaccines; 3) characteristics of physicians who perceive greater financial barriers to delivering vaccines, and 4) practices, experiences and attitudes regarding vaccination outside the medical home.

METHODS: We administered an Internet and mail survey 3/2012–6/2012 to a national network of 443 GIM and 409 FM representative of the American College of Physicians and American Academy of Family Physicians. In addition to descriptive analysis, we created a financial barriers scale and used it in a multivariable analysis to determine physician and practice characteristics associated with perception of greater financial barriers.

RESULTS: Response rates were 79 % (352/443) for GIM and 62 % (255/409) for FM. Less than 1/3 reported routinely assessing vaccination status at every visit. A minority is using Immunization Information Systems (GIM 8 %, FM 36 %, $p \leq 0.0001$). The table shows FM and GIM practices regarding assessing need for and stocking recommended vaccines. The most commonly reported barriers were financial. Physicians practicing in the South, private practice, practices with <5 providers, and practices with more patients with Medicare Part D had a greater perception of financial barriers to delivering vaccines ($p<0.05$). 50 % of providers considered difficulty determining receipt of vaccines a barrier to stocking and administering vaccines (10 % major barrier, 40 % moderate barrier). The majority of providers reported they refer patients elsewhere for vaccines they did not stock and most commonly refer to a pharmacy/retail store (25 % Often/Always, 26 % Sometimes) or public health department (21 % Often/Always, 40 % Sometimes). However, the most commonly reported reasons for referring patients elsewhere for vaccines included the patient's insurance not covering the vaccine (18 % Often or Always/ 43 % Sometimes) and patient's insurance covers the vaccine, but reimbursement is inadequate (11 % Often/Always, 29 % Sometimes). The majority of physicians reported receiving information regarding vaccines administered by other vaccinators <50 % of the time.

CONCLUSIONS: Several categories of problems hinder effective adult vaccine delivery. Systematic approaches to assessing vaccination needs and recommending needed vaccines at all visits, as well as improving communication between vaccine providers, are needed. Provisions in the Affordable Care Act will likely lessen financial barriers; however, more work to address barriers perceived to be created by Medicare Part D is warranted.

Vaccine	FM (%)		GIM (%)	
	Assess Need	Stock	Assess Need	Stock
Seasonal Influenza	98	90	99	84
Pneumococcal	95	86	97	85
Td	87	80	90	81
Tdap	97	86	93	81
Herpes Zoster	75	46	82	53
Hepatitis A	38*	65	28*	62
Hepatitis B	59*	77*	45*	68*
HPV	75*	77*	52*	53*
MMR	62*	73*	37*	53*
Meningococcal	66*	74*	34*	50*
Varicella	60*	69*	27*	34*

*$p<0.05$

NATIONAL SURVEY OF PHYSICIANS' COST CONSCIOUSNESS Susan D. Goold[1,3]; Katherine M. James[2]; Matthew Wynia[5]; Bjorg Thorsteinsdottir[2,7]; Robert Sheeler[6]; Jason Egginton[8]; Mark Liebow[4]; Jon C. Tilburt[4,2]. [1]University of Michigan, Ann Arbor, MI; [2]Mayo Clinic, Rochester, MN; [3]University of Michigan, Ann Arbor, MI; [4]Mayo Clinic, Rochester, MN; [5]American Medical Association, Chicago, IL; [6]Mayo Clinic, Rochester, MN; [7]Mayo Clinic, Rochester, MN; [8]Mayo Clinic, Rochester, MN. (Tracking ID #1632864)

BACKGROUND: Many have called upon physicians to reduce waste and exercise wise resource stewardship. We examined US physicians' views about their roles and responsibilities in addressing rising health care costs, and whether physician and practice characteristics are associated with those views.

METHODS: In mid-2012, we mailed a self-administered, 8-page survey to a random sample of 3,897 practicing US physicians representing all specialties in the AMA Physician Masterfile. We developed the survey through an iterative process of literature review, focus groups with physicians about cost considerations in their practice, and cognitive interviewing with physicians. We reviewed histograms, calculated skew and kurtosis, then proceeded with principle components factor analysis with varimax orthogonal rotation. We retained factors based on criteria $\lambda>1$ or the scree test, initially reviewing 1,2,3 and 4-factor solutions. Items that failed to load >0.3 on any factor were dropped, and other items used to interpret underlying domains; analyses were repeated in an iterative fashion. In all analyses, Factor 1 had $\lambda>2$, often $\lambda>2.5$, with other factors $\lambda<1$ resulting in a one-factor solution with 11 items and good internal consistency ($\alpha=0.77$). Cost consciousness scores were used as a continuous dependent variable in simple and multiple linear regression to detect associations with physician and practice characteristics.

RESULTS: Of 3897 potential respondents, 2556 returned completed surveys for a response rate (AAPOR RR2) of 65 %. Response rates differed somewhat by age (50 years and older: 67 %; less than 50 years: 64 % (X 2=5.4; $p=0.02$) but not by sex, region, race, or specialty. A majority of physician respondents were white (77 %), male (70 %), and over 50 (58 %). Physicians were evenlydistributed in self-reported political leaning (10 % very conservative, 28 % somewhat conservative, 29 % independent, 20 % somewhat liberal/progressive, 10 % very liberal/progressive). Half (53 %) reported receiving a salary or salary plus bonus as their primary practice compensation type. Respondents' scores in the 11-item cost-consciousness scale ranged from 11 to 44, with mean and median scores of 31. In multivariate models, parameter estimates reflect a 1-unit increase in scores. Older age, practice setting, compensation type, political ideology and region of practice were all associated with differences in cost consciousness in unadjusted analyses. Older age ($\beta=0.06$, $p<0.0001$), reporting a practice setting other than small/solo (Group/HMO $\beta=1.16$, $p<0.0001$; city/state/federal government $\beta=1.4$, $p=0.0004$; medical school $\beta=2.15$, $p=0.005$), reporting compensation other than "billing only" (salary plus bonus $\beta=1.03$, $p<0.0001$; salary only $\beta=0.80$, $p=0.01$), and reporting a political ideology of somewhat ($\beta=1.75$, $p<0.0001$) or very liberal/progressive ($\beta=2.90$, $p<0.0001$) were all associated with higher cost-consciousness scores. Practicing in the South ($\beta=-0.67$, $p=0.02$) or Northeast ($\beta=-1.42$, $p<0.0001$) was associated with lower cost-consciousness scores.

CONCLUSIONS: Results suggest there are sub-pockets of the profession with distinct identities and professional self-conceptualizations that drive their judgments about their perceived role in addressing health care costs. This contemporary, large-scale and comprehensive survey of US physicians provides important empirical insight into the contours of professional sentiments about addressing health care costs at a crucial juncture in US health care.

NATIONAL TRENDS IN THE MANAGEMENT OF BACK AND NECK PAIN John N. Mafi; Ellen P. McCarthy; Roger B. Davis; Bruce E. Landon. Beth Israel Deaconess Medical Center, Boston, MA. (Tracking ID #1627954)

BACKGROUND: Back and neck pain are among the most common reasons for visiting a physician and cost the healthcare system approximately $86 billion annually. Studies suggest that the treatment of back pain frequently involves the overuse of diagnostic or treatment modalities that are not supported by national guidelines including use of advanced imaging, referrals to other physicians, and narcotics. Few studies have evaluated national trends in the quality of the management of spine-related disease.

METHODS: We evaluated trends in guideline concordant and discordant treatment of routine spine problems over 10 years from 2001 to 2010 using nationally-representative data on visits to physicians from the National

Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey. We studied outpatient visits with a chief complaint or primary diagnoses of back or neck pain, as well as those with secondary complaints and diagnoses of back or neck pain, but unrelated primary reasons for the visit (e.g., hypertension). We excluded visits with concomitant red flag diagnoses or complaints including fever, neurologic symptoms, and cancer as well as diagnoses or complaints with similar treatments (e.g. knee pain or trauma). Our primary outcome was guideline discordant care defined as prescriptions for narcotics, referrals to another physician, or radiologic testing including plain films or advanced imaging such as MRIs or CT scans. We also studied guideline concordant care defined as prescriptions for NSAIDs or acetaminophen, or referral to physical therapy and none of the discordant indicators. To examine trends, we used SUDAAN to estimate logistic regression models focusing on a linear trend for the survey year, and adjusting for age, sex, race, insurance status, physician specialty, whether the visit was with the patient's PCP, located in a metropolitan area, and region. Results are weighted to reflect national estimates.

RESULTS: We identified 17,438 visits for spine problems, representing an estimated 306 million visits. Mean age was 51.1 years and 57 % were female, with both remaining stable over time. The proportion of visits reflecting guideline concordant care remained stable from 22 % and 27 % in 2001–2002 to 28 % and 29 % in 2009–2010 (p=0.1987 for trend). The proportion of visits with guideline discordant care increased from 46 % and 40 % to 47 % and 52 % for the same time period (p=0.0006 for trend). The Table presents trends in the outcome's components. In a sub-analysis, the odds of ordering a CT or MRI over the 10-year interval increased by 1.78 [1.35, 2.33]. A sensitivity analysis restricted to visits with a chief complaint of new onset back or neck pain revealed similar results.

CONCLUSIONS: Despite numerous published national guidelines, management of spine problems has increasingly relied on advanced diagnostic imaging and narcotic prescriptions. Improvements in management of spine-related disease represent an area of potential costs savings for the health care system while also maintaining or improving the quality of care.

Utilization Rates Over Time

Visit Year (Sample n)	2001 (1,501)	2002 (1,708)	2003 (1,746)	2004 (1,584)	2005 (1,713)	2006 (1,812)	2007 (2,048)	2008 (1,861)	2009 (1,900)	2010 (1,565)	*P*-value for trend
Guideline Concordant	22	27	27	32	29	30	27	28	28	29	0.1987
NSAID or APAP Use	17	16	21	21	24	25	24	23	21	21	0.0484
Physical Therapy	10	18	15	18	18	13	11	15	18	17	0.3006
Guideline Discordant	46	40	41	41	48	43	56	53	47	52	0.0006
X-Ray Use	18	13	13	13	19	13	14	19	13	19	0.6074
Refer to MD	12	12	12	12	12	12	16	13	14	14	0.1443
Opioid Use	22	21	23	25	27	27	38	31	30	29	0.0006

NATIONAL TRENDS IN OPIOID PRESCRIBING AMONG PATIENTS AT RISK OF OPIOID MISUSE: 2001–2010 Marc Larochelle; Fang Zhang; Dennis Ross-Degnan; James F. Wharam. Harvard Medical School, Boston, MA. (Tracking ID #1635376)

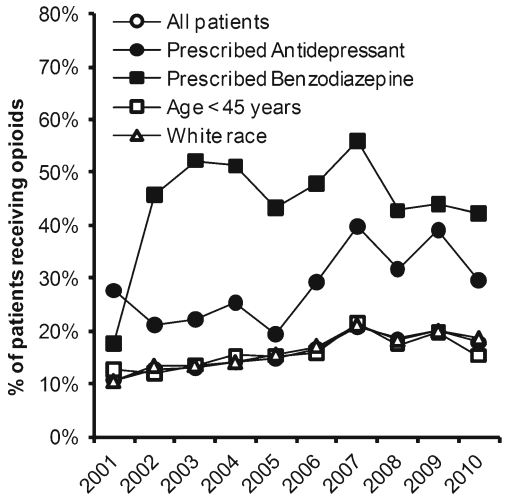
BACKGROUND: Rates of opioid prescribing, overdose, and overdose-related mortality are all increasing in the United States. Previously reported risk factors for opioid misuse include younger age, white race, coexisting mental health disorders, and concomitant use of benzodiazepines. Recent guidelines recommended caution in prescribing opioids to patients at high risk of misuse; however, it is not known if physicians responded by reducing prescribing to such patients.

METHODS: We used the National Ambulatory Care Survey (NAMCS) and analyzed visits of patients with a complaint of musculoskeletal pain annually from 2001 to 2010. The outcome was prescription of an opioid pain medication. We analyzed four risk factors for opioid misuse: age less than 45 years, white race, concomitant antidepressant prescription, and concomitant benzodiazepine prescription. We analyzed trends in the rate of opioid prescribing overall and among patients at risk of opioid misuse using the Cochran-Armitage trend test. We included the four opioid misuse risk factors as candidate predictors of opioid prescription in a multivariable logistic regression. We controlled for gender, payer, region, and indicators of the patient-physician relationship. We used SAS with SAS-callable SUDAAN to account for the complex survey design.

RESULTS: We analyzed 29,103 visits for musculoskeletal pain over the decade. The estimated number of visits nationally increased from 102 million in 2001 to 119 million in 2010. Opioids were prescribed in 10.8 % of visits in 2001, increasing to 17.9 % in 2010 (p<0.0001). From 2001 to 2010, the prevalence of opioid prescribing increased among each group at risk of misuse (p<0.0001 for each risk factor; Figure). Young patients and white patients were no less likely to receive opioids than older and non-white patients (OR 1.0; 95 % CI 0.9–1.1, and OR 1.2; 95 % CI 1.0–1.4 respectively). Patients being treated with an antidepressant had significantly higher odds of being prescribed an opioid (OR 1.9; 95 % CI 1.6–2.2) as did patients receiving a benzodiazepine (OR 4.0; 95 % CI 3.3–4.9).

CONCLUSIONS: Opioid prescribing for musculoskeletal pain increased by more than 50 % in the last decade and increased among patients with risk factors for opioid misuse. Research is needed to determine if these patterns are driving the increase in opioid-related mortality nationwide. Policy- and practice-level interventions are needed to improve patient safety.

Trends in opioid prescribing among groups of patients at risk of opioid misuse.



NATIONAL TRENDS IN PROCESSES AND OUTCOMES OF CARE FOR ELDERLY PATIENTS HOSPITALIZED FOR PNEUMONIA Jonathan S. Lee[1]; Wato Nsa[2]; Leslie R. Hausmann[1,3]; Amal N. Trivedi[4]; Dale W. Bratzler[5]; Dana Auden[2]; Kate Goodrich[6]; Fiona M. Larbi[6]; Michael J. Fine[1,3]. [1]University of Pittsburgh Medical Center, Pittsburgh, PA; [2]Oklahoma Foundation for Medical Quality, Oklahoma City, OK; [3]VA Pittsburgh Healthcare System, Pittsburgh, PA; [4]Alpert Medical School of Brown University, Providence, RI; [5]Oklahoma University Health Sciences Center, Oklahoma City, OK; [6]Centers for Medicare and Medicaid Services, Baltimore, MD. (Tracking ID #1638089)

BACKGROUND: Measuring and reporting performance rates for disease-specific processes of care are important features of Medicare quality improvement and pay for performance initiatives. Our aim was to assess secular trends in performance rates of processes and outcomes of care for elderly patients hospitalized for community-acquired pneumonia (CAP).

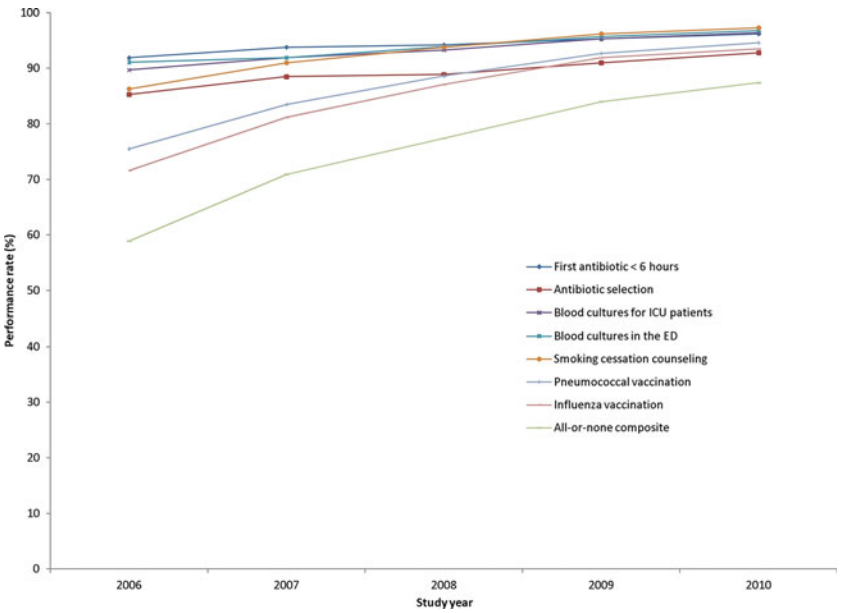
METHODS: We studied elderly patients (age≥65) hospitalized for CAP in U.S hospitals participating in the Centers for Medicare and Medicaid Services (CMS) Inpatient Quality Reporting program during calendar years 2006 to 2010, who met eligibility criteria for the CMS inpatient pneumonia process measures. Our outcomes were performance rates for these 7 publicly-reported pneumonia process measures (i.e., timely initiation and appropriate selection of antibiotics, performance of blood cultures in the emergency department and for intensive care unit patients, smoking cessation counseling, and pneumococcal and influenza vaccination); an

all-or-none composite of all process measures; and 2 medical outcomes (i.e., all-cause mortality and hospital readmission at 30 days). We used linear regression analyses to assess changes in these outcomes by study year.

RESULTS: From 2006 to 2010, 1,818,979 elderly patients with CAP were hospitalized (range 326,956 to 399,243 per year) at 4,740 unique hospitals (range 4,353 to 4,504 per year). As shown in the Figure, performance of all 7 processes of care and the all-or-none composite increased significantly over the 5-year study period ($p<0.01$ for trend, all measures). In 2010, each individual process of care was performed in more than 90 % of all patients, with the largest increases in performance rates over time occurring for pneumococcal (+19.1 %) and influenza (+21.9 %) vaccinations, the 2 process measures performed least frequently in 2006 (75.5 % and 71.6 %, respectively). Performance of the all-or-none composite measure showed the greatest 5-year improvement (+28.5 %), from 58.9 % to 87.4 %. Among all patients, mortality was 10.4 % (range 9.2 to 11.4 % per year) and readmission was 20.4 % (range 19.5 to 20.7 % per year), with neither outcome demonstrating a significant change ($p>0.2$ for trend, both outcomes) over time.

CONCLUSIONS: National performance rates for all pneumonia processes of care improved significantly from 2006 to 2010, with current rates exceeding 90 % for all publicly-reported measures. Despite these improvements in pneumonia processes of care, no significant changes in patient mortality or readmission were observed during this 5-year period.

Figure. National trends in performance of processes of care for pneumonia, 2006 to 2010.



NAVIGATING PUBLIC HOUSING RESIDENTS INTO CARDIOVASCULAR PREVENTION PROGRAMS: A MULTI-SITE INTERVENTION STUDY Tracy A. Battaglia[1]; Jo-Anna L. Rorie[2]; Sarah W. Primeau[1]; Sarah E. Caron[1]; Sarah G. Bhosrekar[2]; Bing L. Chen[1]; Sharon Bak[1]; Timothy Heeren[6]; Gerry Thomas[4]; Rachel Goodman[5]; Eugenia Smith[3]; Deborah J. Bowen[2]. [1]Boston University School of Medicine, Boston, MA; [2]Boston University School of Public Health, Boston, MA; [3]Community Committee for Health Promotion, Boston, MA; [4]Boston Public Health Commission, Boston, MA; [5]Boston Housing Authority, Boston, MA; [6]Boston University School of Public Health, Boston, MA. (Tracking ID #1622701)

BACKGROUND: Residents of urban public housing are among the most vulnerable to early morbidity and mortality from cardiovascular disease. Our prior work demonstrated the impact of a Resident Health Advocate in engaging residents into health screenings, yet interventions are needed to promote participation into care to improve health outcomes.

METHODS: The Boston University Partners in Health and Housing Prevention Research Center, a community-public health partnership, conducted a quasi-experimental intervention study 2011–2012 across six public housing developments in Boston. Three developments were assigned a Patient Navigator (a resident health advocate with advanced training) and three served as control sites. Eligible residents were 18+ years of age, English or Spanish speaking, and screened positive for one or more risk factors (overweight/obese, hypertension, hypercholesterolemia, diabetes, or smoking) at monthly, on-site health screenings. Navigated residents received in person and telephone support to ensure clinical and community referrals were completed. A baseline and follow-up survey collected socio-demographics and healthcare utilization outcomes: visit with primary care provider, participation in community prevention programs (i.e. walking group/smoking cessation program) in prior 3 months. McNemar's tests were used to measure significant changes between outcome measures pre-post intervention.

RESULTS: Among 610 residents participating in screenings, 451 were eligible and 326 (72 %) enrolled ($n=152$ intervention, $n=174$ control). Of those enrolled, the mean age was 50, 75 % female, mostly Non-White (28 % Black, 51 % Hispanic, 10 % Other), public/no health insurance (94 %), had a PCP visit in the past 3 months (64 %), and nearly half never graduated high school (44 %) and were foreign born (47 %). Overall, 79 % were overweight or obese, 78 % reported or diagnosed hypertension, 66 % reported or diagnosed diabetes, 47 % reported high cholesterol, and 32 % reported current tobacco smoking. Compared to intervention residents, controls were more likely to be older (mean age 52 vs. 46, $p<0.01$), non-English speaking (56 % vs. 39 %, $p=0.01$), foreign born (53 % vs. 40 %, $p=0.02$) yet more likely to have seen a primary care provider in the past 3 months (72 % vs. 55 %, $p<0.01$). Preliminary analyses ($n=184$ with completed outcomes) found navigated subjects reported a significant increase in outcome utilization pre-post intervention: attending a primary care visit (51 % to 71 %, $p<0.01$), participating in community programs (34 % to 55 %, $p<0.01$), and over-all attending a community program or a primary care

visit (66 % to 88 %, $p<0.01$). Control group residents reported no significant change in healthcare utilization: attending primary care visit (74 % to 75 %, $p=0.84$), participating in community programs (23 % to 18 %, $p=0.35$), and over-all attending a community program or a primary care visit (79 % to 78 %, $p=0.84$).
CONCLUSIONS: This multi-site navigation intervention study documents the impact of a patient navigator on improving healthcare utilization among a vulnerable population living in public housing.

NEEDLE AND SYRINGE EXCHANGE PROGRAMS: ACCEPTABILITY AND SAFETY OF RETRACTABLE SYRINGES FOR IV DRUG USERS IN THE LARGEST PRE-TRIAL PRISON IN SWITZERLAND
Hans Wolff; Javier Barro; Alejandra Casillas; Thierry Favrod-Coune; Anne Francois; Jean-Pierre Rieder; Mariem Baroudi; Laurent Gétaz; Barbara Broers. University Hospitals of Geneva, Geneva, Switzerland. (Tracking ID #1636223)

BACKGROUND: Transmission of blood-borne infections is important to address in prison, given the prevalence of HIV and hepatitis, overcrowding, and high levels of risky behavior in this setting. Needle and Syringe Exchange Programs (NSP) have proven their feasibility, efficacy and safety in prison settings, but less than 1 % of prisons worldwide have NSP. One identified barrier is organizational concern for needle stick injuries and use of soiled syringes as weapons among inmates. We evaluated 1) incarcerated drug users' experiences with retractable syringes in an NSP, and 2) beliefs and knowledge about NSP among prison officers (PO) and healthcare staff (HS) in prison.
METHODS: From May to October 2010, we replaced usual (insulin-type) syringes with retractable needle devices as part of the NSP in the prison of Champ-Dollon, Geneva; Switzerland. We examined the demographics, clinical profiles for and NSP use among NSP participants, and asked about the ease and safety of the retractable needle device use, in face-to-face interviews. We distributed ninety-eight questionnaires to prison officers and to healthcare staff (HS), surveying individuals on their knowledge and opinions regarding drug use and harm reduction measures.
RESULTS: 284 retractable syringes were distributed to 28 inmates, with a return rate of 70 %. Twenty-six of them accepted to participate in the study. Thirteen were selected for interview and 10 interviews were completed. Most participants were male (96.4 %); mean age was 32 years (SD 4.8). They had a median of 2 previous incarcerations (range 1–45) with a median duration of 70.7 days (range 5–690). Median duration of IV drug use was 54 months (0–324). Seropravelence of HIV was 3 %, HBV 7.1 % and HCV 60.7 %. The majority of participants expressed that retractable syringes were acceptable alternatives, but complained about difficulties due to the weight of the syringe and needle quality, as well as the difficulty to install and use the syringe filter. Of the 98 questionnaires distributed to PO and HS, 70 % of PO and 100 % of the HS estimated harm reduction policies as an effective means to reduce the risk of transmission of blood-borne infections. However, 90.3 % of PO and 9.6 % of HS were still concerned about the use of syringes as weapons; and 76.1 % of PO (4.8 % of HS) feared that NSP would increase drug abuse.
CONCLUSIONS: This is the first study evaluating experiences with retractable syringes for NSP in a correctional setting. NSP was perceived as an acceptable alternative for incarcerated IV drug users. Acceptance may be increased by improving the quality and ease of use of the retractable device as suggested by prisoners. Despite the safe 15-year existence of NSP in the Geneva Champ-Dollon prison, fear of syringes as a weapon still exists among prison officers and health staff. Nevertheless, it is useful to gain this information– as addressing PO and HS safety concerns are an important step towards more disseminated NSP implementation.

NEGATIVE HEALTH CARE EXPERIENCES AND THEIR CONSEQUENCES IN 3 RACIAL AND ETHNIC GROUPS
Rebecca J. Schwei; Elizabeth A. Jacobs. School of Medicine and Public Health, University of Wisconsin, Madison, WI. (Tracking ID #1641611)

BACKGROUND: It has been hypothesized that a previous negative health care experience may lead to changes in a usual source of care. Changes in a usual source of care have been associated with decreased health care use, access, and quality, and greater health costs. Our objectives were to better understand (1) who reports having a negative experience in health care, (2) whether or not they change their behavior if they report a previous negative experience, and (3) whether or not reporting a change in behavior is associated with race/ethnicity.
METHODS: We studied a convenience sample of 472 adults from Chicago area grocery stores who self-identified as African American, Mexican-Hispanic, or White. We used chi-square analyses to evaluate differences in sociodemographic characteristics (race/ethnicity, gender, marital status, employment status, income, education level), access to care (insurance status, avoidance of care due to cost), and overall health status between participants reporting a negative health care experience and those who did not. We used the 10-item Negative Health Care Experience Scale; participants were asked "In the past 5 years, have you had a health care experience you considered to be bad or negative?" and, if they said yes, "How often have you done the following (10) thing(s) because of that bad experience?": decided not to follow your doctor's advice; did not return for your next medical appointment; changed doctors or went for treatment elsewhere; stayed with the same doctor but trusted him or her less; stopped going to the doctor as often as you should; stopped treatment or going to the doctor entirely; did not go for treatment next time you were ill; changed hospitals or clinics; and only go to the emergency room for treatment. Possible reponses for each question included "never", "rarely", "sometimes" or "always". We used frequencies to describe responses to items.
RESULTS: 157 (33.3 %) participants reported having a negative health care experience in the past 5 years. The only sociodemographic, access to care and overall health status variables that differed between those reporting a negative health care experience and those who did not were a self report of avoiding needed care due to cost (49.7 % vs. 31.3 % $p<0.001$), visiting the doctor more than 6 times per year (24.4 % vs. 14.9 % $p=0.044$) and poor health (7.8 % vs. 2.9 % $P<0.001$). The Negative Health Care Experience Scale had high reliability ($\alpha=.82$). The frequency of report of each of the ten behavior changes did not differ by race/ethnicity. Of the people reporting a negative health care experience, 89 % of participants reported "sometimes" or "always" changing at least one behavior in response to a negative health care experience. The frequency of reporting "sometimes" or "always" for the individual items ranged from 35 % for "only go to the emergency room for treatment" to 64 % for "changed doctors or went for treatment elsewhere".
CONCLUSIONS: A third of our sample reported having at least one negative experience in health care in the last 5 year and those who did significantly differed from those who did not in terms of access to care and overall health status. The participants' responses on the Negative Health Care Experience Scale suggest that a previous negative health care experience may influence a patient's subsequent health care behaviors. Further research is needed to understand how health care providers and organizations can prevent these negative experiences and consequences.

NEIGHBORHOOD DISADVANTAGE AND DISORDER AND ADOLESCENT WEIGHT CHANGE OVER TIME
Adebowale Odulana[1,2]; Asheley C. Skinner[2]; Crystal W. Cene[1]; Tamera Coyne-Beasely[2]; Andrew J. Perrin[4]; Giselle Corbie-Smith[1,3]; Eliana M. Perrin[2]. [1]UNC at Chapel Hill School of Medicine, Chapel Hill, NC; [2]UNC at Chapel Hill School of Medicine, Chapel Hill, NC; [3]UNC at Chapel Hill School of Medicine, Chapel Hill, NC; [4]UNC at Chapel Hill, Chapel Hill, NC. (Tracking ID #1640896)

BACKGROUND: Neighborhood disorder, the perceived lack of order and social control in a neighborhood, is associated with lower physical activity and obesity in adults, but less is known about the association in adolescents. Low neighborhood socioeconomic conditions, neighborhood disadvantage, may increase access to obesogenic foods and might promote sedentary lifestyles in adolescents. However, the relationship between neighborhood disorder and disadvantage, and adolescent weight remains unclear. In this study we aim to evaluate the association of neighborhood factors with adolescents' weight changes as they transition into adulthood.
METHODS: Data from waves 1–3 of the National Longitudinal Study of Adolescent Health (Add Health) were used for adolescents aged 12–18 years at wave 1 and 19–25 years at wave 3. Household level variables (e.g., income)

were based on parent responses in wave 1. Neighborhood-level variables included measures of disadvantage, safety, and disorder. We calculated changes in weight category for adolescents and adults (higher, lower, or the same) using measured height and weight from wave 2 to wave 3. We assessed associations between household and neighborhood characteristics at wave 1 and weight changes from wave 2 to 3 using chi-square tests.
RESULTS: Of 10,548 adolescents (mean age 15.5 year., 50 % male, 68 % white, 14 % black, 18 % other) 69 % were healthy weight, 16 % overweight, and 12 % obese at wave 2. Most (57 %) stayed in the same weight category from wave 2 to 3, 31 % went to a higher category, and 11 % lower. Household use of public assistance was associated (p=0.03) with greater weight instability (loss and gain) in adolescents while higher parental education (p=0.002) was associated with lower weight instability. Neighborhood disadvantage variables, poverty (p=0.001) and unemployment (p=0.002), were associated with more weight instability in adolescents.
CONCLUSIONS: Household characteristics and neighborhood disadvantage are strongly associated with weight instability, weight increases and decreases over time. Further study should elucidate the reasons for instability in weight and determine if weight decreases in disadvantaged neighborhoods are healthy or are unhealthy (i.e. the result of food insecurity, substance abuse, or poor health). These findings emphasize the importance of environmental factors on adolescent weight. Whether neighborhood disorder and safety mediate the effects of disadvantage deserves deeper consideration.

NET EFFECT OF AGGRESSIVE BLOOD PRESSURE CONTROL ON STROKE AND FALLS IN OLDER COMMUNITY-DWELLING ADULTS Lillian Min[1,2]; Caroline Blaum[3]; Kenneth M. Langa[1,2]; Deborah A. Levine[1,2]; Eve A. Kerr[1,2]. [1]University of Michigan, Ann Arbor, MI; [2]VA Healthcare Systems, Ann Arbor, MI; [3]New York University, New York, NY. (Tracking ID #1637119)

BACKGROUND: Systolic hypertension affects two-thirds of older adults. Despite cardiovascular benefit of systolic blood pressure (SBP) control demonstrated in trials of selected older patients, it is unclear when benefit of aggressive SBP control outweighs the risk of falls - a known risk of multiple cardiovascular medications.
METHODS: In a longitudinal secondary analysis of 6,280 participants age 65 or older with treated hypertension or SBP measurement >140 mmHg in the Health and Retirement Study in 2006, the frequency of new fall injuries (fall requiring medical care) and new stroke (told of stroke by physician) were assessed as a multinomial variable with the following 4 outcomes: stroke and fall, stroke only, fall only, and no stroke/no fall. We examined the effect on the outcome over 2 years by four levels of increasing SBP control: (1) untreated SBP ≥160 mmHg, (2) treated SBP ≥160 mmHg, (3) treated SBP 121–159 mmHg or untreated SBP 140–159 mmHg, and (4) treated SBP<120 mmHg, controlling for baseline age and sex using multinomial logistic regression. We selected high and low SBP cutoffs as a ±20 mmHg interval around currently-recommended SBP of 140 mmHg.
RESULTS: New injurious falls were more probable (n=799, 14 %) than new stroke (n=243, 4 %) during the two-year follow-up, a difference that increased with age: 7 % falls and 2 % stroke at age 65 versus 25 % falls and 5 % stroke at age 90. More aggressive BP control by a 1-level increase in aggressiveness was associated with increased falls (RR fall only=1.1, p=.05), but not strokes (RR stroke only=.9, p=.2) or both (RR both=1.2, p=.4). The predicted effect on falls, stroke, and the net effect on both outcomes are displayed by age and degree of increase in BP control (Table). The absolute effect sizes of harm for increasing from poorly controlled BP to overly controlled BP are of clinical significance comparable to other clinical tradeoff situations (e.g., warfarin versus aspirin for atrial fibrillation).
CONCLUSIONS: In older adults, more aggressive SBP control increased the risk of falls and did not decrease the risk of stroke. Controlling SBP less than 120 mmHg is associated with net harm. We need to individualize treatments for older adults based on risk and benefits for important clinical and geriatric outcomes.
Net effect on falls and stroke, by age and varying intensification of SBP control
Age Degree of increase in SBP control (From less control to more control) Effect on falls* Effect on stroke* Net effect** (95 % CI)
Sixty-five From Level 1 (untreated>160 mmHg) To Level 2 (treated> 160 mmHg) 1.17 −0.15 1.02 (−2.92, 5.01)
From Level 1 (untreated>160 mmHg) To Level 3 (untreated 140–160 mmHg or treated 120–160 mmHg) 5.50 −0.38 5.12 (−.02, 10.04)
From Level 1 (untreated>160 mmHg) To Level 4 (treated<120 mmHg) 6.88 −0.03 6.85 (−1.53, 12.00)
75 From Level 1 (untreated>160 mmHg) To Level 2 (treated>160 mmHg) 1.28 0.21 1.49 (−1.64, 4.24)
From Level 1 (untreated>160 mmHg) To Level 3 (untreated 140–160 mmHg or treated 120–160 mmHg) 4.23 −0.18 4.05 (−0.17, 8.74)
From Level 1 (untreated>160 mmHg) To Level 4 (treated<120 mmHg) 5.56 0.42 5.98 (0.14, 12.41)
85 From Level 1 (untreated>160 mmHg) To Level 2 (treated>160 mmHg) 1.02 2.30 3.32 (−2.68, 9.96)
From Level 1 (untreated>160 mmHg) To Level 3 (untreated 140–160 mmHg or treated 120–160 mmHg) −0.28 1.85 1.56 (−6.37, 9.61)
From Level 1 (untreated>160 mmHg) To Level 4 (treated<120 mmHg) −0.07 2.82 2.75 (−7.83, 13.55)
* Absolute difference in probability between the two levels of BP control, in percentage points. A negative value indicate decrease in risk (a benefit).
** Net increase in probability of either event, in absolute percentage points.

NEW GRADUATE MEDICAL EDUCATION TEACHING STRATEGIES IN A POST-ACGME WORK-HOUR MANDATED ENVIRONMENT. Christa Nevin[1]; Donald M. Dempsey[1]; Martin Rodriguez[1]; Andrea Cherrington[1]; Mukesh Patel[1,2]; Niveditha Thota[1]; Erin Snyder[1]; Angelo L. Gaffo[1]; Joseph Barney[1]; Matthew Wyatt[1]; Brita Roy[1]; David Daly[1]; James H. Willig[1]. [1]University of Alabama at Birmingham, Birmingham, AL; [2]University of Maryland, Baltimore, MD. (Tracking ID #1631208)

BACKGROUND: In 2003 and 2011, the Accreditation Council of Graduate Medical Education (ACGME) introduced guidelines limiting resident duty hours, resulting in a decrease in educational opportunities for residents. We explored resident attitudes regarding the educational impact of ACGME guidelines and openness to new educational strategies. With these data, and applying principles of Gamification (the use of game elements in non-game applications), we developed a web-based application to supplement medical resident training.
METHODS: Eight focus groups of internal medicine residents at the University of Alabama at Birmingham (UAB) were conducted between 6/2012 and 7/2012 to explore attitudes towards the 2011 ACGME duty hour guidelines. Focus group transcripts were reviewed and common themes identified using a deductive/inductive approach. Participants also completed a survey on openness to new teaching strategies. Using Gamification principles, we developed an online software application (Kaizen-IM), accessed via desktop or mobile device, to improve medical knowledge by allowing residents to compete with their peers to answer clinically relevant questions in structured multispecialty-focused seasons throughout the academic year.
RESULTS: 34 residents participated in focus groups (16 PGY-1, 12 PGY-2, 6 PGY-3). Residents reported a decline in teaching by attending physicians and by PGY-2/PGY-3 residents to interns since implementation of the ACGME guidelines. 79 % reported that they would use an application that allowed them to compete with peers to improve medical knowledge. Kaizen-IM, named after the Japanese business principle of continuous improvement, was launched on 8/20/2012. During Season One of Kaizen-IM (8/20/2012-10/14/2012), 110 questions developed by UAB faculty were administered (2/day) to participating internal medicine residents. 97 (76 %) of UAB internal medicine residents actively participated in Season One, responding to 77 % of administered questions (8,140 total responses).
CONCLUSIONS: Residents are concerned about the educational impact of the ACGME work-hour restrictions and are open to new learning strategies. Novel educational methodologies, like Kaizen-IM, may provide additional learning opportunities for residents. Kaizen-IM is actively being used and has been enthusiastically embraced by UAB Internal Medicine residents.

NO-SHOW TO PRIMARY CARE APPOINTMENTS: WHY PATIENTS DO NOT COME? Emma R. Kaplan-Lewis; Patrick R. Cronin; Sanja Percac-Lima. MGH- Massachusetts General Hospital, Boston, MA. (Tracking ID #1631951)

BACKGROUND: Failure to show up to a primary care appointment leads to disruption of the core purpose of primary care- continuous quality care over time. Missed appointments are a source of inefficiency in the medical system and lead to poor control of chronic disease, later presentation to care and wasted health care dollars. No-shows are higher in primary care clinics taking care of underserved populations and could be a contributing factor to poorer health outcomes in this group. Understanding the factors associated with primary care clinic no-shows and exploring methods to reduce the no-show rate are important to increase access to quality primary care and reduce health disparities. The objective of this study was to determine who were the patients not showing to primary care appointments and to explore their reasons to no-show.
METHODS: A retrospective study was conducted at a community health center (CHC) affiliated with a large academic medical center serving a predominantly Latino, immigrant, low-income population. The majority of patients are Spanish speaking. Poverty levels are more than twice the average in the state. Adult patients >18 yo who did not show up to primary care appointments at the adult medicine practice on 51 days from 3/23/12 to 9/4/12, were called by a bilingual (English and Spanish) patient service coordinator. The patient's reported reason for missing the appointment was documented. Using two-sided t-test of proportions we compared demographic characteristics of the patients that showed to their appointments to patients that did not, as well as patients that could not be reached post no-show.
RESULTS: During the study period there were 7, 508 scheduled appointments at the adult medicine practice, and 1,904 cancellations, reschedules and bumped appointments were excluded. Of the 5,604 appointments that were evaluated, 927 (16.5 %) patients did not show up for their appointments. Of the patient's who missed an appointment, 735 (79 %) were called and of these 273 (37 %) were reached. When compared to patients who came to their appointment, patients who no-showed were younger ($P<0.01$), more likely to be Black ($P=0.04$) or Hispanic ($P<0.01$), and to have Medicaid or be self insured ($P<0.01$), or to have unknown insurance ($P<0.01$). Of patients who no-showed, those who were reached by phone were more likely to be >65 yo ($P<0.01$) and have Medicare insurance ($P=0.02$). The three most common reasons patients cited for missing an appointment were: Forgot ($n=97$, 35.5 %), miscommunication regarding the appointment ($n=86$, 31.5 %) and acute illness (pt too sick to come in or hospitalized) ($n=21$, 7.7 %).
CONCLUSIONS: No-show rates interfere with quality primary care. The patient population in this study cites forgetting and miscommunication as their two most common reasons for missing appointments. Interventions designed to target these reasons are needed to help reduce the no-show rate, improve access and decrease health disparities in this underserved patient population.

NOTE QUALITY AND QUALITY OF CARE: IS THERE AN ASSOCIATION? Samuel T. Edwards[1,2]; Pamela M. Neri[3]; Lynn A. Volk[3]; Gordon D. Schiff[4,5]; David W. Bates[4,5]. 1VA Boston Healthcare System, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Partners Healthcare System, Wellesley, MA; [4]Brigham and Women's Hospital, Boston, MA; [5]Harvard Medical School, Boston, MA. (Tracking ID #1599957)

BACKGROUND: While physician notes are essential to outpatient care, note content is variable, and note quality lacks rigorous definition. Electronic health record (EHR) adoption can result in more complete documentation, but there are concerns that notes are becoming longer, increasingly redundant, and suffer from poor formatting. Documentation style varies between specialties, and the relationship between note quality and clinical quality has not been defined. We describe the composition of specialists' and primary care physicians' outpatient notes for diabetes and coronary artery disease. We identify what data elements are recorded in notes and elsewhere in the EHR. We also assess subjective note quality and compare this to disease specific quality scores.
METHODS: Two physicians reviewed a random sample of notes of outpatient visits to a PCP or medical specialist in 2010 with a diagnosis of coronary artery disease or diabetes mellitus. Data collected included documentation method, note structure, presence of outdated or erroneous copy/pasted text, and visit-specific items relating to the management of diabetes and coronary artery disease. Note quality was assessed using the 9-item Physician Documentation Quality Instrument. Quality scores were generated using the meaningful use criteria. Categorical variables were compared using Fisher's exact test.
RESULTS: Our analysis included 239 notes, written by 111 physicians; 110 notes were written by primary care physicians, 52 by cardiologists and 77 by endocrinologists. PCPs used templates and free text predominantly (42.3 % and 40.9 % respectively). Cardiologists used free text predominantly (65.2 %) followed by dictation (34.8 %), and endocrinologists primarily used free text, followed by templates (58.8 % and 35.3 %, respectively). Mean note length was 619 words for PCPs, 536 words for cardiologists and 659 words for endocrinologists ($p=0.04$). Reason for visit was absent in 10.8 % of notes, medication list was absent in 19.7 %, and timing of follow-up was absent in 18.0 % of notes. Outdated or erroneous copy/pasted material was present in 10.8 % of notes overall, was more common in endocrinology notes (19.5 %) and less common in cardiology notes (1.9 %). Laboratory quality indicators were more likely to be present in the EHR than in the physician note (lipid panel in last year for diabetes: 56.4 % in note vs. 84.9 % in EHR), while medication-based quality indicators were more likely to be present in the note than elsewhere in the EHR (beta blocker for CAD: 67.3 % in note vs. 59.1 % in EHR). Between specialties, there were few differences in documentation of quality metrics. Composite quality scores for diabetes and CAD showed no significant association with subjective note quality (correlation coefficient −0.13, $p=0.065$).
CONCLUSIONS: We found significant differences between specialties regarding documentation method and note length. Typical note sections such as reason for visit and follow-up timing were frequently missing from physician notes, and erroneous/outdated copy/pasted text was frequently present. Key clinical data to support quality patient care are often missing from physician notes, although they often can be found elsewhere in the EHR. Subjective assessment of note quality did not correlate with clinical quality scores. As EHRs continue to be adopted, studies of what documentation improves care and clear policies which support this are needed.

OFF-LABEL USE OF ONDANSETRON IN HOSPITALIZED MEDICAL PATIENTS: PREVALENCE, PATTERNS AND PREDICTORS Sarah Hartley[1]; Latoya Kuhn[2]; Staci Valley[1]; Nabil Fallouh[1]; Kathleen Dussan[1]; Stephanie Judd[1]; Susan L. Murphy[4,3]; Sanjay Saint[2,1]; Vineet Chopra[2,1]. 1University of Michigan, Ann Arbor, MI; [2]Ann Arbor Veterans Affairs Medical Center, Ann Arbor, MI; [3]Ann Arbor Veterans Affairs Medical Center, Ann Arbor, MI; [4]University of Michigan, Ann Arbor, MI. (Tracking ID #1619089)

BACKGROUND: Hospitalists frequently prescribe ondansetron for nausea and vomiting. However, the Food and Drug Administration (FDA) has approved this agent only for prophylaxis of nausea and emesis related to chemotherapy, radiation therapy or for postoperative patients. The purpose of this study was to evaluate the prevalence and predictors of off-label ondansetron use in hospitalized medical patients.
METHODS: We conducted a case–control study of adult medical patients admitted to a single university hospital from the emergency department (ED) between 1 May 2008 and 30 September 2009 who received ondansetron, prochlorperazine, or promethazine as the first anti-emetic after admission. Exclusion criteria included anti-emetic therapy at home, allergy to anti-emetics, pregnancy, admission to the intensive care unit, or use for an indication other than nausea or vomiting. Our sample was initially obtained using an administrative data set; a random sample of 75 patients was selected for medical record review in order to calculate a kappa statistic. A total of 158 patients who received non-FDA approved ondansetron were compared to 151 patients who received promethazine or prochlorperazine (either of which were considered standard treatment). Patterns of non-FDA approved use were analyzed using descriptive statistics. Multivariable logistic regression models were then fit to identify predictors of such use.
RESULTS: We found that ondansetron as first-line treatment for nausea outside of FDA-approved indications was 5 times more prevalent than standard

therapy (4169 doses versus 750 doses). Patients treated with ondansetron tended to be older (54.6 versus 48.8 years, $P<0.01$), more likely to be hypertensive (50.6 % vs. 39.7 %, $P=0.05$), and less frequently prescribed multiple anti-emetics at the time of admission (32.3 % vs. 43.7 %, $P=0.04$) (Table 1). Receipt of prochlorperazine or promethazine in the ED was associated with the decreased likelihood of receiving non-FDA approved ondansetron therapy during admission (odds ratio 0.27, 95 % confidence interval 0.11, 0.66) (Table 2). Inter-rater reliability for data abstraction between the two raters showed excellent agreement ($k=0.89$).

CONCLUSIONS: Although ondansetron therapy for non-FDA approved indications is highly prevalent in hospitalized medical adults, use of standard anti-nausea treatment in the ED was associated with a decrease in this practice. Implementing policies for "upstream" use of medications in the ED may substantially influence inpatient practice

Table 1. Descriptive Characteristics of the Study Sample (N = 309)

Characteristic	Ondansetron n=158	Prochlorperazine / Promethazine n=151	P value
Age, mean (SD)	54.6 (18.3)	48.8 (15.0)	<0.01
Male	56 (35.4%)	56 (37.1%)	0.76
Number of admission, mean (SD)	1.0 (2.5)	1.2 (2.0)	0.44
Hypertension	80 (50.6%)	60 (39.7%)	0.05
Diabetes	40 (25.3%)	31 (20.5%)	0.32
Cirrhosis	11 (7.0%)	6 (4.0%)	0.25
Renal insufficiency	26 (16.5%)	20 (13.2%)	0.43
Discharged on an anti-emetic	32 (20.2%)	35 (23.2%)	0.53
More than one inpatient anti-emetic ordered	51 (32.3%)	66 (43.7%)	0.04

Table 2. Multivariable Logistic Regression Showing Predictors of Ondansetron Therapy

Predictor variable	Odds Ratio	95% Confidence Interval
Age	1.02	1.00-1.03
Cirrhosis	1.51	0.54-4.27
Number of admissions	0.97	0.87-1.08
Admitting service		
Hematology/Oncology	0.54	0.21-1.36
Hospitalists	1.10	0.67-1.83
Other*	Reference	
Emergency Department Treatment		
Ondansetron	1.04	0.60-1.80
Prochlorperazine or Promethazine	0.27	0.11-0.66

*Other admitting service includes Internal Medicine, Cardiology, Family Medicine and Pulmonary

OFF-LABEL ANTIPSYCHOTIC PRESCRIPTIONS IN IRAQ AND AFGHANISTAN VETERANS WITH POSTTRAUMATIC STRESS DISORDER IN VA HEALTHCARE, 2001–2011 Beth Cohen[1,2]; Ying Shi[1]; Thomas Neylan[1,2]; Karen H. Seal[1,2]. [1]San Francisco VA Medical Center, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA. (Tracking ID #1641921)

BACKGROUND: Over one quarter of veterans who have returned from Iraq and Afghanistan and entered VA care have received a diagnosis of posttraumatic stress disorder (PTSD). PTSD has been associated with metabolic abnormalities and cardiac risk factors, even in these younger age veterans. Antipsychotics have been increasingly prescribed for off-label uses, including treatment of PTSD. Given concern about the potentially harmful metabolic side effects of antipsychotics as well as recent trials that failed to demonstrate efficacy for PTSD symptoms, we used a large national VA sample to explore the use of off-label antipsychotics among Iraq and Afghanistan veterans with PTSD. We evaluated the prevalence of off-label antipsychotic use and identified sociodemographic factors, military service characteristics, and psychiatric comorbidities that were associated with their use.

METHODS: We used de-identified Department of Defense data and national VA electronic medical records to select Iraq and Afghanistan veterans who had enrolled in VA care between 10/1/2001 and 12/31/2010, and followed them through 12/31/2011. We used ICD-9 codes to determine mental health and medical diagnoses and pharmacy records to evaluate medication use. We only included medications that were prescribed after the date of PTSD diagnosis and had a supply of at least 30 days. We excluded patients that used antipsychotics but had comorbid diagnoses indicating on-label use (i.e. schizophrenia, bipolar disorder, depression with concurrent use of an antidepressant medication). To evaluate factors independently associated with off-label antipsychotic use, we used Poisson regression models that included age, gender, race, marital status, military component (Active Duty vs. National Guard/Reserve), rank (officer vs. enlisted), branch, multiple deployments, and rural vs. non-rural location. We developed similar models evaluating the association of psychiatric comorbidities with off-label antipsychotic use.

RESULTS: The mean age of our study population was 29.2 years (SD 9) and 9.6 % were women. Of the 155,926 patients with PTSD examined, 22 % (34,142) received no psychiatric medications, 66.2 % (103,276) received psychiatric medications other than antipsychotics, and 11.9 % (18,508) received off-label antipsychotics. In fully adjusted models, several factors were independently associated with off-label antipsychotic use, including male sex (adjusted relative risk 1.47, 95 % CI 1.39–1.55), Active Duty status (1.32, 1.28–1.37), enlisted vs. officer (1.71, 1.55–1.87), and rural vs. non-rural location (1.11, 1.08–1.14). Several comorbid psychiatric diagnoses were also associated with increased likelihood of off-label use, including personality disorder (2.05, 1.91–2.19), drug use disorder (1.77, 1.69–1.86), panic disorder (1.57, 1.48–1.67), and alcohol use disorder (1.43, 1.37–1.50).

CONCLUSIONS: A substantial minority of Iraq and Afghanistan veterans with PTSD diagnoses received off-label antipsychotics. Male veterans, those who were Active Duty, lower rank, or lived in rural locations, and those with psychiatric comorbidities were more likely to receive off-label antipsychotics. Off-label antipsychotics may be prescribed to more symptomatically complex and behaviorally challenging patients, who may be more difficult to engage in conventional psychotherapy. Still, providers should be cautious about off-label antipsychotic use given their known metabolic risks and questionable benefits for PTSD.

OPTIMAL TIMING TO ADMINISTER THE PHQ-9 FOLLOWING A POSITIVE PHQ-2 DEPRESSION SCREEN AMONG HOSPITALIZED PATIENTS WITH HEART FAILURE Tatiana Deveney[1,2]; Bea Herbeck Belnap[2]; Sati Mazumdar[3]; Fanyin He[3]; Bruce L. Rollman[2]. [1]University of Rochester School of Medicine, Rochester, NY; [2]University of Pittsburgh School of Medicine, Pittsburgh, PA; [3]University of Pittsburgh, Pittsburgh, PA. (Tracking ID #1641551)

BACKGROUND: An American Heart Association (AHA) Science Advisory recommends that patients with cardiac disease be routinely screened for depression with the 2-item Patient Health Questionnaire-2 (PHQ-2), with the PHQ-9 questionnaire administered to patients screening positive to diagnose depression. However the optimal time to administer the follow-up PHQ-9 is unknown. To address this question, we compared the prevalence of depression and incidence of 12-month all-cause mortality among hospitalized patients with systolic heart failure (HF) when the PHQ-9 was administered either: (1) immediately following a positive PHQ-2 screen; or (2) at 1-month following hospitalization.

METHODS: Trained study nurses enrolled 371 hospitalized HF patients with an ejection fraction (EF) <40 % and NYHA functional class II-IV symptoms who screened positive for depression on the PHQ-2 administered prior to discharge from 4 Pittsburgh-area hospitals (12/07 to 6/09). Afterwards, they administered the PHQ-9 both immediately following the PHQ-2 and via telephone at 1 month post-hospitalization. Sociodemographic and clinical information were collected at baseline. Using accepted convention, we defined depression as a PHQ-9 score ≥10, then used Kaplan-Meier analyses to calculate the incidence of all-cause mortality at 1-year follow-up by depression status, with log rank tests used for statistical significance.

RESULTS: The study sample was predominantly Caucasian (85 %) and male (64 %) with a mean age of 65±13 years. At baseline, their mean PHQ-9 score was 11.3±4.5, and 63 % of the cohort (232/371) scored ≥10. Of the 316 (85 %) patients who completed the PHQ-9 at 1-month follow-up, 24 % (76) scored ≥10 (8 (3 %) died prior to 1-month follow-up). We confirmed vital status on 100 % of the study cohort at 1-year and identified 76 deaths (20 %). 12-month all-cause mortality was similar between patients who scored ≥10 vs. <10 on the PHQ-9 at baseline (21 % vs. 19 %; p=0.73) and at 1-month follow-up (14 % vs. 15 %; p=0.87). Overall, 21 % (49/232) of those who scored PHQ-9 ≥10 at baseline and 14 % (11/76) of those who scored ≥10 at 1-month died by 12-month follow-up. (Table).

CONCLUSIONS: Among hospitalized HF patients who screen positive for mood symptoms on the PHQ-2, the estimated prevalence of depression is lower when the PHQ-9 is administered 1-month after hospital discharge rather than immediately following the PHQ-2. Furthermore, as neither the baseline nor the 1-month level of PHQ-9 score was associated with alterations in 1-year mortality, delaying administration of the PHQ-9 may safely reduce the risk of over-diagnosis of depression while better focusing treatment resources on HF patients with persistent depressive symptoms who might be more likely to benefit from treatment.

PHQ-9 Score ≧ 10 PHQ-9 Score <10 p-Value*

# of Patients % (n) # Deaths at 1 Year % (n) # of Patients % (n) # of Deaths at 1 Year % (n)

Inpatient (n=371) 63 % (232) 21 % (49) 37 % (139) 19 % (27) 0.73

1-Month Follow Up (n-316) 24 % (76) 14 % (11) 76 % (240) 15 % (36) 0.87

*p-value refers to difference in incidence of all-cause mortality at 12-month follow-up by depression status

OUTCOMES AMONG BUPRENORPHINE-NALOXONE PRIMARY CARE PATIENTS AFTER HURRICANE SANDY Babak Tofighi[1]; Arthur R. Williams[2]; Rana Biary[3]; John Rotrosen[4]; Joshua D. Lee[5]; Ellie Grossman[6]. [1]New York University School of Medicine, New York, NY; [2]New York University School of Medicine, New York, NY; [3]New York University School of Medicine, New York, NY; [4]New York University School of Medicine, New York, NY; [5]New York University School of Medicine, New York, NY; [6]New York University School of Medicine, New York, NY. (Tracking ID #1628814)

BACKGROUND: Post-disaster studies evaluating outcomes among substance using patients enrolled in treatment reveal an increase in relapses. However, outcomes among opiate dependent patients enrolled in office-based buprenorphine treatment have yet to be studied. In October 2012, Bellevue Hospital Center (BHC) and all its primary care services were temporarily closed as a result of Hurricane Sandy. BHC's primary care office-based buprenorphine clinic was temporarily closed and later relocated to an affiliate public hospital. The hospital outpatient pharmacy, which supplies low-cost buprenorphine to uninsured patients, was also temporarily closed. We surveyed enrolled patients for self-reported buprenorphine adherence, illicit substance and alcohol use, as well as disaster-related personal consequences post-Sandy.

METHODS: A quantitative and qualitative semi-structured survey was piloted and administered to patients scheduled for follow-up in BHC's primary care buprenorphine clinic starting in November 2012. This 15-minute survey was administered by one of four physicians either by telephone or in-person in clinic. Survey domains included: housing and employment disruptions, social and economic support (disaster relief), treatment outcomes (buprenorphine adherence, missed medication doses, ability to get care), and tobacco, alcohol and drug use. Open-ended questions probed general patient experiences related to the storm and associated disruptions. Baseline demographic characteristics and insurance status was available from the medical record. Analysis was descriptive (counts, proportions) and qualitative, coding open-ended responses for emergent themes.

RESULTS: There were 146 patients enrolled in the clinic at the time of the storm; of those, we have been able to reach 79 to invite them to participate in the survey. 73 patients have completed the survey (92 % of those invited). The clinic population's mean age is 42 years (range 21–67 years), and it is 82 % male, 14 % African American, 41 % Hispanic, and 44 % Caucasian. Twenty percent are uninsured, and 73 % are enrolled in Medicaid. Illicit opioid misuse was rare, with 4 patients reporting increased illicit heroin or prescription opioid use since Sandy. 49 % of respondents reported disruption of their buprenorphine-naloxone medication supply (n= 36). Of this group, 83 % reduced their daily dose to prolong supply (n=30), 53 % eventually obtained telephone or written refills from relocated Bellevue providers, 24 % obtained buprenorphine from friends/family, and 13 % reported buying buprenorphine from others/dealers. All patients reported difficulty obtaining emergency buprenorphine prescriptions elsewhere (emergency rooms, new outpatient programs).
CONCLUSIONS: Disruption to buprenorphine supply was the norm among a cohort of primary care buprenorphine patients at a large public hospital clinic abruptly closed due to Hurricane Sandy. Common coping strategies were self-directed dose reduction, remote (telephone) refills, and obtaining buprenorphine from friends/family or drug markets. Few respondents reported significantly increased illicit opioid or other drug or alcohol use pre/post-Sandy. Public sector office-based buprenorphine delivered in a primary care setting appears relatively adaptable to severe environmental and service disruptions following a natural disaster.

OVERDOSE HISTORY AND WILLINGNESS TO USE NALOXONE AMONG FORMER PRISON INMATES Ingrid A. Binswanger[1,2]; Brenda Beaty[1]; Shane Mueller[1]; Karen F. Corsi[3]; Sung-joon Min[1]. [1]University of Colorado School of Medicine, Denver, CO; [2]Denver Health, Denver, CO; [3]University of Colorado School of Medicine, Aurora, CO. (Tracking ID #1619705)

BACKGROUND: Former prison inmates are at high risk for overdose death after release from prison. Naloxone is an opioid antidote traditionally used in medical settings to prevent the fatalities from opioid induced respiratory depression. Naloxone is provided to former prison inmates to reverse opioid overdoses in some community-based programs in the United States and European countries. The goal of this study was to examine the history of self-reported overdose and witnessed overdose among former prison inmates and their attitudes towards naloxone for bystander use after release from prison. Understanding the perspective of former prison inmates on naloxone use post-release is important because they may be subject to bystander administed naloxone in future overdoses.
METHODS: As part of a prospective longitudinal cohort study of former prison inmates released to the Denver area, we interviewed 193 former inmates about overdose and their perspectives on naloxone. Participants were recruited from community and re-entry agency sites. Prior to asking questions about naloxone, we provided an introduction with the following statement: "Naloxone or Narcan is a drug used to counter the effects of opioid overdose. It is either given in the nose or as an injection. It has been distributed as part of emergency kits to heroin users in some US cities." We used descriptive statistics to examine prior reported overdoses leading to health service utilization, witnessed overdoses, actions taken at the last witnessed overdose, and willingness to be trained in and use naloxone. To assess positive attitudes towards naloxone in this context, we asked participants if they thought people leaving jails and prisons should be given naloxone. We conducted univariable (chi-square, Mantel-Haenszel chi-square and Fisher's exact tests) and multivariable logistic regression to examine the association of baseline characteristics with positive attitudes towards naloxone.
RESULTS: Among 193 participants, 43.0 % had ever injected drugs. Cocaine/crack was the drug of choice for 29.5 % of the sample, whereas heroin or speedball was the drug of choice for 8.8 %. Nearly one third (32.1 %) had ever been to an emergency department or hospitalized for an overdose from any drug, and 53.4 % had ever witnessed a heroin overdose. At the last witnessed overdose, only 52.9 % of the sample reported that someone called 911. Most (85.5 %) were willing to be trained to use naloxone, and 90.0 % reported that they were willing to give naloxone to someone having an overdose. Overall, 76.7 % thought people leaving prisons and jails should be given naloxone. In unadjusted and adjusted analyses, white race (p=0.04) was the only significant baseline characteristic associated with a more positive attitude towards naloxone.
CONCLUSIONS: In this community-recruited sample of former prison inmates, a high proportion reported past health care utilization for a personal history of overdose. The majority had witnessed overdoses but emergency services were not called in many witnessed overdoses. These findings suggest bystander-administered naloxone could prevent opioid overdose fatalities in this population, in addition to increasing education about calling 911 and legislation to prevent arrest at the scene of an overdose. This high-risk population had favorable impressions of naloxone, but widespread implementation of naloxone distribution to criminal justice populations will require further clinical, research and policy efforts.

OVERUSE, UNDERUSE, AND MISUSE OF COLORECTAL CANCER SCREENING TESTS Gina R. Kruse[1]; Sami M. Khan[2]; Alan M. Zaslavsky[3]; John Z. Ayanian[2,3]; Thomas D. Sequist[2,4]. 1Massachusetts General Hospital, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA; [3]Harvard Medical School, Boston, MA; [4]Harvard Vanguard Medical Associates, Boston, MA. (Tracking ID #1637776)

BACKGROUND: The recent rise in the use of colorectal cancer (CRC) screening exams has led to concerns regarding the efficiency of population-based screening programs. We assessed underuse, overuse, and misuse of CRC screening and surveillance exams among an average-risk adult population.
METHODS: We studied 2,653 adults age 50–65 with no personal history of CRC who initiated screening in 2001 in a large multispecialty group practice. We used electronic health record data to identify all CRC screening exams (home fecal occult blood testing [FOBT], flexible sigmoidoscopy [FS], and colonoscopy) between 2001 and 2011, and reviewed pathology reports of all colon biopsies. We used 2008 screening guidelines and 2006 surveillance guidelines from the US Multi-Society Task Force to classify use. We defined UNDERUSE as any exam performed > 1 year after recommended intervals and OVERUSE as any endoscopy exam performed > 1 year before recommended intervals. We did not measure OVERUSE of FOBT exams given the short (1 year) interval. MISUSE included FOBT or FS exams performed following the removal of colorectal adenomas or FOBT performed within 10 years of a normal colonoscopy. We excluded 15 (0.5 %) patients diagnosed with CRC during the study period. We used Kaplan-Meier methods to calculate the time to follow-up exam by initial findings (no polyps; hyperplastic polyps; 1–2 small adenomas [<10 mm]; or adenomas with high risk features [3+ adenomas/large adenoma >10 mm/ high-grade dysplasia/ villous adenoma]).
RESULTS: Most patients were women (53 %), white (80 %), and commercially insured (81 %). Baseline screening exams in 2001 included 1,812 FOBT exams (69 %), 377 FS exams (14 %), and 449 colonoscopies (17 %). Subjects continued receiving primary care in the multispecialty practice for a median of 10 years (interquartile range [IQR] 6–10 years) following the baseline exam; during which time an additional 5,184 screening and surveillance exams (2,318 FOBT exams [45 %], 506 FS exams [10 %], and 2,360 colonoscopies [46 %]) were completed by 224 primary care providers and 26 endoscopists. 2 % of FOBT exams were positive; while 11 % of endoscopic exams identified 1–2 small adenomas and 6 % of exams identified adenomas with high risk features. Among follow up FOBT exams, 338 (15 %) represented UNDERUSE and 674 (29 %) represented MISUSE. Among FS exams, 1 (0.2 %) represented UNDERUSE, 7 (1 %) represented OVERUSE, and 6 (1 %) represented MISUSE. Among colonoscopies, 414 (18 %) represented UNDERUSE and 921 (39 %) represented OVERUSE. The median time to next screening after negative FOBT was 1.3 years (IQR 1.0–2.4 years) and after FS was 5.5 years (IQR 4.5–9.4 years). The median time to next colonoscopy varied based on the previous exam findings (log-rank p< 0.001), including previous exams with no polyps (6.4 year, IQR 5.0–9.0 years), hyperplastic polyps (5.6 years, IQR 4.8–8.9 years), 1–2 small adenomas

(5.0 years, IQR 3.3–6.3 years), and adenomas with high risk features (3.0 years, IQR 2.3–4.0 years).
CONCLUSIONS: We identified substantial inefficiencies, with over one-third of colonoscopies performed too early and one third of FOBTs performed either late or inappropriately. These use patterns may reduce the tests' effectiveness, subject patients to unnecessary risks, and increase healthcare costs. Healthcare providers developing tools to increase CRC screening rates should address the simultaneous potential for underuse, overuse, and misuse.

PART-TIME PRIMARY CARE PHYSICIAN ACCESS AND CONTINUITY IN THE PATIENT CENTERED MEDICAL HOME Ann-Marie Rosland[1,2]; Sarah Krein[1,2]; Myra Kim[1,3]; David Ratz1; Darcy Saffar[1]; Eve A. Kerr[1,2]. [1]VA Ann Arbor Healthcare System, Ann Arbor, MI; [2]University of Michigan Medical School, Ann Arbor, MI; [3]University of Michigan School of Public Health, Ann Arbor, MI. (Tracking ID #1636595)

BACKGROUND: Patient Centered Medical Home (PCMH) models prioritize same-day access to and continuity with one assigned primary care provider (PCP). At the same time, PCPs are increasingly seeing patients on a part-time schedule. Likewise, the VHA is emphasizing same-day access and continuity in its nation-wide PCMH program. Yet many VHA PCPs, particularly those in academically affiliated medical centers, are not in clinic every day because they work part-time or have other duties. We sought to determine how limited availability ("part-time") and full availability ("full-time") VHA PCPs differed in same-day access and continuity.
METHODS: We examined primary care clinic appointment data from July 2010 to October 2012 in one VHA healthcare system. PCP availability was measured through assigned patient panel size, which is directly proportional to the number of half-day sessions the PCP is in clinic. Part-time was defined as having less than 5 half-day sessions per week. Continuity was measured by whether a primary care appointment or non-acute ED visit was completed with the patient's assigned PCP. The main measure of access was whether a request for a same-day appointment was accommodated on the same-day with the assigned PCP. We also examined whether same-day requests resulted in an appointment with the assigned PCP within 1 week or an appointment on the same-day with any PCP. Multilevel models (MLM) evaluated the impact of PCP availability on continuity and access, controlling for demographic and clinical characteristics of the requesting patients, number of same-day requests the patient made in the month, and site of care.
RESULTS: 1312 total PCP-months of care were examined; 49.7 % were from part-time PCPs. Across 128,376 visits, patients had an AOR for 'continuity'—seeing their assigned PCP - of 1.25 (95 % CI 1.21, 1.30) per each additional session increase in PCP weekly availability. The expected probabilities of continuity were 67 % for patients of PCPs with 2 sessions/week, 79 % for patients of PCPs with 5 sessions/week, and 92 % for patients of PCPs with 10 sessions/week. Across 21,862 same-day appointment requests, the AOR of being seen on the same day with the assigned PCP was 1.07 (1.03, 1.10) per additional weekly session of availability; expected probabilities were 18 % for 2 sessions/week, 21 % for 5 sessions/week, and 27 % for 10 sessions/week. The AOR of being seen within 1 week by the assigned PCP was similar (1.07 (1.03, 1.10) per additional weekly session), but with higher overall expected probability: 27 % for 2 sessions/week, 31 % for 5 sessions/week, and 38 % for 10 sessions/week. Differences in the odds of being seen same-day by any PCP were slightly attenuated (AOR 1.05 (1,02, 1.09)) with high expected probabilities of 54 % for 2 sessions/week, 56 % for 5 sessions/week, 61 % for 10 sessions/week.
CONCLUSIONS: Patients of part-time PCPs experienced significantly less continuity and, to a smaller extent, less same-day access, than patients of full-time PCPs. Given the growing prevalence of part-time PCPs and the projected shortage of providers in the future, PCMH programs will need to structure care teams that include part-time providers while enhancing levels of access and continuity.

PARTICIPATING IN DIABETES (CARE): THE ART OF ACCOMPANIMENT, ENACTMENT OF ILLNESS, AND CROSS-CULTURAL CARE Arlene M. Katz[2]; Victoria Koski-Karell[1]; Marie-Louise Jean-Baptiste[1]; Kermshlise C. Picard[1]. [1]Cambridge Health Alliance, Cambridge, MA; [2]Harvard Medical School, Boston, MA. (Tracking ID #1642527)

BACKGROUND: Haitian immigrants with Type 2 Diabetes Mellitus (DM2) encounter complex social and structural forces that influence their health indicators and their familiarity with concepts of prevention, chronic disease management, and capacity for self-care. In 2003, Dr. Jean-Baptiste and her team began convening an innovative monthly open group of Haitian DM2 patients at Windsor Clinic in Cambridge, MA. The program strives to enhance "good care" for Haitians living with DM2 and other chronic diseases by promoting practice-based cross-cultural care. This research project strove to understand the ways that patients experience, participate in, and enact their disease; the ways that healthcare professionals accompany these individuals during their illness experiences; and how care practices might be "tweaked" to improve the health, lifestyle, and wellbeing of Haitian patients living with DM2.
METHODS: This project employed qualitative ethnographic methods over the course of 24 months. Investigators attended, observed, and participated in monthly Diabetes Group meetings, taking fieldnotes and speaking informally with health professionals and participants in the Group. Filmed formal interviews were conducted with 4 professionals, 10 Haitian patients, and other participants. Qualitative data of participants' illness experiences and Group meetings was analyzed for themes and insights into what is "at stake" for Haitian DM2 patients, the benefits and challenges of DM2 care, the art and role of accompaniment, and factors influencing Group attendance and participation. Secondary and intermediate outcome measures of self-management, self-sufficiency, knowledge, and social engagement were also considered. Quantitative data was also collected through routine blood glucose, cholesterol, blood pressure, and HbA1c tests.
RESULTS: Participation in monthly Diabetes Group meetings increased steadily since 2003 and over the course of this research project. The initial Group expanded from one group of 10–14 patients to three distinct monthly groups of 15–25 patients each. Footage was used to create a videotape presented to participants. It was a central way to include patients in the proceedings and outcomes of the project, which they found empowering. Patients discussed strategies for chronic disease management and definitions of health terms; asked and answered each other's questions; engaged in a walking group; and participated in food demonstrations. This motivated mutual behavioral change and expanded providers' sensitivities to social and cultural determinants of health and care. In 12 months, regular participants' HbA1c levels dropped from 12 to 8.4. While a number of patients consistently participated in the Diabetes Group, others attended less regularly and were more likely to face challenges in their self-care and had poorer health indicators.
CONCLUSIONS: The Diabetes Group embodies accompaniment; the collaboration between patient, doctor, and the community; integrated cross-cultural healthcare; and the relational aspects of global health and social change. Results demonstrate the importance of caregivers responding to the complexities of their patients' lived experiences of disease and situated knowledges by continuously tweaking goals, educational lessons, and interventions. Social support and consistent participation in the Group shows sustained positive health impact. Further ethnographic research is needed to understand why some patients participate more consistently than others.

PARTNER NOTIFICATION PRACTICES AMONG HIV-INFECTED MEN E. J. Edelman[1]; Kirsha S. Gordon[2]; Matthew Hogben[3]; Stephen Crystal[4]; Kendall Bryant[5]; Amy C. Justice[1,2]; David A. Fiellin[1]. [1]Yale University, New Haven, CT; [2]VA Connecticut Healthcare System, West Haven, CT; [3]Centers for Disease Control and Prevention, Atlanta, GA; [4]Rutgers, New Brunswick, NJ; [5]National Institute on Alcohol Abuse and Alcoholism, Potomac, MD. (Tracking ID #1642472)

BACKGROUND: Partner notification (PN), the process during which partners of an HIV-infected (HIV+) individual are notified of their exposure, is an important component of efforts to seek, test and treat all potentially HIV+ individuals. However, there are few data available assessing PN practices in national samples of HIV+ patients.
METHODS: We performed a cross-sectional analysis of the Veterans Aging Cohort Study, an observational study conducted at 8 urban centers nationally. We used data from 2003 to 2004. The analytic sample was restricted to HIV+ men who had available survey data and were sexually active in the past 12 months. To determine PN practices, we used the following question: Since you were diagnosed with HIV, have you told your sexual partners so that they can get tested and treated as well? We collapsed response options accordingly: 1) I told every partner/I had the health department notify my partners for me (categorized as PN performed); and 2) I told some partners, but not all of them/I did not tell any of them/I tried to notify my partners but could not find them/I prefer not to answer this question (categorized as PN not performed). Covariates were assessed using self-report and laboratory data. Sexual risk items assessed behaviors during the past 12 months. Multiple partners was defined as at least 3 partners in the past 12 months; casual partners was defined as having sex with a partner who was not known ahead of time. Depressive symptoms were assessed using the Beck Depression Inventory; alcohol consumption was based on the Alcohol Use Disorders Identification Test (AUDIT). Descriptive statistics were used to compare the characteristics of those who did and did not conduct PN. Multivariable logistic regression analysis was used to determine factors associated with PN.
RESULTS: In our sample (n=912), 336 (37 %) of patients had not performed PN. In bivariate analyses, in comparison to those who performed PN, patients who did not perform PN were similar based on age (mean[SD]=49[9]), race/ethnicity (white 22 %, black 63 %, Hispanic 11 %, other 4 %), education (95 % high graduate or more), HCV-infected (45 %), suppressed HIV-1 viral load (defined as <500 copies/mL) (54 %), CD4 count (median[IQR]=414 [278, 586]), years since HIV diagnosis (median[IQR]=6 [3,8]), depression score (median[IQR]=3 [1,7]) and AUDIT score (median[IQR]=2 [0,4]). Men who did not perform PN were more likely to be not married (92 % vs. 82 %), have casual partners (44 % vs. 14 %), have sex with men 64 % vs. 43 %), have at least 3 sex partners (41 % vs. 19 %), exchange money or drugs for sex (19 % vs. 8 %), been diagnosed with a sexually transmitted infection (STI) (16 % vs. 11 %), endorse non-condom use (31 % vs. 17 %), and have sex under the influence of alcohol/drugs (23 % vs. 17 %); all $p<0.04$. In the final model, HIV-infected men with casual partners (OR [95 % CI]=0.45 [0.29, 0.70]), men who reported having sex with men (OR [95 % CI]=0.63 [0.45, 0.87]), multiple partners (OR [95 % CI]=0.60 [0.41, 0.88]), exchanged money or drugs for sex (OR [95 % CI]=0.53 [0.31, 0.89]), or who endorsed non-condom use (OR [95 % CI]=0.65 [0.44, 0.95]) were less likely to conduct PN. Notably, HIV-1 RNA<500 copies/mL was not associated with whether patients had performed PN.
CONCLUSIONS: Among a sample of HIV+ patients, PN is suboptimal and associated with ongoing sexual risk behaviors. Interventions to improve PN, particularly in the setting of sexual risk behaviors, are needed.

PATIENT EXPERIENCES WITH INVOLUNTARY OUT-OF-NETWORK CHARGES Denise D. Pong[3]; Kelly A. Kyanko[1]; Kathleen Bahan[4]; Leslie Curry[2]. 1NYU School of Medicine, New York, NY; [2]Yale School of Public Health, New Haven, CT; [3]Duke University School of Medicine, Durham, NC; [4]Columbia University Mailman School of Public Health, New York, NY. (Tracking ID #1630768)

BACKGROUND: Approximately 40 % of individuals using out-of-network physicians experience involuntary out-of-network care, leading to unexpected and sometimes financially burdensome charges. Despite its prevalence, research on patient experiences with involuntary out-of-network care is limited. Greater understanding of patient experiences may inform policy solutions to address this issue. We sought to characterize the experiences of patients who encountered involuntary out-of-network physician charges.
METHODS: Qualitative study using 26 in-depth telephone interviews with a standardized interview guide. Participants were a purposeful sample of privately insured adults from across the U.S. who experienced involuntary out-of-network care. They were diverse with regard to income level, education, and health status.
RESULTS: Four recurrent themes characterize the perspective of individuals who experienced involuntary out-of-network physician charges: 1) responsibilities and mechanisms for determining network participation are not transparent; 2) physician procedures for billing and disclosure of physician out-of-network status are inconsistent; 3) serious illness requiring emergency care or hospitalization precludes ability to choose a physician or confirm network participation and 4) resources for mediation of involuntary charges once they occur are not available.
CONCLUSIONS: Our data reveal that patient education may not be sufficient to reduce the prevalence and financial burden of involuntary out-of-network care. Participants described experiencing involuntary out-of-network healthcare charges due to system level failures. As policymakers seek solutions, our findings suggest several potential areas of further consideration such as standardization of processes to disclose that a physician is out-of-network, holding patients harmless not only for out-of-network emergency room care but also for non-elective hospitalization, and designation of a mediator for involuntary charges.

PATIENT EXPERIENCES WITH LIFESTYLE COUNSELING IN AN ONLINE LIFESTYLE SUPPORT SYSTEM John J. Rief. University of Pittsburgh, Pittsburgh, PA. (Tracking ID #1643142)

BACKGROUND: While online counseling offers a variety of tools for tailoring the delivery of lifestyle interventions and collapsing the physical distance between practitioners and participants, it also augurs major changes in the communicative strategies and styles of both. Shifting counseling to an online environment may yield positive benefits (e.g., increased participant adherence and more timely problem-solving) but also create the conditions for anxieties regarding, for example, the quality of patient-provider interaction. Thus, additional research is needed to assess the ways in which different modalities of online communication cultivate and/or enervate patients' ability to develop strong relationships with their providers and effective self-management skills. My primary objective was to evaluate the experiences of primary care patients participating in an evidence-based online lifestyle intervention, especially their sense of the quality of their interaction with online lifestyle coaches who assisted in delivering the intervention.
METHODS: I utilized qualitative methods (i.e., the rhetorical technique of close reading based on shared word choices, themes, and frames) to analyze interview responses from 35 participants who completed exit interviews after completion of a 1-year-long online lifestyle intervention. This analysis focuses on a set of 8 questions regarding participant experiences with online lifestyle coaching and, in particular, with the two styles of asynchronous contact used by lifestyle coaches to interact with participants: "as needed" (in response to specific problems faced or questions posed by participants) and "scheduled" (automated). The previously transcribed passages from these interviews were analyzed and then mapped based on shared thematic characteristics.
RESULTS: Throughout the participant responses, four primary themes emerged: (1) the need for dialectical engagement (i.e., back and forth dialogue and deliberation), (2) the role of collaboration in problem solving (i.e., combining the grounded experiences of individual participants with the expertise of lifestyle coaches to address specific barriers to success), (3) the need to address the specific context of the participant in terms of communication style and healthcare needs, and (4) the extent to which "as needed" and "scheduled" notes variously enhance or undermine participant perception of genuine human interaction. Many participants noted the importance of receiving "as needed" notes to the development of their partnership with their lifestyle coach. These themes provide key inflection points for additional research including the importance of human (as opposed to fully automated) interaction in online lifestyle interventions and the potential importance of patient-centered communication strategies in the online environment.

CONCLUSIONS: The emergent themes provide a starting point for understanding how the participants experienced online interaction with their lifestyle coaches in the context of an online lifestyle support system aimed at assisting them in losing weight and increasing their physical activity. This study suggests that the personalization of online interaction as well as the extent to which it avoids full automation may be essential to its successful adoption in lifestyle interventions.

PATIENT NAVIGATION FOR SCREENING MAMMOGRAPHY: A RESIDENT CLINIC QUALITY IMPROVEMENT INITIATIVE
Swati Shroff[1]; Molly McCoy[2]; Mariuca Tuxbury[2]; Bonnie Sherman[2]; Sharon Bak[2]; Tracy Battaglia[2]. [1]Boston Medical Center, Boston, MA; [2]Boston Univeristy School of Medicine, Boston Medical Center, Boston, MA. (Tracking ID #1637221)

BACKGROUND: In an era of accountable care, health system innovations are necessary to achieve equity in quality healthcare delivery. Patient navigation (PN) has been used to address breast cancer disparities; however, its use has not been evaluated in resident training practices. This study aims to evaluate the use of PN in resident primary care clinics to improve mammography screening rates.
METHODS: We conducted a pre-post evaluation of a breast cancer quality improvement (QI) initiative from September 2011-July 2012 at the largest ambulatory resident clinic at Boston Medical Center (BMC). The initiative began with a didactic session introducing residents to the concept of PN, including existing telephone, written, and electronic protocols navigators use for scheduling and tracking mammograms. Eligible patients for the QI initiative included: women aged 51–70 years of age, assigned to a resident provider, and seen by a BMC internal medicine provider within the past 2 years. The outcome of interest was mammography adherence, defined by the Healthcare Effectiveness Data and Information Set (HEDIS) measure as completion of a screening mammogram within the past 24 months. The QI initiative was designed so that all women whose last documented screening mammogram was 18 months ago or greater received one-on-one navigator outreach and tracking over time to ensure 24 month adherence to screening mammography. Those whose last documented mammogram was <18 months ago received usual care. Clinical and demographic data were extracted from the electronic medical record. McNemar's test was used to compare pre- and post-adherence rates. An electronic self-administered post-intervention survey was given to the residents to assess their experiences with PN.
RESULTS: 66 residents had 552 patients eligible for the QI initiative. The majority of the women were Non-White (Black 64 %, Hispanic 13 %), publicly insured (60 %), and non-US born (62 %). Pre-intervention, only 293 women (53 %) were adherent to screening mammography according to the HEDIS measure. Adherent women were more likely to be Black (70 % v. 58 %, p= 0.002), insured (74 % v. 65 %, p=0.05), and have a previous mammogram report on record (96 % v. 28 %, p<.0001). Post-intervention adherence rates significantly improved after 9 months of implementation of PN (66 % v. 53 %, p<0.0001). Improvements were observed across all sociodemographic groups. Among the navigation-targeted group (n=278), 55 % were unable to be contacted by phone, while only 10 % actually declined mammography services. Of the 27 (41 %) residents who completed the survey, 75 % reported at least one communication with the navigator, yet only 14 % knew the navigator's name. 35 % of respondents felt PN decreased their workload, and 100 % would like to see PN's role expanded within their ambulatory practices.
CONCLUSIONS: PN has potential to improve the equitable delivery of quality care, in this case, mammography adherence rates among resident practices serving vulnerable populations, despite challenges in contacting eligible patients. Resident trainees perceived having PN in their ambulatory practice to be beneficial.

PATIENT PERCEPTIONS ABOUT ANTIBIOTIC TREATMENT FOR ACUTE COUGH: A QUALITATIVE STUDY
Patrick P. Dempsey[1]; Alexandra C. Businger[1]; Lauren E. Whaley[1]; Jeffrey A. Linder[1,2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Cambridge, MA. (Tracking ID #1641422)

BACKGROUND: Although national guidelines discourage antibiotic prescribing for acute cough, patients continue to seek care and clinicians continue to prescribe antibiotics for acute cough. To understand knowledge and attitudes of patients regarding the evaluation and treatment of acute cough, we conducted a series of interviews with patients at a large, diverse primary care practice.
METHODS: We conducted a qualitative analysis of semi-structured, in-depth interviews with 14 patients that had a primary care physician at the Phyllis Jen Center for Primary Care in Boston. Patients were eligible if they had a visit to the practice in the past 2 years, were aged 18–64 years old, and did not have chronic lung disease. Patients received US$50 for their participation. Interview questions addressed: patient knowledge of antibiotics; patient attitudes toward inappropriate prescribing of antibiotics for acute cough; patient desire and demand for antibiotics for acute cough; patient perceptions of antibiotic prescribing guidelines and patient education materials; patient ideas for improving antibiotic prescribing through changes in the practice environment and provider behavior. Each interview was recorded, transcribed verbatim, and analyzed utilizing a standard comprehensive qualitative analysis method using structural then thematic coding.
RESULTS: Participants had a mean age of 46 years, 7 of 14 were white, and 8 of 14 were women. Participants had a varied understanding of the appropriateness of antibiotic prescribing. When asked if antibiotics were necessary for their cough, participants said: yes (4); no (4); they are necessary for bacterial infections (1); they are necessary for bronchitis or pneumonia (1); they are not sure (1); they follow what the doctor says (1). Participants mentioned different consequences of unnecessary antibiotics such as: building resistance (5), allergic reactions (5), increasing susceptibility to future infections (5), and opening yourself up to more problems and getting sicker (5). Of the 14 participants, 10 reported never directly asking their physician for antibiotics for acute cough. Participants universally agreed that patient education materials (posters, pamphlets) about when antibiotics should be prescribed would be helpful; 10 participants said they would read and follow them. To help providers decrease inappropriate antibiotic prescribing, 9 participants endorsed phone triage by nurses to educate patients on over-the-counter remedies and guide patients on when it is necessary to come to the office. Three participants responded that clinicians need to spend more time with the patient rather than rushing to judgment and prescribing antibiotics. Four participants responded that physicians should educate patients about over-the-counter remedies and help set expectations for the typical duration of symptoms.
CONCLUSIONS: The majority of participants were aware of the ineffectiveness of antibiotics for acute cough and of the potential for adverse reactions. To reduce inappropriate antibiotic prescribing for acute cough, patients universally agreed that patient handouts and posters would be beneficial. Several patients thought clinicians should spend more time with patients and provide education on prevention strategies, over-the-counter remedies, and reasons why antibiotics would not help acute cough.

PATIENT SAFETY AND INTERPROFESSIONAL COLLABORATION ASSESSMENT: A DISTINCT SKILLS SET FOR MEDICAL STUDENTS
Jennifer Adams[1]; Marc Triola[1]; Maja Djukic[2]; Linda Tewksbury[1]; Sabrina W. Lee[1]; Sondra Zabar[1]; Kathleen Hanley[1]; Colleen Gillespie[1]. [1]NYU School of Medicine, New York, NY; [2]NYU College of Nursing, New York, NY. (Tracking ID #1640550)

BACKGROUND: Interprofessional collaboration (IPC) is increasingly recognized as fundamental to patient-centered medical care. Interprofessional education (IPE) is shown to improve patient outcomes and collaboration in practice. Still, many medical schools have limited training in IPE. The NYUSOM and NYUCON, with support from the Josiah Macy Jr. Foundation, developed and implemented a comprehensive IPE curriculum for its students. To better understand the impact of the curriculum, an OSCE (Objective Structured Clinical Examination) was completed to assess medical students' baseline skills in IPC and to assess whether these abilities were associated with other core clinical skills.

METHODS: An IPE case was authored and implemented as part of a high-stakes, end-of-third-year comprehensive clinical skills OSCE. The case prompted students to create an interprofessional care plan with a nurse for the patient they saw in a previous case, a 15-minute interview with a patient who came into urgent care with chief complaint of shortness of breath. Students were expected to use the SBAR (situation, background, assessment and recommendation) technique to communicate with the Standardized Nurse and to use CUS (concern, unsafe and safety issue) if the nurse relayed any incorrect information. The Standardized Nurse was trained to make a specific mistake to ensure the student had the opportunity to use CUS. A behaviorally anchored checklist was developed to assess IPC, including 4 items to assess use of SBAR, 1 item focused on using CUS to respond to the Standardized Nurse's information error, and 3 items focusing on core dimensions of collaborative practice (introducing professional role, collaborating in identifying next steps and implementing an interprofessional team care plan). Each of these used a 3-point response scale of "not done", "partly done", and "well done" and a composite score of % "well done" for the 8 items was calculated to measure overall IPC skill. Finally, a 4-point item assessed the degree one would recommend the student as a physician based on overall IPC. The Standardized Nurse completed the checklist at the conclusion of the case.
RESULTS: 168 third year medical students completed the case. 72 % of students used SBAR to present a patient-centered situational assessment; half used SBAR to comprehensively present the patient's background; 41 % used SBAR to provide their assessment of the situation. Only 27 % used CUS in a skillful and respectful way in response to the nurse's error. 17 % of students fully introduced self and role and less than a third (28 %) of students collaborated with the nurse in developing a plan of action. Overall, the 8-item IPC score appeared to be internally consistent (Cronbach's alpha=.70); average % well done=35 % (SD=26 %). Also, 41 % of students received a "recommend with reservations" rating for their overall IPC; 38 % received a "recommend" and 22 % received a "highly recommend" rating. Finally, IPC was not significantly associated with other core clinical skills assessed in this high-stakes 8-station OSCE (correlation with overall communication scores=.05, p=.54; history-gathering r=.04, p=.59; physical examination r=.03, p=.71; clinical reasoning r=.09, p=.24).
CONCLUSIONS: Medical students' IPC skills need targeted development. This particular skill set was not associated with other core clinical skills, suggesting that IPC practice is a distinct skill set that requires specific curricula and training experiences.

PATIENT SELF-REPORT OF COLORECTAL CANCER SCREENING DISCUSSIONS WITH PRIMARY CARE PHYSICIANS: WHAT SCREENING OPTIONS ARE BEING DISCUSSED AND WHAT OPTIONS ARE BEING MISSED? Vanessa Ramirez-Zohfeld[1]; Alfred W. Rademaker[2]; Nancy C. Dolan[1,3]; M. Rosario Ferreira[1,4]; William L. Galanter[6]; Jonathan M. Radosta[6]; Dachao Liu[2]; Milton "Mickey" Eder[5]; Francisco Acosta[1]; Kenzie A. Cameron[1]. [1]Northwestern University, Chicago, IL; [2]Northwestern University, Chicago, IL; [3]Northwestern Medical Faculty Foundation, Chicago, IL; [4]Jesse Brown VAMC, Chicago, IL; [5]ACCESS Community Health Network, Chicago, IL; [6]University of Illinois Hospital & Health Sciences System, Chicago, IL. (Tracking ID #1641499)

BACKGROUND: Past research has indicated the critical importance of clinician discussion and recommendation of colorectal cancer (CRC) screening. Recent research also indicates that providing patients a choice of screening options (alerting patients that there are multiple U.S. Preventive Services Task Force (USPSTF)-accepted screening modalities) may increase CRC screening completion, particularly among racial and ethnic minorities. Objective: To assess the frequency with which CRC screening is discussed during non-acute general internal medicine (GIM) visits, as well as to assess which screening tests are being discussed in a population of average risk, 50–75 year-old, racially/ethnic minority patients.
METHODS: Data were extracted from an ongoing randomized-controlled study to promote CRC screening at seven federally qualified health centers and one academic health center in a large, urban area. English and Spanish-speaking patients who were not up to date with CRC screening and were seeking care at one of these health centers participated in an interviewer-administered survey before and immediately after their physician visit. Descriptive statistics were used to identify whether or not discussion of screening occurred during the visit and if so, what type of screening option(s) were discussed.
RESULTS: Among 485 patients who completed an interviewer-administered survey immediately following their physician visit, the mean age was 57.8 years (SD=6.1); 355 (73.2 %) were female; 221 (45.6 %) identified themselves as Hispanic/Latino and 245 (50.5 %) as Non-Hispanic Black; 149 (30.7 %) reported 0–6 years of education, 231 (47.6 %) reported 7–12 years of education and 101 (20.8 %) had 13 or more years of education. Almost one-third of patients (33.1 %) reported being uninsured. Two hundred forty-one (49.7 %) of patients reported that their physician discussed CRC screening with them during their visit. Of those 241 patients who recalled a discussion regarding CRC screening, 190 (78.8 %) reported that they had discussed specific CRC screening tests with their doctor (19.1 % indicated that a discussion had occurred, but no specific tests had been discussed, and 2.1 % could not recall if specific tests had been discussed or not). When asked which tests had been discussed, 25.8 % reported stool tests (FOBT or FIT); 83.2 % reported colonoscopy; and 3.2 % could not recall the specific tests that had been discussed. Of the 158 participants who reported discussions of colonoscopy, only 23 (14.6 %) reported that the physician had also discussed stool tests.
CONCLUSIONS: In the majority of patient visits during which CRC screening was discussed, only one screening option was presented; most often that option was colonoscopy. In addition to increasing the frequency of discussion of CRC screening within non-acute GIM visits, clinicians should consider offering patients a choice of CRC screening modalities, which appears to occur infrequently. Increased discussion of screening options may ultimately serve to increase screening completion, particularly among racial and ethnic minorities as well as those who are uninsured or underinsured.

PATIENT ACTIVATION BY DTCA INFLUENCES PRIMARY CARE PHYSICIANS' PRESCRIPTIONS OF CELEBREX FOR OSTEOARTHRITIS Michael Fischer[1]; Jeffrey N. Katz[1]; Lisa D. Marceau[2]; Felicia L. Trachtenberg[2]; Jing Yu[2]; John B. McKinlay[2]. [1]Brigham & Women's Hospital, Boston, MA; [2]New England Research Institute, Watertown, MA. (Tracking ID #1629268)

BACKGROUND: Direct to consumer marketing of medications is intended to "activate" patients to request the advertised medication from their physicians. There is limited data on the extent to which physicians alter prescribing patterns in response to specific requests from activated patients.
METHODS: We performed a factorial experiment in which primary care physicians viewed clinically authentic videotapes of "patients" presenting with symptomatic knee osteoarthritis (OA). The "patients" were played by professional actors who differed by sex, race (white, Black, Hispanic) and SES (higher, lower). 192 primary care physicians working primarily in Illinois were recruited to participate. Each physician viewed one vignette of a patient with typical symptoms of knee OA lasting for several months. In one half of vignettes the patient was 'activated' and asked: "I've seen ads for Celebrex and it looks just like what I need…A woman I work with takes it and she said it really works for her…so, I really want to try that." The non activated patients requested help with their pain but did not ask for any specific medications: "I just want something to make it better." Activated and nonactivated vignettes were balanced on sex, race and SES. Physicians were balanced by sex and years of experience. After viewing the videotape, the physicians completed a questionnaire in which they indicated the treatment(s) they would likely order. We examined the association between patient characteristics, particularly activated vs. non-activated, and the medications the physicians said they would prescribe (celecoxib, non-selective NSAIDs, other) using a multivariate ANOVA model.

RESULTS: 53 % of the PCPs presented with a vignette including an active request for celecoxib reported that they would prescribe celecoxib, as compared with 24 % of physicians seeing the identical vignette without an active medication request ($p<0.0001$; Table). Physicians receiving an active request for celecoxib were less likely to report that they would prescribe a non-selective NSAID (29 %) than physicians whose simulated patients did not request celecoxib (42 %; $p=0.06$). Most of the non-selective NSAIDs specified are available as generics. Further, physicians who received an active request for celecoxib prescribed either a COX-2 OR a traditional NSAID for 82 % of vignettes, compared to 66 % of physicians who did not receive an active request ($p=0.004$). The associations between active request and physician prescribing patterns were not influenced by patient characteristics (gender, race, SES) or physician characteristics (gender, experience).

CONCLUSIONS: Physicians presented with an activated request for celecoxib by a patient with typical knee OA were more than twice as likely to prescribe celecoxib compared to physicians encountering a non-activated patient who provided the same clinical history and they were also considerably more likely to prescribe any NSAID (selective or non-selective). Given the higher price, increased risk of cardiovascular toxicity and similar efficacy of celecoxib compared to non-selective NSAIDs, these findings suggest that some types of patient activation may increase health care costs and compromise appropriateness of prescribing.

Prescription of celecoxib and other NSAIDs for OA: Stratified by active patient request

Active Request	Celecoxib	NSAID, not Cox-2	Celecoxib OR non-selective	Neither
Yes	51 (53 %)	28 (29 %)	79 (82 %)	17 (18 %)
No	23 (24 %)	40 (42 %)	63 (66 %)	33 (34 %)

PATIENT AND PHYSICIAN GENDER CONCORDANCE IN PREVENTIVE CARE IN UNIVERSITY PRIMARY CARE SETTINGS Vanessa Virgini[1]; Simone Krähenmann-Müller[1]; Manuel R. Blum[1]; Bruno R. da Costa[2]; Tinh-Hai Collet[3]; Stefan Weiler[1]; Yonas Martin[3]; Jacques Cornuz[3]; Edouard Battegay[4]; Jean-Michel T. Gaspoz[5]; Douglas Bauer[6]; Eve A. Kerr[7]; Drahomir Aujesky[1]; Nicolas Rodondi[1]. [1]Inselspital, University Hospital of Bern, Bern, Switzerland; [2]Inselspital, University Hospital of Bern, Bern, Switzerland; [3]University Hospital of Lausanne, Lausanne, Switzerland; [4]University Hospital of Zurich, Zurich, Switzerland; [5]University Hospital of Geneva, Geneva, Switzerland; [6]University of California, San Francisco, CA; [7]University of Michigan, Ann Arbor, MI. (Tracking ID #1623711)

BACKGROUND: The proportion of female physicians working in primary care medicine has increased for several decades. Several studies have reported physician gender differences in preventive health care received by patients, especially for gender-specific preventive services. However, limited data exist on the role of patient and physician gender and gender concordance in the broad spectrum of preventive care. Therefore, we assessed the association between physician gender, patient-physician gender concordance, and the quality of preventive care in Swiss university primary care settings.

METHODS: We performed a retrospective cohort study of 1001 randomly selected patients aged 50–80 years from four Swiss university primary care settings. We used indicators derived from RAND's Quality Assessment Tools indicators and calculated percentages of recommended preventive care (such as behavioral counseling and cancer screening) according to physician and patient gender. We conducted a hierarchical multivariate logistic regression model to derive point estimates and p-values while accounting for the hierarchical structure of our dataset. Analyses were adjusted for patients' age, civil status, occupation, legal status and for physicians' age, function and centre (both as random factors).

RESULTS: Overall, 1001 patients (mean age 63.5 years, 557 male) treated by 189 physicians (mean age 34.2 years, 90 male, 94.7 % residents) were included in this study. Female patients received less recommended preventive care than male patients (65.2 % vs. 72.1 %, $p<0.001$). Female physicians provided significantly more preventive care than male physicians to both female (66.7 % vs. 63.6 %) and male patients (73.4 % vs. 70.7 %, $p=0.01$). Results were similar after multivariate adjustment. We found no evidence that preventive care differed among gender concordant and discordant patient-physician pairs (p for interaction=0.70). Female physicians provided particularly more recommended cancer screening (colon cancer, breast cancer) than male physicians (38.5 % vs. 30.9 %, $p=0.01$).

CONCLUSIONS: In Swiss primary care settings, female patients receive less preventive care than male patients. Furthermore, female physicians provide significantly more preventive care than their male colleagues, particularly for cancer screening. This study suggests that greater attention should be paid to female patients in preventive health care. Further studies are needed to understand why female physicians tend to provide better preventive care.

PATIENT AND PHYSICIAN SATISFACTION WITH AN ELECTRONIC MEDICAL RECORD (EMR): CORRELATIONS WITH COMPUTER ACTIVITY Neil J. Farber[1]; Yunan Chen[3]; Alan Calvitti[1,2]; Richard L. Street[4,5]; Danielle Zuest[2]; Lin Liu[1]; Kristin Bell[2]; Mark Gabuzda[2]; Barbara Gray[2]; Zia Agha[2,1]. 1University of California, San Diego, La Jolla, CA; [2]San Diego VAMC, La Jolla, CA; [3]University of California, Irvine, Irvine, CA; [4]Texas A & M University, College Station, TX; [5]Baylor College of Medicine, Houston, TX. (Tracking ID #1638783)

BACKGROUND: The use of electronic medical record (EMR) systems by primary care physicians has increased in recent years. Although there are clear benefits to EMRs, such as better availability of medical information and potentially decreased medical errors, some have expressed concerns about an increased workload for physicians, as well as problems with patient-physician interaction. However, no studies have examined the association of patient or physician satisfaction with physician EMR usage intensity. The data reported in this abstract, part of a larger study involving EMR use in a VAMC, look at correlations between actual computer use by physicians during the patient-physician interaction and the satisfaction of patients and physicians during that interaction.

METHODS: General internal medicine physicians in VAMC continuity practices located in one West Coast city were recruited to be part of this study. Each participating physician identified up to six patients to participate in the study. All patients were visiting the physician for either a follow-up or an acute visit. Physician use of the computer and the patient-physician interaction in the exam room were captured in real time via videotape of the interaction, videotape of the computer screen, and through the use of the Morae system that records physician clicks and scrolls on the computer. Physicians and patients completed satisfaction surveys (patients with their physicians, physicians with the EMR system and patient-physician interaction). Spearman correlation coefficients were used to analyze the correlations between patient satisfaction with the physician, and the amount of physician time spent viewing the computer; and for the correlations between the physician satisfactions with the EMR system and various computer activities.

RESULTS: Video and Morae data, and satisfaction surveys, were collected on a total of 126 individual patient office visits for the 23 participating physicians. The total time spent using the EMR during the clinical visit negatively correlated with the satisfaction of the perceived interactional skills of the physician ($p=0.05$), and patient-centered communication was positively associated with the time spent by the physician with the patient and companion ($p=0.01$). Physician satisfaction was negatively correlated with the total number of clicks and scrolls using the EMR (a measure of the time using the EMR), including adequacy of data collection ($p=0.0024$), use of time in the interaction ($p=0.0017$), physician-patient relationship ($p=0.0368$), and the cooperative nature of the patient ($p=0.0317$).

CONCLUSIONS: In this study of VA general internists' use of the EMR, patient satisfaction with the physicians' interactional skills, and physicians' satisfaction in several spheres of the clinical interaction were negatively correlated with an increased physician use of the EMR during the

clinical visit. EMR systems need to be designed in a more physician friendly manner that allows for increased physician time during the interaction for face-to-face communication with the patient, and to ease the workload of EMR documentation. In the meantime, physicians should be coached about how to expedite their use of the EMR during the clinical visit as well as outside of the exam room in order to improve both theirs and their patients' satisfaction.

PATIENT AND PROVIDER ATTITUDES TOWARD OBESITY CARE IN THE PRIMARY CARE SETTING Stephanie A. Rose[1]; Joseph Conigliaro[2]; Nancy Schoenberg[3]. [1]University of Kentucky, Lexington, KY; [2]North Shore-LIJ, New Hyde Park, NY; [3]University of Kentucky, Lexington, KY. (Tracking ID #1640747)

BACKGROUND: Despite published guidelines, physicians are not routinely screening and counseling for obesity. We evaluated attitudes and opinions, the perceived role of the provider in weight loss care, and barriers and facilitators to weight loss care in primary care.
METHODS: Using previous findings, we developed a qualitative survey of adult primary care providers (PCPs) and adult (≥18 years of age) patients (pts) at four separate rural and urban primary care settings. Groups of PCPs and pts were invited to participate in separate 90-minute focus groups run by a trained focus group leader and were asked questions that included 1) reasons for discrepancies in prevalence of PCP and pt report of discussion of weight loss (100 % vs 44 %); 2) reasons for differences in sense of PCP responsibility for pt weight loss (93 % vs 41 %); 3) types of weight loss programs recommended by PCPs; 4) barriers to PCP provision of weight loss; and 5) ideas for improvement for PCP provision of weight loss to pts. Focus groups sessions were audiotaped and transcribed and assessed for repeated themes.
RESULTS: We conducted four PCP and three pt focus groups. PCPs felt that pts underreported PCP weight loss counseling due to lack of patient information retention and explicit discussion by the provider. Pts felt that PCPs may overreport counseling and may be reluctant to provide counseling due to concern of offending pts. PCPs reported giving tips such as food diaries, calorie counting, and referrals to programs such as Weight Watchers. Pts generally reported receiving small tips such as specific dietary advice and exercise promotion or no tips at all. PCP-reported barriers to weight loss counseling included sedentary lifestyle due to socioeconomic and environmental changes, and a lack of office tools for weight loss. Pt-reported barriers to weight loss included lack of time and lack of communication between PCPs and pts, as well as socioeconomic and lifestyle barriers promoting weight gain. PCP ideas for improvement included changes promoting access to a healthy lifestyle, while pts focused on specific weight loss goals, incentives, frequent follow-up, and increase in provider-patient communication.
CONCLUSIONS: PCPs report more pt weight loss counseling than reported by pts. Pts report a positive correlation between weight loss advice and weight loss attempt. PCPs appear to be missing opportunities for guideline-concordant obesity care. Further analysis will be based on grounded theory analysis of the transcripts of the multiple sessions, with the development of codes, categories, and concepts to develop tools for weight loss in primary care.

PATIENT AND REGIMEN CHARACTERISTICS PREDICT MEDICATION ERRORS AFTER HOSPITAL DISCHARGE Amanda Salanitro[1,2]; Amy P. Myers[3]; Courtney Cawthon[4]; Cardella L. Leak[4]; Julia M. Jacobsen[4]; Joanna S. Lee[4]; Samuel K. Nwosu[5]; Jonathan S. Schildcrout[5]; John F. Schnelle[1,4]; Ted Speroff[1,4]; Sunil Kripalani[2,4]. [1]VA Tennessee Valley Healthcare System, Nashville, TN; [2]Vanderbilt University, Nashville, TN; [3]Vanderbilt University, Nashville, TN; [4]Vanderbilt University, Nashville, TN; [5]Vanderbilt University, Nashville, TN. (Tracking ID #1636712)

BACKGROUND: Medication errors persist in spite of medication reconciliation being performed at hospital discharge. Furthermore, when patients return home there may be differences between what medications patients think they should be taking and what is ordered. Medication errors in this setting place patients at risk for harmful adverse drug events and hospital readmission. We examined patient- and medication-related factors associated with medication errors following hospital discharge.
METHODS: We analyzed data from a prospective cohort study of patients hospitalized with acute coronary syndromes and/or acute decompensated heart failure who were enrolled in the Vanderbilt Inpatient Cohort Study. Medication errors were determined by comparing discharge medication lists to what patients reported taking during a phone interview in the week following discharge. We utilized standard Bernoulli logistic regression for binary endpoints (i.e., presence/absence of an error) and binomial logistic regression for count endpoints (i.e., number of errors) to examine the association between pre-specified risk factors and types of medication errors (discordance between the presence of a medication on the discharge list and the patient-reported list; errors of omission and commission; and for cardiac medications, discrepancies in indication, dose, and frequency). Risk factors included demographic characteristics, health literacy, subjective numeracy, marital status, cognitive function, social support, education, income, depression, global health status, and medication adherence.
RESULTS: Patients took a mean of 13 medications after discharge. Among 473 patients, 51 % had at least one discordant medication (i.e., it did not appear on both the discharge list and the patient-reported list). Over one-quarter (27 %) of patients were not taking a medication that they were supposed to be taking per the discharge list (an omission), while over one-third (36 %) were taking a medication not listed on the discharge list (error of commission). Nearly 60 % of patients reported a discrepancy in indication, dose, or frequency for at least one cardiac medication on the discharge list. In adjusted analyses, the greater the number of medications taken, the higher the odds were for having a medication being discordant (odds ratio=1.10, 95 % confidence interval 1.05–1.15), having an error of commission (OR=1.09, CI 1.04–1.14), or having a discrepancy in indication, dose, or frequency (OR=1.38, CI 1.17–1.62). No risk factors were significantly associated with errors of omission. Older age (OR=1.215, CI 1.07–1.38) and more cardiac medication changes between admission and discharge (OR=1.05 per medication change, CI 1.00–1.10) were associated with higher odds of discrepancies in indication, while female gender (OR=0.683, CI 0.52–0.89), higher health literacy (OR=0.972, CI 0.96–0.99), and higher subjective numeracy (OR=0.863, CI 0.78–0.96) were protective. Worse cognitive function was associated with higher odds of discrepancies in frequency (OR=1.407, CI 1.08–1.84), while female gender was protective for discrepancies in dose (OR=0.649, CI 0.47–0.91).
CONCLUSIONS: Medication errors were identified frequently in patients recently discharged. Patients with advanced age, lower health literacy and numeracy, cognitive impairment, and who take more medications are at risk for experiencing more post-discharge medication errors and subsequent potential harm due to these errors.

PATIENT REQUESTS FOR SPECIFIC NARCOTICS INFLUENCE PHYSICIAN PRESCRIBING FOR SCIATICA Michael Fischer[1]; Jeffrey N. Katz[1]; Lisa D. Marceau[2]; Felicia L. Trachtenberg[2]; Jing Yu[2]; John B. McKinlay[2]. [1]Brigham & Women's Hospital, Boston, MA; [2]New England Research Institutes, Watertown, MA. (Tracking ID #1633192)

BACKGROUND: Sciatica is one of the most common presenting complaints in primary care. Physicians struggle to manage pain adequately while avoiding overuse of narcotic medications that can cause adverse clinical effects or are subject to misuse and diversion. It is unknown to what extent patient expectations or requests for pain medication drive physician prescribing decisions.
METHODS: We performed a factorial experiment in which PCPs viewed clinically authentic videotapes of "patients" presenting with symptoms strongly suggestive of sciatica. The "patients" were played by professional actors who differed by sex, race (white, Black, Hispanic) and SES (higher, lower). 192 PCPs working primarily in Illinois were recruited. Each PCP

viewed one vignette of a patient presenting with a few weeks of daily right-sided lower back pain with radiation down the posterior right leg but with no weakness or other generally accepted "red flag" symptoms. The patient described driving as an important work requirement that was adversely affected by the pain. In half of the vignettes the patient made a specific request for oxycodone: "my wife/husband had some oxycodone left over from some dental surgery and I took one last night and … I mean, it really worked. I was amazed—It was the first time I've had relief since this all started. So, I'd like to try some of that." The other half of patients presented an open-ended request: "I just want something to make it better." Activated and open-ended requests were balanced on sex, race and SES. PCPs were balanced by sex and years of experience. After viewing the videotape, the PCPs completed a questionnaire in which they indicated the treatment(s) they would likely order. We examined the association between patient attributes, particularly type of request, and PCP decisions about prescribing narcotics using a multivariate ANOVA model.

RESULTS: 20 % of PCPs presented with an active request for oxycodone reported that they would prescribe a form of oxycodone, compared to only 1 % of PCPs presented with an open-ended request ($p<0.001$; Table). PCPs presented with active requests were more likely to report that they would prescribe a strong narcotic (56 % vs 30 %; $p<0.001$) and less likely a weak narcotic (13 % vs 26 %; $p=0.01$). Patients with higher SES were more likely to receive a narcotic (69 % vs 52 %; $p=0.01$). Patient sex and race were not associated with narcotic choice.

CONCLUSIONS: PCPs presented with a patient request for oxycodone were almost twice as likely to prescribe a strong narcotic, driven mostly by increased prescribing of oxycodone specifically, while PCP's presented with an open-ended request for pain relief rarely selected oxycodone. PCPs were more likely to prescribe narcotics for patients with higher apparent SES, suggesting potential disparities in pain management. Given current concerns about overuse or diversion of narcotic pain medications and the safety concerns related to the patient in the vignette driving for work, these findings suggest that active patient requests may lead to overuse of strong narcotics.

Prescription of oxycodone and other narcotics for sciatica: Stratified by active patient request for oxycodone

Active Request	Oxycodone	Strong narcotic	all (1)	Hydrocodone	Weak narcotic (2)	Any narcotic (3)	No narcotic
Yes	19 (20 %)	54 (56 %)	35 (36 %)	12 (13 %)	63 (66 %)	33 (34 %)	
No	1 (1 %)	29 (30 %)	28 (29 %)	25 (26 %)	53 (55 %)	43 (45 %)	
p-value	<0.001	<0.001	0.35	0.01	0.11	0.11	

1 hydrocodone, oxycodone 2 codeine, propoxyphene, tramadol 3 four physicians prescribed both a strong and weak narcotic

PATIENT SATISFACTION WITH HOSPITALIZATION: ADDRESSING PATIENT'S MOTIVATING CONCERNS FOR ADMISSION AND PERCEPTIONS OF READINESS FOR DISCHARGE Mohan B. Palla; Muralidhar R. Idamakanti; Amber Khan; Muhammad A. Shahzad; Mangai Kishore; Diane L. Levine. Wayne State University, Detroit, MI. (Tracking ID #1642246)

BACKGROUND: Many patients are dissatisfied with how their health care complaints are handled and are disappointed and frustrated when their expectations are not met. Patients often have different perspectives about readiness for discharge compared with their physicians. Acknowledging and addressing expectations has a positive influence on satisfaction. To explore patient expectations and their impact on satisfaction, we studied the motivating concerns of patients at the time of admission (TOA) and their perceptions of timing of discharge.

METHODS: This was a prospective cohort study of hospitalized patients. The Readiness for Hospital Discharge Scale (RHDS) was modified to create a scale addressing patient's motivating concerns at the TOA. A pilot was conducted to validate the scale. The Motivating Concern at Admission Scale (MCaAS) focused on exploring concerns at TOA distinct from the chief complaint. Patient's age, gender, health insurance, prior hospitalization and readmission within 30 days was collected. On admission, patients rated each item on the MCaAS using a Likert Scale (1-unimportant, 5-very important). Patients were interviewed daily regarding readiness for discharge. On the day of discharge, patients were asked whether their motivating concerns at TOA were addressed and how satisfied they were with their hospital stay on a Likert scale (1-very satisfied, 4-very dissatisfied). Mann–Whitney U-Test was used to compare ordinal data and patient satisfaction. Scale items were grouped into categories (physical, emotional, socioeconomic and medical). Continuous data was analyzed using the independent t-test.

RESULTS: 241 patients, mean age of 50.5 (± 15.4), were interviewed (58 % men, 85 % African American). 87.7 % anticipated admission. 199 (82.6 %) were very satisfied with their hospitalization. Functional limitation was a more important motivating concern at TOA in patients≥ 65 years ($Z=-1.99$, $P=0.04$). Socioeconomic concerns: need for shelter ($Z=-2.48$, $P=0.01$), food ($Z=-2.48$, $P=0.01$), and warmth ($Z=-2.36$, $P=0.01$) were more important in patients <65 years. Patients without health insurance considered socioeconomic ($Z=-2.93$, $p=0.003$) and medical issues ($Z=-5.66$, $p=0.00$) more important motivating concerns at TOA than those with. Patients with prior hospitalization ($t=2.19$, $P=0.03$) and readmissions ($t=2.04$, $P=0.04$) within 30 days considered physical limitations more important than those without. Overall, 93.4 % of patients felt their motivating concerns at TOA were addressed. Patients whose motivating concerns were addressed were more satisfied ($Z=-9.37$, $P=0.00$). The mean patient expected length of stay (LOS) was 3.6 days (± 2.2); mean actual LOS was 4.4 (± 3.1). Mismatch regarding readiness for discharge between patient and physician was seen in nearly one quarter of cases. Discharge timing mismatch was associated with patient dissatisfaction ($Z=-6.20$, $P=0.00$). Satisfaction was not dependent on patient concerns at admission but was dependent on whether concerns were met. There were no differences in patient's motivating concern at admission with discharge timing mismatch. Finally, there was no relationship between satisfaction and prior hospitalization or readmission.

CONCLUSIONS: In this study we found patient satisfaction was lower when patient's motivating concerns for admission were not addressed and their readiness for discharge was incongruent with day of discharge. Concentrating on these areas provides an opportunity to further improve patient satisfaction.

PATIENTS HAVE SOMETHING TO SAY: ANALYSIS OF 514 PATIENT SAFETY AND QUALITY COMMENTS FROM THE PROMISES PATIENT SURVEY Namara Brede[1]; Sara Singer[3,5]; Harry Reyes Nieva[1]; Judy Ling[2]; Nicholas Leydon[2]; Caitlin A. Colling[1]; Patricia Satterstrom[4,3]; Catherine Yoon[1]; Endel J. Orav[1,3]; Joel S. Weissman[1,5]; Donald Goldmann[6]; Madeleine Biondolillo[3]; Gordon D. Schiff[1,5]. 1Brigham and Women's Hospital, Boston, MA; [2]Massachusetts Department of Public Health, Boston, MA; [3]Harvard School of Public Health, Boston, MA; [4]Harvard Business School, Boston, MA; [5]Harvard Medical School, Boston, MA; [6]Institute for Healthcare Improvement, Boston, MA. (Tracking ID #1641452)

BACKGROUND: The PROMISES (Proactive Reduction of Outpatient Malpractice: Improving Safety, Efficiency, and Satisfaction) project is an AHRQ-funded quality improvement initiative to assess and reduce malpractice risks in primary care practices in Massachusetts. As part of the project's baseline evaluation component, a patient survey was administered that included a free-response question. This paper draws on responses to that question to describe patients' ideas about how their providers and practices could improve the care and services they received.

METHODS: Data were collected by a professional research firm using a newly developed mail survey tool that combined elements of CAHPS and AHRQ patient safety culture instruments. In each of 25 practices across Massachusetts, we recruited from 81 to 150 patients seen over several weeks. Patients were given the opportunity to opt out of the survey, and the survey was administered to the remaining 3582 patients. Qualitative comments were transcribed by the research firm and then coded thematically by PROMISES investigators into categories reflecting broad themes; each individual comment was placed into one or multiple categories. Comments falling into each category were coded as either positive or negative, and we summarized the number of responses in each group.

RESULTS: Of those surveyed, 1648 patients (47 %) responded to the survey; 514 of these surveys (31 %) contained patient comments. 182 patients offered positive comments about their care, 251 voiced negative comments, and 70 noted both positive and negative aspects of care. About half of the comments (228) included concrete suggestions for improvements, e.g., "follow through on referrals," "provide for STAT appointments," and "let me bypass the automated phone system." The single most common theme was communication with physicians (114 comments: 20 positive/94 negative); e.g., "[my doctor] is attentive to my needs, thorough in her explanations," and "they need to spend more time with patients and listen." Patients also commented on communication with office staff (103 comments: 64+/39−), overall satisfaction with care (99: 60+/39−), office waiting time (79: 11+/68−), timely appointment scheduling (68: 16+/52−), professional caregiver competency (52: 34+/18−), communication with NPs/PAs (43: 18+/25−), test result management (36: 2+/34−), office visit time (28: 1+/27−), referral management (26: 7+/19−), office facilities (23: 2+/21−), insurance/billing (21: 1+/20−), office organization (19: 3+/16−), medication management (19: 3+/16−), and trust of providers (12: 9+/3−).
CONCLUSIONS: Patients provided an unexpected abundance of comments, revealing some striking patterns. While the most common themes related to communication, other concerns, including waiting time and test and referral management, were also frequently cited. Some themes were almost always mentioned in a negative light (insurance/billing and test result management), while others were more positive or mixed (communication with staff and professional competency of caregivers). These comments provided useful feedback to individual practices, and also illuminated areas of importance for patients. This rich and complex dataset highlights possible areas of focus for future malpractice risk reduction and quality improvement work in the primary care setting.

PATIENTS IN A COMMUNITY HEALTH CENTER CONSIDER PATIENT PORTALS IMPORTANT BUT FACE BARRIERS TO ADOPTION Mita S. Goel; Rachel O'Conor; Liliana Aguayo; Anne M. Boyd; David W. Baker. Northwestern University, Chicago, IL. (Tracking ID #1642530)

BACKGROUND: Patient portals (PPs) allow patients electronic access to their health records and may facilitate communication with health care providers. Implementation of PPs is likely to accelerate because PP use is essential for garnering federal financial incentives for achieving meaningful use of electronic health records. We sought to identify attitudinal and access barriers to PP adoption among patients seeking care at a federally qualified community health center (FQHC) preparing to implement a PP.
METHODS: We contacted a random sample of 150 patients, stratified by age and gender, with 2 or more visits in the past 18 months to an urban FQHC. We conducted a 20 min telephone interview soliciting (1) attitudes toward PP features, such as secure messaging and viewing test results using a 5 point Likert Scale, (2) use of internet-enabled technology and (3) demographic characteristics. In addition to simple descriptive statistics, we examined the relationship between demographics, attitudes towards PP features and use of internet-enabled technology.
RESULTS: A total of 104 participants consented for the study (response rate 69 %). Mean age was 47 years (age range 18–72); 66 % were women, 85 % were Latino, 71 % preferred to speak in Spanish and 45 % had less than a high school education. More than 80 % reported key features of the PP were important or very important (medication refills, viewing test results, viewing medication lists and dosing, seeing when screening tests are due, receiving text alerts when due for screening, online scheduling, emailing about new medical problems, asking questions about existing medical issues and sharing medical records with other providers). Younger age (18–34 years) was positively correlated with rating PP features as important ($p<0.05$); ratings of PP features did not vary by preferred language. Many respondents lacked access to internet-enabled technology; 34 % did not own a computer and 45 % did not have an internet-enabled mobile phone. In all, 46 % did not have access to any internet-enabled technology. Increasing age was negatively associated with access to internet-enabled technology; 85 % of respondents aged 18–34 years had access vs. 22 % of those 65 years and older ($p<0.05$). Similarly, Spanish language preference was associated with poorer access to internet-enabled technology; 43 % of Spanish speakers had access vs. 80 % of English speakers ($p<0.05$). When asked why they lacked internet-enabled devices ($n=54$), 50 % reported they did not know how to use a computer and an additional 25 % reported they were unable to afford the technology. However, 95 % of all participants had access to a mobile phone and of those, 75 % used text messaging.
CONCLUSIONS: Although patients seeking care at an FQHC consider key PP functions important, many lack access to, or proficiency with using, internet-enabled devices. Adoption of PP technology in this context is likely to be slow and may place safety net institutions at risk of losing important federal financial incentives. Further work should explore the prevalence of these barriers more broadly in FQHCs. Text messaging may be a more feasible vehicle for patient-centered interventions in FQHCs at present.

PATIENTS WHO FEEL SAFE TO DISCLOSE LGBT RELATED ISSUES TO THEIR HEALTHCARE PROVIDERS ARE MORE MOTIVATED TO TAKE CARE OF THEIR OWN HEALTH Richard E. Greene; Benjamin Cox; Jonathan Gursky; Nicole Rosendale; Benjamin Solomon; Jaclyn Fox; Colleen Gillespie. NYU School of Medicine, New York, NY. (Tracking ID #1641126)

BACKGROUND: Lesbian, gay, bisexual and transgender (LGBT) health centers exist to meet the special health needs for members of the LGBT community. It remains unclear whether patients attending these clinics take better care of themselves or have better health outcomes than patients who are seen in other, mainstream clinics. We surveyed patients at a new LGBT clinic embedded in a city-funded outpatient facility that serves an urban, diverse, underserved population on the Lower East Side of NYC. Our aim was to better understand why patients sought out care at an LGBT clinic, assess patient satisfaction with these clinics, and evaluate how these clinics may change patient attitudes about their own health.
METHODS: We designed and administered an 18-question survey to the patients at the new LGBT Clinic; the first 15 questions used True/False and Likert scale formats to assess participants' attitudes about LGBT-health centers, views about their own health, and satisfaction with the care received at the clinic. Three questions were open-ended and allowed the patient to name their sexual identity and include additional comments about their healthcare experiences. The survey was sent to all LGBT-identified patients who sought primary care services at the LGBT clinic since its opening. Between May and June 2011, patients received an email that described the purpose of the study and included a link to the anonymous on-line survey. Three weekly reminder emails were sent. People who attended the clinic but did not identify as LGBT (i.e. who had been scheduled erroneously), who came seeking Sports Medicine advice exclusively (a side interest of the lead clinician), or did not have access to e-mail were excluded from the study. We used descriptive statistics to analyze the results and performed Chi-Square analyses to examine for associations between key variables of interest.
RESULTS: Of the 87 patients who were invited, 38 (44 %) responded. Overall, patients reported they had a "good experience" at the clinic (36/38 (94 %) agreed or strongly agreed with this statement). Patients named as reasons they chose the LGBT clinic: safety and freedom from discrimination, confidence they would have their specific needs addressed, and assurance of LGBT sensitive providers. 30/38 respondents (79 %) reported that they strongly agree that since receiving care at the LGBT Clinic, they are now taking better care of their own health. Respondents' taking better care of their own health since seeking care at the LGBT clinic was positively associated with having shared health concerns there that they previously had not shared with providers (Chi Sq=8.70, $p=.034$). Both of these elements (better self-care and newly sharing health concerns at the LGBT clinic) were also positively associated with feeling that the staff at the LGBT clinic created a safe place ($p<.05$).
CONCLUSIONS: LGBT patients are more likely to share details of their lives with providers they perceive to be open and sensitive to the LGBT related aspects of their lives. Our data implies that by sharing these details, patients may be activated to take better care of their own health once engaging in a system they feel to be free of bias against LGBT individuals.

PATIENTS' UNDERSTANDING OF CARDIOVASCULAR DISEASE RISK MESSAGES Tiffany Brown[1,2]; Namratha R. Kandula[1,2]; Muriel Jean-Jacques[1,2]; Ingrid N. Guzman[1]; Stephen D. Persell[1,2]. [1]Northwestern University Feinberg School of Medicine, Chicago, IL; [2]Northwestern University Feinberg School of Medicine, Chicago, IL. (Tracking ID #1640450)

BACKGROUND: Although effective for primary prevention in individuals at high risk for cardiovascular disease (CVD), statins are underused, especially among vulnerable populations. One factor in underuse may be that patients do not understand their CVD risk and the potential benefits of taking a statin. As part of a randomized trial aimed at increasing statin use in high risk patients, we developed education materials that described a patient's personalized 10-year CVD risk and encouraged patients to talk about statins with their health care provider. This qualitative study describes patients' reactions to these messages and subsequent modifications to the messages during pilot-testing.
METHODS: We developed a targeted message for patients with a 10-year risk for myocardial infarction or coronary death of ≥10 % (based on Framingham Risk Score) and hyperlipidemia. The message contained 3 main points: (1) the patient's current risk score (2) the average risk score for a person of the same age with normal risk factors; and (3) the patient's adjusted risk if statin treatment was initiated. The same message was presented using two different visual formats: a pictogram or a vertical thermometer with stoplight colors. We conducted semi-structured qualitative interviews with a convenience sample of patients in an urban federally qualified health care center serving a predominantly homeless population. Participants were shown both variations of the message for a hypothetical patient. The order that the 2 different formats were shown in was randomly varied. After the first round of interviews, we simplified the message and conducted additional interviews.
RESULTS: Participants' (n=53) mean age was 46 years old, 72 % were male, 62 % were African-American, 36 % had less than a high school education, and 57 % reported some form of health care coverage. In the first round of interviews (n=39), fewer than half of participants were able to accurately explain the message in their own words. Participant responses highlighted comprehension challenges (e.g., "Just say 'you are in bad shape' the other stuff I don't need" and "I'm a little confused to be honest. Is this [pictogram] supposed to be happy?"). Participants felt that the information on the same age patient with low risk and also the adjusted risk score after treatment was too much information and confusing. They preferred the thermometer to the pictogram. Based on the initial feedback, we simplified the message from three main ideas to only one: the patient's current high risk score. In the second round of interviews (n=14), three-quarters correctly explained the main idea of the message. Participants also said the message should mention lifestyle change in addition to statin treatment as a way to lower CVD risk. A brief sentence about lifestyle was added to the final message.
CONCLUSIONS: Pilot-testing of messages about CVD risk and statin treatment identified important comprehension challenges which patients might encounter. Participants had difficulty interpreting messages that compared their own high risk score to the lower risk score of a patient with controlled risk factors. Participants said that the most important and understandable messages were to focus on their individual high risk and to include information about lifestyle. Educational messages aimed at increasing statin use should be simple and focus on the patient's current high risk and what action should be taken.

PATTERNS OF EXPENDITURES AND ADHERENCE TO MEDICATIONS AMONG LOW AND NON-LOW INCOME BENEFICIARIES ENROLLED IN MEDICARE PART D Arleen Brown; Stella M. Yala; Norman Turk; Carol Mangione; Susan Ettner; O. Kenrik Duru; Neil Steers; Lindsay Kimbro. David Geffen School of Medicine at UCLA, Los Angeles, CA. (Tracking ID #1628744)

BACKGROUND: The Medicare Part D low-income subsidy (LIS) provides full or partial waivers for out-of-pocket (OOP) medication, has cost-sharing requirements and eliminates gap coverage. Under the Affordable Care Act (ACA), more Medicare beneficiaries will receive LIS. However, it has not been established the effect of Part D LIS on expenditures and its association with medication adherence. The objectives of this study were to examine, among Part D beneficiaries, the effect of LIS on expenditures and to determine if the subsidy is associated with adherence to medications for hypertension, diabetes or hypercholesterolemia.
METHODS: In this cross-sectional, retrospective analysis, non-LIS beneficiaries without coverage in the gap (Non-LIS/Non-GC) were compared to non-LIS beneficiaries with gap coverage (Non-LIS/GC) and to LIS beneficiaries with gap coverage. Data from a national Medicare insurance provider included participants in 12 states continuously enrolled from January 1, 2005 through December 31, 2006. Patient information was linked to 2000 US Census tract data. Logistic regression models were constructed to assess the association between LIS status and the following outcomes: (a) expenditures that exceeded the gap threshold and (b) adherence to hypertensive, diabetes, or cholesterol-lowering medications. Generalized linear models were used to assess the association between LIS status and total, OOP, or plan expenditures. All models included as covariates demographic characteristics (age, gender), co-morbid conditions, residential census tract characteristics (median household income, education, race/ethnicity, linguistic isolation), and state of residence. Models of medication adherence included only beneficiaries with the condition of interest.
RESULTS: Of the 344,817 eligible beneficiaries, 290,302 were non-LIS/Non-GC, 29,289 were non-LIS/GC, and 25,226 were LIS. Adjusted estimates for expenditures, prescription drug use, and medication adherence are presented in the table.
CONCLUSIONS: Relative to Non-LIS/Non-GC beneficiaries, LIS beneficiaries had higher total costs and lower OOP costs; were more likely to reach the gap expenditure threshold; and had slightly higher medication adherence. Non-LIS/GC beneficiaries had modest differences in expenditures and adherence compared to Non-LIS/Non-GC beneficiaries. Our findings suggest that gap coverage may be associated with improved adherence for LIS participants and that attempts to reduce or eliminate gap coverage may result in lowered medication adherence among the most vulnerable beneficiaries, leading to increased costs and poorer health outcomes. Further research is needed to understand how the extension of ACA benefits will influence expenditures and adherence among Medicare beneficiaries who are not currently eligible for the subsidy.
Regression-Adjusted Estimates of Expenditures, Prescription Drug Use, and Adherence by LIS and Gap Coverage Status
Non-LIS/Non-Gap Coverage (Ref.) N=290,302 Non-LIS/Gap Coverage N=29,289 LIS N=25,226
Total expenditures $1,341 $1,360* $1,887**
Plan expenditures $776 $822** $1,708**
OOP expenditures $570 $546** $148**
Brand OOP expenditures $369 $374* $96**
Expenditures that exceeded \"Gap\" threshold 16.9 % 17.4 %* 27.6 %**
Total number of prescriptions 26.5 25.1** 38.1**
Diabetes drug adherence 57.4 % 57.7 % 62.5 %**
Hypertension drug adherence 62.4 % 64.2 %** 65.6 %**
Lipid-lowering drug adherence 55.6 % 57.0 %** 59.6 %**
** p<0.01; * p<0.05

PATTERNS OF HOSPICE CARE AMONG VETERANS AND NON-VETERANS Melissa W. Wachterman[1,2]; Steven R. Simon[1,2]; Stuart R. Lipsitz[2]; Nancy L. Keating[3,2]. [1]VA Boston Healthcare System, Jamaica Plain, MA; [2]Brigham and Women's Hospital, Boston, MA; [3]Harvard Medical School, Boston, MA. (Tracking ID #1639941)

BACKGROUND: Historically, hospice use by military Veterans lagged behind that of non-Veterans. Responding to this disparity, in 2002–2003, the Veterans Health Administration (VHA) expanded Veterans' access to end-of-life care services, and rates of hospice use increased substantially. Meanwhile, general US hospice patterns have shifted in recent decades, moving beyond the traditional focus on treating patients with cancer living at home. We compared

Veteran and non-Veteran hospice users to determine whether demographics, primary diagnosis, location of care, and service utilization differed for these two populations.

METHODS: Using data from the 2007 National Home and Hospice Care Survey (NHHCS), administered by the National Center for Health Statistics, we identified 1415 male hospice users (95 % of Veterans in NHHCS were male). We used chi-square and t-tests to compare Veterans and non-Veterans by demographic characteristics, primary diagnosis, and location of hospice care. We used multivariate regression to assess whether differences in primary diagnoses and location of care between Veterans and non-Veterans existed after adjustment for demographic and clinical factors. We also compared measures of service utilization-length of stay (LOS) in hospice and number of visits by hospice nurses, social workers, and home health aides-between Veterans and non-Veterans, using multivariate regression. All analyses accounted for the complex sampling design; results were weighted to reflect national estimates.

RESULTS: Among 483 Veteran and 932 non-Veteran male hospice users, representing 287,620 hospice enrollees nationally in 2007, Veterans were significantly older than non-Veterans (mean age 77.0 vs. 74.3 years, p=0.02). Most Veteran and non-Veteran hospice users were non-Hispanic whites (81.7 % and 82.0 %, p=0.72) and married (70.1 % vs. 61.0 %, p=0.10), respectively. Veteran hospice users were significantly more likely to live at home while receiving hospice (68.4 % vs. 57.6 %, p=0.047), although this difference was not statistically significant after adjustment for demographic and clinical factors (p= 0.06). Cancer was a more common diagnosis among Veterans in hospice than non-Veterans (56.4 % vs. 48.4 %), but this difference was not statistically significant (unadjusted p=0.07, adjusted p=0.06). In analyses adjusting for demographic and clinical factors, mean hospice LOS was significantly longer for Veterans than non-Veterans (60 vs. 48 days, p=0.0499). In adjusted analyses, the number of nurse or social worker visits did not differ by veteran status (both p> 0.10), but Veterans received significantly fewer visits from home health aides than non-Veterans (1 every 3.3 days vs. 1 every 2.0 days, p=0.005).

CONCLUSIONS: In a nationally-representative cohort of male hospice users, Veterans were older than non-Veterans, but other characteristics were similar. We found suggestive evidence that Veterans may be more likely than non-Veterans to have cancer and receive hospice at home (a more traditional pattern of hospice use), though these differences were not statistically significant. The longer LOS for Veterans suggests that Veterans are being referred to hospice earlier than non-Veterans, perhaps as a result of the VHA's efforts to expand awareness of and access to hospice. However, Veterans had fewer home health aide visits than non-Veterans. Further study is needed to understand the sources of this difference and to assess if it is associated with worse experiences among Veteran hospice users.

PEER MENTORSHIP AT A METHADONE MAINTENANCE TREATMENT PROGRAM: DEVELOPING SELF-EFFICACY THROUGH PROJECT GROW Magni Hamso[1]; Hillary Kunins[1]; Janet Smith[2]; Melissa Stein[2]. [1]Montefiore Medical Center, Bronx, NY; [2]Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1629970)

BACKGROUND: Women with opioid dependence face many gender-specific challenges as they enter treatment, including poorer physical and mental health than their male counterparts, low self-efficacy, and, in the case of methadone maintenance, a highly structured and hierarchical system comprised of more male than female clients. The aim of this study was to evaluate the peer-mentoring arm of Project GROW (Giving Resources and Options to Women), an HIV prevention program serving women enrolled in methadone maintenance treatment programs (MMTP) in the South Bronx, an impoverished New York City neighborhood with high rates of HIV and substance use. The goal of the peer-mentoring program was to create a cadre of female peers who could help engage other women in treatment and HIV prevention activities. The purpose of this analysis was to assess how being a peer mentor might affect the women's sense of self-efficacy, both inside and outside of the MMTP.

METHODS: All current Project GROW peer mentors were invited to participate in a semi-structured interview. The interview included questions about the women's understanding of peer mentorship, their perceptions of self-efficacy (how they viewed themselves and their future, and how they thought they were viewed by MMTP staff, other clients and family since becoming peers), their experience of methadone maintenance (both the idea and logistics of being on methadone), and their attitude toward and engagement in high-risk behavior. The interviews were audio-taped, transcribed, and analyzed using the principles of grounded theory.

RESULTS: All ten current Project GROW peer mentors participated in the interviews. The women ranged in age from 40 to 60 years old, were African American or Latina, and attended a MMTP of the Albert Einstein College of Medicine's Division of Substance Abuse. The most prominent theme that featured in all of the interviews was the importance of peer mentorship in their lives. Central to all of the women's self-definition was being a peer mentor. The women suggested that other clients and staff saw them as Project GROW peer mentors, rather than as clients and substance users. They defined their future around remaining peer mentors and continuing to help others both inside the MMTP and outside, among their family and friends. Contrary to our expectations, women did not share increased frustration with the logistics of methadone maintenance after becoming peers; instead, they were grateful for methadone, which had helped keep them substance-free, and more patient with the hierarchical structure of the MMTP.

CONCLUSIONS: Participation in a peer-mentoring program for women in methadone maintenance provided these women with an important identity as a peer mentor that superseded their identities as substance users and MMTP clients. This identity helped promote their self-efficacy to remain substance free, to continue treatment with methadone, to help other female substance users, and to participate more fully in their families' lives. Training to become a peer mentor may have important benefits for women enrolled in a MMTP, with regard to both functional and substance use related outcomes.

PERCEIVED DISCRIMINATION AMONG PATIENTS WITH SICKLE CELL DISEASE: ASSOCIATION WITH CLINICAL OUTCOMES Mary Catherine Beach[1]; Carlton Haywood[1]; Sophie Lanzkron[1]; Gladys Onojobi[2]; Shawn M. Bediako[3]; Charles Jonassaint[1]; Marie Diener-West[1]; Jennifer Haythornthwaite[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Howard University, Washington, DC; [3]University of Maryland Baltimore County, Baltimore, MD. (Tracking ID #1638809)

BACKGROUND: The predominantly black race of persons with sickle cell disease (SCD) is perceived by healthcare providers and patients to impact the quality of care. Furthermore, as a historically stigmatized disease, it is possible that persons with SCD perceive discrimination on the basis of their disease status. While perceived racial discrimination is associated with clinical outcomes in other patient populations, little is known about the effects of discrimination among SCD patients. We compared the extent to which persons with SCD perceive discrimination due to their race or disease, and examine the impact of perceived discrimination on patient outcomes.

METHODS: Using audio self-interviews, we administered questionnaires to SCD patients receiving ambulatory care at two urban hospital centers. Independent variables were the extent to which respondents perceived discrimination from doctors due to their race or their disease over the past 12 months, and over the past 2 years. Outcomes were the respondent's self-reported adherence to doctor's advice, levels of trust in the medical profession, distrust in the healthcare system, and sickle cell specific self-efficacy.

RESULTS: 279 SCD patients participated in our survey. The respondents were 97 % black, 53 % female, and had a mean age of 34.9 years. In thinking about experiences over the previous 2 years, 25 % of respondents perceived discrimination based on race, and 28 % perceived discrimination based on having SCD. In thinking about experiences over the previous 12 months, respondents perceived a greater level of disease- vs. race-based discrimination (mean scores=2.1 vs. 1.6, p<0.0001). Both disease- and race-based discrimination perceptions were associated with lower self-efficacy, lower trust in medical professionals, and greater distrust of health care systems. Perceptions of disease-based, but not race-based, discrimination were associated with less adherence to doctor's advice. Both race-based and disease-based perceived discrimination maintained independent associations with trust in medical professionals and distrust in the health care system after controlling for each other, respondent sex, and respondent

age. Only disease-based discrimination maintained an independent association with self-efficacy and adherence with doctor's advice.
CONCLUSIONS: Patients with SCD perceive discrimination based both on their race and their disease status. Both types of perceived discrimination have negative consequences for SCD patient trust in medical professionals and distrust in the health care system. Furthermore, disease-based discrimination appears to have negative consequences for patient's self-efficacy and their adherence to treatment. The effects of perceived discrimination should be the subject of greater attention in the SCD community.

PERCEIVED RISK FOR TYPE 2 DIABETES AMONG WOMEN WITH A HISTORY OF GESTATIONAL DIABETES Joyce W. Tang[1]; Kenzie A. Cameron[1]; Javiera Pumarino[1]; Alan Peaceman[2]; Ronald T. Ackermann[1]. [1]Northwestern University, Chicago, IL; [2]Northwestern University, Chicago, IL. (Tracking ID #1641834)

BACKGROUND: Gestational diabetes (GDM) is a striking, yet modifiable risk factor for the development of type 2 diabetes mellitus (DM2). Nearly 50 % of women diagnosed with GDM develop DM2 within 10 years of initial diagnosis. It is unclear whether or not most women with a history of GDM are aware of their increased risk for developing DM2 and the extent to which they seek primary care follow-up after delivery. Prior studies in this area are limited and have not included ethnic minorities, who are disproportionately affected by GDM.
METHODS: We conducted structured interviews with women who were diagnosed with GDM during a recent pregnancy and were within 18 months of delivery; patients diagnosed with DM2 after delivery were excluded. We recruited participants from 4 obstetrics clinics (2 academic, 1 private, 1 community) and 1 endocrinology clinic affiliated with Prentice Women's Hospital (Chicago, IL). A programmer analyst identified eligible patients through query of the Electronic Health Record (EHR) for positive glucose tolerance tests (GTT). Women rated their risk for DM2 over 10 years (4 point scale) and compared their risk to those of other women their age (5 point scale). Reasons for risk ratings were elicited (open-ended response). Women rated the effect of GDM on risk for DM2 (5 point scale). Interest in receiving wellness information from physicians was rated on a 3 point scale. Receipt of follow-up care and postpartum GTT were self-reported. Chi-square tests were used to test potential differences by race.
RESULTS: Of 124 eligible patients, 74 women completed interviews (33 Caucasian, 34 Hispanic, and 7 African-American); mean age was 33.8 (SD 5.7). Ninety-one percent of women felt they had at least a slight chance of developing DM2, but only 12 % perceived their risk to be high. Forty-one percent of women rated their risk for DM2 as higher than for other women their age; Hispanic women were less likely than African American or Caucasian women to perceive higher risk for DM2 (24 % Hispanic, 52 % Caucasian, 71 % African-American, $p=0.01$). Most women believed that GDM increased their risk for DM2, but only 17 % felt it increased their risk by a lot. Reasons for perceived higher risk included family history of DM2, elevated weight, and history of GDM. In contrast, reasons for perceived low risk included a healthy or improved lifestyle and lack of family history of DM2. Ninety-six percent of women reported seeing a physician after delivery (with 31 % seeing a primary care physician other than their OB/GYN); yet, 45 % of women reported not undergoing guideline recommended postpartum GTT. Sixty-three percent of women reported seeing a primary care physician at least once a year and 77 % of women reported interest in receiving information on how to stay healthy from their primary care physician.
CONCLUSIONS: Most women with a history of GDM perceive themselves to be at risk for DM2, but few perceive themselves to be at high risk; Hispanic women were least likely to perceive their risk as higher than that of their peers. GDM is felt to increase risk for DM2, but only mildly. After pregnancy, women commonly obtain follow-up in primary care, and may benefit from a coordinated handoff from obstetric care to improve continuity of care and ensure continued emphasis on the importance of diabetes prevention.

PERCEPTIONS OF CLINICAL RESEARCH AMONG PERSONS WITH SICKLE CELL DISEASE Mary Catherine Beach[1]; Carlton Haywood[1]; Sophie Lanzkron[1]; Shawn M. Bediako[3]; Gladys Onojobi[2]; Charles Jonassaint[1]; Jennifer Haythornthwaite[1]; Marie Diener-West[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Howard University, Washington, DC; [3]University of Maryland Baltimore County, Baltimore, MD. (Tracking ID #1638694)

BACKGROUND: There is only one FDA-approved disease-modifying therapy available to treat sickle cell disease (SCD); therefore participation of individuals with SCD in clinical trials of new therapies is vital to improve the health of this population. Unfortunately, many clinical investigators report difficulty in recruiting sufficient numbers of SCD patients to participate in trials, and a number of major studies in SCD have closed down due to insufficient enrollment. Despite this, little is known about the attitudes that persons with SCD have about clinical trials. We examined attitudes towards clinical trials among persons with SCD, and the extent to which demographic, attitudinal, clinical characteristics, previous clinical trial history, and perceptions of the quality of prior healthcare experiences is associated with SCD patient attitudes.
METHODS: Using audio self-interviews, we administered questionnaires to SCD patients receiving ambulatory care at two urban hospital centers in Baltimore, MD and Washington, DC. Independent variables were patient demographics (age, sex, receipt of medical assistance, household income, and education), patient attitudes (trust in medical professionals and distrust in the healthcare system), the perception of the severity of their own SCD compared to others, previous participation in a clinical trial, and quality of prior healthcare experiences (Stewart et al.'s Interpersonal Processes of Care measure). Outcomes were the respondent's attitudes towards clinical research and clinical trials as measured by a modified version of the Perceptions of Participation in Clinical Research scale.
RESULTS: 279 SCD patients participated in our study (response rate of 92.5 %). Respondents were 97 % black, 53 % female, and had a mean age of 34.9 years. Most (74.9 %) respondents reported having being asked to participate in a clinical trial; of those, most (67.5 %) also reported participating in a clinical trial at some point in their life. Most SCD patients (84 %) agreed or strongly agreed that clinical trials are a necessary way to learn about treatments, 81 % agreed or strongly agreed that it is important for people to take part in clinical trials, 77 % agreed or strongly agreed that participation in a clinical trial can help them and their family, and 92 % agreed or strongly agreed that participation in a clinical trial can help future generations. In a regression model, previous participation in a clinical trial and having the perception that one's SCD was not as severe as others both independently predicted having more positive attitudes toward clinical trials.
CONCLUSIONS: Contrary to what is commonly and anecdotally reported, we found very positive attitudes toward clinical trials among persons with SCD. In our study, patients who perceived that their SCD was less severe than others, and patients who have previously taken part in clinical trials, reported the most positive attitudes towards clinical trials. These results suggest that difficulties that are encountered in recruiting SCD patients to take part in clinical trials may be less likely due to SCD patient attitudes, and perhaps more likely due to the logistical requirements/burdens of participation, to researcher attitudes and/or their methods of approaching potential participants, or to research design considerations (such as overly stringent or inappropriate inclusion/exclusion criteria).

PERSPECTIVES ON PHYSICAL ACTIVITY AMONG IMMIGRANTS AND REFUGEES TO MINNESOTA Mark L. Wieland[1]; Kristina Tiedje[2]; Sonja J. Meiers[3]; Ahmed A. Mohamed[4]; Christine M. Formea[1]; Jennifer M. Ridgeway[1]; Gladys B. Asiedu[1]; Ginny Boyum[5]; Jennifer A. Weis[1]; Julie A. Nigon[6]; Christy A. Patten[1]; Irene G. Sia[1]. [1]Mayo Clinic, Rochester, MN; [2]Université Lumière Lyon 2, Lyon, France; [3]Winona State University, Rochester, MN; [4]Michigan State University College of Human Medicine, East Lansing, MI; [5]Rochester Community and Technical College, Rochester, MN; [6]Hawthorne Education Center, Rochester, MN. (Tracking ID #1634408)

BACKGROUND: Immigrants and refugees to the United States exhibit relatively low levels of physical activity and this disparity likely contributes to the escalation in cardiovascular risk (obesity, hyperlipidemia, hypertension, diabetes) observed after immigration. Reasons for this disparity are poorly understood.
METHODS: Through an established community-based participatory research partnership, 16 gender and age-stratified focus groups were conducted among 127 participants from heterogenous immigrant and refugee groups (Cambodian, Latino, Somali, Sudanese) in Rochester, Minnesota. Focus group questions were informed by community participation and by a social cognitive (learning) theory framework. Transcripts of audio recordings were coded independently by two analysts using inductive analysis to generate code lists. The final code list (agreed upon by all eight analysts) was used for paired coding of materials. Through coded material, themes and sub-themes emerged as an explanatory model for perceived barriers and facilitators to physical activity among participants. Analytic memos and data tables were derived to inform presentation of results. Analysis was facilitated by NVIVO-9 software.
RESULTS: We found many similarities in perceived barriers and facilitators to physical activity between heterogenous immigrant and refugee groups. Knowledge of physical activity principles was high, but physical activity was conceptualized and practiced in many different ways, including intentional exercise, sports, and chores around the house. Further, participants conveyed many advantages of being physically active that extend beyond the biomedical (e.g., lower risk of diseases, longevity) to the psychosocial (e.g., enhanced self-confidence, happiness, and lower stress). Participants described more barriers to physical activity in the US than in their home country and said that they are in a process of transition and learning how to overcome the barriers to being physically active in their new country. Importantly, lack of familiarity and comfort with taking the first steps towards being physically active are the most significant barriers to behavior change. However, once these initial hurdles are cleared, participants were optimistic about their ability to be physically active. Structural barriers included lack of time, lack of transportation to exercise facilities, lack of motivation or interest in formal exercise, competing time spent with electronics, and a lack of places to gather as groups for physical activities that are affordable and linguistically welcoming. Participants were motivated by social support from family, friends, and communities to be physically active.
CONCLUSIONS: We found many similarities in perceived barriers and facilitators to physical activity between heterogenous immigrant and refugee groups, suggesting that these shared experiences of immigration and associated social, economic, and linguistic factors (rather than cultural norms) may be primary drivers of physical activity after arrival to the US. These findings may inform intervention work among immigrants and refugees to the United States to promote physical activity.

PERSPECTIVES ON SUFFERING IN THE PRIMARY CARE SETTING Catherine Trimbur[1]; Timothy Quill[2]; Sally Norton[2]. [1]Montefiore Medical Center, Bronx, NY; [2]University of Rochester School of Medicine, Rochester, NY. (Tracking ID #1637990)

BACKGROUND: The experience of suffering is widespread and important aspect of patients' health and health care. An expression of internal distress, suffering can be a simultaneously physical, emotional and existential experience. Primary care physicians carry a great responsibility in identifying and managing suffering. However, few studies have looked at provider experiences in caring for patients who are suffering, or strategies they use to address suffering in the outpatient setting.
METHODS: This study examines the perspectives of primary care physicians on caring for suffering patients, particularly how they develop the skills necessary to observe, diagnose and address suffering in the context of an otherwise demanding outpatient setting. We used a semi-structured qualitative descriptive design. Participants were physicians working in primary care practices in upstate NY, including family practitioners, general internists and pediatricians. The sample had even representation from providers in urban, suburban and rural practices and were evenly distributed in number of years in practice. We conducted 20 semi-structured, face-to-face interviews with questions focusing on types of suffering observed, ways in which formal and informal education prepared them to address suffering and approaches they used in their own practice to meet these patient needs. Suffering was purposefully not defined for respondents to allow for respondents' own perspectives to emerge. Physicians were first recruited by criterion sampling and then snowball or referral sampling. Interviews were audiotaped, transcribed and analyzed by an iterative process to identify and analyze major themes, concepts and events relevant to the research question.
RESULTS: Providers in this study articulated a deep ideological commitment to patient-centered care and to being aware of suffering in their patients. They identified a clear sense of how they wanted to interact with patients and made deliberate choices to cultivate the type of practice that would support this ideology. However, they also identified significant structural challenges in doing this. The primary challenges identified were lack of medical training around patient suffering, and constraints around office visits (including number of visits per session, length of time scheduled for visits, location of visits, and reimbursement structures). They described these factors as barriers to their ability to exhibit empathy, elicit concerns and create healing relationships with patients. Innovative approaches for overcoming these challenges was also an important theme that emerged. These approaches included seeking out continuing education (both formal and informal), flexibility in scheduling visits (length and location of visits and using appointments for family meetings) and accepting lower salaries.
CONCLUSIONS: This study explores the challenges and rewards of caring for suffering patients in the primary care setting and the unique approaches one group of providers use to overcome these challenges. As many of the strategies described are financially uncompensated, providers were instead motivated by an ideological commitment to their patients and to relieving suffering. The results of this study point to the need for increased structural support for this type of work and more robust training around recognizing and exploring suffering at all stages of medical education.

PHARMACY-BASED INTERVENTIONS TO REDUCE PRIMARY MEDICATION NON-ADHERENCE Niteesh K. Choudhry[1]; Michael Fischer[1]; Katsiaryna Bykov[1]; Gregory Brill1; Gregory Bopp[2]; Aaron M. Wurst[2]; William Shrank[1]. [1]Brigham & Women's Hospital, Boston, MA; [2]CVS-Caremark, Woonsocket, RI. (Tracking ID #1629255)

BACKGROUND: Non-adherence to essential chronic medications is common and leads to substantial morbidity, mortality, and avoidable healthcare costs. Recent studies have recognized the frequency of primary non-adherence, when patients do not fill their first prescription for a new medication. Little is known about what interventions could reduce rates of primary non-adherence. We evaluated two interventions implemented by a large pharmacy chain attempting to reduce primary non-adherence to cardiovascular medications.
METHODS: In 2007 CVS retail pharmacies began making automated reminder phone calls to patients who had not picked up new prescriptions within 3 and 7 days after the prescription was initially processed. In 2009 pharmacists and pharmacy technicians began making personal calls to patients who had not picked up their prescriptions within 8 days after initial processing. For each intervention a 1–2 % random sample of patients, selected based on birthdate, did not receive the intervention and served as a control group. We used pharmacy and insurance data from CVS-Caremark to identify the rate at which prescriptions for cardiovascular medications were not filled within 30 days after they had first been processed.
RESULTS: The automated intervention included 852,629 patients and 1.2 million prescriptions, with a control group of 9,282 patients and 13,179 prescriptions. The live intervention included 121,155 patients and 139,502 prescriptions with a control group of 2,976 patients and 3,407 prescriptions. The control and intervention groups were balanced by age, gender, and patterns of prior prescription use. For the automated intervention, the rate of unfilled prescriptions was 4.2 % in the intervention

group and 4.5 % in the control group ($p>0.1$). For antihypertensives the unfilled prescription rate was 3.6 % in the intervention group and 4.0 % in the control group ($p>0.1$) while for statins the rates were 5.4 % in the intervention group and 5.6 % in the control group ($p>0.1$). The live intervention was used in a group that had not filled prescriptions after 8 days and thus had much higher rates of primary non-adherence. In this setting the rate of unfilled prescriptions was 36.9 % in the intervention group and 41.7 % in the control group, a difference of 4.8 % ($p<0.0001$). The difference in unfilled prescription rate for antihypertensives was 6.9 % ($p<0.0001$) but for statins was only 0.5 % ($p>0.1$).

CONCLUSIONS: Automated reminder calls encouraging patients to fill their prescriptions had no significant effect on rates of primary medication adherence. Personal calls from pharmacists and pharmacy technicians to patients at high risk for primary non-adherence significantly increased primary adherence to prescriptions for cardiovascular medications, although many patients still did not fill their prescriptions. The findings were driven by improved adherence to anihypertensive medications, with no effect on adherence to statins. Our findings indicate that 20 personal calls from the pharmacy would be needed to yield one additional filled prescription, or 15 calls per prescription filled if the results were limited to antihypertensives. Future analyses of long-term adherence and clinical outcomes will be needed to assess the cost-effectiveness of these interventions for pharmacies or health systems.

PHYSICIAN RACE AND THE CARE OF MEDICALLY DISADVANTAGED PATIENTS: A NATIONALLY REPRESENTATIVE ANALYSIS

Lyndonna M. Marrast[1,2]; Leah Zallman[1,2]; David Himmelstein[1,3]; Steffie Woolhandler[1,3]; David Bor[1,2]; Danny McCormick[1,2]. [1]Harvard Medical School, Boston, MA; [2]Cambridge Health Alliance, Cambridge, MA; [3]City University of New York at Hunter College, New York, NY. (Tracking ID #1642396)

BACKGROUND: Studies from 20 to 30 years ago suggested that minority physicians were more likely to care for medically disadvantaged patients. Diversifying the physician workforce was, therefore, seen as a method to lessen widespread health disparities. Since then, the share of black and Hispanic physicians in the workforce has increased marginally. The US population has become more racially and ethnically diverse and disparities in access to care persist. It is not known, however, whether minority physicians currently care for a higher proportion of vulnerable patients than white physicians; if so, renewed efforts to diversify the physician workforce might improve access to care for these populations.

METHODS: We analyzed the 2010 Medical Expenditure Panel Survey (MEPS) which collects data annually on a nationally representative sample of non-institutionalized US residents regarding demographics, insurance status, use of health services and the characteristics of respondents' physicians, including race. Our study sample consisted of adults (age >=18) who reported having a physician as their usual source of care and who identified their physician's racial/ethnic background ($n=7070$). We examined the association between physician race/ethnicity and the care of vulnerable patient populations by estimating the odds ratios (and 95 % confidence intervals [CI]) for being cared for by a minority (black, Hispanic, Asian) vs. a non-Hispanic white physician for respondents who were low income, defined as living below 200 % of poverty (vs. higher income), had Medicaid (vs. other insurance types), were uninsured (vs. insured), spoke a language other than English at home (vs. English spoken at home) or were of minority race/ethnicity (vs. white). We also estimated the association between the specific race of the patient and that of his/her physician (white, black, Hispanic or Asian). Finally, we repeated these analyses using multivariable logistic regression to control for other characteristics of the provider (age, gender, office setting, region of the country and metropolitan statistical area).

RESULTS: The odds of being cared for by a minority physician were higher for low income (OR, 1.65; 95%CI [1.37, 1.98]), Medicaid (OR, 2.8; 95%CI [2.30, 3.40]), non-English speaking (OR, 9.53; 95%CI [7.05, 12.88]), uninsured (borderline significance, with OR, 1.26; 95%CI [0.98, 1.62]) and racial and ethnic minority (OR, 7.04; 95%CI [5.81, 8.52]) patients. Adjustment for physician characteristics in multivariable models did not alter these findings. The association between patient and physician specific race/ethnicity were stronger: relative to non-Hispanic white patients, black patients were more likely to be cared for by a black than a white physician (OR, 23.24; 95 % CI [16.28, 33.17]), Hispanic patients were more likely to be cared for by a Hispanic than a white physician (OR, 19.04; 95 % CI [13.47, 26.93]) and Asian patients were more likely to be cared for by an Asian than a white physician (OR, 25.73; 95 % CI [16.92, 39.13]).

CONCLUSIONS: Physicians of minority race and ethnicity currently play a disproportionately large role in the care of medically disadvantaged patients. Increasing the racial and ethnic diversity of the physician workforce could ameliorate persistent disparities in access to care for medically disadvantaged patients.

PHYSICIAN VIEWS OF COST-CONTAINMENT STRATEGIES

Susan D. Goold[1,2]; Jon C. Tilburt[3,4]; Matthew Wynia[8]; Katherine M. James[4]; Robert Sheeler[6]; Jason Egginton[5]; Mark Liebow[1]; Bjorg Thorsteinsdottir[4,7]; Marion Danis[9]. [1]University of Michigan, Ann Arbor, MI; [2]University of Michigan, Ann Arbor, MI; [3]Mayo Clinic, Rochester, MN; [4]Mayo Clinic, Rochester, MN; [5]Mayo Clinic, Rochester, MN; [6]Mayo Clinic, Rochester, MN; [7]Mayo Clinic, Rochester, MN; [8]American Medical Association, Chicago, IL; [9]Clinical Center, NIH, Bethesda, MD. (Tracking ID #1633204)

BACKGROUND: Given physicians' key role in the health system, we examined their enthusiasm for cost containment strategies and how this varied by physician and practice characteristics.

METHODS: In mid-2012 we surveyed a random sample of 3,897 practicing US physicians from all specialties in the AMA Physician Masterfile. Respondents rated their enthusiasm (not, somewhat, very enthusiastic) for cost-containment strategies. Multivariate logistic regression analyzed relationships between physician and practice characteristics and enthusiasm for each strategy.

RESULTS: 2556 of 3897 returned completed surveys (RR 65 %). Physicians responded most favorably to a strategy promoting continuity of care. (Table). Surgeons and procedural and non-procedural specialists were less enthusiastic than primary care physicians about reducing compensation for highly paid specialties (ORs 0.1, 0.2 & 0.5; 95 % CIs 0.1–0.2, 0.1–0.2 & 0.4–0.7). Specialists reported more enthusiasm for penalizing avoidable readmissions (ORs 1.7 & 1.3; 95 % CIs 1.3–2.1 & 1.1–1.7); procedural specialists reported less enthusiasm for bundled payment (OR 0.6; 95 % CI 0.5–0.8). Physicians paid salary or salary plus bonus were more enthusiastic about electronic health records (ORs 1.9 & 2.3; 95 % CIs 1.4–2.4 & 1.8–2.9) and bundled payment (ORs 2.2 & 1.7; 95 % CIs 1.7–2.8 & 1.4–2.1); salary only physicians were more enthusiastic about eliminating fee-for-service payment (OR 4.0; 95 % CI 3.1–5.3). Physicians in group/HMO settings reported more enthusiasm than those in solo/small groups for electronic health records (OR 2.3; 95 % CI 1.8–2.9), eliminating fee-for-service (OR 2.2; 95 % CI 1.6–2.9), quality and safety data (OR 1.5; 95 % CI 1.1–2.2), limiting access to expensive treatments (OR 1.8; 95 % CI 1.3–2.4), chronic disease coordination (OR 1.9; 95 % CI 1.0–3.7) and using cost-effectiveness data (OR 1.7; 95 % CI 1.2–2.3). Those in governmental settings responded similarly to group/HMO physicians. Independents and liberals were more enthusiastic than conservatives about most strategies except for high-deductible health plans and higher co-pays.

CONCLUSIONS: US physicians expressed enthusiasm for cost-containment strategies that could enhance quality, e.g., decision support, continuity of care, and improving conversations with patients. Linking evidence with decision-making and reducing insurance coverage for marginally-beneficial, high-cost services found some support. There was less enthusiasm for financing reforms, although that varied by specialty, compensation and practice setting.

Potential means of reducing health care costs Not enthusiastic No. (%) Somewhat enthusiastic No. (%) Very enthusiastic No. (%)
Promoting continuity of care 32 (1) 580 (23) 1872 (75)
Promoting chronic disease care coordination 49 (2) 715 (29) 1723 (69)
Promoting better conversations with patients 80 (3) 745 (30) 1661 (67)
Rooting out fraud and abuse 176 (7) 575 (23) 1736 (70)
Expanding access to quality and safety data 200 (8) 1017 (41) 1258 (51)

Promoting head-to-head trials of competing treatments 207 (8) 1024 (41) 1243 (50)
Limiting corporate influence on physician behavior 252 (10) 653 (27) 1535 (63)
Limiting access to expensive treatments with little net benefit 262 (11) 945 (38) 1265 (51)
Using cost-effective data to determine available treatments 269 (11) 1041 (42) 1170 (47)
Expanding access to free preventive care 359 (15) 939 (38) 1174 (47)
Expanding electronic health records 715 (29) 904 (37) 857 (35)
Higher co-pays 981 (40) 1079 (44) 419 (17)
High deductible health plans 1059 (43) 1005 (41) 410 (17)
Reducing compensation for the highest-paid specialties 1091 (44) 794 (32) 589 (24)
Penalizing providers for avoidable readmissions 1465 (59) 869 (35) 138 (6)
Paying a network of practices a fixed, \"bundled\" price for managing all care for a defined population 1611 (65) 696 (28) 160 (6)
Eliminating fee-for-service payment models 1718 (70) 550 (23) 175 (7)
Allowing Medicare payment cuts to doctors to take effect 2333 (94) 112 (5) 35 (1)

PHYSICIANS CARING FOR PHYSICIANS - A QUANTITATIVE SURVEY J. H. Isaacson; Kathryn Teng; Sarah Schramm; Sam Butler; Michael Felver; Craig Nielsen; Carmen Paradis; MIchael B. Rothberg. Cleveland Clinic, Cleveland, OH. (Tracking ID #1641480)

BACKGROUND: How physicians provide longitudinal primary care to physician-patients has not been well studied. In focus groups, we identified that physicians perceived that caring for physician-patients differed from caring for other patients. The objective of this study was to explore these differences. Specifically, we looked at the 5 themes: differences in care; benefits; challenges; specific strategies employed; and the perceived importance of each specific strategy.
METHODS: We surveyed all Cleveland Clinic Medicine Institute primary care physicians (pcps) using an anonymous, web-based application. The survey consisted of 18 Likert-scale questions, five Yes/No questions, and two open-ended questions grouped into the five themes listed above. Data was analyzed using the Wilcoxon-Mann–Whitney two sample test and the yes/no responses were analyzed using either a chi-square or a Fisher's exact test.
RESULTS: Of 210 physicians, 88 (42 %) responded. Mean age was 47.6; mean years in practice was 16.6. 47 % were women. Regarding differences in care, participants agreed or strongly agreed they were more likely to follow the same protocol for chart documentation (88 %), communicate results in the same way (54 %), and change their schedule to accommodate physician-patients (44 %). They disagreed/strongly disagreed that they ordered more tests or procedures (58 %) or had trouble maintaining boundaries (66 %). Benefits of providing care to physician patients included feeling their work was valued (60 % agree/strongly agree) and greater ease in discussing complex issues (68 % agree/strongly agree). Challenges included more anxiety or self-doubt when caring for physician patients (49 % agree/strongly agree). Participants felt it was important to use the following strategies when caring for physician-patients: make recommendations based on evidence-based medicine (83 %) follow routine assessment and examination protocols (87 %), follow routine scheduling and communication protocols (50 %), recommend the same follow up visit schedule (60 %), and define boundaries of the relationship (45 %). In practice, most respondents reported using the same strategies when caring for physicians and non-physicians except for scheduling and communication protocols. Physicians with greater experience reported less anxiety (−0.2 per decade in practice, p=0.04), felt that their work was more valued (0.3 per decade, p=0.003), and agreed more strongly that caring for physician-patients was not different from caring for other patients (0.3 per decade, p=0.01). They were also less likely to follow routine assessment and examination protocols (−0.2 per decade, p=0.04) and to define boundaries of the relationship (−0.3 per decade, p=.04). Similarly, for each 10 unit increase in number of physician-patients seen, the need to define boundaries decreased by 0.2 (p=0.04).
CONCLUSIONS: Physicians perceive caring for physicians as different and rewarding, though some find it anxiety-provoking. Many are willing to make concessions regarding scheduling and testing. With increasing experience, anxiety decreased, as did the need to follow protocols and maintain boundaries.

PHYSICIANS USING MODERN PRACTICES FOR EXCELLENT DOCUMENTATION AND CARE IN HEART FAILURE (PUMPED CHF) Annia Cotorruelo-Martinez[1]; Jay N. Patel[1]; Nicole Gill-Duncan[1]; Philippe Leveille[1]; Julie M. Pearson[2]; Kell Julliard[2]; Archana Saxena[1]. [1]Lutheran Medical Center, Brooklyn, NY; [2]Lutheran Medical Center, Brooklyn, NY. (Tracking ID #1641659)

BACKGROUND: The goal of this study was to test the effectiveness of a multifaceted intervention, including a novel online training program, designed to improve resident documentation and knowledge related to congestive heart failure (CHF).
METHODS: We developed a web-based educational curriculum with two main goals in mind; to educate residents on CHF diagnosis and management based on the ACGME core competencies and to emphasize the importance of appropriate chart documentation. The course reviewed what should be included in documentation of a CHF patient by walking the learner through the various sections of a patient chart. A pre- and post-test administered immediately before and after the online course assessed knowledge that changed as a direct result of the course (maximum score 14 points) and allowed residents to identify individual areas for improvement. The study team also individually coached residents who completed the course in the proper assessment, treatment and management of one CHF patient while on the medicine floors. To measure the application of the online course and one-on-one coaching on actual chart documentation, charts from patients with systolic CHF with left ventricular ejection fraction (LVEF) less than 50 % were scored using a 39-point scoring system. The scoring system included: CHF symptoms, signs, behaviors, functional class, LVEF assessment, discharge medications, patient education, and other transition of care resources. Chart documentation scores from the intervention group of residents were compared with a historical control of patient charts meeting the same inclusion criteria.
RESULTS: Knowledge of CHF documentation significantly increased after the online educational course from a mean of 10.6 (76 %) to 12.6 (90 %) (p<0.001). The mean documentation score of the patient charts (n=50) in the historical control group was 46 % compared to 58 % in the charts reviewed after the educational intervention (n=47).
CONCLUSIONS: Despite a significant increase in knowledge scores following the online educational course, there was only a slight increase in documentation scores—even with ongoing mentoring. The data from the chart review suggests that the online component was not sufficient to create sustained change. Additional teaching modalities to use in conjunction with online learning need to be identified in this setting to foster resident education and improvement on a continuous basis to ultimately result in sustained behavior change.

PHYSICIANS' PROPENSITY TO DISCUSS PROGNOSIS ON PATIENTS' PROGNOSIS AWARENESS FOR METASTATIC LUNG OR COLORECTAL CANCER Michael Pang-Hsiang Liu[1]; Mary Beth Landrum[1]; Jane C. Weeks[2]; Haiden A. Huskamp[1]; Katherine L. Kahn[3]; Yulei He[1]; Jennifer W. Mack[2]; Nancy L. Keating[1,4]. [1]Harvard Medical School, Boston, MA; [2]Dana-Farber Cancer Institute, Boston, MA; [3]University of California at Los Angeles, Los Angeles, CA; [4]Brigham and Women's Hospital, Boston, MA. (Tracking ID #1641780)

BACKGROUND: Understanding one's prognosis is essential for terminally-ill patients, as it will influence their treatment preferences. However, many patients have a limited awareness of their prognosis, and little is known about the impact of physicians' propensity to discuss prognosis on patients' prognosis awareness. We collected information from a large cohort of advanced-cancer patients and their physicians to explore the potential association of physicians' propensity to deliver prognostic information with patients' perceptions of their prognosis.

METHODS: We investigated 686 patients with metastatic lung or colorectal cancer at diagnosis who participated in the Cancer Care Outcomes Research and Surveillance study, a multiregional population-based prospective cohort study of lung and colorectal cancer patients. We included patients who were alive and reported their life expectancy at the baseline interview conducted 3–6 months after diagnosis. Patient-reported life expectancy of ≤2 years for lung cancer and ≤5 years for colorectal cancer was considered generally accurate. These patients were linked with 486 doctors who were identified by these patients as filling important roles in their cancer care and responded to the physician survey. Physicians were asked to assume they were caring for an asymptomatic patient with a life expectancy of 4–6 months and report when they would initiate discussion about prognosis with this patient. Using multivariable logistic regression, we assessed whether patients of physicians who reported discussing prognosis "now" reported more accurate awareness of their life expectancy, adjusting for patient and physician characteristics.
RESULTS: Few patients with metastatic cancers (16.5 %) reported an accurate awareness of their prognosis. Patients whose most-important-doctor reported discussing prognosis with terminally-ill patients early were more likely than those whose doctors deferred these discussions to have an accurate prognosis awareness (adjusted proportion, 18.5 % vs 7.6 %; odds ratio, 3.23; 95 % confidence interval, 1.39–7.52; P=0.006). Patients whose physician cared for more terminally-ill patients were more likely than other patients to report an accurate prognosis awareness. Individuals who died within 3 months after the interview were most likely to be aware of their prognosis, and those who lived more than 2 years were least likely to be (28.6 % vs 9.8 %; P<0.001).
CONCLUSIONS: Although few patients with advanced cancer reported an accurate prognosis awareness, physicians' propensity to discuss prognosis early was associated with more accurate reports of prognosis. This finding suggests that physicians' communication behaviors may play an important role in explaining the very low rate of prognostic understanding we observed among patients with incurable cancers. Some patients may be hindered from having an accurate understanding of their prognosis if the doctors whom they are relying on for their key decisions about their cancer tend to delay or are reluctant to discuss prognosis with them. Enhancing the communication skills of providers with important roles in cancer care may help to improve patients' understanding of their prognosis.

Primary Results of the GEE Model with Logistic Regression

Role and response of the surveyed physician N Unadjusted Proportion with Accurate Prognosis Awareness Adjusted Proportion with Accurate Prognosis Awareness Odds Ratio (95 % CI) P Value

Most-important-doctor does not discuss early 109 9.2 7.6 1.00 - -

Most-important-doctor discusses early 301 18.3 18.5 3.23 (1.39–7.52) 0.006

Not most-important-doctor does not discuss early 79 17.7 16.8 2.78 (1.15–6.70) 0.02

Not most-important-doctor discusses early 197 17.3 18.8 3.30 (1.33–8.17) 0.01

PHYSIOLOGIC MEASURES OF MINDFULNESS MEDITATION IN OLDER ADULTS Natalia Morone[1,2]; Sagar Kamprath[1]; Ronald Glick[1]. [1]University of PIttsburgh, Pittsburgh, PA; [2]Veterans Affairs Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1634917)

BACKGROUND: Mindfulness meditation has been associated with subjective reports of relaxation in older adults, but physiologic changes have been less well studied. Most commonly noted in the literature is an increase in the high frequency component of heart rate variability (HRV), which has been associated with an increase in parasympathetic cardiac activity via the vagus nerve. Other changes noted include decrease in heart rate (HR), blood pressure (BP), and respiratory rate (RR), which are also associated with relative predominance of parasympathetic over sympathetic nervous system cardio-respiratory control. Currently, there is little data in older adults that describe their response to mindfulness meditation. The objective of this study was to collect physiologic changes associated with mindfulness meditation in older adults. Our hypothesis was that BP, HR, and RR would significantly decrease during mindfulness meditation while HRV would significantly increase as compared to not meditating.
METHODS: Older adults participating in a clinical trial of mindfulness meditation for chronic low back pain were asked to complete an electrocardiogram (EKG). Physiologic measures were recorded after completion of the eight-week mindfulness meditation program. HRV, HR, and RR were recorded with an EKG, and BP was recorded with an automated blood pressure monitor. Participants were asked to perform a "vanilla" task (watch a documentary) for 15 minutes and then asked to meditate for 15 min while an EKG was being recorded. They were also asked to rate the quality of their meditation immediately after the meditation session (0=poor to 10=excellent). Data analyses focused on within-participant changes that occurred between meditation and the comparison (vanilla) task. To determine the effects of meditation on HRV EKG data was analyzed with Mindware HRV Software modules. It computes HR and RR from the EKG and outputs a file of interbeat interval values which were used to compute time-based statistics of standard deviation of the normal-to-normal interval (SDNN) and the square root of the mean squared differences of successive NN intervals (RMSSD).
RESULTS: Eighteen participants completed physiologic data collection. The mean age of the sample was 74 years, 12/18 (67 %) of participants were female, 14/18 (78 %) were white, 13/18 (72 %) had a least some college education, and 11/14 (79 %) made less than $40,000 per year. Participants rated the mean quality of their meditation as 8.1 (range 4–10). Participants had a significant decrease in their systolic BP measured before the neutral task and after the 15 min meditation session (123.1 vs. 114.9, P=0.002) and a significant decrease in their diastolic BP (70.9 vs. 65.2, P=0.004). They also had a significant decrease in their RR (16.1 vs. 14.3, P=0.046). HRV changed in the expected direction but did not reach statistical significance (SDNN 62.4 vs. 99.9, P=0.12; RMSSD 81.9 vs. 115.7, P=0.11).
CONCLUSIONS: A brief mindfulness meditation session significantly reduced BP and RR in older adults with chronic low back pain. Heart rate variability improved during the short session but did not reach statistical significance.

PICTURE GOOD HEALTH: A CHURCH-BASED, PHOTOVOICE INTERVENTION FOR LATINOS WITH DIABETES Arshiya A. Baig[1]; Amanda Giese[1]; Cara A. Locklin[2]; Yue Gao[1]; Sang Mee Lee[1]; Michael T. Quinn[1]; Marla C. Solomon[2]; Lisa Sanchez-Johnsen[2]; Deborah L. Burnet[1]; Marshall Chin[1]. [1]University of Chicago, Chicago, IL; [2]University of Illinois at Chicago, Chicago, ID. (Tracking ID #1635193)

BACKGROUND: Clinical trials assessing the impact of church-based programs on diabetes outcomes among Latinos are lacking. We compared the effect of a low-intensity (LI) versus high-intensity (HI) church-based diabetes self-management intervention on clinical outcomes among low-income Latino adults.
METHODS: Using CBPR, we partnered with two Latino churches in an urban, low-income neighborhood. We recruited adults with self-reported diabetes, who were non-pregnant and English or Spanish-speaking from community and church events in Chicago. Participants were randomized to the LI or HI intervention group and followed for 6 months. In the LI group, participants received mailed metabolic assessments (MMA) and a 90-min lecture on diabetes self-management at the church. In the HI group, participants received MMA and were invited to an eight-week church-based intervention of weekly diabetes self-management classes led by lay leaders trained in motivational interviewing. In weekly photovoice exercises, participants discussed photos of their lives with diabetes and shared challenges and successes in self-care. Patient navigators assisted participants in finding a physician and connected them to local resources. The primary outcome was change in A1c. Secondary outcomes included change in LDL, blood pressure, BMI, diabetes self-care, self-rated health, and self-empowerment.
RESULTS: One-hundred participants enrolled and were randomized. Their mean age was 54±12 years and 81 % were female, 98 % were Latino,

70 % only spoke Spanish at home, 87 % had a household income below $30,000, and 51 % were uninsured. Average baseline A1c was 8.0 %±2.0. HI participants attended an average of 4.6±3.3 classes; 82 % of LI participants attended the lecture. The 6-month follow-up rate was 80 %. Both groups improved in 3 self-care measures from baseline to 6-months, but the HI group had improvements in 6 more self-care areas, including mean days in past week eating a healthy diet (1.06 days, 95 % CI:0.13–1.99), eating high fat diet (−1.20, 95 % CI:−1.84- -0.56), days exercising (1.21, 95 % CI:0.36–2.07), days checking feet (1.15, 95 % CI:0.25–2.05) and a trend for days adhering to medication regimen (0.72, 95 % CI:−0.03–1.47). Improvements in 2 diet and exercise measures remained significant for the HI group when assessing for change by group over time. All participants significantly improved their self-rated health status (1.55 mean increase, 95 % CI:1.15–1.95) and diabetes self-empowerment (0.22 mean increase, 95 % CI:0.01–0.43) but differences between groups were not significant. There was a significant overall decrease in A1c at 3-months (−0.31 %, 95 % CI:−0.62- -0.01) which was not sustained at 6-months (−0.15 %, 95 % CI:−0.54-0.25); differences between groups over time were not significant. There were no significant changes in other secondary outcomes within or across arms. There was a trend for the HI group to have less contact with their physician during the study period (−1.08±−4.06 total visits and calls, p=0.10) compared to baseline than the LI group (−0.10±3.23, p=0.77). Interventions were well-received in both groups.

CONCLUSIONS: Among low-income Latino adults with diabetes, a church-based intervention can improve diabetes self-care, self-empowerment, self-rated health and, in the short-term, A1c. A high intensity intervention may improve more aspects of diabetes self-care and be a lower-cost substitute for an additional physician visit.

PILOT CLINICAL TRIAL OF A COLLABORATIVE CARE INTERVENTION TO IMPROVE SYMPTOMS AND QUALITY OF LIFE IN CHRONIC HEART FAILURE David Bekelman[1,2]; Carolyn T. Nowels[2]; Debbi Main[7]; Paul Heidenreich[5]; Brack Hattler[1,2]; Karl Lorenz[6]; Paula Meek[4]; Connor McBryde[1,2]; Stephanie Hooker[3]. [1]VA Eastern Colorado Heath Care System, Denver, CO; [2]University of Colorado School of Medicine, Aurora, CO; [3]University of Colorado, Denver, CO; [4]University of Colorado College of Nursing, Aurora, CO; [5]VA Palo Alto Health Care System, Palo Alto, CA; [6]VA Greater Los Angeles Health Care System, Los Angeles, CA; [7]University of Colorado, Denver, CO. (Tracking ID #1635628)

BACKGROUND: People with chronic heart failure suffer from numerous symptoms that worsen quality of life. We developed the CASA (collaborative Care to Alleviate Symptoms and Adjust to illness) intervention to improve symptoms and quality of life by integrating palliative and psychosocial care into chronic care. The objectives of this study were to determine the feasibility and acceptability of CASA and identify necessary improvements prior to an efficacy trial.

METHODS: The study was designed as a prospective, mixed-method, pilot clinical trial. Patients with chronic heart failure meeting eligibility criteria were recruited from outpatient cardiology clinics and inpatient medical wards of the Denver VA Medical Center and the University of Colorado Hospital. Enrolled patients were randomly allocated to CASA or another intervention also being pilot tested. The CASA intervention included: (1) Nurse phone visits with structured symptom assessments and guidelines to alleviate breathlessness, fatigue, pain, or depression; (2) a social worker who provided structured phone counseling targeting adjustment to illness and depression if present; and (3) brief weekly team meetings with a palliative care specialist, cardiologist and primary care physician who made medical recommendations to patients' primary care providers to improve symptoms. Measurements included: (1) Enrollment and retention rates, (2) medical recommendation implementation rates and quality of care measures, (3) baseline and 3 month self-report outcome measures, and, (4) an end-of-study semi-structured participant interview to collect feedback on the helpfulness of the intervention and recommendations for changes.

RESULTS: Forty-two percent of approached eligible patients enrolled, and the 17 CASA pilot participants were male with a median age of 63 years. One subject withdrew from the study early and there were <5 % missing data. Participants reported that the nursing component of the intervention was a "good source of information" about self-management and included the right number of and timing of phone visits. Some found symptoms besides those targeted by the intervention to be "most bothersome" at baseline, such as cough (12 %) and numbness/tingling in hands/feet (12 %). Participants recommended reducing the nurse phone symptom survey length. Most enjoyed speaking to the social worker, although some felt the content of the psychosocial component did not fit with their situation "because I'm not depressed." Overall, 71 of 87 (82 %) CASA collaborative care team medical recommendations were implemented (medication changes, 40/41; tests, 14/22; consults, 17/21). In terms of quality of care, all participants who screened positive for depression were either treated for depression or thought not to have a depressive disorder. Both participants who endorsed thoughts of dying were reassessed and found not to be suicidal.

CONCLUSIONS: The CASA intervention was feasible based on participant enrollment, cohort retention, minimal missing data, implementation of CASA medical recommendations, and acceptability of the intervention. Several intervention changes were made based on participant feedback, including shortening nurse symptom assessments, addressing symptoms beyond the four target symptoms, modifying the psychosocial language to make it less depression-focused, and increasing the flexibility around which psychosocial modules are provided.

POLYPHARMACY AMONG VETERANS WITH AND WITHOUT HIV INFECTION IN THE VETERANS AGING COHORT STUDY E. J. Edelman[1,2]; Kirsha S. Gordon[2]; Kathleen M. Akgün[1,2]; Cynthia Gibert[3,4]; Vincent Lo Re[5]; Ian R. McNicholl[6]; David Rimland[7,8]; Janet P. Tate[1,2]; Julie Womack[1,2]; Christina Wyatt[9]; Amy C. Justice[1,2]. [1]Yale University, New Haven, CT; [2]VA Connecticut Healthcare System, West Haven, CT; [3]George Washington University School of Medicine, Washington, DC; [4]Washington DC Veterans Affairs Medical Center, Washington, DC; [5]University of Pennsylvania School of Medicine, Philadelphia, PA; [6]UC-San Francisco, San Francisco, CA; [7]Emory School of Medicine, Atlanta, GA; [8]Atlanta Veterans Affairs Medical Center, Atlanta, GA; [9]Mount Sinai School of Medicine, New York, NY. (Tracking ID #1640956)

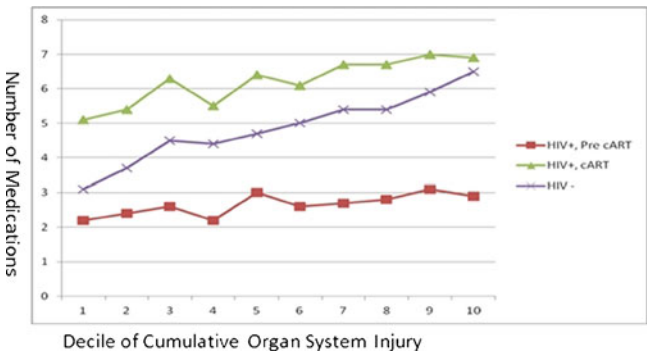
BACKGROUND: Guidelines recommend identical primary care screening and treatment criteria for HIV infected individuals (HIV+) and those without HIV (HIV−) despite greater cumulative organ system injury (and risk of adverse drug effects) and absolute burden of medication among HIV+. Because polypharmacy, defined as prescriptions for >5 medications at once, has established risks among HIV- we used data from the Veterans Aging Cohort Study (VACS) to characterize and compare rates of polypharmacy among HIV+/− Veterans. We hypothesized that combination antiretroviral therapy (cART), older age, and greater organ system injury would be associated with higher medication counts

METHODS: VACS includes HIV+ and age and race/ethnicity matched HIV- Veterans seen within the National Veterans Healthcare System. The VACS Index is composed of age and 8 routine clinical biomarkers reflecting organ system injury including: immune dysfunction, and bone marrow, liver, and renal injury—weighted to predict all cause mortality. It predicts mortality among HIV+/− with equal accuracy (C statistic 0.71). Using cross sectional data from fiscal year 2010, we calculated active medications and VACS Index scores for HIV+/− closest to the midpoint of the year. We used pharmacy fill/refill data to determine active long-term medication counts (> 90 days), including combination antiretroviral therapy (cART). Using the VACS Index score, we grouped subjects into deciles of organ injury (injury groups), and calculated median number of medications by HIV status and cART use (defined as being on >3 antiretroviral medications from

at >classes). We fit a linear regression model predicting number of medications based upon HIV status, cART exposure, age, race/ethnicity, and VACS Index score.

RESULTS: Our analysis included 53,147 subjects (16,148 HIV+ on cART; 3,235 HIV+ not on cART; and 33,764 HIV-). Association between medication count and organ injury group was strong among HIV- with median medication count doubling from 3 to >6 from the lowest to highest injury group (figure). In contast, all HIV+ on cART risk groups were on a median of ¬>5 medications and none of the HIV+ not on cART risk groups crossed this threshold. In regression models adjusting for age, race/ethnicity, and VACS Index score, compared to HIV+ not on cART, HIV- patients were on a mean of 2.2 (95 % CI 2.1–2.4) more medications and HIV+ on cART were on a mean of 3.7 (95 % CI 3.5–3.8) more medications.

CONCLUSIONS: Compared to HIV- and to HIV+ not on cART, HIV+ on cART are at substantially higher risk of polypharmacy regardless of age or organ system injury. Risk increases further with age and organ injury. Providers should be cautious when applying primary care guidelines to HIV+ on cART, given risks associated with polypharmacy among those without HIV, especially among those with decreased organ system reserve, and the lack of evidence of long-term benefit among HIV+.



POLYPHARMACY IS ASSOCIATED WITH AN INCREASED RISK OF MAJOR BLEEDING IN ELDERLY PATIENTS WITH VENOUS THROMBOEMBOLISM Waltraud Leiss[1]; Marie Méan[1]; Andreas Limacher[2]; Marc Righini[3]; Kurt A. Jäger[4]; Hans-Jürg Beer[5]; Joseph Osterwalder[6]; Beat Frauchiger[7]; Christian M. Matter[8,9]; Nils Kucher[10]; Anne Angelillo-Scherrer[11]; Jacques Cornuz[12]; Martin Banyai[13]; Bernhard Lämmle[14]; Marc Husmann[15]; Michael Egloff[5]; Markus Aschwanden[4]; Henri Bounameaux[3]; Nicolas Rodondi[1]; Drahomir Aujesky[1]. [1]Bern University Hospital, Bern, Switzerland; [2]University of Bern, Bern, Switzerland; [3]Geneva University Hospital, Geneva, Switzerland; [4]Basel University Hospital, Basel, Switzerland; [5]Cantonal Hospital of Baden, Baden, Switzerland; [6]Cantonal Hospital of St. Gallen, St. Gallen, Switzerland; [7]Cantonal Hospital of Frauenfeld, Frauenfeld, Switzerland; [8]University of Zurich, Zurich, Switzerland; [9]Zurich University Hospital, Zurich, Switzerland; [10]Bern University Hospital, Bern, Switzerland; [11]Lausanne University Hospital, Lausanne, Switzerland; [12]University of Lausanne, Lausanne, Switzerland; [13]Cantonal Hospital of Lucerne, Lucerne, Switzerland; [14]Bern University Hospital, Bern, Switzerland; [15]University of Zurich and Zurich University Hospital, Zurich, Switzerland. (Tracking ID #1630445)

BACKGROUND: Venous thromboembolism (VTE) often affects multimorbid older patients who take multiple concomitant drugs (polypharmacy). Although drug interactions with vitamin K antagonists are a potential cause of excessive anticoagulation and bleeding, whether polypharmacy increases bleeding risk in elderly patients with VTE is uncertain.

METHODS: In a multicenter Swiss cohort study, we prospectively enrolled consecutive patients aged ≥65 years who received vitamin K antagonists for acute VTE between September 2009 and March 2012. The presence of polypharmacy, defined as the use of more than four different drugs, was assessed at baseline. The outcome was the time to a first major bleeding, defined as fatal bleeding, symptomatic bleeding in a critical site, or bleeding causing a fall in hemoglobin ≥20 g/L or leading to the transfusion ≥2 units of red blood cells. We assessed the association between polypharmacy and the time to a first major bleeding using Cox proportional hazard analysis, adjusting for known bleeding risk factors (age, gender, history of major bleeding, active cancer, chronic liver disease, chronic renal disease, cardiac disease, thrombocytopenia, cerebrovascular disease, diabetes mellitus, anemia, arterial hypertension, recent major surgery and presence of symptomatic pulmonary embolism).

RESULTS: Of 830 enrolled patients, 413 (49.8 %) had polypharmacy. The mean ± SD follow-up duration was 17.8±9.3 months. The overall incidence of major bleeding was 6.4 % per person-year. Patients with polypharmacy had a significantly higher incidence of major bleeding than patients without (9.0 % vs. 4.1 % per person-year; p=0.002). After multivariate adjustment, polypharmacy remained significantly associated with major bleeding (hazard ratio 2.1, 95 % confidence interval 1.2–3.5; p=0.007). Patients with polypharmacy did not spend a higher percentage of time with an excessive international normalized ratio (>3.0) than patients without (17.7 % vs. 16.0 %; p=0.18).

CONCLUSIONS: Polypharmacy is common in elderly patients receiving vitamin K antagonists for VTE, and is an independent predictor of major bleeding. Further studies need to explore by which mechanism polypharmacy increases the bleeding risk in elderly patients with VTE.

POORLY INFORMED DECISION MAKING FOR CANCER SCREENING: RESULTS FROM A NATIONAL SURVEY Richard Hoffman[1]; Joann G. Elmore[2]; Kathleen Fairfield[3]; Bethany Gerstein[4]; Michael Pignone[5]; Carrie A. Levin[4]. [1]Albuquerque VA Medical Center, Albuquerque, NM; [2]University of Washington, Seattle, WA; [3]Maine Medical Center, Portland, ME; [4]Informed Medical Decisions Foundation, Boston, MA; [5]University of North Carolina, Chapel Hill, NC. (Tracking ID #1633671)

BACKGROUND: Cancer screening requires individuals to obtain and process key information in order to make informed decisions. We examined ratings of information sources and feeling informed about screening, cancer knowledge, and goals and concerns about screening for breast (BrCa), colorectal (CRC), and prostate (PCa) cancer.

METHODS: The TRENDS study is an Internet-based survey of US adults aged≥40 conducted in 2011. All respondents reported having experienced and/or discussed screening either for breast, colorectal, or prostate cancer in the past 2 years. Respondents rated the importance (from 0=not all to 10=extremely important) of various information sources for decision-making (health care providers, media, family), how informed they felt about cancer screening (0=not all to 10=extremely well informed), and the importance (0=not all to 10=extremely) of goals and concerns relevant to the screening decision (value of early detection and knowing cancer status). Respondents also reported the main reason for their cancer screening decision, their perceived cancer risk, and answered knowledge questions. We analyzed data with descriptive statistics (mean [SD]), ANOVA, and chi-square tests.

RESULTS: Overall, 1768 eligible respondents were surveyed: 683 BrCa, 795 CRC (491 women), and 290 PCa. The mean (SD) age was 59.9 (10.7), 76 % were non-Hispanic whites, 34 % were college graduates, and 50 % reported excellent/very good health. Respondents considered health care providers the most important information source (7.5 [2.9]), followed by family/friends (5.2 [3.3]), and then media (4.0 [3.2]). While personal preference was the main reason for BrCa decisions, provider recommendations were the main reason for PCa and CRC testing decisions. Overall, 40 % considered themselves to be at low risk for cancer and 14 % at high risk. Most respondents felt informed about cancer screening, with a mean value of 7.5 (2.2), though respondents felt less informed about PCa (6.6 [2.4]) than CRC (7.4[2.1]) or BrCa (7.9 [2.0]), P<0.001. However, respondents performed poorly on knowledge questions; only 17 % correctly answered all 3 questions while 12 % correctly answered none. Most respondents correctly answered questions about whether there was evidence for the benefit of screening (78 %), but only 29 % knew the

lifetime risk for cancer diagnosis (15 % BrCa, 44 % CRC, 20 % PCa, $P<0.001$) and only 38 % knew the risk of cancer mortality (26 % BrCa, 42 % CRC, 44 % PCa, $P<0.001$). Respondents substantially overestimated incidence and mortality risks. Respondents rated finding cancer early (9.0 [2.1]) and knowing cancer status (9.1 [2.0]) as highly important decision factors for all cancer screenings. Compared to PCa respondents (CRC respondents were not queried), BrCa respondents more highly valued avoiding false positive tests (8.5 [2.6] vs. 7.6 [2.8]), the reassurance of a negative test (9.2 [1.8] vs. 8.5 [2.3]), and avoiding dealing with harmless cancers (7.8 [3.3] vs. 6.9 [3.4]), all P-values <0.001.
CONCLUSIONS: Respondents rated early detection and knowing cancer status as highly important decision factors when considering cancer screening. Although respondents considered themselves well informed, they performed poorly on key knowledge questions. These findings highlight the need for providing information to better support informed decision-making. Health care providers, who were considered the most important source of information, are well positioned to facilitate this decision support.

PREDICTORS OF U.S. PHYSICIAN REACTIONS TO THE AFFORDABLE CARE ACT Jon C. Tilburt[2,5]; Ryan M. Antiel[1]; Katherine M. James[2]; Jason Egginton[3]; Robert Sheeler[4]; Mark Liebow[5]; Susan D. Goold6. [1]Mayo Clinic, Rochester, MN; [2]Mayo Clinic, Rochester, MN; [3]Mayo Clinic, Rochester, MN; [4]Mayo Clinic, Rochester, MN; [5]Mayo Clinic, Rochester, MN; [6]University of Michigan, Ann Arbor, MI. (Tracking ID #1637599)

BACKGROUND: Reactions to the Patient Protection and Affordable Care Act (ACA) have been mixed. Little is known about how U.S. physicians' political affiliations, specialties, or other demographic or practice characteristics relate to their reactions to health care reform legislation. We sought to describe physicians' views about the direction the ACA might take U.S. health care, their perception of the fairness of reimbursement under the ACA, and to examine physician characteristics associated with those judgments.
METHODS: In the summer of 2012, we mailed an 8-page paper survey entitled "Physicians, Health Care Costs, and Society" to a random sample of 3897 U.S. physicians drawn from the AMA Masterfile. The survey contained two items related to the ACA: "The Affordable Care Act, if fully implemented, would turn United States health care in the right direction" (with 4-point Likert scale response categories: "strongly disagree" to "strongly agree"); and "The Affordable Care Act, if fully implemented, would make physician reimbursement…" (response categories "more fair", "less fair", "neither more nor less fair", and "not sure"). We used multivariate logistic regression in SAS 9.2 (Cary, NC) to look for associations between physicians' demographic characteristics including age, sex, region of practice, their political self-characterization, clinical specialty (categorized as primary care, surgery, procedural specialty, nonprocedural specialty, nonclinical specialty, and other), practice compensation type, and their responses to the two survey items related to the ACA.
RESULTS: Among the 2556 physicians who responded (AAPOR RR2: 65 %), two out of five (41 %) believe that the ACA will turn U.S. health care in the right direction. Only 7 % believe the law will make physician reimbursement more fair, while 44 % believe it will make physician reimbursement less fair. Physician respondents were split in self-reported political affiliation (38 % conservative, 29 % independent, 30 % liberal), the majority were male (70 %) and age 50 years or older (58 %). Compared to political conservatives, self-identified liberals and independents were both substantially more likely to endorse the ACA (OR 36.6 [95 % CI, 27.2–49.3]; OR 5.3 [95 % CI, 4.1–6.9], respectively) and to believe it will make physician reimbursement more fair (OR 12.8 [95 % CI, 6.7–24.2]; OR 5.0 [95 % CI, 2.5–9.8]; respectively) after adjusting for age, sex, race, region, and specialty. Surgeons and procedural specialists were significantly less likely than primary care providers to agree that the ACA will benefit U.S. health care (OR 0.6 [95 % CI, 0.4–0.8], OR 0.6 [95 % CI, 0.5–0.8], respectively), and were significantly less likely to believe that the ACA will render physician reimbursement more fair (OR 0.2 [95 % CI, 0.1–0.4], OR 0.4 [95 % CI, 0.3–0.7], respectively) when adjusting for age, sex, race, region, and specialty.
CONCLUSIONS: Significant subsets of U.S. physicians express concerns about the direction of U.S. health care under the ACA. Those opinions appear intertwined with political affiliation and type of medical specialty.

PREDICTORS OF CROSS-CULTURAL CARE PREPAREDNESS AMONG PHYSICIANS AND NURSES IN LAUSANNE, SWITZERLAND Alejandra Casillas[1,3]; Sophie Paroz[1]; Alexander Green[2]; Hans Wolff[3]; Patrick Bodenmann[1]. [1]Lausanne University Hospital, Lausanne, Switzerland; [2]Harvard Medical School, Boston, MA; [3]Geneva University Hospital, Genève, Switzerland. (Tracking ID #1630454)

BACKGROUND: Representing new challenges for providers, Switzerland has seen a rapid influx of migrant and at-risk patients into the safety net. We evaluated provider preparedness for commonly encountered vulnerable patient profiles, and examined determining predictors. Rather than utilize awareness or knowledge of particular cultures for self-assessment, we focused on cross-cultural preparedness- an all-encompassing and reliable indicator of cultural competence.
METHODS: This secondary data analysis comes from a broader survey on cross-cultural care at Lausanne University Hospital and Department of ambulatory care and community medicine. A 64-item questionnaire, including translated/back-translated items from the validated survey, "Residency training in cross-cultural care," was mailed in November 2010 to residents, chief residents and nurses. Preparedness items asked "How prepared do you feel to care for…?" referring to patient-profiles, such as "patients with distrust of the health care system" on an ascending 5-point Likert scale. We examined proportions of "4-well/5-very well prepared," and the mean composite score for the eight items. We used simple and multivariate linear regression to examine the effect of the following variables on the composite: demographics (gender, non-French dominant language), work (provider role, time at institution, work-unit "sensitized" to cultural-care), and items on reported cultural-competence training, and cross-cultural care problem-awareness. We determined which were significant before and after adjustment. We present results significant at the $p=0.05$ level.
RESULTS: Of 885 mailed questionnaires, 371 individuals (41.2 %) returned the completed survey: 123 (33.6 %) physicians and 239 (66.4 %) nurses, reflecting the distribution of providers in the institution. The mean composite score was 3.30 (SD 0.70) with the highest proportion of "well/very well-prepared" responses for the item referring to patients with "cultures different from your own" (67.2 %) and the lowest for "whose religious beliefs affect treatment" (21.9 %). Prior to adjustment, having a non-French dominant language ($p=0.004$), working in a sensitized department ($p=0.003$), five of eight training experience items and four of six problem-awareness items were significantly correlated with higher preparedness. After multivariate adjustment, having a non-French dominant language ($\beta=0.25$, $p=.012$), working in a sensitized department ($\beta=0.21$, $p=.007$), having received training on the history/culture of a specific group ($\beta=0.25$, $p=.03$) remained significantly associated; as did problem-awareness about the lack of practical experience caring for diverse populations ($\beta=0.25$, $p=.004$) and about inadequate cross-cultural training ($\beta=0.18$, $p=.04$). Nurse provider role ($\beta=0.221$, $p=.03$) was also associated with higher preparedness, after adjustment.
CONCLUSIONS: Self-assessed preparedness among Lausanne providers leaves room for improvement. But, speaking a non-native dominant language, working in a sensitized department, and possessing specific training experiences and problem-awareness were associated with preparedness. The positive effect of nurse role on preparedness is consistent—Swiss nurses have historically led the charge on cultural competency. These findings highlight strategies for improving provider preparedness and thus high-quality cross-cultural care: emphasizing the experience of nurses, and the institution's role in creating a diverse and culturally sensitive work environment.

PREDICTORS OF EARLY ENROLLMENT IN HOME BASED PRIMARY CARE AMONG VETERANS WITH DIABETES Samuel T. Edwards[1,2]; Julia Prentice[3,4]; Donglin Li[3]; Steven R. Simon[1,5]; Dayna Cooper[6]; Thomas Edes[6]; Steven D. Pizer[3,4]. [1]Boston VA Healthcare System, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]VA Boston Healthcare

System, Boston, MA; [4]Boston University Schools of Medicine and Public Health, Boston, MA; [5]Brigham and Women's Hospital, Boston, MA; [6]Veterans Health Administration, Washington, DC. (Tracking ID #1639784)

BACKGROUND: Intensive primary care and home-based services have the potential to reduce costs and improve quality for patients with extensive care needs, but appropriate patient selection is critical to ensure efficacy and cost effectiveness. In this study, we describe patient selection into one such program by examining predictors of early enrollment in Home Based Primary Care (HBPC), a national home care program operated by the US Department of Veterans Affairs (VA).
METHODS: We identified all Veterans who filled a prescription for any antihyperglycemic medication through VA in 2005 or 2006, who subsequently enrolled in HBPC. We extracted baseline patient data from VA and Medicare claims, and included demographics, comorbidities and inpatient bed days in the prior year. Early HBPC enrollment was defined as enrollment within 6 months of study entry, while enrollment after 6 months was defined as late enrollment. We compared baseline characteristics using descriptive statistics and performed logistic regression to determine factors that predict early versus late enrollment in HBPC.
RESULTS: We identified 25,737 diabetic Veterans enrolled in HBPC, and 6,477 enrolled within 6 months. Early HBPC patients were older (early HBPC 75.9 years vs. late HBPC 73.6 years, $p<0.001$), and more likely to be non-white race (77.6 % vs. 74.5 % $p<0.001$). Early HBPC patients had a higher prevalence of heart failure (38.5 % vs. 22.8 %., $p<0.001$), chronic lung disease (39.3 %, vs. 30.3 % $p<0.001$), paralysis (7.1 % vs. 3.4 %, $p<0.001$), depression (28.1 % vs. 18.8 %, $p<0.001$), psychosis (23.3 % vs. 16.2 %, $p<0.001$) and metastatic cancer (1.6 % vs. 0.8 %, $p<0.001$). Early HBPC patients also were also more likely to spend over 15 days in the hospital in the prior year (22.1 % vs. 10.5 %, $p<0.001$), and less likely to spend no time in the hospital in the prior year (48.9 % vs. 65.0 %, $p<0.001$). Early and late enrollees had similar rates of obesity (22.8 % vs. 22.9 %, $p=0.89$), lymphoma (1.0 % vs. 0.8 %, $p=0.13$ and alcohol abuse (4.16 % vs. 4.14 %, $p=0.92$). Drug abuse was less common in early HBPC patients (1.6 % vs. 2.2 %, $p=0.003$). Multivariate predictors of early HBPC (OR>1) or not receiving early HBPC (OR<1) are shown in the table.
CONCLUSIONS: Older patients with multiple serious chronic diseases, and those with prior hospitalization are more likely to be early enrollees in HBPC. Metastatic cancer and paralysis were strong predictors, suggesting HBPC serves those with terminal illness and physical disability. Depression and psychosis were also strong predictors, reflecting HBPC's role in mental health care. Patients with drug abuse were less likely to be early enrollees, suggesting a possible barrier to enrollment. Overall, HBPC serves elderly Veterans with multiple comorbidities and high hospital utilization. These results are consistent with appropriate patient selection and will facilitate future work to assess the impact of HBPC on utilization and health.

Multivariate predictors of early HBPC enrollment

Predictor	OR	95 % Confidence Interval
Age (per year)	1.04	1.03–1.04
> 15 inpatient hospital days	1.55	1.40–1.71
CHF	1.63	1.52–1.76
Paralysis	1.92	1.68–2.19
Metastatic Cancer	1.65	1.25–2.16
Depression	1.52	1.41–1.63
Psychosis	1.51	1.40–1.63
Drug Use	0.66	0.51–0.84
White Race	0.76	0.70–0.82

PREDICTORS OF POSTPARTUM PRIMARY CARE UTILIZATION FOR WOMEN WITH MEDICALLY COMPLICATED PREGNANCIES: AN ANALYSIS OF MEDICAL CLAIMS DATA Wendy L. Bennett[1]; Hsien-Yen Chang[2]; David M. Levine[1]; Lin Wang[3]; Donna Neale[4]; Erika Werner[4]; Jeanne M. Clark[1]. [1]Johns Hopkins School of Medicine, Baltimore, MD; [2]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD; [3]Johns Hopkins HealthCare, LLC, Glen Burnie, MD; [4]Johns Hopkins School of Medicine, Baltimore, MD. (Tracking ID #1643459)

BACKGROUND: Pregnancy complications, such as gestational diabetes mellitus (GDM) and hypertensive disorders of pregnancy (HDP), are risk factors for type 2 diabetes (DM) and cardiovascular disease. Guidelines recommend postpartum DM screening for women with GDM and reassessing blood pressure for women with HDP. We determined predictors of postpartum utilization of primary and obstetric care in the 1 year after delivery.
METHODS: We conducted a retrospective cohort study using claims data 2003–10 from a private health insurance plan and a Medicaid Managed Care Organization in Maryland. Our sample included women with ≥ one pregnancy and insurance claims 6 months prior to conception through 12 months after delivery. We compared utilization between women with complicated pregnancies (GDM, pregestational DM or HDP) and a comparison group of women who had a pregnancy without any of these complications, using ICD9 and CPT codes. The primary outcome was a primary care visit within 12 months and the secondary outcome was an obstetric visit within 3 months after delivery. We used multivariate logistic regression models to assess the association between the pregnancy complications and sociodemographic predictor variables, and utilization of care at 3 and 12 months after delivery, stratified by insurance type.
RESULTS: 37,751 deliveries accounted for 8,389 complicated pregnancies (7,741 women) and 28,054 comparison pregnancies (23,559 women). 87.2 % had Medicaid insurance. Rates of HDP, GDM and pregestational DM were 17.0 %, 9.1 % and 1.4 %, respectively. Compared to the group without complications, women with a complicated pregnancy were older at delivery (24.8 vs. 26.5 years, $p<0.001$), had higher rates of cesarean delivery (38.0 % vs. 24.6 %, $p<0.0001$) and preterm delivery (13.7 % vs. 8.0 %, $p<0.0001$). Among women with private health insurance 60.0 % in the complicated delivery and 49.5 % in the comparison group attended a primary care visit within 12 months postpartum. Half of women with Medicaid lost coverage 3–6 months after delivery. Among those with coverage≥6 months postpartum, 56.6 % in the complicated group and 51.7 % in the comparison group attended a primary care visit within 12 months. Nearly half of all women with private health insurance and 60 % of women with Medicaid attended a postpartum obstetric visit within 3 months. Among women with Medicaid, statistically significant predictors of receiving a primary care visit within 12 months postpartum included non-Black race, older age, preeclampsia or pregestational DM (but not GDM) and depression. Among women with private health insurance, statistically significant predictors of receiving primary care within 12 months included co-morbid diagnoses of thyroid disease and asthma, being a current smoker and having a mental health disorder, but not pregnancy complications.
CONCLUSIONS: Compared to women without pregnancy complications, women with GDM, HDP or pregestational DM were more likely to attend primary care visits within 1 year after delivery. Except for women with pregestational DM, fewer than 60 % of women with complicated deliveries attended a visit. Because many women lose insurance coverage within 3 months of delivery, Medicaid expansion policies have potential to improve women's post-pregnancy preventive health care, especially for women at risk of developing chronic diseases.

PREDICTORS OF POTENTIAL BLOOD PRESSURE OVERTREATMENT IN OLDER VETERANS WITH DIABETES Lillian Min[1,2]; TImothy Hofer[1,2]; Robert Holleman[2]; Adam S. Wilk[3,2]; Eve A. Kerr[1,2]. [1]University of Michigan Medical School, Ann Arbor, MI; [2]VA Healthcare Systems, Ann Arbor, MI; [3]University of Michigan School of Public Health, Ann Arbor, MI. (Tracking ID #1636412)

BACKGROUND: We have previously shown that an 80-year-old veteran with diabetes is three times more likely than a 55-year-old veteran to receive potential overtreatment for hypertension. However, we know little about how geriatric-specific co-morbidities and patterns of health care use are associated with overtreatment in older veterans with diabetes.
METHODS: We identified 280,396 veterans age 75+ with diabetes receiving ambulatory care in the Department of Veterans Affairs (VA) over 2 years (8 quarters, July 2009-June 2011) using VA National Central

Data Warehouse data. For the last visit of each quarter, we indexed low blood pressure (BP) visits with BP <130/65 mmHg. To measure the degree of potential overtreatment. for each veteran, we used anti-hypertension medication data to count the number of low-BP visits during which the veteran was also prescribed >=3 classes of BP medications continuously OR had BP regimen intensification within 3 months of the low-BP visit (a count of 8 possible opportunities per veteran). We then examined, using zero-inflated binomial regression, how specific comorbidity and utilization variables were associated with degree of potential overtreatment. Variables were age (in years, range 75–100), count of 21 general medical conditions (e.g., heart disease), count of 8 geriatric conditions (e.g., dementia), ambulatory care use (total specialty and primary care visits), and the intensity of geriatric care utilization (4 categories: general medicine with/without one geriatric consultation visit, geriatric primary care [2+ geriatric clinic visits comprising >50 % of primary care visits], or other combination of geriatric and general primary care visits). We adjusted for time exposure. On a subset of 7,227 of the older veterans who received any new geriatric care (consultation or onset of new primary care) during the 2-year time period, we performed a longitudinal analysis to measure the time relationship between potential overtreatment and onset of new geriatric care.

RESULTS: Nearly one-third (31 %) of the older veterans had a low-BP visit associated with potential overtreatment. Multivariable regression results (Table) showed that each additional year above age 75, both types of co-morbidity, and utilization all predicted greater potential overtreatment ($p<.001$ for all variables). The only protective factor was intensity of geriatric care involvement. Veterans with geriatricians as primary care providers had the least potential overtreatment compared to those with no geriatric care (.44 versus .54 visits with potential overtreatment, on average). All variables were strongly statistically significant ($p<.001$). In the longitudinal analysis, overtreatment risk was increased in the 3 quarters leading up to new geriatric care and decreased in the 3 quarters after new geriatric care.

CONCLUSIONS: Increased age, greater healthcare use, and co-morbidity all contribute to overtreatment. Short-term protection from overtreatment following geriatric clinic care suggests strategies employed by geriatricians may be useful in preventing potential overtreatment of older diabetic patients.

Variables (Effect sizes) Effect on predicted number (mean) of low-BP visits with overtreatment
Age (95 vs 75 years) .63 vs .50
Number of visits (9 vs 2) .54 vs .38
Number of general medical conditions (6 vs 3) .60 vs .40
Number of geriatric conditions (2 vs 0) .54 vs .53
Geriatric care involvement (geriatrics as primary care versus no geriatric care) .44 vs .54
$p<.001$ for all variables in the model

PREDICTORS OF SCHOLARLY SUCCESS AMONG INTERNAL MEDICINE RESIDENTS Leonardo Tamariz; Deidre T. Campbell; Mary Moore; Stephen Symes; Ana M. Palacio. University of Miami, Miami, FL. (Tracking ID #1639967)

BACKGROUND: Many residency programs have structured research curriculums that have reported scholarly success. However, the components that predict this success in a research curriculum are unknown. The aim of this study was to evaluate predictors of scholarly success in a research curriculum among internal medicine residents.

METHODS: We collected information from categorical internal medicine residents and their mentors. Resident data consisted of self-reported demographics, research knowledge using the biostatistical test survey, and USMLE scores. Mentor data consisted of number of publications and federally funded grants. We defined scholarly success as the presentation of the research project on a national meeting or publication in a peer-review journal. We calculated predictors of scholarly success using logistic regression.

RESULTS: We collected information on 156 residents and 53 mentors. The majority of the residents were males (61 %) from 26 to 30 years of age. Third year residents had the highest presentation or publication rate (71 %). Resident data like USMLE and biostatistical knowledge scores were not predictive of scholarly success ($p>0.05$). Number of papers published by the mentor (OR of 1.02; 95 % CI 1.0–1.05; $p=0.03$) and having federally funded grants (OR 6.4; 95 % CI 2.8–14.5; $p<0.01$) predicted scholarly success.

CONCLUSIONS: A research curriculum aids in achieving pre-determined milestones. Mentors play were critical in scholarly success.

Predictors of scholarly success
Predictor Odds ratio (95 % CI) p-value
PYG3 level 8.2(3.2–8.9)<0.01
Female gender 0.63(0.32–1.2)0.19
Foreign medical graduate 0.68(0.33–1.3) 0.28
USMLE score step 1 0.99(0.98–1.0) 0.26
USMLE score step 2 0.99(0.98–1.0) 0.26
Number of publications by mentor 1.02(1.0–1.05) 0.03
Number of mentor federally funded grants 6.44(2.85–14.5) <0.01

PREGNANCY INTENTION AND AMBIVALENCE IN OBESE AND NON-OBESE WOMEN Cynthia H. Chuang[1,2]; Junjia Zhu[2]; Kristen Kjerulff[2]. [1]Penn State College of Medicine, Hershey, PA; [2]Penn State College of Medicine, Hershey, PA. (Tracking ID #1643092)

BACKGROUND: Obese women have been described to be less likely to use contraception, although the reasons for this are unclear. Ambivalence toward future pregnancy (i.e., not sure if you want a future pregnancy or not) has been associated with contraceptive non-use and increased risk for unintended pregnancy. The objective of this study was to describe the future pregnancy intentions and ambivalence toward future pregnancy in obese and non-obese women.

METHODS: Participants of the First Baby Study, a cohort of 3,006 women recruited during the pregnancy of their first child, were interviewed during the 3rd trimester. Women were asked if they were intending another pregnancy in the future (Y/N) and how certain they were about those intentions (certain vs. ambivalent). Logistic regression analysis modeled the outcomes of intention and ambivalence, adjusting for age, race/ethnicity, education, marital status, pregnancy complications, and intendedness of index pregnancy.

RESULTS: There were 607 (20.4 %) obese women participating in the First Baby Study. Intention for future pregnancy did not differ by weight status, with 85.5 % of the sample intending to get pregnant again at some time in the future. However, obese women were more likely to be ambivalent about future pregnancy intentions than non-obese women (48.9 % vs. 42.7 %, $p=0.006$), which persisted in multivariable analysis (adjusted odds ratio 1.23, 95 % CI 1.01–1.50).

CONCLUSIONS: Obese women were more likely to report ambivalence regarding future pregnancy. Since ambivalence has been linked to inconsistent contraceptive behavior, this could partly explain why obese women are at higher risk for contraceptive failure and unintended pregnancy.

PRELIMINARY FINDINGS FROM A RANDOMIZED TRIAL OF A COMMUNITY HEALTH WORKER LED INTERVENTION TO IMPROVE DIABETES INTERMEDIATE OUTCOMES AMONG LATINOS WITH POORLY CONTROLLED DIABETES Olveen Carrasquillo; Sonjia Kenya; Ana M. Palacio. University of Miami, Miami, FL. (Tracking ID #1643294)

BACKGROUND: Diabetes disproportionately impacts Latino population. Community Health Workers are repeatedly highlighted as one approach that may improve cardiovascular and diabetes intermediate outcomes in this population. However, evidence from rigorous RCTs supporting this approach is very limited. We present preliminary findings from our ongoing randomized trial testing this strategy among Latinos with poorly controlled diabetes living in Miami.

METHODS: The Miami Health Heart Initiative is a NHLBI sponsored study that seeks to examine the impact of a comprehensive community health workers intervention on systolic blood pressure among poorly controlled diabetics (A1c >=8.0 %). Following a comprehensive 90 min study intake and phlebotomy eligible Latino patients ages 35–65 year are randomized to usual health care plus health education literature or the CHW intervention. The intervention consists of home visits, phone calls and group education, nutrition and community based exercise sessions. CHWs use a social determinants approach to assist with social/family needs, patient navigation and culturally tailored evidence based health education. At 1 year an RA blinded to group assignment conducts a follow-up evaluation. All three hundred patients have been randomized. In this abstract we present preliminary data on the first 120 who have been followed for 1 year. We use t-testing and linear mixed models to statistically test for the impact of our intervention on our primary outcomes.

RESULTS: Of the first 120 patients, 30 % were from Cuba and others coming from a wide variety of Latin American countries. Study attrition has been 18 % with slightly greater attrition in the control group. Intervention patients have received an average of 6 home visits, 21 completed phone calls and participated in 1.5 groups sessions. Over 80 % of intervention patients have had at least 10 CHW contacts over the course of a year. Feedback from CHWs has been that the program is making a tremendous impact on the lives of many patients. At "graduation ceremonies" held for patients completing the intervention, all have expressed overwhelming support for the program many with emotional testimonials of the major difference the program has made in their lives. As shown in table 1, as compared to the control group, in the intervention arm we have seen slight improvements in SBP and less worsening of A1C and LDL. However, these are very small differences of questionable clinical impact and our study will not be adequately powered to detect such small effect sizes.

CONCLUSIONS: In a highly heterogeneous Latino population, we are not detecting a significant impact of a comprehensive and rigorous CHW intervention on CVD and diabetes clinical outcomes. Our data does not support perceptions by our study staff, subjects randomized to the intervention, and overwhelming expert consensus in support of CHW interventions among Latino diabetics.

MMHI Preliminary findings

	Control	CHW Intervention
HbA1C (%)	Baseline	8.64 8.83
	One Year	9.04 8.90
	Change	+0.40 +.0.07
SBP (mm/Hg)	Baseline	99.9 92.3
	One Year	111.8 99.5
	Change	+11.9 +7.2
Ldl (mg/dl)	Baseline	133.1 131.8
	One Year	133.5 127.8
	Change	+.04 -4.0

PREOPERATIVE HYPERNATREMIA PREDICTS INCREASED PERIOPERATIVE MORBIDITY AND MORTALITY Alexander A. Leung[1]; Finlay A. McAlister[2]; Samuel R. Finlayson[1]; David W. Bates[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]University of Alberta, Edmonton, AB, Canada. (Tracking ID #1624359)

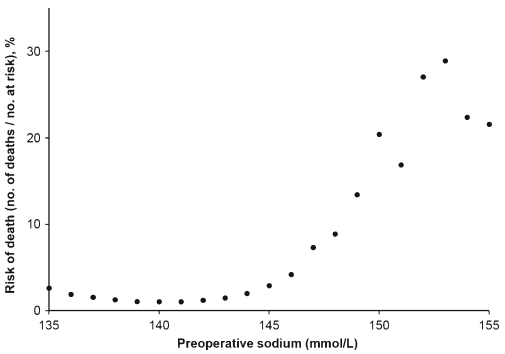
BACKGROUND: Hyponatremia has been linked to adverse perioperative outcomes. However, the prognostic implications of preoperative hypernatremia are unknown. We sought to determine whether preoperative hypernatremia is a predictor of 30-day perioperative morbidity and mortality.

METHODS: We conducted a cohort study using the American College of Surgeons-National Surgical Quality Improvement Program (ACS-NSQIP), and identified 908 869 adult patients undergoing major surgery from approximately 300 hospitals from the years 2005 to 2010, and followed them for 30-day perioperative outcomes, which included death, major coronary events, wound infections, pneumonia, and venous thromboembolism. Multivariable logistic regression was used to estimate the odds of 30-day perioperative outcomes according to the presence of preoperative hypernatremia.

RESULTS: The 20 029 patients (2.2 %) with preoperative hypernatremia (>144 mmmol/L) were compared with the 888 840 patients with a normal baseline sodium (135–144 mmmol/L). Hypernatremia was associated with a higher risk for 30-day mortality (5.2 % vs. 1.3 %; adjusted odds ratio [OR], 1.44; 95 % confidence interval [CI], 1.33–1.56), and this finding was consistent in all subgroups. The risk increased according to the severity of hypernatremia ($p<0.001$ for pairwise comparison for mild [145–148 mmol/L] vs. moderate to severe [>148 mmol/L] categories). Furthermore, hypernatremia was associated with a greater risk for perioperative major coronary events (1.6 % vs. 0.7 %; adjusted OR, 1.16; 95 % CI, 1.03–1.32), pneumonia (3.4 % vs. 1.5 %; adjusted OR, 1.23; 95 % CI, 1.13–1.34), and venous thromboembolism (1.8 % vs. 0.9 %; aOR, 1.28; 95 % CI, 1.14 to 1.42).

CONCLUSIONS: Preoperative hypernatremia is associated with increased perioperative 30-day morbidity and mortality.

Risk of 30-day perioperative mortality according to preoperative sodium level



PREPARING PRACTICES TO BE PATIENT-CENTERED MEDICAL HOMES: PATIENT INTEREST IN SELF-MANAGEMENT SUPPORT PROGRAMS Christopher Sciamanna[1]; Vijay A. Patel[1]; Jennifer Kraschnewski[1]; Dino A. Messina[2]; Heather Stuckey[1]; William J. Curry[1]; Cynthia H. Chuang[1]; Lisa L. Sherwood[1]; Stacy L. Hess1. [1]Penn State Hershey, Hershey, PA; [2]Danbury Hospital, Danbury, CT. (Tracking ID #1623965)

BACKGROUND: To qualify as a Patient-Centered Medical Home, practices will need to support patient self-management, yet few studies have examined the interest of primary care patients. This study determined the interest of primary care patients in participating in a range of self-management programs.

METHODS: Cross-sectional survey of 483 consecutive primary care patients, assessing interest in six self-management programs, focusing on weight, stress and physical activity.

RESULTS: Interest in programs ranged from 36.3 % (group walking) to 55.3 % (group strength training). The average patient was interested in 2.7 (Standard Deviation; SD=2.2) programs and 71 % were interested in at least one program. Those reporting more days of poor physical health were more interested in the strength training program [OR=2.3 (95 % CI; 1.1–4.5)], those reporting more days of poor mental health were more interested in the online stress reduction program [OR=6.5 (95 % CI; 3.1–13.7)] and obese individuals were more interested in a group weight control program [OR=22.0 (95%CI; 9.5–50.7)], than those with a normal weight. Individuals with hypertension, diabetes and high cholesterol were no more interested in participating in any program, after adjusting for potential confounders.

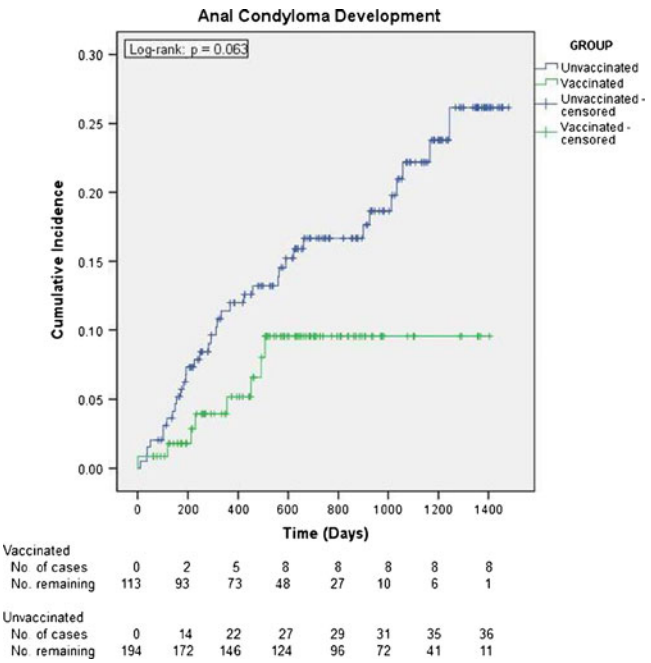
CONCLUSIONS: Self-management programs are of great interest to primary care patients and should be considered as a method for addressing the self-management support standards for Patient-Centered Medical Homes. Self-referral may be more appropriate for some programs (e.g., stress reduction for patients with poor mental health) than for others (e.g., physical activity for patients with hypertension).

PRESCRIBING PEDOMETERS IN A SAFETY-NET HEALTH SYSTEM: PILOT AND FEASIBILITY STUDY RESULTS Ann S. Barnes. Baylor College of Medicine, Houston, TX. (Tracking ID #1642408)

BACKGROUND: Physical inactivity is associated with obesity, cardiovascular disease, diabetes, and some cancers. Evidence suggests that even modest levels of light to moderate physical activity can reduce cardiovascular disease risk. While most Americans do not engage in adequate physical activity levels, low-income individuals are even less likely than their more affluent counterparts to report adherence to recommended levels. Studies have shown that physician counseling, prescriptions for exercise, and pedometers have resulted in increases in patient physical activity levels. Likewise, studies have shown that pharmacists can successfully be a part of multi-modal efforts to counsel patients on healthy lifestyle changes. The purpose of this pilot study was to determine the feasibility of 1) having physicians in a busy, safety-net, out-patient clinical practice prescribe pedometers to adult patients deemed safe for low-level physical activity (walking); 2) having patients redeem a pedometer prescription (free of charge) at the on-site pharmacy; and 3) having pharmacists engage in physical activity and pedometer counseling with patients.
METHODS: An uncontrolled clinical trial design was used for this pilot and feasibility project. All physicians from 2 out-patient health centers within a large safety-net health system in the southeast United States were invited to introduce the benefits of walking to their adult patients and to prescribe a pedometer to help their patient monitor and carry out the physical activity recommendation. The pedometer prescription was embedded within the electronic medical record formulary so that the intervention fit within usual provider work-flow. Patients filled the pedometer prescription as they would any other prescription within the health center pharmacy system. Pharmacists provided brief counseling on how to use the pedometer, how to increase steps, and they provided patients with a flier about physical activity classes offered within the health system and a step-log with a self-addressed stamped envelope that could be returned to the study's principal investigator. Both the physicians and the pharmacists were provided with brief scripts to assist them with communicating with their patients. Neither physicians, nor pharmacists, nor patients were provided with incentives for participation.
RESULTS: Between February 2010 and December 2010, 750 pedometers were prescribed by the two participating clinics. All physicians caring for adult patients wrote at least one pedometer prescription during the study period. Of the 750 prescriptions written, 603 were filled in the pharmacy (80 % filled). Eleven percent of participating patients returned their completed step log by mail.
CONCLUSIONS: This small pilot study demonstrates that it is feasible in a safety-net health system for busy, primary care providers to engage their patients in counseling about physical activity and to prescribe a pedometer. It also shows that the majority of patients who are given a pedometer prescription by their doctor will fill the prescription to get the device. Lastly, the pilot shows that non-traditional health promotion providers– pharmacists– are willing and able to offer health promotion advice about physical activity to patients in the context of filling patient pedometer prescriptions.

PREVENTION OF ANAL CONDYLOMA WITH QUADRIVALENT HUMAN PAPILLOMAVIRUS VACCINATION OF OLDER MEN WHO HAVE SEX WITH MEN: A NONCONCURRENT COHORT STUDY Kristin Swedish[1]; Stephen E. Goldstone[2]. [1]Montefiore Medical Center, Bronx, NY; [2]Mount Sinai School of Medicine, New York, NY. (Tracking ID #1641467)

BACKGROUND: The quadrivalent human papillomavirus vaccine (qHPV) is FDA-approved for use in males 9 to 26 years old to prevent anogenital condyloma. QHPV has been shown to decrease anal and cervical high-grade dysplasia recurrence post treatment. The objective of this study is to determine if qHPV is effective at preventing anal condyloma among MSM 26 years of age and older.
METHODS: This nonconcurrent cohort study evaluated HIV-negative MSM patients aged 26 and older seen in a single anorectal surgery practice in New York City during 2007–2010. Patients either had no history of anal condyloma or had previously-treated anal condyloma recurrence-free for at least 12 months prior to vaccination/time zero. We determined the recurrence rate of anal condyloma in vaccinated versus unvaccinated patients.
RESULTS: Of 308 eligible patients, 114 (37 %) patients had received the full 3-dose qHPV vaccine electively; 194 (63 %) were unvaccinated. One hundred ten (35.7 %) patients had history of anal condyloma. Vaccinated patients were significantly younger than unvaccinated patients (vaccinated mean age 38.5 +/− 7.4 years, unvaccinated mean age 44.2 +/−10.4, $p<0.001$) and were more likely to test positive for oncogenic HPV within 8 months prior to study entry (vaccinated 43.9 %, unvaccinated 33.5 %, $p=0.03$). Groups were comparable in respect to race/ethnicity; insurance type; smoking status; history of anal condyloma; history of high-grade anal intraepithelial neoplasia; and history of gonorrhea, chlamydia, and syphilis. The incidence of anal condyloma among vaccinated patients was 4.6 per 100 person-years; the incidence among unvaccinated patients was 8.7 per 100 person-years. After adjustment for history of anal condyloma and oncogenic HPV status, qHPV was associated with decreased risk of anal condyloma development, though did not reach significance (hazard ratio 0.47; 95 % confidence interval 0.22–1.04; $p=0.063$).
CONCLUSIONS: Among MSM 26 years of age and older with and without history of anal condyloma, qHPV appears to reduce the risk of anal condyloma development and the risk of recurrence in those who had been condyloma-free for at least 1 year prior to vaccination. A randomized controlled trial is needed to confirm these findings in this age group.
Time to development of anal condyloma among vaccinated and unvaccinated MSM 26 years of age and older, New York City, April 2007 - April 2011 ($N=308$).



PRIMARY CARE CLAIMS EXPERIENCE OF MASSACHUSETTS MALPRACTICE INSURERS: LESSONS FOR IMPROVING SAFETY AND REDUCING RISK Gordon D. Schiff[1,5]; Ann Louise Puopolo[3]; Anne Huben-Kearney[4]; Carol Keohane[3]; Peggy McDonough[4]; Ellis R. Bonnie[4]; David W. Bates[1,5]; Madeleine Biondolillo[2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Massachusetts Department of Public Health, Boston, MA; [3]CRICO/Risk Management Foundation, Boston, MA; [4]Coverys, Boston, MA; 5Harvard Medical School, Boston, MA. (Tracking ID #1641654)

BACKGROUND: Despite prior focus on high-impact inpatient cases, the outpatient setting, particularly primary care, is increasingly recognized as a major contributor to malpractice claims and risk. In order to study outpatient malpractice experience and identify areas for improvement, the Massachusetts Department of Public Health, leading academic and safety partners, and the state's two leading malpractice insurers came together to share data and lessons from primary care malpractice cases as part of an AHRQ-funded malpractice reduction initiative.
METHODS: Databases from the two insurers were queried for all claims closed during the 5 years between 2004 and 2009 that involved adult primary care physicians and practices. For each year, statistical analyses were performed on the number of closed claims, patient diagnosis, physician named, disposition of case, classification of breakdown in the process of care (e.g. diagnosis, medication), and subclass of the alleged breakdown (e.g. for diagnosis: history/physical/evaluation of symptoms, ordering of tests, test interpretation, etc.). Statistical t-tests of comparison between outcomes of primary care vs. non-primary care cases were also performed using SAS.
RESULTS: During the study period, an average of 3,305 general medical staff/fellow physicians were covered by the two insurers, and 551 malpractice claims involving 595 physicians were registered, giving an overall rate of 3.3 cases per year per 100 physicians covered. A total of 595 physicians were named in these 551 cases. Breakdown in care processes occurred most frequently in the following areas: diagnosis (397 cases; 72.1 %), medication management (66 cases; 12.3 %), other medical treatment (41 cases; 7.4 %), communication (15 cases; 2.7 %), patient rights (8 cases; 1.5 %), and patient safety/security (8 cases; 1.5 %). Leading diagnoses involved in cases were cancer (190), heart diseases (48), blood vessel diseases (27), infections (22), and CVA (16). Notably, among cancer cases, 129 (68 %) were one of four cancers: colorectal, lung, prostate, and breast. Each of these leading cancers had a distinctive pattern and frequency of breakdown points and patient characteristics; for example, among 56 colorectal cancer cases with allegations related to diagnosis error 9 patients (16 %) were 49 years old or younger. Ambulatory cases were also significantly more likely to be settled (35 % vs. 20 %), or result in plaintiff verdict (2 % vs. 1 %) compared to non-general medical malpractice claims.
CONCLUSIONS: Review of malpractice claims for primary care physicians in Massachusetts showed that such cases represent a substantial burden, and point to key areas of system failure and patient risk. Failure or delays in diagnosis, particularly breast, lung, colorectal, and prostate cancers, accounted for the most cases, and each had its own patterns of failure distribution. Targeting routine outpatient processes that create vulnerabilities to these types of adverse patient outcomes represents a priority for preventing both patient harm and associated malpractice lawsuits, especially as they appear to be more difficult to defend.

PRIMARY CARE INTERNAL MEDICINE WORKLOAD OUTSIDE THE CLINIC ENCOUNTER: A VOLUME/TIME STUDY Lori A. Brown; Neil J. Farber; Jessica J. Chen; John Fontanesi. UCSD, La Jolla, CA. (Tracking ID #1631884)

BACKGROUND: Primary care practices are besieged by increasing demands including changes of workflow and scope of work brought about by electronic medical records (EMRs). Previous studies have examined the changes in physician workload and scope of work using survey instruments or administrative data to examine these changes. However, these studies likely under-represent what is now expected of academic practicing physicians. This study attempts to capture a more complete picture of the workload and scope of work of physicians working with an EMR in an academic setting by combining direct workflow observations with time analysis of activities outside of the clinic.
METHODS: This study was part of larger data acquisition for a quality improvement initiative conducted at the Internal Medicine Group (IMG) of the University of California, San Diego in March, 2011. The study included standardized direct workflow observations of patients, staff, and physician. Data included detailed time-motion analyses of EMR activities including E-prescriptions, E-mail, lab imaging consultations, and documentation functions. Volume of extra-clinical patient care activities are logged into and date and time-stamped by the EMR, captured via administrative logs for each physician for a 90 day period. Data reflecting each physician's percent of time in clinical activities was converted to a full time equivalent (FTE), and a multiplier of the FTE was applied to the number of tasks performed. The converted numbers of tasks then converted to hours per categorical task per 90 day period. Using U.S. Bureau of Statistics, the 90 day periods were converted into annualized hours per task category. Using the assumption of 18.5 workdays/ month, with each workday 8.1 h long, the annualized hours were converted to an average clinical workday. The gender and part-time vs. full-time status of the physicians were compared with the results of the workload data via student's T-tests.
RESULTS: For every 8 h of direct patient care time, physicians spent an average of 3:55 h (3:00–4:10 h) engaged in various forms of documenting and responding to clinical communications. Phone call accounted for 1:40 h of time (1:33–1:68 h), with assessing laboratory results accounting for 0:73 h (0:57–0:95 h) and e-prescriptions accounting for 0:54 h (0:51–0:66). No significant effects were seen for gender or work status of the physicians in this study.
CONCLUSIONS: Academic primary care general internal medicine physicians in this study spend a significant percentage of time in responding to communications and documenting the management of their patient's health outside of the clinical encounter when utilizing EMRs and workload is unrelated to gender of the physician and work status. Particularly with impending shortages of U.S. primary care physicians and data indicating burnout in primary care, there is an urgent need to address the large amount of physician's workload occurring outside the clinical encounter. In addition, competing demands on academic general internists with teaching and scholarly pursuits can make it difficult to continuously monitor patient care activities occurring outside the patient visit. Academic general internal medicine clinic directors should consider addressing potential changes in workflow particularly in this setting.

PRIMARY CARE PHYSICIAN-DEFINED COMPLEXITY AND OUTPATIENT CHARLSON SCORE AS PREDICTORS OF HEALTH CARE UTILIZATION Clemens S. Hong[1]; Richard W. Grant[2]; Yuchiao Chang[1]; Jeffrey M. Ashburner[1]; Wei He[1]; Timothy Ferris[1]; Steven J. Atlas[1]. [1]Massachusetts General Hospital, Boston, MA; [2]Kaiser Permanent, Division of Research, Oakland, CA. (Tracking ID #1642668)

BACKGROUND: Health system redesign efforts increasingly focus on patients with complex health needs. We evaluated a previously validated predictive algorithm for physician-defined complexity (PDC), alone, and in combination with complexity defined using outpatient Charlson score, as predictors of primary care (PC) and acute care utilization.
METHODS: We applied the PDC predictive algorithm and outpatient Charlson score to a 2007 cohort of 143,372 PC patients in an academic primary care network. We defined complex patients using each algorithm. We used a risk score threshold for PDC that reflected maximized model accuracy (15.7 % of patients complex), and an outpatient Charlson score threshold of ≥3 (18.9 % of patients complex). We investigated PC and acute care utilization outcomes over the subsequent 4 years comparing three classifications of patient complexity: 1) complex by Charlson, but not PDC (Ch), 2) complex by PDC, but not Charlson (P), and 4) complex by both Charlson and PDC (ChP).
RESULTS: Over 75 % (108,081) of PC patients were not complex by either algorithm; 14.6 % (20,977) of patients were complex by only one algorithm (8.8 % in the Ch group and 5.8 % in the PDC group); 10.0 % (14,314) were complex by both algorithms. Table 1 shows patient characteristics of the 4 complexity groups. Compared to the Ch group (12.7 visits), P group patients (8.8 visits, $p<0.01$) visited their PC practice less and ChP patients (14.7 visits, $p<0.01$) visited their PC practice more frequently over 4 years. On average, PDC patients made a greater number of ED visits (0.8 v 0.5 visits, $P<0.01$) and were hospitalized more (0.5 v 0.4 admits, $P<0.01$), but there was no difference in the number of 30-day readmissions (0.06 v 0.05 $P=0.10$) in 4 years of

follow-up. However, a statistically significant difference in 30-day readmissions with the same directional trend was seen at 2 and 3 years (data not shown). ChP patients made a greater number of ED visits (0.9 v 0.5 visits, $P<0.01$), were hospitalized more often (1.2 v 0.4 admits, $P<0.01$) and had more frequent 30-day readmission (0.20 v 0.05 admits, $P<0.01$).

CONCLUSIONS: Physician-defined complexity is a distinct construct from complexity defined by Charlson score, with 14.6 % of all patients defined as complex by only one of the two algorithms. PDC is correlated with decreased primary care engagement and increased acute care utilization in unadjusted analyses compared to Charlson-defined complexity. The complexity cohort defined by both algorithms appears to be at even higher risk for acute care utilization. PDC may enhance current risk prediction approaches and help identify complex patients that are both at high risk for future acute care utilization and challenging for physicians to manage.

Table 1: Patient Characteristics and Healthcare Utilization Outcomes in 3 Complexity Groups

Variable	Complex By Charlson (Ch) N=12,723	Complex By PDC (P) N=8,254	Complex by Both (ChP) N=14,314	P-value PDC vs Ch	P-value ChP vs Ch
Mean Age (years)	59.5	57.5	68.2	<0.01	<0.01
% Women	53.5	65.0	55.0	<0.01	<0.01
% Non-White	16.3	29.6	19.1	<0.01	0.01
% Commercial Insurance	56.1	34.4	25.1	<0.01	<0.01
% Limited English Proficiency	6.2	15.9	10.5	<0.01	<0.01
CBG* Median Household Income ($)	64337	49675	55304	<0.01	<0.01
# Primary Care Visits	12.7	8.8	14.7	<0.01	<0.01
# Emergency Department Visits	0.5	0.8	0.9	<0.01	<0.01
# Readmissions (within 30 day of discharge)	0.05	0.06	0.2	0.10	<0.01
# Hospitalizations	0.4	0.5	1.2	<0.01	<0.01

*CBG = Census Block Group

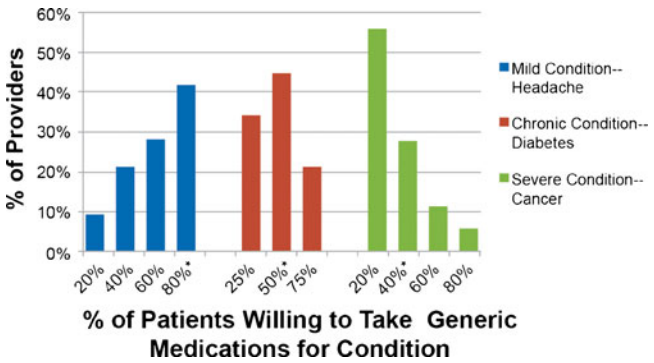
PRIMARY CARE PROVIDER AWARENESS OF THE PREVALENCE OF BELIEFS ABOUT GENERIC MEDICATIONS AMONG PATIENTS Kristin Whitely; Susan J. Andreae; Monika Safford. University of Alabama at Birmingham, Birmingham, AL. (Tracking ID #1637328)

BACKGROUND: Medication adherence plays a vital role in the effective treatment of chronic illness, yet previous studies suggest that more than half of patients with chronic illnesses do not take their medications as directed. Among the hypothesized barriers to adherence include cost. This is especially relevant in the Southeast, where both chronic disease and poverty are more prevalent than elsewhere in the U.S. Findings from our previous study, which surveyed a sample of Southeastern patients with chronic diseases, indicated that many patients in this population might hold misconceptions regarding generic medications despite their cost-related benefits. Primary care providers could address such concerns directly, yet no studies have examined provider awareness of these misperceptions. Therefore, we surveyed practicing primary care physicians in the Southeast to assess provider awareness regarding patient misperceptions of generic medications.

METHODS: We developed an online, case-based, educational module on generic medications as part of an ongoing continuing medical education (CME) program targeted at a network of primary care physicians, physicians' assistants, and nurses practicing in Mississippi and Alabama that receive monthly education modules for CME credits. Based on a previously completed survey of beliefs of Southeastern primary care patients with chronic medical conditions, the 11-item pre-test assessed providers' estimates of the prevalence of beliefs in their patients. Completed prior to the education module, the survey asked providers to estimate the prevalence of patient beliefs about issues such as the efficacy and side effects of generic medications and patients' willingness to use generics for various medical conditions. We contrasted primary care provider estimates with the actual prevalence reported on the patient survey.

RESULTS: There were 161 respondents to the provider survey. Overall, only 43 % of providers correctly estimated the prevalence of patient beliefs: 50 % of patients believed that generics were less efficacious than brand name medications, and 49 % of providers correctly estimated this prevalence; 50 % of patients believed that generics have more side effects, and 58 % of providers correctly estimated this prevalence (see also Figure).

CONCLUSIONS: Fewer than half of these Southeastern primary care providers accurately estimated the prevalence of beliefs about generic medications among Southeastern patients. Greater awareness of patient beliefs about generic medications among these providers could enhance the uptake of generic medications in this population. These findings may be useful for the design of future interventions aiming to increase utilization of generic medications in the rural Southeast, which would alleviate cost as a barrier to medication adherence.



PRIOR INCARCERATION IS ASSOCIATED WITH DISTRUST IN THE HEALTH CARE SYSTEM BUT NOT WITH TRUST IN HEALTH CARE PROVIDERS Aaron D. Fox; Joanna L. Starrels; Chinazo Cunningham. Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1640728)

BACKGROUND: To optimize engagement in health care, patients must trust their provider and the health care system. In buprenorphine treatment for opioid dependence, patients must trust their providers enough to disclose sensitive information such as ongoing drug use. Frequently in the United States, incarceration co-occurs with opioid dependence, and the negative experiences of incarceration may engender mistrust. Further, experts recommend that patients who are court-mandated to substance abuse treatment be treated in integrated care where treatment providers report directly to the criminal justice system; however, this may also compromise trust. In this study, we investigated prior incarceration and levels of trust, hypothesizing that trust would be lower in those with a history of incarceration than in those without.

METHODS: We conducted a cross-sectional study of opioid-dependent individuals who initiated buprenorphine treatment at an urban community health center. Treatment providers did not report directly to the criminal justice system. Questionnaires assessed demographic information, substance use, health status, prior incarceration, and two measures of trust. Dependent variables were: (1) trust in health care provider and (2) distrust in the health care system. For each trust variable, participants rated seven statements using a 5-point scale (1=strongly disagree, 5=strongly agree), and we used the mean of these seven items as a summary score. There were two main independent variables: (1) any incarceration (≥ 3 days within lifetime; yes/no) and (2) recent incarceration (≥ 1 day in the previous 30 days; yes/no). We tested the associations between each independent and dependent variable using four separate linear regression models, adjusting for demographic and clinical covariates that were associated with the independent variables in bivariate testing.

RESULTS: Of the 91 participants, most were male (74 %), Hispanic (69 %), and unstably housed (62 %). Thirty percent were HIV-positive, and the mean age was 44 years. Any incarceration occurred in 64 (70 %), and of these, 14 (15 %) had recently been incarcerated. Those with any incarceration were more likely to be male and unstably housed than those

without. Overall, trust in health care provider was high (3.48±0.56, mean ± SD) but distrust in the health care system (3.30±0.94) was also high. In unadjusted analyses, any (vs. no) incarceration was associated with greater distrust in the health care system (3.45±0.95 vs. 2.95±0.83, p=0.01), but was not associated with trust in health care provider (3.60±0.60 vs. 3.66±0.57, NS). Recent (vs. no) incarceration was also associated with distrust in the health care system (3.84±0.74 vs. 3.21±0.94, p=0.02), but was not associated with trust in health care provider (3.36±0.64 vs. 3.66±0.69, NS). Adjustment for covariates did not change significance.
CONCLUSIONS: Prior incarceration was common in this cohort of buprenorphine-treated patients. Distrust in the health care system was high and significantly associated with prior incarceration, while trust in one's health care provider was high regardless of prior incarceration. The potential for negatively impacting this high level of trust by requiring providers to report directly to the criminal justice system should be evaluated before integrated models of court-mandated substance abuse treatment are fully implemented.

PRIVATE FOR-PROFIT OPIOID TREATMENT PROGRAMS PROVIDE FEWER COMPREHENSIVE SERVICES THAN NON-PROFIT AND PUBLIC PROGRAMS Marcus A. Bachhuber[1]; William Southern[2]; Chinazo Cunningham[1]. [1]Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, NY; [2]Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1625676)

BACKGROUND: Skyrocketing rates of opioid addiction in the US have triggered a renewed interest in opioid treatment programs (OTPs). In addition, health reform may result in increased funding for OTPs. This funding could be distributed to private for-profit and private non-profit OTPs, or used for expansion of government-run (public) OTPs. Private for-profit OTPs may increase profits by withholding potentially beneficial services that are not reimbursed by insurance plans. To examine the relationship between ownership and services offered, we compared private for-profit, private non-profit, and public OTPs.
METHODS: We conducted a cross-sectional analysis of the 2010 National Survey of Substance Abuse Treatment Services, a voluntary nationwide survey of all US drug treatment programs. We examined five services by self-reported OTP ownership, (1) screening for co-occurring infectious diseases (HIV, sexually transmitted infections, and viral hepatitis), (2) provision of mental health care, and ancillary support with (3) social services, (4) employment, and (5) housing. We first conducted bivariate analyses comparing services offered by ownership status; then, we developed multivariable logistic regression models to examine whether differences found were due to differing epidemiologic needs. When examining whether OTPs screened for co-occurring infectious diseases, we adjusted for county-level rates of HIV, sexually transmitted infections, hepatitis C, and treatment admissions for injection drug use. For provision of mental health services, we adjusted for measures of county mental health (mean number of emotionally unhealthy days for adults and percent reporting inadequate social/emotional support) and number of mental health professionals per 100 000 persons. For provision of ancillary support, we adjusted for county-level social (proportion of persons with disabilities, veterans, high school graduates, and single-parent households), economic (proportion unemployed, under the poverty line, receiving public assistance, and receiving food assistance), and housing measures (proportion of persons who moved in the past year, renters spending >35 % of income on rent, and proportion of vacant housing units).
RESULTS: Of 1 039 OTPs offering outpatient services, 56.0 % were for-profit, 34.4 % were non-profit, and 9.6 % were public. In logistic regression models, public OTPs were more likely than for-profit OTPs to screen for infectious diseases (OR: 4.0, 95 % CI: 2.5–6.5), provide mental health assessment and treatment (OR: 21.4, 95 % CI: 12.4–36.9), provide assistance with social services (OR: 3.1, 95 % CI: 1.9–5.3), employment (OR: 1.9, 95 % CI: 1.2–2.9), and housing (OR: 2.0, 95 % CI: 1.2–3.4). Non-profit OTPs were also more likely than for-profit OTPs to screen for infectious diseases (OR: 2.1, 95 % CI: 1.5–2.8), provide mental health assessment and treatment (OR: 7.2, 95 % CI: 4.6–11.3), and provide assistance with social services (OR: 2.8, 95 % CI: 2.0–3.8), but not more likely to provide assistance with employment (OR: 0.9, 95 % CI: 0.6–1.2), or housing (OR: 1.2, 95 % CI: 0.9–1.7).
CONCLUSIONS: For-profit OTPs were less likely to provide comprehensive services than both non-profit and public OTPs. These differences persisted after adjusting for measures of epidemiologic need. Our findings suggest that investment in non-profit and public OTPs may more effectively increase the availability of comprehensive services to opioid-dependent patients.

PROACTIVE TOBACCO TREATMENT AND POPULATION-LEVEL CESSATION: A PRAGMATIC RANDOMIZED CONTROLLED TRIAL Steven Fu[1,2]; Michelle van Ryn[5]; Scott Sherman[3,4]; Diana Burgess[1,2]; Siamak Noorbaloochi[1,2]; Barbara Clothier[1]; Brent C. Taylor[1]; Anne Joseph[2]. [1]Minneapolis VA Health Care System, Minneapolis, MN; [2]University of Minnesota Medical School, Minneapolis, MN; [3]New York Harbor VA Health Care System, New York City, NY; [4]New York University School of Medicine, New York City, NY; [5]University of Minnesota Medical School, Minneapolis, MN. (Tracking ID #1637966)

BACKGROUND: Current tobacco use treatment approaches are reactive and require smokers to initiate treatment or depend on the provider to initiate smoking cessation care. As a result, most smokers do not receive evidence-based treatments for tobacco use that include intensive behavioral counseling and pharmacotherapy. Proactive tobacco treatment integrates population-based and individual-level treatment strategies to address both patient and provider barriers to tobacco cessation care. The primary objectives of this study was to assess the effect of a proactive care intervention on population-level smoking abstinence rates (i.e., abstinence among all smokers including those who use and do not use treatment) and on use of evidence-based tobacco treatments compared to reactive/usual care among a diverse population of current smokers
METHODS: We identified a population-based registry of current smokers from four Veterans Health Administration (VHA) facilities using the VHA electronic medical record health, who were randomized to proactive care or usual care. The proactive care intervention combines: (1) proactive outreach and (2) offer of choice of smoking cessation services (telephone or face-to-face). Proactive outreach included a mailed invitations followed by telephone outreach (up to 6 call attempts) to motivate smokers to seek treatment with choice of services. Because this study was testing proactive outreach, smokers were randomized prior to contact and a baseline survey was administered after randomization using a multiple-wave mailed questionnaire protocol. Outcomes from both groups were collected 12 months post-randomization from participant surveys and from VHA administrative databases. The primary outcome was population-level cessation at 1 year using a self-reported, 6-month prolonged smoking abstinence measure.
RESULTS: Current smokers (N=6400, 1600 per site) as identified by the electronic medical record were randomly assigned to proactive care or usual care with an allocation ratio of 1:1 within each site and mailed a baseline survey. The sample was diverse; 28 % African American, 62 % Caucasian, 4 % other race, and 4 % unknown race. Seven percent were of Hispanic ethnicity. In the proactive care intervention group, 2519 were mailed outreach invitation materials. During telephone outreach, 1556 (62 %) were successfully contacted. Of the participants mailed an outreach invitation packet, 392 (16 %) elected VA telephone coaching and 77 (3 %) elected in-person smoking cessation services at their VA Medical Center. The follow-up survey response rate was 67 %. We observed a significant increase in the population-level cessation rate of 2.6 %. The population-level cessation rate at 1 year was 13.4 % for proactive care compared to 10.8 % for usual care (p=0.025). In generalized linear mixed model analysis, proactive care resulted in increased odds of population-level cessation, OR=1.274 (1.033, 1.571). In additional analyses incorporating multiple imputation to estimate missing outcome measures and adjusting

for baseline group differences in age of smoking initiation, and length of prior quit attempts, the effect of proactive care on population-level cessation persisted, OR=1.220 (1.002, 1.484).
CONCLUSIONS: Population-based proactive tobacco treatment using proactive outreach to connect smokers to evidence-based telephone or in-person smoking cessation services is effective for increasing long-term population-level cessation rates.

PROGRAM LEVEL PREDICTORS OF INTERNAL MEDICINE BOARD PASS RATES Manas Kaushik[1]; Malavika Subramanyam[2]; Ashish Upadhyay[1]; Ananya Roy[3]. [1]Boston Unviersity School of Medicine, Boston, MA; [2]Indian Institute of Public Health, Gandhinagar, India; [3]Yale School of Public Health, New Haven, CT. (Tracking ID #1621950)

BACKGROUND: Aggregate pass rate of residents in American Board of Internal Medicine (ABIM) certifying exam is an indicator of residency program performance. We explored state wise and regional variation in pass rates and hypothesized that program level factors influence the aggregate performance of residents.
METHODS: We utilized prospectively collected administrative data by American Medical Association and Accreditation Council for Graduate Medical Education (ACGME) on 359 non-military, internal medicine residency programs from which residents appeared on the American Board of Internal Medicine examination in 2004–2006 and 2007–2009. We used generalized estimating equations (GEE) in SAS 9.2.
RESULTS: Mean program board pass rates varied significantly by region (West: 89.1 %, South: 90.3 %, Midwest: 92.1 %, Northeast: 92.6 %). In fully adjusted model, the program level pass rates were 2 % lower for each withdrawn sub-specialties and 0.8 % lower for each PD change. ACGME accreditation cycle length and proportion of preliminary residents were significantly associated with program pass rates.
CONCLUSIONS: Program size can limit the utility of board pass rates to be used as continuous program accreditation. Stability in program leadership and sub-specialty programs is associated, independent of ACGME's summary accreditation evaluation, with better resident preparation for delivering better patient outcomes and care.
Table 1: Multivariate adjusted predictors of program level passrates
Estimate CI p-value
Community based programs 1.91 -0.15,3.98 0.06
Community based, University affiliated programs 1.12 -0.63,2.88 0.2
ACGME approved residency positions −0.06 -0.12,0.01 0.09
Number of PGY1 categorical residents 0.32 0.12,0.52 0.002
ACGME Cycle length (2007) 0.63 0.25,1.01 0.0012
Number of medical subspecialties 0.25 0.01,0.49 0.037
Number of programs with new IM subspecialty programs in 2003–2009 -0.34 -1.86,1.19 0.6
Number of programs that had withdrawn IM subspecialty programs 2003–2009 -2.06 -3.69,-0.43 0.013
Number of programs with >1 PDs in 2003–2009 -0.8 -1.54,-0.06 0.034
Moonlighting allowed −0.71 -3.3,1.88 0.59

PROMOTING COLORECTAL CANCER SCREENING AMONG URBAN AMERICAN INDIAN AND ALASKA NATIVE ELDERS: IDENTIFYING AND ADDRESSING CULTURAL ISSUES, KNOWLEDGE AND BELIEFS RELATED TO COLORECTAL CANCER AND SCREENING Shin-Ping Tu[3]; Deborah Bassett[1]; Emily R. Van Dyke[2]. [1]University of Pennsylvania, Philadelphia, PA; [2]University of Washington School of Public Health, Seattle, WA; [3]University of Washington, Seattle, WA. (Tracking ID #1624529)

BACKGROUND: Colorectal cancer (CRC) is a leading cause of cancer deaths among American Indian/Alaska Natives (AI/ANs). AI/ANs are twice as likely to be diagnosed with advanced CRC compared to non-Hispanic Whites. 50–60 % of CRC deaths can be prevented if adults aged 50 or older receive routine screening. While overall cancer mortality has declined between 1.4 and 3 % per year over the last decade, cancer mortality has not declined among AI/ANs. To promote CRC screening among AI/ANs, we examined cultural context, knowledge, and beliefs about CRC and CRC screening among urban AI/AN Elders.
METHODS: Seven focus groups were conducted in two urban settings in the Pacific Northwest (N=46) to adapt an evidence-based CRC screening intervention to urban AI/AN patients. Facilitators used field guides to discuss participant awareness and concerns about CRC and CRC screening. Our analyses consisted of examining each communicative event using ethnography of communication and Hymes' 1962 SPEAKING framework, which is a heuristic aid that enables analysis of various components of a communicative interaction. This method has been used effectively in many cultural settings to elucidate a rich understanding of communicative events. Focus group transcripts and contextual notes comprised the datasets that were analyzed using speech codes theory (SCT). Based on six propositions, SCT asserts that in any instance of communicative conduct, elements of a speech code are present and are identifiable through the speech of its users. This code reveals beliefs, premises, and rules about psychology, sociology, and the appropriate use of communicative conduct within a given speech community. Findings from the analysis of these datasets were based on the observation of repeated occurrences of components of communicative conduct, which suggest a pattern in the data rather than a single instance. We then distilled elements of speech codes that were used and understood by the focus group participants into a set of themes that elucidate a shared way of speaking about colorectal cancer among these urban AI/AN Elders.
RESULTS: Based on descriptive content thematic analysis, Table 1 summarizes common focus group themes. We identified several shared cultural norms with respect to talking about health, CRC, and cancer screening. These included norms about the use of silence and of humor by both men and women as an indicator of discomfort with a topic. These norms also revealed the importance of contextualizing CRC screening as a means of preserving AI/AN culture by prolonging the lives of AI/AN Elders so that they can share their traditions with future generations.
CONCLUSIONS: Themes identified through pre-intervention focus groups guided each step of the patient educational materials development process. Using this applied CBPR model, we created unique and compelling culturally-appropriate educational materials to encourage CRC screening among AI/AN Elders.
Table 1: Themes Identified in Seven Pre-Intervention Patient Focus Groups
Desire for educational materials specifically about AI/ANs and designed by AI/ANs
Importance of emphasizing the potential benefits of CRC screening to the patient's family and community rather than focusing on the potential to reduce individual mortality
Importance of showing that traditional ways of living in harmony on the Medicine Wheel can be achieved through health maintenance including a \"traditional\" diet, exercise, and cancer screening
Fear of death and dying leading to preference for not knowing earlier than necessary about cancer diagnosis
Aversion to CRC screening modalities due to previous abuse and resultant shame and embarrassment
Among male respondents, assumption that CRC screening requires digital rectal exam, which leads to fear that getting screened for CRC might cause questioning of their sexuality
Tension between knowing that a healthy diet, regular exercise, and regular health care will promote long-term health and difficulty accessing and affording healthy food, safe exercise spaces, and medical care
Anger over lack of access to colonoscopies given high cancer mortality among AI/ANs
Need and desire for patient advocates and outreach services to make CRC screening more readily accessible

PROMOTING LEARNER-CENTERED EDUCATION IN MORNING REPORTS Leah Tudtud-Hans; Sam Baz; Lawrence Loo. Loma Linda University School of Medicine, Loma Linda, CA. (Tracking ID #1633809)

BACKGROUND: In November 2011, the Liaison Committee on Medical Education (LCME) revised its Educational Standard (ED-5-A) stating "A medical education program must include instructional opportunities for active learning. . . to provide medical student with opportunities to develop lifelong learning skills." The LCME continues to require Schools of Medicine and departments to provide resources to enhance the teaching skills of their residents (ED-24). Our morning reports include medical students, interns, senior residents and faculty. Structuring educational conferences to meet the learning needs of this diverse group poses a challenge even for the most experienced teacher.
METHODS: We designed two worksheets to improve the educational value of our resident led morning reports. Our goals were to enhance the teaching skills of our senior resident presenters, improve self-reported learner perceptions, and to set a higher educational standard for these conferences. The first worksheet entitled "Promoting Principles of Adult & Active Learning" asks each presenter to systematically organize the conference focusing on a learner-centered approach. Each presenter is asked to (1) specify learning objectives for each major group in the audience (i.e. medical student, intern, and senior resident); (2) describe the intended interactive process to facilitate individual and or group participation; (3) utilize audiovisual aids to appeal to different learning styles; and (4) ensure the learning climate will foster participation and inquiry. The second worksheet entitled the "Value of Morning Reports" asks each member of the audience to (1) name the top 3 learning objectives addressed in the conference; (2) evaluate the conference on a 5 point Likert-like scale on clarity of presentation, degree of interaction, practical usefulness of the content, and overall learning value; and (3) open-ended comments solicited on areas of strength, areas to improve and other. Feedback is provided to the resident presenter immediately after the conference by key faculty.
RESULTS: To date, 404 total evaluations were collected. Conference evaluations before and after our educational intervention found no differences in the "overall learning value" of our morning reports when all participants were included. This is most likely due to a ceiling effect since our morning reports were already highly rated (Year 2011–4.63 versus Year 2012 4.64, p=0.93). Subgroup analysis, however, revealed that medical students consistently rated these conferences higher in all 4 categories evaluated and for "clarity of presentation," this reached statistical difference (Year 2011 4.10 versus Year 2012 4.71, p=0.001).
CONCLUSIONS: Residents often receive little training in their roles as teachers and medical educators. Our teacher's guide worksheet outlines a basic organizational approach that promotes learner-centered education and active learning. The impact of this intervention appears to be the greatest with the medical students. Our senior residents uniformly reported that the presenter worksheet helped them focused their learning goals and objectives for the different levels of learners and increased their confidence when leading morning reports. Our simple to use educational intervention can be readily applied to other institutions and helps meet both medical school (LCME) and residency (ACGME) accreditation standards for teaching and learning

PROMOTING SMOKING CESSATION AFTER HOSPITAL DISCHARGE: THE HELPING HAND RANDOMIZED CONTROLLED COMPARATIVE EFFECTIVENESS TRIAL Nancy A. Rigotti[1,2]; Sandra Japuntich[3]; Susan Regan[1]; Jennifer H. Kelley[1]; Yuchiao Chang[1]; Michele Reyen[1]; Joseph C. Viana[1]; Elyse R. Park[2]; Douglas Levy[2]; Molly Korotkin[1]; Joanna Streck[1]; Daniel E. Singer[1]. [1]Massachusetts General Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA; [3]Boston VA Health Care System, Boston, MA. (Tracking ID #1626274)

BACKGROUND: Hospitalization provides an opportunity for smokers to quit. Smokers who quit after hospital discharge reduce their subsequent morbidity and mortality rates and might reduce their risk of readmission. Hospital-initiated tobacco treatment is effective only if it continues for more than 1 month after discharge. Sustaining the treatment of chronic conditions like tobacco dependence from hospital to home is a challenge for health care systems to accomplish. We tested a model system to facilitate the delivery of evidence-based smoking cessation counseling and medication to hospitalized smokers after hospital discharge.
METHODS: A randomized controlled trial at 1 large urban teaching hospital compared 2 post-discharge treatments, Extended Care (EC) vs. Standard Care (SC), for smokers who were counseled during their hospital stay and wanted to quit smoking after discharge. EC provided 3 months of free medication of the patient's choice at discharge (nicotine replacement, bupropion, or varenicline) and 5 automated outbound interactive voice response (IVR) phone calls at 2, 14, 30, 60, and 90 days after discharge. IVR calls reminded smokers to stay quit, promoted medication adherence and offered medication refills and a return call from a live counselor for further support. SC patients were given advice to contact a free telephone quitline and use smoking cessation medication after discharge. Outcomes (use of treatment, smoking status, readmission rate) were assessed 1, 3, and 6 months post-discharge.
RESULTS: 397 smokers who were admitted from 7/2010 to 4/2012 were randomly assigned to EC (n=198) or SC (n=199). Groups were comparable at baseline (49 % male, 85 % white, mean age=52 y; mean cig/day=17). Follow-up rates were 91 % (1 month), 85 % (3 month), and 82 % (6 mo). EC, compared to SC, increased smokers' post-discharge use of pharmacotherapy (87 % vs 66 %, p<.001, at 1 month; 91 % vs. 73 %, p<.001, at 3 month) and counseling (41 % vs 26 %, p=.002 at 1 month; 67 % vs. 47 %, p<.001 at 3 month). EC, compared to SC, increased self-reported continuous abstinence at 1 mo (46 % vs 34 %, p=.010), 3 mo (34 % vs 24 %, p=.024), 6 month (28 % vs 16 %, p=.007) after discharge and tobacco abstinence for the past 7 days at 1 month (53 % vs 40 %, p=.011), 3 month (46 % vs 37 %, p=.092), and 6 month (42 % vs 29 %, p=.007) after discharge. Analysis of readmission rates is in process.
CONCLUSIONS: A multi-component telephone-based intervention designed to facilitate hospitalized smokers' access to tobacco treatment after discharge improved the use of counseling and pharmacotherapy and increased smoking cessation rates for 6 months after hospital discharge. This promising model could be adopted by hospitals to provide post-discharge treatment and help meet tobacco quality of care standards.

PROSPECTIVE ASSOCIATION OF PHYSICAL ACTIVITY AND MARKERS OF INFLAMMATION AND INSULIN RESISTANCE IN OUTPATIENTS WITH CORONARY HEART DISEASE: DATA FROM THE HEART AND SOUL STUDY Jennifer L. Jarvie[1]; Mathilda C. Regan[2]; Beth Cohen[1,2]. [1]University of California, San Francisco, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA. (Tracking ID #1635366)

BACKGROUND: Higher levels of physical activity are associated with lower rates of coronary heart disease (CHD). Prior studies have suggested this is in part secondary to lower rates of inflammation and insulin resistance in active versus sedentary individuals, but conclusions are limited by their cross-sectional designs. Additionally, little is known about how changes in physical activity can alter levels of inflammation and insulin resistance. Using a population of patients with known CHD, we sought to determine whether activity level was associated with markers of inflammation and insulin resistance over a 5-year period.
METHODS: We used data from 656 participants in the Heart and Soul Study, a prospective cohort study of outpatients with documented CHD. Physical activity was evaluated at baseline and Year 5 by self-report of frequency of "activities such as 15–20 min of brisk walking, swimming, general conditioning, or recreational sports." We classified participants with low versus high levels of activity based on prior definitions from this cohort that were associated with objective treadmill exercise capacity and risk of future CHD events. Comparing activity from baseline to Year 5 yielded 4 groups: stable low activity (n=151), high activity to low activity (n=110), low activity to high activity (n=60), and stable high activity (n=335). We compared Year 5 markers of inflammation (C-reactive protein [CRP], interleukin-6 [IL-6], and fibrinogen) and insulin resistance (insulin, glucose, and A1c) in the 4 activity groups using t-tests and developed linear regression models serially adjusted for potential confounding and mediating variables.

RESULTS: At Year 5 there were significant differences between the 4 activity groups in mean CRP, IL-6, fibrinogen, insulin, A1c, and glucose (see Table), with those who increased their physical activity over time having lower levels of inflammation and insulin resistance than those with stable low or decreasing activity. Those with high activity at both time points had the lowest levels of these biomarkers. The differences in CRP, IL-6, fibrinogen, and glucose were not explained by adjustment for age, gender, aspirin use, BMI, smoking, and depression.

CONCLUSIONS: In this novel population of men and women with known CHD followed for 5 years, higher physical activity was associated with lower levels of inflammation and insulin resistance. These findings provide possible mechanisms for lower rates of CHD events in individuals who are more physically active compared to their more sedentary peers and optimistically highlights that individuals with CHD who increase their frequency of physical activity may improve their biological profile and reduce risk of further CHD events.

Association of exercise status with Year 5 biomarkers

	Stable Low	High to Low	Low to High	Stable High	p—for trend
CRP*	0.76±1.26	0.57±1.16	0.48±1.14	0.26±1.16	<0.001
IL-6*	1.38±0.65	1.41±0.64	1.26±0.72	1.10±0.67	<0.001
Fibrinogen	396±101	375±82	374±79	367±78	0.002
Insulin*	5.57±0.65	5.49±0.92	5.42±0.60	5.41±0.63	0.001
A1c	6.07±1.05	6.26±1.53	5.97±1.16	5.86±1.00	0.009
Glucose*	4.76±0.25	4.76±0.33	4.67±0.20	4.69±0.21	0.003

* denotes log-transformed results

PROVIDER PERCEPTIONS OF INTENTIONAL MEDICATION DISCONTINUATION Amy Linsky[1,2]; Steven R. Simon[1,3]; Barbara G. Bokhour[4,5]. 1VA Boston Healthcare System, Boston, MA; [2]Boston University School of Medicine, Boston, MA; [3]Brigham and Women's Hospital, Boston, MA; 4ENRM VA Medical Center, Bedford, MA; [5]Boston University School of Public Health, Boston, MA. (Tracking ID #1641699)

BACKGROUND: Adverse outcomes from inappropriate medication use, whether measured as adverse clinical events, increased health care costs or decreased quality of life, are pervasive, even within an integrated health care system such as the Veterans Health Administration (VA). While medication adherence and medication reconciliation receive considerable attention, there has been less focus on improving intentional, proactive discontinuation of medications that may no longer be necessary or whose benefits no longer outweigh associated risks. Therefore, our objective was to identify provider beliefs and attitudes associated with medication discontinuation.

METHODS: We conducted 45–60 min semi-structured qualitative interviews with 20 Primary Care providers with prescribing privileges, including physicians, nurse practitioners and clinical pharmacists, at two VA Medical Centers. Providers were asked about their perceptions of medication management, polypharmacy and clinical decision making related to intentional medication discontinuation. Fully transcribed interviews were analyzed based on the principles of grounded theory, including open coding, theme development and constant comparative analysis of cases.

RESULTS: Study participants had varying years of clinical experience and mixed exposure to prior practice in non-VA settings. We identified five domains that affected how clinical providers make and act upon decisions to discontinue medication: 1) Polypharmacy—perceptions of its definition, prevalence and importance ; 2) Understanding of the patient—developed relationships, established trust and open communication enabled better understanding of patients' knowledge of and adherence to their medication regimens, establishing a foundation upon which decisions could be based; 3) Clinical reasoning and decision making—the rationale and professional jurisdiction that support medication discontinuation; 4) Clinical practice activities—actions required in patient care, often requiring providers to multitask or feel time pressures; and 5) Structural factors such as personnel (e.g., provider roles and care-team composition), system (e.g., coordination across multiple providers and locations) and information technologies. Specifically, providers had various definitions of polypharmacy and expressed that patients frequently were prescribed many more than five medications. Medication reconciliation, necessary for making discontinuation decisions, was viewed as time-consuming. A common source of frustration was inadequate exchange of information with non-VA providers, leading to uncertainties about prior evaluations and management. Some physicians reported a sense of control over the medication regimens that empowered them to discontinue prescriptions. Pharmacists enjoyed their expanded role in the Patient Aligned Care Team model (i.e., a medical home); they appreciated spending dedicated time with patients and conducting medication reconciliation to enable prescribing decisions.

CONCLUSIONS: Clinicians express a wide variety of opinions and viewpoints related to medication management decisions, and especially discontinuation. In order to develop and implement effective interventions that improve prescribing practices, whether targeted at the clinician or organization of care delivery, additional research is needed on the full range of attitudes and beliefs harbored by clinical providers as well as the environments in which they practice.

QUALITY OF CARE AND RACIAL DISPARITIES AMONG POTENTIAL MEDICARE ACCOUNTABLE CARE ORGANIZATIONS Ryan E. Anderson[2,3]; John Z. Ayanian[1,4]; Alan M. Zaslavsky[1]; J. Michael McWilliams[1,4]. [1]Harvard Medical School, Boston, MA; [2]Harvard Kennedy School of Government, Cambridge, MA; [3]Washington University School of Medicine, St. Louis, MO; [4]Brigham and Women's Hospital, Boston, MA. (Tracking ID #1642510)

BACKGROUND: The Medicare Accountable Care Organization (ACO) programs reward larger provider groups for improving quality of care and containing spending, but not for reducing health care disparities. This study sought to examine sociodemographic differences between Medicare beneficiaries served by provider groups sufficiently large to participate in ACO programs (≥5,000 assigned beneficiaries) and those served by smaller groups; the association between group size and racial disparities in quality for cardiovascular disease and diabetes; and the association between quality and disparities among larger groups.

METHODS: Using 2009 Medicare claims and linked American Medical Association Group Practice data, we assigned 3.3 million beneficiaries with cardiovascular disease or diabetes to primary care provider groups. Six quality measures were evaluated for this population, including four process measures adapted from the Healthcare Effectiveness Data and Information Set, hospitalization for ambulatory care-sensitive conditions (ACSCs) related to cardiovascular disease or diabetes, and hospitalization for any ACSC. We compared racial differences in these quality measures for provider groups that were small (<5,000 assigned beneficiaries), medium-sized (5,000–14,999), and large (≥15,000), adjusting for sociodemographic and clinical characteristics. Among medium-sized and large groups, we used multilevel models to estimate correlations between group performance on quality measures for white beneficiaries and black-white disparities within groups.

RESULTS: Beneficiaries assigned to medium-sized and large provider groups were more likely to be white (88.5 vs. 84.5 %; $P<0.001$), less likely to be eligible for Medicaid (13.3 vs. 18 %; $P<0.001$), and lived in areas with fewer people below poverty (8.7 vs. 9.6 %; $P<0.001$). Large groups were associated with smaller disparities in retinal exams compared with small groups (3.7 vs. 1.2 %; $P<0.001$) for beneficiaries with diabetes, but not with smaller disparities in other process measures or hospitalization for ACSCs. Among medium-sized and large groups, lower rates of hospitalization related to cardiovascular disease or diabetes among white beneficiaries were correlated with smaller racial disparities ($r=0.30$; $p=0.005$), but better quality was not correlated with smaller disparities in other measures.

CONCLUSIONS: Provider groups sufficiently large to participate in ACO programs were more likely to serve white beneficiaries and those living in more socioeconomically advantaged areas. The size of provider group was not consistently associated with smaller racial disparities in care for

Medicare beneficiaries with cardiovascular disease or diabetes. These findings suggest that benefits achieved by ACOs may accrue disproportionately to white patients in more affluent areas. To the extent that new payment incentives improve the quality of care provided by ACOs, our findings suggest these potential gains may not be consistently associated with reduced racial disparities across the quality measures included in ACO contracts. Additional incentives and novel payment arrangements may be required for ACOs to promote greater equity in care.

QUALITY OF INPATIENT DOCUMENTATION OF CODE STATUS DISCUSSION Rashmi K. Sharma; Andrew Thurston; Diane Wayne. Northwestern University, Chicago, IL. (Tracking ID #1642626)

BACKGROUND: Although a code status discussion (CSD) provides an opportunity for physicians to assess patient preferences regarding end-of-life care, prior studies have shown that these conversations are infrequently documented in the medical record. Little is also known about the quality of these discussions. We sought to examine the content and quality of documented inpatient CSDs.
METHODS: Using the electronic medical record (EMR), we identified all patients admitted to a single academic medical center between January 1 and June 30, 2011 with a do-not-resuscitate (DNR) order written or cancelled at least 24 h after admission. We then used an electronic text search query to identify all clinical notes, written 24 h before and after the DNR order, that referenced discussion of code status or resuscitation. We excluded notes written by consulting physicians. Using published guidelines for CSD content, supplemented by key domains from an institutional communication skills training program, we developed a chart abstraction tool to evaluate the quality of CSD documentation. One coder abstracted the following quality elements: a) who the discussion was held with (e.g., patient, surrogate); b) review of patient goals and values; c) discussion of prognosis; d) review of treatment options e) likely outcomes of resuscitation, and f) presence of a healthcare power of attorney (HCPOA). A second coder reviewed a subsample to assess for inter-rater reliability.
RESULTS: We identified 395 patients with a new or cancelled DNR order of whom 237 (60 %) had a note documenting a CSD. We reviewed a random sample of 131 notes (55 %) of which 26 were excluded (consultant notes) leaving 105 notes for abstraction. Percent agreement between the two coders for each of the key abstraction elements ranged from 70 to 100 %. Mean patient age was 63.5 +/− 18 years; 37 % of patients were male and 57 % were white. Median length of stay was 10 days, 88 % of patients had been admitted to the hospital within the previous 6 months, one patient had a documented DNR order on a previous hospitalization, and 42 % of patients died in the hospital. Thirty four percent of notes were written by an internal medicine resident, 34 % by a non-internal medicine resident, and 28 % by a hospitalist. Discussion of prognosis was documented in 18 % of notes, outcomes of resuscitation in 2 %, patient values and goals in 8.6 % and 48 % respectively, and presence of HCPOA in 24 %. Sixty-nine percent of notes contained documentation of who the discussion was held with. There were no significant differences in documentation between medicine and non-internal medicine residents. Hospitalists were more likely to document who the discussion was held with (89 % vs. 61 %, p=0.006) and patient goals (67 % vs. 39 %, p=0.02) than residents.
CONCLUSIONS: Review of inpatient CSD notes revealed poor documentation of several key content domains. Our findings suggest that education in CSD documentation is needed for residents as well as supervising faculty. Further research is also needed to clarify factors affecting the quality of CSD documentation and to identify ways to improve documentation in the inpatient setting.

QUALITY OF LIFE AND THE VALUE OF WEIGHT LOSS AMONG OBESE PRIMARY CARE PATIENTS Christina C. Wee; Roger B. Davis; Karen W. Huskey; Mary Beth Hamel. Beth Israel Deaconess Medical Center, Boston, MA. (Tracking ID #1640513)

BACKGROUND: Obesity has wide-ranging adverse consequences including its adverse impact on health and quality of life (QOL). Not surprisingly, a majority of obese adults desire and attempt weight loss each year. Few studies, however, have examined the degree to which obese patients value weight loss, the risks patients are willing to assume to lose weight, and the contribution obesity-related QOL makes on how much patients value weight loss.
METHODS: We interviewed 338 obese patients (BMI ≥35 from 4 diverse primary care practices (58 % response rate) to assess their health, QOL (via the Impact of Weight on QOL-lite/IWQOL-lite), and preferences for weight loss. We assessed patients' health utility (preference-based quality life measure) via a series of standard gamble scenarios assessing patients' willingness to risk death to lose various amounts of weight or achieve perfect health (range 0 to 1; 0=death and 1=most valued health/weight state). We developed sequential multivariable models to assess the association between sociodemographic (age, sex, race, education), clinical (i.e. BMI, comorbidities) and QOL factors and patients' utility as a continuous outcome using linear regression and as a dichotomous outcome (utility less than 1.0) using logistic regression.
RESULTS: Our sample had mean age of 49 years, 68 % were women and by design 50 % were nonwhite. Pts had a mean weight of 257 lbs (BMI 40.7) and desired an ideal weight of 172 lbs (33 % weight loss). Their mean utility was 0.94, reflecting the group's average willingness to accept a 6 % risk of death to achieve their most desired health/weight state. Pts were more willing to assume a risk of dying for higher levels of weight loss and were more willing to risk death to achieve their perceived ideal weight than to achieve perfect health (see Table). In initial linear regression models that evaluated the role of age, sex, race, BMI, and education, education was the only significant correlate of pt utility; college graduates had a utility 0.04 units higher than those with no more than a high school education. However, this difference was no longer significant after full adjustment. After full adjustment, QOL score was the only factor significantly associated with utility; a 10 point higher score on the IWQOL-lite was associated with a 0.01 unit increase in utility. Comorbid conditions were not significantly associated with pt utility even prior to adjusting for QOL. Results from logistic regression models were consistent with our primary findings.
CONCLUSIONS: Moderately to severely obese primary care patients in our study report health utilities similar to those living with mild depression reported elsewhere. As anticipated, obesity-related quality of life was significantly associated with utility. Surprisingly, patients' utility did not appear to be influenced by BMI or comorbid conditions.
Table. Patient Preferences and Utility for Weight Loss and Perfect Health
Health/Weight Outcome Willing to Risk Death, % Mean Acceptable Risk, % Mean Utility
Current 10 % weight loss 20 % weight loss BMI of 25 Perceived ideal weight Perfect health - 25.8 36.6 39.3 45.0 25.2 - 3.9 8.9 9.6 9.6 9.4 0.943 0.952 0.966 0.976 0.979 0.960

QUALITY OF OSTEOPOROSIS CARE AMONG OLDER MEDICARE FRAGILITY FRACTURE PATIENTS 2006–2010 John Mecchella[1,2]; Stephen K. Liu[1,2]; Jeffrey C. Munson[1,3]; John-Erik Bell[1,3]; Rebecca L. Zaha[1]; Anna N. Tosteson[1,3]; Nancy E. Morden[1,3]. [1]The Dartmouth Institute for Health Policy and Clinical Practice, Lebanon, NH; [2]Geisel School of Medicine at Dartmouth, Hanover, NH; [3]Dartmouth-Hitchcock Medical Center, Lebanon, NH. (Tracking ID #1637217)

BACKGROUND: Osteoporotic fractures result in substantial morbidity and mortality; fracture risk is highest among fragility fracture survivors. Appropriate osteoporosis treatment reduces recurrent fractures. We studied osteoporosis care in a national cohort of older, community dwelling Medicare fragility fracture survivors to assess the uptake of care guidelines and post-fracture care quality among U.S. adults.
METHODS: Using Medicare administrative inpatient, outpatient (2003–2010) and prescription data (2006–2010), we studied patients 68 years of age or older with a fracture of the hip, distal radius or proximal humerus. Poisson regression modeled factors, including patient characteristics, comorbidities and hospital referral region (HRR) of residence, were

associated with our main outcome: bone density testing and/or anti-resorptive pharmacotherapy in the 6 months following fracture. In secondary analyses, these models were repeated for patients without osteoporosis care prior to index fracture ("attention naïve"), for women only, by fracture location and allowing 12 months to achieve the outcome.

RESULTS: Among 61,832 fracture patients (37.3 % hip, 19.9 % humerus, 42.9 % radius), mean age was 80.6; 87.0 % were female; 88.5 % were white; 2.6 % were Black; 62.1 % were "attention naïve" at the time of fracture. Overall 21.8 % received testing and/or pharmacotherapy in the 6 months following fracture. In adjusted models, factors associated with significantly lower likelihood of receiving this care were: Black race, male sex, and an upper extremity fracture (vs. hip). In models restricted to "attention naïve" patients the same factors were associated with lower RRs of achieving care. Adjusted HRR-level care rates ranged from 14.7 % to 22.9 %. The proportion receiving care increased from 2006 to 2009 (16.8 % vs. 30.5 %). Secondary analyses paralleled the main models. Overall, the proportion achieving the main outcome within 12 months of index fracture was only slightly higher: 28.4 %.

CONCLUSIONS: In this national cohort, post-fracture osteoporosis care was uncommon, especially for Blacks and men. Osteoporosis care increased over time, but for most patients without prior osteoporosis attention, a fragility fracture was insufficient to trigger treatment and/or testing in this fully-insured cohort. Clinicians and policy makers must consider effective remedies for this persistent care gap.

Fully Adjusted Poisson Models: Anti-resorptive Therapy and/or Bone Density Testing in the 6 Months Following Fragility Fracture: Overall cohort and Treatment Naive Sub-Cohort

Overall Cohort Treatment Naive Sub-Cohort

N=61,832 *N*=38,376

aRR 95 % CI aRR 95 % CI

Age Group (vs. 68–70) >80 0.83 0.80–0.9 * 0.63 0.57–0.7 *

Sex Male 0.45 0.41–0.5 * 0.39 0.36–0.4 *

Race (vs. white) Black 0.81 0.73–0.9 * 0.80 0.67–1 *

Hispanic 1.02 0.96–1.1 1.12 1–1.3

Fracture Location Hip Referent Referent

Humerus 0.85 0.82–0.9 * 0.66 0.61–0.7 *

Distal Radius 0.94 0.91–1 * 0.77 0.72–0.8 *

* $p<0.05$, aRR: Adjusted Relative Risk

QUANTIFYING THE IMPACT OF UNNECESSARY IONIZED CALCIUM MEASUREMENTS Paul Di Capua; Michael A. Pfeffer. UCLA, Los Angeles, CA. (Tracking ID #1638244)

BACKGROUND: Lack of standardization in physicians' ordering practices contributes to the wide variability in both outcomes and costs of health care. For example, based on our clinical experience, house staff routinely order daily ionized calcium on a majority of patients despite the limited benefit in all but a subset of patients, with potential cost savings for the hospital. However, serum calcium measurements are part of a routine basic metabolic panel and serve as an adequate proxy for concentration of ionized calcium, the biologically active calcium cation. The correlation between the serum and ionized calcium concentrations changes in certain patient populations—end stage renal disease, hyperparathyroidism, hypercalcemia of malignancy, crtically ill and after blood transfusions—wherein it may be more justifiable to order this specialty test. This exploratory research sought to measure the number of unnecessary ionized calcium measurements in our hospital and quantify the financial and clinical costs of these measurements.

METHODS: Two hospital-specific databases were linked to quantify unnecessary ionized calcium measurements: a billing database included laboratory orders (without lab values) and patient co-morbidities, and a laboratory database provided lab values. The billing database included all adult inpatient admissions over a calendar year. Patients with any of the five criteria which preclude using serum calcium as a proxy for ionized calcium were excluded. A subset of 1000 patients from the billing database were linked to the laboratory database. An ionized calcium measurement was considered superfluous if the patient did not meet any of the five comorbid criteria and if an ionized calcium measurement had been normal within the previous 30 days. The clinical laboratory director and staff provided logistic and financial information to quantify the costs of ionized calcium measurements.

RESULTS: There were a total of 32,566 inpatient admissions over the examined calendar year. Of these, 24 % had any kind of malignancy, 5 % had CKD (defined as stage 4, 5 or end stage renal disease) and 1 % had any kind of parathyroid disease. 20,822 (64 %) patients had an ionized calcium measured at least once and 15,735 (48 %) had multiple ionized calcium measurements. Of the 1000 patients in the subset for which we had clinical data, 43 % had a normal ionized calcium within 30 days and 18 % had a prior normal ionized calcium and none of the comorbid criteria. The marginal cost of an ionized calcium measurement is $0.74, for serum calcium, $0.13. We estimate the total direct annual cost of superfluous ionized calcium measurements to be $58,746 and total blood loss of 234,637 L of patient blood unnecessarily drawn.

CONCLUSIONS: Variability in physician ordering underlies part of the quality gap in the American healthcare system; laboratory orders can be window into this gap. Even under the broadest exclusion criteria, many patients unnecessarily have their ionized calcium levels measured routinely in our system without clinical indication. This example may be specific to our hospital system, but the larger lesson of cost-conscious healthcare can be applied more broadly. This analysis has served as a backbone for an educational intervention aimed at reducing unnecessary lab ordering and a guide in changing laboratory order templates.

RACE, WEIGHT LOSS, AND CHANGE IN PATIENTS' UTILITY AFTER WEIGHT LOSS SURGERY Christina C. Wee[1]; Edward R. Marcantonio[1]; Karen W. Huskey[1]; Daniel B. Jones[1]; George L. Blackburn[1]; Caroline Apovian[2]; Roger B. Davis[1]; Mary Beth Hamel[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Boston Medical Center, Boston, MA. (Tracking ID #1640225)

BACKGROUND: While weight loss surgery (WLS) is one of few treatments that produce substantial and sustained weight loss, it is neither universally effective nor risk free and WLS outcomes often fall short of patients' (pts') initial expectations. Moreover, few data are available on WLS' effectiveness in racially diverse populations in the U.S. and the "value" pts derive from undergoing WLS.

METHODS: We interviewed 538 consecutive pts who sought and underwent WLS at 2 centers (70 % response rate) to examine outcomes of WLS and the value pts place on these outcomes. We determined the "value" pts derived from WLS by prospectively assessing pts' health value or health utility (preference-based quality of life measure) via a series of standard gamble scenarios assessing pts' willingness to risk death to lose various amounts of weight or to achieve perfect health; calculated utilities ranged from 0 to 1 where 0=death and 1=most valued health/weight state before and after WLS. Weight loss was abstracted via chart review. We conducted preliminary multivariable analyses to examine the influence of sex and race on weight loss and change in utility 1-year post-WLS on the first 372 pts who completed our 1-year post-op interview (72 % retention).

RESULTS: The mean pre-WLS BMI was 46.6, the mean age was 45.1 years, 76 % were women, 69 % were Caucasian, 17 % were African American (AA) and 9 % were Hispanic; 55 % underwent Gastric Bypass and 45 % underwent Gastric Banding. The mean patient utility was 0.88 prior to WLS, representing patients' willingness to assume a 12 % average risk of dying to achieve their most valued weight/health state. One year post-WLS, pts lost a mean of 26 % of initial weight. After adjustment for age, sex, baseline BMI, education, recruitment site, and surgery type, AA [21.5 % (95 % CI 19.3, 23.7) of initial weight] and Hispanic [22.2 % (19.2, 25.1)] pts lost significantly less weight than Caucasian pts [26.4 % (25.1, 27.7)]. After adjustment, pts' utility on average improved among Caucasian pts [+0.056 (0.023, 0.090)], remained unchanged among Hispanic pts [+0.0004 (−0.076, 0.075)] and deteriorated among AAs [−0.057

(−0.114, −0.001)]. Men and women had comparable weight loss [22.9 % (20.9, 25.0) vs. 24.3 (22.8, 25.8)] and change in utility [0.0003 (−0.052, 0. 053) vs. 0.019 (−0.019, 0.058)] 1 year after WLS. We did not detect significant interactions between sex and race nor between surgery type and sex or race.
CONCLUSIONS: Caucasian patients lost more weight than AA or Hispanic pts 1 year after WLS; nonetheless, AA and Hispanic pts still achieved fairly substantial weight loss. The utility change among Caucasian pts post WLS is comparable to a transition from mild clinical depression to perfect health reported elsewhere. However, despite sustaining fairly substantial weight loss, health utility deteriorated among AA patients and did not change among Hispanic patients after WLS. Future studies should evaluate longer-term clinical and utility outcomes after WLS and the factors that drive health value derived by patients.

RACIAL DIFFERENCES IN CANCER SCREENING WITH ELECTRONIC HEALTH RECORDS AND ELECTRONIC PREVENTIVE CARE REMINDERS Rebecca G. Mishuris[1,2]; Jeffrey A. Linder[1,2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA. (Tracking ID #1637529)

BACKGROUND: Racial disparities in cancer screening are well documented. Health information technology may reduce these disparities. We investigated whether the use of electronic health records (EHRs) or electronic preventive care reminders (e-reminders) had an impact on racial disparities for cancer screening.
METHODS: We measured the difference in rates of age-appropriate cancer screening between whites and non-whites at primary care visits with and without EHRs and, at visits with EHRs, with and without e-reminders. We used the representative surveys, National Ambulatory and National Hospital Ambulatory Medical Care Surveys, from 2006 to 2009. We examined mammography for women age 40–75; Pap smears for women age 21–65; and sigmoidoscopy or colonoscopy for patients age 50–75. We developed logistic regression models with each type of cancer screening as the dependent variable to determine if the use of EHRs or e-reminders independently modified differences in screening rates between whites and non-whites.
RESULTS: We analyzed an estimated 93 million cancer screening visits in the US from 2006 to 2009. Practices had EHRs at 49 % of these visits, and, at visits with EHRs, e-reminders at 62 %. For mammography, there was no difference in screening between whites and non-whites overall (p=0.79). At practices with EHRs, there was no difference in mammography screening between whites and non-whites (6.4 % vs. 6.1 %, p=0.79). At practices with e-reminders, there was no difference in mammography screening between whites and non-whites (6.6 % vs. 5.8 %, p=0.61); at practices without e-reminders there was no difference between whites and non-whites (6.2 % vs. 6.6 %, p>0.05); and the presence of e-reminders did not modify the lack of a difference in mammography between whites and non-whites (p=0.70 for the adjusted interaction). For Pap smears, there was no difference in screening between whites and non-whites overall (p= 0.05). At practices with EHRs, there was no difference in Pap smear screening between whites and non-whites (5.8 % vs. 5.8 %, p=0.75). At practices with e-reminders there was no difference in Pap smear screening between whites and non-whites (6.4 % vs. 6.4 %, p=0.60); at practices without e-reminders there was no difference in screening between whites and non-whites (4.9 % vs. 5 %, p>0.05); and the presence of e-reminders did not modify the lack of a difference in Pap smear screening between whites and non-whites (p=0.68 for the adjusted interaction). For colon cancer screening, whites were more likely to receive screening than non-whites overall (4.2 % vs. 3.4 %, p=0.003). At practices with EHRs, whites received colon cancer screening less often than non-whites (2.4 % vs. 4.3 %, p=0.006); the presence of EHRs did not modify the difference between whites and non-whites (p=0.22 for the adjusted interaction). At practices with e-reminders, whites received colon cancer screening less often than non-whites (2.3 % vs. 4.7 %, p=0.02); at practices without e-reminders, there was no difference in screening between whites and non-whites (2.4 % vs. 3.5 %, p=0.09); and the presence of e-reminders did not modify the difference in colon cancer screening between whites and non-whites (p=0.43 for the adjusted interaction).
CONCLUSIONS: Non-whites were less likely to receive colon cancer screening overall, but this disparity was reversed at practices using EHRs and e-reminders. At practices with EHRs or e-reminders, we found no racial disparities in cancer screening.

RACIAL DISPARITIES IN HPV VACCINATION. Sonya Borrero; Amanda Gelman; Elizabeth Miller; E. Bimla Schwarz; Aletha Y. Akers; Kwonho Jeong. University of Pittsburgh, Pittsburgh, PA. (Tracking ID #1642094)

BACKGROUND: HPV vaccination is a safe and effective method for primary prevention of cervical cancer yet US rates of HPV vaccination remain suboptimal. Given that cervical cancer is more common in African-American and Hispanic women than in white women, it is important to determine whether there are racial/ethnic disparities in the utilization of the HPV vaccine and to understand potentially modifiable factors contributing to observed disparities. The objective of this study was to examine the independent effect of race/ethnicity on HPV vaccine initiation in adolescents and young women in the US and to determine whether access to healthcare influences this relationship.
METHODS: We used nationally representative data collected by the National Survey of Family Growth from 2007 to 2010 to compare HPV vaccine initiation among white, African-American, and Hispanic females aged 15–24. We conducted a multivariable regression analysis to determine the independent effect of race/ethnicity on HPV vaccine initiation after controlling for socio-demographic variables found to be significant in bivariate analysis. We then examined the role of healthcare access as a confounder for the relationship between race/ethnicity and HPV vaccination by adding several access-related variables into the model. These included insurance status during the last 12 months, place of residence (urban, suburban, or rural), and receipt of at least one reproductive health service within the last 12 months. Given that existing national studies report prevalence rates for either younger or older vaccine-eligible women, we also conducted age-stratified analyses (ages 15–18 and 19–24 years) to enable comparisons with existing data. STATA survey procedures were used for all analyses to account for the NSFG's complex survey sampling design.
RESULTS: The sample consisted of 3,073 women: 62.7 % were white, 19.7 % Hispanic, and 17.6 % African American. Overall, only 24.0 % of girls and women reported HPV vaccination. There were significant racial/ethnic differences in rates of vaccination with 28.7 % of white females reporting vaccination compared to 15.0 % of African-American women and 16.9 % of Hispanic women (p<0.001). After adjusting for age, religion, birth country, marital status, parent education, household income, and number of lifetime male sexual partners, African-Americans and Hispanics remained less likely to have been vaccinated against HPV (adjusted OR: 0.46; 95 % CI: 0.33–0.66 and adjusted OR: 0.56; 95 % CI: 0.38–0.83, respectively). Adding healthcare access measures did not substantially change the odds of vaccination for African-Americans or Hispanics (adjusted OR: 0.43; 95 % CI: 0.31–0.59 and adjusted OR: 0.61; 95 % CI: 0.41–0.89, respectively). The age-stratified analyses revealed that this disparity affected African-American females in both age groups (ages 15–18 and 19–24) and Hispanic adolescent girls (ages 15–18).
CONCLUSIONS: There are significant racial/ethnic disparities in HPV vaccination that do not appear to be explained by access to healthcare. Research is needed to further elucidate the reasons for under-vaccination among girls and young women of color and identify ways in which providers and healthcare systems may improve vaccine uptake for these vulnerable populations.

RACIAL DISPARITIES IN THE USE OF CATHETER ABLATION FOR ATRIAL FIBRILLATION AND FLUTTER Leonardo Tamariz; Alexis P. Rodriguez; Robert Myerburg; Hua Li; Ana M. Palacio. University of Miami, Miami, FL. (Tracking ID #1639828)

BACKGROUND: Atrial fibrillation (AF) is the most common arrhythmia seen in clinical practice that requires therapy. Catheter ablation is an expensive but potentially curable treatment of AF. We explored racial

disparities in the use of catheter ablation for AF in the State of Florida, and compared the findings to ablation for atrial flutter (AFlut).
METHODS: We conducted a cross-sectional analysis of all ambulatory and hospital discharge procedures between 2006 and 2009 in the State of Florida. We identified all subjects with AF and AFlut, using ICD-9 code 427.31 and 427.32, and all catheter ablation for AF and AFlut, using ICD-9 procedure codes 37.34, along with the race/ethnicity of each individual. We used logistic regression to determine the odds ratio (OR) of having a catheter ablation per disease by race and ethnicity adjusted for Charlson score, insurance status and year of the procedure.
RESULTS: We identified 923,590 subjects with AF and 28,714 with atrial flutter. Blacks had the highest comorbidity scores compared to Whites and Hispanics ($p<0.01$). Catheter ablations were more commonly used in AFlut than in AF. Figures 1 and 2 show the temporal trends of catheter ablation use by ethnicity. The adjusted OR of having catheter ablation for AF for Blacks was 0.67; 95 % CI 0.60–0.75 ($p<0.01$) and for Hispanics was 0.82; 95 % CI 0.75–0.91 ($p<0.01$) when compared to Whites. The adjusted OR of having an ablation for atrial flutter for Blacks was 1.08; 95 % CI 0.96–1.21 ($p=0.16$) and for Hispanics was 0.90; 95 % CI 0.78–1.08 ($p=0.20$) when compared to Whites.
CONCLUSIONS: In the state of Florida, during the years of 2006 and 2009, Black and Hispanics subjects with AF received less catheter ablations while the same minority subjects with atrial flutter received a similar number of ablations compared to White subjects with the same insurance and comorbidity burden.

Figure 1: Use of catheter ablation in atrial fibrillation

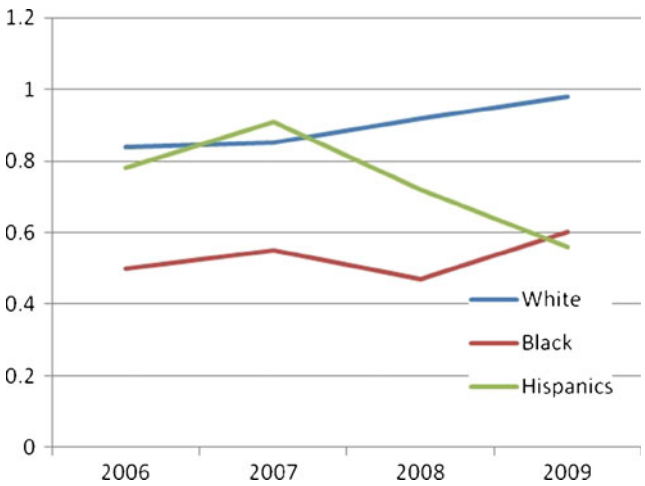
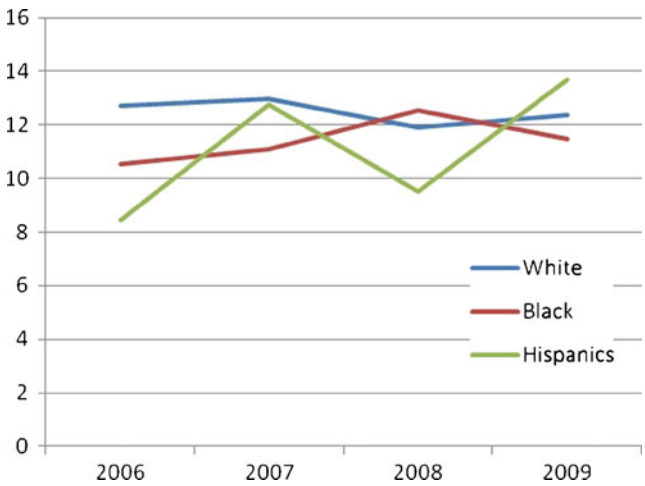


Figure 2: Use of catheter ablation in atrial flutter



RANDOMIZED INTERVENTION TO PROMOTE PHYSICAL ACTIVITY OF INTERNAL MEDICINE RESIDENTS Anne N. Thorndike; Sarah Mills; Lillian Sonnenberg; Deepak Palakshappa; Tian Gao; Cindy T. Pau; Susan Regan. Massachusetts General Hospital, Boston, MA. (Tracking ID #1623837)

BACKGROUND: Physicians' long, intense work hours reduce time for healthy behaviors and contribute to burnout. Promoting physical activity of medical residents could help create better role models for patients and improve physician health during and after residency.
METHODS: We tested 2 strategies using an activity monitor to increase physical activity of internal medicine residents over 12 weeks in 2011 at a hospital in Boston, MA. In Phase 1 (6 weeks), residents were randomly assigned to an activity monitor with visual feedback (intervention) or to a blinded monitor (control). Phase 2 (6 weeks) was a team competition with all monitors unblinded. In both phases, residents were given free access to an on-site fitness center. Primary outcomes were: 1) median steps/day to assess activity levels and 2) proportion of days on which the activity monitor was worn to assess compliance with wearing the monitor. Secondary analyses looked at mean steps/day on days when the monitor was worn (>500 steps), comparing steps in Phase 2 vs. Phase 1, steps during inpatient vs. outpatient rotations, and steps by residency year of training. Baseline weight, BMI, blood pressure, and fasting lipids of residents were compared to measurements at study end.
RESULTS: A total of 104 residents were randomized in Phase 1, and 99 continued into Phase 2. The mean age of residents was 29; 54 % were female; 66 % were white; and the mean BMI was 24.1. During Phase 1, intervention and control groups recorded similar steps/day (6369 vs. 6063, $p=0.16$) and compliance with wearing the monitor (77 % vs. 77 % of days, $p=0.73$). During Phase 2 (team competition), residents assigned to intervention in Phase 1 recorded more steps/day (5382 vs. 3698, $p<0.001$) and were more compliant (63 % vs. 56 %, $p<0.001$) compared to control. Including only days with >500 steps recorded, residents logged more steps/day during Phase 2 (team competition) than Phase 1 ($p=0.009$) and more steps/day during outpatient than inpatient rotations ($p<0.001$). During the team competition, senior residents recorded more steps per day than juniors or interns ($p=0.02$). Compared to baseline, at study end the mean systolic blood pressure decreased ($p=0.004$), HDL cholesterol increased ($p<0.001$), and weight did not change.
CONCLUSIONS: This is the first randomized intervention to our knowledge to promote physical activity among physicians. We found that a relatively simple intervention was feasible, moderately effective for improving activity, and associated with improvement in cardiovascular risk factors of internal medicine residents. Future research will be needed to determine if improving physician lifestyle habits can help prevent burnout and improve health outcomes.

REACH OF AN EFFECTIVE, NATIONALLY-AVAILABLE, LOW-COST, PEER-LED, NONPROFIT WEIGHT LOSS PROGRAM IN MEDICALLY UNDERSERVED AREAS Nia S. Mitchell[1]; Ariann F. Nassel[2]. [1]University of Colorado Anschutz Medcial Campus, Aurora, CO; [2]University of Colorado Anschutz Medical Campus, Aurora, CO. (Tracking ID #1640695)

BACKGROUND: Obesity disproportionately affects underserved populations, and physicians struggle to help underserved patients lose weight because of a lack of affordable and accessible weight loss programs. Take Off Pounds Sensibly (TOPS) is a nationally-available, low-cost, peer-led, nonprofit weight loss program that can be implemented in any setting. Although a large study of the effectiveness of TOPS showed that participants lost 5 % or more of their initial weight and maintained the weight loss for up to 3 years, there was no information about the reach of TOPS into underserved areas. Understanding the reach of TOPS in underserved communities is an important step in addressing the health disparity of obesity because it informs providers of its widespread

availability for their underserved patients. We hypothesized that TOPS would be available in 25 % of medically underserved areas (MUAs) because of its low cost, peer-led format, and ease of implementation. We also hypothesized that the racial and ethnic makeup of the locations of TOPS chapters would reflect the diversity of the country and include lower income categories.

METHODS: To determine the reach of TOPS into underserved populations, we integrated TOPS chapter addresses from the TOPS administrative database with data from Health Resources Services Administration (HRSA) designated MUAs using geographic information systems. MUAs are determined based on the ratio of primary care physicians per 1000 population, infant mortality rate, percentage of population with income below the poverty level, and percentage of population age 65 and over. To determine the racial demographics and median income of the TOPS chapter locations, we incorporated data from US Census tracts.

RESULTS: In the United States, there are 3,461 HRSA-designated MUAs, and there are 6,765 TOPS chapters with over 115,000 members throughout the country. The number of chapters per state varies from 3 in Hawaii to 403 in California. Thirty percent of MUAs have at least one TOPS chapter, and one MUA has 20 chapters. Twenty-four percent of TOPS chapters are in MUAs. The US population is 75 % Caucasian, 14 % African American, and 16 % Hispanic. The average racial distribution in the census tracts for the TOPS chapter locations was 82 % (range 18–96 %) Caucasian, 7 % (range 0.3–27 %) African American, and 9 % (range 1–47 %) Hispanic. The average median income for the census tracts with TOPS locations is $48,931 (range $35,822–$82,623).

CONCLUSIONS: TOPS, an effective, low-cost weight loss program, is available in 30 % of MUAs in the United States. Although the racial distribution of the locations of the TOPS chapters does not match the distribution in the country, TOPS operates in racially and economically diverse communities, including those that are underserved, those with large ethnic minority populations, and those with low median incomes. Given its effectiveness, locations in communities at risk for obesity, and ease of implementation, TOPS is poised to be part of the broader solution to treat obesity among medically underserved populations. Physicians should consider recommending TOPS to their underserved overweight and obese patients.

READMISSION AND MORTALITY ASSOCIATED WITH HYPONATREMIA AT THE TIME OF DISCHARGE IN PATIENTS WITHOUT HEART FAILURE OR END-STAGE LIVER DISEASE

Brittany Fuller; Michael F. Harrison; Juan Cesar Fernandez Castillo; Sreekanth Uppuluri; Harish Kinni; Karen Olarte-Merida; David Paje. Henry Ford Hospital, Detroit, MI. (Tracking ID #1642556)

BACKGROUND: Hyponatremia at the time of hospital discharge is common. Previous studies show that it is associated with increased risks of rehospitalization and of both short-term and long-term mortality. However, these studies included patients with either heart failure (HF) or end-stage liver disease (ESLD), conditions where hyponatremia is known to be indicative of poor prognosis. The purpose of this study was to evaluate the association between hyponatremia at the time of discharge and the rates of readmission and mortality in patients without HF or ESLD.

METHODS: Administrative and clinical data were retrospectively abstracted from the medical records of consecutive patients discharged alive from an urban tertiary referral teaching hospital. Patients with a history of HF or ESLD were excluded. The primary outcomes included the following 30-day events: all-cause readmission, mortality, and composite of readmission or mortality. Independent *t*-test and chi-squared test were used to compare baseline characteristics between patients discharged with hyponatremia (serum sodium concentration <135 mEq/L) and those discharged with eunatremia (135–145 mEq/L). Pearson's chi-squared tests were used to compare outcomes between both groups. Kaplan-Meier graphs were also plotted and compared using the log-rank test.

RESULTS: Overall, 950 patients were included in the analysis. At the time of discharge, 418 (44 %) had hyponatremia and 532 (56 %) had eunatremia, with mean serum sodium concentrations of 132.1±1.5 mEq/L and 138.2±2.2 mEq/L, respectively ($p<0.01$). Compared to patients with normal serum sodium, those with hyponatremia had higher age-adjusted Charlson Comorbidity Index (3.6±3.2 vs. 2.6±2.9, $p<0.01$), stayed longer in the hospital (6.8±6.2 days vs. 5.2±6.2 days, $p<0.01$), and were discharged with more medications (7.6±4.7 vs. 6.4±4.1, $p<0.01$). They were also more likely to have stayed in the intensive care unit (ICU) during their index admission (OR 1.78, 95 % CI 1.24 to 2.54, $p=0.002$). Patients who were hyponatremic at discharge had a higher risk of the following events within 30-days: readmission or death (RR 1.45, 95 % CI 1.08 to 1.95, $p=0.012$), readmission (RR 1.37, 95 % CI 1.01 to 1.85, $p=0.044$), and death (RR 2.97, 95 % CI 1.15 to 7.66, $p=0.018$).

CONCLUSIONS: Among patients without heart failure or end-stage liver disease, hyponatremia at the time of hospital discharge is associated with an increased risk of 30-day readmission and mortality. However, these patients have higher comorbidity scores, longer hospital stays, more discharge medications, and are more likely to have been in the ICU.

Table 1: Rates of Clinical Outcomes after Hospital Discharge of Patients without Heart Failure or End-Stage Liver Disease

Clinical Outcomes Serum Sodium at Hospital Discharge<135 mEq/L (n=418) Serum Sodium at Hospital Discharge 135–145 mEq/L (n=532) p-value RR 95 % CI

30-DAY READMISSION OR MORTALITY 19.1 % (80) 13.2 % (70) 0.012 1.45 1.08–1.95

30-DAY READMISSION 17.5 % (73) 12.8 % (68) 0.044 1.37 1.01–1.85

30-DAY MORTALITY 3.3 % (14) 1.1 % (6) 0.018 2.97 1.15–7.66

READY TO PROVIDE PREVENTIVE WOMEN'S HEALTH SERVICES?: A SURVEY OF INTERNAL MEDICINE RESIDENTS' TRAINING, ATTITUDES AND CLINICAL PRACTICE

Sara Teasdale[1]; Palav Babaria[2]; Elizabeth Harleman[2]; Alicia Fernandez[2]. [1]UC Davis Medical Center, Sacramento, CA; [2]University of California San Francisco, San Francisco, CA. (Tracking ID #1630436)

BACKGROUND: With expanded coverage for preventive women's health care under the Affordable Care Act and recent Institute of Medicine recommendations, internists will be increasingly expected to address women's health. Prior studies have demonstrated that internal medicine (IM) residency training in women's health is often inadequate. Our goal was to understand the perceived importance for IM residents in providing women's health services, the perceived adequacy of training in these areas, and how residents currently provide these specific services to women.

METHODS: We designed a survey to assess three recommended preventive services for women: well woman exams (pap smears and breast exams), annual contraception counseling, and intimate partner violence (IPV) screening. The 41-question survey was administered to all IM residents enrolled in a three-year training program at an urban, university-based residency program. Descriptive statistics were analyzed using Stata 12. All Likert scale outcomes were dichotomized and logistic regression techniques were used to examine the potential association between each of the 17 outcomes and the primary predictors: gender, categorical vs. primary care track, VA continuity clinic site vs. non-VA site, and post-graduate year (PGY1 vs. PGY 3), in both univariate and multivariate analyses.

RESULTS: Of 175 internal medicine residents, 131 (75 %) completed the survey. Overall, 84 % of residents believe it is important for internists to provide preventive women's health services. However, 45 % of residents feel adequately trained in IPV screening and less than 30 % feel adequately trained in what to do if a woman screens positive for IPV or how to prescribe contraception. Fewer than 40 % feel comfortable prescribing contraception or know what to do if a woman screens positive for IPV. With regards to training, residents at VA clinics feel less adequately trained in how to do a pelvic exam ($p<0.05$, OR 0.40 (CI 0.17–0.94)) and males feel less adequately trained in how to prescribe oral contraception ($p<0.05$, OR 0.39 (CI 0.16–0.95)). PGY3 residents feel more adequately trained ($p<0.05$, OR 2.61(CI 1.10–6.20)) in IPV screening. With regards to comfort,

residents with VA clinic feel less comfortable performing breast exams ($p<0.05$, OR 0.34 (CI 0.14–0.83)), pap smears ($p<0.01$, OR 0.29 (CI 0.12–0.70), IPV screening ($p<0.05$, OR 0.37 (CI 0.15–0.90)) and contraception counseling ($p<0.01$, OR 0.37 (CI 0.15–0.90)). Males feel less comfortable prescribing oral contraceptives ($p<0.01$, OR 0.30 (CI 0.13–0.72)). PGY3 residents are more likely to feel comfortable ($p<0.05$, OR 2.43 (CI 1.01–5.83)) with IPV screening. In multivariate analysis of clinical practice, 29.8 % of residents have performed≥10 PAP smears, with males less likely (OR 0.13(CI 0.04–0.37)) and PGY-3 residents most likely (OR 53.7 (CI 10.1–285.4). 6.8 % of residents have prescribed contraception≥10 times. Male residents are least likely to have written≥10 prescriptions (OR 0.09 (CI 0.01–0.77)). Only 17 % of residents report screening for IPV annually, with no differences between the groups.
CONCLUSIONS: Although internal medicine residents believe it is important for internists to provide preventive health care to women, they do not feel adequately prepared to do so, particularly in contraception counseling or responding to women who screen positive for IPV. Training in preventive women's health may need to improve substantially if internists are to be well prepared to provide universal services.

REASON FOR CONSULTATION AND OUTCOMES OF A NEW PALLIATIVE CARE PROGRAM Aziz Ansari; Elizabeth Schulwolf. Loyola University Medical Center, Maywood, IL. (Tracking ID #1643307)

BACKGROUND: Palliative care (PC) is a specialty focusing on relief of distressing symptoms and facilitating goals of care discussions for people with serious illness. It is well established that PC programs reduce length of stay, improve quality of life and symptom burden along with decreasing utilization of non beneficial resources. We set out to determine the primary reason for consultation and potential impact on change in code status, length of stay (LOS), 90 day readmission rate and discharge disposition for a new PC consult service at an academic institution.
METHODS: Our new PC consultation program began September 1, 2010. As part of efforts to track operational and quality metrics all cases are recorded in a database. We analyzed data from all consults obtained in the first year of the program (September 1, 2010-June 30, 2011) including consulting service, primary reason for consult, change in code status, LOS pre and post consult, and discharge disposition. We then compared change in code status when goals of care was the primary reason for consult vs. symptom management. We also evaluated 90-day readmission rates for patients consulted between September 1, 2010 and March 30, 2011.
RESULTS: There were 282 consults; 254 (90 %) were requested by medicine services and 28 (10 %) were from surgical services. Of these, 226 consults (80 %) were requested primarily for assistance with establishing goals of care and 56 consults (20 %) primarily for assistance with symptom management. Overall, 126 patients (45 %) were full code before a PC consult (100 for goals of care and 26 for symptom management); 61 (48 %) of these patients had a change in code status to DNR following palliative care consultation. More patients had a change in code status when the primary reason for consult was goals of care than when for symptom management (55 % vs. 23 %, $p=0.006$). The 90-day readmission rate for 140 patients consulted between September 1, 2010 and March 30, 2011, dropped by 75 % (201 pre-consult compared to 51 post-consult). Overall, 34 % of patients were discharged to hospice care and 17 % of patients died while receiving inpatient comfort measures. Lastly, the mean post-consult LOS was shorter when compared to mean pre-consult LOS (3.84 vs. 6.84 days).
CONCLUSIONS: The majority of PC consults were requested from medicine services primarily for facilitating goals of care discussions. Following consultation, nearly half of patients who were full code had a change in code status to DNR. Readmission rates and post consult LOS decreased while hospice utilization increased consistent with previous studies. Our data suggest there is a recognized need for assistance with discussions about goals of care and that these conversations help to ensure alignment of treatment plans with patient's wishes as well as to reduce non-beneficial resource utilization.

REASONS FOR HIGH STRESS LEVELS IN AN INNER CITY OUTPATIENT POPULATION Kimberley Lee; Madhav Goyal. Johns Hopkins School of Mediicine, Baltimore, MD. (Tracking ID #1638016)

BACKGROUND: There is limited data examining the factors that contribute to perceived stress for Blacks living in the inner city. The objectives of this study were to measure the perceived stress levels of in an inner city, primarily Black population. We also sought to identify factors associated with higher levels of stress in this population, and identify the proportion of participants interested in a stress-management workshop.
METHODS: This was a cross-sectional anonymous survey of patients in an inner city health center in Baltimore, MD. Consecutive patients who registered at the clinic and who were 18 years of age or older were asked if they would be willing to participate in the study. Participants who consented were given an anonymous survey. Specific stress-related information gathered included the ten-item perceived stress scale (PSS), life events scale (LES), 24-hour and 6-month pain, pain catastrophizing scale (PCS), and mindfulness attention awareness scale (MAAS). Interest in a weekly mind-body workshop for 4 weeks was also assessed. We used linear regression to first identify demographic and other factors associated with perceived stress in a univariate analysis. An initial multivariate model was formed by inclusion of all significant variables ($p<0.05$) from the univariate analysis followed by stepwise deletion. Only variables that were significant in both models were kept. The final multivariate logistic regression model included the following variables: age, PCS score, MAAS score, and change in sleep habits on the LES.
RESULTS: Among all 174 patients surveyed, the mean PSS score was 20.4 (sd 7.2). In a multivariate analysis, higher age and mindfulness scores were associated with lower PSS scores ($p=0.01$). Higher pain catastrophizing scores and number of stressful life events were associated with higher PSS scores ($p<.001$ and $p=.01$ respectively). Of 41 life events, a change in sleep was the only stressful life event associated with higher PSS stress scores ($p=0.007$).
CONCLUSIONS: The perceived stress level of our sample of low-income, inner city outpatients is a standard deviation higher than that of the general population. The majority of this population is black and it has been shown that African Americans have higher perceived stress scores than their Caucasian counterparts. However, our inner city population has higher perceived stress scores than blacks in the general population as well. Higher mindfulness attention awareness scale scores were associated with reduced perceived stress. Thus, training in mind-body programs that develop mindfulness skills may be helpful in reducing stress in this population.

RECOGNITION OF VULNERABILITY IN HOSPITALIZED CARDIOVASCULAR PATIENTS Sunil Kripalani; Susan P. Bell; John F. Schnelle; Samuel K. Nwosu; Courtney Cawthon; Jonathan S. Schildcrout. Vanderbilt University, Nashville, TN. (Tracking ID #1642274)

BACKGROUND: Among elders, low functional health status (vulnerability) is a significant risk factor for poor outcomes, including functional decline and death. Assessment of vulnerability in hospitalized patients may identify at-risk individuals, who could benefit from increased post-acute care services such as home health nursing or rehabilitation. We assessed the prevalence of vulnerability among elders hospitalized with acute cardiovascular conditions, as well as their characteristics, prior health care utilization, and referral for post-acute care services.
METHODS: Individuals over the age of 65 hospitalized with acute coronary syndromes (ACS) or acute decompensated heart failure (ADHF) were enrolled in a prospective cohort study. Participants completed a series of validated measurements to assess demographics, education, cognition, psychosocial factors, and prior health care utilization. Functional health status was measured by the Vulnerable Elders Survey (VES-13), a validated method for identifying vulnerable elders in community settings. With a possible range of 0 to 10, a VES-13 score≥3 represents vulnerability, and scores≥4 represent extreme vulnerability. Disposition and home health services were recorded by chart abstraction.

RESULTS: Among 228 participants, the median VES-13 score was 3 (IQR 1–7), 129 (56 %) met criteria for vulnerability, and 83 (36 %) were classified as extremely vulnerable. Increasing vulnerability was associated with age, female sex, lower education level, lower health literacy (p=0.023), and lower health numeracy (p=0.01). More vulnerable patients were more likely to have moderate or severe depression (p<0.001) and greater difficulty paying bills (p=0.006). ER visits, clinic visits, and hospitalization in the prior 12 months were more frequent in vulnerable adults. However, low utilization of home health and rehabilitation facilities was present, with the majority of patients being discharged home with self-care. Vulnerable elders were no more likely to receive home health (2 %) or transfer to a rehabilitation facility (2 %) than non-vulnerable patients. Only patients classified as extremely vulnerable received higher levels of post-acute care services (33 %).
CONCLUSIONS: Reduced functional health status is highly prevalent in older adults hospitalized with ACS or ADHF. Vulnerability is associated with other risk factors, such as low health literacy and depression, as well as higher levels of health care utilization. Despite this, there is little referral for post-acute care services for adults identified as vulnerable.

RECRUITING AND RETENTION STRATEGIES IN TWO COMMUNITY-BASED RANDOMIZED CONTROL TRIALS OF OLDER BLACK MEN Joseph Ravenell. New York University School of Medicine, New York, NY. (Tracking ID #1640942)

BACKGROUND: Black men are often under-represented in clinical and health services research, decreasing the generalizability of results for many studies. This study aims to describe strategies for recruitment and retention of older black male study participants in two large community-based randomized control trials both with a 6-month intervention period and one 6-month follow-up data collection visit.
METHODS: Research staff in charge of recruiting and retaining study participants in two large community-based trials participated in two nominal group technique (NGT) focus groups where a round-robin facilitated discussion encouraged each participant to give unique responses to the questions: "What strategies have been effective in recruiting participants for the Mister B and FAITH-CRC studies?" and "What strategies have been effective in retaining participants for the Mister B and FAITH-CRC studies?" until all responses had been stated. Participants were then asked to rank responses in terms of importance and rankings were tallied for the entire group.
RESULTS: Recruitment and retention NGT groups had seven and eight participants respectively. Participants represented a variety of study personnel including interventionists, recruiters and administrative staff. Respondents ranked the three most important strategies for recruitment as: 1) incentives, 2) identifying the right neighborhoods and 3) having dynamic, outgoing and personable team members. For retention strategies, respondents identified the most important strategies as: 1) verifying phone numbers at the time of recruitment, 2) calling participants at multiple and varied times for each intervention and follow-up session and 3) developing rapport with interventionists.
CONCLUSIONS: Recruiting and retaining participants, particularly those from hard-to-reach populations, in randomized control trials is essential for the advancement of research and clinical practices focusing on reducing health disparities. This study aims to describe strategies that have been effective for recruiting and retaining older black male study participants recruited from community-based settings.

REDUCTION OF CARDIOVASCULAR RISK FACTORS BY MAGNITUDE OF WEIGHT LOSS IN OBESE AND OVERWEIGHT SUBJECTS WITH ≥2 COMORBIDITIES Lawrence J. Cheskin[1]; Charles H. Bowden[2]. [1]Johns Hopkins Weight Management Center, Baltimore, MD; [2]VIVUS, Inc., Mountain View, CA. (Tracking ID #1609151)

BACKGROUND: Obesity is associated with a significant risk of cardiovascular disease (CVD). Weight loss (WL) increases the odds of improvement in CVD risk factors and these risk factors are further improved with greater WL. Phentermine and topiramate extended-release (PHEN/TPM ER), when used in conjunction with lifestyle modifications, has previously demonstrated significant WL in the 56-week CONQUER study of obese and overweight subjects with ≥2 weight-related comorbidities. This post hoc analysis evaluated CVD risk factors according to degree of WL over 56 weeks.
METHODS: CONQUER was a double-blind, placebo-controlled, Phase 3 trial of 2487 obese and overweight adult subjects (BMI ≥27 to ≤45 kg/m2) with ≥2 weight-related comorbidities randomly assigned to placebo, PHEN 7.5 mg/TPM ER 46 mg (7.5/46), or PHEN 15 mg/TPM ER 92 mg (15/92) plus lifestyle modifications (reduced calorie diet and increased physical activity) for 56 weeks. In this post hoc analysis, lipid parameters and blood pressure (BP) were assessed in subjects achieving <5 %, ≥5 % to <10 %, ≥10 % to <15 %, and ≥15 % WL. Changes in Framingham risk score (which assessed cardiovascular risk over 10 years based on age, gender, total cholesterol, high-density lipoprotein cholesterol [HDL-C], smoking status, systolic BP, and antihypertensive medication use) were also assessed by degree of WL.
RESULTS: Most subjects were female (70 %) and Caucasian (86 %); mean age was 51.1 years, and mean BMI was 36.6 kg/m2. At baseline, 52 % of subjects had hypertension and 36 % had dyslipidemia. At week 56, for the placebo (n=979), 7.5/46 (n=488), and 15/92 (n=981) groups, respectively, least-squares (LS) mean absolute WL was −1.4 kg, −8.1 kg, and −10.2 kg (P<.0001 vs placebo, all comparisons; ITT-LOCF). Significant improvements in CVD risk factors were seen with WL ≥5 % vs <5 %: LS mean change for those achieving WL of <5 %, ≥5 % to <10 %, ≥10 % to <15 %, and ≥15 %, respectively, for systolic BP (mm Hg) were −2.1, −4.9, −7.4, and −9.4 (P<.0001 vs <5 %, all comparisons; ITT-LOCF), and for diastolic BP (mm Hg) were −1.7, −3.8, −5.0, and −5.6 (P <.0001 vs <5 %, all comparisons). LS mean percent change in lipid parameters for each WL category, respectively, was HDL-C (%), −0.2, 1.0, 3.5, and 6.5 (P≤.0078 vs <5 %, all comparisons); non-HDL-C (%), −3.4, −7.2, −8.9, and −13.2 (P<.0001 vs <5 %, all comparisons); triglycerides (%), −2.1, −17.2, −40.5, and −60.0 (P<.0001 vs <5 %, all comparisons). After 56 weeks of treatment, Framingham Risk was decreased, with greater improvements observed with greater WL: −0.2, −0.6, −1.0, and −1.4 for those achieving WL of <5 %, ≥5 % to <10 %, ≥10 % to <15 %, and ≥15 %, respectively (P<.05 vs <5 %, all comparisons; ITT-LOCF); this represents no relative mean reduction with <5 % or ≥5 % to <10 % WL and a 9.8 % and 15.6 % relative mean reduction for ≥10 % to <15 %, and ≥15 %, respectively. Most common adverse events included constipation, dry mouth, and paraesthesia.
CONCLUSIONS: When used in conjunction with lifestyle modification, PHEN/TPM ER led to significant WL in obese and overweight subjects. Framingham risk was improved with increasing degree of WL as were systolic and diastolic BP, HDL-C, non-HDL-C, and triglycerides in those achieving as little as 5 % to <10 % WL. These findings suggest the potential of WL induced by PHEN/TPM ER to significantly reduce CVD risk factors in obese and overweight patients. Dr. Cheskin is a member of the VIVUS, Inc. National Advisory Board and stockholder in the company.

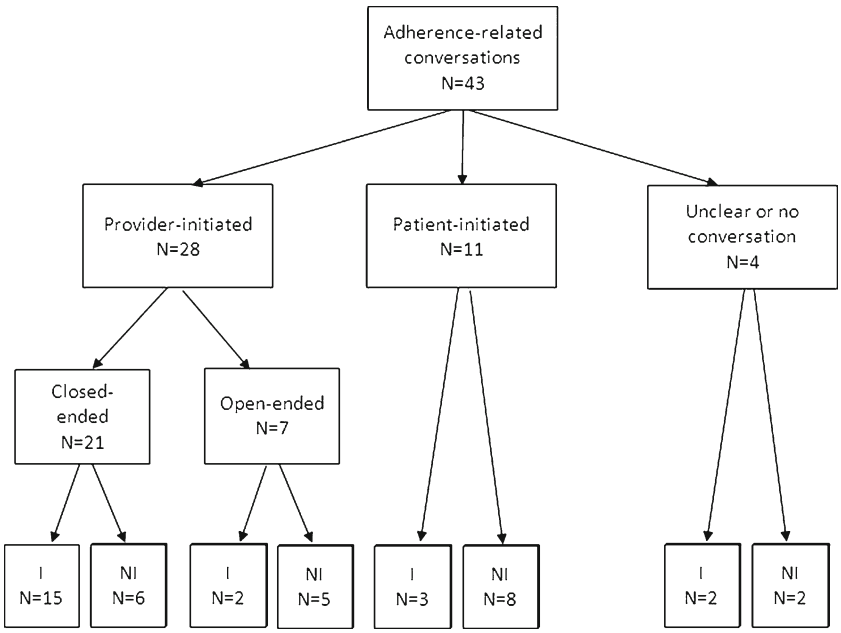
RELATION OF ANTIHYPERTENSIVE TREATMENT INTENSIFICATION TO PATIENT-PROVIDER COMMUNICATION ABOUT ADHERENCE TO MEDICATIONS Varsha Vimalananda[1,2]; Barbara G. Bokhour[1,3]; Jeffrey Solomon[1]. [1]Center for Health Quality, Outcomes and Economic Research (CHQOER), Bedford, MA; [2]Boston University School of Medicine, Boston, MA; [3]Boston University School of Public Health, Boston, MA. (Tracking ID #1639756)

BACKGROUND: In treating patients with uncontrolled blood pressure (BP), providers must distinguish suboptimal adherence to medications from insufficiently intensive therapy. Provider communication strategies are crucial to effective assessment of adherence and thus may influence decisions about whether or not to intensify medical therapy. We explored the relationships between open- or closed-ended questioning, providers' perceptions of adherence and decisions to intensify medications for hypertension (HTN).
METHODS: Data were collected for the CATCH (Culture and Treatment Communication in Hypertension) study. CATCH recruited primary care providers

(PCPs) and their patients from 2 VA medical centers. Eligible patients had a diagnosis of hypertension (HTN) and >=2 BP measurements above goal (>140/90 mmHg or, for diabetes, >130/80 mmHg) in the preceding year. We audiorecorded and transcribed 52 clinical interactions between patients and PCPs. In 43 encounters, PCPs clearly discussed intensification or non-intensification of medications. Among these, we coded segments related to medication-taking according to pre-specified categories based on our analytic goals: patient- or provider-initiated discussion; open- or closed-ended questioning; intensification or non-intensification of medication; and perceived acceptable or unacceptable adherence. For perceived adherence we determined provider assessment based on either explicit statements about adherence or patients' passive agreement with provider's declarative statements.

RESULTS: Of the 43 encounters, 22 resulted in treatment intensification and 21 did not. Forty patients were male. The intensified group was younger (57.5±11.1 vs. 61.3±7.2 years) and had a higher mean BP (166/97±21/11 vs. 155/92±13/8 mmHg). Adherence was addressed in most encounters (39/43) (Figure). Providers initiated the medication-taking discussion more often than did patients (65 % vs. 27 %). Providers used closed-ended more frequently than open-ended questions (75 % vs. 25 %). Intensification was more likely to occur when providers used closed-ended vs. open-ended questions (71 % vs. 40 %). Intensification occurred least frequently (27 %) when patients initiated the conversation. The perception of acceptable adherence was much more likely in cases of closed- than in cases of open-ended questioning (76 % vs. 13 %).

CONCLUSIONS: The methods that providers use to assess adherence in patient encounters influence decisions about treatment intensification for HTN. Use of closed-ended questions is likely to result in incomplete information about adherence, leading to inaccurate judgments of the need to intensify therapy.



RELATIONSHIP BETWEEN SELF-ASSESSED AND TESTED NON-ENGLISH LANGUAGE PROFICIENCY AMONG PRIMARY CARE PROVIDERS Lisa C. Diamond[1,2]; Sukyung Chung[3]; Warren Ferguson[4]; Elizabeth A. Jacobs[5]; Francesca Gany[1,2]. [1]Memorial Sloan-Kettering Cancer Center, New York, NY; [2]Weill Cornell Medical College, New York, NY; [3]Palo Alto Medical Foundation Research Institute, Palo Alto, CA; [4]University of Massachusetts Medical School, Worcester, MA; [5]University of Wisconsin-Madison, Madison, WI. (Tracking ID #1634474)

BACKGROUND: Individuals with limited English proficiency (LEP) experience poor patient-clinician communication. True language concordance between LEP patients and clinicians can be beneficial but most studies of language concordance have used clinician self-reported non-English language proficiency. Self-assessments are less expensive and less time consuming than oral proficiency tests but may not be as reliable. Our objective was to evaluate the accuracy of self-assessment of non-English language proficiency by clinicians.

METHODS: Primary care providers (PCPs) who spoke one of 6 languages other than English were recruited from a multispecialty group practice in the San Francisco Bay Area of California and from Massachusetts Community Health Centers. PCPs first completed a <5 min self-assessment using a version of the Interagency Language Roundtable (ILR) Scale which was adapted for use in the medical setting. They were then invited to take the Clinician Cultural and Linguistic Assessment (CCLA), a validated oral proficiency interview designed to assess clinician language proficiency in the health care setting. We used non-parametric approaches to assess equality in mean and variance in CCLA scores of each ILR scale and the correlation between CCLA scores and ILR scale by language.

RESULTS: Sixteen PCPs in California and 51 in Massachusetts participated in the study. Spanish was the most common language tested (79 %), followed by Cantonese, Mandarin, French, Portuguese, and Vietnamese. The respondents self-reported their proficiency level as "Excellent" 9 % of the time, 24 % rated "Very Good," 46 % "Good," 18 % "Fair," and 3 % rated "Poor" proficiency. The average CCLA score was 76/100. There was a positive correlation between self-reported ILR scale and CCLA score (rho=0.49, $p<0.001$). Respondents who self-reported "Excellent" on the ILR scored an average of 87 on the CCLA. Respondents who self-reported "Poor" scored an average of 34 and those who self-reported "Fair" scored an average of 64. Scores for participants who self-rated as "Good" or "Very Good" were similar (78 vs. 80). The variance in CCLA scores was wider in the middle categories ("Good" or "Very good") than in the low or high ILR categories ($p=0.003$).

CONCLUSIONS: Self-reporting of non-English language proficiency using the ILR correlates to tested language proficiency, particularly on

the low and high ends of the self-rating scale. Participants who self-report in the middle of the scale may require additional testing. Further research needs to be done to identify the characteristics of PCP whose self-reported non-English proficiency levels are inaccurate and, thus, require proficiency testing.

RELATIONSHIP BETWEEN INCREASED CLOSTRIDIUM DIFFICILE RATES, ANTIBIOTIC UTILIZATION, AND A NEW C. DIFFICILE TESTING ALGORITHM Daniel Caroff[1]; Warren Bilker[3]; David A. Pegues[2]; Keith Hamilton[2]. [1]University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania, Philadelphia, PA; [3]University of Pennsylvania, Philadelphia, PA. (Tracking ID #1634774)

BACKGROUND: At our institution, we have seen a disproportionate increase in rates of positive C. difficile testing on our inpatient oncology units from 2008 to 2011 despite aggressive environmental measures and antimicrobial stewardship. Similarly, utilization of some broad-spectrum antibiotics increased on the same units. In December of 2010, our institution changed C. difficile testing from an enzyme immunoassay (EIA) to an algorithm using glutamate dehydrogenase antigen, EIA, and polymerase chain reaction (PCR) assays. The aim of this study was to examine relationships between positive C. difficile tests, the usage of broad-spectrum antibiotics and a more sensitive assay.
METHODS: We collected data on positive C. difficile tests, number of tests performed, and total defined daily doses of pipericillin-tazobactam, meropenem, levofloxacin, and cefepime used on several oncology, critical care, and general medical units from 2008 to 2011. Data was standardized by patient-days. We designed a mixed-effects Poisson regression model to compare infection rate, unit type, C. difficile assay type, and antibiotic usage trends. All cases of positive C. difficile tests were adjudicated based on National Healthcare Safety Network (NHSN) definitions.
RESULTS: Rates of positive C. difficile testing on oncology units increased by 36 % after introduction of the PCR-based assay ($p<0.001$). There was no relationship between antibiotic usage and rates of C. difficile on any unit. After the implementation of the PCR-based assay, the average rate of colonization (patients with positive C. difficile testing that did not meet NHSN criteria for GI infection) more than doubled from 16 % to 35 % on oncology units compared with no increase (28 % to 27 %) on general medical and critical care units.
CONCLUSIONS: Trends in positive C. difficile results were strongly associated with use of a new assay, but not with trends in antibiotic usage. Specifically, the rate of positive C. difficile testing due to colonization increased significantly on oncology units after implementation of a more sensitive assay. This may be related to a lower threshold for C. difficile testing in oncology patients. In order to minimize the detection of colonization and the subsequent antimicrobial treatment of these patients, we suggest an algorithmic approach to C. difficile testing. Further prospective study is needed to determine whether such an approach is safe and beneficial.

REPATRIATION TO PRIMARY CARE: DO PCPS AND SPECIALISTS AGREE? Nathaniel Gleason; Sara Ackerman; Don Collado; Chanda Ho; Jennifer J. Monacelli; Michael Wang; Ralph Gonzales. UCSF, San Francisco, CA. (Tracking ID #1640636)

BACKGROUND: 'Repatriation'—the return of care management from a specialist to the primary care provider (PCP), accompanied by specialist recommendations—could help optimize the use of specialty care resources. A better understanding of two areas is needed: 1) identification of patients followed by a specialist for a clinical problem that could reasonably be managed by a PCP, and 2) an understanding of barriers to repatriation. Here we report survey results from specialists and PCPs regarding patients under their mutual care; in a companion abstract we report qualitative findings from interviews with PCPs.
METHODS: Specialists (total $n=59$) in 5 medicine subspecialty practices (Cardiology, Endocrinology, Gastroenterology, Pulmonary, and Rheumatology) at a single institution completed a 4-item, self-administered survey following each patient visit ($n=104$–173 surveys per specialty), which asked, "Could this diagnosis be managed exclusively by the PCP?" Response options were "yes", "perhaps," and "no". PCPs (both internal ($n=90$) and external ($n=262$) to the academic medical center) were then identified, and received a similar survey for each patient captured by a specialist survey. Since PCPs were reflecting on their own comfort level with exclusive management, we did not include a "perhaps" response, but rather 'yes' and 'unlikely'. Proportions are presented with 95 % confidence intervals (95 % CI); statistical significance in the difference between specialists and PCPs on the question of repatriation was assessed with McNemar's chi-square test.
RESULTS: Specialists completed surveys for 754 (68 %) of the 1,082 eligible patient visits during the survey period. PCPs were identified for 705 (94 %) of these patients ($n=316$ internal, and 389 external). PCPs completed 383 surveys (response rate=80 % for internal and 37 % for external PCPs). 342 patients had PCP and specialist surveys with no missing data, and served as the final study sample. PCPs identified 46 % of patients appropriate for repatriation, compared with specialists who identified 24 % ($p<0.001$). Among patients whom PCPs deemed appropriate for repatriation ($n=158$), 35 % (95 % CI: 28, 42) of specialists answered "yes," 27 % (95 % CI: 20, 34) answered "perhaps," and 38 % (95 % CI: 30, 45) answered "no." Among patients whom specialists deemed appropriate for repatriation ($n=82$), 67 % (95 % CI: 57, 77) of PCPs answered "yes" and 33 % (95 % CI: 23, 43) answered "unlikely." Overall, 16 % (95 % CI: 13 %, 19 %) of patients had concordant PCPs and specialists, answering "yes" to repatriation. For trends by diagnosis, we limited the analysis to those diagnoses shared by at least 8 patients. The diagnoses with >50 % agreement that repatriation was appropriate were hypertension (6/8 PCP-specialist pairs agree), coronary artery disease (11/21), non-malignant thyroid disease (6/12), and COPD (9/18). Diagnoses with >50 % agreement that repatriation was not appropriate were inflammatory bowel disease (11/13), thyroid cancer (11/13), and rheumatoid arthritis (25/32).
CONCLUSIONS: For patients with continuing care in specialty practices, and an established PCP, PCPs and specialists agreed that return of care management to the PCP is reasonable for a significant proportion. This presents an opportunity to provide less costly, streamlined care for such patients. Conversely, we found a high degree of discordance overall. Several diagnoses emerged as potential targets for empiric interventions to facilitate repatriation where appropriate.

REPRODUCIBILITY OF ASSESSMENTS OF LEARNERS' SKILLS IN QUALITY IMPROVEMENT Robert G. Badgett[1,2]; Edward F. Ellerbeck[3]; Leslie A. Sullivan[3]; Tracie C. Collins[1]. [1]KU School of Medicine-Wichita, Wichita, KS; [2]KU School of Medicine-Wichita, Wichita, KS; [3]KU School of Medicine, Kansas City, KS. (Tracking ID #1635454)

BACKGROUND: The teaching of quality improvement (QI) is an emerging component of curricula for both medical students and resident physicians. In the absence of clear national recommendations, schools are developing independent curricula. The Quality Improvement Knowledge Application Tool (QIKAT) is, to our knowledge, the only existing tool for assessing the knowledge of learners and thus is essential for guiding the assessment of innovations in the teaching of QI. Prior reports of the inter-rater reliability of the QIKAT range from Kappa of 0.2 to 0.8.
METHODS: In a before and after assessment, we administered a modified QIKAT to medical students participating in a required senior course that includes teaching of QI. The QIKAT consists of questions that query learners' confidence in their QI skills and three scenarios in which learners describe the aim and methods of proposed QI projects to address deficits in the quality of care described in the scenarios. Raters assess 4 dimensions of the proposed projects. One dimension is the aim statement of the proposed project. An example of an exemplary aim statement is to "increase the percentage of retinal exams for my patients with diabetes by 50 % in the next 6 months" (Oyler J et al. University of Chicago Medical Center).

During October of 2012, students were randomly given one QI scenario from the QIKAT before the course and a second scenario after the course. Two raters independently and blindly assessed the students' answers to the scenarios. The raters used previously published criteria for scoring the QIKAT. In addition, for the aim statements, all five of Doran's SMART criteria (specific, measurable, attainable, relevant, time-bound) were required for aim statements to be judged as excellent. Inter-rater agreement was measured with Cohen's weighted kappa. For this analysis, we included all tests regardless of whether they were administered before or after the course.

RESULTS: Twenty-nine senior medical students completed tests before and after the course yielding 58 completed tests. For the inter-rater reliability of the assessments of the aim statements component of the QIKAT, kappa was 0.09 (p=0.479). The inter-rater reliability of the other 3 dimensions ranged from 0.25 to 0.31 (p-values ranged from 0.01 to 0.027). For the inter-rated reliability of the overall QIKAT scores, kappa was 0.12 (p=0.122).

CONCLUSIONS: In an independent assessment, we report the QIKAT to be much less reliable than previously reported. We believe the tool is essential in guiding the development of curricula in quality improvement; however, the QIKAT needs more explicit criteria for scoring its subjective components. This is especially true for incorporation of Doran's SMART criteria into the assessment of aim statements for QI projects proposed by the students. A limitation of our study was assessing only two of the three scenarios from the QIKAT.

REPRODUCTIVE CHALLENGES FACING US MILITARY FEMALE SOLDIERS IN A WAR-READY CULTURE April S. Fitzgerald[1]; Rita L. Duboyce[2]; Barbara A. Cooper[2]; Deborah Omori[2]; Joan B. Ritter[2]; Patrick G. O'Malley[2]. [1]Johns Hopkins University, Baltimore, MD; [2]Uniformed Services University of the Health Sciences, Bethesda, MD. (Tracking ID #1641059)

BACKGROUND: Initially capped at 2 % maximum allowable percentage of the military, female soldiers now comprise over 14 % of the U.S. active duty military, numbering over 200,000. The issues of sexuality, family planning, pregnancy, breast feeding, and family care are unique in this population and affect soldier readiness and deployment planning. The goal of our study is to evaluate reproductive and maternity leave policies that affect female soldiers.

METHODS: Systematic review of international and US military policies. We reviewed the US Uniform Code of Military Justice, Department of Defense Instructions, and service specific regulations such as the Air Force Instructions, Army Regulations, and Navy Regulations for barriers to female military service with regards to reproduction. We also compared maternity leave policies applicable to female soldiers among four major countries that have significant numbers of female soldiers serving on active duty: United Kingdom, Canada, Australia, and the United States.

RESULTS: The US provides the shortest length of maternity leave (6 weeks) among four major countries reviewed. In the post-partum time frame, the US Army and Air force defer deployment for 4 months while the Navy defers deployment for 12 months. Only the Air Force and Navy have breastfeeding policies that guarantee time and space for Active Duty mothers to pump breast milk. All military services require a family care plan for dual-military and single parents to ensure adequate care for dependents if the military member is deployed.

CONCLUSIONS: The US military has implemented policies to reduce barriers to the service of female military members, but policymakers could consider further policy changes. Recommendations include increasing education and family planning programs, implementing an optional six-week extension of non-chargeable maternity leave for primipara mothers, and consideration of a temporary 80 % full-time equivalent option for female soldiers during the first 6-months of their newborn's life. These strategies should be studied for impact on female retention, mission effectiveness, unit morale, child well-being, and soldier health.

Maternity Policies in 4 Countries with Female Service Members
Australia </u</b Canada </u</b United Kingdom</u</b United States </u</b
Maximum Parental Leave </b 52 week 52 week 52 week 6 week
Maternity Pay </b 14 weeks (100 % pay) 38 week (non-paid) Up to 52 week (93 % pay) 6 week(90 % pay) 33 week (lower of 90 % or stnd rate) 6 week (100 % pay)

RESIDENT ATTITUDES, KNOWLEDGE AND BEHAVIORS REGARDING AN ELECTRONIC INCIDENT REPORTING SYSTEM Jessica A. Eng[1,2]; Jonathan Hatoun[3,4]; Constance Liu[3]; Laura Blum-Smith[5]; Sandra Shea[5]; Winnie Suen[3,6]. [1]University of California San Francisco School of Medicine, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA; [3]Boston Medical Center, Boston, MA; [4]Boston Children's Hospital, Boston, MA; [5]Committee of Interns and Residents, New York, NY; [6]Boston University School of Medicine, Boston, MA. (Tracking ID #1637400)

BACKGROUND: At academic medical centers, resident physicians are frontline providers who can play a key role in improving patient safety and hospital operations. While the use of electronic incident reporting systems to gather data about areas for improvement is increasing, there is little data about the resident perspective on electronic incident reporting systems. In recognition of this issue, Boston Medical Center, a 496-bed urban safety net hospital, collaborated with the Committee of Interns and Residents housestaff union. As the initial step of a hospital-funded project to improve reporting behaviors, we conducted a survey of interns and residents about their attitudes, knowledge, and behaviors regarding the institution's electronic incident reporting system.

METHODS: A resident focus group was used to inform a preliminary survey of graduating house officers in Spring 2012, from which a final survey tool was refined. The voluntary and confidential survey was distributed to the interns and residents of one urban academic medical center at house officer conferences for 8 weeks in Fall 2012. Residents were asked to select the 3 biggest barriers to using the reporting system from a list (knowledge of current electronic incident reporting system, fears related to reporting, perceived effectiveness of current system, and resident work load and priorities). Other survey questions focused on their use of the reporting system, attitudes towards efforts to increase reporting, and attitudes towards learning how to reduce errors. Most survey questions used a 5-point Likert scale ("Strongly Disagree" to "Strongly Agree") categorical response format, and results are reported by combining the "Somewhat Agree" and "Strongly Agree" responses.

RESULTS: Three hundred fifty residents responded (69 % response rate) to the survey. Sixty-three percent reported having been involved in an adverse event, but only 37 % of all residents had submitted an electronic incident report. The most commonly cited barriers to using the electronic reporting system were not knowing which incidents to report (53 %), not knowing how to use the electronic reporting system (45 %), and being too busy with other work to file a report (43 %). Residents were least likely to cite worries about retaliation from other hospital employees (12 %), disciplinary action (7 %), litigation (7 %) as barriers. Respondents indicated that discussion of possible adverse events on a case by case basis with their clinical teams (57 %) and educational conferences about adverse events led by someone from their department (50 %) would increase rates of their reporting. Ninety-one percent agreed that "it is important to learn how to improve systems during residency to reduce errors"; however, only 37 % felt that "reporting adverse events using the electronic incident reporting system is an effective way to help reduce errors and improve patient safety." Only 32 % agreed that their supervisors encourage them to use the reporting system.

CONCLUSIONS: Many adverse events go unreported due to a lack of resident knowledge about how to use the current reporting system and which incidents to report, as well as because of a feeling that the electronic reporting system is not an effective way to improve patient safety. Still, residents believe that it is important to learn how to improve hospital systems during residency. Patient safety efforts at academic medical centers should include education of residents about how adverse event reporting improves patient safety and how to use available reporting systems.

RESIDENT PEER CHART REVIEW: AN EFFECTIVE APPROACH FOR QUALITY IMPROVEMENT AND MEDICAL EDUCATION
Andrew J. Hale; Ryan Nall. Beth Israel Deaconess Medical Center, Boston, MA. (Tracking ID #1641286)

BACKGROUND: Appropriate follow-up and documentation of outpatient lab results is an ongoing challenge for many healthcare providers. Additionally, teaching resident physicians how to do it correctly is an added difficulty. Peer review among residents is a little explored but potentially valuable intervention to improve safety and education. In this quasi-experimental study, we evaluated the effects of self- and peer-review on laboratory follow-up among internal medicine residents.
METHODS: We examined three groups of residents—those who reviewed their own charts (self-review; $n=69$); those who reviewed other residents' charts (peer-review; $n=59$); and an historical control group of 20 residents. Self- and peer-review occurred in September through October of 2012 and examined the first ten results available from 4/1/12 onwards. Residents assessed the acuity of each lab result, the time to document a discussion with the patient, and undocumented results. We performed a second review after the initial review, using the first 10 results from 11/1/12 forward. We reviewed results from the control group in the same manner, using results from both 4/1/11 and 11/1/11 onwards, to assess the effect of 7 months of additional training. We also surveyed residents about their comfort with the peer review process and its importance.
RESULTS: Before the chart review intervention, from 4/1/12 onwards, the mean time required for documentation was 5.1 (SD 4.7) days based on self-review and 6.2 (SD 7.3) days based on peer-review ($p=0.24$). In self-review, there were 43 (6.2 %) cases of no documentation of lab follow-up, while in peer-review there were 77 (11.2 %) such cases ($p=0.006$). For missed abnormal labs, there were 13 (5.8 %) cases found in self-review and 15 (8.6 %) found in peer-review ($p=0.50$). In self-review, there were 84 (12.2 %) cases of documentation after 7 days, while in peer-review there were 104 (15.1 %) such cases ($p=0.06$). Interim results from the first 10 residents following the intervention, from 11/1/12 onwards, found a mean time to documentation of 2.9 days (SD 1.3). There were 2 (2.0 %) missed labs, 0 of which were abnormal, and 4 (4.0 %) labs documented after 7 days. In interim review of 10 historical control residents, the mean time to documentation was 6.0 (SD 3.0) days initially and 6.1 (SD 3.8) days 7 months later ($p=0.84$). Similarly, initial and subsequent reviews documented 13 % and 16 % of cases with no documentation ($p=0.52$), 11.4 % and 12.2 % undocumented abnormal results ($p=0.57$), and 20 % and 22 % of cases with no documentation within 7 days ($p=0.68$). A total of 78 % of surveyed residents agreed or strongly agreed that peer review was an important part of the quality improvement process, and 85 % felt comfortable or very comfortable reviewing other residents.
CONCLUSIONS: In this innovative application of peer-review to patient safety and resident education, peer-review had a strong effect on improving resident behavior. Peer-review identified more cases of suboptimal laboratory result documentation than did self-review. The process of performing peer review appeared to markedly improve subsequent documentation of laboratory results. The majority of residents felt peer-review was important, and were comfortable with participating in it. Our results support the use of resident peer review in improving the safety of laboratory result follow-up, and suggest it could be used far more broadly in resident quality improvement and education.

RESIDENT-LED INTERVENTION TARGETING HIGH-UTILIZING PATIENTS IN A RESIDENT CONTINUITY CLINIC SHOWS PROMISE IN IMPROVING RESIDENTS' COMPETENCY IN SYSTEMS-BASED PRACTICE
Sean Tackett[1]; Melissa Dattalo[1]; Marc Larochelle[2,1]; Ryan E. Childers[1]; Huy Do[1]; Lauren Graham[1]; Lana R. Elpert[1]; Stephanie Nothelle[1]; Fernanda Porto Carreiro[1]; Justin Elfrey[1]; Laura Hanyok[1]. [1]Johns Hopkins Bayview Medical Center, Baltimore, MD; [2]Harvard Medical School, Boston, MA. (Tracking ID #1638890)

BACKGROUND: Effective systems-based practice has the potential to improve quality and reduce cost for high-utilizing medically and psychosocially complex patients. Residents training in internal medicine continuity clinics provide care for a disproportionate number of such complex patients, making resident clinics an ideal place to develop competency in systems-based practice. In 2011, internal medicine residents at Johns Hopkins Bayview created and implemented a multimodal intervention to improve care for high-utilizing patients in their continuity clinic.
METHODS: We included patients insured by a Medicaid HMO who had 4 or more ED visits or inpatient admissions and 3 or more visits to the continuity clinic in the preceding year. We assigned each intern (PGY-1) starting in July 2011 to a high-utilizing patient whose primary care physician had just graduated from the residency program. The intervention consisted of structured home visits, action plan development, collaboration with an insurer-based nurse case manager (NCM), and monthly multidisciplinary conferences that included problem-solving discussions for selected high-utilizing patients and didactic sessions. Residents (PGY-2 and PGY-3) continued usual care with their established high-utilizing patients and served as a comparison group. We administered surveys to both interns and residents matched with high-utilizing patients at the end of the 2011–2012 academic year. All trainees rated their competency in systems-based practice (4 questions summed, scaled 4–20), ability to work with NCMs (2 questions, each scaled 1–5), and satisfaction with the care they provided (visual analog scale of 0–100), and they completed the Difficult-Doctor Patient Relationship Questionnaire (scores over 30 indicate a difficult relationship). Interns completed an additional series of questions assessing their satisfaction with the intervention.
RESULTS: Fifteen intern-patient dyads (intervention group) and 23 resident-patient dyads (usual care group) were included in the analysis. Most interns felt that the intervention improved their ability to care for their high-utilizing patient (86 %) and for their other patients not involved in the intervention (79 %). Every intern (100 %) agreed that the home visits were personally rewarding, changed their perception of their patient, allowed them to know their patient better as a person, and permitted them to provide better care for their patient. Interns, compared to residents, had a trend toward higher perceived competency in systems-based practice (12.4 (SD 3.2) vs. 10.9 (SD 4.2), $p=0.23$) and felt more strongly that they understood the role of NCMs (3.6 (SD 1.2) vs. 2.4 (SD 1.3), $p=0.01$), and could employ NCM help (3.5 (SD 1.1) vs. 2.3 (SD 1.3), $p=0.01$). Residents, compared to interns, had greater satisfaction with their care of their patients (63.9 (SD 27.2) vs. 55.3 (SD 25.0), $p=0.34$) and did not perceive their patients to be as difficult (28.3 (SD 8.2) vs. 35.6 (SD 11.0), $p=0.04$).
CONCLUSIONS: A resident-led intervention to improve care for high-utilizing patients in resident continuity clinic was well received by interns. The intervention may have led to greater competency in systems-based practice, especially interprofessional collaboration. Further study would be needed to determine why residents reported better relationships with patients. Potential reasons include residents' longer patient relationships and training experience.

RHEUMATOID ARTHRITIS IS ASSOCIATED WITH DISTURBED MACROVASCULAR BUT NOT MICROVASCULAR FUNCTION
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BACKGROUND: Rheumatoid arthritis (RA) patients have macrovascular dysfunction and increased cardiovascular death. Digital pulse amplitude, a measure of microvascular endothelial function, has not been tested in RA. The mechanism of vascular dysfunction in RA is unclear.
METHODS: We conducted a cross-sectional study of 26 RA subjects and 15 matched controls. Macrovascular function was assessed by flow-mediated dilation (FMD) and pulse wave velocity (PWV) and microvascular function by digital pulse amplitude (EndoPAT). Oxidative stress was assessed by asymmetric dimethyl L-arginine (ADMA) and nitrotyrosine (NT) and inflammation by CRP. We used linear regression to evaluate the

association between RA and vascular function, and to assess for potential mediators.
RESULTS: RA was associated with a 2.1 % lower FMD in an age-adjusted model (CI 0.08–4.07, p=0.04). RA was associated with a 1 m/s higher PWV in a model adjusted for age and blood pressure (CI 0.25–1.69, p=0.01). There was no difference in EndoPAT index between RA and controls (Table). ADMA, NT, and CRP were not significant mediators of the association between RA and macrovascular dysfunction. Vascular function measures in RA vs control subjects RA control P value Flow-mediated vasodilation, % 4.44±3.01 6.73±3.11 0.03 Pulse wave velocity, m/s 8.2±1.6 6.9±0.9 0.01 EndoPAT index 2.2±0.6 2.2±0.8 0.77
CONCLUSIONS: RA patients have significantly impaired macrovascular function (by FMD and PWV) while microvascular function is preserved. ADMA, nitrotyrosine or CRP did not mediate the association between RA and macrovascular function. The biological differences in the macrovascular and microvascular beds in RA patients deserve further investigations.
Vascular function measures in RA vs control subjects
RA control P value
Flow-mediated vasodilation, % 4.44±3.01 6.73±3.11 0.03
Pulse wave velocity, m/s 8.2±1.6 6.9±0.9 0.01
EndoPAT index 2.2±0.6 2.2±0.8 0.77

RISK FACTOR PROFILES OF AFRICAN AMERICANS WITH PERIPHERAL ARTERIAL DISEASE Rosalee Zackula[2]; Mojdeh Baniasadi1; Tracie C. Collins[1]. [1]KU School of Medicine-Wichita, Wichita, KS; [2]KU School of Medicine-Wichita, Wichita, KS. (Tracking ID #1642070)

BACKGROUND: African Americans are more than two times as likely as non-Hispanic whites to suffer from peripheral arterial disease (PAD)—atherosclerosis of the abdominal aorta and arteries of lower extremities. Very little is known about risk factors for PAD in African Americans. We explored risk factor profiles of African Ameicans with PAD.
METHODS: A cross-sectional analysis was conducted using data from an NHLBI funded trial to promote walking among community-dwelling African Americans. Exclusion criteria included prior foot or lower leg amputation and an inability to walk for exercise. Participants were evaluated for PAD using the ankle-brachial index (ABI: the ratio of systolic blood pressure in the ankle to that in the arm) and completed a telephone survey that included an assessment of sociodemographics, comorbidities and readiness to engage in exercise. PAD was defined by an ABI<0.995 in either leg. Chi-square and Mann-Whitney U tests were used to compare survey responses by PAD status. Where data were sparse, exact 2-tailed tests were used. Analyses were conducted in IBM SPSS (version 20, Chicago, IL).
RESULTS: Eighty three African Americans were included in the study; 43 (51.8 %) were diagnosed with PAD. Sixty-four (77.1 %) were females of whom 32 screened positive for PAD, 19 (22.9 %) were males of whom 11 screened positive for PAD. However, the median age of females with PAD (66.5 years) versus without (57.0 years) was higher, z=2.71, P=0.006. Results were similar for males; median age for males with PAD was 74.0 years versus 53.0 years without (z=2.74, p=0.004). We found significant differences in number of comorbidities by group (Table 1.); those with PAD reported more comorbidities; z=2.34, p=0.019. The most often reported comorbidities were arthritis and hypertension, PAD=14 (33.3 %) compared with no PAD=7 (17.1 %). No significant differences were found for smoking status or prescriptions for hypertension/cardiovascular disease. Of those diagnosed with PAD, 5 (15.6 %) reported they did not have primary care physicians.
CONCLUSIONS: Results showed higher numbers of comorbidities and advancing age were significantly associated with PAD. However, data were sparse and disproportionately female. Further studies should consider these potential risk factors, the role of diabetes mellitus, and biases when designing research on African Americans with PAD.
Table 1. Comorbidities by PAD Status, f (%)
Comorbidity Positive Negative
Angina 0 (0.0) 1 (2.4)
Angina, Hypertension 1 (2.4) 1 (2.4)
Arthritis 2 (4.8) 4 (9.8)
Arthritis, Angina, Diabetes, Hypertension 1 (2.4) 1 (2.4)
Arthritis, Asthma, Angina 0 (0.0) 1 (2.4)
Arthritis, Asthma, Diabetes, Hypertension 1 (2.4) 1 (2.4)
Arthritis, Asthma, Hypertension 2 (4.8) 1 (2.4)
Arthritis, Diabetes 0 (0.0) 2 (4.9)
Arthritis, Diabetes,Hypertension 7 (16.7) 4 (9.8)
Arthritis, Hypertension 14 (33.3) 7 (17.1)
Asthma, Diabetes, Hypertension 1 (2.4) 0 (0.0)
Asthma, Hypertension 1 (2.4) 0 (0.0)
Diabetes,Hypertension 4 (9.5) 4 (9.8)
Hypertension 7 (16.7) 8 (19.5)
None 1 (2.4) 6 (14.6)

RISK FACTORS FOR EMOTIONAL DISTRESS AMONG PHYSICIAN RESIDENTS AND FELLOWS: A DESCRIPTIVE STUDY OF COUNSELING VISITS Anna Golob[1]; Mindy Stern[2]. [1]University of Washington, Seattle, WA; [2]University of Washington, Seattle, WA. (Tracking ID #1635672)

BACKGROUND: A significant proportion of surveyed physician residents report emotional distress, burnout, or poor quality of life. There is evidence that resident distress impacts patient care and can negatively affect medical knowledge as assessed by standardized examinations. Unfortunately, there is a paucity of data regarding causes of resident and fellow distress and effective interventions. Our University Graduate Medical Education Wellness Center offers free and confidential counseling visits to its physician trainees (residents and fellows). The counselors have collected a de-identified database of information about the trainees who receive counseling. The objective of this IRB-approved study is to provide a descriptive analysis of this database with an aim to better characterize risk factors leading to emotional distress among physician trainees.
METHODS: The analysis includes all University Wellness Center physician trainee counseling visits that occurred between 9/1/2009 and 9/30/2012. The database includes age, gender, post graduate year, foreign medical graduate status, amount of medical debt, by whom the trainee was referred, chief complaint, other concerns, history of prior mental health diagnosis/counseling/psychiatric medication use, distress level using a Likert Scale from 1 to 5, whether medication was recommended, and if/where the trainee was referred as a result of the visit.
RESULTS: There were 332 new physician trainee counseling visits during the 3 year study period and 1,312 return counseling visits. The great majority of physician trainees were self referred (80 %) followed by referred by a program director (16 %) or by a partner (2 %). Female physician trainees outnumbered males by nearly two to one (65 % to 35 %). The amount of medical debt ranged from none to $580 K, with an average of $157 K; slightly less than the national average of $162 K for US allopathic graduates. Distress level as assessed by Likert Scale did not vary by amount of medical debt; average distress level at all new visits was 4.0. A chief complaint of mental health disorder was the most common reason for seeking a new counseling visit (46 %) followed by relationship concerns (28 %), career (22 %), physical health (3 %), and chemical dependency (1 %). Depression was the most common mental health condition seen (22 %), followed by anxiety (15 %). As reference, the point prevalence of depression in US adults aged 18–64 is around 4 %. 18 % of trainees were seen for a chief complaint of job stress, burnout, or struggles with work-life balance. Interventions included follow-up counseling visits, utilized by 75 % of trainees, and referrals. Twenty-three percent of trainees seen in new visits were referred to other providers or programs, most commonly to a psychiatrist (54 %), PCP (9 %), or a community counselor (9 %).
CONCLUSIONS: A mental health disorder was the most common reason for seeking counseling in this study. The physician trainees were found to have a higher prevalence of depression than their age matched, non-physician counterparts. They had substantial medical school debt, but this

was not higher than the national average, suggesting amount of debt may not correlate well with emotional distress. As demonstrated in other studies, this population frequently reported stress, burnout, and difficulty with work-life balance. One interesting finding is the large percentage of visits prompted by relationship concerns. This is one potential target for prospective intervention by graduate medical education programs.

RISK FACTORS FOR NON-ADHERENCE WITH ROUTINE SCREENING MAMMOGRAPHY IN HIV-INFECTED WOMEN
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BACKGROUND: With advances in antiretroviral treatment over the past two decades, life expectancy has increased significantly for HIV-infected individuals; making it more important than ever to ensure the aging HIV-infected population is obtaining routine cancer screening for non-AIDS-defining malignancies. Screening mammography is especially critical, as breast cancer is the most common malignancy diagnosis for American women. The objective of this study was to identify risk factors for inadequate screening mammography in a diverse cohort of HIV-infected women at a large urban safety-net HIV clinic.
METHODS: This retrospective cohort study reviewed the electronic medical record of HIV-infected women aged 40 and older receiving HIV care between October 1st, 2003 and March 31, 2008, for risk factors associated with inadequate screening mammography, defined as not having a mammogram within 2 years of first HIV clinic visit during the study period. Analyses included Chi square testing and unadjusted and multivariate logistic regression.
RESULTS: One hundred forty-six of 292 (50 %) of women had a mammogram within 2 years of initial HIV clinic visit. In unadjusted analysis, women who were of white race, U.S. born, English-speaking, unemployed, high school or higher education level, or who had an HIV viral load >75 copies/mL or a CD4 T-cell count <200 cells/mm3 had increased odds of not undergoing a mammogram. In multivariate analysis, women who were U.S. born (OR 2.7 CI [1.5–4.6]), completed high school or higher education (OR 1.8 [CI 1.1–3.0]) or had an HIV viral load >75 copies/mL (OR 2.2 CI [1.3–3.9]) had increased odds of not obtaining a mammogram.
CONCLUSIONS: Only half of HIV-infected women aged 40 and older had a mammogram within 2 years of initial HIV clinic visit in this study. U.S. born status, higher education level and detectable HIV viral load were associated with inadequate screening mammography. This study demonstrates an unacceptably low proportion of HIV-infected women undergoing routine screening mammography in a socioeconomically disadvantaged patient population, and further study is needed to identify interventions to improve screening mammography rates in this vulnerable population.

RISK FACTORS FOR POTENTIALLY AVOIDABLE READMISSIONS DUE TO END-OF-LIFE CARE ISSUES
Jacques Donze[1,2]; Stuart R. Lipsitz[1,2]; Jeffrey L. Schnipper[1,2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA. (Tracking ID #1633705)

BACKGROUND: Repeated hospitalizations are frequent towards the end of life, and each admission may be an opportunity to initiate advanced care planning to ensure that care continues to be consistent with patient and caregiver wishes, to address issues such as pain, and to reduce future unnecessary readmissions. Since resources are limited, there is a need to prioritize palliative care services for those most likely to benefit, e.g., those likely to have readmissions due to unresolved end-of-life issues. We aim to identify the risk factors for having a 30-day potentially avoidable readmission due to end-of-life care issues.
METHODS: We included all consecutive discharges from any medical service of an academic tertiary medical center in Boston between July 1, 2009 and June 30, 2010. Potentially avoidable 30-day readmissions to the index hospital or two other hospitals within its network were then identified using a validated computerized algorithm based on administrative data (SQLape®). Finally, a random sample of the 30-day potentially avoidable readmissions was reviewed by 1 of 9 trained physicians to identify the ones due to end of life issues, defined by the following 2 criteria: 1) Patient has a terminal clinical condition, such as metastatic cancer or another condition with a life expectancy of 6 months or less; and 2) The readmission is part of the terminal disease process that was not adequately addressed during the index hospitalization. A nested case-control study was designed, where the potentially avoidable end-of-life readmission cases were compared to the non-readmitted controls. We performed a multivariable logistic regression in which the final model included variables that were found to be significantly associated with the outcome in bivariable testing; age and Elixhauser comorbidity index were forced into the model as important potential confounders.
RESULTS: Our study included 80 cases with potentially avoidable end-of-life readmission and 7,974 controls without any 30-day readmission. In a multivariable analysis, the following risk factors were significantly associated (Table): number of admissions in the previous 12 months, malignant neoplasm, opiate medication use, and Elixhauser comorbidity index. Total number of medications and end-stage renal disease, significant in bivariable testing, were no longer significant in the multivariable model. The C statistic for the final model was 0.85, indicating excellent discrimination.
CONCLUSIONS: In a medical population, the main risk factors associated with 30-day potentially avoidable readmission due to end-of-life care issues are a higher number of admissions in the last year, a diagnosis of cancer, the use of opiates, and a higher comorbidity score. Palliative care prior to discharge could be prioritized to the patients with these risk factors in order to improve end-of-life care and possibly reduce unnecessary hospitalizations.

Multivariable analysis

Variable	Odds Ratio	95 % confidence interval
age, per 10 years	1.04	0.91–1.19
Number of admissions in the previous 12 months	1.10	1.02–1.20*
Total number of medications at discharge	1.04	1.00–1.10
Neoplasm	5.60	2.85–11.0*
End stage renal disease	0.60	0.25–1.42
Opiate medication use	2.29	1.29–4.07*
Elixhauser, per 5 unit increase	1.16	1.10–1.22*

* $P<0.05$

RISK-ADJUSTING HOSPITAL-ACQUIRED PRESSURE ULCER RATES FROM CLAIMS DATA: TEACHING HOSPITALS BEWARE
Jennifer Meddings[1]; Heidi Reichert[1]; Laurence F. McMahon[1,2]. [1]University of Michigan Medical School, Ann Arbor, MI; [2]University of Michigan School of Public Health, Ann Arbor, MI. (Tracking ID #1642519)

BACKGROUND: In October 2014, the Centers for Medicare and Medicaid Services (CMS) will compare hospitals nationwide by their hospital-acquired complication (HAC) rates, and reduce pay for all admissions to the quartile of hospitals with the highest risk-adjusted HAC rates; other payers are expected to adopt similar policies. The risk-adjustment method for HACs has not been determined. Using the example of hospital-acquired pressure ulcers (HAPUs), our objectives were to 1) inform the CMS risk-adjustment methodology by deriving models to predict a patient's risk of developing a HAPU, and 2) assess which types of hospitals benefit from the risk-adjustment procedure. We hypothesized that teaching hospitals would benefit most from risk-adjustment due to traditional wisdom that these hospitals care for more complex and severely ill patients.
METHODS: Based on statistical methods used by CMS to risk-adjust (i.e., risk-standardize) hospital mortality rates, we developed hierarchical models to risk-adjust hospital rates of HAPUs (including all stages). Claims data from the Healthcare Cost and Utilization Project State Inpatient Datasets for California were utilized, consisting of >1.2 million adult discharges

annually (age>=21 years, length-of-stay>=2 days, all payers) from all nonfederal acute care hospitals in 2009 (N=304 hospitals, with 20 teaching hospitals) and 2010 (N=296 hospitals, with 19 teaching hospitals). Independent predictors were chosen by literature review and included only present-on-admission conditions. We studied which hospital types (by teaching status, ownership) benefited by the risk-adjustment procedure.

RESULTS: After adjusting for age and gender, the HAPU risk factors with the largest odds ratios in 2010 (and $p<0.01$ in both years) included respirator dependence (OR 7.5), shock/collapse (2.7), neurologic conditions involving paralysis or spinal cord injury (2.7), feeding disorders/malnutrition (2.5), hip fracture or dislocation (2.3), and pneumonia (2.2). The admission's categorization as elective surgical (OR 2.0), or non-elective surgical (4.0) was also statistically significant, compared to medical admissions without surgery. The residual between-hospital variation in risk was larger in magnitude than many patient-level risk factors as indicated by the median odds ratio being >2.0 in both years. C-statistic was 0.86 in 2009 and 0.87 in 2010. In 2010, 289 (98 %) hospitals changed rank after risk-adjustment; 173 hospitals' ranks improved (i.e., lowered) with 116 hospitals' ranks worsening. Of 74 hospitals in the highest quartile of hospital rates before risk-adjustment, 11 (15 %) were reassigned to better (i.e., lower) quartiles using risk-adjusted rates. Hospitals that benefited from risk-adjustment were largely non-teaching (for-profit and not-for-profit). In 2010, teaching hospitals listed a mean of 9.47 (95 % CI: 9.45,9.49) diagnoses compared to 10.93 (95 % CI: 10.92,10.94) for non-teaching hospitals; both teaching and non-teaching hospitals had a mean Charlson/Deyo comorbidity score of 1.70.

CONCLUSIONS: Unexpectedly, teaching hospitals did not benefit from risk-adjustment of hospital-acquired pressure ulcer rates using models developed from patient-level risk factors available in claims data. It is unclear if the fewer number of diagnoses per discharge and similar Charlson/Deyo comorbidity scores reflect less complex patients or less complete claims data documentation in teaching hospitals compared to non-teaching hospitals.

ROLE MODELING AND MEDICAL ERROR DISCLOSURE: RESULTS OF A NATIONAL SURVEY OF FOURTH-YEAR MEDICAL STUDENTS William Martinez[1,8]; Gerald B. Hickson[2]; Bonnie Miller[2]; David J. Doukas[3]; John D. Buckley[4]; John Song[5]; Niraj Sehgal[6]; Jennifer Deitz[7]; Clarence H. Braddock[7]; Lisa Lehamann[1,8]. [1]Brigham and Women's Hospital, Boston, MA; [2]Vanderbilt University School of Medicine, Nashville, TN; [3]University of Louisville School of Medicine, Louisville, KY; [4]Indiana University School of Medicine, Indianapolis, IN; [5]University of Minnesota Medical School, Minneapolis, MN; [6]University of California San Francisco, San Francisco, CA; [7]Stanford University School of Medicine, Stanford, CA; [8]Harvard Medical School, Boston, MA. (Tracking ID #1642717)

BACKGROUND: Medical students are in a formative stage of their professional development and their attitudes and behaviors regarding error disclosure may be influenced by their learning environment, a phenomena known as the "hidden curriculum". We measured students' exposure to negative and positive role modeling for responding to medical errors and examined the association between exposure to role modeling and students' own attitudes and behaviors regarding error disclosure.

METHODS: We administered an anonymous, electronic questionnaire to 1,187 fourth-year medical students from seven medical schools representing all four regions of the U.S. The questionnaire asked respondents about: (1) personal experience with medical errors; (2) training for responding to errors; (3) nontransparent personal behavior in response to a harmful error (e.g., nondisclosure to supervising physicians or patients/families or evading responsibility); (4) frequency of exposure to role modeling related to disclosure as measured by a 2-item negative role modeling scale (e.g., observe more senior team member evade responsibility for error) (score range: 2–8, Cronbach α=.64) and a 3-item positive role modeling scale (e.g., observe more senior team member openly disclose error) (score range: 3–12, Cronbach α=.91); and (5) attitudes regarding disclosure as measured by a 9-item disclosure attitudes scale (score range: 9–36, Cronbach α=.74). Higher scores on these scales represent more frequent exposure to that type of role modeling and more positive attitudes regarding disclosure, respectively. Factor analysis was used to created summary variables representing scale items. Multivariate regression analysis was used to assess independent predictors of the two primary outcomes: (1) attitudes regarding disclosure and (2) nontransparent behavior in response to a harmful error.

RESULTS: The overall response rate was 53 % (631/1187). More than 80 % of students reported exposure to positive role modeling for responding to errors; while more than 50 % of students reported exposure to negative role modeling. Training for responding to errors had the largest independent, positive effect on attitudes regarding disclosure (standardized effect estimate, 0.32, P<.001); while negative role modeling had the largest independent, negative effect (standardized effect estimate, -0.24, P<.001). Positive role modeling had a similar, positive effect on attitudes (standardized effect estimate, 0.26, P<.001). Of the 11 % (68/631) of students who reported contributing to a harmful error, 44 % (30/68) reported nontransparent behavior in response to such an error. More frequent exposure to negative role modeling was independently associated with an increased likelihood of nontransparent behavior in response to a harmful error (OR 1.46, 95 % CI 1.14–1.86; P<.001). While disclosure training and positive role modeling were associated with attitudes, they were not independently associated with behavior.

CONCLUSIONS: Exposure to role modeling predicts both students' attitudes and behavior regarding the disclosure of harmful medical errors. Negative role models may be a significant impediment to disclosure among students. The findings suggest a "hidden curriculum" regarding error disclosure in which the behavior modeled by more senior team members may have a greater impact on subsequent trainee behavior than the values and expectations espoused by the educational and health care system.

ROLE OF PATIENT-PHYSICIAN LANGUAGE CONCORDANCE IN PREVENTIVE HEALTH SCREENINGS IN CALIFORNIA Jane Jih[1]; Eric Vittinghoff[2]; Alicia Fernandez[1]. [1]University of California San Francisco, San Francisco, CA; [2]University of California San Francisco, San Francisco, CA. (Tracking ID #1624157)

BACKGROUND: Patient-physician language concordance (LC) among limited English proficient (LEP) patients is strongly associated with patient trust and satisfaction and has been found to be important in some clinical settings and for specific outcomes. Whether patient-physician LC contributes to the completion of preventive health screenings is unclear. We examined the relationship between LC and completion of preventive health practices among LEP Latino and Asian Americans in California.

METHODS: Cross-sectional data from the 2007 and 2009 California Health Interview Survey (CHIS) was used. CHIS is a population-based, random-dial telephone survey of non-institutionalized residents of California. Interviews were conducted in English, Spanish, Mandarin, Cantonese, Vietnamese and Korean. Analysis was restricted to non-pregnant adults who a) self-reported as Latino or Chinese, Vietnamese or Korean who were grouped as Asian and b) reported speaking English "not well" or "not at all" and spoke a target non-English language at home. Patient-physician LC was defined by respondents reporting that their main physician spoke their target non-English language. Outcomes were 1) self-reported mammogram in the last 2 years (yrs) and 3) self-reported completion of colorectal cancer screening (defined as fecal hem-occult in last 2 year or colonoscopy in last 10 year or sigmoidoscopy in last 5 year). Analysis of mammogram and colorectal cancer screening was further restricted to women≥40 year old and respondents≥50 year old respectively. We examined the completion rates of the outcomes in the LEP populations compared to their English-speaking counterparts. Following CHIS guidelines, we used weighted logistic models with jackknife standard errors to estimate odds-ratios for the effect of LC, adjusted for age, education, income, percent time in US, health status, insurance and for sex for colorectal cancer screening. Adjusted group completion rates with 95 % confidence intervals were estimated using regression standardization. Stata version 12.1 was used.

RESULTS: In the mammography analysis, 68 % of LEP Latinos (n=2184) and 65 % of LEP Asians (n=1069) reported physician LC. LEP women with LC physicians were more likely to report mammogram completion than LEP women with non-LC physicians (Latina LEP LC 79 % vs LEP non-LC 68 %, adjusted odds ratio (AOR) 1.85, 95 % CI 1.36–2.52 and Asian LEP LC 72 % vs LEP non-LC 58 %, AOR 1.99, 95 % CI 1.14–3.47). In the colorectal cancer screening analysis, 62 % of LEP Latinos (n=2151) and 66 % of LEP Asians (n=1407) reported physician LC. There was no clear evidence for differences in the completion of colorectal cancer screening among LEP respondents by physician LC (LEP Latinos AOR 1.24, 95 % CI 0.90–1.69; LEP Asians AOR 1.11, 95 % CI 0.70–1.77). However, the colorectal cancer screening rate was lower among LEP Latinos and Asians than among English-speaking Latinos and Asians (LEP Latinos 50 % vs English-speaking Latinos 70 %; LEP Asians 55 % vs English-speaking Asians 75 %), regardless of physician LC.
CONCLUSIONS: Patient-physician language concordance may be an important contributor to the completion of mammography in LEP Latino and Asian populations in California where many patients report a language concordant physician. Patient-physician language concordance may not be sufficient to overcome barriers to the completion of colorectal cancer screening among LEP Latinos and Asians, and completion rates in the LEP populations are lower than among English-speaking counterparts.

ROLE OF THE PRIMARY CARE PROVIDER (PCP) IN THE CARE OF PATIENTS WITH LOW RISK PROSTATE CANCER: A QUALITATIVE STUDY Zackary Berger[1]; H. B. Carter[2]; Craig E. Pollack[1]. [1]Johns Hopkins School of Medicine, Baltimore, MD; [2]Johns Hopkins School of Medicine, Baltimore, MD. (Tracking ID #1640532)

BACKGROUND: Despite unclear evidence regarding the benefits of surgical or radiation treatment for low risk prostate cancer, relatively few men decide on active surveillance as their choice of management. Further, for those men that do enroll in active surveillance, many withdraw to seek surgical or radiation treatment despite lack of disease progression. Though evidence suggests that primary care providers (PCPs) may play an important role in treatment decision-making, their contribution to a patient's choice to remain in active surveillance remains poorly understood. We thus set out to elucidate the roles played by PCPs in active surveillance among men diagnosed with low-risk prostate cancer.
METHODS: Semi-structured interviews with patients who initially enrolled in the active surveillance program at Johns Hopkins. Participants were purposefully sampled to over-represent those who withdrew from active surveillance despite lack of disease progression.
RESULTS: 12 interviews have been conducted to date with recruitment on-going; their average age was 71. A minority (4 out of 12) reported that the PCP played no role in the patient's prostate cancer screening or treatment decisions. Five stated they were referred by their PCP to the urologist, but their PCP did not play any role thereafter in discussing or recommending management options. Two patients said they discussed management options with their PCP, and one patient reported that he discussed side effects of treatment with his PCP. Several main themes emerged regarding the reasons why PCPs did not play a larger role in discussions of treatment: patients' assumptions that PCPs did not have the time to discuss treatment ("they care, but they have so many patients"), and patients understanding of prostate cancer treatment as solely a urological matter. These themes were also relevant to patients' on-going decisions regarding remaining in or withdrawing from active surveillance, with few men reporting that their PCPs were involved in their choice to withdraw from active surveillance. In addition, despite a number of men reporting a years-long relationship with their PCP, they reported that their PCP did not take an interest in their prostate cancer treatment but focused on other issues, e.g., "he's only worried about my blood pressure and my blood sugar"; "he's attentive, but hands me off to the urologist," "I got diabetes, so it's other issues [that he has] to worry about."
CONCLUSIONS: Some patients do not see their PCP as a useful source of recommendations for prostate cancer management, either because they assume the issue is not appropriate to discuss with their PCP, or because they think their PCP is not able or interested. Efforts to encourage men with low risk prostate cancer to enroll and remain in active surveillance may benefit from closer involvement of PCPs.

RURAL MINORITY WILLINGNESS TO PARTICIPATE IN HIV CLINICAL TRIALS Malika Roman Isler; Lloyd Edwards; Alison Halpern; Margaret Miles; Giselle Corbie-Smith. University of North Carolina at Chapel Hill, Chapel Hill, NC. (Tracking ID #1642462)

BACKGROUND: Though African-Americans experience a significant and disparate proportion of HIV/AIDS cases, they remain underrepresented in HIV clinical trials. Due to barriers such as geographic isolation, distance from tertiary medical centers, low provider referral, and pervasive stigma, the challenges to clinical trial participation are magnified for minorities living in rural communities. Structural and social interventions address some barriers; however, participation is predicated on individual willingness. Previous studies indicate varied findings on the willingness of African-Americans to participate in clinical research. This study seeks to characterize the willingness of rural minorities to participate in HIV clinical trials.
METHODS: As part of a multi-level intervention study, we conducted a baseline survey of minorities living with HIV/AIDS (n=196) in 6 contiguous rural counties in NC. Surveys were administered using an audience response system. The outcome of interest was willingness to participate in an HIV clinical trial (yes/no). We fitted a logistic regression model with 14 predictors of willingness: gender, age, race, education, marital status, insurance status, length of diagnosis, history of HIV clinical trial enrollment, knowledge, attitudes, religious belief, current health status, religious attendance, and religious activity participation.
RESULTS: At baseline, 178 (90.8 %) participants indicated willingness to participate in HIV clinical trials. None of the predictor variables reached significance in the bivariate analyses. Race had an unadjusted p-value =.0537. Of the 14 predictors included in the multivariable model, only race was a statistically significant predictor for willingness (p=.0305). Participants self-report of race was: African-American 161 (80.1 %) and non-African-American 40 (19.9 %). Participants who self-identified as African-American were more likely to indicate willingness to participate in HIV clinical trials than those who did not self-identify as Africa-American.
CONCLUSIONS: African-Americans and the field of HIV clinical research stand to benefit from more minority inclusion in HIV clinical trials. Evidence of African-American willingness to participate in HIV clinical trials abates notions of unwillingness and helps to focus intervention efforts on prevailing barriers to minority participation.

SAFETY OF PRECONSULTATION EXCHANGE IN AN ELECTRONIC REFERRAL SYSTEM Erika L. Price; Justin L. Sewell; Alice H. Chen; Urmimala Sarkar. University of California, San Francisco, San Francisco, CA. (Tracking ID #1641626)

BACKGROUND: Preconsultation exchange between primary care and specialty providers via electronic consultation and referral systems can enhance coordination of care by answering clinical questions without specialist appointments and by streamlining the pre-specialty visit workup, particularly within settings with limited specialty access. However, the safety of preconsultation exchange is unknown, and risks may exist for patients not scheduled for specialist visits. To assess this within our safety net healthcare system, we retrospectively reviewed medical records for patients discussed via our established electronic preconsultation and referrals system who were not scheduled for gastroenterology (GI) clinic.
METHODS: We reviewed all electronically submitted GI referrals from hospital-based referring clinics between 11/1/2009 and 6/20/2010 that were not scheduled for appointments. For unscheduled referrals lacking clear resolution through preconsultation exchange, two investigators reviewed the medical record and assessed potential for patient harm from not having a GI appointment scheduled, using a validated scale. When adequate data were present, investigators also assessed actual patient harm. A180-day time horizon was used for all evaluations. Disagreements were resolved via

consensus with a third physician serving as tie-breaker. Referrals through 10/31/2010 will ultimately be reviewed.

RESULTS: 179 of 795 referrals (22 %) were not scheduled for appointments. For 52 (29 %) of these, advice was provided electronically and appointments were not needed. Of the remaining 127 patients referred, only 74 (58 %) had primary care visits within 180 days following referral. Sixty-three of 179 referrals (35 %) were unscheduled because they were from inappropriate sources (including emergency department and inpatient settings) rather than primary care providers, or were made to the wrong clinic (for example, GI rather than liver). Thirty-two (51 %) of these referrals were appropriately redirected. Fifty-four (30 %) were not scheduled because the specialist provider requested additional clinical history that was never provided (n=22) or requested further diagnostic evaluation (n=32) prior to scheduling. Of the 32 referrals for which additional evaluation was requested, testing was ordered in 20 (63 %), and was completed in 13 (41 %), but the referrals system was not updated with results. Of 58 referrals assessed for potential harm from not being scheduled, 41 (71 %) had potential for major harm, and 8 (14 %) had potential for moderate harm. Of 61 referrals assessed for actual harm, 56 (92 %) had no harm, 3 (5 %) had moderate harm, and 2 (3 %) had major harm attributable to not being scheduled for a GI appointment.

CONCLUSIONS: Preconsultation exchange has potential to improve availability, efficiency, and timeliness of specialty care, but its use may pose safety risks. Overall, 23 % of unscheduled referrals in our study had potential for major harm, but only 1 % had major harm to patients, suggesting the relative safety of preconsultation exchange. Much of the harm potential relates to referrals from inappropriate sources, which can be addressed by tailoring the electronic platform, or from referring providers not following up on specialist requests for additional information/workup, which was often attributed to provider discontinuity or patient loss to follow-up. Our results can inform the design and oversight of electronic preconsultation exchange across health systems.

SCREENING AND BRIEF INTERVENTION FOR DRUG USE IN PRIMARY CARE: THE ASPIRE RANDOMIZED TRIAL Richard Saitz[1,2]; Tibor P. Palfai[3]; Debbie M. Cheng[1,4]; Daniel P. Alford[1]; Judith A. Bernstein[5]; Christine A. Lloyd-Travaglini[6]; Seville M. Meli[1]; Christine E. Chaisson[6]; Jeffrey H. Samet[1,5]. [1]Boston University and Boston Medical Center, Boston, MA; [2]Boston University School of Public Health, Boston, MA; [3]Boston University, Boston, MA; [4]Boston University School of Public Health, Boston, MA; [5]Boston University School of Public Health, Boston, MA; [6]Boston University School of Public Health, Boston, MA. (Tracking ID #1632712)

BACKGROUND: The US Federal government has spent several hundred million dollars on training and implementation of alcohol and other drug screening and brief intervention (programs known as Screening, Brief Intervention, Referral and Treatment or SBIRT) in the past decade. However, the efficacy of universal screening and brief intervention (SBI) for drug use among primary care (PC) patients is unknown; consequently it is not recommended by professional organizations such as the US Preventive Services Task Force. This 3-arm randomized trial (the Assessing Screening Plus brief Intervention's Resulting Efficacy to stop drug use (ASPIRE) study) tested the efficacy of two brief interventions (BIs) for drug use—a brief negotiated interview (BNI), and an adaptation of motivational interviewing (AMI)—compared to no BI in PC patients identified by screening.

METHODS: We randomly assigned subjects identified by screening in PC with Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) drug specific scores of ≥4 to BNI, AMI or no BI. BNI was a 10–15 min structured interview conducted by trained paraprofessional health educators. AMI was ≤45 min of MI and an optional booster conducted by trained doctoral psychology students. All subjects received a written list of substance abuse treatment and mutual help resources. Primary outcome was number of days use of the self-identified drug of most concern (DOMC) in the past 30 days as determined by validated calendar method at 6 months. A secondary outcome was number of days heavy use (2 or more times in a day) of the DOMC. Analyses were performed using negative binomial regression adjusted for baseline use, drug dependence, DOMC, and prior outpatient counseling.

RESULTS: Of 876 eligible subjects, 528 (60 %) were randomized. Subjects were 70 % male, 69 % black, with a mean age 41 years. DOMC was: marijuana 63 %, opioid 17 % (prescription opioid 11 %), and cocaine 19 %. ASSIST score was ≥27 (consistent with dependence) for 18 %; 12 % reported injection drug use (past 3 months), mean days DOMC use (of 30 days) was 14.4. At 6 months, 98 % completed follow-up and mean days DOMC use was 14.0 (in the past 30 days). There were no significant effects of BNI or AMI on outcomes. For the primary outcome, mean adjusted days use of the DOMC at 6 months was 11.5 (no BI) vs. 11.2 (BNI) (incidence rate ratio (IRR) 0.97, 95 % CI 0.77–1.22) and 12.1 (AMI)(IRR 1.05, 95 % CI 0.84–1.32) (p=0.81 for both comparisons vs. no BI). There were also no significant effects of BNI or AMI on the secondary outcome, number of days heavy use of the DOMC. There were no significant effects on either outcome in analyses stratified by DOMC or ASSIST score.

CONCLUSIONS: In this trial of brief intervention (BI) among primary care patients identified by screening, BNI and AMI did not have efficacy for decreasing drug use. Future analyses will examine six-week outcomes and additional 6-month outcomes including hair toxicological drug tests. If other trials yield consistent results, widespread implementation of drug screening and BI should be reconsidered, and research should focus on alternative ways to address drug use and consequences in primary care settings. Financial Support: R01-DA025068 and UL1-TR000157. The contents are solely the responsibility of the authors and do not necessarily represent the official view of NIDA, NCATS or NIH.

SCREENING FOR SCHISTOSOMIASIS AND STRONGYLOIDES AMONG BRAZILIAN IMMIGRANTS IN THE UNITED STATES Alison B. Rapoport[1,2]; Sarah E. Messmer[1,2]; Pieter Cohen[1,2]. [1]Cambridge Health Alliance, Cambridge, MA; [2]Harvard Medical School, Cambridge, MA. (Tracking ID #1621927)

BACKGROUND: Schistosomiasis and strongyloides are endemic to Brazil, with estimated prevalence rates of active disease of up to 20 % and 5 %, respectively. Clinical manifestations of fulminant disease include pulmonary hypertension and multi-system failure. Even years after initial infection, patients can transition from asymptomatic carrier status to severe illness, making treatment in the asymptomatic stage an important intervention. The Centers for Disease Control (CDC) recommends screening for schistosomiasis serum antibodies in patients from endemic areas and for strongyloides, in patients who are higher risk of infection based on clinical and demographic factors. In clinical practice, immigrants are often tested only if eosinophilia is incidentally noted. Data to support either of these practices among immigrant patients from South America is scant.

METHODS: To identify patients who had a serologic test for either schistosomiasis or strongyloides performed for screening purposes, we conducted a retrospective chart review of all adult Brazilian immigrants who presented for a routine physical exam at one internist's primary care practice in Massachusetts between April 2012 and October 2012. The study was conducted at this site as immigrant patients (mostly from Brazil) were routinely screened beginning in April 2012 for both infections. Our primary outcomes were the presence of a positive serologic tests for schistosomiasis and strongyloides (IgG detected by ELISA). We also assessed whether patient demographic factors or the presence of blood eosinophilia (>7.0 % eosinophils) were associated with sero-positivity using the chi-squared test (p-value of<0.05 considered to be statistically significant).

RESULTS: We identified 125 patients screened for antibodies to both schistosomiasis and strongyloides (no patients were screened for either alone). Twenty-five percent (31/125) had elevated antibodies to schistosomiasis and 6 % (8/125) had elevated antibodies to strongyloides. Those with elevated antibodies to schistosomiasis were more likely to have immigrated from the Southeast region of Brazil (i.e., Minas Gerais, Sao Paulo, Rio de Janeiro, Espirito Santo) vs other areas of Brazil (97 % vs 64 %; p<0.01) and more likely to have lived in the US≥5 years as compared to<5 years (32 % vs 0 %; p=0.01) but were not statistically

more likely to have an elevated eosinophil count (20 % vs 10 %; $p=0.39$). No demographic factor was predictive of strongyloides seropositivity; however, an elevated eosinophil count was associated with strongyloides seropositivity (57 % vs 7 %; $p<0.01$).

CONCLUSIONS: Results of this preliminary study: 1) suggest the possibility that clinicians might be able to selectively screen immigrants who arrive from Southeastern Brazil for schistosomiasis, and 2) provide support for the current practice of selectively screening for strongyloides in patients who have elevated eosinophil counts. Firm guidelines regarding the optimal approach to screening for these conditions will require confirmation of our findings in larger and more representative patient populations as well as additional research regarding factors such as positive predictive value of current serologic tests for active infection, the potential health risks of treating or not treating in the asymptomatic stage, and financial costs of treatment.

SEE ONE, DO MORE THAN ONE, AND ACTUALLY LEARN SOMETHING IN THE PROCESS! THE EFFECTIVENESS OF A RANDOMIZED MUSCULOSKELETAL CURRICULUM IN THE TEACHING AND RETENTION OF KNOWLEDGE AND SKILLS

Cindy Sadikot; Sharon Leung; Darlene LeFrancois. Montefiore Medical Center and Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1642251)

BACKGROUND: Musculoskeletal complaints are some of the most common reasons for primary care visits, yet most Internal Medicine (IM) residents do not feel confident or skilled in their ability to diagnose and treat these complaints. The project aims are to 1) institute and assess the immediate and 6 month effectiveness of a musculoskeletal workshop on IM residents' knowledge and clinical skills and 2) ascertain whether additional specialty clinical exposure is associated with improved performance.

METHODS: The curriculum was taught to second year IM residents during their ambulatory care rotation (ACR) month. The 3 h workshop consisted of a didactic presentation of shoulder and knee anatomy and common pathology, followed by a demonstration of exams and specific maneuvers. Residents then paired and practiced supervised exams until they were able to demonstrate mastery of the skills taught. Before, immediately after, and 6 months after the workshop, residents completed 18 multiple choice questions focused on the evaluation of common knee and shoulder complaints. Examination skills were evaluated with a standardized case based 17 item checklist before the workshop and at 6 months. Scores of 0, 0.5, and 1 signified that the task was not completed, completed partially correctly, or completed correctly respectively. Half of the residents were randomized to attend orthopedics or physical medicine and rehabilitation clinics during ACR and the other half served as a control group.

RESULTS: Of the 39 residents who attended the workshop between January and May 2012, all completed the knowledge questions immediately after the workshop and 34 (87.2 %) completed the 6 month follow-up. Among these 34 residents, a history of personal injury ($n=12$) did not impact how well subjects performed on the observed exam ($p>0.93$). The mean percentages of knowledge questions answered correctly before, immediately following, and 6 months after the workshop were 58.2 %, 80.8 %, and 68.2 % for shoulder questions ($p<0.01$ for all comparisons) and 52.6 %, 76.6 %, and 69.9 % for knee questions (pre vs immediate post, pre vs 6 month $p<0.01$, immediate post vs 6 month $p=0.20$). Of those randomized to attend a specialty clinic, 72 % attended at least 1 session (median 3, IQR 2,6). There was no significant difference between the intervention and control groups in shoulder-related and knee-related knowledge at the pre- and 6 month post-workshop assessments ($p>0.32$). However, the mean scores for the observed knee exam were significantly higher at 6 months compared to control, whereas there was no difference in groups at baseline (0.58 vs 0.46 at 6 month post $p=0.05$ compared to 0.51 vs 0.47 pre intervention, $p=0.49$). There was no significant difference seen between the two groups in the observed shoulder exam pre or post intervention.

CONCLUSIONS: A formal musculoskeletal workshop improved knowledge, both immediately and at 6 months, regardless of randomization to additional specialty clinics. However, those who were randomized to and attended specialty clinics performed significantly better on the observed knee exam at 6 months. This suggests that while a brief workshop with didactics can improve knowledge, additional proficiency in clinical skills requires repetitive clinical exposure. The implication is that iteration of hands-on clinical exposure is required for sustained improvement of musculoskeletal examination skills.

SELF-AUDIT INCREASES CLINICIAN-DRIVEN UNIVERSAL HIV SCREENING AMONG INTERNAL MEDICINE RESIDENTS

Joshua Barocas[1]; Meghan Brennan[1,2]; Christopher Crnich[1]; Timothy Hess[1]; Ajay Sethi[3]; James M. Sosman[1]. [1]University of Wisconsin, Madison, WI; [2]William S Middleton Memorial Veterans Hospital, Madison, WI; [3]University of Wisconsin, Madison, WI. (Tracking ID #1637396)

BACKGROUND: Adoption of universal HIV screening by primary care physicians has been suboptimal, despite CDC recommendations. Less than half of Americans have ever been screened. Internal medicine residents represent the next wave of practicing physicians targeted to integrate HIV screening into their practice. We sought to identify the effect of self-audit on HIV screening rates among internal medicine residents in their out-patient clinics.

METHODS: We used a pre-post intervention design without a control arm where residents received self-audit feedback on their out-patient HIV screening rates. Residents were from a single training program where they participated in a 3-year primary care continuity clinic. In 2010, the intervention was integrated into a longstanding annual chart review where all residents self-audit 20 randomly selected primary care patients on preventive services. Baseline data was collected during the 2010 chart review. 2010 data accurately reflected pre-intervention HIV screening rates because residents were not informed in advance that HIV screening had been added to the chart review form. During the following year, no other intervention occurred, and the formal curriculum was not altered. The annual chart review was repeated in 2011 without modification, providing post-feedback screening rates 1 year after the intervention. A generalized linear mixed approach was used to model the odds ratio of HIV screening between the 2 years, adjusting for resident year of training and gender, clinic site, patient age and gender, and resident-patient gender concordance. Within a single year patient-level data was clustered according to resident, which was treated as a random effect. Odds ratios were constructed similarly for other preventive services included on the chart review to assess whether change between the 2 years was HIV screening-specific. The analysis had >80 % power to establish equivalence for a screening test performed in 80 % of patients with a margin of 5 %.

RESULTS: The study analyzed chart reviews on 2097 individual patients over 2 years. Internal medicine residents increased their out-patient HIV screening rates from 18 to 40 % (adjusted OR 3.16, 95 % CI 1.93–4.39, $p<0.001$) following self-audit feedback. Older patient age was associated with a decreased odds of receiving HIV screening; however no other patient- or resident-level variables were significantly associated with HIV screening. Over the same time period, rates of other preventive services- blood pressure control, diabetes and cholesterol screening, as well as alcohol and tobacco assessment- did not change, suggesting the intervention was HIV screening-specific. Tetanus vaccination increased slightly, however this could be explained by a local pertussis outbreak that likely spurred increased Tdap immunization rates.

CONCLUSIONS: Providing feedback to residents on their HIV screening rates was associated with a significant increase in subsequent out-patient HIV screening. This was achieved with minimal intervention, simply including the topic on an annual chart review. HIV screening continues to be included in the residency program's annual audit, demonstrating its feasibility and sustainability. It should be noted that a screening rate of 40 % is still low. However, we have demonstrated a clear improvement within the residency and general HIV screening rates in the Midwest, which hover around 20 %.

SELF-REFERRAL TO CANCER SPECIALISTS AND QUALITY OF CARE Craig Pollack[1]; Afshin Rastegar[3]; Nancy L. Keating[4]; John Adams[3]; Maria Pisu[5]; Katherine L. Kahn[2,3]. [1]Johns Hopkins School of Mediine, Baltimore, MD; [2]Davide Geffen School of Medicine at UCLA, Los Angeles, CA; [3]RAND Corporation, Santa Monica, CA; [4]Brigham and Women's Hospital, Boston, MA; [5]University of Alabama, Birmingham, AL. (Tracking ID #1642101)

BACKGROUND: Though patients with cancer frequently see multiple different types of physicians for their cancer care, relatively little is known regarding how patients choose their cancer specialists. In general, patients may either follow the referral advice of their physicians or self-refer to a particular specialist. We examine patient correlates of self-referral across multiple types of cancer specialists and test whether self-referral is associated with higher satisfaction and better quality of cancer care.
METHODS: Data were collected as part of the Cancer Care Outcomes Research and Surveillance (CanCORS) Consortium which included detailed survey data on patients diagnosed with lung or colorectal cancer in 2003 to 2005. Patients were eligible if they reported being referred to any of three types of cancer specialists—surgeons, radiation oncologists, and medical oncologists. Patients reported whether they were self or family-referred ('self-referral') or were referred by a provider or clinic to each cancer specialist. We assessed aspects of satisfaction with care using a 13-item scale. Quality indicators included patient-reported overall quality of care and use of appropriate, stage-specific treatment (i.e. adjuvant chemotherapy for stage III colon cancer, adjuvant chemotherapy and radiation therapy for stage II/III rectal cancer, and curative surgery for stage I/II nonsmall cell lung cancer). We used multivariable logistic regression models to assess sociodemographic, clinical, and health-care characteristics that were associated with self-referral. Because each patient may have been referred to more than 1 type of specialist, we adjusted for clustering using robust standard errors. We similarly used multivariable logistic regression analyses to test whether self-referral was associated with satisfaction and quality of care.
RESULTS: The 5,934 patients in our sample—3,052 with lung cancer and 2,882 with colorectal cancer—reported on 11,083 referrals. Overall, 12.1 % of the patients had self-referred to at least one of their cancer specialists: 8.8 % self-referred to their surgeons, 4.5 % to their radiation oncologist, and 8.8 % to their medical oncologist. In adjusted analyses, black patients were significantly less likely to self-refer than white patients (OR 0.48, 95 %CI 0.35–0.65); those with a college degree were significantly less likely to self-refer than those with less than a high school degree (OR 1.58, 95 %CI 1.17–2.12); and those with the highest incomes were more likely to self-referral than those with the lowest incomes (OR 1.54, 95 %CI 1.08–2.21). Compared with colon cancer patients, those with lung cancer (either small cell or non-small cell) were significantly less likely to self-refer. Self-referral was associated with significantly lower physician communication and nursing care scores in multivariable logistic regression analyses. We did not observe significant associations between self-referral and patient-reported quality of care or receipt of recommended care.
CONCLUSIONS: Understanding the pathways that lead patients to receive high quality care is critical. Overall, about 12 % of lung or colorectal cancer patients self-refer to cancer specialists, particularly white patients and those with higher socioeconomic status. However, self-referral is not associated with higher satisfaction or quality of cancer care.

SEX, RACE, AND CONSIDERATION OF WEIGHT LOSS SURGERY BY OBESE PRIMARY CARE PATIENTS Christina C. Wee[1]; Karen W. Huskey[1]; Dragana Bolcic-Jankovic[2]; Mary Ellen Colten[2]; Roger B. Davis[1]; Mary Beth Hamel[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]University of Massachusetts, Boston, MA. (Tracking ID #1636200)

BACKGROUND: Weight loss surgery (WLS) is one of few obesity treatments to produce substantial and sustained weight loss but only a small proportion of medically-eligible patients (pts) undergo this treatment with disproportionately low use among men and African Americans (AA). Factors underlying these variations in use are unclear.
METHODS: We interviewed 338 moderately to severely obese pts (BMI≥ 35 kg/m2) seen at four diverse primary care practices in Greater-Boston (58 % response rate), oversampling for racial and ethnic minorities. We developed sequential multivariable logistic regression models to describe patients' serious consideration of WLS, potential variation by sex and race, and factors that underlie such variation.
RESULTS: Of 338 pts, the mean age of our sample was 48.7 years, 69 % were women, 36 % were Caucasian, 35 % were AA, and 25 % were Hispanic. 326 pts (96 %) had heard of WLS and 34 % had seriously considered WLS. Men were less likely than women and AAs were less likely than Caucasian pts to have considered WLS after adjustment for age and BMI (Table Model 1). Further adjustment for education (Model 2) and comorbid conditions (Model 3) did not explain differences by race and sex but racial differences largely dissipated after adjustment for quality of life (QOL) (Model 4), which tended to be higher among AA than Caucasian pts. Physician recommendation of WLS was independently associated with serious consideration by pts of this treatment [OR 5.67 (95 % CI 3.35–9.60)], but did not explain gender or racial differences. Nevertheless, 46 % pts reported they would consider WLS if their doctor recommended it; men were as willing and AA and Hispanic patients were more willing to consider WLS than their respective counterparts after adjustment. Only 20 % of pts reported being recommended WLS by their doctor with AAs and men being less likely to receive this recommendation; QOL differences appeared to explain racial variation in recommendations (data not shown). High perceived risk to WLS was the most commonly reported barrier, cited by 39 % of pts; financial and insurance coverage concerns were cited only by 1 %.
CONCLUSIONS: African American and male primary care patients were less likely to have considered weight loss surgery and were less likely to have been recommended these procedures by their doctors. Differences in how obesity affects quality of life appear to account for some of these variations. High perceived risk is a major deterrent for patients whereas financial and insurance coverage concerns were not.
Table. Likelihood (OR and 95 % CI) of Patients' Serious Consideration of WLS by Sex and Race after Sequential Adjustment
Model 1 Model 2 Model 3 Model 4
Men Women White AA Hispanic 0.4 (0.3–0.6) 1.0 (ref) 1.0 (ref) 0.6 (0.4–0.9) 1.4 (0.8–2.4) 0.4 (0.3–0.6) 1.0 (ref) 1.0 (ref) 0.7 (0.4–1.0) 1.6 (0.9–2.9) 0.3 (0.2–0.5) 1.0 (ref) 1.0 (ref) 0.6 (0.4–1.0) 1.7 (0.9–3.3) 0.3 (0.2–0.5) 1.0 (ref) 1.0 (ref) 1.2 (0.7–2.1) 1.7 (0.8–3.4)
Model C-Statistic 0.73 0.75 0.77 0.81
Model 1 adjusted for age and BMI and factors in table. Subsequent models adjusted for factors in preceding model in addition to education (model 2), comorbiditiies (model 3) and QOL (model 4).

SEX-BASED DIFFERENCES IN END-OF-LIFE CARE AMONG HOSPITALIZED ADULTS IN THE US Erica Just[1,2]; David J. Casarett[3]; David A. Asch[3]; Dingwei Dai[1]; Chris Feudtner[1]. [1]Children's Hospital of Philadelphia, Philadelphia, PA; [2]University of Pennsylvania, Philadelphia, PA; [3]University of Pennsylvania Perelman School of Medicine, Philadelphia, PA. (Tracking ID #1635136)

BACKGROUND: End-of-life care has emerged as a major health care issue over the past two decades. A growing literature has suggested that sex-based disparities affect patients in a variety of settings. Little is known about gender disparities in inpatient care at the end of life. We sought to test whether differences exist in care provided to male and female patients during their final hospitalizations.
METHODS: We reviewed the clinically detailed administrative data of 98,314 patients at least 18 years of age who died while hospitalized in 458 acute care hospitals in the United States during 2011. We modeled sex-based differences in length of stay, code status, intubation, admission to an intensive care unit (ICU), and provision of cardiopulmonary resuscitation (CPR), adjusting for age, race/ethnicity, and medical diagnoses. Multivariable analyses further adjusted for marital status, medical comorbidities, insurance status, and hospital clustering.
RESULTS: Women represented approximately half of the sample (48,509; 49.34 %). They were older than men (73.8 vs. 70.6 years of age, $p<0.0001$)

and less likely to be married (27.7 % vs. 48.3 %, $p<0.001$). The most common diagnostic-related-groups (APR-DRGs) were the same for both sexes. Among all patients, median length of stay was 4 days (IQR 2,10); 11.6 % of subjects were exposed to CPR; 37.6 % had a do-not-resuscitate (DNR) order during the admission; 37.5 % underwent intubation. Women were less likely than men to receive care in an ICU (OR: 0.83; 95 % CI: 0.81, 0.84) and less likely to undergo intubation (OR: 0.80; 95 % CI: 0.78, 0.82). Women were more likely to have a DNR order (OR: 1.16; 95 % CI: 1.29, 1.89). In multivariable multilevel mixed effects analyses, additionally controlling for marital status, payor type, Elixhauser comorbidities, and hospital-level clustering, the odds of DNR status remained greater for women (OR: 1.10; 95 % CI: 1.08, 1.12). Among patients without a DNR order, ICU stay was less common among women (OR: 0.84; 95 % CI: 0.81, 0.86). Among patients with only APR-DRG of pulmonary edema/respiratory failure and without DNR, odds of intubation remained lower among women (OR: 0.78; 95 % CI: 0.68, 0.90). Women were less frequently exposed to CPR (OR: 0.77; 95 % CI: 0.74, 0.80); among patients without a DNR who experienced cardiac arrest, the odds of undergoing CPR remained lower for women (OR: 0.90; 95 % CI: 0. 83, 0.97). Adjustment for age, race, geographic region, and APR-DRG did not alter these findings.

CONCLUSIONS: In this diverse sample of hospitalized patients from across the United States, men received more aggressive care during their terminal hospitalizations than women. This finding was not explained by differences in observable characteristics such as age, race, or marital status. Better understanding of the causes of this sex-based disparity could provide important insights into how to improve hospital-based care at the end of life for all patients.

SEXUAL AND REPRODUCTIVE HEALTH AWARENESS AMONG FEMALE HIGH SCHOOL STUDENTS IN INDIA Chiti Parikh; Erica Phillips; Nicole Sirotin. New York Presbytarian Hospital, New York, NY. (Tracking ID #1643121)

BACKGROUND: Over the last decade there has been a decrease in the rate of new HIV infections worldwide, however this trend is less impressive in India. Over 35 % of all reported AIDS cases in India occur in people aged 15–24 years. Lack of sex education programs in high schools creates a formidable barrier to promotion of HIV awareness and reduction in new infections. Objective of this study is to assess change in sexual and reproductive knowledge among female high school students in India after a sex education seminar.

METHODS: The study was conducted at a high school in Ahmadabad, India. 88 female students ages 15–17 were enrolled in the study after obtaining written and verbal consent from the students and the principal. A 17 question pretest questionnaire (derived from National Family Health Survey-3, administered by Government of India under WHO) was administered to assess their baseline knowledge about contraception, STIs and HIV. After a 30 min seminar the questionnaire was re-administered to assess the impact of the seminar on sexual risk reduction knowledge among participating students.

RESULTS: 88 pretest questionnaires and 84 post-test questionnaires were collected. Average awareness of various methods of contraception increased from 65.2 % to 91.7 %. Awareness of STIs other than HIV increased from 20 % to 91.6 %. 63.9 % of the students knew that condoms can protect against pregnancy and STIs compared to 33.3 % before the seminar. Of note, more than 60 % of the students stated television, magazines and friends as their main source of information pertaining to sexual health and reproduction.

CONCLUSIONS: This study highlights the considerable lack of basic sexual and reproductive knowledge among adolescents in India. This brief educational intervention demonstrated an improvement in knowledge in the area of contraception and HIV awareness. The lack of basic sex education is likely the root cause of the lag in reduction of new HIV infections compared to the vast monies invested in India's current HIV prevention campaigns. This study along with several others highlights the importance of integrating sex education with HIV programs in order to boost the progress India has made in the past decade. Since over a third of new HIV infections occur in the age group of 15–34 years, it is very important to recognize the importance of developing formalized sex education programs at high schools in India.

SEXUAL FUNCTION DOES NOT PREDICT MAINTENANCE OF SEXUAL ACTIVITY IN MIDLIFE WOMEN Holly N. Thomas; Stacey Dillon; Rachel Hess. University of Pittsburgh, Pittsburgh, PA. (Tracking ID #1641052)

BACKGROUND: Frequency of sexual activity as well as sexual function decline as women age, but the reasons for these declines are not well understood. It is not known whether lower sexual function predicts future cessation of sexual activity—in other words, does "poor quality" sex cause women to stop having sex? We hypothesized that sexually active women with worse sexual function would be less likely to engage in partnered sexual activity 4 years later.

METHODS: Do Stage Transitions Result in Detectable Effects (STRIDE) is a longitudinal cohort study of women aged 40–65. Participants completed annual questionnaires regarding demographics, sex, menopause, and medical problems. Sexual activity was defined as any partnered activity, ranging from kissing to intercourse, in the prior 6 months. Body mass index (BMI) and medication use were abstracted from the electronic health record. In study year 4, women completed the Female Sexual Function Index (FSFI), a validated measure of sexual function in women. Characteristics of sexually active and inactive women in study year 4 and 8 were examined and compared using chi2, Fisher's exact, and t-tests as appropriate. For the primary analysis, only women who reported sexual activity at study year 4 were included, and women who answered "no sexual activity in the prior 4 weeks" to one or more of the FSFI questions were excluded. Univariable logistic regression was used to examine the relationship between the predictors at baseline and the primary outcome, sexual activity 4 years later. Variables that were marginally significant ($p<0.2$) were entered into a multivariable model to assess the relationship between FSFI score and future sexual activity while controlling for other factors.

RESULTS: Six hundred two women completed year 4 of the study. Sixty-eight (11.3 %) women did not respond to the questions regarding sex. At study year 4, 354 (66.3 %) women were sexually active. Of these women, 228 (85.4 %) remained sexually active at study year 8, 39 (14.6 %) were not, and 87 had missing data. The mean (sd) FSFI scores among sexually inactive and active women were 21.8 (3.8) and 22.3 (3.8) respectively. In univariable analyses, neither FSFI score nor sexual dysfunction (as defined by an FSFI score <27) were significant predictors of sexual activity at study year 8 ($p=0.653$ and 0.693 respectively). Women who remained sexually active were more likely to be Caucasian, partnered, healthier, earlier in the menopausal transition, and thinner ($p=0.001$, 0.037, 0.006, 0.045, and 0.007 respectively). Women who placed a higher importance on sex were more likely to remain sexually active ($p=0.009$). In the multivariable model, only race and menopausal status remained significant predictors of sexual activity ($p=0.016$ and 0.024 respectively); FSFI score remained a non-significant predictor ($p=0.921$), while importance of sex approached significance ($p=0.079$).

CONCLUSIONS: A majority of women who are sexually active at midlife continue to remain sexually active 4 years later, despite mean FSFI scores that fall into the "dysfunctional" range. Sexual dysfunction, as measured by the FSFI, is not associated with future cessation of sexual activity in midlife women. Reasons that women stop, or continue to have, sex during the midlife transition go beyond the "quality" of sex. Importance of sex may be a significant factor. Further longitudinal exploration of these reasons is necessary to fully understand women's sexual practices in midlife and beyond.

SHARED DECISION MAKING EDUCATION TO IMPLEMENT PRACTICE CHANGE: IMPACT ON PATIENTS' SATISFACTION WITH PHYSICIAN COMMUNICATION AND CONFIDENCE IN DECISION Ade B. Olomu[1]; Venu Gourineni[1]; Steven Pierce[2]; Margaret HolmesRovner[3]. [1]Michigan State University, East Lansing, MI; [2]Michigan State University, East Lansing, MI; [3]Michigan State University, East Lansing, MI. (Tracking ID #1643163)

BACKGROUND: Studies have revealed that a shared decision making (SDM) process accompanied by decision aids (DA) is effective in improving patient knowledge, patient satisfaction and health outcomes. The use of SDM and DAs has been encouraged but is not regularly implemented in low-income

populations. To address this important gap, we conducted a study of our shared decision making program, Office-GAP (Guidelines Applied to Practice) in a Federally Qualified Community Health Center (FQCHC). Objectives were 1) To develop and pilot test an implementation approach that simultaneously taught both physicians' and patients' SDM and use of DA in a FQCHC during office visit, 2) evaluated the impact on patient satisfaction with physician communication and confidence in decision.

METHODS: The study was a process evaluation testing the feasibility of provider training, patient education in a group visit, and use of Guidelines Applied to Practice (GAP) tools during office visits. Two doctors, 1 nurse-practitioner (NP), 8 staff, and patients with a diagnosis of CAD or diabetes mellitus in one FQCHC participated in this pilot study from January 2009 to December 2011. After an initial group visit, patients followed up with 2 physician visits using GAP tools. The Combined Outcome Measure for Risk Communication And treatment Decision making (COMRADE) survey was used with a modified scoring algorithm to measure patient's satisfaction with physician communication (SWC) and confidence in decision (CID) made.

RESULTS: All providers and staff attended the 90-min physician training, while 96 patients who attended 90-min group visits were enrolled in this study. Our results demonstrated the feasibility of an Office-GAP program. The Office-GAP tool was used 98.7 % of the time. Eighty (83.3 %) and 75 (78.1 %) patients completed their first and second Office-GAP provider visits respectively. There were longitudinal increases in both patients' satisfaction (SWC) and confidence in decision (CID) making. Relative to the baseline (M=38.6), SWC increased at visit 2 post-GAP assessment (M=42.9, p=< .001) and at visit 3 (M=44.3, p=< .001). Similarly, CID increased from baseline (M=38.9) to visit 2 (M=43.1, p=< .001) and visit 3 (M=43.8, p=< .001). These results suggest that SDM increased over time among the Office-GAP patients.

CONCLUSIONS: The use SDM and DA in real time is feasible in FQCHC and has the potential to improve satisfaction with physician communication and confidence in decisions among patients with heart disease and diabetes. Further evaluation is needed to establish reach, effectiveness and cost-effectiveness of this approach.

SHARED UNDERSTANDING BETWEEN PATIENTS AND PHYSICIANS ON ASPECTS OF HOSPITAL CARE: IMPLICATION FOR QUALITY OF COMMUNICATION AND POTENTIAL ASSOCIATION WITH PATIENT SATISFACTION Sosena Kebede; Zackary Berger. Johns Hopkins University, Baltimore, MD. (Tracking ID #1642184)

BACKGROUND: The hospital is a complex and intimidating place where sick and anxious patients undergo multiple procedures, and interact with multiple caregivers. Prior studies have documented that patients' understandings of their discharge plans are generally poor but few have looked at patients' understandings of aspects of their in-hospital events. No study that we know of has examined whether the degree of shared understanding influences patients' satisfaction with their physicians. We aim to document the degree of shared understanding between patients and their physicians regarding hospital care,evaluate heterogeneities of the degree of shared understanding among patient subgroups, and assess the association between degree of shared understanding and patient satisfaction.

METHODS: (In 8/11 we completed a pilot study (n=8 patients).) We plan to enroll a total of 200 (currently we are at n=138) adult, medicine patients, with at least 2 chronic medical conditions, have been in the hospital> 2 days and have had at least 2 diagnostic tests/procedures. On the day of discharge we administer a semi-structured questionnaire -questions include reason for admission; medical conditions; tests/procedures done, why they were done and results; and reason for prescribed medications. Physicians' documentations are used to assess the degree of shared understanding between patients and their physicians on the selected items. Three questions adopted from Press Ganey satisfaction survey that focus on physician communication will be used to assess patient satisfaction.

RESULTS: Pilot: 3 out of 8 patients had full concordance with their physicians in regards to their chronic conditions, procedures and indication for medications; 2 of these were black, one was white, one was 56 year old college grad, two were in their 20s and high school graduates, each only had 2 known medical conditions. One 56 year old white female, with a complicated medical history had zero concordance in regards to her medications, and diagnoses and was only able to list 3 out of 6 procedures, and did not know any of the results. The rest had concordance ranging from 50 to 100 % on each of the three domains, 100 % concordance in these patients were seen in the procedure domain where each had only 2 procedures. Satisfaction survey was not collected on the pilot patients but most expressed unsolicited high degree of satisfaction during the interview.

CONCLUSIONS: The pilot study although small indicates important points. Firstly, patients with multiple co-morbidities and multiple procedures/are more likely to have lower shared understanding. Secondly, patients' shared understanding seem to be the lowest in the areas of medications. Finally, based on the unsolicited great review we received from patients their level of satisfaction did not seem to be dampened even when their shared understanding was poor with their physicians. It is possible that patients' satisfaction with their physicians may depend more on their hospitalization outcomes and less with the process (communication), or patients may be fully satisfied with communication efforts by their physicians despite the fact that it may not always be effective. Effective communication is a dimension of quality of care, and these issues ultimately raise the intriguing question-can patients be satisfied without receiving a quality care or vice versa?

SHIFTING UPSTREAM: EFFICACY TRIAL OF A LOW LITERACY, EMR MEDICATION EDUCATION STRATEGY Michael S. Wolf[1]; Laura Curtis[1]; Ashley R. Bergeron[1]; Stacy Bailey[2]; Allison L. Russell[1]; Rebecca Mullen[1]. [1]Northwestern University, Chicago, IL; [2]UNC-Chapel Hill, Chapel Hill, NC. (Tracking ID #1643111)

BACKGROUND: Prior studies have shown that patient-provider communication about new medications is inadequate. Patients often have a limited understanding of medication instructions, warnings, and side-effects. Ineffective communication may be one reason for lack of understanding. We sought to leverage an electronic medical record (EMR, EpiCare, Verona, WI) to support patient education about new prescription medications and encourage patient-provider communication.

METHODS: Patients (N=142) at an academic general internal medicine clinic who received a new prescription were recruited and consented into the study. Physicians were randomized to either usual care or the EMR strategy. Patients seeing a physician in the intervention arm received a low literacy-appropriate, one-page educational 'med sheet' with explicit instructions framed from the physician's voice to the patient regarding proper use and vigilance for any new prescription. Patients were interviewed immediately following their scheduled physician visit; demographic information was collected and patient-provider communication was assessed via CAHPS items. Follow-up telephone interviews were conducted to determine if the patient filled their medication and to assess the patients' functional understanding of their new prescriptions (how to take it, for how long, what it was for, and side-effects). Differences in medication understanding and patient-provider communication by study arm were assessed using the chi-square statistic

RESULTS: A total of 142 patients were recruited (75 usual care, 67 intervention). 76.1 % patients were female, 37.3 % were Black, 44.4 % were White. Patients receiving the EMR strategy were more likely to be White, higher educated, and have adequate literacy. Only 1 % of usual care patients reported receiving written information about their new prescription, compared to 69 % in the intervention arm (p<0.001). Overall, patient-provider communication about indications and directions for use of new prescriptions was very high (98 %), but did not differ by study arm. Information on side effects (47 %) or risks and warnings (21 %) was usually not discussed in either study arm. However, participants receiving the EMR strategy were more able to identify side effects or warnings for their new medication compared to the control arm (39 % vs. 18 %, p=0.01). A non-significant trend suggested participants who received the

intervention were also more able to demonstrate a functional understanding of their new prescriptions (55 % vs. 45 %, p=0.25).

CONCLUSIONS: Our initial pilot trial provides some initial evidence to the value of moving 'upstream' to the point of prescribing to offer easy-to-understand information to patients about new medicines. However, clearly further evaluations are warranted. The rate of counseling and communication was atypically high in our general internal medicine clinic. Future trials should be conducted among more vulnerable populations, such as patients served by community health centers where rates of low health literacy and low socioeconomic status (risk factors to poor understanding and adherence) are greater. Our intervention should also seek to better engage providers to improve spoken counseling during encounters, rather than to solely provide assurances in primary care that plain language, written information and instructions are being provided.

SIGN-OUTS: QUALITY DIFFERENCES BETWEEN PRIMARY AND COVERING RESIDENTS Kevin D. Hauck; Lauren Shapiro. Montefiore Medical Center, Bronx, NY. (Tracking ID #1641712)

BACKGROUND: Failure to give complete sign-outs during clinical handoffs is a potential source of patient harm. New duty hour restrictions have increased the number of handoffs that occur between primary and covering residents, and from one covering resident to another. In this study investigators compared the quality of sign-outs between primary and covering residents on an inpatient medicine service.

METHODS: Eight days of sign-outs between day and night residents on the internal medicine teaching service at Montefiore Medical Center were audiotaped and any written components collected. Primary residents were those day residents principally responsible for a patient's care. Covering residents were residents who covered the primary resident while he or she was in clinic or post-call. During the study period the primary residents were the same but the night and covering resident varied. To assess sign-out quality, investigators adapted a previously evaluated 6-component coding scheme which included a patient's clinical condition, code status, recent or scheduled events, anticipatory guidance, tasks to be completed, the presence of a plan and rationale for any task assigned and a global assessment of the sign-out's quality.

RESULTS: A total of 534 sign-outs were evaluated;16 sign-outs had missing data and could not be coded. 449 sign-outs contained both written and verbal elements and 29 were written only. Of the complete sign-outs, 347 were done by primary residents and 171 by covering residents. The majority of sign-outs by both primary and covering residents were globally adequate but there were significant differences in the components of quality between the two groups. Primary residents were more likely to give an account of recent and scheduled events, provide a synopsis of the patient's clinical condition and provide anticipatory guidance. Primary residents were also more likely to assign tasks to their nightfloats. When covering residents assigned tasks to the night resident, they were less likely to provide a rationale and plan for completing those tasks. These results are summarized in Table 1.

CONCLUSIONS: Our data suggest that sign-outs by covering residents are less complete, and provide less guidance. Failure to provide anticipatory guidance and a plan and rational for tasks assigned may reflect less familiarity with patients and could lead to negative clinical outcomes. The increase in tasks assigned from one covering resident to another likely reflects either lack of ownership or an overwhelming workload among these residents. Given the deficiencies in covering resident signouts we believe that internal medicine residency programs should design their schedules to minimize handoffs by covering residents. Future research should examine sign-outs by covering residents as a target for educational or quality improvement interventions.

Table 1: A comparison of significant differences between sign-outs given by primary and covering residents

Sign-Out Component*	Total Sign-Outs % (N)	Primary Resident % (N)	Covering Resident % (N)
Clinical Condition	90.7 % (470)	95.9 % (329)	80.6 % (141)
Recent/Scheduled Events	96.6 % (495)	97.4 % (334)	92 % (161)
Tasks Assigned	45.9 % (238)	38.8 % (133)	60 % (105)
Plan for Task	62.2 % (150)	69.9 % (95)	52.4 % (55)
Rationale for Task	63.9 % (154)	69.9 % (95)	56.2 % (59)
Anticipatory Guidance	56.4 % (300)	64.3 % (223)	41.6 % (77)
Globally Adequate	92.5 % (478)	94.5 % (324)	88.5 % (154)

All comparisons significant with P<0.05. *Percentages reflect within-group percentages, and thus do not sum to 100 %.

SMOKING BEHAVIOR AND USE OF TOBACCO INDUSTRY SPONSORED WEBSITES AMONG MEDICAL STUDENTS AND RECENT GRADUATES IN ARGENTINA Raul Mejia[1]; Maria Victoria Salgado[1]; Celia P. Kaplan[2]; Eliseo J. Perez-Stable[2]. [1]Universidad de Buenos Aires, Centro de Estudios de Estado y Sociedad,, Buenos Aires, Argentina; [2]UCSF, San Francisco, CA. (Tracking ID #1644107)

BACKGROUND: Internet-based marketing has become an attractive option for promoting tobacco products due to its potential to avoid advertising restrictions. In Argentina, several cigarette brands have designed websites for the local market that promote user participation. This study evaluated the use of tobacco-sponsored websites by medical students and recent graduates.

METHODS: An on-line self-administered survey was conducted among eligible medical students and recent graduates in Buenos Aires, Argentina. Sampling was from lists of email addresses of students enrolled in two required courses. Eligibility criteria were age 18–30 years, a former or current medical student at University of Buenos Aires (UBA), and report on smoking status. Other items asked about demographics, depression, and Internet use, "accessing a tobacco brand website" at least once and using tobacco promotional materials.

RESULTS: There were 1,659 participants (response rate=35.1 %); 73.1 % were women, all ≤30 years; 55.7 % current students, and 43.6 % physicians. Women were more likely to report positive screening for depression (p<0.05). Current smokers constituted 27.3 % of the sample, 73.1 % of them smoked their first cigarette more than 1 h after waking up and 75 % smoked ≤10 cigarettes/day. Among respondents, 19.4 % reported having accessed a tobacco sponsored website at least once in their lifetime and 93.8 % accessed these sites only when it was necessary for participating in a tobacco marketing promotion. Most people logging on for promotions reported entering once a month or less (58.9 %), while 25.5 % reported accessing the tobacco industry Internet sites once a week or more. Only 19 participants responded that they accessed the website for reasons other than participating in a marketing promotion. Men were more likely to report having seen a tobacco advertisement on the Internet, to have received a tobacco promotion personally addressed to them, to have used that promotion and to have accessed a tobacco sponsored website (p<0.05). In adjusted logistic regression models, participants were more likely to have accessed a tobacco website if they reported having seen a tobacco advertisement on the Internet (OR=2.3; 95 % CI 1.7–3.2), received a personalized tobacco promotion (OR=5.8; 95 % CI 4.3–7.8) or used one of these promotions (OR=15.5; 95 % CI 10.2–23.6). Respondents were more likely to be current smokers if they received a tobacco promotion (OR=2.6; 95 % CI 2.0–3.5) or if they used one of these promotions (OR=1.9; 95 % CI 1.3–2.9), and less likely to be current smoker if they have seen a tobacco ad on internet (OR=0.6; 95 % CI 0.5–0.8).

CONCLUSIONS: Medical students and physicians smoke at a similar rate to that found in the general population in Argentina. Our study suggests that tobacco industry websites reach medical students and young physicians in a middle-income country with their marketing promotions. This strategy is one component in maintaining current smoking status among young adults. Current or proposed legislation to ban tobacco advertising needs to include Internet sites and related social media.

SMOKING-ATTRIBUTABLE MORTALITY AMONG HOMELESS ADULTS IN BOSTON Travis P. Baggett[1,2]; Nancy A. Rigotti[1,3]. [1]Massachusetts General Hospital, Boston, MA; [2]Boston Health Care for the Homeless Program, Boston, MA; [3]Harvard Medical School, Boston, MA. (Tracking ID #1642661)

BACKGROUND: Homeless individuals have a 73 % prevalence of cigarette smoking and high rates of premature mortality, but smoking-attributable mortality rates have never been reported in a U.S. homeless population. We used clinical, survey, and vital registry data to estimate smoking-attributable mortality in a cohort of homeless adults in Boston.
METHODS: We cross-linked a cohort of 19,836 adults aged 35–64 years who were seen at Boston Health Care for the Homeless Program in 2003–08 with Massachusetts mortality files spanning the same years to determine the number of deaths due to 19 smoking-related conditions. We calculated smoking-attributable fractions (SAF) for each condition using smoking prevalence estimates from the nationally representative 2003 Health Care for the Homeless User Survey and relative risk estimates from the CDC. For each condition, we multiplied the SAF by the number of deaths to estimate smoking-attributable deaths. We divided this by the person-years of observation to generate smoking-attributable mortality rates, which we compared to rates in the 2004 Massachusetts population using direct standardization to adjust for age and sex differences.
RESULTS: Participants were observed for 62,300 person-years. 71 % were <50 years old at the index observation, 73 % were men, 45 % were white, and 30 % were black. Of 1,053 deaths among 35–64 year old adults, 160 were smoking-attributable, including 136 among men and 24 among women. The age- and sex-standardized smoking-attributable mortality rate in the homeless cohort (250.4 deaths/100,000 person-years) was 3.4-fold higher than in the Massachusetts population (72.6 per 100,000). The leading causes of smoking-attributable death were ischemic heart disease (n=50) and lung cancer (n=50). Other causes of smoking-attributable death included other heart disease (n=14), stroke (n=12), and chronic airways obstruction (n=9).
CONCLUSIONS: Despite their young age, a substantial number of deaths among homeless adults are smoking-attributable. Addressing the high prevalence of cigarette smoking among homeless people has the potential to reduce the burden of premature mortality in this vulnerable population.

SMOKING-ATTRIBUTABLE MORTALITY AMONG STATE PRISONERS IN THE UNITED STATES: 2001–2009 Ingrid A. Binswanger[1,2]; Elizabeth A. Carson[3]; Patrick Krueger[4]; Shane Mueller[1]; William J. Sabol[3]. [1]University of Colorado School of Medicine, Aurora, CO; [2]Bureau of Justice Statistics, Washington, DC; [3]Denver Health, Denver, CO; [4]University of Colorado Denver, Denver, CO. (Tracking ID #1619620)

BACKGROUND: Tobacco use is a significant contributor to preventable death. Prison inmates have a high prevalence of tobacco use and lung cancer has been the leading cause of cancer death in former prison inmates. We determined the smoking-attributable mortality and years of potential life lost due smoking among state prisoners and compared smoking-attributable mortality rates among prisoners with those in the US general population.
METHODS: We analyzed national data on state prisoners from several sources. From the Bureau of Justice Statistics (BJS), we used 1) the Survey of Inmates in State Correctional Facilities, last conducted in 2004, for nationally representative (weighted) self-reported smoking rates; 2) the Deaths in Custody Reporting Program for numbers of deaths by state, gender, age and year and ICD-10 codes for primary cause of death among prisoners 35 and older, 2001–2009; and 3) the National Prisoner Statistics series for year-end prison population by state and gender. We also used the Centers for Disease Control and Prevention Smoking-Attributable Mortality, Morbidity, and Economic Costs (SAMMEC) system, an online application, to calculate the smoking-attributable mortality in 19 cause-of-death categories attributable to smoking (not including secondhand smoke), including cancer, cardiovascular, and pulmonary causes. We used SAMMEC to calculate age-adjusted smoking attributable mortality rates, years of potential life lost (YPLL), and age-adjusted YPLL rates. For comparisons to smoking-attributable mortality rates in the general population, we used 2004 US population estimates in SAMMEC.
RESULTS: Of 1.2 million prisoners at year-end 2004, 76 % had ever smoked, of which 66 % were allowed to smoke at their facility. Among prisoners of all ages, 39 % were current smokers and 37 % were former smokers, whereas 56 % reported daily smokers before their arrest. From 2001 to 2009, there were 5,662 smoking-attributable deaths among state prisoners in the United States. Of these, 172 deaths (3 %) were among women. The largest categories of smoking deaths were tracheal, lung and bronchial cancer (n=1,925), ischemic heart disease (n=1,305), other heart disease (n=1,028), cerebrovascular disease (n=260), chronic airways obstruction (n=238), and pneumonia/Influenza (n=172). The age-adjusted smoking attributable mortality rate among prisoners was 363/100,000 compared with 248/100,000 among the general US population. Smoking was responsible for an estimated 136,960 YPLL. The age-adjusted YPLL among prisoners was 5,241/100,000 compared with 3,501/100,000 in the general population.
CONCLUSIONS: Smoking contributes to substantial mortality in correctional facilities. This study provides the first national estimates of smoking-attributable mortality and years of potential life lost in prisoners. Our results are subject to several limitations related to the measurement of smoking prevalence, reporting of deaths, and releases due to medical parole. These may have resulted in conservative estimates of smoking-attributable mortality. Further efforts to prevent smoking related deaths among prisoners are needed, including enhanced tobacco cessation efforts, quality care for smoking related illness, and relapse prevention.

SOCIAL MEDIA USE AND HIV RISK BEHAVIORS IN YOUNG MEN WHO HAVE SEX WITH MEN OF COLOR IN NEW YORK CITY: IMPLICATIONS FOR OUTREACH AND PREVENTION Viraj V. Patel; Desmond Sutton; Melissa Stein. Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1643201)

BACKGROUND: Men who have sex with men for over 60 % of all new HIV infections, with MSM aged 13–29 (YMSM) accounting for 69 % of new infections among all persons in this age group. While HIV incidence has decreased in most populations, YMSM of color, mostly Black and Latino, is the only group to experience an increasing HIV incidence, with existing prevention interventions failing to reach nearly 75 % of this hard to reach population. Rapid development and implementation of new prevention strategies with a broader reach are urgently needed to stem this epidemic. At the same time, social media access and use by young people is ubiquitous and disparities in use of these sites by racial/ethnic minorities and in low-income groups are minimal. Given the challenges of reaching YMSMC in current HIV prevention activities, social media-based approaches may be particularly efficient in identifying and engaging this population.
METHODS: We conducted a descriptive study using a venue based cross-sectional survey design and used a convenience sample of this hard to reach population. We conducted a venue based survey rather than online to understand the level of social media access and use in this group as an online sample would be biased and less informative in this regard. Survey question items were adapted from the CDC's Youth Behavioral Risk Factor Surveillance Survey and de-novo questions on Internet use, access, use of social and media sites were developed in partnership with a LGBT community center in the Bronx, New York. The survey was pre- and beta-tested with online survey software on iPads, assessed for face validity and comprehension by obtaining qualitative feedback from clients at the center, and then refined as required. To obtain a broad sample, we administered surveys in New York City at 2 LGBT oriented community agencies, a social event organized by LGBT youth ("kiki-ball"), and at 2 bars, all known to be frequented by YMSM of color and provided a $4.50 Metrocard incentive after completion.
RESULTS: RESULTS: 104 individuals out of the 107 approached (97 %) participated, with 91 providing complete responses (88 %). Overall, the sample was young (mean age 23 SD±4.8), mostly Hispanic or Black (>82 %), 81 % male, 11 % Transgender women (male-to-female), relatively poor (20 % homeless, 54 % on Medicaid, 18 % uninsured), with 81 % completing 12th grade or having a GED. Ten percent had HIV (self-report), 15 % were diagnosed with a STI in past 12 months, 86 % had seen a medical doctor in the past year. Twelve percent did not use a condom at last sexual intercourse, 19 % traded sex for money or clothes, 10 % traded sex

for drugs. Eighty-eight percent accessed the internet multiple times/day, 86 % had Internet access through a mobile device, and nearly 60 % used the internet primarily from their mobile devices. Forty-five percent used social media to find sex partners, 11 % to find drugs/alcohol. In bivariate analysis, HIV status was associated with having a STI (OR=8.1, p=0.009), trading sex for money or clothes (OR=5.1, p=0.04), and using social media to find partners (OR=10, p=0.03). Additionally, social media access and use was not associated with homeless status, age, education, or race/ethnicity.

CONCLUSIONS: Our study in high risk and vulnerable YMSM of color population, showed social media access and use by low-income YMSM was ubiquitous, with most having access to social media through their mobile devices and using these sites multiple times/day. Social media may be a feasible way to efficiently reach an otherwise hard to reach population.

SOCIOECONOMIC STATUS AND ACCESS TO CORONARY ANGIOGRAPHY IN THE CONTEXT OF UNIVERSAL HEALTHCARE COVERAGE Gabriel E. Fabreau[1,2]; Alexander A. Leung[4,2]; Danielle Southern[3]; William A. Ghali[3,2]; John Z. Ayanian[1]. [1]Harvard Medical School, Boston, MA; [2]University of Calgary, Calgary, AB, Canada; [3]University of Calgary, Calgary, AB, Canada; [4]Brigham and Women's Hospital, Boston, MA. (Tracking ID #1635712)

BACKGROUND: Socioeconomic status (SES) is closely correlated to health and may affect access to medical care. In Canada, a universal health care system aims to provide care based on need and reduce barriers to access. Previous studies have shown an SES gradient for early access to invasive cardiac procedures after a myocardial infarction, but these studies were based on administrative data that may not capture key confounding variables. We used a provincial multicenter clinical cardiac registry from Alberta, Canada to investigate the relationship of area-level household income to access to coronary angiography and mortality.

METHODS: We performed an analysis of 12,796 patients admitted with an acute coronary syndrome (ACS) to any cardiology service in the southern health zones of Alberta, Canada between April 18, 2004 and Aug 30, 2011 by linking census, vital statistics and clinical registry data. Patient SES was estimated using residential neighbourhood median household income from the 2010 Canadian census. We compared the odds of receiving an invasive cardiac procedure within 1, 7 and 30 days and the odds of dying within 30, 90 and 365 days after admission by income quintile. Using multivariable logistic regression, we controlled for age, sex, urban vs. non-urban residence, cardiac risk factors and comorbidities to estimate the adjusted odds ratio of receiving coronary angiography and of death.

RESULTS: Overall rates of angiography within 1, 7 and 30 days of admission for ACS were 43 %, 75 % and 78 % respectively and mortality at 30 days, 90 days and 1 year were 2.1 %, 2.9 % and 5.4 % respectively. Income was inversely associated with receipt of coronary angiography within 1 day, 7 days and 30 days in unadjusted analyses (Table 1). Similarly, the unadjusted OR of death within 30 days, 90 days and 1 year was increased for the lowest vs. highest income quintile (Table 1). After adjustment for sociodemographic and clinical factors, no significant difference in receipt of coronary angiography was evident between the lowest and highest income quintiles within 1 day or 7 days, but use of angiography was significantly lower for low income patients at 30 days (Table 1). No differences were seen in the adjusted 30-day, 90-day or 1-year mortality between the lowest and highest income quintiles.

CONCLUSIONS: An income gradient exists for receipt of coronary angiography and mortality after an acute coronary syndrome in Canada. However, adjustment for clinical factors and residence outside an urban centre accounts for most of the income disparities relating to both endpoints. These findings underscore the crucial importance of rich clinical registry data for studying socioeconomic disparities in cardiac care. Low income is indeed associated with less use of invasive procedures and poorer survival, but it appears to be factors other than income itself that produce the apparent disparities.

Unadjusted and Adjusted Odds Ratios for Receiving Coronary Angiography and Death Post Acute Coronary Syndrome for Highest vs. Lowest Income Quintiles

Coronary Angiography Within: Odds Ratio of Receiving Cardiac Catheterization

	Unadjusted [CI] P-value	Adjusted [CI] P-value
1d	0.70 [0.63, 0.79]<.001	1.05 [0.92, 1.21] 0.57
7d	0.73 [0.64, 0.83]<.001	0.87 [0.75, 1.01] 0.16
30d	0.76 [0.67, 0.87]<.001	0.84 [0.72, 0.98] 0.045

Death Within: Odds Ratio of Death

30d	2.30 [1.53, 3.44]<.001	1.38 [0.89, 2.13] 0.44
90d	1.99 [1.42, 2.79]<.001	1.23 [0.85, 1.79] 0.51
1 year	1.80 [1.41, 2.29]<.001	1.16 [0.88,1.52] 0.21

SPECIALISTS AS PRIMARY CARE PHYSICIANS: PATIENT CHARACTERISTICS AND QUALITY OF CARE OF VISITS TO GENERALIST AND SPECIALIST PHYSICIANS SELF-IDENTIFIED AS PRIMARY CARE PHYSICIANS. Samuel T. Edwards[1,2]; John N. Mafi[3,2]; Bruce E. Landon[3,4]. [1]Boston VA Healthcare System, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Beth Israel Deaconess Medical Center, Boston, MA; [4]Harvard Medical School, Boston, MA. (Tracking ID #1634943)

BACKGROUND: Adult primary care is typically provided by physicians trained in family practice or general internal medicine, but many patients see medical subspecialists for their primary care.

METHODS: We studied a nationally representative sample of visits for patients ≥18 years identified from the National Ambulatory Medical Care Survey (NAMCS) over the time period 1997–2010 for which the provider indicated that they were the patient's primary care physician. We included visits to generalists (family practice or general internal medicine), cardiologists, and other medical specialists.. We describe patient, provider and visit characteristics and compare visit-based quality of care for several common medical conditions after constructing multivariable models to control for patient demographics, payer type, region, and year. Analyses were performed using SAS 9.3 and SUDAAN for weighted analyses.

RESULTS: Among 81,898 visits to self-identified PCPs, 93.8 % were to generalist physicians, 1.6 % to cardiologists and 4.7 % to other medical specialists. Mean visit time was 18.5, 20.2, and 25.9 min to generalists, cardiologists, and other specialists respectively (p<0.001). The majority of visits to generalists were for new problems (40.5 %), whereas the majority of visits to cardiologists and medical specialists was for chronic disease management (59.4 % and 63.75 % respectively, p<0.001). Mean patient age was 55.5 years for PCPs, 58.5 years for medical specialists, and 67.1 years for cardiologists. Visits to specialist PCPs had a higher prevalence of chronic disease than visits to generalists (2.9 chronic diseases for cardiologists vs. 4.5 for other medical specialists vs. 2.3 for generalists). Quality of care for cardiovascular disease was better for cardiologists than generalists, and better for generalists that for other medical specialists (e.g., beta-blocker for coronary artery disease, 34.5 % for generalists, 41.1 % for cardiology, 22.4 % for other medical specialists, p=0.016). Pulmonary specialists provided more appropriate treatment of asthma than other specialties, but generalists provided better asthma care than other medical specialists and cardiologist (pulmonary 34.8 %, generalist 25.9 %, cardiologist 15.0 %, p=0.0013). Generalists performed better quality of care for depression (treatment of depression 79.3 % for generalists vs. 66.2 % for cardiologists vs. 70.4 % for other medical specialists, p=0.05) and had less misuse of medication in the elderly (9.8 % for generalists vs. 16.4 % in cardiologists). Routine EKGs in low risk patients were more likely ordered by cardiologists than generalists (26.0 % cardiologists, 9.7 % generalists, p=0.0338). All of these differences persisted in adjusted analyses.

CONCLUSIONS: Medical specialists who serve as PCPs tend to take care of older patients with a higher prevalence of chronic disease, and dedicate the majority of their visits to chronic disease management, usually within their specialty. Specialist PCPs demonstrate higher quality of care within their specialty domain, but perform worse outside of their specialty. As we endeavor to transform primary care through innovative practice models such as the Patient-Centered Medical Home, careful consideration is

needed regarding the appropriate integration of specialty care for older more medically complex patients.

SPECIALISTS' ATTITUDES IN JAPAN TOWARDS THE HOSPITALIST MODEL OF CARE Gautam A. Deshpande[1,2]; Sachiko Ohde[1]; Osamu Takahashi[1]; Tsuguya Fukui[1]. [1]St. Luke's Life Science Institute, Chuoku, Japan; [2]University of Hawaii, Honolulu, HI. (Tracking ID #1626169)

BACKGROUND: Despite the rapid growth of the hospitalist medicine in the U.S., assessments of suitability of this healthcare model to systems overseas are lacking. In Japan, general internal medicine (GIM) has little defined role in the specialty-driven inpatient setting. This pilot study quantitatively explores the attitudes of specialty inpatient physicians towards the model of care provided by inpatient GIM physicians ("hospitalists").
METHODS: This was a prospective, survey-based study at a tertiary-level, community hospital in Tokyo, Japan. After a brief vignette of the hospitalist role, specialists were asked to rate their agreement with 26 statements assessing their attitude towards the hospitalist model of care via standardized surveys. Descriptive statistics were employed for baseline practice characteristics and attitudes. Highly correlated factors were included in exploratory factor analysis to identify latent factors ("components") regarding specialists' attitudes towards hospitalists. Associations between components and practice characteristics were explored via multivariable linear regression analysis.
RESULTS: Of 330 eligible physicians, 38 surveys were received (response rate, 11.5 %; men, 76.3 %). Median (range) time spent in practice was 15 (3–37) years; 89.5 % reported having a subspecialty, with 55.3 % claiming a secondary subspecialty; 89.5 % reported taking care of inpatients and outpatients; 80.6 % reported spending <25 % of time practicing outside their specialty. In 12 months, 42.1 % and 47.4 % of respondents reported sending none or ≤10 % of their inpatients to a hospitalist, respectively, though 59.5 % felt that their patients would appreciate having a hospitalist physician to orchestrate inpatient care; 34.2 % versus 23.7 % agreed that specialists were best able to see their own inpatients and 65.8 % felt responsible for their patients' total care; 57.9 % agreed that using a hospitalist service would be "shirking duty," though only 15.8 % thought that patients would also feel this way. On factor analysis, Scree plot indicated 3 components among 10 highly correlated factors. Component 1, suggesting overwork and priority on outpatients, was associated with more positive responses to hospitalist care. After adjustment, only type of residency program remained statistically significant ($p=0.003$), with those having graduated from university-based programs tending to cluster in Component 1. Component 3 suggested dissatisfaction with time management (work-life schedules), resulting in positive attitudes to hospitalists, though without statistical significance. In contrast, Component 2 suggested a perception of decreased patient and physician satisfaction with hospitalist care. These specialists, tending to be younger with higher call frequencies and inpatient burdens, broadly agreed that, "inpatient generalists will decrease patients' quality of care" ($p=0.032$).
CONCLUSIONS: This preliminary study suggests that overwork, outpatient orientation, and dissatisfaction with time management may favorably influence attitudes towards the hospitalist model of care in Japan, and may be more prevalent among more experienced physicians trained in specialty- and outpatient-oriented settings, such as university-based programs. In contrast, hospitalist care may not be seen as optimal among younger specialty physicians with more active inpatient responsibilities. An understanding of these factors may influence the successful implementation and growth of hospitalist medicine overseas.

STANDARD WORK-HOUR REPORTING INACCURATELY REFLECTS ACTUAL HOURS WORKED DURING 16-h LONG CALL SHIFTS Jed Gonzalo[1,3]; Julius J. Yang[3]; Long Ngo[3]; Alicia Clark[2,3]; Eileen E. Reynolds[3]; Shoshana Herzig[3]. [1]Penn State College of Medicine, Hershey, PA; [2]Duke University School of Medicine, Durham, NC; [3]Beth Israel Deaconess Medical Center, Boston, MA. (Tracking ID #1635000)

BACKGROUND: The Accreditation Council for Graduate Medical Education (ACGME) duty hour standards were implemented to better balance patient care, resident well-being and education. Numerous studies have evaluated their impact on patient safety, education, and fatigue, resulting in large systematic changes to achieve compliance. These changes are all based upon the results of duty hours surveys, which rely on remote resident retrospective report through the annual ACGME survey, often implemented months after the call shift. No studies have evaluated the accuracy of resident recall of duty hour compliance remotely, in a manner similar to the annual ACGME survey. We examined the accuracy of residents' remote perceptions of shift length compliance and workload characteristics.
METHODS: From July 2011–June 2012, we emailed a survey to medicine ward residents following each 16-h long call shift to determine their compliance with 16-h shift length and workload characteristics, including number of patients on the census, total admissions, and patients accepted after 5 pm. In June 2012, we emailed a second survey to the same residents, assessing perceptions of their 16-h long call shifts during the preceding year. Using matched comparisons, we compared call-shift data to residents' retrospective perceptions of 16-h shift length compliance using general linear models, and call-shift workload characteristics using linear mixed effects models.
RESULTS: Of 648 call-shifts, data were collected from 497 (77 %), with 77 (15 %) including at least one team member having an extended shift beyond 16 h. Eighty-seven of 95 residents completed the end-of-year perceptions survey (92 %). After excluding one resident without call-shift data, 48 (56 %) residents underestimated, 33 (38 %) overestimated, and 5 (6 %) were accurate in their estimation of the percentage of compliant call-shifts. Of residents who overestimated this percentage, they estimated compliance 85 % of the time, compared to 67 % of the time based on actual call-shift data (average overestimation 18 %, 95 % [CI] 13 to 23). Of residents who underestimated this percentage, they estimated compliance 77 % of the time, compared to 95 % of the time based on actual call-shift data (average underestimation 18 %, 95 % CI 13 to 23). Compared to on-call data, residents' recall overestimated the number of patients on a census prior to an admitting day ($p=0.01$), admissions accepted during the call-shift ($p<0.0001$), and admissions accepted after 5 pm (<0.0001).
CONCLUSIONS: Residents' remote recall of 16-h, long call shift compliance and characteristics were not congruent with data obtained from actual shifts. The majority of residents (94 %) either under- or over-reported compliance with shift length while only 6 % were accurate in their recall. Studies investigating the accuracy of resident self-report of duty hours compared to more objective standards have shown mixed results; however, our study most accurately reflects the methods used by the ACGME annual survey. Given the importance of accurate duty hours reporting for targeting changes to admitting structures, measuring the impact of those changes, and maintaining accreditation for residency programs, further work should investigate alternatives to remote recall surveys for duty hour assessment.

STATINS IN WHOSE WATER? MODELING RELATIVE COST-SAVING OF OVER-THE-COUNTER STATIN USE IN SELECTED AMERICAN POPULATIONS INDEPENDENT OF LIPID LEVELS David Heller[1]; Pamela G. Coxson[1]; Mark J. Pletcher[1,2]; Lee Goldman[3]; Kirsten Bibbins-Domingo[1,2]. [1]University of California, San Francisco, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]Columbia University, New York, NY. (Tracking ID #1641903)

BACKGROUND: Statin medications reduce coronary heart disease risk, but are costly and have multiple toxicities. Current primary care practice guidelines in the United States, such as ATP III, recommend offering statins only to selected patients, based on their low density lipoprotein (LDL) level and other cardiovascular risk factors. Because of lower statin costs and recent data suggesting that statins prevent CHD in broader populations, some argue these medications should be made available without a prescription. We sought to determine in which US populations

statins would prove cost-saving over a 10-year time horizon. We defined these populations by age, gender, BMI, and tobacco use. We explicitly omitted blood pressure, LDL and HDL levels, and any other serologic markers, as such data may be unavailable to statin consumers.
METHODS: We used the Coronary Heart Disease (CHD) Policy Model, a dynamic state transition model of cardiovascular disease in the United States, to estimate the net cost savings associated with 10-year universal statin use (modeled as a 27 % drop in LDL) in 375 sub-populations divided by age, gender, tobacco use, and BMI. We excluded current users of statins, persons with diabetes, and persons with a Framingham risk score of 20 % or more (all based on self-report in the National Health And Nutrition Examination Survey, NHANES), from the analysis. To calculate total cost associated with statin use in each population, we assumed a direct cost of $4 USD per person-month, and also estimated quality of life and toxicity costs. We estimated 97 myopathy events and 110 hepatitis events per 100,000 person-years, with a 1.6 % and 0.45 % risk of rhabdomyolysis and hepatic failure per episode, respectively (and associated with hospitalizations costing $11,745 and $15,729, respectively). We then multiplied these toxicity costs by a factor of 10, presuming statin users not seeing a physician may present later to care. We compared the sum of all of those costs with the sum of all cardiovascular event costs and quality-of-life losses prevented by the medication, calculated based on observational data.
RESULTS: Universal low-dose statin use in all persons in the United States 35 and over is projected to prevent approximately 104,000 total deaths and 1.1 million incident cases of CHD, with a total cost of approximately $11.2 billion USD. Cost savings of approximately $1 billion would be achieved in men overall, offset by a $12.2 billion net loss in women. Universal statin use is estimated to be cost-saving overall in all men from age 45–74. In women 45–74, statin use is estimated to be cost-saving in obese smokers. Statins would not be cost-saving in any strata of women aged under 45 or over 74.
CONCLUSIONS: Universal use of statins in select US populations could avert millions of cardiac events and thousands of deaths at a net cost savings to society, even after accounting for the cost of toxicity. Statin use could be reasonably suggested to all men in the US between age 45–74, and to other high-risk populations who could self-identify based on factors such as obesity or smoking. These data suggest that a policy of over-the-counter statin availability and recommended widespread use could be substantially cost-saving.

STATUS OF ADVANCE DIRECTIVE AND GOALS-OF-CARE DISCUSSIONS IN A UNIVERSITY-AFFILIATED COMMUNITY HOSPITAL Rebecca Eskin[1]; Deepa Shah[1,2]; Beth Barron[1,2]; Zorica Stojanovic[1,2]; Gregory Pappas[1]. [1]Columbia University College of Physicians and Surgeons, New York, NY; [2]New York Presbyterian Hospital, New York, NY. (Tracking ID #1642505)

BACKGROUND: The New York State Palliative Care Information Act, passed in 2011, mandates that physicians offer terminally-ill patients information and counseling on palliative care and end-of-life options. The Allen Hospital of New York Presbyterian serves a population of generally elderly, ethnically diverse patients with multiple comorbidities. many of whom would benefit from discussion about advance directives and goals of care. This study was designed to collect baseline data in preparation for interventions to improve the quality and increase the number of conversations about advance directives and goals of care in this population.
METHODS: All patients over the age of 70 admitted to medical teams at the Allen over a 1-month period in the summer of 2012 were included in a chart review. Data was collected including demographic information, comorbidities, functional status, code status, functional status, and documentation of any discussion about prognosis or goals of care. A survey was distributed to providers about experiences and previous training on advance directive conversations. A sample of patients was interviewed about their experiences discussing code status, goals of care and their wishes for the context and content of these conversations with their providers.
RESULTS: 260 patient charts were reviewed. 24 % had Do Not Resuscitate Orders in the medical record. 21.5 % had documentation of a conversation about prognosis, goals of care, or code status. Higher frequency of DNR orders was seen in patients residing in nursing homes (46 %) and those with a documented diagnosis of dementia (38 %). Goals of care conversations were documented at higher rates in patients with complete functional dependence (39 %) and patients who spent time in the ICU (55 %). Physician surveys revealed that 96 % (23/24) believed it was "very important" or "absolutely necessary" to address advance directives with patients. They identified obstacles including language barriers and time limitation. Patient interviews revealed emphasis on quality of life, misinformation about the definition of a DNR order, and recognition that physicians' time is limited
CONCLUSIONS: This study provided quantitative and qualitative data about the status of advance directives and code status discussions at this community hospital. The data revealed an overall low rate of DNR orders and documented goals of care conversations with variation based on patient characteristics and factors related to the hospitalization. Patient wishes and physician obstacles were further clarified with surveys and interviews. The data will be collected again after physician education and compared to this baseline data to measure the effect of the intervention.

STORIES OF PARTNERSHIP: LAYING THE FOUNDATION FOR A THRIVING MEDICAL-RELIGIOUS PROGRAM TO PROMOTE COMMUNITY ENGAGEMENT Rebeca Rios[1]; Panagis Galiatsatos[1]; William D. Hale[2]; Lisa A. Cooper[1]. [1]Johns Hopkins School of Medicine, Baltimore, MD; [2]Johns Hopkins University School of Medicine, Baltimore, MD. (Tracking ID #1642162)

BACKGROUND: To meet the health care needs of all community members living with chronic diseases, health care systems must engage community partners and expand circles of care. Partnerships between academic medicine and religious communities offer valuable opportunities to deliver health interventions in ways that are consistent with community and cultural norms. The Healthy Community Partnership (HCP) is a medical-religious partnership between an academically-affiliated medical center and religious congregations in surrounding communities. The aim of this study is to describe the initial process by which individuals from HCP religious and medical communities engaged in the partnership over its first year. By describing key components of the partnering process, we aimed to identify factors influencing partnership engagement that may be compiled and disseminated to those interested in expanding communities of care through medical-religious partnerships.
METHODS: We recruited participants from a group of 20 identified key informants from church congregations and medical staff to participate in in-depth interviews. Trained interviewers covered topics related to reasons for partnering and central aspects of the partnership using a semi-structured interview guide. Using a grounded theory approach to thematic analysis of audiotaped interviews, 2 reviewers identified themes related to the process of partnering.
RESULTS: Among the initial sample, 4 of the respondents were congregation partners, 3 were medical center partners, and 4 out of 7 were male. Several themes related to the initial partnering process emerged. The theme of trust was central, and personal characteristics of trusted individuals, such as integrity, were important. Norms of consistency referred to consistency in responsiveness and communication. Trust was

also borne out of the perception of commitment of leaders at the highest level of partner organizations. A frequent theme concerned the sense of a shared, holistic vision of spiritual/bodily health. Another frequent theme was related to the principle of valuing community partners as experts, exemplified by expressions of the importance of defining partnership goals based on community defined problems and solutions. Good communication, particularly listening, "bridging," and "speaking their language," was often mentioned in relation to facilitators of partnership. Finally, 3 of the respondents described themselves natural liaisons because of their long-term personal relationships with both the medical center and one of the church partners.

CONCLUSIONS: Our results have implications for administrators and practicing physicians interested in enhancing community engagement through partnering with faith communities for health education and outreach. Thematic content suggests the following recommendations for engaging religious communities: 1) Use sound communication skills to listen and learn about how community members and congregation leaders understand community strengths and health problems. 2) Create opportunities to discuss shared values and vision around health and wellness. 3) Seek strong commitment from organizational leaders, and identify staff members who may be natural liaisons due to their involvement with churches. 4) Finally, all partners should demonstrate their commitment through regular communication and following through reliably.

STRATEGIES FOR FACILITATING CARE COORDINATION AMONG UNDERSERVED ADULTS WITH DIABETES Radhika Takiar[1]; Shari Bolen[2]; Adam T. Perzynski[2]; Paulette A. Sage[3]; Kurt Stange[4]. [1]University of Akron, Akron, OH; [2]The MetroHealth System/Case Western Reserve University, Cleveland, OH; [3]Case Western Reserve University, Cleveland, OH; [4]Case Western Reserve University, Cleveland, OH. (Tracking ID #1635218)

BACKGROUND: While several studies have investigated issues of care coordination within primary care, no study has observed and described the range of strategies used to facilitate care coordination at the primary care visit in underserved populations. A better understanding of the depth and range of care coordination activities for underserved populations will help inform investigators, clinicians, administrators, and policymakers about potential strategies to enhance care coordination.

METHODS: We conducted a qualitative study of diabetes visits from a safety net primary care clinic with high quality of care scores for diabetes patients. We recruited adults with type 2 diabetes from the 4 primary care physicians at the clinic until no new themes emerged. We audiotaped, observed, and transcribed the doctor-patient visits. Using a grounded theory approach, one investigator independently coded and analyzed transcripts for all care coordination that arose during the visit and described the strategies used to facilitate care coordination by patients and/or providers. A second investigator independently reviewed 25 % of the visits. Disagreements were resolved by consensus.

RESULTS: Fifteen mainly African American (93 %) middle-aged (mean age 61 years) female (64 %) patients participated. The mean blood sugar, blood pressure, and cholesterol were under fairly good control (HbA1c 7.5 %, BP 134/81 mmHg, and LDL 100 mg/dl). An average of 13 (SD 5) strategies per visit were used to facilitate care coordination including: use of the electronic health record to access notes and lab results, use of the clinic's mailing and phone system to facilitate interprovider and patient-nurse-provider communication, use of ancillary support including on-site nurses and care coordinators, referring patients to nearby specialists, sharing provider knowledge (i.e. regarding useful community resources and access to low cost medications) and sharing patient knowledge (i.e. about finances, insurance coverage, specialist visits). Providers most often initiated strategies of accessing the electronic health record, promoting ancillary support within their own clinic system, and asking patients to share their knowledge about a range of items (i.e. medical history, specialist advice, medications, and social environment support). However, patients most often initiated strategies of sharing their own knowledge (i.e. their medical history, specialist advice, or insurance coverage/finances) and of using clinic resources, like the phone or mail, to facilitate the patient-nurse-provider communication or obtain low cost medications. Together, the patients and providers contribute to care coordination in a complementary manner, following Wagner's Chronic Care Model which focuses on transforming health care from being reactive to proactive.

CONCLUSIONS: Numerous strategies were used for facilitating care coordination by both patients and providers during the primary care office visit in this safety net diabetic population. Patients have important, insider knowledge of their health care that is accessible to them in a manner not always efficiently available to their physicians despite a high functioning EHR. The synthesis of patient and provider strategies can potentially enhance care coordination and subsequent care quality.

STRATEGIES FOR IMPROVING MEDICATION ADHERENCE DISCUSSIONS AT THE PRIMARY CARE VISIT FOR UNDERSERVED ADULTS WITH DIABETES Andrea Grosz[1]; Adam T. Perzynski[2]; Paulette A. Sage[3]; Kurt Stange[3,4]; Shari Bolen[2]. [1]Case Western Reserve University School of Medicine, Cleveland, OH; [2]The MetroHealth System/Case Western Reserve University, Cleveland, OH; [3]Case Western Reserve University School of Medicine, Cleveland, OH; [4]Case Western Reserve University School of Medicine, Cleveland, OH. (Tracking ID #1629942)

BACKGROUND: Although many studies have shown that better medication adherence is associated with improved patient outcomes in adults with diabetes, little is known about the type, number and range of strategies used to facilitate medication adherence during the doctor-patient visit with underserved populations. An increased understanding of strategies to promote medication adherence could inform future translational and quality improvement work.

METHODS: We conducted a qualitative study of diabetes visits from a safety net primary care clinic with high quality of care scores for diabetes patients. We recruited adults with type 2 diabetes from the 4 primary care physicians at the clinic. We audiotaped, observed, and transcribed the doctor-patient visits. Using a grounded theory approach, one investigator coded, analyzed, and timed transcripts for all medication adherence discussions and strategies for facilitating medication adherence. A second independent reviewer coded and analyzed 25 % of the visits. Disagreements were resolved by discussion among the research team.

RESULTS: We enrolled 15 patients, and reached saturation of themes after analyzing 13 subjects. Patients were mainly African American (93 %), middle-aged (mean age 61 years) and female (64 %), and were under fairly good risk factor control (mean HbA1c 7.5 %, mean BP 134/81 mmHg, and mean LDL 100 mg/dl). On average, 7 (SD 3) minutes were spent discussing medications, comprising 28 % (SD 15 %) of the total visit time. The range of potential facilitators of medication adherence included discussions of: side effects, patient knowledge and beliefs, cost, refills, medication importance and purpose, different treatment options, medication instructions, follow-up plans, and reviewing medications. Of note, review of the medication list and inter-provider notes in the electronic medical record often prompted or facilitated these adherence discussions. On average, 13 (SD 5) strategies per visit were used to facilitate medication adherence. Patient strategies (N=52 for all 15 visits) included sharing their knowledge about their current meds and needed refills (42 %), reporting or inquiring about side effects (12 %), reporting reasons for nonadherence and

effective strategies for adherence (8 %), bringing up cost/insurance concerns (8 %), mentioning patient preference for medications (8 %), and bringing in medications (4 %). Provider strategies (N=139 for all 15 visits) included using basic terms to give medication instructions and explain their purpose (13 %), educating about potential side effects (10 %), relating importance of adherence to patient outcomes (9 %), providing low cost medication options (7 %), providing information about how to obtain and determine need for refills (7 %), giving very specific medication instructions (7 %), identifying medications by color/size/nicknames (5 %), inquiring about side effects (3 %), shared decision-making about medication changes (3 %), arranging a follow up plan for potential side effects (3 %), and normalizing medications(1 %).
CONCLUSIONS: Patients and providers initiated numerous strategies for facilitating medication adherence discussions during the primary care visit for adults with diabetes in this safety net population. Clinicians and policymakers should consider how to effectively incorporate and evaluate these strategies in primary care.

STUDENT-RUN CLINICS AS MEDICAL STUDENT SCHOLARLY HOMES FOR GENERAL INTERNAL MEDICINE Scott A. Elman[1]; Linda Wang[2]; Alexandra E. Bachorik[2]; Laura A. Huppert[1]; Nandini C. Palaniappa[2]; Noa Simchoni[2]; Matthew A. Spinelli[2]; David C. Thomas[3]; Rebecca Berman[1,4]; Yasmin S. Meah[3]. [1]Harvard Medical School, Boston, MA; [2]Icahn School of Medicine at Mount Sinai, New York, NY; [3]Icahn School of Medicine at Mount Sinai, New York, NY; [4]Massachusetts General Hospital, Boston, MA. (Tracking ID #1640616)

BACKGROUND: As the nation's primary care crisis deepens, concern has grown over how to entice medical students into primary care. Traditional medical school curricula rarely offer students exposure to academic general internal medicine (GIM). Student-run clinics (SRC) are popular activities at over 100 medical schools; many have robust programs with unique exposures to GIM practice, scholarly activities, and mentorship. We aim to 1) highlight innovative scholarly programs at two SRCs that expose students to GIM and 2) propose SRCs as curricular venues with substantial impact on student exposure to GIM that deserve further study. Setting and participants: Harvard Medical School's Crimson Collaborative (CCC) and Icahn School of Medicine at Mount Sinai's East Harlem Health Outreach Partnership (EHHOP) staffed by medical students of all years.
METHODS: CCC and EHHOP have developed programs to train medical students in GIM practice and scholarly research. At the CCC, third-year students may participate in a Primary Care Clerkship, an 8-month longitudinal experience focused on evidence-based, primary care panel management. All students attend post-clinic case review sessions and primary care didactics led by internal medicine residents. Select students are trained in motivational interviewing (MI) to counsel patients on diet, exercise and smoking cessation. The CCC research team, mentored by GIM faculty, tracks patient demographics, health outcomes and patient satisfaction. Through EHHOP's Chronic Care Program, select third-year students follow a panel of complex patients with chronic illness. They are mentored by fourth-year students and generalist physicians to create interdisciplinary care plans and direct patients through all venues of care. Students engage in a primary care curriculum, reflective practice meetings, and case presentations at "EHHOP Grand Rounds". EHHOP's Quality Improvement (QI) Council affords extensive QI training and implementation to improve clinic practice. Through quality-based GIM faculty-mentored research, students investigate preventative practices compared to national standards.
RESULTS: The CCC has trained 473 students; 50 students have been trained in MI. EHHOP has involved 60–90 % of the student body annually since 2004; the Chronic Care Program has trained over 30 third-year and over 60 fourth-year students. Both clinics have made substantial contributions to GIM scholarly research. The CCC has published a paper on increasing student exposure to primary care careers and clinic operations, held two workshops on mental health integration and SRC student education, led 10 national and regional oral presentations on topics like patient satisfaction measurement methods, and has produced 48 posters with 75 different student contributors on topics such as hypertension management and the colocation of psychiatry. EHHOP has led over 20 national and regional workshops and posters in primary care practice innovations, initiated 9 QI projects with over 45 student participants and published four papers discussing SRC student education, depression, diabetes, and hypertension outcomes. EHHOP is also spearheading projects on the quality of diabetes care, ED utilization, and mental health integration.
CONCLUSIONS: We propose the SRC as an emerging venue with robust scholarly opportunities for students to explore the GIM practice, research and mentorship. The educational practices of SRCs deserve study into the impact on medical student careers in primary care and GIM.

SUBOPTIMAL ADHERENCE TO INITIAL PROCESSES OF CARE IN ELDERLY PATIENTS WITH ACUTE VENOUS THROMBOEMBOLISM Anna K. Stuck[1]; Marie Méan[1]; Andreas Limacher[2]; Marc Righini[3]; Kurt A. Jäger[4]; Juerg-Hans Beer[5]; Joseph Osterwalder[6]; Beat Frauchiger[7]; Christian M. Matter[8]; Nils Kucher[9]; Anne Angelillo-Scherrer[10]; Jacques Cornuz[11]; Martin Banyai[12]; Bernhard Lämmle[13]; Marc Husmann[14]; Michael Egloff[5]; Markus Aschwanden[4]; Henri Bounameaux[3]; Nicolas Rodondi[1]; Drahomir Aujesky[1]. [1]Bern University Hospital and University of Bern, Bern, Switzerland; [2]Clinical Trials Unit Bern, University of Bern, Bern, Switzerland; [3]Geneva University Hospital, Geneva, Switzerland; [4]Basel University Hospital, Basel, Switzerland; [5]Cantonal Hospital of Baden, Baden, Switzerland; [6]Cantonal Hospital of St. Gallen, St. Gallen, Switzerland; [7]Cantonal Hospital of Frauenfeld, Frauenfeld, Switzerland; [8]University of Zurich, and Zurich University Hospital, Zurich, Switzerland; [9]Bern University Hospital and University of Bern, Bern, Switzerland; [10]Lausanne University Hospital, Lausanne, Switzerland; [11]University of Lausanne, Lausanne, Switzerland; [12]Cantonal Hospital of Lucerne, Lucerne, Switzerland; [13]Bern University Hospital and University of Bern, Bern, Switzerland; [14]Zurich University Hospital and University of Zurich, Zurich, Switzerland. (Tracking ID #1639290)

BACKGROUND: Although venous thromboembolism (VTE) is common in elderly persons, limited data exist on the quality of care in elderly patients with VTE, and it is unknown whether such patients receive recommended processes of care in the early phase of VTE.
METHODS: We prospectively studied consecutive in- and outpatients aged ≥65 years with acute, symptomatic VTE from all five Swiss university- and four non-university hospitals between September 2009 and March 2011. We systematically assessed whether the following five processes of care, which are recommended by the American College of Chest Physicians, were performed in each patient: (1) duration of parenteral anticoagulation for ≥5 days; (2) start of oral anticoagulation on the first treatment day; (3) continuation of parenteral anticoagulation until the international normalized ratio [INR] is ≥2 for ≥24 h; (4) use of low-molecular-weight heparin monotherapy in patients with cancer; and (5) prescription of compression stockings in patients with symptomatic deep vein thrombosis. We used multivariable logistic models to identify patient and hospital factors independently associated with adherence to recommended processes of care.
RESULTS: Our cohort comprised 950 patients with VTE (median age 75 years). Of these, 86.0 % (645/750) received parenteral anticoagulation for ≥5 days, 46.7 % (350/750) had oral anticoagulation started on the first treatment day, and 36.5 % (274/750) had an INR ≥2 for ≥24 h before parenteral anticoagulation was discontinued. Overall, 34.6 % (53/153) of patients with cancer received low-molecular-weight heparin monotherapy and 71.9 % (304/423) of patients with symptomatic deep vein thrombosis were prescribed compression stockings. In multivariable analysis, obesity (odds ratio [OR] 0.68, 95 % confidence interval [CI] 0.47–0.97), symptomatic pulmonary embolism (OR 0.61, 95 % CI 0.43–0.86), and hospital-acquired VTE (OR 0.32, 95 % CI, 0.19–0.54) were negatively associated with the initiation of oral anticoagulation on the first treatment day.
CONCLUSIONS: The adherence to most recommended processes of care was suboptimal in elderly patients with VTE. Several patient characteristics

were associated with lower rates of initiating oral anticoagulation on the first treatment day. Further efforts are needed to improve quality of care in elderly patients with VTE.

SUBTHRESHOLD PTSD IN MILITARY SERVICE MEMBERS RETURNING FROM IRAQ AND AFGHANISTAN Michael Roy[1,2]; Michelle Costanzo[1,2]; Patricia Taylor[1,2]; Suzanne Leaman[1,2]. [1]Uniformed Services University, Bethesda, MD; [2]Uniformed Services University, Bethesda, MD. (Tracking ID #1643169)

BACKGROUND: Posttraumatic stress disorder (PTSD) has been called a signature injury of the Iraq and Afghanistan wars and has been the subject of considerable attention. However, there is evidence that subthreshold mood anxiety disorders, including PTSD, are associated with functional impairment and are so much more common than the full-blown disorders that they are actually responsible for a greater degree of impairment at the community level. It is therefore important to develop a better understanding of those with subthreshold symptoms and to be able to characterize this population in order to conduct targeted intervention.
METHODS: We conducted a prospective cohort study, enrolling active duty and reserve component U.S. military service members (SMs) at their demobilization station upon their return from Iraq or Afghanistan, and within 2 months of their return we completed a comprehensive 2-day evaluation including multiple psychophysiologic measures, novel brain imaging techniques (functional MRI and diffusion tensor imaging), vestibular and olfactory testing, electroencephalograms, evoked response potentials, and detailed psychological assessment. We identified a cohort of 81 SMs who did not meet criteria for PTSD, depression or postconcussive syndrome (PCS, the aftermath of a traumatic brain injury) upon initial assessment, and we are in the process of conducting 3, 6, and 12 month follow-up assessments for the subsequent development of PTSD, depression or PCS. In this report, we compare the baseline assessments for those with subthreshold PTSD symptoms (PTSD Checklist, or PCL, scoore of 28–49 versus those with no significant PTSD symptoms (PCL<28).
RESULTS: There was no difference in age, gender, branch of service or alcohol use between those with and without subthreshold PTSD symptoms, but those with subthreshold symptoms were more likely to have experienced a significant TBI during deployment (10 % vs. 4 %), and had greater symptoms of depression as measured by the PHQ-9 (mean score 4.3 vs. 1.5) as well as anxiety as measured by the GAD-7 (mean 4.3 vs. 1.6). On the SF-36 assessment of functional status, there was no difference in general health, but differences were evident in social functioning (mean 94 vs. 83) and vitality (76 vs. 67). There were no differences in olfactory or vestibular functioning, and while we are continuing to analyze brain imaging studies we have not yet discerned group differences. However, there are compelling differences in psychophysiologic measures in both phases of a fear acquisition/fear extinction experiment, as those with subthreshold PTSD symptoms tended to have greater responses in heart rate, eye blink, and galvanic skin response to both danger and safety cues in each phase.
CONCLUSIONS: Psychophysiologic measures provide compelling evidence of heightened responses, as well as generalization of fear conditioning, in military service members who have recently returned from combat with subthreshold PTSD symptoms as opposed to their fellow SMs who lack subthreshold symptoms. This provides evidence for the significance of subthreshold symptoms, which are associated with functional impairment and higher rates of progression to full PTSD. Future studies should target interventions at those with subthreshold PTSD.

SUCCESSFUL TREATMENT OF MEDICALLY COMPLEX PATIENTS WITH DEPRESSION USING ALGORITHM BASED CARE IN AN ACADEMIC PRIMARY CARE CLINIC Duncan Vincent; Lauren Metzger; Amy Weil; Diane R. Dolan-Soto; Samuel Cykert. University of North Carolina Hospitals, Chapel Hill, NC. (Tracking ID #1640132)

BACKGROUND: Major depressive disorder (MDD) affects 5–10 % of patients in the primary care setting. The USPSTF recommends screening adults for depression in clinical practices that have systems in place to assure accurate diagnosis, effective treatment and follow-up. The Depression Care Program (DCP) is a multidisciplinary program developed in 2011 that utilizes the Patient Health Questionnaire (PHQ-9) as a screening tool to identify and follow patients that screen positive for depression inside the UNC Internal Medicine clinic. The DCP also conducts follow-up phone calls and offers in-clinic counseling with a licensed clinical social worker for patients with severe depression.
METHODS: In the Internal Medicine clinic at the University of North Carolina Hospitals, 95 patients with MDD have been enrolled to date, though data collection is ongoing. Inclusion criteria are as follows: patients are required to be at least 18 years old, have a PHQ-9 score of 10 or greater, and return for at least one follow-up visit. The medical records of these patients were reviewed by a resident physician to determine the specific intervention from the DCP (i.e. medication change, in-clinic counseling, both, or neither), as well as co-morbid conditions (e.g. diabetes, heart disease, lung disease, or chronic pain syndromes). Descriptive statistics were compiled. Bivariate and regression analyses were performed with significant improvement of the PHQ-9 score, defined as a total score reduction of 5 points or greater, as the primary outcome.
RESULTS: Of the 95 patients enrolled, 38 % are AA, 67 % are women, 80 % had health insurance, and the mean age was 56 years. Sixty-nine percent of patients had long-standing depression and were already on antidepressant medication. Fifty-three percent of patients including those with prolonged depressive illness showed a significant improvement in depression symptoms as measured by an improvement in follow-up PHQ-9 score of five points or greater. Fourteen percent had a medication adjusted only, 9 % had counseling only, 37 % had both medication adjustment and counseling, and 38 % were monitored only without intervention. There was no difference between the intervention groups in PHQ-9 improvement. In bivariate analysis, patients with health insurance did significantly better than those without insurance, 53 % vs. 26 % (p=0.04) and patients with chronic pain trended worse 39 % vs. 59 % (p=0.57). In regression analysis using treatment modality, demographic data, and comorbidities, chronic pain syndrome was the only significant comorbid predictor consistent with significantly less improvement, OR 0.35 (95 % CI 0.14, 0.93). Insurance status trended toward improvement but was no longer statistically significant, OR 3.2 (95 % CI 0.88, 12).
CONCLUSIONS: A standardized depression care program was successful in treating depression in patients with multiple comorbidities in an academic primary care clinic including those who had received standard depression treatment in the past. Lack of health insurance status and the presence of comorbid chronic pain syndromes were associated with treatment-refractory depression. Future directions include creation of a parallel anxiety diagnosis and a treatment algorithm to address confounding components such as prior trauma in those with pain.

SUPPORT FOR HOSPITAL TO HOME FOR ELDERS: A RANDOMIZED CONTROL TRIAL OF AN IN-PATIENT DISCHARGE INTERVENTION AMONG A DIVERSE ELDERLY POPULATION L. E. Goldman[1]; Urmimala Sarkar[1]; Eric R. Kessell[1]; Jeffrey Critchfield[1]; Michelle Schneidermann[1]; Edgar Pierluissi[1]; Barbara Walter[2]; Margot Kushel[1]. [1]University of California, San Francisco, San Francisco, CA; [2]San Francisco General Hospital, San Francisco, CA. (Tracking ID #1642073)

BACKGROUND: Nearly 20 % of hospitalized older adults are readmitted to the hospital within 30 days, costing Medicare more than $17 billion annually. Hospital-based transitional care programs with post-discharge follow-up have reduced readmissions and emergency department (ED) visits among selected populations. It is unclear how a hospital-based nurse-led transitional care intervention affects 30 day acute care use (emergency department (ED) visits and hospitalizations) among ethnically diverse adults age 55 and older hospitalized in a safety-net setting.

METHODS: We conducted a randomized control trial of a hospital-based transitional care intervention versus usual care among English, Spanish, and Chinese (Mandarin and Cantonese)-speaking patients 55 and older admitted to an urban public hospital. Intervention-group participants received supplementary inpatient nurse coaching provided by study nurses regarding medications and follow-up plans, a tailored language-concordant, literacy-appropriate discharge care written plan with medications, follow-up planning, and anticipatory guidance, and received 2 follow-up telephone calls from a nurse practitioner at 1–2 and 7–10 days post-hospitalization. We compared rates of 30-day post-hospitalization ED visits and readmissions to the index hospital using hospital administrative data and 30-day mortality using hospital administrative data and follow-up 30-day telephone calls. Further work to expand the analysis to include results from other area hospitals and linkage to vital statistic data is underway.
RESULTS: We enrolled 700 individuals reflecting an ethnically diverse, low income population with limited educational attainment (mean age=66). Twenty-five percent were African American, 20 % Latino/Hispanic, 19 % White, 25 % Chinese, 6 % Filipino, and 5 % reported other race/ethnicities. Less than 11 % had a household income of greater than $20,000 per year, and 66 % had limited health literacy. At baseline, 85 % of the enrolled population reported a usual source of health care and, 80 % had used the ED and/or had been hospitalized in the past 6 months. Randomization was successful for characteristics including demographics, socioeconomic variables, activities of daily living, and pre-hospitalization health care usage between intervention and control group ($p>0.1$ for all). Of the 700 enrolled, outcomes at 30 days were available in administrative data for 670 (96 %), including 14 (2 %) who died. Thirty days after hospital discharge 45 patients (13.6 %) in the usual care group and 39 (11.9 %) in the intervention group were readmitted to the index hospital ($p=0.51$), and 28 (8.5 %) of the usual care group compared to 28 (8.6 %) of the intervention group visited the ED ($p=1.0$).
CONCLUSIONS: Among a diverse population of adults age 55 and older admitted to an urban public hospital, there was no difference in the 30-day rate of post-hospitalization ED visits and readmissions to the index hospital between an intervention group who received a hospital-based nurse-led transitional care intervention with telephone follow-up and tailored patient education materials and the usual care group. Nurse-led hospital-based discharge interventions for transitional care may not be effective among diverse populations age 55 and older with high pre-admission health care usage and usual source of care. Populations with complex medical and social needs may require transitional-care interventions that partner with outpatient providers and/or include home-based visits.

SURVEY FINDINGS ON MEDICAL HOME IMPLEMENTATION AND TEAM FUNCTIONING IN VHA PRIMARY CARE Emily D. Dolan[2]; Christian Helfrich[1]; Karin M. Nelson[1]; Gordon Schectman[3]; Richard Stark[3]; Stephan D. Fihn[2]. [1]Department for Veterans Affairs, Seattle, WA; [2]Department for Veterans Affairs, Seattle, WA; [3]Department for Veterans Affairs, Washington, DC. (Tracking ID #1633503)

BACKGROUND: In April 2010, the Veteran's Health Administration (VHA) launched the Patient Aligned Cart Team (PACT) initiative to implement a medical home model. It emphasized team-based care to improve continuity; changes to scheduling and alternatives to face-to-face visits to improve access; and use of nurse care managers and additional health promotion support to improve care management and coordination. Reconstituted primary care teams were to include 4 team members: a primary care provider (PCP), nurse care manager, clinical associate (e.g., LPN) and clerical assistants who meet regularly and share responsibility for a defined panel of patients. To support PACT implementation, clinics received funding for the expanded staffing model, and training, including intensive regional learning collaboratives.
METHODS: We developed and fielded a survey in spring 2012 (approximately 2 years into the initiative) to all primary care personnel except for PACT demonstration sites in 2 of the 21 VA networks. The survey included a range of questions on implementation of components of PACT, and a 21-item scale designed to measure team functioning within primary care. Finally respondents reported barriers and facilitators to PACT.
RESULTS: The survey yielded 5,404 respondents (approximately 30 % response rate). When asked if they were assigned to a care team, 90.5 % of PCPs, 94.0 % of nurse care managers, 87.4 % of clinical associates, and 74.1 % of clerical assistants reported being on a team. Respondents reported spending, on average, more than a half-hour each day in team "huddles" (meetings to plan for the work day). Team functioning scores did not differ significantly by team member. When asked how much time was spent each week on work that could be done by someone with less training, 50 % of PCPs, 48 % of nurse care managers, 58 % of clerical assistants, and 64 % of clinical associates reported spending more than 75 % of their time doing work that could be done by someone with less training. PCPs reported delegating tasks to team members, but at lower rates than team members reported being relied upon for those tasks. For example, 45 % of PCPs reported relying on team members to resolve messages from patients, versus 86 % of nurse care managers and 62 % of clinical associates reported being relied upon. When asked what factors were helpful to implementing PACT, the most reported activity was team huddles (41 %) and regular meetings (33 %). Other factors such as information systems, education sessions, and other quality improvement methods were cited less frequently (<21 %). When asked about barriers to implementation, clinical reminder volume (43 %), recruiting and retaining PCPs (42 %), and lack of control over one's schedule (39 %) were reported most frequently. Other factors such as difficulty accessing specialty care (34 %), inadequate time allotted for activities (32 %), and lack of support from leadership (31 %) were reported somewhat less frequently.
CONCLUSIONS: The process of transforming primary care at the VHA into PACT teams is ongoing, and 2 years into the initiative, survey respondents report broad progress on key aspects of PACT. At the same time, adjusting to new team roles so that each member is working to the top of their competency may require more time and support.

SYMPTOM DURATION AND SEVERITY FOLLOWING ACUTE COUGH VISITS IN PRIMARY CARE Patrick P. Dempsey; Lauren E. Whaley; Alexandra C. Businger; Jeffrey A. Linder. Brigham and Women's Hospital, Boston, MA. (Tracking ID #1641202)

BACKGROUND: Acute cough is a common problem in primary care. Patients and physicians are often frustrated by the lack of recommended treatments. Physicians frequently prescribe non-recommended treatments, like antibiotics, when symptoms fail to resolve promptly. We measured the duration and severity of cough and other symptoms following a primary care visit for acute cough.
METHODS: We prospectively screened 138 patients at a primary care practice between March 2011 and September 2012 and enrolled 117 English or Spanish-speaking patients with acute cough. Eligible patients were 18–64 years old, without chronic lung disease, who had not made a clinic visit in the prior month, and who had a cough of less than 21 days duration. Of the 117 recruited patients, 71 (61 %) returned a 21-day questionnaire and answered questions about cough severity. Respondents ranked the severity of symptoms, including cough, shortness of breath, sleep disruption, and feeling unwell on a scale from 0 ("Normal/not affected") to 6 ("As bad as it could be"). We considered the day of the visit "day 1" and considered symptoms resolved when respondents reported no symptom for 2 consecutive days. We used the log rank test to compare cough resolution between respondents who did and did not receive antibiotics.
RESULTS: Respondents had a mean age of 46 years old; 78 % were women, 43 % white, and 24 % black; 69 % had completed at least some undergraduate college; 72 % had private insurance and 26 % had Medicare. The proportion of respondents still coughing on days 7, 14, and 21 was 90 %, 63 %, and 46 %, respectively. The mean duration of cough was 15.0 (95 % confidence interval, 13.6 to 16.3) days. On days 1, 7, 14, and 21, the mean severity of cough was 4.1 ("Bad"), 2.3 ("Slight problem"), 1.6, and 1.1 ("Very little problem"), respectively. On days 1, 7, 14, and 21, the proportion of patients with shortness of breath was 69 %, 49 %, 30 %, and 18 % and the mean severity was 1.8, 1.3, 0.6, and 0.4, respectively; the

proportion of patients with sleep disruption was 90 %, 68 %, 54 %, and 39 % and the mean severity was 3.3, 1.8, 1.4, and 0.9, respectively; and the proportion of patients feeling unwell was 97 %, 77 %, 58 %, and 38 % and the mean severity was 3.8, 1.9, 1.4, and 0.8, respectively. For the 34 (48 %) patients who took any time off work or school the median return was on day 3. A total of 19 (26 %) patients received antibiotics. The average duration of cough was 14.1 days for those who received antibiotics and 15.0 days for those who did not (p=0.71). Within 21 days of the visit, 9 (13 %) patients had at least one cough-related follow up visit to the study practice.
CONCLUSIONS: Roughly half of patients with acute cough were still coughing 21 days after a primary care visit, though the severity was mild. Similarly, on day 21 many patients continued to have mild shortness of breath, mild sleep disruption, and felt a little unwell. Patients who seek primary care for acute cough will miss about 3 days of work or school. Physicians and patients should understand symptom resolution can be prolonged.

SYSTEMATIC REVIEW OF NON-PHARMACOLOGIC INTERVENTIONS TO IMPROVE THE SLEEP OF HOSPITALIZED PATIENTS Ruth Tamrat; Madhav Goyal; Minh-Phuong Huynh-Le. Johns Hopkins University School of Medicine, Baltimore, MD. (Tracking ID #1641906)

BACKGROUND: Adequate levels of sleep are needed in both health and illness. Sleep deprivation is known to have multiple harmful physiological effects, including a decline in immune function and wound healing, along with increased pain perception and mortality. Despite these adverse effects on recovery from illness, a number of studies have shown that sleep deprivation remains an incompletely addressed problem among acutely ill patients admitted to hospitals. While medications can help with inpatient sleep, they may not address the underlying reasons for sleep disturbance in the inpatient setting, and are often accompanied by side effects. We sought to perform a systematic review of the literature to identify non-pharmacologic interventions that have been used to improve the sleep of non-ICU inpatients and their effects on sleep quantity and quality.
METHODS: We searched PubMed, Embase, Web of Science, CINAHL, and Cochrane Library in July 2011. We also performed hand searches from the reference lists. We included any study in which a non-pharmacologic intervention was conducted in a general inpatient setting, and measured nighttime sleep quantity or quality as an outcome. Two reviewers independently performed a title/abstract review followed by a full paper review. We assessed the risk of bias for the various study designs by using an adapted version of the Cochrane's EPOC guide. We assessed the strength of evidence following AHRQ guidelines in the four domains of risk of bias, consistency, directness, and precision. To assess the direction and magnitude of reported effects of the interventions, we calculated the relative difference between groups in how each outcome measure changed from baseline. Given the heterogeneity of trial designs, outcomes, and paucity of studies, we did not conduct meta-analysis. We relied on 50 % or more trials within a category showing a significant result as a precise result for that outcome category.
RESULTS: After a review of 17,322 citations, we included 15 intervention studies with 1,259 participants. These included four RCTs, six nonrandomized controlled trials, and five pre-post studies. The interventions used included relaxation techniques applied prior to sleep, including massage, music, audiotape guided imagery, and a warm drink; sleep hygiene or reduced sleep interruption programs; and daytime bright light therapy. Relaxation techniques improved sleep quality or quantity by −7 % to 29 %, sleep hygiene or reduced sleep interruption programs improved sleep quality or quantity by +1 to+22 %, and daytime bright light therapy improved sleep quantity by +7 to+18 %. The strength of evidence that these interventions improve sleep quality or quantity of inpatients was determined to be as follows: low for relaxation techniques, insufficient for sleep hygiene or reduced sleep interruption programs, and low for daytime bright light therapy.
CONCLUSIONS: Our systematic review found a dearth of trials in this area. There is low strength of evidence that relaxation techniques improve sleep quality of non-critically ill hospitalized patients, and also low strength of evidence that bright light therapy may improve sleep quality. Given the unmet need of adequate sleep in hospitalized patients, future trials should assess non-pharmacologic interventions to improve sleep with randomization and blinded sleep outcome measures. They should also obtain health outcome measures to assess the health effects of improved sleep.

SYSTEMATIC REVIEW OF SURVEYS TO MEASURE INFORMAL CAREGIVER SATISFACTION WITH HOSPICE Anne M. Walling[1,2]; Sangeeta Ahluwalia[2]; Rebecca Anhang-Price[3]; Oluwatobi Oluwatola[2]; Denise Quigley[2]; Karl Lorenz[2]; Roberta Shanman[2]; Joan Teno4. [1]University of California, Los Angeles, Los Angeles, CA; [2]RAND Health, Santa Monica, CA; [3]RAND Health, Washington, DC; [4]Brown University, Providence, RI. (Tracking ID #1642853)

BACKGROUND: Movement towards uniform assessment and public reporting of quality will soon encompass hospice, and there are distinct issues in assessing the experience of hospice, an important one of which is the use of caregivers as the source of information about the experience. To inform the development of a new experience of care survey, we undertook a systematic review of the literature on patients' and caregivers' satisfaction and experience with hospice.
METHODS: We searched PubMed and PsycInfo using specific search criteria for all English-language articles published after 1990 that used survey questions or instruments to measure adult patients' and/or caregiver experiences with hospice and/or palliative care. We also searched PsycTESTS, a database indexing surveys in the fields such as psychology, education, medicine, and social work, and the grey literature (i.e., New York Academy of Medicine Grey Literature Report, Google, and the National Quality Measures Clearinghouse). Additional resources were identified through reference mining and input from experts. We conducted dual review of citations with a consensus procedure to resolve disagreements.
RESULTS: Our search identified 2,094 titles, reduced to 84 articles after title, abstract screening and detailed review. Experts and grey literature contributed an additional 4 articles, 9 surveys and 2 toolkits [Hospice AIM Toolkit (PEACE) and TIME: Toolkit of Instruments to Measure End of Life Care]. The most commonly used surveys include Family Satisfaction with Advanced Cancer Care (FAMCARE) (n=8), Family Evaluation of Hospice Care (FEHC) (n=8), Family Assessment of Treatment at End of Life (FATE) (n=5), After-death bereaved family member interview (n=5), Quality of Dying and Death (QODD) (n=5), and Views of Informal Carers-Evaluation of Services (VOICES) (n=4). The FEHC and the Bereaved Family Survey (derived from FATE) are in national operational use for quality assessment and improvement. Symptom and communication domains were covered by almost all surveys studied, whereas financial and bereavement domains were less commonly represented.
CONCLUSIONS: A number of validated and widely used surveys to measure informal caregiver satisfaction with hospice are available. These instruments vary in their focus for research vs. quality improvement and specific domains covered.

SYSTEMATIC REVIEW: HEALTH-RELATED CHARACTERISTICS OF ELDERLY HOSPITALIZED PATIENTS AND NURSING HOME RESIDENTS ASSOCIATED WITH SHORT-TERM MORTALITY John M. Thomas[1,2]; Leo M. Cooney[3]; Terri Fried[3,4]. [1]VA Connecticut Healthcare System, West Haven, CT; [2]Yale University School of Medicine, New Haven, CT; [3]Yale University School of Medicine, New Haven, CT; [4]VA Connecticut Healthcare System, West Haven, CT. (Tracking ID #1637184)

BACKGROUND: Attempts to aid patients in health care decisions in late life by quantifying life expectancy or mortality risk have met with limited practical success. Prognostic indices, in most cases, have modest overall accuracy, lack validation in diverse populations, and contain factors that may not be readily measured in every clinical setting. Nonetheless, studies have examined numerous risk factors for mortality in older persons, and a systematic review offers the opportunity to organize these factors into broader domains. Our objective was to identify the domains of health-related characteristics of older hospitalized patients and nursing home residents most strongly associated with short-term mortality.
METHODS: We reviewed studies published in English in MEDLINE, Scopus, or Web of Science before August 1, 2010 to find prospective studies consisting of persons 65 years or older that evaluated the association between at least one health-related patient characteristic and mortality within 1 year in multivariable analysis. Once the studies were identified, all health-related characteristics associated with mortality in multivariable analysis were extracted from these studies and categorized into domains. We noted the frequency, across individual studies, with which particular domains were associated with mortality in multivariable analysis.
RESULTS: Thirty-three studies (28 studies involving hospitalized patients and 5 studies involving nursing home residents) reported a large number of characteristics associated with mortality, comprising seven domains: cognitive function, disease diagnosis, laboratory values, nutrition, physical function, pressure sores, and shortness of breath. Measures of physical function and nutrition were the domains most frequently associated with mortality up to 1 year for hospitalized patients and nursing home residents; measures of physical function, cognitive function, and nutrition were the domains most frequently associated with in-hospital mortality for hospitalized patients. Pressure sores and shortness of breath were examined in too few studies to compare with the other domains.
CONCLUSIONS: Among a large number of health-related characteristics of older persons shown to be associated with short-term mortality, measures of nutrition, physical function, and cognitive function were the domains of health most frequently associated with mortality. These domains provide easily measurable factors that may serve as helpful markers to identify patients at increased mortality risk.

TEACHING OSTEOARTHRITIS EVALUATION AND MANAGEMENT IN AN INTERNAL MEDICINE RESIDENCY PROGRAM Ashley Morris; Donald Fox; Amy Thompson; Patty J. Iverson; William P. Moran; Cathryn Caton. Medical University of South Carolina, Charleston, SC. (Tracking ID #1643084)

BACKGROUND: Osteoarthritis affects 50–80 % of people 65 years and older. Osteoarthritis is the most prevalent form of arthritis in the United States and is responsible for half of all disabilities. In older adults it is associated with pain, functional disability and being homebound.
METHODS: A retrospective chart review of history and physical forms was performed to determine the pre-intervention rate of completion of the functional assessment. We utilized a 4 month multilevel, multi-strategy approach to educate 100 residents and prompt them to complete a functional assessment, history, evaluation and management of an elderly patient with osteoarthritis. We combined osteoarthritis lecture and individual resident academic detailing to enhance resident knowledge of functional assessments and osteoarthritis management. Nurses and patient care technicians were utilized to prompt and remind residents to perform functional assessments and manage patients with pain related to osteoarthritis. Improvement in medical knowledge was assessed using a pre and post intervention questionnaire. Skill (i.e. functional assessment) was assessed by calculating the number of completed cue sheets and history and physical forms on the inpatient services.
RESULTS: Fifty-eight percent of attendings participated in resident detailing efforts. Given variable schedules and practice location, only 14 % of residents attended the didactic. Over the 4 month intervention period, 72 % of residents were detailed. Of 750 patients 65 years and older seen in the clinic during this period, 57 % had functional assessments completed. Of the patients admitted to general medicine inpatient services 47 % had functional assessments completed in comparison to 35 % pre-intervention. Response rates for both pre and post tests were> 75 %. Improvement in knowledge was demonstrated on the pre-post test scores (p=0.019).
3**CONCLUSIONS:** Using educational strategies, as well as system changes we improved resident knowledge and skill in functional assessment and management of osteoarthritis in patients 65 years and older.

TEACHING DISCHARGE PLANNING TO SUB-INTERNS: A TRIAL STUDYING THE EFFECT OF MULTI-DISCIPLINARY ROUNDS Ankur Segon; Julie L. Mitchell; Michael Frank; Martin Muntz; Jaren G. Thomas; Kerrie Quirk. Medical College of Wisconsin, Milwaukee, WI. (Tracking ID #1641171)

BACKGROUND: Objectives 1. Determine sub-intern's knowledge and attitudes towards members of the multidisciplinary team 2. Identify areas of deficit in sub-intern's knowledge of the discharge process 3. Evaluate the impact of attendance at daily multidisciplinary rounds on sub-intern's knowledge and attitude towards members of the multidisciplinary team and the discharge process
METHODS: Sub-interns at our institution rotate at 4 different sites. All sub-interns have similar level of prior inpatient medicine experience. Only 1 of 4 sites conducts daily multidisciplinary rounds where senior residents from each medicine team present the team's patients. Over 1 year, we surveyed a total of 105 medicine sub-interns across all 4 sites (response rate 67 %). Students were surveyed both at the beginning and end of their rotation. We compared student responses between sites with and without multidisciplinary rounds to determine impact of these rounds on student's knowledge and attitude.
RESULTS: All responses were scored on a 1–5 Likert-like scale, with 5 being the highest score. Over the course of the sub-internship, there was a statistically significant improvement in student's familiarity with the role of members of the multidisciplinary team and student's appreciation of the importance of various members of the multidisciplinary team in providing comprehensive care to their patients (table). Students also got more comfortable in interacting with members of multidisciplinary team (3.6 to 4.3, p<0.001). There was a marked improvement in student's self-reported ability to manage the discharge process, both in terms of determining discharge disposition (2.8 to 4.3, p<0.001) and execution of the discharge plan (2.6 to 4.1, p<0.001). There was no difference in knowledge and attitude towards members of the multidisciplinary team or comfort with the discharge process between students who attended multidisciplinary rounds and students who did not. Students who attended multidisciplinary rounds reported a decline in perceived clinical and educational utility of these rounds by the end of the sub-internship (table).
CONCLUSIONS: Without any formal or specific curricular intervention, student's knowledge, attitude and comfort level with roles of various members of the healthcare team and the discharge process show a reassuring growth throughout the medicine sub-internship. Attendance at multi-disciplinary rounds does not improve student's experience with members of the multidisciplinary team or the discharge process.

Question 1*			
How familiar are you with the role of each of the following members of the healthcare team?			
	Pre-rotation score	Post rotation score	p-value
Case manager	2.7	3.3	<0.001
Social worker	3.4	3.8	<0.001
Physical therapist	3.7	4.1	<0.001
Respiratory therapist	3.6	4.2	<0.001
Dietitian	3.9	4.1	<0.001
Speech therapist	3.2	4.0	<0.001
Question 2*			
How important is the role of each of the following members of the healthcare team to the overall care of the hospitalized patient?			
	Pre-rotation score	Post rotation score	p-value
Case manager	4.4	3.6	<0.001
Social worker	4.5	4.5	NA
Physical therapist	4.3	4.8	<0.001
Respiratory therapist	4.5	4.6	0.05
Dietitian	4.1	4.5	0.003
Speech therapist	4.0	4.1	0.41
Question 3*			
How important is it to start to the process of discharge planning at the time of admission?			
Pre-rotation score	Post-rotation score	p-value	
4.0	4.3	<0.001	
Question 4*			
What is the utility of multidisciplinary rounds as a learning tool during your sub-internship?			
Pre-rotation score	Post-rotation score	p-value	
3.6	2.8	0.033	
Question 5*			
How useful are multidisciplinary rounds to your overall ability to provide efficient care to your hospitalized patients?			
Pre-rotation score	Post-rotation score	p-value	
3.6	2.8	0.14	

*All questions scored on a 1-5 scale, with 1 being the lowest possible score and 5 being the highest

TEAMWORK ASSESSMENT IN INTERNAL MEDICINE: A SYSTEMATIC REVIEW OF VALIDITY EVIDENCE AND OUTCOMES

Rachel Havyer; Majken T. Wingo; Nneka Comfere; Darlene R. Nelson; Andrew J. Halvorsen; Furman S. McDonald; Darcy Reed. Mayo Clinic, Rochester, MN. (Tracking ID #1642498)

BACKGROUND: Effective teamwork among health professionals improves patient safety and is an essential competency for physicians across the education continuum. Valid teamwork assessment is imperative to determine physician competency and to optimize preparedness to function in teams. Numerous organizations have made teamwork a top priority in their recommendations for improving healthcare, yet there is little consensus on how to measure it. Therefore, we conducted a systematic review of published instruments used to measure teamwork in undergraduate, graduate, and continuing medical education in general internal medicine and all medical subspecialties. We synthesized the validity evidence and outcomes for each unique teamwork assessment tool with the goal of providing a resource for educators, clinicians and other health professionals to identify appropriate assessments to apply to their settings and teams.

METHODS: We searched MEDLINE, MEDLINE In-process, CINAHL and PsycINFO from January 1979 through June 2012, as well as references of included articles and abstracts from 5 professional meetings. Two content experts were queried for additional studies. Included studies described quantitative tools designed for measuring teamwork among medical students, residents, fellows, and practicing physicians on single or multi-professional teams in general internal medicine and all medical subspecialties. Instrument validity and study quality data were abstracted using established frameworks with existing validity evidence. For each tool identified, the literature was again searched for additional validity evidence. Two authors independently abstracted one-third of articles and agreement was calculated.

RESULTS: Of 12,256 citations, 140 articles describing 64 unique teamwork assessment tools met inclusion criteria. Interrater agreement for data abstraction was ICC 0.73 (95 % CI 0.63–0.81). Most (57, 89 %) teamwork assessments involved practicing physicians, 31 (48 %) involved residents/fellows, and 5 (8 %) involved medical students. The majority (58, 91 %) assessed interprofessional teams. Teamwork tools were applied in inpatient (34, 53 %), outpatient (21, 33 %), and classroom settings (8, 13 %). Fifteen teamwork tools used simulation. General internal medicine was the medical specialty with the greatest number of published tools (29, 45 %), followed by critical care medicine (23, 36 %). Of the 64 tools, 17 (27 %) assessed individuals working within teams, 45 (70 %) assessed teams as a whole, and 7 (11 %) assessed both individuals and teams. Validity evidence for teamwork tools included content (50, 78 %), internal structure (47, 73 %), relationships to other variables (25, 39 %), and response process (12, 19 %). Attitudes and opinions were the most frequently assessed outcomes. Relationships between teamwork scores and

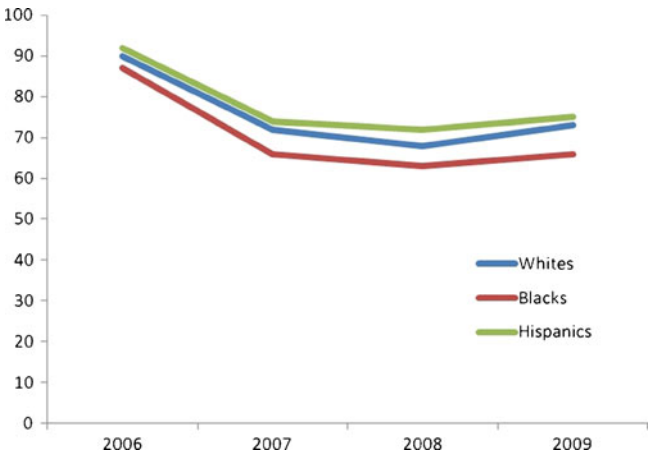
patient outcomes were examined for 12 (19 %) tools. Scores from the Safety Attitudes Questionnaire and Team Climate Inventory have substantial validity evidence and have been associated with improved patient outcomes.
CONCLUSIONS: Numerous tools exist to assess teamwork of physicians and trainees functioning in interprofessional teams across a variety of settings and specialties within internal medicine. There is strong validity evidence for several tools, although few teamwork assessments have been directly linked to patient outcomes. This review may help educators, clinicians, and other health professionals identify appropriate teamwork assessment tools to apply to their own teams.

TECHNOLOGY-ASSISTED WEIGHT LOSS INTERVENTIONS IN PRIMARY CARE: A SYSTEMATIC REVIEW David M. Levine; Joseph Nicholson; Melanie Jay. New York University Medical Center, New York, NY. (Tracking ID #1642413)

BACKGROUND: The obesity epidemic shapes numerous interactions in primary care today, accounting for unprecedented rates of chronic disease. However, there are few available weight loss interventions suitable to primary care (PC). Many are mired by high attrition rates, weight regain, and resource-intensive requirements. Moreover, numerous barriers exist to proper implementation, including deficient training, poor scalability, insufficient time, inadequate reimbursement, and alternate prevention responsibilities. Technology-assisted weight loss interventions may address these barriers through time and cost savings, improved feedback, enhanced self-monitoring, and convenience of use. To date, these programs have employed initial computerized assessment for forthcoming tailoring, web-based and mobile device self-monitoring and counseling, and automated feedback. Many have yet to be pragmatically integrated into PC, where they ultimately need to be deployed. This systematic review examines technology-assisted weight loss interventions specifically provided in a PC setting and highlights pragmatic aspects of the trials. To our knowledge, this is the first such systematic review.
METHODS: We performed a literature search of online databases (MEDLINE, PubMed, Cochrane, Google Scholar) and reference lists of identified studies and reviews between 2000 and 2012. Inclusion criteria included: (1) RCT published in peer-reviewed English-language journal; (2) utilization of the Internet, personal or in-office computer, and/or mobile device; (3) weight-loss as a primary outcome; and (4) intervention facilitated in an ambulatory PC setting. From each study we extracted baseline demographics, recruitment procedures, setting, intensity, mode of customization, motivating theory, tech modality, personnel, and weight loss (kg, percent, and percent achieving greater than 5 % loss). The Delphi and the Cochrane Effective Practice and Organization of Care (EPOC) criteria were used to assess bias. Degree of pragmatism (whether an intervention occurred under realistic versus ideal circumstances) was determined with the Pragmatic Explanatory Continuum Indicator Summary (PRECIS) (0-explanatory, 4-pragmatic).
RESULTS: 14 trials met inclusion criteria. Patients were more often female (61 %), White (67 %), and middle-aged. 13/14 (93 %) trials were of high intensity and employed tailored interventions. 7/14 (50 %) trials employed the Internet and 5/14 (36 %) utilized clinician-guiding software. 10/14 (71 %) involved self-monitoring, 11/14 (79 %) incorporated automated feedback, while 12/14 (86 %) included care-provider feedback. MDs were the most frequently (43 %) utilized personnel, while no personnel were required in 21 % of interventions. Mean attrition ranged from 6 to 80 %. Weight loss in the active treatment arm ranged from 0.08 kg–5.1 kg (0.8 %–5.2 % of initial body weight). Patients losing at least 5 % of baseline weight ranged from 5 %–41.4 %. 13/14 (93 %) and 14/14 studies met more than 4 Delphi and EPOC criteria, respectively. The mean PRECIS score was 2.8/4 (SD 0.42). Given the disparate features of the studies, results were summarized but not pooled quantitatively.
CONCLUSIONS: Compared to usual care, some technology-assisted weight loss interventions in PC demonstrate clinically significant weight loss. However, too few studies of adequate methodology are available to definitively determine impact. Further research particularly employing pragmatic methods is needed to best determine management for obesity in PC.

TEMPORAL TRENDS OF HEALTH DISPARITIES IN DRUG ELUTING STENTS Leonardo Tamariz; Ana M. Palacio; Alexis P. Rodriguez; Hua Li; Mauricio G. Cohen. University of Miami, Miami, FL. (Tracking ID #1639873)

BACKGROUND: Drug Eluting Stents (DES) decrease in stent re-stenosis by approximately 80 % when compared to Bare Metal Stents (BMS). Racial disparities have been reported in the use of cardiovascular procedures. We explore the impact of the 2007 antiplatelet therapy guidelines on racial disparities in the use of DES in the State of Florida.
METHODS: We conducted a cross-sectional analysis of all ambulatory and hospital discharge stent placement procedures between 2006 and 2010. We identified 188,260 percutaneous coronary interventions in which patients received either DES or BMS stents using ICD-9 procedure codes along with the race/ethnicity of each individual. We calculated the yearly usage of stents by race and ethnicity. We used logistic regression to determine the odds ratio (OR) of having a DES by race and ethnicity adjusted for Charlson score, insurance status and year of the procedure. We also conducted a subgroup analysis of diabetics to determine if health disparities existed in this group. To evaluate for temporal trends we used the Cochrane-Armitage trend test.
RESULTS: The majority of stent recipients were White (n=158,039) followed by Hispanics (n=16,087) and Blacks (n=14,037). Blacks had the highest comorbidity scores compared to Whites and Hispanics (p<0.01). The use of DES decreased from 2006 to 2009, and this decrease was seen in all ethnicities. The adjusted OR of having a DES for Blacks was 0.84; 95 % CI 0.81–0.88 (p<0.01) and for Hispanics was 1.24; 95 % CI 1.19–1.29 (p<0.01) when compared to Whites. We identified 62,798 subjects with diabetes and in them the adjusted OR of having a DES for diabetic Blacks was 0.93; 95 % CI 0.88–0.99 (p=0.02) and for Hispanics was 1.34; 95 % CI 1.25–1.43 (p<0.01) when compared to Whites. Figure 1 shows that difference in use of DES increased over time (p<0.01).
CONCLUSIONS: In the state of Florida, during the years of 2006 and 2009, the disparity gap in the use of DES between blacks and Whites increased after the implementation of the new antiplatelet therapy guidelines even among diabetic patients. Hispanics had a higher rate of DES use when compared to non-Hispanic whites. Understanding the reasons for these conflicting disparities may shed light on possible mechanisms to prevent them particularly when instituting practice guidelines that may use subjective measures in the decision making process.
Use of stents by ethnicity

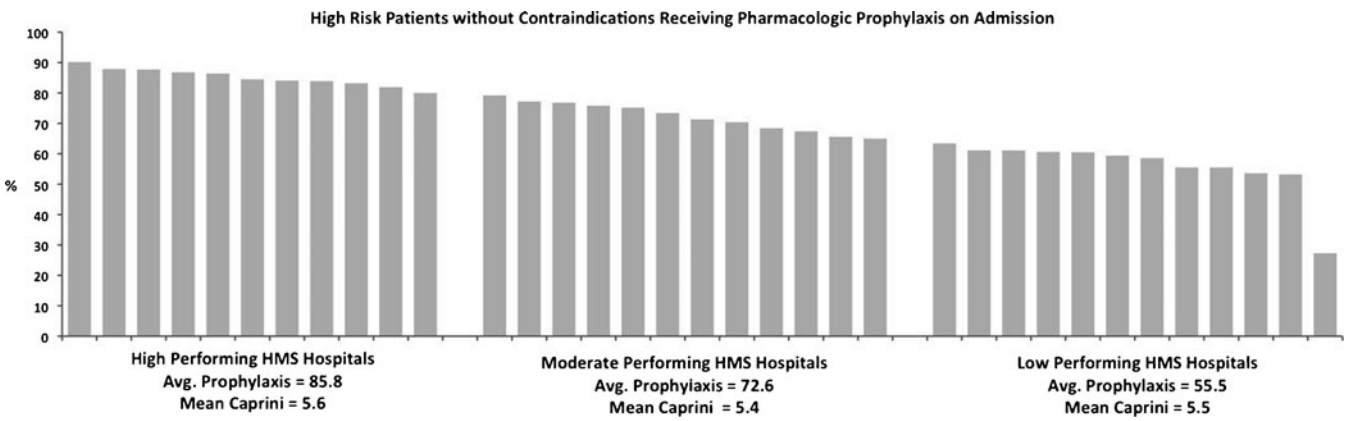


THE ASSOCIATION BETWEEN CARE COORDINATION AND HEALTH OUTCOMES IN EPISODES OF CARE Craig Pollack[1]; Eric Schneider[2]; Julie Lai[2]; Robert Rudin[2]; Steven Fox[2]; Peter S. Hussey[2]. [1]Johns Hopkins School of Mediine, Baltimore, MD; [2]RAND Corporation, Arlington, VA. (Tracking ID #1630687)

BACKGROUND: Better coordinated care is hoped to improve patient outcomes and reduce health spending, but the health and cost consequences associated with the current levels of care coordination have not been quantified. Our goal was to measure the extent to which care coordination was linked with health outcomes and costs of care for Medicare beneficiaries with chronic disease.
METHODS: Using 5 % sample Medicare data from 2008 and 2009, we conducted a retrospective cohort study comparing the health outcomes and costs of care for Medicare beneficiaries experiencing variable continuity of care during a 12 month episode of care for congestive heart failure (CHF, n=53,488), chronic obstructive pulmonary disease (COPD, n=76,520) or diabetes (DM, n=166,654). The Bice-Boxerman Continuity of Care (COC) Index was used to assess care coordination with values ranging from 0 to 1.0. We used multivariable logistic regression models to examine the association between COC and hospitalizations, emergency room visits, and specific types of complications. Two-part models (logistic regression models followed by generalized linear regression models with gamma variance distribution and log link function) were used to test whether COC was associated with costs of care. Sensitivity analyses explored alternative claims-based measures of coordination.
RESULTS: After multivariable adjustment, higher levels of coordination were associated with lower odds of inpatient hospitalization (Odds Ratio [OR] for 0.1 increase in COC Index=0.94 for CHF, 0.95 for COPD, and 0.95 for DM, all p<0.0001), emergency department visits (OR=0.92 for CHF, 0.93 for COPD, and 0.94 for DM, all p<0.0001), and odds of specific types of complications. For every 0.1 increase in the COC index, total episode costs of care were 4.7 % lower for CHF (95 % CI 4.4 % to 5.0 %), 6.3 % lower for COPD (95 % CI 6.0 % to 6.5 %), and 5.1 % lower for DM (95%CI 5.0 % to 5.2 %) in adjusted analyses. Extrapolating the results to all Medicare beneficiaries, the total reduction in Medicare spending associated with improving coordination from its current level to the population median would be approximately $1.5 billion for the three conditions.
CONCLUSIONS: Modest differences in care coordination for Medicare beneficiaries may be associated with sizable cost reductions.

THE ASSOCIATION BETWEEN HOSPITAL PERFORMANCE FOR PHARMACOLOGIC VENOUS THROMBOEMBOLISM PROPHYLAXIS AND RATES OF VENOUS THROMBOEMBOLISM
Scott Flanders[1]; M. Todd Greene[1]; Paul Grant[1]; Scott Kaatz[2]; David Paje[3]; Bobby Lee[4]; James Barron[5]; Steven J. Bernstein[1,6]. [1]University of Michgian, Ann Arbor, MI; [2]Hurley Medical Center, Flint, MI; [3]Henry Ford Health System, Detroit, MI; [4]Oakwood Healthcare System, Dearborn, MI; [5]Spectrum Health, Grand Rapids, MI; 6VA Ann Arbor Healthcare System, Ann Arbor, MI. (Tracking ID #1637138)

BACKGROUND: Hospital-associated venous thromboembolism (VTE) affects up to 15 % of hospitalized medical patients and is felt to be one of the most common preventable causes of death in the hospital. Pharmacologic prophylaxis has been shown to reduce rates of hospital-associated VTE, yet is underutilized in U.S. hospitals. Although improving VTE prophylaxis rates in hospitals has been the focus of recent quality improvement efforts, the effect of improving prophylaxis rates on VTE outcomes in hospitalized patients admitted to the general medical ward has not previously been described.
METHODS: The Michigan Hospital Medicine Safety Consortium is a quality collaborative of 35 hospitals with a goal of preventing adverse events in hospitalized medical patients. Using web-based data entry, an abstractor at each hospital collects detailed demographic and clinical data, including all known risk factors for VTE and use of pharmacologic prophylaxis for 800 patients per year. For this analysis, patients<18 years of age, obstetric or surgical patients, patients with contraindications to prophylaxis, and patients admitted directly to the ICU were excluded. VTE outcomes during hospitalization and at 90 days after discharge were determined by medical record review and follow-up phone calls. High risk was defined as a Caprini score≥2. Performance categories based on pharmacologic prophylaxis rates were defined as follows: high≥80 %; moderate<80 %–≥65 %; low <65 %.
RESULTS: Among 20,796 high-risk patients, the mean age was 66 years, mean Caprini score was 5.6 and mean length of stay was 4.4 days. Hospital rates of pharmacologic prophylaxis varied between 27 % and 90 % with an overall average of 70 %. A total of 11 hospitals were classified as high performers on prophylaxis. There were 12 hospitals in each of the moderate and low performance categories. Average rates of prophylaxis differed significantly by performance level (figure). The rate of VTE at 90 days in the high, moderate, and low performing hospitals was 1.09 %, 1.30 %, and 0.99 % respectively, and did not differ significantly. Relative to high performing hospitals, moderate and low performing hospitals did not have significantly higher rates of risk-adjusted VTE. Caprini score was associated with in-hospital (OR=1.21, 95%CI 1.09–1.35) and 90-day (OR=1.13, 95 % CI 1.08–1.18) rates of VTE.
CONCLUSIONS: Hospital level of performance for pharmacologic VTE prophylaxis does not appear to be associated with in-hospital or 90 day rates of VTE. The impact of increasing rates of pharmacologic prophylaxis to prevent hospital associated VTE in general medical patients imay be minimal.
Hospital Rate of Pharmacologic Prophylaxis on Admission for High Risk Patients with No Contraindications



THE ASSOCIATION BETWEEN MEDICAL STUDENT CAREER INTERESTS AND ATTITUDES TOWARD PRIMARY CARE, FACULTY MENTORSHIP, AND INSTITUTIONAL SUPPORT
Charlotte E. Ward; Susan Edgman-Levitan; Marya J. Cohen; Rebecca Berman. Massachusetts General Hospital, Boston, MA. (Tracking ID #1640366)

BACKGROUND: It is becoming increasingly difficult for patients to find primary care physicians (PCPs) in the United States. By expanding Medicaid and providing federal subsidies to help lower-income individuals purchase private insurance, the Affordable Care Act will extend insurance coverage to 30 million new patients, many

of whom will likely need a PCP. It is important therefore, to attract a greater number of medical students to the field of primary care and to better understand factors that contribute to student career interests. The Crimson Care Collaborative (CCC), a series of 5 student-faculty collaborative practices, aims to give students hands-on practical experience in primary care practices across the Harvard Medical School network, with the hope that these students will be more inclined to pursue a career in primary care after they graduate. We surveyed medical students prior to participating in CCC. Our goal was to examine the relationship between student career interest and faculty mentorship, institutional support and attitudes toward primary care.

METHODS: All Harvard Medical School (HMS) students who joined the Crimson Care Collaborative as student-volunteers were administered a survey prior to volunteering which asked questions about their career interests, attitudes toward and knowledge about primary care, and presence of faculty mentoring. Survey responses were compared with Chi-square tests.

RESULTS: The study population included 129 HMS students who filled out a survey prior to participating in CCC. Among students who reported having a faculty mentor at HMS within the field of general medicine, reported interest was higher in general medicine than specialty medicine (60 %, vs. 8 %, $p<0.0001$). Students interested in general medicine were more likely to report having met a HMS faculty member whose general medicine career is one they would like to emulate (59 % vs. 15 %, $p<0.001$) and to report having disagreed with negative comments that they heard about primary care from either faculty, residents, or their peers (86 % vs. 45 %, $p<0.001$) compared to students interested in specialty medicine. Students interested in general medicine were less likely to report that there was institutional support for future primary care careers than students not interested in general medicine (38 % vs. 69 %, $p=0.002$). There were no significant differences in student-reported importance of income, ability to pay back loans, or amount of student debt between students interested in general medicine versus specialty medicine.

CONCLUSIONS: Harvard Medical School students interested in general medicine were more likely to report having faculty mentors and members that they emulate in the fields of general medicine, more likely to disagree with negative comments that they had heard in regard to primary care, but were less likely to report the presence of institutional support. The ability to pay back loans, student debt and importance of income were not associated with career interest, in contrast to previous studies. Our study finds that there are other factors that may be important, aside from student debt and income, that play a role in primary care career interest. Further research into what institutions as a whole can do to improve student perceptions regarding institutional support for general medicine and primary care is needed.

THE ASSOCIATION BETWEEN OUTPATIENT EXPERIENCE OF CARE AND SUBSEQUENT RESOURCE UTILIZATION IN A PRIMARY CARE NETWORK Charlotte E. Ward; Jeffrey M. Ashburner; Wei He; Steven J. Atlas. Massachusetts General Hospital, Boston, MA. (Tracking ID #1641674)

BACKGROUND: Assessing patient experience, using surveys such as the Consumer Assessment of Healthcare Providers and Systems (CAHPS), is increasingly part of performance measurement efforts. The relationship between patient reported access to care and subsequent resource utilization has not been extensively studied. Our goal was to examine the relationship between patient reported access to care, using the Clinician and Group (CG) CAHPS survey, and measures of resource utilization within a large, academic primary care network.

METHODS: Subjects included adult patients seen in any of 13 primary care practices affiliated with Massachusetts General Hospital who completed a CG-CAHPS survey after an outpatient visit between January, 2009 and December, 2010. CG-CAHPS individual item measures were assessed within the access domain (5 items) by taking the percentage of respondents reporting the most positive response ('Always') for the question item, commonly referred to as the 'Top Box' score. Resource utilization measures were assessed through December 2011 and included high cost imaging tests (computed tomography, magnetic resonance imaging, and nuclear cardiology), emergency department (ED) visits, and inpatient admissions or readmissions. We examined the association among CG-CAHPS items and subsequent resource utilization outcome measures using generalized linear models. We assessed adjusted outcomes controlling for age, gender, race, insurance status, language spoken and Charlson score.

RESULTS: The study population included 13,945 adult patients who completed a CG-CAHPS survey and had data available for at least one utilization measure. Among these patients, 1,375 (9.9 %) had a high cost imaging test, 1,312 (9.4 %) had a visit to the ED, 1,095 (7.9 %) had an inpatient admission, and 196 (1.4 %) had a readmission within 30 days. After adjusting for patient characteristics, three items within the access composite were significantly associated with resource utilization outcome measures. Patients who reported getting an urgent care appointment as soon as they needed it were less likely to have had a high cost imaging test completed (RR, 0.82; 95 % CI, 0.71–0.94; $P=.006$) and were less likely to have an ED visit (RR, 0.87; 95 % CI, 0.75–1.00; $P=.06$). Patients who reported getting a routine care appointment as soon as they needed it were less likely to have had a readmission (RR, 0.65; 95 % CI, 0.47–0.91; $P=0.01$). Patients who reported getting an answer to their medical question after regular office hours were less likely to have had a high cost imaging test completed (RR, 0.68; 95 % CI, 0.49–0.92; $P=0.01$).

CONCLUSIONS: Within a large, academic primary care network, higher patient-reported access to care after outpatient visits was associated with decreased subsequent high cost imaging tests, ED visits and hospital readmissions. Whether improved access to outpatient primary care services decreases overall health care utilization and costs requires further study.

THE ASSOCIATION BETWEEN PATIENT EXPERIENCE OF CARE AND SUBSEQUENT CANCER PREVENTION AND CHRONIC DISEASE OUTCOMES Charlotte E. Ward; Jeffrey M. Ashburner; Wei He; Steven J. Atlas. Massachusetts General Hospital, Boston, MA. (Tracking ID #1636341)

BACKGROUND: Assessing patient experience, using surveys such as the Consumer Assessment of Healthcare Providers and Systems (CAHPS), is increasingly part of performance measurement efforts. While evidence suggests CAHPS is positively associated with improved outcomes in the hospital setting, it is less clear whether this is also true in outpatient primary care settings. Our goal was to examine the relationship between patient experience of care, using the Clinician and Group (CG) CAHPS survey and measures of quality of care within a large, academic primary care network.

METHODS: Subjects included adult patients seen in any of 13 practices affiliated with Massachusetts General Hospital who completed a CG-CAHPS survey after an outpatient visit between August, 2008 and December, 2010 and were eligible for preventive cancer screening or chronic disease management (diabetes and coronary artery disease [CAD]). CG-CAHPS individual item measures were assessed within access (5 items) and communication (6 items) domains by taking the percentage of respondents reporting the most positive response ('Always') for the question item, commonly referred to as the 'Top Box' score. Quality of care measures assessed through December 2011 included outpatient Healthcare Effectiveness Data and Information Set (HEDIS) items for cancer screening completion (breast, cervical and colorectal), and screening and goal attainment measures for diabetes (LDL and HbA1c) and CAD (LDL). We examined the association among CG-CAHPS items and subsequent HEDIS outcome measures using generalized linear models. We assessed adjusted outcomes controlling for age, gender, race, insurance status, language and Charlson score.
RESULTS: The study population included 4,949 women aged 42–74 who were eligible for breast cancer screening, 4,012 women aged of 21–64 who were eligible for cervical cancer screening, 7,067 patients aged 52–75 who were eligible for colorectal cancer screening, and 2,385 diabetic and 1,576 CAD patients who completed a CG-CAHPS survey and had HEDIS outcome measures. A total of 99 models were assessed (9 CG-CAHPS items and 11 HEDIS measures). After adjusting for patient characteristics, only 3 patient experience measures were significantly associated with HEDIS outcome measures. Diabetic patients who reported getting an answer to their medical question during office hours were more likely to have a HbA1c<9 % (RR, 1.07; 95 % CI, 1.01–1.12; P=.02). Patients who reported that the physician knew important information about their medical history were more likely to receive a colonoscopy (RR, 1.05; 95 % CI, 1.02–1.09; P=0.003). Patients who reported seeing the physician within 15 min of their appointment time were less likely to receive a mammogram (RR, 0.98; 95 % CI, 0.95–1.00; P =0.04), and less likely to receive a colonoscopy (RR, 0.97; 95 % CI, 0.95–1.00; P=0.02).
CONCLUSIONS: Within a large, academic primary care network, most patient-reported physician communication and access to care questions after outpatient visits were not associated with subsequent preventive cancer screening and chronic disease management outcomes. Among significant associations, CG-CAHPS items were both positively and negatively predictive of HEDIS outcomes. These results support assessing patient experience as a unique domain of quality of care in addition to HEDIS measures.

THE ASSOCIATION OF ELECTRONIC HEALTH RECORD MEANINGFUL USE WITH CHRONIC DISEASE QUALITY MEASURES Lipika Samal[1,2]; Adam Wright[1,2]; Jeffrey A. Linder[1,2]; David W. Bates[1,2]. [1]Harvard Medical School, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA. (Tracking ID #1642581)

BACKGROUND: Electronic health records (EHRs) may improve quality of care when used in a meaningful way. The Department of Health and Human Services has defined stage 1 of meaningful use as a minimum level of performance on 15 core objectives including computerized order entry, electronic prescribing, clinical decision support, providing health information to patients, and data exchange, among others; additionally federal policy defines a set of clinical quality measures. We evaluated the association of meaningful use with quality.
METHODS: We compared physicians at our hospital and affiliated practices who met meaningful use criteria with those physicians who did not meet the criteria and excluded physicians with fewer than 10 patients in the denominator of any of the meaningful use core objectives. We examined data from September to November 2012 and determined quality measures for hypertension (HTN), diabetes (DM), coronary artery disease (CAD), asthma, and depression. We used Student's t-test to assess the relationship between meaningful use (as a dichotomous variable) with seven quality measures (as a proportion of patients meeting each quality measure). We excluded physicians with zero patients in the denominator of each quality measure.
RESULTS: We analyzed data on 1,213 physicians, 754 (62 %) of whom were meaningful users. For one quality measure (blood pressure control <140/90 mmHg in HTN patients) meaningful use was marginally associated with better quality (n=962; 47 % vs. 44 %; p=0.05). For five quality measures, meaningful use was not associated with better quality: 1) hemoglobin A1C control <9.0 % in DM patients (n=174; 70 % vs. 61 %; p=0.07); 2) urine protein screening in DM patients (n=642; 77 % vs. 79 %; p=0.28); 3) LDL control <100 mg/dL in DM patients (n=673; 81 % vs. 80 %; p=0.62); 4) beta blocker therapy in CAD patients (n=187; 96 % vs. 96 %; p=0.90); and 5) asthma medication (n=739; 59 % vs. 62 %; p=0.13). For one quality measure, continuous depression treatment for 12 weeks after diagnosis, meaningful use was associated with worse quality (n=139; 48 % vs. 69 %; p=0.001).
CONCLUSIONS: In this sample of physicians using the same EHR, we found no difference in quality between meaningful users and non-meaningful users.

THE ASSOCIATION OF HEALTH LITERACY WITH ILLNESS AND MEDICATION BELIEFS AMONG OLDER ADULTS WITH ASTHMA Alex Federman[1]; Michael S. Wolf[2]; Anastasia Sofianou[1]; Melissa Martynenko[1]; Ethan Halm[3]; Howard Leventhal[4]; Juan P. Wisnivesky[1]. [1]Mount Sinai School of Medicine, New York, NY; [2]Northwestern University, Chicago, IL; [3]UT Southwestern Medical Center, Dallas, TX; [4]Rutgers, The State University of New Jersey, New Brunswick, NJ. (Tracking ID #1636522)

BACKGROUND: Older adults with asthma have disproportionately poor asthma outcomes, yet remain a relatively understudied group. Suboptimal health literacy (HL) and asthma beliefs are associated with poor asthma self-management and outcomes. We tested the hypothesis that low HL is associated with inaccurate beliefs about asthma among older asthmatics.
METHODS: Asthmatics ages ≥60 years were recruited from hospital and community practices in New York, NY and Chicago, IL (n=420). HL was measured with the Short Test of Functional Health Literacy in Adults; validated instruments derived from the Self Regulation Model were used to assess beliefs. The association of beliefs with HL was evaluated with multivariate models.
RESULTS: Thirty-six percent of patients had low HL; 54 % believed they only have asthma with symptoms, 29 % believed they will not always have asthma and 20 % believed that their doctor can cure asthma. Low HL was associated with the 'not always have' and 'doctor can cure' asthma beliefs (OR: 1.84, 95 % CI: 1.2 to 2.82; OR: 2.22, 95 % CI: 1.29 to 3.82, respectively). Patients with low HL were also more likely to be concerned about medication use (β=0.92, p=.05), despite recognizing their necessity (β=−1.36, p=.01).
CONCLUSIONS: Older asthmatics with low HL endorse inaccurate asthma beliefs. Practitioners should use HL appropriate strategies to counter misconceptions about asthma among older adults to improve asthma self-management.

THE BORDER OF REPRODUCTIVE CONTROL: UNDOCUMENTED IMMIGRATION AS A RISK FACTOR FOR UNINTENDED PREGNANCY IN SWITZERLAND Alejandra Casillas[1,4]; Patrick Bodenmann[4]; Manuella Epiney[3]; Laurent Gétaz[2]; Olivier Irion[3]; Hans Wolff[2]. [1]Geneva University Hospital, Genève, Switzerland; [2]Geneva University Hospital, Genève, Switzerland; [3]Geneva University Hospital, Genève, Switzerland; [4]Lausanne University Hospital, Lausanne, Switzerland. (Tracking ID #1620117)

BACKGROUND: Unintended pregnancy reflects the unmet public health need for family planning, as prioritized in Healthy People 2020. An issue of disparities, it is linked to factors that disproportionately impact vulnerable populations. In Switzerland, where access to care is frequently lauded, undocumented immigrants are nevertheless limited. Swiss studies have demonstrated undocumented women's lack of insurance, low rates of preventive primary care, and poor knowledge of birth control. Using the only database to inquire about unintended pregnancy in Switzerland, this study examined the relationship between immigrant documentation and unintended pregnancy.
METHODS: This cross-sectional analysis used data from pregnant women presenting to the university public hospital in Geneva from February 2005–October 2006. Information was collected by midwives in face-to-face interviews during the initial pregnancy consultation and/or follow-up for a general study on pregnant women's health. As part of the questionnaire, women were asked if their current pregnancy was intended. Using Chi-square exact tests, we compared the proportion of unintended pregnancies between documented and undocumented women. We used logistic regression to examine whether undocumented status was associated with unintended pregnancy after adjusting for socio-demographics (age, marriage, employment, living quarters), family interaction (relationship with partner, presence of family, children), health-services utilization (Pap smear, medication use, contraception), reproductive history (abortion, knowledge of emergency contraception), drug use (tobacco, other substances), violence exposure, and psychological trauma. We present odds ratios with 95 % confidence intervals of the adjusted analyses, significant at the $p \leq 0.05$ level.
RESULTS: Four hundred nine women were invited to participate and 394 accepted (96 %). 161 were undocumented immigrants (41 %), of which nearly all were Latina (84 %) and all uninsured. More undocumented women were younger, employed, lived in a single-quarters apartment, used contraception (including "insecure" methods: condom-only, calendar, retraction) when she became pregnant and never had a Pap smear. Less were married, had a stable relationship with the baby's father, had family or children in Geneva, had knowledge of emergency contraception, used medications, and ever used tobacco or any other substance. Undocumented women had a higher proportion of unintended pregnancies (75 % vs. 21 %, $p<0.001$). Undocumented status was associated with unintended pregnancy even after adjustment (OR 6.2, 1.8–21.2), as was a history of psychological problems (OR 4.1, 1.3–12.7). Stable relationship with baby's father (OR 0.10, 0.02–0.60), history of abortion (OR 0.35, 0.12–0.997), and current psychiatric treatment (OR 0.03, 0.004–0.04) decreased odds. Contraception non-use was notably associated with lower odds of unintended pregnancy (OR 0.013, 0.004–0.04).
CONCLUSIONS: Undocumented status increased the odds of unintended pregnancy, calling provider attention to a lack of effective family planning among this population in Switzerland. Factors linked to domestic stability and health treatment were protective. Contraception non-use decreased odds of unintended pregnancy—likely reflecting a plan for pregnancy in this group. However, this also distributes some focus to the need for teaching of effective and correctly-utilized methods, among all women, given the use of insecure contraception observed in the study.

THE CORRELATION BETWEEN PATIENT PROPENSITY FOR ACTIVE PARTICIPATION IN DECISION-MAKING AND ACTUAL SHARED DECISION MAKING BEHAVIORS DURING CHRONIC CARE ENCOUNTERS Gretchen Rickards[1,2]; Dorothy Becher[2]; Jeffrey L. Jackson[2,3]; Janice L. Hanson[2,4]; Patrick G. O'Malley[2,1]. [1]Walter Reed National Military Medical Center, Bethesda, MD; [2]Uniformed Services University, Bethesda, MD; [3]Medical College of Wisconsin, Milwaukee, WI; [4]University of Colorado, Aurora, CO. (Tracking ID #1637701)

BACKGROUND: Optimal shared decision making requires patients to be actively engaged in agenda setting, information exchange, valuation of outcomes, and decisions. While there are tools to measure one's propensity for activation, it is not clear if this corresponds with actual activation during an encounter. We sought to assess the relationship between patient propensity for activation and actual activation behavior during encounter decision making.
METHODS: Prospective study using dual, blinded rating of transcribed audiotapes of a consecutive sample of 98 consenting participants aged 40–80 years old with 3 or more chronic conditions seeing their internist (N=11) for a routine appointment. Prior to each encounter, patients completed a survey to measure their propensity for participation in shared decision making based on their knowledge (health literacy), skills (medication adherence), and confidence (locus of control). Each domain was scaled to 10 and summed, yielding a total "patient activation propensity" score. Using transcriptions, actual patient activation was rated on a scale of 1–10 (based on relationship symmetry, control of session, quality of questions, directness of decision making, specificity of responses, and focus). Each encounter was also rated by level of decision-making complexity (low, medium, high) and shared decision making (0–10 scale; with additional categorization of each encounter as doctor- or patient-dominated). All encounter measures were dual-rated by 3 authors (GR, DB, PO), with disagreements reconciled through consensus.
RESULTS: Patients were 53 % female, 33 % Caucasian, mean age was 66, 88 % were on five or more medications, and 30 % had very good or excellent functional status. Doctors were 55 % female, mean age 48yo, and had a mean of 19 year since graduation. The level of decision making was: 61 % Low, 39 % Medium/High. Patient propensity for activation was moderate to high (mean: 19.8, on scale of 0–30) while actual patient activation during the encounters was low (mean: 4.0; SD 1.6, on a scale of 0–10). There were higher patient activation scores with increasing levels of decision making (means: 3.75 for low complexity vs 4.39 moderate to high complexity; p=0.05). Encounters were overwhelmingly doctor-dominated (88/98), with low levels of sharing in decision making (mean score: 4.4, range 0–10). There was no correlation between patient propensity for activation and actual activation (r=0.14; p=0.24), though there was a trend toward correlation with actual shared decision making (r=0.27, p=0.07). However, observed patient activation was strongly correlated with the observed degree of shared decision making (r=0.65, $p<0.001$).
CONCLUSIONS: Patient propensity for activation in encounters does not correlate with actual patient activation, and may be suppressed by doctor domination and other structural components of the interaction. Further work is needed to improve the interactional facilitation of patients' participation in shared decision making.

THE DESIGN OF THE HCNI, A COMMUNITY PARTNERED APPROACH TO CVD RISK FACTOR REDUCTION IN SOUTH LOS ANGELES. Arleen Brown[1]; D'Ann M. Morris[3,4]; Katherine L. Kahn[1]; Roberto Vargas[1]; Aziza L. Wright[4,2]; Felica U. Jones[2]; Nell Forge[4]; Keith C. Norris[4]; Astrea Flowers[3]; Ibrahima Sankare[1]; Keyonna M. King[1]; Lujia Zhang[1]; Sigrid K. Madrigal[2]; Dennishia Banner[2]; Rachelle Bross[5]; Orwilda L. Pitts[4]; Loretta Jones[2,4]. [1]UCLA, Los Angeles, CA; [2]Healthy African American Families, Los Angeles, CA; [3]Los Angeles Urban League, Los Angeles, CA; [4]Charles Drew University, Los Angeles, CA; [5]Los Angeles Biomed, Los Angeles, CA. (Tracking ID #1641978)

BACKGROUND: Widespread behavioral, clinical, and public health efforts to improve awareness and management of cardiovascular disease (CVD) and its risk factors have had limited success in reducing disparities. Community-partnered participatory research (CPPR) may be an effective strategy for designing and implementing more effective community-level risk reduction efforts. The Healthy Community Neighborhood Initiative (HCNI) is a multifaceted community partnered study that aims to improve health and health care in a predominantly African American and Latino community in South Los Angeles. The HCNI partners have developed strategies to understand and mitigate chronic disease disparities in this community through CPPR, including weekly meetings of

the partners (the Los Angeles Urban League, Healthy African American Families, Charles Drew University, and University of California in Los Angeles), participation in community and academic events, and invited sessions with "guest" community and academic experts. Throughout this process, 6 students, 5 community health workers and community partners new to research have been mentored in CPPR.

METHODS: The HCNI designed a baseline assessment consisting of a household survey (interviews and clinical exams); neighborhood observations; and community asset mapping to examine clinical and social determinants of health. The study protocol, data collection instruments, and participant feedback forms were reviewed and revised by community residents and subsequently approved by the CDU and UCLA Human Subjects Protection Committees. The protocols for all components of the initiative were designed and pilot tested collaboratively by the partners.

RESULTS: Over a 5 month period, the recruitment team contacted 90 community residents and enrolled 79 into the study. Seventy-five enrollees completed the household survey, which includes an interview, a physical examination and laboratory studies to collect biomarkers (A1c, c-Reactive Peptide, lipids, and hemoglobin). Thirty-six functional status tests (grip strength and chair stands) were also administered to participants ages 50 and older. Consistent with efforts to disseminate community-partnered research findings and build a sustainable community-academic partnership that enhances community capacity, the HCNI held 3 community research training sessions on medical research informed consent, survey and clinical exam administration, and depression assessment. The HCNI also provided each study participant with a community resource guide and distributed the guide at a free clinic event attended by 5,000 community residents.

CONCLUSIONS: The HCNI and community residents have developed effective strategies for designing and conducting a community assessment to understand CVD disparities and building community and academic capacity to engage in CPPR. These findings will be linked to data from neighborhood observations and community asset mapping to inform future strategies for collaboration with community residents to develop community based interventions.

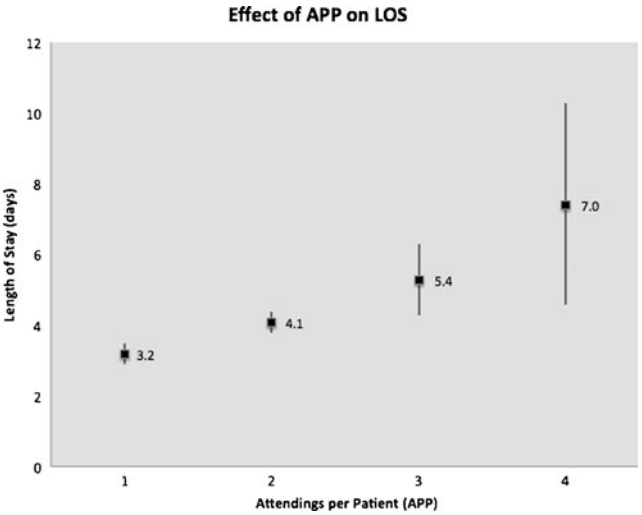
THE EFFECT OF ATTENDING DISCONTINUITY ON QUALITY OF CARE AT A UNIVERSITY-BASED INTERNAL MEDICINE PROGRAM Charlie M. Wray[1]; Adarsh Sai[1]; Waheed Baqai[2]; David H. Kim[1]; Lawrence Loo[1]. [1]Loma Linda School of Medicine, Loma Linda, CA; [2]Loma Linda University Medical Center, Loma Linda, CA. (Tracking ID #1608493)

BACKGROUND: Studies examining the importance of continuity of care with a single physician have demonstrated improved patient outcomes. Unfortunately, most of these studies were performed in the outpatient, rather than the inpatient setting. With over 18 million inpatients admitted to teaching hospitals in 2010, the impact of the attending physician continuity of care on quality outcomes has not been explored. We hypothesized that attending physician discontinuity at a large university-based internal medicine program may adversely affect the quality of care given to hospitalized patients.

METHODS: We performed a six-month retrospective analysis of administrative data from November 2011 to April 2012. We included all adult patients ≥18 years old admitted to/discharged from the internal medicine teaching service. Attendings per Patient (APP) reflect a count of each internal medicine attending physician who oversaw the care of a patient. The primary outcome was hospital Length of Stay (LOS), with a secondary outcome of ICU (Intensive Care Unit) transfer rate. Multivariate regression analysis was performed for LOS with patient race, gender, Charles Combined-Age Comorbidity Index (CCI; to adjust for severity of illness), and APP as the independent variables.

RESULTS: Our study sample included 1,012 patients with mean ± SD age of 56.3±20.5 years, 59 % were females, the majority Caucasian (55 %), and mean CCI 2.0±2.3. Mean ± SD LOS was 5.4±6.2 days, and 81 (8 %) patients were transferred to ICU during hospitalization. The mean LOS for 1, 2, 3, 4-APP was 3.2, 4.1, 5.4, and 7.0 days (±95 % CI), respectively—see Figure displaying the mean ±95 % CI for each LOS. CCI and APP were significantly associated with LOS after adjustment for confounders (F=29.2, p<0.01 for CCI and F=12.4, p<0.01 for APP). CCI and APP were also significantly associated with ICU transfer (F=6.2, p<0.01 for CCI and F=1.0, p<0.01).

CONCLUSIONS: To our knowledge, this is the first study to examine how the number of attending physicians per patient in a University hospital teaching service is associated with an adverse effect on the overall inpatient LOS and subsequent transfer to the ICU. Future prospective studies should examine the optimal duration of attending faculty rotations who oversee a ward team to optimize the balance of teaching, quality and costs of patient care.



THE EFFECT OF INFORMATION PRESENTATION ON THE DECISION TO UNDERGO ELECTIVE PERCUTANEOUS CORONARY INTERVENTION MIchael B. Rothberg[1]; Laura Scherer[3]; Mohammed Amin Kashef[5]; Henry Ting[4]; Megan Coylewright[4]; Brian Zikmund-Fisher[2]. [1]Cleveland Clinic, Cleveland, OH; [2]University of Michigan, Ann Arbor, MI; [3]University of Missouri, Columbia, MO; [4]Mayo Clinic, Rochester, MN; [5]Baystate Medical Center, Springfield, MA. (Tracking ID #1643063)

BACKGROUND: Clinical trials of percutaneous coronary intervention (PCI) for stable coronary artery disease (CAD) demonstrate that the benefits of PCI are limited to symptom relief. However, most patients believe that PCI also prevents myocardial infarction (MI). We explored subjects' beliefs and willingness to accept hypothetical PCI depending on how information was presented.

METHODS: Individuals aged ≥50 years who had never had PCI were recruited for a web-based survey. Participants were randomized to read 1 of 4 hypothetical scenarios and complete a questionnaire. Participants were asked to imagine visiting a cardiologist after experiencing stable chest pain and a positive stress test. In 3 scenarios the cardiologist described CAD as artery blockage and provided either no information about the effects of PCI on MI risk (NO INFO), specifically told the patient that PCI does not reduce MI risk (SPECIFIC INFO), or explained why PCI does not reduce MI risk (EXPLANATORY INFO). In a 4th scenario, CAD was described simply as inflammation (INFLAMMATION). Identical information about PCI complications, the role of PCI in reducing angina, and the benefits of optimal medical therapy (OMT) were provided in all scenarios. Subjects were asked if they would opt for PCI and for OMT, and how effective PCI was for preventing MI.

RESULTS: The final sample consisted of 1678 participants (total completion rate=89 %). Mean age was 60, 51 % were female and 79 % were white. Overall, 52 % of respondents chose PCI. Compared to the other groups, the NO INFO respondents were most likely to choose PCI (69 % vs. 46 %, p<0.001), and to believe that PCI prevents MI (71 % vs. 36 %, p<0.001). Those receiving EXPLANATORY INFO were least likely

to think PCI would prevent MI (31 %, $p<.05$ vs. other information states). Participants receiving NO INFO were least likely (83 %) and those receiving EXPLANATORY INFO most likely (92 %) to agree to take medications (83 % vs. 92 %, $p<0.001$). Subjects given NO INFO thought PCI was more effective than medication; the rest thought the opposite. When asked to recall what the doctor told them, 52 % of the NO INFO participants falsely remembered that the doctor had told them that PCI prevented MI vs. 19 % of other participants ($p<0.001$). Across the entire sample, belief that PCI would prevent MI was strongly correlated with the decision to have PCI (OR 9.05; 95 % CI 7.37, 11.62). Other predictors of PCI were an action bias ($p<0.001$), being more worried ($p<0.001$), and having symptoms that were judged to be bothersome or limit activity ($p<0.001$). Age, sex, and race were not associated with the PCI decision (all $p>.40$).

CONCLUSIONS: In the absence of information to the contrary, most patients assume that PCI prevents MI in stable angina and are likely to choose it. Explicit information can partially overcome that bias and influence decision-making. Explaining why PCI does not prevent MI was the most effective means of overcoming this bias.

THE EFFECT OF LANGUAGE CONGRUENCY ON THE OUT-OF-HOSPITAL (OOH) MANAGEMENT OF CHEST PAIN Madeline Sterling[2,1]; Sandra Echeverria[2]; Mark Merlin[2]. [1]UMDNJ-School of Public Health, Piscataway, NJ; [2]UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ. (Tracking ID #1620664)

BACKGROUND: Although language barriers are associated with disparities and delays in cardiovascular care in the hospital, little is known about how they affect care in the prehospital setting. The out-of hospital (OOH) management of chest pain is protocol driven, however language barriers likely affect the care provided by Advanced Life Support (ALS) paramedics aboard Emergency Medical Services (EMS) units.

METHODS: This is a 4-year retrospective cohort study of New Jersey patients who called 911 for chest pain from April 2008 to January 2011. Using an electronic medical record system, we examined the association between language barriers and total On-Scene-Time (OST) spent by ALS paramedics from one of the state's largest EMS systems. A series of linear regression models were built to examine this association and we adjusted for confounding by demographic and clinical variables.

RESULTS: 11, 249 patients cared for by a NJ-EMS system for the treatment of chest pain were included in our study. Of these, 222 had a perceived language barrier (1.98 %). Contrary to expectations, language barriers were associated with less OST (β=0-.85400, $p<.0028$). After adjusting for demographic and clinical variables, a language barrier between patient and paramedic persisted as a significant independent predictor of less OST (β=−.7149, $p<.0146$). Paramedics spent less OST with Hispanics (β=− .3717, $p<.0228$), Asian/Others (β=−.5647, $p<.0101$) and patients with abnormal heart rates (β=−.007, $p<.0001$). Additionally, we found that the association between language barriers and OST varied significantly among racial/ethnic groups in adjusted models.

CONCLUSIONS: Among patients with chest pain, language barriers between patients and paramedics are associated with decreased total On-Scene-Time. Adjusted models indicate that paramedics spend less OST with Hispanics and Asian/Others (compared to whites) and those with abnormal heart rates, independent of the presence of a language barrier. Our study suggests that for those with chest pain, disparities and delays in cardiovascular care do not occur in the prehospital setting. Further research ought to concentrate on the quality of cardiac care rendered in formal medical setting in order to improve existing disparities.

Study Population By Language Barrier

Characteristics	Overall	No Language Barrier (Yes)	Language Barrier	p value
Gender				
Male	5,507 (48.96 %)	5,403 (98.1 %)	104 (1.9 %)	<.5256
Female	5,742 (51.04 %)	5,624 (97.9 %)	118 (2.06 %)	
Age (years) mean, (SD)	63.08 (16.79)	63.04 (16.8)	65.25 (16.2)	
18–45	1,761 (15.65 %)	1,736 (98.5 %)	25 (1.42 %)	<.1403
46–75	6,308 (56.08 %)	6,172 (97.8 %)	136 (2.16 %)	
76–105	3,180 (28.27 %)	3,119 (98.1 %)	61 (1.91 %)	
Race/Ethnicity				
White, Non-Hispanic	7,890 (70.14 %)	7,798 (98.8 %)	92 (1.2 %)	<.0001
Hispanic	765 (6.80 %)	689 (90.0 %)	76 (10.0 %)	
Black, Non-Hispanic	2,220 (19.56 %)	2,176 (98.0 %)	24 (1.08 %)	
Asian/Other	394 (3.50 %)	364 (92.4 %)	30 (7.6 %)	
Heart Rate (BPM) mean, (SD)	87.82 (21.9)	87.76 (4.23)	88.27 (20.50)	
Normal (60–100 BPM)	8,245 (73.3 %)	8,093 (98.1 %)	152 (1.8 %)	<1.006
Abnormal (<60 BPM or>100 BPM)	3,000 (26.7 %)	2,930 (97.6 %)	70 (2.3 %)	
On-Scene-Time (minutes) mean, (SD)	9.769 (4.22)	9.78 (4.23)	8.93 (3.4)	<.0001

THE EFFECT OF A YOGA INTERVENTION ON ALCOHOL AND DRUG ABUSE RISK IN VETERAN AND CIVILIAN WOMEN WITH PTSD. Shivani M. Reddy[1,2]; Megan R. Gerber[1,2]; Karen S. Mitchell[3,4]. [1]Boston University School of Medicine, Boston, MA; [2]VA Boston Healthcare System, Boston, MA; [3]VA Boston Healthcare System, Boston, MA; [4]Boston University School of Medicine, Boston, MA. (Tracking ID #1630672)

BACKGROUND: Post-traumatic Stress Disorder (PTSD) is of particular importance to the Veteran population. Many patients with PTSD have co-morbidities, including alcohol and substance abuse, which may impede diagnosis and treatment of PTSD. There is growing interest among Veterans and civilians in complementary and alternative medicine (CAM), though evidence for the efficacy of CAM in PTSD is sparse. In this study, we investigated the impact of a yoga intervention on alcohol and drug abuse risk in women with PTSD.

METHODS: We conducted a pilot study of a randomized controlled trial at a VA medical center comparing a 12-session weekly yoga intervention with control. Veteran and civilian women ages 18–65 with PTSD or sub-threshold PTSD were included. Participants were excluded if they attended a yoga class in the last 6 months or reported substance abuse in the previous 3 months. The intervention consisted of a hatha yoga class taught according to trauma-sensitive yoga guidelines, and the control group completed weekly assessments. All participants completed self-reported measures at baseline, post-intervention, and at 1-month follow-up, including Alcohol Use Disorder Identification Test (AUDIT) and Drug Use Disorder Identification Test (DUDIT). Mean AUDIT and DUDIT scores were calculated at each time point and compared using Wilcoxon Rank Sum tests. AUDIT and DUDIT scores were dichotomized into high or low risk of harmful use and compared with Fisher's exact tests.

RESULTS: Thirty-eight women were randomized to the yoga intervention (n=20) and assessment-only control (n=18). Participant mean age was 43.3; 24 % were Veterans. The majority of participants (76 %) completed the study. There was no difference in baseline AUDIT and DUDIT scores of participants lost to follow-up. By dichotomizing AUDIT and DUDIT score, we observed at baseline, 8 % and 21 % of participants had high risk drinking and drug use behaviors, respectively. At post-intervention and follow-up, there were no higher risk alcohol or drug users in the yoga group compared to 2–3 higher risk users in the control group. This difference was not statistically significant. Mean AUDIT scores decreased over the study period in the yoga group, declining from 1.95 (SD=2.35, 95 % CI: 0.85–3.05) at baseline to 1.29 (SD=1.20, 95 % CI: 0.59–1.98) post intervention, and 1.00 (SD=1.35, 95 % CI: 0.18–1.92) at follow-up. The mean difference between intervention and control groups approached significance over time. (Post-intervention p=0.247, Follow-up p=0.052) Post-intervention, mean DUDIT scores were lower in the yoga group (0.07, SD=1.92, 95 % CI: −0.08–0.23) than the control group (1.09 SD=1.79, 95 % CI: −0.20–2.38); this difference approached significance (p=0.081), although it disappeared at follow-up (p=0.209).

CONCLUSIONS: A pilot study of a yoga intervention for women with PTSD resulted in lower alcohol use and drug use risk scores compared to controls, with results approaching statistical significance. Findings suggest that yoga may be a feasible adjunctive treatment for patients with PTSD and substance abuse disorders. Further studies into the efficacy of CAM in the treatment of PTSD are warranted.

THE EFFECTIVENESS OF MOBILE ELECTRONIC DEVICES IN WEIGHT LOSS AMONG OVERWEIGHT AND OBESE POPULATIONS: A SYSTEMATIC REVIEW AND META-ANALYSIS
Bushra Khokhar; Jessica Jones; Paul Ronksley; Jeff Caird; Doreen Rabi. University of Calgary, Calgary, AB, Canada. (Tracking ID #1638887)

BACKGROUND: Mobile electronic devices, such as mobile phones and personal digital assistants (PDAs), have emerged as useful tools in the facilitation and maintenance of weight loss. However, while randomized controlled studies have demonstrated a positive impact of mobile interventions, the extent to which mobile electronic devices are more effective than usual care methods is still being debated.
METHODS: Electronic databases were systematically searched for randomized controlled trails (RCT) evaluating the effectiveness of mobile electronic device interventions among overweight and obese populations. Weighted mean difference (WMD) for change in body weight (kg) was the primary outcome.
RESULTS: The search strategy yielded 457 citations and of the 46 potentially relevant studies, five met the criteria and four were included in the meta-analysis. A total of 461 participants were included in the four studies reporting a mean change in body weight. There were 232 participants who used some form of a mobile electronic device and 229 control comparator participants. Using a random-effects model, the WMD for the effect of using mobile electronic devices on reduction in body weight was −0.40 kg (95 % CI −2.44, 1.65). Mobile electronic device interventions were associated with a greater reduction in body weight (kg) compared to control groups during short duration interventions (</= 6 months) (−1.65 kg (95 % CI −2.50, −0.80)).
CONCLUSIONS: There was no reduction in body weight among the intervention and control groups during long duration interventions (> 6 months) (1.19 kg (95 % CI 0.77, 1.60)). Mobile electronic devices appear to enhance weight loss in the short term but currently there is insufficient literature on this topic to make a definitive recommendation. The literature on the efficacy of mobile devices in improving health is rapidly evolving and their use in health care is quickly expanding. While mobile devices hold great promise in health care, critical evaluations of effectiveness are required to ensure optimal benefit to potential users. Keywords: Mobile electronic device, weight loss, obesity, overweight.

THE EFFECTIVENESS OF A MANDATE FOR INFLUENZA VACCINATION IN HEALTH CARE PROVIDERS: A SYSTEMATIC REVIEW
Samantha I. Pitts[1]; Kathryn R. Millar[2]; Jodi B. Segal[1]. [1]Johns Hopkins University, School of Medicine, Baltimore, MD; [2]Johns Hopkins University, School of Public Health, Baltimore, MD. (Tracking ID #1637404)

BACKGROUND: Despite recommendations for influenza vaccination of health care providers (HCPs), vaccination rates in the US remain low, with an estimated 67 % of HCPs vaccinated. Consequently, several key professional societies have endorsed mandatory influenza vaccination policies. Objective: To systematically examine the published evidence of the effectiveness of an institutional mandate for influenza vaccination in HCPs.
METHODS: We searched MEDLINE, Embase, the Cochrane Library, CINAHL, and Web of Science until 12/14/2012 using controlled vocabulary and key word searches to identify studies that evaluated a mandate. We defined "mandate" as required influenza vaccination for continued employment or clinical practice, with limited exemptions for medical or religious reasons. Two reviewers independently screened all articles by title/abstract and then by full text based on specified eligibility criteria. Two reviewers sequentially abstracted study design and outcome data from each article, including HCP attitudes, vaccination rates, absenteeism, and clinical outcomes. We assessed the risk of bias due to the known limitations of observational studies.
RESULTS: Our search strategy yielded 693 unique records. We included 11 published studies; 8 examined mandates at single institutions or health systems, and 3 assessed mandates across multiple institutions. Six studies are pending full text screening. Ten included studies involved hospitals or health systems including hospitals, and one involved pharmacists. All were within the United States. All 11 studies examined vaccination rates. Five single institution studies reported pre- and post-mandate rates in comparable populations, with increases in vaccination rates of 27 % (in 3 studies), 44 % (in 1) and 44–68 % (in 1, depending on the comparison season). All 5 studies implemented at least one additional strategy with the mandate (e.g., an educational campaign). An additional pre/post study which expanded the population requiring vaccination with the mandate reported a 7 % increase; this institution had a comprehensive influenza vaccination strategy and high vaccination rate prior to the mandate (92 %). A multi-institution study reported an average increase across sites of 24 %, and one performance improvement initiative reported that hospitals with a mandate had a 9 % higher vaccination rate in the final year of the program ($P<0.001$). The remaining 3 studies had incomplete reporting and vaccination rate changes were indeterminable. No study reported on clinical outcomes in patients. Two single institution studies reported on absenteeism among health care providers; one reported a reduction, while the second found no significant difference. Six of the 11 studies reported on terminations and "voluntary resignations," which combined ranged from 0.02–0.15 %.
CONCLUSIONS: A mandate for influenza vaccination among HCPs is associated with substantial increases in vaccination rates in observational studies. The 2 studies with the least improvement had institutions with a high pre-mandate vaccination rate or that were already participating in a multifaceted performance improvement project. The mandate was frequently implemented with other strategies to increase vaccination. There were insufficient studies to draw conclusions about clinical outcomes among HCPs or patients. Knowledge of clinical outcomes will require systematic surveillance for health care associated influenza.

THE EFFECTS OF A DECADE OF PROGRESSIVE DUTY HOUR LIMITATIONS AT A MULTI-HOSPITAL INTERNAL MEDICINE RESIDENCY PROGRAM
Michael F. Krug[1]; Heather L. Davidson[2,1]; P. L. Wander[1]; Joyce E. Wipf[2,1]. [1]University of Washington, Seattle, WA; [2]VA Puget Sound HCS, Seattle, WA. (Tracking ID #1642238)

BACKGROUND: In July of 2003, the Accreditation Council for Graduate Medical Education (ACGME) mandated that resident duty hour limitations be implemented (including a maximum shift length of 24+6 h and 80 h of work per week). Eight years later, the ACGME required more restrictive measures, limiting interns to no more than 16 h of continuous duty. The effects of changes in work hours on resident well-being, patient care, and education remain unclear. The purpose of our IRB-approved study was: 1) to look for measurable changes in resident well-being and burnout prevalence over the last decade and 2) to investigate residents' perception of the impact of July 2011 changes.
METHODS: In spring of 2012 we sent all current internal medicine residents at a large university-based, multi-hospital residency program an anonymous mailed survey consisting of: 1) a validated depression screening questionnaire 2) the Maslach Burnout Inventory, and 3) a previously described questionnaire on career satisfaction. All three of these instruments were used in prior resident surveys at our institution in 2001 and 2004. The results from each time point were compared using pairwise comparisons for Z-tests of proportion and the p value was set at<.004 after Bonferroni correction for multiple comparisons. Additionally, in the current survey we queried residents about the impact of the latest work hour restrictions on resident well-being, patient care, and education.
RESULTS: Overall,112 out of 170 residents returned the survey (66 %). Table 1 compares 2012 resident data with results from 2004 and 2001. Significantly fewer residents had a positive screening result for depression in 2011 compared with 2004. Career satisfaction remains high after improvement seen from 2001 to 2004. There was a non-significant trend toward reduction in burnout. 58 % of 2012 survey respondents favored returning to the pre-July 2011 work hour limitations (ie interns able to work 24+6 h continuously) rather than keeping the current system (16 %) or

limiting both interns and senior residents to 16 h (26 %). Senior residents were more likely than R1s to favor reversion to the previous system (69 % vs. 40 %). Most residents (62 %) felt that the 2011 duty hour limitations negatively impacted their education. Table 1. Resident Well-Being in 2011 Survey Compared to Historical Results No. (%) of respondents: 2011 (n=112) 2004 (n=118) 2001 (n=115) Burnout: Met burnout criteria 2011 68(61) 2004 75(68) p value 0.267 2001 87(76) p value 0.015 Career satisfaction: Happy with career choice 2011 89(79) 2004 94(80) p-value 0.851 2001 76(66) p-value 0.029 Depression: Positive result on screen 2011 35(32) 2004 65(56) p-value 0.0003 2001 52(45) p-value 0.045

CONCLUSIONS: Indicators of resident well-being at our institution have changed over time from 2001 to 2011 as duty hour limitations have evolved. Fewer residents screened positive for depression in 2011 compared with 2004, which we hypothesize may be related to reduced sleep deprivation. Career satisfaction improved after the 2003 duty hour limitations and has remained high. Burnout rates continue to be high despite dramatic alterations in duty hour regulations. Residents believe that the latest duty hour limitations negatively affected their education, and most prefer to work under pre-July 2011 conditions. This study contributes to the ongoing national conversation about duty hour limitations.

THE FEASIBILITY OF COMPUTER ASSISTED INSTRUCTION FOR LOW LITERACY PATIENTS David P. Miller[2]; Vanessa Duren-Winfield[1]; James L. Wofford[2]; Michael Pignone[3]; Larry D. Case[4]. [1]Winston-Salem State University School of Health Sciences, Winston-Salem, NC; [2]Wake Forest School of Medicine, Winston-Salem, NC; [3]University of North Carolina School of Medicine, Chapel Hill, NC; [4]Wake Forest School of Medicine, Winston-Salem, NC. (Tracking ID #1637327)

BACKGROUND: One-third of Americans have low health literacy. Patients with low health literacy have difficulty understanding their doctors, ask fewer questions in medical encounters, and cannot comprehend the majority of printed patient education materials currently in use. New educational strategies are needed to reach low literacy patients. Computer-assisted instruction (CAI) offers the potential to overcome literacy barriers by incorporating multimedia elements and allowing users to proceed at their own pace. We investigated the feasibility of using CAI to educate patients of varying literacy levels by examining patients' preferences for learning and their assessment of computer-based patient education programs.

METHODS: We analyzed patient preference and usability data from a trial which randomly assigned participants to interact with a touch screen computer program focusing on either colorectal cancer screening or prescription drug safety. Both programs were developed for a mixed literacy audience with prominent use of audio narration, graphics, pictures, and animations or video. Participants were English-speaking patients aged 50–74 years old who were scheduled for a routine medical visit and were overdue for colorectal cancer screening. A verbally administered baseline questionnaire assessed health literacy level, participants' usual sources of health information, and prior computer experience. Following the computer programs, each participant completed a verbally administered program evaluation survey. A research assistant recorded the number of times each participant asked for assistance using the program.

RESULTS: A total of 264 participants enrolled in the study and completed the assigned computer program. Most participants were female (67 %), African-American (74 %), had annual household incomes of<$20,000 (76 %), and had limited health literacy (56 %). Compared to those with adequate literacy, limited literacy patients were less likely to have prior computer experience (58 % vs. 80 %, p<0.001) or use the internet to get health information (18 % vs. 34 %, p<0.01). Overall, doctors were the most common source of medical information, used by 85 % of both limited and adequate literacy patients. Regardless of literacy level, over 98 % of participants stated the computer programs were easy, were preferred to reading a brochure, and would be personally recommended to others. Over 90 % of all patients reported they learned something important from the programs, but limited literacy patients were more likely to state they learned more from the programs than they would have from a brochure (97 % limited literacy vs. 88 % adequate literacy, p=0.02). Over three-quarters of all participants were able to complete the programs without any assistance (74 % limited literacy vs. 85 % for adequate literacy, p=0.03), and even 84 % of limited literacy patients required no more than one episode of assistance.

CONCLUSIONS: Although patients with limited health literacy have less prior computer experience, the overwhelming majority completed the programs with minimal assistance and stated they learned more from the computer programs than they would have from a brochure. Future research should investigate ways CAI can be incorporated in medical care to enhance patient understanding, particularly for low literacy patients.

THE FREQUENCY AND CHARACTERISTICS OF OLDER HOSPITALIZED ADULTS WHO REQUIRE A SURROGATE DECISION MAKER Alexia Torke[2,3]; Greg A. Sachs[1,2]; Paul R. Helft[1,3]; Kianna Montz[2]; Siu Hui[2]; James E. Slaven[4]; Christopher M. Callahan[1,2]. [1]Indiana University, Indianapolis, IN; [2]Regenstrief Institute, Indianapolis, IN; [3]Indiana University Health, Indianapolis, IN; [4]Indiana University, Indianapolis, IN. (Tracking ID #1635119)

BACKGROUND: Although many hospitalized older adults lose the ability to make medical decisions, little is known about the frequency that surrogates make medical decisions, the characteristics of the patients who require a surrogate, or the nature of decisions.

METHODS: We conducted a prospective, observational study of hospitalized adults 65 and older at two Midwest hospitals: a tertiary referral center; and a public urban hospital. Patients were identified at admission from the medical record. We conducted a physician screen between hospital days 2–4 to identify patients who required major decisions related to life sustaining care (including code status), procedures and surgeries, and discharge placement. Physicians identified patients who required a surrogate to make all decisions or participate with patients in decision making. Data on patient characteristics were obtained from electronic medical records.

RESULTS: We enrolled 597 of 1084 eligible patients (55 % enrollment) with mean age 76.1 (SD 8.18), Patients were 51 % white and 48 % African American. Of these, 41 % had surrogate involvement in decision making (17 % required a surrogate for all decisions, 24 % had both surrogate and patient involvement). In the ICU, surrogate decision making was even more common with surrogate involvement in 59 % (38 % of patients entirely required a surrogate and 29 % both). Surrogates were most commonly daughters (59 %), sons (25 %), or spouses (21 %). In multivariable analyses, patients with surrogate involvement were more likely to have an admission diagnosis of altered mental status, odds ratio (OR) 6.35 (95 % Confidence Interval (CI) 3.35, 12.1), to have lower SES as indicated by Medicaid insurance, OR 6.68 (CI 1.66, 26.93), to be admitted to the ICU (OR 4.12, CI 2.29, 7.41), to be older compared to the baseline group of those ages 65–69, (ages 70–74, OR 2.08 (CI 1.13, 3.84); ages 75–84, OR 4.13 (CI 2.41, 7.08), and 85+, OR 8.02 (CI 4.17, 15.39), and to be admitted from a nursing home, OR 1.91 (CI 1.02, 3.56). Patients with a surrogate were more seriously ill as indicated by higher scores on the Cumulative Illness Severity Scale (mean 21.45 for patients who made decisions, 22.78 both, 23.97 surrogate, p<0.0001) and more likely to die in the hospital (0 % patient, 2.8 % both, 9.9 % surrogate, p<0.0001). Overall, only 7 % of patients had a living will and 25 % had chosen a health care representative. These numbers did not differ by surrogate status. Patients with surrogate involvement were more likely to face decisions about life sustaining care (44 % patient, 51 % both, 66 % surrogate, p=0.0003) and discharge placement (33 % patient, 46 % both, 49 % surrogate, p=0.0026) within even the first 4 days of admission.

CONCLUSIONS: Decisions for older adults involve surrogates 40 % of the time for all hospitalized patients and almost 2/3 of the time in the ICU. In many cases, decisions are shared with patients who are partially or temporarily incapacitated. Given this data, approaches to shared decision making in the hospital must include surrogates nearly as much as patients. Clinicians should be highly attuned to the need for a surrogate when a patient is admitted with altered mental status, but also when patients are

older, in the ICU, from a nursing home, or on Medicaid. Most patients requiring a surrogate will face at least one decision about life sustaining care, and decisions will be commonly made by daughters without the help of living wills or previously appointed health care power of attorney forms.

THE GENERAL PUBLIC'S COMFORT WITH DECEASED ORGAN DONATION DISCUSSION IN PRIMARY CARE SETTINGS: OPPORTUNITIES FOR INTERVENTION Tanjala S. Purnell[1]; Neil R. Powe[2]; Misty U. Troll[1]; Nae-Yuh Wang[1]; Marshala R. Lee[3]; Sydney M. Dy[1]; Lisa A. Cooper[1]; L. Ebony Boulware[1]. [1]Johns Hopkins University, Baltimore, MD; [2]University of California San Francisco, San Francisco, CA; [3]University of Maryland, Baltimore, MD. (Tracking ID #1642715)

BACKGROUND: Discussion about deceased organ donation preferences is increasingly promoted as an important aspect of end of life decision-making to be addressed by primary care physicians (PCPs). However, little is known about comfort levels regarding discussing organ donation preferences with primary care doctors among adults in the US general public.
METHODS: We conducted a national household telephone survey using random digit selection of telephone numbers to assess comfort with and frequency of discussions with primary care physicians about deceased organ donation among US adults in the general public. In multivariable logistic regression models, we assessed the independent association of demographic, socioeconomic, and attitudinal factors with comfort and having a discussion with a PCP about donation.
RESULTS: Among 845 total participants (from 85 % of eligible households), mean age was 45 years with 12 % African Americans and 16 % Hispanics. Among the 683 participants who reported having a PCP, 631 (92 %) stated they were very or moderately comfortable discussing organ donation with their PCP, but only 129 (19 %) had previously discussed organ donation with their PCP. After multivariable adjustment, minority race (OR: 0.47, 95 % CI: 0.23–0.99), lack of interest in deceased donation (OR: 0.19, 95 % CI: 0.09–0.40), and less trust in physicians (OR: 0.39, 95 % CI: 0.18–0.83) were independently associated with less comfort discussing deceased donation with a PCP, while participants with lack of interest in deceased donation (OR: 0.27, 95 % CI: 0.09–0.78) were less likely to report prior discussion about donation with a PCP. We found no significant differences in comfort with or prior discussion about donation by participant age, gender, education, marital status, insurance status, or US census region.
CONCLUSIONS: Despite high levels of comfort with discussing deceased organ donation with PCPs among the US general public, few participants had previously engaged in discussions. Strategies to engage patients in discussions about organ donation during end of life planning in primary care settings may improve both donation rates and the quality of end of life decision-making. Efforts to address concerns regarding medical mistrust and to engage minorities may be particularly effective.

THE HUDDLE: TRAINEE EXPERIENCES IN TEAM-BASED PRIMARY CARE IN AN INNOVATIVE INTERPROFESSIONAL EDUCATION PROGRAM Kelli Copeland; Rebecca L. Shunk; Susan L. Janson; Bridget O'Brien. University of California San Francisco, San Francisco, CA. (Tracking ID #1640109)

BACKGROUND: Team-based primary care delivery is a central component of the patient-centered medical home model. Brief team meetings, or "huddles," have been identified as an important component of safe, effective team-based care. Inclusion of trainees in huddles can provide valuable interprofessional learning opportunities, particularly for development of skills in communication and coordination of care. This qualitative study examines trainee perceptions of the role of huddles in team-based primary care, key elements of huddles, and their impact on provider and patient experience.
METHODS: In 2011, the San Francisco VA and the University of California San Francisco established the Education in Patient Aligned Care Teams (EdPACT) Program to prepare Internal Medicine residents (R2s) and Adult Nurse Practitioner students (NP2s) to work in teams with staff to care for a panel of primary care patients. EdPACT encourages regular huddles before clinic to formalize interprofessional communication. Semi-structured interviews were conducted with EdPACT trainees about their experiences with huddles. Two authors reviewed interview transcripts for alignment with a framework for interprofessional collaboration that includes relational, process, and organizational factors. The authors developed a coding scheme based on this framework, independently coded the transcripts and reconciled to consensus, then analyzed coded passages for themes.
RESULTS: 19 of 23 trainees participated in interviews. Nearly all trainees identified huddles as valuable to their clinic experience; all described the role of relational factors in their huddle and 18 out of 19 described process factors. The most common relational factors were 1) team dynamic (i.e., getting to know members, establishing a team identity), 2) consistent participation in huddles, and 3) defined roles and role clarity. Trainees highlighted team dynamic as particularly important for effective huddles and noted improvements over the year. The two process factors most commonly referenced were 1) communication related to clinical tasks, and 2) having established routines. Many trainees described pre-huddle review of patient charts and ordering tests/procedures, i.e. "scrubbing," as an important routine that improved the efficiency of huddles and clinic. The VA-supported team structure (PACT) was the primary organizational factor mentioned by trainees. PACT was a new concept that some trainees found challenging in the beginning of the year but was appreciated more as the year progressed and relational and process factors improved. Trainees characterized the huddle as the primary event for interprofessional collaboration. Some suggested that huddles improved the primary care experience for both providers and patients. Several trainees said regular communication about tasks and scheduling before clinic increased team efficiency. Others stated that multiple team members knowing the patients and providing different services contributed to better care for patients.
CONCLUSIONS: Trainees valued huddles for building interprofessional relationships and as key for delivering team-based primary care. Some trainees believed that huddles contributed to efficiency in clinic and better patient outcomes through improved relationships, communication, and coordination between team members. Several of the relational and process factors highlighted by trainees suggest areas in need of focused training and feedback to maximize huddle effectiveness.

THE IMPACT OF ANTI-INFLAMMATORY AGENTS ON CD4 RECOVERY IN HIV INFECTED INDIVIDUALS. IS THERE A CLINICAL DIFFERENCE? Raji Shameem; Vanya Grover; Pooja Kumar; Ladan Ahmadi. Lenox Hill Hospital, New York, NY. (Tracking ID #1639172)

BACKGROUND: One topic of interest that has emerged is the use of anti-inflammatory medications for the treatment of HIV. This includes statins, aspirin, and other NSAIDS. The aim of this study was to see if chronic use of anti-inflammatory agents leads to a clinically significant increase in CD4 recovery.
METHODS: The study population comprised of HIV patients in an urban ambulatory site. Chart review was performed to detect patients treated with aspirin, statins, and NSAIDS. CD4 counts were analyzed through a retrospective chart analysis. CD4 recovery was calculated as the most recent CD4 count divided by the CD4 nadir (most recent CD4 count/CD4 count nadir). For inclusion, patients must have received anti-retroviral therapy for at least 6 months and an undetectable viral load for 6 months. A viral load less than 200 via PCR testing was defined to be undetectable. The study arm was HIV patients treated with statins, aspirin, or other NSAIDS for at least 6 months. The control arm was HIV patients who were not receiving anti-inflammatory therapy. Patients with malignancy, chronic kidney disease, receiving chemotherapy or corticosteroids were excluded.

RESULTS: A total of 526 charts were analyzed in an urban ambulatory setting. A total of 71 patients receiving anti-inflammatory treatment for at least 6 months met the inclusion criteria. These patients comprised the study group. Ninety-nine patients who met the inclusion criteria and did not receive anti-inflammatory treatment comprised the control group. A large number of patients were excluded from the study due to a lack of undetectable viral loads for at least 6 months and/or viral load values greater than 200 at any point in a 6 month period. (n=260). Other patients were not included due to other exclusion criteria (n=96). In the study group CD4 recovery median was 2.69. For the control group the CD4 recovery median was 2.42. Median values were used as opposed to mean values due to the skewed distribution of the data. The distribution of the CD4 recovery ratio was shown to be the same across both groups with the Mann-Whitney U test. The p value was determined to be 0.87, signifying that there was no clinically significant difference between both groups in our study.
CONCLUSIONS: In vitro studies have shown a potential benefit of anti-inflammatory medications for the treatment of HIV. However, there was no statistically significant difference in CD4 recovery in HIV patients receiving anti-inflammatory treatment as opposed to HIV patients not on anti-inflammatory treatment. Future randomized prospective studies with larger study sample sizes are necessary to evaluate if there is a role of anti-inflammatory agents in HIV treatment.

THE IMPACT OF DUTY HOUR RESTRICTIONS ON JOB BURNOUT IN INTERNAL MEDICINE RESIDENTS Jonathan Ripp[1]; Robert Fallar[1]; Joel T. Katz[2]; Hasan Bazari[3]; Lisa Bellini[4]; Deborah Korenstein[1]. [1]Mount Sinai School of Medicine, New York, NY; [2]Brigham and Women's Hospital, Boston, MA; [3]Massachusetts General Hospital, Boston, MA; [4]University of Pennsylvania School of Medicine, Philadelphia, PA. (Tracking ID #1642287)

BACKGROUND: Internal medicine (IM) residents commonly develop job burnout, potentially leading to poor academic performance, depression and errors. Prolonged work hours are believed to be a risk factor for burnout, but the extent to which work hour limitations (WHL) can mitigate job burnout remains uncertain. We hypothesized that the July 2011 WHL would lead to a decrease in burnout incidence in IM residents.
METHODS: We administered a survey to first-year IM residents at 4 institutions twice between June 2011 and July 2012, linking individual pre- and post- responses. The survey measured job burnout, sleepiness and other characteristics, and has been previously used by our group. In order to estimate the impact of the 2011 WHL, data gathered from this cohort were compared to findings collected in 2008–9 from a cohort of first-year IM residents at the same 4 institutions. With SAS statistical software, we analyzed our data using dichotomous chi-square tests to compare variables in both cohorts.
RESULTS: Of 265 first-year residents eligible to participate in our study, 237 (89 %) completed the initial survey and 146 (55 %) completed both surveys. Year-end burnout prevalence (106/146 v. 105/127; 73 % v. 83 %; P=0.05) and burnout incidence (68/105 v. 67/82; 65 % v. 82 %; P=0.01) were both significantly lower in the 2011–12 cohort as compared with the 2008–9 cohort. Among residents who developed burnout during internship, when comparing 2011–12 and 2008–9 cohorts, there were no significant differences in excessive Epworth sleepiness (47/67 v. 48/67; 70 % v. 67 %; P=0.85), high depersonalization (56/68 v 59/67; 82 % v. 88 %; P=0.35) or high emotional exhaustion (53/68 v 54/67; 78 % v. 81 %; P=0.70) scores. There was no difference in year-end prevalence of excessive Epworth sleepiness (86/145 v. 85/127; 59 % v.67 %; P=0.19) between the two cohorts; however, residents who developed burnout in the 2011–12 cohort were more likely to report working >70 h when compared with residents who remained burnout free. (57/68 v. 24/37; 84 % v. 65 %; P=0.02)
CONCLUSIONS: Job burnout in IM resident physicians decreased modestly after implementation of the 2011 WHL. This benefit seems unrelated to excessive sleepiness though may be correlated with hours worked. Despite these findings, resident burnout remains unacceptably high and further interventions to address the issue need to be explored.

THE IMPACT OF LIMITED TEAM CONTINUITY ON MEDICAL STUDENTS: A SURVEY-BASED EVALUATION OF TEAM FRAGMENTATION'S EFFECTS ON THIRD-YEAR MEDICAL STUDENTS DURING THEIR INPATIENT INTERNAL MEDICINE CLERKSHIP David A. Williams; Traci E. Yamashita; Eva M. Aagaard. University of Colorado, Aurora, CO. (Tracking ID #1611146)

BACKGROUND: As programs adapt to new resident duty hour changes implemented in July 2011, internal medicine resident work schedules have progressively transitioned toward shift-based systems, often resulting in increased team fragmentation. We hypothesized that exposure to shift-based schedules that result in such team fragmentation would have a negative effect on medical student experiences during their required third-year internal medicine clerkship.
METHODS: As part of a larger national study on the impact of duty hour reform on medical students, 67 of 150 eligible third-year medical students completed surveys about career choice, teaching and supervision, assessment, patient care, well-being, and attractiveness of an internal medicine career after completing their internal medicine clerkship. Non-demographic variables used a 5-point Likert scale from strongly disagree to strongly agree. We assessed the impact of exposure to shift-based schedules on student perceptions of these variables. Chi-squared and Fisher's exact tests were used to assess relationships between exposure to shift-based schedules and student responses. Questions with univariate p<0.1 were included in multivariable logistic regression models.
RESULTS: Of the 67 students, 37 (54 %), were exposed to shift-based schedules. Overall satisfaction with the clerkship was high (>90 %) as was expressed interest in a career in internal medicine or a combined specialty with internal medicine (66 %) and these variables did not vary by exposure. Exposed students were less likely to agree or strongly agree that their attendings were committed to teaching (88 % vs. 100 %, OR 0.35, 95 % CI 0.13–0.90). There was no difference between groups in perceived time to teach by attendings, residents or interns, nor did perceived commitment to teaching vary for residents or interns. However, exposed students were more likely to agree or strongly agree that interns were able to observe them at the bedside (79.4 % vs. 58.1 %, OR 1.89, 95 % CI 1.08–3.13) and had sufficient exposure to assess their performance (97.1 % vs. 80.7 %, OR 3.00, 95 % CI 1.01–8.86), whereas they were less likely to strongly agree or agree that residents had sufficient exposure to assess their performance (88.3 % vs. 90.3 % OR 0.29, 95 % CI 0.09–0.91). Finally, although not statistically significant, there was a trend towards students feeling less team support in the exposed group (OR 0.51, 95 % CI 0.24–1.11).
CONCLUSIONS: Medical student exposure to shift-based schedules with rotating residents had little effect on their perceptions of residents as teachers or their overall satisfaction with their rotation, and seemed to increase the importance of interns in student assessment. However, such exposure appears to adversely affect the relationship between medical students and attending physicians by significantly decreasing attendings' perceived commitment to teaching. It also impacted perceived ability of residents to be able to assess student performance. Moreover, there was a trend toward reduced feeling of team support. These findings suggest that team continuity may have important broader implications for the teaching environment and should be an important consideration when implementing shift-based schedules. The larger study may help further inform these results.

THE IMPACT OF A NOVEL POPULATION MANAGEMENT SYSTEM ON DECREASING EDUCATIONAL DISPARITIES IN COLORECTAL CANCER SCREENING Seth A. Berkowitz; Jeffrey M. Ashburner; Yuchiao Chang; Adrian Zai; Sanja Percac-Lima; Steven J. Atlas. MGH, Boston, MA. (Tracking ID #1624592)

BACKGROUND: Compared to patients with greater than HS (>HS) educational attainment, patients with a high school diploma or less (≤HS) have lower colorectal cancer (CRC) screening rates and 50 % greater risk of CRC mortality. Population management strategies, facilitated by advanced health information technology, are increasingly used to improve

screening rates, but often do not specifically target health inequities. We evaluated whether such a system might still decrease educational disparities in CRC screening.

METHODS: From June 15, 2011 to June 14, 2012 we utilized TopCare (Technology for Optimizing Population Care in a Resource-limited Environment) to identify and manage all patients eligible for CRC screening (men and women age 52–75 without prior total colectomy) within an 18-practice academic primary care network. Practices were randomized to one of two versions of TopCare. Patients overdue for screening received interventions to promote completion including notification of primary care providers, reminder letters, and listing with practice delegates who could schedule tests and visits. Because the two versions of TopCare did not have a differential effect on outcomes (test for interaction was non-significant), we report pooled results. Our primary outcome was CRC screening completion, stratified by patient educational attainment (≤HS vs. >HS), a correlate of low socioeconomic status. We performed descriptive statistics and unadjusted comparisons using chi-square and McNemar's tests. A logistic regression model was used to compare CRC screening completion among patients with complete follow-up. A Cox regression model was used to evaluate time-to-screening completion among all patients overdue for screening at any time during the study period.

RESULTS: Among 40,454 patients in 18 practice sites eligible for CRC screening for the entire study period, 75 % had > HS educational attainment. ≤HS patients were more likely to be non-white, non-English speaking, and have Medicare, Medicaid, or no insurance ($p<.001$ for all comparisons). Prior to TopCare implementation, 73.0 % of ≤ HS patients had completed CRC screening, compared to 80.6 % of > HS ($p<.001$). At the end of the study period, screening completion increased for both groups (+3.2 % for ≤ HS, $p<.001$; + 2.5 % for > HS, $p<.001$). However, a significant disparity in screening completion between ≤ HS and > HS remained (76.2 % vs. 83.1 %, $p<.001$). In a logistic regression model accounting for physician/practice clustering and adjusting for age, gender, race/ethnicity, language, insurance, and TopCare version, ≤HS was significantly associated with lower CRC screening completion (adjusted completion rate 76.8 % in ≤ HS vs. 79.0 % in > HS, $p<.001$). In a multivariable Cox regression analysis among the 11,976 patients overdue for screening during the study period, ≤HS was associated with prolonged time to screening completion (HR 0.89, 95 % CI 0.81–0.98, adjusted for same covariates as above).

CONCLUSIONS: Despite the promise of population management systems to increase the overall use of preventive services, CRC screening disparities did not decrease over a 1-year follow-up period among patients with low educational attainment. Population management approaches that do not specifically address disparities may not improve them, and if less effective in low SES patients may actually widen disparities over time. Future strategies should specifically address causes of CRC screening disparities in order to improve health equity.

THE IMPACT OF THE DIABETES HEALTH PLAN ON CARDIOVASCULAR RISK FACTORS AMONG PATIENTS WITH DIABETES O. Kenrik Duru; Susan Ettner; Norman Turk; Jinnan Li; Ekaterina Vaisberg; Lindsay Kimbro; Carol Mangione. UCLA, Los Angeles, CA. (Tracking ID #1642762)

BACKGROUND: A key objective of the Diabetes Health Plan (DHP), a new disease-specific health plan, is the avoidance of complications among diabetic patients through early identification and increased adherence to preventive care and treatments for cardiovascular risk factors. We conducted analyses to determine whether participation in the DHP is associated with better control of cardiovascular risk factors. We hypothesized that among persons with diabetes, those offered the DHP would have better glycemic (A1c) and lipid (LDL) control relative to those only offered the standard benefit.

METHODS: The DHP includes several enhancements to a standard plan: 1) financial incentives with reduced/eliminated co-pays for medications to lower blood glucose and cholesterol as well as for office visits to the PCP and selected specialists; 2) enhanced access to care management and individualized telephonic coaching; 3) enhanced communication with beneficiaries via online data and adherence tracking; and 4) a compliance design that requires members to comply with evidence-based guidelines to receive enhanced benefits, or potentially be terminated from the plan. For these analyses, we used a longitudinal study design with a before/after comparison group. Patients with diabetes were defined as having any of the following: 1) at least one 250.xx inpatient, outpatient, or ED claim, 2) an A1c value > 6.5 %, or 3) use of insulin or an oral hypoglycemic medication other than metformin. We compared eligible diabetic patients within employer groups that offered the DHP with eligible diabetic patients in employer groups that did not have access to the DHP (controls). We applied propensity score matching to select 5 control employers for each DHP employer, using matching variables including mean salary, member count, % female, and % with a chronic condition. We used a 2 year study window to measure A1c and LDL, with a 1-year "pre" period and 1-year "post" period for both the DHP and control samples, but only included patients who had at least 9 months between their "pre" and "post" lab values in the analyses. We constructed multivariate linear regressions to estimate study outcomes, controlling for individual-level income, race, education, age and gender, and compared change in the last recorded laboratory value within each period using difference-in-difference analyses. Results were expressed as predicted probabilities.

RESULTS: Our analytic sample included 500 patients within DHP employer groups and 751 patients in control employer groups. At baseline, the mean A1c value was 7.17 % in the DHP groups and 7.26 % in the control groups. In difference-in-difference analyses, the change in A1c for DHP patients relative to control patients was −0.27 % ($p=0.002$). At baseline, the mean LDL value was 97.6 mg/dl in the DHP groups and 94.5 mg/dl in the control groups. In difference-in-difference analyses, the change in LDL for DHP patients relative to control patients was −2.7 mg/dl ($p=0.25$).

CONCLUSIONS: We found that the Diabetes Health Plan was associated with a significant decrease in A1c values, but not in LDL values, among patients in DHP employer groups compared with similar patients in control employer groups. These preliminary results provide support for this "real-world" implementation of a disease-specific health plan in terms of improving glycemic control, but additional studies over a longer follow-up period and examining a wider range of outcomes are needed for a complete evaluation.

THE IMPACT OF THE ECONOMIC RECESSION IN LATE 2000S ON ACUTE MYOCARDIAL INFARCTION OCCURRENCE IN DIFFERENT SOCIOECONOMIC AREAS OF NEW JERSEY RARITAN BAY REGION Yulong Li; Iris Rukshin; Fangfang Pan; Shuvendu Sen; Mohammed Islam; Abdalla Yousif; Vladimir Rukshin. Raritan Bay Medical Center, Perth Amboy, NJ. (Tracking ID #1614818)

BACKGROUND: The financial crisis in 2008 started the late 2000s economic recession. During this recession, the Dow Jones Industry Average (Dow Average) decreased over 50 % and the US unemployment rate reached a historical high of 10 %. Previous researches have demonstrated that the incidences of acute myocardial infarction and stroke increased during economic recessions. We hypothesize that socioeconomic inequality in neighborhood of residence can worsen the negative impact of economic recession on AMI incidence. This retrospective case-control study was designed to assess the impact of the economic recession from 12/2007 to 07/2009 on occurrence of acute myocardial infarction (AMI) in different socioeconomic areas of Raritan Bay region, New Jersey (NJ).

METHODS: We analyzed a retrospective cohort of AMI patients that were treated at two main MI centers in Raritan Bay region from 01/2006 to 06/2012. All cases were identified by having AMI as the primary diagnosis at discharge. These cases were divided into two groups based on whether the adjusted annual income (abbreviated as income) of the zip code area they resided in was above or below the NJ state average. Student-*t* test was used to compare the age difference between these two groups. The differences in

gender and presence of co-morbidities (hypertension, diabetes mellitus, and hyperlipidemia) were examined using Chi-square test. Spearman Rank Correlation test was used to examine correlation between monthly AMI occurrence in each group and NJ unemployment rate/Dow Jones Industrial Average in the corresponding month.
RESULTS: A total of 1,467 cases of AMI with residence in Raritan Bay region were treated from 01/2006 to 06/2012. There were 990 AMI patients living in the areas (average income: $44,515; total population: 187,328) with income less than the state average ($52,118), and 477 in the areas (average income: $64,138; total population: 90,013) with income greater than the state average. Between these two groups (lower-income group vs. higher-income group), the differences in age (69.5 vs. 70.1, P=0.50), gender (female/male ratio: 0.857 vs. 0.807, P=0.58), hypertension (46 % vs. 41 %, P=0.07), diabetes (37 % vs. 32 %, P=0.09) and hyperlipidemia (38 % vs. 34 %, P=0.10) were not statistically significant. In the lower-income group, monthly incidence of AMI trended up after onset of the recession and this increase was correlated with the rise of unemployment rate in NJ (coefficient=0.231, P=0.042). In contrast, in the higher income group, monthly occurrence of AMI remained stable and was not correlated with the unemployment rate (coefficient=−0.02, P=0.887). No significant correlation was found between the monthly Dow averages and the AMI incidences in both groups.
CONCLUSIONS: The findings of this study suggest that the residents in low socioeconomic areas have a higher risk for AMI during economic recessions and that unemployment is a contributing factor. This could be caused by several factors, which may include a higher stress level and/or a decreased compliance to treatment of comorbid conditions because of economic strain. Policy makers and social program planners should be aware of such an increased risk for AMI among the residents living in low socioeconomic neighborhoods, and design programmatic interventions to lessen the adverse impact of economic recession on cardiovascular diseases.

THE J-CURVE IN THE CLINIC: IS REAL-WORLD BLOOD PRESSURE AS MEASURED IN OUR CLINICS A MAJOR CARDIAC RISK FACTOR? Jeremy Sussman[1,2]; Wyndy Wiitala[1]; Edward H. Kennedy[1]; Rodney A. Hayward[1,2]. [1]VA Ann Arbor Healthcare System, Ann Arbor, MI; [2]University of MIchigan, Ann Arbor, MI. (Tracking ID #1641896)

BACKGROUND: While systolic blood pressure (BP) has been a strong, consistent predictor of cardiovascular disease (CVD) in risk prediction tools, the BP assessments in most of those studies used rigorous research protocols and consistent measurement techniques. However, the BPs taken in routine clinic practice are known to be much less reliable. Further, few risk prediction tools have accounted for the long-noted "J-shape" of the BP risk curve or examined how the rise of more aggressive BP treatment could alter the association with measured BP and CVD events. In this study we used a large clinical database to see how real-world clinic blood pressure measures are associated with heart disease mortality risk.
METHODS: We conducted a retrospective cohort study of all patients at 12 Veterans' Health Affairs facilities without a documented history of a CVD event or congestive heart failure. The outcome variable was CVD death over 5 years of follow-up starting in 2003, as obtained from the National Death Index. We examined 3 categories of risk predictor variables: traditional risk factors, BP medications used, and comorbidities. We developed risk prediction scores using logistic regression with multivariable regression splines for continuous variables, including scores with and without SBP and DBP as predictors. We used five-fold cross-validation to estimate over-fitting. We assessed each prediction score's predictive performance with the area under the receiver operating characteristic (AUROC) curve and net reclassification improvement (NRI), using cut-points of low risk (<2.5 %), medium risk (2.5 %–10 %), and high risk (>10 %). The NRI assessed how many patients' estimated risk would be reclassified above and below those cut-points when BP was added to the model, and what percentage of those changes would improve the predictive accuracy of the model.
RESULTS: 4880 of 100,354 Veterans (4.8 %) died of CVD during the 5 year follow-up. The full model, excluding the BP variables, had an AUROC of 78.9. Including systolic BP in the model increased the AUROC by 0.1 (to 79.0) whereas including diastolic BP increased the AUROC by 0.3 (to 79.2). In comparison, removing age reduced the AUROC by almost 6.5 (to 72.5). Similarly, the NRI was quite small, at 0.9 % for SBP and 1.1 % for DBP. The relationship between systolic BP and CVD events was clearly J-shaped, with the lowest risk SBP found at 138 mmHg. The weakness of the association between BP and CVD mortality and the existence of a J-shaped curve held regardless of the number of BP-lowering medications a patient was on and was similar for diastolic BP. The relationship between blood pressure and CVD mortality did not become stronger when using a single blood pressure measurement or an average of three measurements. Five-fold cross-validation showed no major over-fitting for any model.
CONCLUSIONS: These results show that in routine clinical practice BP has a very weak association with CVD mortality, but that the slight J-shaped association still holds. This suggests that estimates from most widely used risk calculators will be inaccurate in routine clinical practice unless steps are taken to improve clinic BP measures or until risk calculators based on data from regular clinical use are developed.

THE JOHNS HOPKINS LEARNING ENVIRONMENT SURVEY (JHLES): DEVELOPMENT OF AN EFFICIENT TOOL TO ASSESS STUDENT PERCEPTIONS OF THE MEDICAL SCHOOL LEARNING ENVIRONMENT. Robert Shochet; Jorie Colbert-Getz; Scott Wright. Johns Hopkins University School of Medicine, Baltimore, MD. (Tracking ID #1642672)

BACKGROUND: The medical school learning environment (LE) encompasses the physical, social and psychological context in which students are immersed, and holds significant influence on how students form professional identities, express humanistic behaviors and achieve academic success. Traditional LE assessments provide aggregated institutional or cohort data, and miss the opportunity to consider how individual students might interact differently with the multi-dimensional LE. The objective of this study was to construct a reliable measure of student perceptions of their interface with the social, relational, and academic aspects of the medical school learning environment, and provide a window to potential differences in patterns of engagement.
METHODS: Study subjects were actively enrolled JHUSOM students across 4 classes during the 2011–2012 academic year. We developed a 65-item LE questionnaire created by literature review, iteratively revised, then pilot tested to actively enrolled students in April–July, 2011. We then revised the survey and re-administered with 32-items in the spring of 2012. To assess the internal structure of item scores, EFA was performed on the correlation matrix using principle axis factoring with varimax rotation. Composite JHLES scores were analyzed by gender, race/ethnicity, medical school year, and to overall LE perception with one-way ANOVAs.
RESULTS: In 2012, 377 of the 465 students responded to the survey (response rate=81 %); 49 % of responders were female, 49 % Caucasian, 33 % Asian, 7 % African American, and 4 % Hispanic. Responses by class year: Y-1- 112 (30 %), Y-2-96 (25 %), Y-3- 81 (22 %), Y-4- 88 (23 %). The final factor structure of 28 items grouped into 7 domains, named: community of peers, faculty relationships, academic climate, growth promoting, mentoring, sense of safety, and physical space. These 7 factors accounted for 57 % of the overall variance. Composite LE scores ranged from 51 to 139 with a mean of 107 (SD=15). JHLES scores did not differ significantly by age, gender or race/ethnicity. When comparing ratings of overall perception of the LE to JHLES scores, those perceiving the LE as exceptional (n=64) scored higher than those perceiving the LE as good (n=225), p<0.001, or fair (n=63), p<0.001, or poor/terrible (n=25), p<0.001.
CONCLUSIONS: Relative to published LE studies, the 7 factor, 28-item JHLES accounted for a higher percentage of variance despite its shorter length. JHLES scores correlated linearly with their overall LE perceptions, potentially shedding light on the unique and varying ways students interact with and acclimate to the school's academic climate and socio-relational qualities. Thus, the JHLES might be used as a tool to measure how well

students are navigating the LE to enhance their professional growth and in identifying at-risk students. Limitations include single institution study, recall bias, and students surveyed at one point in time. The JHLES should be studied across institutions to confirm its value as an efficient LE measure, as well as a means to study medical student patterns of interactivity with the LE.

THE NEW FRONTIER OF MEDICATION RECONCILIATION: USE OF AN ELECTRONIC MEDICATION REFILL HISTORY IN PRIMARY CARE Daniel J. Elliott[1]; Elizabeth Mearns[2]; Dominique Comer[2]; Lindsey Olivere[3]; Joseph Couto[2]. [1]Christiana Care Health System, Newark, DE; [2]Thomas Jefferson University, Philadelphia, PA; [3]Duke Univerity, Durham, NC. (Tracking ID #1640231)

BACKGROUND: Medication Reconciliation including assessing adherence is a core responsibility of primary care providers. Providers historically rely upon patients to subjectively report medication usage, but electronic-prescribing networks have made multi-payer pharmacy fill history information increasingly available to clinicians. This data may facilitate medication reconciliation and adherence assessment. The objective of this study is to understand the adoption, utilization, and impact of pharmacy refill data in primary care practice.
METHODS: We conducted a survey of primary care providers in a large community practice network one year after an electronic Medication Refill History became available within the shared electronic health record (EHR). The function allowed providers to retrieve prescription fill data through SureScripts (Arlington, VA). We developed a 14-item survey to assess knowledge of the medication history function within the EHR, previous experience with the system, and identification of barriers to using the function. We also asked providers to identify the potential value of prescription fill data. Surveys were distributed to providers at practice meetings and electronically through SurveyMonkey (Palo Alto, CA). Responses are summarized as proportions.
RESULTS: We received surveys from 55 of 72 providers (76.4 % response rate). Of these, 47 (86 %) were aware of the function within the EHR, and 36 (77 %) had used it previously. Of these 36, 19 (53 %) reported that it was extremely helpful, and 16 (44 %) said it was somewhat helpful to clinical care. Eighty percent (29/36) used the function for 30 % or less of their patients in the previous 3 months. The most common situations that providers reported using the medication history were at the time they are considering prescribing a narcotic (92 %), when seeing a new patient (79 %), and when they have a concern about non-adherence (79 %). Providers were least likely to use it when prescribing a medication for acute illness (36 %). In terms of Medication Reconciliation, providers indicated that when used in the past, the refill history enabled them to confirm adherence to currently prescribed medications (54 %), identify medications that were not on their current medication list (69 %), and identify a potentially significant medication discrepancy (49 %). Barriers to use included delays in access (57 %), concern for inconsistent or incomplete data (15 %), and the time pressures of clinical practice (37 %). All providers reported that a complete, reliable, and accessible medication refill history would be extremely (74 %) or somewhat (26 %) helpful to clinical practice, particularly in the setting of pain management (96 %) and transitions of care (89 %).
CONCLUSIONS: Improvements in information technology infrastructure have increasingly made a patient's multi-payer Medication Refill History available to practicing physicians. Our results suggest that practicing primary care providers may access this data in a variable and selective manner, with emphasis on high-risk situations such as pain management and transitions of care. When used, primary care providers indicate that the data is valuable, including identifying medication discrepancies. If this data is to provide maximum benefit to inform clinical care, implementation should focus on making this data complete and readily-accessible to providers in routine clinical practice.

THE OLDER ADULT SYMPTOM INVENTORY SCALE (OASIS): DEVELOPMENT, RELIABILITY, AND VALIDITY OF A NEW GERIATRIC SYMPTOM BURDEN SCALE Hilary Mosher[1,2]; Skyler Johnson[1]; Peter Kaboli[1,2]. [1]Iowa City VA Healthcare System, Iowa City, IA; [2]University of Iowa Carver College of Medicine, Iowa City, IA. (Tracking ID #1619647)

BACKGROUND: Symptoms are a major driver for health care use, especially in older adults. Assessing presence and burden of symptoms can be challenging in both clinical and research settings. Having a more efficient and effective inventory of symptom presence and burden may facilitate improvements in patient health and satisfaction. The study objective was to develop and test the reliability and concurrent validity of the Older Adult Symptom Inventory Scale (OASIS), a new instrument measuring symptom presence and burden in an elderly population.
METHODS: This prospective cohort study within the Veterans Administration (VA) healthcare system included cognitively intact outpatients aged 65 years and older, including 17 subjects during the development phase and 532 during the testing phase. The 47-item OASIS contains a Count scale and a Bother scale. Both scales were tested for internal consistency, test-retest reliability, and associations with widely used scales to determine concurrent validity.
RESULTS: In reliability testing, the 46-item OASIS symptom Count and Bother scales had excellent internal consistency (alphas>0.9) and excellent test-retest reliability (r=0.77 for Count scale; r=0.86 for Bother scale). Both scales highly correlated (P<0.001) with the SF-36 scale and subscales, the Modified OARS Instrumental Activities of Daily Living, the Geriatric Depression Scale, a single item indicator of well-being, and medication use. The test group found the OASIS practical and useful, with 75 % stating it would provide useful information to health care providers. The most prevalent symptom reported was fatigue (71.6 %), followed by joint pain/ache/stiffness (70.6 %) and drowsiness (61.2 %). All other symptoms, except for hallucinations, were reported by over 12 % of respondents. The most bothersome symptoms, when endorsed were problems having or enjoying sexual intercourse (mean 3.78, mode 5), back pain (mean 3.16, mode 3) and joint pain/ache/stiffness (mean 3.11, mode 2).
CONCLUSIONS: The OASIS Count and Bother scales are practical, reliable and valid instruments to measure symptom burden in an elderly population. Development and use of the OASIS may improve identification of untreated conditions and symptomatic adverse drug events, and permit better longitudinal management in complex medically ill elders.

THE OPTIMAL INTERVAL OF DIABETES MELLITUS SCREENING IN HEALTHY ADULTS: A COMPETING RISK ANALYSIS Osamu Takahashi[1,2]; Gautam A. Deshpande[1]; Sachiko Ohde[1]; Tsuguya Fukui[1,2]. [1]St. Luke's Life Science Institute, Tokyo, Japan; [2]St. Luke's International Hospital, Tokyo, Japan. (Tracking ID #1643149)

BACKGROUND: To identify adults at risk for cardiovascular disease, diabetes mellitus (DM) screening using hemoglobin A1c (HbA1c) is important, but there are few studies regarding the appropriate monitoring interval for re-screening. We aimed to determine the optimal interval for rechecking HbA1c levels below the diagnostic threshold of 6.5 % for healthy adults in Japan.
METHODS: This was a population-based cohort study from 2005 to 2008 in Tokyo, Japan. In healthy adults with HbA1c of <6.5 %, no prior cardiovascular diseases (CVD), and taking no diabetes medication at baseline, we measured the serum HbA1c annually for 4 years. We estimated the optimal interval of screening when the cumulative incidence of HbA1c ≥6.5 % or fasting plasma glucose (FPG) ≥126 mg/dl surpassed 10 %. We used a competing risk analysis adjusting for CVD and anti-diabetic medication as competing risks.
RESULTS: At baseline, 12,440 people (52 % male) with a mean age of 50 years old (SD: 12 years, range: 21–92), had a mean FPG of 98.3 mg/dl (SD: 10.2 mg/dl) and mean HbA1c of 5.3 % (SD: 0.4 %). For those with baseline HbA1c of <5.5 %, 5.5–5.9 %, and 6.0–6.4 %, the cumulative incidences of DM were 0.1 %, 1.6 %, and 17 % at 1 year and 0.2 %, 3 %, and 33 % at 3 years, respectively. Competing risk regression indicated that

hazard ratio (HR) for the cumulative incidence of DM were 6.3 (95 % CI: 4.5–8.8) for baseline HbA1c of 5.5–5.9 % and 51.6 (95 % CI: 36.3–73.3) for baseline HbA1c of 6.0–6.4 %, when using HbA1c <5.0 % as reference. Increased body mass index (HR: 1.1, 95%CI: 1.1–1.7) and male gender (HR: 1.5, 95 % CI: 1.1–2.0) were also associated with an increased cumulative incidence of DM.

CONCLUSIONS: The optimal interval for re-screening healthy adults should be more than 3 years for those with baseline HbA1c of <6.0 % and 1 year for those with baseline HbA1c of 6.0–6.4 %.

THE PHQ-2 DEPRESSION SCREEN PREDICTS ALL-CAUSE MORTALITY FOR UP TO 2 YEARS FOLLOWING HOSPITALIZATION WITH HEART FAILURE Tatiana Deveney[1,2]; Bea Herbeck Belnap[2]; Fanyin He[3]; Sati Mazumdar[3]; Bruce L. Rollman[2]. [1]University of Rochester School of Medicine, Rochester, NY; [2]University of Pittsburgh School of Medicine, Pittsburgh, PA; [3]University of Pittsburgh, Pittsburgh, PA. (Tracking ID #1634679)

BACKGROUND: The American Heart Association (AHA) Science Advisory recommends routine screening of cardiac patients for depression with the 2-item Patient Health Questionnaire-2 (PHQ-2). The PHQ-2 assesses for depression and anhedonia, the two cardinal DSM-IV symptoms of depression, and is considered positive if one or both items are endorsed. Reports suggest a positive PHQ-2 is associated with mortality at 1-year following hospitalization with heart failure (HF), but its longer term predictive effect is unknown. (Rollman BL et al., J Cardiac Failure, 2012) The objective of this report is to determine the long-term durability of the association between a positive PHQ-2 screen and all-cause mortality following hospitalization with HF.

METHODS: 471 hospitalized HF patients with an ejection fraction (EF) <40 %, NYHA functional class II-IV symptoms, who were suspected of depression were screened with the PHQ-2 prior to discharge from 4 Pittsburgh-area hospitals (12/07 to 6/09). Sociodemographic, health-related quality of life (SF-12), and clinical information were collected at baseline. We used Kaplan-Meier analyses to calculate the annual incidence of all-cause mortality by PHQ-2 status with log-rank tests for statistical significance. Multivariate Cox models were used to generate hazard ratios (HR) by PHQ-2 status adjusting for differences in baseline covariates and known predictors of heart failure morbidity and mortality.

RESULTS: At baseline, PHQ-2 positive patients (PHQ-2 (+); n=371), compared with PHQ-2 negative patients (PHQ-2 (−); n=100) were younger (age 65 vs. 70) and more likely to report lower levels of function (NYHA Class: 67 % III-IV vs. 61 % II) and health-related quality of life (mean SF-12 MCS: 44 vs. 59) (all p<0.005). We confirmed vital status on 99 % (467/471) of our study cohort as of 6/30/12 (mean follow up: 34.9 months ±17.6 months) and identified 198 deaths (42 %). At both 1- and 2-years follow-up, significantly more PHQ-2 (+) vs. PHQ-2 (−) patients had died (Table), and the mortality risk associated with a positive PHQ-2 persisted even after adjustment for age, gender, EF, and other established predictors of HF mortality (1-year: HR: 3.19 (95 % CI: 1.50–6.80); p=0.003; 2-year: HR: 2.01 (1.19–3.37); p=0.009). However, this difference in mortality risk by PHQ-2 status disappeared by 3 years follow-up (3-year: HR: 1.36 (0.90–2.06); p=0.14; 4-year: HR: 1.44 (0.98–2.12); p=0.07).

CONCLUSIONS: A positive PHQ-2 depression screen is associated with significantly elevated mortality risk for up to 2 years following hospital discharge, even after adjustment for a variety of established predictors of HF mortality. While our findings support the AHA recommendation to screen cardiac patients for depression and confirm the negative impact of depression in patients with heart failure, well designed clinical trials remain necessary to determine whether depression treatment can reduce all-cause HF mortality.

Cumulative Mortality Incidence by PHQ-2 Status

Year	PHQ-2 (+) % (n)	PHQ-2 (−) % (n)	p Value
1st Year	20 (76)	8 (8)	0.005
2nd Year	31 (116)	19 (19)	0.02
3rd Year	37 (138)	33 (33)	0.28
4th Year	43 (161)	37 (37)	0.26

THE PREVALENCE AND CAUSES OF PRESCRIBING AND MONITORING ERRORS IN U.K. PRIMARY CARE Sarah P. Slight[1,2]; Rachel Howard[3]; Maisoon Ghaleb[5]; Nick Barber[5]; Bryony D. Franklin[5,6]; Anthony J. Avery[2]. [1]Brigham and Women's Hospital, Boston, MA; [2]University of Nottingham, Nottingham, United Kingdom; [3]University of Reading, Reading, United Kingdom; [4]The University of Hertfordshire, Hatfield, United Kingdom; [5]University College London, London, United Kingdom; [6]Imperial College Healthcare NHS Trust, London, United Kingdom. (Tracking ID #1628834)

BACKGROUND: Prescribing is an essential task for any doctor. Errors can and do occur when prescribing, the majority of which are preventable. Relatively little is known about the prevalence and underlying causes of prescribing and monitoring errors in primary care. We conducted a large-scale, mixed methods study in a broad range of English family practices to address this knowledge gap, and provide recommendations for how these errors may be overcome.

METHODS: Fifteen family practices were purposively selected within three Primary Care Trusts (PCTs) with differing characteristics (inner-city London, urban and suburban/rural) to participate. Four trained pharmacists undertook a retrospective review of unique medication items, prescribed over a 12-month period, to a 2 % random sample of patients. The severity of each error identified was assessed on a reliable, validated, ten-point scale. The primary outcome measure was binary, indicating the presence of one or more prescribing or monitoring errors, and modelled using logistic regression. The significance of the variables in the models was assessed using the Wald chi-squared test and determination of odds ratio (OR) with associated 95 % confidence intervals (CI). All statistical analyses were performed using STATA (version 11.2, Stata Corp LP). A wide range of different types of the more serious errors was also discussed with members of practice staff (n=80) to explore the underlying reasons why these errors occurred. Interviews were audio-recorded with permission and transcribed verbatim. A list of main- and sub-themes was applied systematically to the whole data set with the aid of qualitative analysis software QSR N-Vivo version 8.0.

RESULTS: Prescribing and/or monitoring errors were detected in 4.9 % (296/6048) of all prescription items (95 % CI 4.4–5.5 %). Modelling suggested that the factors associated with an increased risk of error in patients were: age less than 15 years (OR 1.81, 1.15 to 2.85, p=0.010) or greater than 64 (OR 1.67, 1.03 to 2.71, p=0.037), and higher numbers of unique medication items prescribed (OR 1.16, 1.12 to 1.19, p<0.001). The vast majority of errors were of mild to moderate severity, with 0.2 % (11/6048) of items having a severe error. Seven categories of high-level error-producing conditions were identified: the prescriber, the patient, the team, the task, the working environment, the practice computer system, and the primary/secondary care interface. Further subcategories were identified within each of these. The prescriber's therapeutic training, drug knowledge and experience, knowledge of the patient, perception of risk, and their physical and emotional health, were all identified as possible causes. The working environment with its high workload, time pressures, and interruptions, and computer related issues, were all highlighted as possible causes and often interconnected.

CONCLUSIONS: Prescribing and monitoring errors, while mainly of minor significance, are common in English family practice. Several factors were found to increase the risk of error. These findings suggest that substantial improvements could be made to the safety of prescribing in family practices.

THE PREVALENCE, PREDICTORS, AND COST OF FUTILE TREATMENT IN THE INTENSIVE CARE UNIT Neil Wenger; Thanh N. Huynh; Eric Kleerup. UCLA, Los Angeles, CA. (Tracking ID #1631453)

BACKGROUND: Medicine is now able to keep patients alive for long periods of time in conditions such as permanent unconsciousness and permanent dependence on ICU-level treatment, conditions that nearly all people would not want. When a patient's chance of survival is very low or the quality of life is markedly diminished, intensive care interventions that

prolong life without achieving the goals of medicine are often considered "futile" by health care providers. We aimed to quantify the prevalence, cost, and predictors of futile treatment at one academic health system.
METHODS: A focus group of clinicians who provide care for critically ill patients was convened to develop a common definition of futile critical care treatment. On a daily basis for 3 months, we surveyed critical care specialists in five ICUs at an academic health care system to identify patients that clinicians felt were receiving futile treatment. Using a multivariate model, we identified patient and clinician characteristics associated with patients receiving futile treatment. We calculated the cost of futile treatment by summing daily hospital charges after a patient was assessed to be receiving futile treatment.
RESULTS: The 6,916 assessments by 36 critical care specialists on 1,136 patients over 3 months found that 904 (80 %) patients never received futile treatment, 98 (8.6 %) patients received probably futile treatment, and 123 (11 %) patients received futile treatment. These 123 patients received 464 days of futile treatment in critical care (ranging from 1 to 58 days), accounting for 6.7 % of all assessed patient days in the five ICUs. Eighty-four of the 123 futile patients died before hospital discharge and 20 patients died within 6 months of ICU care (6-month mortality was 85 %) with survivors remaining in severely compromised health states. Patients who were older, male, African American, admitted from a nursing home or long term acute care facility, cared for in the medical ICU, and had longer hospital stays were more likely to be assessed as receiving futile treatment. The proportion of variation in futile treatment assessment accounted for by patient factors was 10 times the size of that accounted for by physician characteristics. The cost of futile treatment in critical care was estimated to be $5.3 million for this 3 month period at one academic health system.
CONCLUSIONS: At the studied center, futile treatment in critical care is common, affecting more than 1 out of every 10 critical care patients. Futile treatment in critical care can be identified prospectively and its cost is not insignificant, exceeding an estimated $20 million annually at one medical center. Efforts are needed to identify patients receiving futile treatment and to explore methods to re-orient treatments to better serve patients.

THE RELATION BETWEEN SUBJECTIVE SOCIOECONOMIC STATUS, DEPRESSION AND SELF-RATED HEALTH IN A POPULATION OF AFRICAN AMERICANS, HISPANICS AND NON-HISPANIC WHITES WITH DIABETES Jose A. Delgado[1]; Elizabeth A. Jacobs[2]; Nancy E. Adler[3]; Keegan Korthauer[5]; Alicia Fernandez[5]. [1]Georgetown University Hospital, Washington, DC; [2]University of Wisconsin School of Medicine and Public Health, Madison, WI; [3]University of California, San Francisco, San Francisco, CA; [4]University of Wisconsin School of Medicine and Public Health, Madison, WI; [5]University of California, San Francisco, San Francisco, CA. (Tracking ID #1643166)

BACKGROUND: The prevalence of chronic medical conditions is increasing among minority populations compared to non-Hispanic whites. Studies of the factors contributing to these disparities have focused on objective measures of socioeconomic status (OSS) rather than minority individuals' perception of their subjective social status (SSS). Our objective was to examine the relationship between subjective social status, depression and self-rated health to explore whether or not the relationship between SSS and these conditions differed across African Americans, Mexican Americans, and non-Hispanic whites with diabetes.
METHODS: We conducted a survey and abstracted data from the medical records from 711 diverse patients seeking care for diabetes in safety net institutions in Chicago and the Bay Area. SSS was measured using the McArthur scale. Depression symptoms were determined by using the Patient Health Questionnaire (PHQ-9). Participants were asked about their general health during the 4 weeks prior to the survey using a standard single-item indicator of self-reported general health from the SF-8 Health Survey. Kruskal-Wallis and Wilcoxon rank sum tests were used to test for racial differences in SSS. Logistic regression models were used to evaluate the effect of SSS on depression and self-rated health.
RESULTS: There were significant differences in SSS among the three racial groups when ranking themselves in their communities ($p<0.0001$) and within the US overall ($p=0.0306$). For SSS in the community, African Americans had significantly higher average rankings than both Mexican Americans ($p<0.0001$) and non-Hispanic Whites ($p=0.0035$). The difference between Mexican Americans and non-Hispanic Whites was not significant after adjusting for multiple comparisons ($p=0.0375$, significance level of multiple comparisons requires $p<0.017$). We found a significant relationship between SSS and both depression and self-rated health ($p<0.01$). This effect was observed in both the US and the community ladders. Higher SSS was inversely related to depression, while higher SSS was found to be associated with higher overall health status
CONCLUSIONS: Subjective and objective social status are two important factors involved in the presence of common chronic conditions. Characterizing the effect of SES on depression and self-rated health could lead to better targeted interventions in different ethnic communities.

THE RISK OF THIAZIDE-INDUCED ADVERSE EFFECTS IN OLDER ADULTS Anil N. Makam[1]; W. John Boscardin[1,2]; Yinghui Miao[1,2]; Michael Steinman[1,2]. [1]University of California, San Francisco, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA. (Tracking ID #1631749)

BACKGROUND: While thiazide diuretics have been shown to be safe in older adults within the context of randomized controlled trials, relatively little is known about the risk of thiazide-induced adverse effects (AEs) among older adults with hypertension in real-world settings. We sought to evaluate the magnitude of the risk of thiazide-induced metabolic AEs in older adults with hypertension and to examine whether age and comorbid burden increase this risk.
METHODS: This is an observational cohort study using national data from the Department of Veterans Affairs. Veterans aged 65 years or older with hypertension who were newly prescribed a thiazide diuretic ($N=1,163$) or were non-users of first-line anti-hypertensive medications ($N=21,666$) between July and December 2007 were followed for up to 15 months. We performed a propensity score analysis accounting for clustering within medical centers to compare new thiazide users ($N=1,041$) to nearest matched non-users ($N=1,041$) on the primary composite outcome of mild AEs and secondary outcomes of severe AEs, emergency department (ED) visits for AEs, and hospitalizations for AEs. Mild AEs were defined as sodium <135 meq/L, potassium <3.5 meq/L, or a decrease in estimated GFR by more than 25 % from baseline. Severe AEs were sodium <130 meq/L, potassium <3.0 meq/L, or a decrease in estimated GFR by more than 50 %. We used multivariable logistic regression to analyze age and comorbidity count as predictors of developing AEs among thiazide users.
RESULTS: Among thiazide users, only 49 % had follow-up laboratory testing within 3 months after the index date. Compared to matched non-users, new users of thiazide diuretics had an absolute risk increase of 7.1 % for at least one mild AE (3.5 % for hyponatremia, 3.0 % for hypokalemia, and 1.6 % were at risk for kidney injury; NNH=15, $p<.001$), 1.2 % for at least one severe AE (NNH=87, $p=.03$), and 1.7 % for an ED visit or hospitalization for AEs (NNH=58, $p=.04$). Among thiazide users, having 5 or greater comorbidities compared to 1 comorbidity (hypertension) was associated with 2.9 times the odds of developing a mild AE (95 % CI, 1.4–5.8). There was no relationship between advancing age and the composite outcome of any mild AE (OR 1.2, 95 % CI, 0.9–1.7); however, each 10 years increase in age was associated with 1.5 times the odds of developing mild hyponatremia (95 % CI, 1.0–2.2).
CONCLUSIONS: Although 1 in 15 elderly patients with hypertension prescribed a thiazide diuretic develop a mild metabolic adverse effect and 1 in 87 patients a severe adverse effect, less than half of the patients have follow-up laboratory monitoring within 3-months. Closer monitoring is warranted after initiation of thiazide diuretics, especially among older adults with multiple chronic conditions.

THE ROLE OF COGNITIVE PERFORMANCE ON THE RELATIONSHIP BETWEEN PAIN AND PHYSICAL FUNCTION IN OLDER ADULTS WITH KNEE OSTEOARTHRITIS Natalia Morone[2,1]; Kaleab Abebe[1]; Lisa Morrow[1]; Debra K. Weiner[2,1]. [1]University of PIttsburgh, Pittsburgh, PA; [2]Veterans Affairs Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1634860)

BACKGROUND: There is evidence of an association between physical functional decline and cognitive decline prior to the onset of dementia. In patients with chronic non-malignant pain, diminished cognitive function has also been associated with pain severity. Given this early evidence of an association between early cognitive decline, chronic pain, and decreased physical function, our objective was to corroborate and extend these findings to older adults with knee osteoarthritis (OA)-associated chronic pain. We hypothesized that higher levels of self-reported chronic knee OA pain would be associated with decreased executive cognitive function and decreased physical function among cognitively intact older adults with advanced knee OA.
METHODS: We performed a cross-sectional secondary data analysis on 79 Veterans who had participated in a Veteran's Affairs clinical trial of periosteal stimulation for advanced knee OA. Participants had to be ≥60 years, have pain of at least moderate intensity (pain occurring most days of the week and of at least 3 months duration), and meet clinical criteria for painful knee OA. Measures included executive function tests of cognitive performance (Computer-Based Assessment of Mild Cognitive Impairment), pain (McGill Pain Questionnaire-Short Form) and physical function measures (gait speed and stair climbing). Descriptive statistics for the sample as a whole were generated. Linear regression models were run on the variables of interest. We carried out exploratory analyses to see if cognitive performance affected the relationship between pain and physical function, which could suggest a potential mediating relationship. This was done using the template of Baron & Kenny.
RESULTS: The sample was predominantly male, 76/79 (96 %), white 57/79 (72 %), and overweight (mean body mass index=31). Pain had a significant relationship with gait speed and stair climbing so that as pain scores worsened gait speed and stair climbing worsened (P=0.007, 0.035, respectively). Higher performance on the executive function tests was also significantly associated with improved gait speed and stair climbing (P=0.002, P=0.014 respectively). We did not find a significant relationship between pain and cognitive performance. We explored the relationship between pain and physical function adjusted for cognitive performance and found that pain was no longer associated with gait speed (P=0.06), suggesting cognitive function mediated this relationship.
CONCLUSIONS: Deterioration in physical function was associated with deterioration in cognition in cognitively intact older adults with chronic painful knee OA. This suggests slower gait speed in patients could be an indication to clinicians to monitor their patient's cognitive function. Executive function in particular affected the relationship between gait speed and pain suggesting a possible mediating relationship.

THE ROLE OF INTERNS AS TEACHERS: INTERNS' AND MEDICAL STUDENTS' PERCEPTIONS David R. Linz; Carla Spagnoletti. University of Pittsburgh School of Medicine, Pittsburgh, PA. (Tracking ID #1638727)

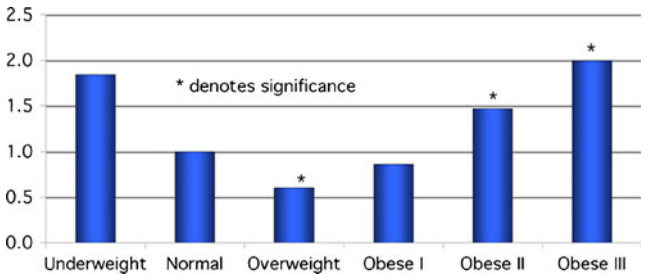
BACKGROUND: Teaching is a vital skill of physicians and one that typically develops in residency. While published studies report that residents-as-teachers curricula improve teaching skills, none have described the unique role or needs of interns as teachers. The objective of this study was to explore the knowledge, attitudes, and reported teaching behaviors of interns who work with medical students and to assess medical students' perceptions of their interns' teaching behaviors in an environment where no formal interns-as-teacher curriculum exists.
METHODS: In November 2012, the prior class (2011–2012) of categorical, medicine/pediatrics, preliminary and transitional interns at a university-based (N=66) and a community-based (N=18) internal medicine training program in Pittsburgh were surveyed electronically. Prior teaching experience and education, perceived comfort with and barriers to teaching, and reported teaching quality and frequency were assessed. Concurrently, a sample of 2011–2012 third-year medical students (MS3's) who worked with these interns during their inpatient medicine clerkship (N=20) were surveyed to assess their perceptions of intern teaching quality and frequency, and perceived facilitators and barriers to teaching. Both surveys were anonymous. Descriptive statistics were performed for demographic items. Percentage correct was calculated for multiple choice knowledge-based items. Frequencies, means and standard deviations were calculated for attitudinal and skill items.
RESULTS: Of those surveyed, 69 % of former interns responded. Among them, 31 % reported prior teaching experience and 29 % prior training in teaching. The average percentage correct for knowledge items was 72 %. A total of 74 % felt interns play an important role in the education of MS3's, but only 24 % had confidence in their teaching ability, 22 % were aware of their expectations as a teacher, and 21 % felt well prepared to teach during their internship. Among the 80 % of former MS3's who responded, 81 % felt interns play an important role in the education of third year medical students. Former MS3's estimated that they spent an average of 25 h per week interacting with interns during their medicine clerkship and that one-third of the clinical knowledge learned on that clerkship was taught by interns. The mean rating for teaching quality in 15 teaching scenarios was 3.1 (SD 0.8) by former interns and 3.1 (SD 0.7) by former MS3's (5-point Likert-type scale where 1 = poor, 3 = average, and 5 = excellent). The mean rating for teaching frequency of 22 teaching tasks ranged from 0.5 to 2.9 by former interns and 0.6 to 3.3 by former MS3's (5-point scale where 0 = never, 1 = rarely/0–1 time(s) per week, 2 = occasionally/2-6 times per week, 3 = usually/once per day, and 4 = all the time/more than once per day). Both former interns and medical students agreed on the following as the three greatest barriers to intern teaching: heavy workload, distractions, and stress.
CONCLUSIONS: Though former interns and MS3's felt that interns play an important role in the education of medical students, most interns did not feel well-prepared to teach, lacked confidence in their teaching skills, and were unaware of their expectations as teachers. Therefore, curricula targeted specifically at developing the teaching skills of interns are needed.

THE ROLE OF OBESITY AND DIABETES IN PERSISTENT NEUTROPHILIA Margarita Kushnir; Hillel W. Cohen; Henny H. Billett. Montefiore Medical Center and the Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1642147)

BACKGROUND: Chronic neutrophilia is a relatively common problem in primary care clinics that often leads to an expensive and invasive work-up. Prior studies have linked obesity with leukocytosis and other markers of inflammation. We examined this association further to determine the degree of obesity at which the risk of neutrophilia increases. We also investigated whether the frequently coexisting diabetes may be a confounder in this relationship.
METHODS: Data from Montefiore Medical Center primary care clinics were obtained from electronic medical records. All patients (age ≥21 year) that had 3 outpatient complete blood cell counts checked, 2–24 months apart, over a period of 6 years, were included. Patients with hematologic disorders or those on medications that may cause leukocytosis were excluded from the study. Patients were stratified according to WHO-defined BMI criteria into six groups: Underweight (BMI <18.5), Normal (BMI 18.5–24.9), Overweight (BMI 25–29.9), Obese Class I (BMI 30–34.9), Obese Class II (BMI 35–39.9), and Obese Class III (BMI≥40). Persistent neutrophilia was defined as an absolute neutrophil count (ANC) of ≥7.8 x109/L on at least three occasions. Neutrophilia rates were compared by chi-square analysis. Odds ratios (OR) were estimated with multivariate logistic regression models. A two-tailed alpha of 0.05 was used to denote significance.

RESULTS: Data on 34,508 Bronx patients were collected; 12,993 (37.7 %) were diabetic and 6,698 (19.4 %) were smokers. A total of 563 patients (1.6 %) had persistent neutrophilia. For simplicity, the following results are from our non-smoker cohort but our overall population had a very similar trend. When comparing odds ratios of neutrophilia by BMI group a parabolic trend emerged, as depicted in Figure 1. While Obesity Class I was not associated with a statistically significant increase in risk, there was a strong association with neutrophilia in Obese Class II and III patients (Obese II: OR 1.47, 95%CI: 1.04, 2.08, p=0.03; Obese III: OR 2.00, 95%CI: 1.41, 2.83, p<0.001). The risk of persistent neutrophilia was actually decreased in Overweight patients (OR 0.60, 95%CI: 0.43, 0.84, p=0.003) compared to patients in the Normal BMI group. In the overall population, smokers had an increased risk of neutrophilia (OR 2.00, 95%CI: 1.67, 2.40, p<0.001). Diabetes was also independently and strongly associated with persistent neutrophilia (OR 1.82 95%CI: 1.52, 2.19, p<0.001).

CONCLUSIONS: Overall, there was a significant association of persistent neutrophilia with obesity only with BMI≥40 (with smokers excluded, BMI≥35 was significant). We conclude that persistent neutrophilia is associated with obesity but only in the very obese and has a signficant association with diabetes.



THE ROLE OF PROVIDER CONTINUITY IN RACIAL DISPARITIES IN CHRONIC CARE OUTCOMES Rose M. Kakoza[1]; Thomas D. Sequist[1,2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA. (Tracking ID #1642722)

BACKGROUND: Racial and ethnic minorities achieve worse health outcomes for chronic illnesses; and these groups may also receive more fragmented primary care. We analyzed the contribution of primary care continuity to racial disparities in quality of care for hypertension and diabetes.

METHODS: We used electronic health record data to identify 14,413 adults with diabetes and 36,882 adults with hypertension cared for by 225 primary care physicians across 15 health centers in a multispecialty group practice. Eligible patients were white, black, or Hispanic and had an assigned primary care physician with at least one primary care visit between 2009 and 2012. We measured primary care continuity during 2009–2011 and assessed quality of care in 2012. Continuity was measured using the Usual Provider Continuity (UPC) index, defined as the ratio of visits made to the assigned primary care physician to the total number of primary care visits including those to nurse practitioners, physician assistants, and covering physicians. The index ranges from 0 (low continuity) to 1 (high continuity). For diabetics, we assessed rates of control of HbA1c (<7.0 %), LDL cholesterol (<100 mg/dL), and blood pressure (<130/80 mmHg). For patients with hypertension, we assessed rates of blood pressure control (<140/90 mmHg). We fit multivariable logistic regression models adjusting for age, gender, and insurance status to analyze 1) the association between each chronic care outcome and primary care continuity (UPC); 2) the association between each chronic care outcome and patient race/ethnicity and 3) the impact of primary care continuity on racial/ethnic disparities in each chronic care outcome.

RESULTS: The majority of the study cohort was male (51 %) and commercially insured (66 %), with a mean age of 58 years. The majority of patients were white (74 %), with the remainder black (21 %) and Hispanic (4 %). The mean UPC index was 0.54 for patients with diabetes and 0.57 for patients with hypertension, and did not vary according to patient race/ethnicity. Among all diabetics, UPC index was significantly associated with achieving control of HbA1c (OR 1.19; 95 % CI 1.06–1.34), LDL cholesterol (OR 1.14; 95 % CI 1.00,1.30) and blood pressure (OR 1.28; 95 % CI 1.13–1.44). Among all patients with hypertension, UPC index was significantly associated with achieving blood pressure control (OR 1.28; 95 % CI 1.05–1.57). Among patients with diabetes, blacks (OR 0.90; 95 % CI 0.83–0.98) and Hispanics (OR 0.74; 95 % CI 0.62–0.89) were less likely than whites to achieve HbA1c control; and blacks were less likely than whites to achieve control of LDL cholesterol (OR 0.79; 95 % CI 0.68–0.90) and blood pressure (OR 0.74; 95 % CI 0.63–0.87). Among patients with hypertension, blacks were less likely than whites to achieve blood pressure control (OR 0.86; 95 % CI 0.75–0.98). These significant racial disparities in diabetes and hypertension outcomes were not significantly changed after adjusting for primary care continuity.

CONCLUSIONS: We identified relatively high rates of primary care continuity, which were associated with improved outcomes for patients with diabetes and hypertension. Significant racial disparities in chronic care outcomes were not related to the degree of primary care continuity. Programs including patient-centered medical homes may need to focus on more than pairing patients and physicians to impact existing racial disparities in quality of chronic care.

THE ROLE OF SOCIAL SUPPORT IN DRUG AND ALCOHOL USE AMONG FORMER PRISON INMATES **SUSAN CALCATERRA MD, MPH, BRENDA BEATY MPH, INGRID A. BINSWANGER MD, MPH, MS** Susan L. Calcaterra[1,2]; Ingrid A. Binswanger[2,1]; Brenda Beaty[3,4]. [1]Denver Health Hospital, Denver, CO; [2]University of Colorado, Aurora, CO; [3]University of Colorado, Aurora, CO; [4]Children's Hospital Colorado, Aurora, CO. (Tracking ID #1638479)

BACKGROUND: Prison inmates are at an increased risk of death upon prison release. Prior work suggests that overdose due to drugs and alcohol is a leading cause of death among recently released inmates. Among the non-incarcerated population, factors such as perceived social support, in the form of marriage and healthy relationships with family and friends, have been shown to be protective in maintaining abstinence. Factors which predict drug or alcohol use in prison inmates have not been examined. We aimed to identify factors associated with drug use and hazardous alcohol use in a population of recently released prison inmates.

METHODS: This study involved in-person, structured interviews with 200 former prison inmates recruited within 3 weeks of prison release as part of a prospective cohort study. Interviews were conducted using computer assisted survey software for sensitive questions. Sociodemographic characteristics were obtained during the baseline interview. Follow-up interviews were conducted after 3 months with 155 participants (76 % retention). Associations between perceived social support and drug use and/or hazardous drinking behaviors were determined using data obtained during the 3 month post release interview. Hazardous drinking behaviors were determined by using questions taken from the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) questionnaire, a 3-item alcohol screen that reliably identifies hazardous drinking behaviors. Drug use and alcohol use responses were not mutually exclusive. Social support was characterized as1) perceived conflict among family or friends, 2) employment status, 3) marital status, and 4) housing status. Associations between past 30 days drug use and/or hazardous drinking behaviors were examined using Fisher's exact tests and Wilcoxon tests. Multivariable logistic regression was used to assess the independent association of perceived social support with past 30 day substance use and/or hazardous drinking behaviors.

RESULTS: Of the 155 respondents, 73.6 % (n=114) were male. In the past 30 days, 17.5 % (n=27) had used drugs and 20.7 % (n=32) had exhibited hazardous drinking behaviors. Among those who used drugs, 63.0 % (N=17) were male, 40.7 % (n=11) were non Hispanic black, and the mean age was 43.4 years old (SD 8.9). Among those who exhibited

hazardous drinking behaviors, 75 % (n=24, p=NS) were male and had a mean age of 39.5 years old (SD 7.8; p=0.03). Among non Hispanic whites (NHWs), the majority reported hazardous drinking behaviors (46.9 %, n= 15 vs. 29.3, n=36, respectively; p=0.01). After adjusting for the effects of drug use on major social obligations, being bothered by family problems was associated with drug use (adjusted odds ratio [AOR] 3.27, 95 % CI 1.30–8.19). After adjusting for race/ethnicity, being bothered by family problems was also associated with hazardous drinking (AOR 2.28, 95 % CI 1.05–6.87). Being homeless was not found to be associated with drug use or hazardous drinking behaviors in the adjusted models.
CONCLUSIONS: Former inmates with perceived family problems had increased odds of past 30 day drug use and hazardous drinking behaviors. Future studies need to confirm a protective effect of family support and post-release substance use. These findings support a future study which would examine the effect of improving family relationships on post-release substance use.

THE ROLE OF THE PCP IN PREVENTIVE CANCER SCREENING USING A NOVEL POPULATION MANAGEMENT SYSTEM
Steven J. Atlas[1]; Jeffrey M. Ashburner[1]; Adrian Zai[2]; Yuchiao Chang[1]; Sanja Percac-Lima[1]; Douglas Levy[1]; Richard W. Grant1. [1]Massachusetts General Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. (Tracking ID #1633208)

BACKGROUND: Preventive cancer testing rates remain suboptimal despite known benefits of screening and use of visit-based reminders. Advances in health information technology (HIT) now permit population-based screening, but the best methods remain uncertain. We implemented a novel visit-independent, population management system within a large primary care (PC) network and compared two versions: one that involved PC providers (PCPs) in patient screening and one that did not. We hypothesized that involving PCPs would lead to more effective and efficient cancer screening.
METHODS: We randomized 18 PC sites within an academic network to intervention (n=9) or augmented usual care control (n=9) groups. Patients eligible for breast, cervical and colorectal cancer screening were included. All practices employed a novel HIT system that identified patients overdue for screening, mailed reminder letters, and tracked scheduling and completion of screening; used scheduling delegates to assist patients; and had access to patient navigators for those at high risk for non-adherence. In intervention practices, physicians (for their patients) and population managers (for other practice patients) personally screened real-time rosters of patients overdue for screening, and could choose an individualized method of patient contact (reminder letter, referral to scheduling delegate, referral to patient navigator) or defer screening. In control practices, all overdue patients were initially sent a reminder letter without provider review and then transferred to a delegate list. Intervention patients without provider action within 8 weeks defaulted to the automated control version. We examined average cancer screening test completion over 1-year of follow-up for each eligible patient and all eligible cancers using a mixed effects model accounting for clustering by PCP or practice and adjusting for age, race, insurance, language, and time since last visit.
RESULTS: Among 104,074 eligible patients, baseline screening rates were similar in intervention and control patients for breast (79.4 % vs. 79.8 %), cervical (80.9 % vs. 82.0 %), and colorectal (77.6 % vs. 76.4 %) cancer. Small but statistically significant differences in patient characteristics for age, gender, ethnicity, language spoken, insurance status and time since last visit were seen among intervention (n=51,166) and control (n= 52,908) patients (all p<0.001). Most intervention providers used the tool (88 of 98, 90 %) and reviewed 8,115 patients overdue for at least 1 cancer screening (6,017 selected to receive a reminder letter, 407 referred directly to a scheduling delegate, 48 referred to a patient navigator, and 1,744 were deferred from screening). An additional 6,159 letters were sent to intervention patients not reviewed by a provider (total 12,176 letters). In control practices, 17,237 patient letters were mailed. Adjusted average cancer screening rates did not differ among intervention and control practices for all cancers combined (79.6 % vs. 79.6 %, p=0.87), or breast (79.7 % vs. 79.7 %, p=0.98), cervical (80.6 % vs. 81.3 %, p=0.58), or colorectal cancer (78.0 % vs. 77.5 %, p=0.78).
CONCLUSIONS: Involving providers in a visit-independent, population management HIT system for breast, cervical or colorectal cancer screening did not increase screening rates compared to an automated reminder system. However, similar screening rates were achieved with fewer patient contacts in intervention practices.

THE SILO NEXT DOOR: PRIMARY CARE LEADERS' PERSPECTIVES ON COLLABORATING WITH HOSPITALS DURING HOSPITAL-TO-CLINIC CARE TRANSITIONS IN THE SAFETY NET
Oanh K. Nguyen[1]; Jenna Kruger[1]; S. Ryan R. Greysen[1]; Audrey Lyndon[2]; L. E. Goldman1. [1]University of California San Francisco, San Francisco, CA; [2]University of California San Francisco, San Francisco, CA. (Tracking ID #1642926)

BACKGROUND: Poorly coordinated care between hospital and outpatient settings, and delayed access to primary care contributes to hospital readmissions. Given financial penalties for readmissions, hospitals are investing in interventions to improve care transitions following discharge. In parallel, Medicaid managed care organizations are providing incentives to primary care clinics to improve care coordination. Despite this, there is little collaboration between hospitals and primary care practices in efforts to improve care coordination following discharge. We sought to understand what primary care leaders perceived as barriers and facilitators to working with hospitals to improve patient transitions from acute inpatient hospital settings to outpatient care.
METHODS: We conducted semi-structured telephone interviews with primary care leaders in California, focusing on 'safety net' clinics serving Medicaid and uninsured patients, who are at higher risk of readmission. We purposely sampled clinics to maximize variation in geography, urban vs. rural, and types of county health systems. Participants included medical directors, CEOs, and clinic champions for transitional care, care coordination or quality improvement. Questions focused on barriers and facilitators to collaboration with hospitals, including clinic priorities and quality improvement efforts, past or on-going collaboration with hospitals, and existing infrastructure. We systematically coded transcripts to identify emergent, recurring policy-relevant themes using thematic analysis and an inductive framework strategy.
RESULTS: We interviewed 21 primary care leaders (45 % response) at safety net clinics in 10 urban and rural counties. We identified the following themes around working with hospitals on transitions: Barriers: 1) current reimbursement does not provide incentives for care coordination; 2) competing priorities for resources (spending on physical infrastructure, expanding clinic capacity, core clinic functions, and measurement of policy-mandated quality measures) limits opportunities to focus on transitions and hospital collaboration; 3) lack of a shared communication infrastructure connecting settings/institutions. Facilitators: 1) external funding support for dedicated personnel and program development; 2) existing personal relationships with hospital leaders; 3) having a large number of shared patients with a hospital; 4) alignment of clinic and hospital missions.
CONCLUSIONS: Primary care leaders perceived reimbursement, competing priorities and lack of a shared communication infrastructure as major barriers to hospital collaboration, while facilitators included external funding, relationships with hospital leadership, a shared patient population and alignment of organizational priorities. Stakeholders interested in improving care coordination after discharge should consider revising reimbursement policies to align hospital and primary care incentives, providing resources for dedicated personnel and program development and facilitating information technology interoperability.
Table: Themes with Representative Quotes
Theme Representative Quote
Barriers Current reimbursement structure does not provide incentives for care coordination \"Fix the reimbursement system. That is the single biggest issue and that is what causes silos; it is the biggest impediment for hospitals and safety net providers to work together.\"
Competing priorities: spending on core clinic functions \"I think we're all financially strapped enough. You know, it looks like we're getting all these

big, big bucks but it's amazing how fast those…bucks go when you're providing medications, labs, and…other things for your patients. So I think that intentionally puts a strain on a relationship.\"
Competing priorities: clinic expansion \"Well, our biggest priority lately has been finding enough space to see the volume of patients.\"
Competing priorities: policy-mandated quality measures \"Now the focus is more towards the number of clinic visits that we have to make in order to qualify for certain government funding. [This] could be standing in the way of how to really best deliver care.\"
Lack of shared communication infrastructure across settings \"It's a lot of effort to get medical records back. It is often not timely…When patients do go to the ER and get admitted, we may or may not find out about it. So, the chances are that the very high risk, high cost, high frequency patients that are going to cycle in and out of more costly acute care is greater because we don't know that its happening. So, communication between facilities is one of the most challenging issues.\"
Facilitators Existing personal relationships with hospital leaders \"Our CEO…has had very deep and ongoing relationships with the [hospital] management and their leadership. So this has been a longstanding, well-developed relationship.\"
Alignment of clinic and hospital missions \"The local hospital…a lot of our missions are actually very intertwined, and so…they have actually sought us out to be more involved in hospital administrative work for their discharging.\"

THE SYMPTOMS OF GASTROESOPHAGEAL REFLUX DISEASE, GERD, ARE CORRELATED WITH BODY MASS INDEX, AST/ALT RATIO AND INSULIN RESISTANCE IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE IN JAPAN Motoshi Fujiwara[1]; Yuichiro Eguchi[2]; Hidetoshi Aihara[1]; Naoko E. Furukawa[1,2]; Hitoshi Eguchi[1]; Masaki Tago[1]; Motosuke Tomonaga[1]; Tsuneaki Yoshioka[1]; Masaki Hyakutake[1]; Yuta Sakanishi[3]; Itaru Kyoraku[1]; Takashi Sugioka[3]; Kazuma Fujimoto[5]; Shu-ichi Yamashita[1]. [1]Saga Medical School, Saga, Japan; [2]Saga Medical School, Saga, Japan; [3]Saga Medical School, Saga, Japan; [4]Saga Medical School, Saga, Japan. (Tracking ID #1635977)

BACKGROUND: In western countries, there is a significant relationship between the prevalence of gastroesophageal reflux disease (GERD) and metabolic syndrome consisting of visceral obesity, insulin resistance, et al. However, the relationship between the severity of upper gastrointestinal symptoms and metabolic risk factors is still controversial in Japan. The aim of this study is to clarify the relationship between the seriousness of the upper gastrointestinal symptoms defined by the frequency scale for the symptoms of gastroesophageal reflux disease (FSSG) and metabolic risk factors (in apparently normal individuals who received medical checkups and in patients with non-alcoholic fatty liver disease (NAFLD)).
METHODS: Two hundred twenty-eight individuals who lived in Saga, Japan and received medical checkups and underwent gastrointestinal endoscopy in 2009 (Group A) and 50 patients with NAFLD (Group B) were enrolled in this study. FSSG, biochemical examination of blood, waist circumference, amount of visceral fat measured by body-composition analyzer (BCA), and visceral fat area measured by abdominal computed tomography (CT) were evaluated.
RESULTS: There were no significant difference between group A (51.0± 9.5 years) and group B (51.4±12.3 years) in mean age. Mean body mass index (BMI) of Group B was higher than that of Group A (Group A: 23.1± 3.4, Group B: 27.2±4.2, respectively, $p<0.05$). In Group A, there were no correlation between FSSG score, and BMI, waist circumference, and visceral fat area, respectively. Furthermore, when Group A was divided into three subgroups by BMI (BMI<25, 25<and >28, >28, respectively), there was no significant difference in FSSG score among each subgroup. In contrast, there were significant correlations between FSSG score and BMI, AST/ALT ratio, and insulin resistance calculated by QUICKI ($r=0.34$, $R=-0.31$, $r=-0.29$, $p<0.05$, respectively) in Group B. Insulin resistance also showed significant relationship especially with the degree of esophageal dysmotility which could be discriminated from complaints about acid excretion by the type of FSSG questions. BMI was higher in Group B with GER symptoms (FSSG score >8) than Group B without GER symptoms or Group A both with and without GER symptoms (post hoc, $p<0.05$).
CONCLUSIONS: Presumably normal patients who undergo medical checkups show no correlation between the severity of the upper gastrointestinal symptoms and metabolic risk factors. However, in patients with NAFLD, increased BMI, AST/ALT ratio and insulin resistance are associated with an increased risk of developing GER symptoms. This study suggests that the treatment of obesity may improve GER symptoms in NAFLD patients in Japan.

THE USE OF INDIVIDUALIZED DASHBOARDS AND PAY-FOR-PERFORMANCE TO IMPROVE VENOUS THROMBOEMBOLISM PROPHYLAXIS COMPLIANCE BY HOSPITALISTS Henry J. Michtalik[1,2]; Howard T. Carolan[1]; Michael B. Streiff[1]; Elliott R. Haut[1,2]; Joseph Finkelstein[1]; Nowella Durkin[1]; Murali A. Padmanaban[1]; Brandyn D. Lau[1]; Daniel Brotman1. [1]Johns Hopkins University School of Medicine, Baltimore, MD; [2]Armstrong Institute for Patient Safety and Quality, Baltimore, MD. (Tracking ID #1638740)

BACKGROUND: Venous thromboembolism (VTE) accounts for over 100,000 deaths per year and costs the healthcare system approximately $15,000 per event. Methods to increase appropriate prophylaxis have included computerized physician order entry (CPOE) with decision support, dashboards, and pay-for-performance (P4P) programs. In this study, we sequentially examined CPOE-based decision support alone, group and individualized feedback using a dashboard plus decision support, and a P4P program in conjunction with dashboards and decision support to improve VTE prophylaxis.
METHODS: CPOE with decision support for appropriate VTE prophylaxis based on American College of Chest Physicians (ACCP) guidelines was incorporated into the admission order-sets for all adults admitted to our tertiary care academic medical center in 2008. Appropriate prophylaxis was audited through the CPOE system 24 h from admission. To further improve VTE prophylaxis, a web-based dashboard specific to the hospitalist group was launched in January 2011, providing both hospitalist group and individualized hospitalist compliance rates. Benchmarks were determined using this dashboard. After 6 months of feedback only, a P4P program was initiated with hospital funding. No payment was made to individual hospitalists with ACCP-compliant VTE prophylaxis rates of <80 %. Graduated payouts were made for compliance rates of 80–100 % to a maximum of $0.50 per work RVU. Using time series analysis, the percent compliance for the hospitalist group was compared during all three periods: CPOE alone, CPOE with dashboard, and CPOE with dashboard tied to P4P. The analysis was restricted to the non-teaching unit of the hospital where individual housestaff practice would be unlikely to confound the results. A sensitivity analysis explored the potential impact from physician turnover.
RESULTS: We examined 4,119 inpatient admissions by 38 hospitalists from 2008 to 2012. The 5 most frequent primary diagnoses were heart failure, acute kidney failure, syncope, pneumonia, and chest pain. Patients had a median age of 57 years [IQR: 44, 69], APR-DRG severity of illness score of 2 [IQR: 2, 3] and length of stay of 3 days [IQR: 2, 6]. VTE prophylaxis group compliance rates were 84 % (95 % CI: 83, 85), 90 % (95 %: 88, 93), and 94 % (95 %: 93, 96) for CPOE alone, CPOE with dashboard, and CPOE with dashboard tied to P4P respectively. Compliance significantly improved with both the use of the dashboard ($p<0.001$) and the addition of the P4P program ($p=0.01$). Annual individual physician VTE P4P payments ranged from $80 to $1,429 (mean $654; SD ±364). The total annual cost of the P4P program of $12,422 was distributed to 19 providers. Sensitivity analysis accounting for physician turnover did not significantly impact the comparisons.
CONCLUSIONS: Although CPOE with decision support assists with appropriate VTE prophylaxis, direct feedback using dashboards significantly improved compliance. This effect was further augmented by incorporating an individual physician pay-for-performance program. The total P4P payments for an entire year were less than the cost of a single VTE event, suggesting an actual cost-savings. Real-time dashboards and physician-level incentives may assist hospitals in reducing preventable harm and achieving quality and safety benchmarks.

THE ASSOCIATION BETWEEN PRIMARY CARE CONTINUITY, ACCESS, AND CARE COORDINATION WITH HEALTH OUTCOMES AMONG A NATIONAL COHORT OF VETERANS Karin M. Nelson[1]; Haili Sun[1]; Nancy Sharp[1]; Emily D. Dolan[1]; Charles Maynard[1]; Gordon Schectman[2]; Stephan D. Fihn3. [1]Department of Veterans Affairs, Seattle, WA; [2]Department of Veterans Affairs, Seattle, WA; [3]Department of Veterans Affairs, Seattle, WA. (Tracking ID #1633498)

BACKGROUND: The Veterans Health Administration (VHA), the largest integrated health system in the US, has been implementing a patient-centered medical home model, called the Patient Aligned Care Team (PACT), that is intended to improve coordination of health services, increase non-face-to-face access, and improve continuity with assigned providers in primary care. We sought to determine if these factors were associated with the likelihood of hospitalization among veterans receiving primary care within VHA.
METHODS: We analyzed national data on over 4.3 million Veterans enrolled in the VHA from 4/2009 to 4/2010. We constructed logistic models to assess the relationship between attributes of PACT and VHA hospitalization during the subsequent year (4/2010–4/2011) among Veterans with 2 or more primary care visits, adjusting for demographic characteristics, medical and psychiatric co-morbidity and accounting for clustering by facility. Continuity was defined using the proportion of visits to the Veteran's assigned primary care provider. Access to care outside of clinic visits was assessed by the use of primary care telephone clinics and by primary care group visits. We also examined indicators of team-based care, such as visits with a clinic nurse. Results were stratified by age greater or less than 65 years.
RESULTS: Of Veterans enrolled in primary care, 372,170 (8.5 %) were admitted to a VHA hospital during the subsequent year and 145,142 (3.3 %) died. Among veterans over age 65, increasing age and presence of medical or psychiatric conditions were associated with a greater likelihood of admission to a VA hospital. Veterans with an increasing proportion of primary care visits with their assigned primary care provider (OR 0.76, 95 % CI 0.72, 0.80 for all visits with the same PCP compared with less than 50 % of visits with PCP) and a visit with the clinic RN (0.92, 95 % CI 0.87, 0.98) had a lower likelihood of hospitalization. Similar to the older age group, lower risk for admission was associated with an increasing proportion of primary care visits with their assigned primary care provider (OR 0.88, 95 % CI 0.86, 0.89 for all visits with the same PCP compared with less than 50 % of visits with PCP). Primary care phone visits and group visits were not associated with subsequent hospitalizations.
CONCLUSIONS: Among a national cohort of veterans, key components of the patient-centered medical home within VHA, notably continuity with a primary care provider, were associated with a lower likelihood of hospitalization.

THE ASSOCIATION OF PRIOR CULTURAL COMPETENCE TRAINING AND PERCEPTIONS OF THE DEPARTMENTAL ENVIRONMENT WITH SELF-REPORTED CROSS-CULTURAL BEHAVIORS IN PRACTICE Rebeca Rios[1]; Tanjala S. Purnell[1]; Jessie K. Kimbrough-Sugick[1]; Letitia Wright[1]; Stephen Sisson[1]; Brian K. Gibbs[2]; Leonard S. Feldman[1]; Rosalyn W. Stewart[1]; Lisa A. Cooper1. [1]Johns Hopkins University School of Medicine, Baltimore, MD; [2]Johns Hopkins University School of Medicine, Baltimore, MD. (Tracking ID #1641143)

BACKGROUND: Training in cultural competence for health professionals is increasingly recognized as an important target for improving quality of care and reducing ethno-racial health care disparities. Learning and practice environments have an important influence on patient-centered and cross-cultural (CC) behaviors, which strengthen the patient-physician relationship. Yet, little is known about the influence of cultural competence training and environmental characteristics on performing CC behaviors in clinical practice. The objective of this study was to examine whether prior cultural competence training and perceptions of the departmental environment were independently associated with self-reported frequencies of key CC behaviors within a university teaching setting.
METHODS: We surveyed faculty, fellows, and residents within 10 clinical departments of an urban academic medical institution. Outcome measures were self-reported frequencies of 3 specific CC behaviors: 1) asking patients/families about their explanations of illness; 2) asking patients/families about their expectations of care; and 3) finding ways to adapt clinical services to patient/family cultural preferences. One item measured prior CC training ("none or very little" vs. "some or a lot"). Departmental environment measures were perceived commitment of departmental leaders to cultural competence (agree vs. disagree), and interactional diversity, consisting of self-rated exposure to diverse perspectives and positive interracial interactions (satisfied vs. dissatisfied). Differences in frequencies of CC behaviors (dichotomized into ≤75 % versus >75 % of the time) by prior CC training and departmental environment measures were assessed using the chi-square statistic and multivariable logistic regression.
RESULTS: The sample consisted of 1,220 (47 % response rate) respondents; 52 % were male, and mean age was 39.8 years (SD=10.7). Sixty-two percent were Caucasian, 21 % Asian, 10 % African American, and 4 % reported Hispanic ethnicity. 66 % of were born in the U.S. Two thirds of the study sample reported having at least some CC training; 60 % endorsed interactional diversity, and 71 % of the sample believed that departmental leaders were committed to cultural competence. Overall, 32 % of respondents reported that they elicit explanations of health and illness, 36 % ask about expectations for care, and 44 % adapt services to cultural preferences >75 % of the time. Compared with participants who received little or no prior CC training, those who received prior CC training were more likely to report they frequently elicit explanations (OR: 1.5; 95 % CI: 1.1–2.0), ask about expectations, (OR: 1.9; 95 % CI: 1.4–2.6), and adapt care to cultural preferences (OR: 1.7; 95 % CI: 1.2–2.2). Similarly, those who endorsed that their departments had a climate of interactional diversity were more likely than their counterparts to perform 2 of the CC behaviors (elicit explanations, OR: 1.8; 95 % CI: 1.2–2.5; asking about expectations, OR: 1.7; 95 % CI: 1.2–2.4).
CONCLUSIONS: The application of prior training to clinical practice represents the deepest level of educational success. Prior CC training and perceived interactional diversity in one's department were associated with cross-cultural behaviors in practice. Results highlight the importance of departmental support of both cultural competence training and diverse environments. Future work is warranted to identify specific aspects of medical institutional environments that shape cross-cultural training and care.

THE CYCLE OF SUBSTANCE ABUSE, PROSTITUTION AND PSYCHOLOGICAL DISTRESS AND ITS EFFECT ON HEALTH SEEKING BEHAVIOR AMONG HIV POSITIVE BLACK WOMEN. Jennifer L. Grant[2,1]; Loida Bonney[1]; Judith C. Barker[3]. [1]Emory University School of Medicine, Atlanta, GA; [2]Rollins School of Public Health, Atlanta, GA; [3]University of CA, San Francisco, San Francisco, CA. (Tracking ID #1637292)

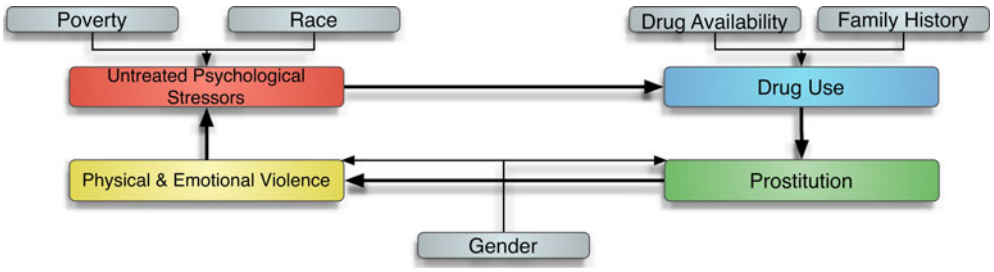
BACKGROUND: Black women in the South have increasing rates of HIV infection and disproportionately high rates of adverse HIV-related outcomes. To explain these findings, several studies have reported the association of substance abuse, and gender related violence with increased risk for HIV infection. However, fewer have looked at how and why drug use interferes with engagement in HIV care following diagnosis. The objective of this analysis was to examine how the vulnerabilities of poverty, race, and gender influence drug abuse, prostitution and psychological distress, and their effects on health seeking behavior among HIV positive black women through the narratives of Black women.
METHODS: Individual semi-structured in-depth interviews were conducted with 20 HIV-positive Black women residing in Atlanta, GA

using a phenomenological approach. Participants were identified from an electronic medical record review of an HIV primary care clinic and recruited by telephone call or formal letter. Inclusion criteria specified that women identify as Black, had been aware of their HIV serostatus for at least 2 years, and had been linked to HIV care. Participants were asked about their racial, gender, and socioeconomic identities and how these affected treatment of their HIV. In addition, questions were directed to include experiences with substance abuse, criminal activity, and romantic relationships. Finally, participants were invited to disclose their experiences with the HIV health care system. Interviews were digitally recorded, transcribed and analyzed thematically.

RESULTS: One hundred eleven black women were screened for eligibility during the initial chart review. Seventy-eight women were contacted. There was a high rate of non-response. Almost all 20 participants reported annual incomes below the federal poverty level. Ten participants admitted to prior substance abuse. Of the 10, 8 spoke of engaging in sex work to finance their addiction and an additional 2 entered into ongoing relationships with men in exchange for housing, money, or drugs. All 10 of these women stated their sex work or relationships lead to considerable amounts of violence and sexual exploitation, which lead to psychological distress and further drug abuse. All women reporting history of substance abuse stated that this cycle of addiction, specifically their preoccupation with obtaining drugs, low self worth and/or lack of desire to live, was their primary reason for not seeking HIV healthcare.

CONCLUSIONS: We conclude that there are low-income Black women with HIV-infection in the South who are trapped in a self-reinforcing cycle of drug abuse, prostitution, and psychological distress. Increasing mental health resources and harm reduction and empowerment programs may facilitate engagement in care for this highly vulnerable population. Intervention at multiple points in the cycle can lead to improved outcomes.

Race and poverty promote lack of access to mental health care following trauma. Family history of substance abuse and widespread availability of illegal drugs in Black communities promote to drug use. Gender dynamics in the streets influences entry into prostitution as well as occurrences of physical and emotional violence.



THE ECONOMIC CONSEQUENCES OF CONTEMPORARY PATTERNS OF ANTIDEPRESSANT PRESCRIBING Niteesh K. Choudhry; Daniel A. Lieberman; Jerry Avorn; Joan Landon. Brigham and Women's Hospital, Harvard Medical School, Boston, MA. (Tracking ID #1643949)

BACKGROUND: Serotonin norepinephrine reuptake inhibitors (SNRIs) are frequently prescribed as initial antidepressant therapy, although selective-serotonin reuptake inhibitors (SSRIs) are equally or more effective as well as being less expensive. We sought to evaluate recent patterns of antidepressant prescribing and their economic consequences.

METHODS: We examined a national cohort of privately insured patients with an open formulary and tiered copayments. We identified patients ≥18 years of age with at least 2 years of prior continuous enrollment who initiated a SSRI, SNRI or atypical antidepressant (bupropion, mirtazapine) between January 2008 and June 2011. Patients were excluded if they previously received any antidepressant or had diabetic neuropathy, chronic pain, fibromyalgia, bipolar disorder, or psychotic disorders. For each month, we calculated the percent of patients receiving each medication class and the percent receiving branded drugs. We assessed the use of each class over time using bivariate linear regression models. We used multivariate linear regression models to identify predictors of being initiated on each class, including age, sex, geographical region, copayment, clinical comorbidities, and month. We next identified patients with at least 6 months of continuous enrollment after filling their original prescription and calculated patient, insurer, and total costs for antidepressants during those 6 months for these patients. Finally, we estimated projected savings if patients prescribed SNRIs had received the generic SSRI sertraline.

RESULTS: Our cohort consisted of 248,550 patients who initiated antidepressants during the study period (62.5 % female, average age 42.8). SSRIs accounted for 76.9 % of the initial prescriptions, SNRIs for 9.6 %, and atypicals for 13.5 %. The percent of patients initiating therapy with SSRIs did not significantly change over time ($P>0.10$). In contrast, SNRI use decreased by an average of 0.12 % per month ($P<0.001$) and atypical use increased by an average of 0.11 % per month ($P<0.001$). Brand drug use decreased from 38.1 % to 26.7 %, a 0.49 % monthly decrease ($P<0.001$). Characteristics associated with a higher probability of receiving SNRIs, as compared to other antidepressants, were: female sex (odds ratio [OR] 1.25, $P<0.001$) older age (OR 1.01 per year, $P<0.001$), and higher Charlson comorbidity score (OR 1.07 per point, $P<0.001$). Combined patient and insurer spending for patients who initiated therapy with SSRIs was $358.32 (patient costs: $57.55; insurer costs: $300.78) over the subsequent 6 months. In contrast, SNRI and atypical treated patients had average costs of $673.30 (patient costs: $118.26; insurer costs: $555.03) and $454.92 (patient costs: $53.2[1]; insurer costs: $401.71), respectively. If patients receiving SNRIs had instead been prescribed sertraline, this would result in annual savings of more than $700 per patient.

CONCLUSIONS: Despite higher costs and equal or inferior clinical effectiveness, a considerable proportion of privately insured patients received initial antidepressant therapy with SNRIs. Though the proportion of patients receiving SNRIs and branded antidepressants decreased over the study period, savings would be considerable if patients starting SNRIs had instead been prescribed SSRIs.

THE EFFECT OF MEDICAID STATUS ON WEIGHT LOSS OUTCOMES AFTER GASTRIC BYPASS SURGERY Elsbeth Jensen-Otsu[1]; Emily Ward[2]; Breana Mitchell[3]; Jonathan A. Schoen[3]; Kevin Rothchild[3]; Gregory L. Austin[2]. [1]University of Colorado Denver, Aurora, CO; [2]University of Colorado Denver, Aurora, CO; [3]University of Colorado Denver, Aurora, CO. (Tracking ID #1642234)

BACKGROUND: Severe obesity (BMI>40 kg/m2 or >35 kg/m2 with one or more co-morbid conditions) disproportionately affects

individuals in the lowest socioeconomic status group, and these individuals are more likely to be enrolled in state Medicaid programs. Bariatric surgery, including Roux-en-Y gastric bypass (RYGB), achieves the greatest long-term weight loss for severe obesity and is increasingly utilized. Patients with severe obesity enrolled in Medicaid are less likely to undergo bariatric surgery, and not all state Medicaid programs provide coverage for bariatric surgery. The purpose of this study was to compare weight loss outcomes after RYGB surgery between patients with Medicaid and other insurance.

METHODS: This was a retrospective cohort study of 318 consecutive patients (n=113 for Medicaid; n=130 for other government insurance; n=75 for commercial insurance) who underwent RYGB surgery at a single academic center between 2004 and 2011 and who had at least 6 months of follow-up after RYGB. Data on age, race, gender, pre-surgery weight/BMI, comorbidities, and insurance provider were collected. Percent weight loss (PWL) and absolute weight loss (AWL, in kg) were recorded at 6 months. Linear regression analysis was used to compare PWL and AWL at 6 months between patients with Medicaid, other government insurance, and commercial insurance.

RESULTS: Patients with other government insurance were less heavy and had a lower BMI compared to both the Medicaid and commercial insurance patients (both $p<0.001$) prior to RYBG. Medicaid patients (mean age 35.8 y) were substantially younger (overall $p<0.0001$) compared to other government (mean age 44.4 y) and commercial insurance patients (mean age 42.9 y). The proportion of female patients was higher ($p=0.012$) in the Medicaid group (94.7 %) compared to other government insurance (84.6 %) and commercial insurance patients (81.3 %). There was no difference in the racial distribution. In unadjusted analyses, Medicaid patients had significantly greater PWL by 1.91 percentage points ($p=0.03$) compared to commercial insurance patients. Patients with other government insurance had a borderline significant ($p=0.061$) increase in PWL of 1.61 percentage points compared to commercial insurance patients. There was no significant difference in absolute weight loss between the 3 groups. However, increasing age was associated with decreased PWL ($p=0.002$) and AWL ($p<0.001$) across all patients and was a confounder of the relationship between PWL and insurance provider. In regression analysis adjusted for age, Medicaid patients had a non-significant increase in PWL ($p=0.163$) compared to patients with commercial insurance. Interestingly, PWL for those with other government insurance was now significantly increased compared to the commercial insurance patients ($p=0.039$). When adjusted for age, there were no differences in AWL. Hospital length of stay was similar between the three groups.

CONCLUSIONS: Our data support more recent data that Medicaid patients have at least equal weight loss following RYGB for severe obesity. Although patients with Medicaid are less likely to undergo RYGB surgery, it is the most effective treatment for severe obesity. Given the younger cohort of patients in a Medicaid population, these patients may derive even greater long-term benefit than other patients. This should be considered as many states expand Medicaid and make policy decisions regarding obesity treatment.

THE EFFECT OF PATIENT-CENTERED MEDICAL HOME TRANSFORMATION COUPLED WITH PAYMENT REFORM: PATIENT EXPERIENCE OUTCOMES Leonie Heyworth[1,2]; Asaf Bitton[2]; Stuart R. Lipsitz[2]; Thad Schilling[3]; Gordon D. Schiff[2]; David W. Bates[2]; Steven R. Simon[1,2]. [1]VA Boston Healthcare System, Boston, MA; 2Brigham and Women's Hospital, Boston, MA; [3]Atrius Health, Boston, MA. (Tracking ID #1642620)

BACKGROUND: The patient-centered medical home (PCMH) has emerged as a patient-focused, quality-driven, cost-effective model to revive primary care. Linking practice transformation to payment reform may incent more rapid adoption of the PCMH model. Existing literature has examined short-term patient satisfaction outcomes, but results have been mixed. We undertook a 3-year quasi-experimental study to evaluate patient experience following a pilot PCMH transformation with payment reform at an intervention and control clinic site.

METHODS: Study setting was 2 internal medicine clinics of a large multi-specialty group of 14 practices in greater Boston. The pilot PCMH transformation started in April 2009 and consisted of team restructuring, process improvements and replacing fee-for-service physician reimbursement with a salary scheme. To understand patient experiences with care "pre" and "post" the PCMH transformation, we analyzed 4,124 responses to the Press-Ganey patient experience survey in both intervention and control sites from 2008 to 2010. Our primary outcome was overall visit satisfaction. Secondary outcomes reflected the core principles of the PCMH: enhanced access to care, visit coordination and care, physician communication, and whole-person orientation of care. Each outcome was rated on a 1–5 Likert-type scale from "very good" to "very poor". Individual survey responses were linked to each patient's medical record, providing demographic information, healthcare utilization, certain medical conditions and provider characteristics. Propensity score weighting adjusted for case-mix differences between patients in the control and intervention groups in the pre and post periods. Multivariable logistic regression models assessed the adjusted differences between patients' experiences before and after the PCMH transformation at intervention and control sites.

RESULTS: Between 2008 and 2010, 4,124 patients at the intervention and control sites responded to the Press-Ganey patient experience survey. Pre-PCMH intervention (January 2008–March 2009), 1,224 patients had received care at the intervention site and 803 received care at the control site. Post-intervention (October 2009–December 2010), 1,278 patients at the intervention site and 819 patients at the control site completed a post-transformation survey. After propensity weighting on all available demographic and clinical status variables, intervention and control sites were similar with respect to all baseline variables. Pre-intervention, 62 % of intervention participants were very satisfied compared with 68 % post-intervention ($p=0.004$). At the control site, 63 % of patients felt satisfied pre-intervention versus 64 % post-intervention ($p=0.58$). Using a difference-of-differences approach, a trend towards improved overall satisfaction emerged at the intervention site ($p=0.10$). In analysis of secondary outcomes, intervention participants were more likely to report faster speed of registration ($p=0.04$), and provide superior ratings to the four questions in the personal physician and communication domain (all $p\leq0.05$).

CONCLUSIONS: While earlier PCMH pilot studies showed no improvement in patient satisfaction, using a quasi-experimental design to evaluate patient experience following PCMH practice transformation coupled with payment reform, we found meaningful improvements in key areas. Future studies are needed to determine if physicians, over time, will thrive under salary-based reimbursement.

THE EFFECTIVENESS AND COSTS OF TWO POPULATION-BASED CANCER SCREENING PROGRAMS: THE VALUE OF PCP INPUT Douglas Levy[1]; Vidit Munshi[2]; Jeffrey M. Ashburner[3]; Adrian Zai[5]; Richard W. Grant[3]; Steven J. Atlas[3]. [1]Massachusetts General Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA; [3]Massachusetts General Hospital, Boston, MA; [4]Massachusetts General Hospital, Boston, MA. (Tracking ID #1639629)

BACKGROUND: Rates of guideline-recommended preventive cancer screening remain suboptimal despite proven health benefits. Our primary care (PC) network recently completed a practice-randomized trial comparing two versions of a health information technology (HIT) population management system to increase preventive cancer screening in eligible patients. We assessed the relative effectiveness and costs of these two population management programs.

METHODS: The HIT system included a patient registry which continuously identified PC network patients overdue for breast, cervical, or colorectal cancer screening; permitted targeted outreach; and tracked tests scheduled and completed. The control program used an automated outreach process where overdue patients were first sent letters asking them to call and schedule an appointment. If there was no response, delegates in the provider's office would call the patient. If there was still no response, patients at high risk for non-adherence were assigned to navigators who would work closely with patients to complete screening. The intervention program leveraged providers' personal knowledge to update patients' screening status or designate them for personalized letter, phone, or navigator outreach. If a provider did not act within 8 weeks, the patient defaulted to the automated outreach used in the control arm. Nine practice sites were randomized to each study arm. Effectiveness was measured as the proportion of time eligible patients were up to date on all screening (up to 3 tests). We used micro-costing techniques to estimate the costs of the HIT tool, HIT training, mailing materials, and clinical staff time over 1 year. Monte Carlo methods were used to aggregate costs taking into account uncertainty in individual parameter values.
RESULTS: Over the 1-year study period, there were 104,074 eligible patients. Adjusting for practice-level clustering, patient age, race, insurance, language, and time since last visit, patients in intervention and control groups spent equal amounts of time with all pertinent screenings completed (79.9 % vs. 79.6 %, $p=0.87$). We estimated the cost for the control arm was $167,170 while the cost for the intervention arm was $215,377 (95 % CI for difference $1,717–$126,321). One-time costs (software, training) were lower for control ($125,144) than intervention ($175,780; 95 %CI for difference $6,265–$128,211), driven almost entirely by the additional complexity of the intervention software design. However, ongoing costs (mailing, personnel) were somewhat higher for the control arm ($42,026) than intervention ($39,596; 95 % CI for difference −$8,709–$15,248). Physicians estimated they spent less time managing patients' cancer screening in the intervention arm than in the control arm, though this difference was only statistically significant for Pap tests (24.5 min/day intervention, 30.0 min/day control, $p=0.04$). Sensitivity analyses suggest that software costs, and therefore overall program costs, could be increased 4 to 5 times if the program were introduced in a setting where there was substantial incompatibility across existing information systems.
CONCLUSIONS: An automated program of patient outreach achieved identical screening success at lower cost compared to one designed to take advantage of providers' personal knowledge of their patients. Standardized software design could reduce one-time costs and make the intervention approach more cost-effective compared to the control.

THE IMPACT OF AN HIV ADHERENCE INFORMATICS INTERVENTION ON PATIENT-PROVIDER COMMUNICATION ABOUT ART ADHERENCE Barbara G. Bokhour[1,2]; Jeffrey Solomon[1]; Michael B. Laws[5]; Allen L. Gifford[1,2]; Matthew B. Goetz[3]. [1]ENRM Veterans Affairs Medical Center, Bedford, MA; [2]Boston University School of Public Health, Boston, MA; [3]VA Greater Los Angeles Health Care System, Los Angeles, CA; [4]Brown University, Providence, RI. (Tracking ID #1641720)

BACKGROUND: Successfully managing HIV infection depends upon patients' strict adherence to antiretroviral (ART) medication regimens. Communication in patient-provider encounters is a critical component of fostering adherence, and informatics-based interventions offer a promising means of improving communication. MedCHEC uses a tablet-computer pre-visit clinical assessment, plus tailored adherence support, to improve HIV medication adherence. One mechanism through which such interventions may have an effect on outcomes is through its effect on the patient-provider clinical encounter. The goals of this study were to evaluate the impact of the MedCHEC tablet-computer pre-visit clinical assessment on the actual communication between patients and providers in HIV-related clinical encounters.
METHODS: We audio-recorded and analyzed a sample of 42 patient-provider clinical visits with 12 providers in the MedCHEC study at two Veterans Affairs HIV clinics. Of these, 21 patients had received the MedChec intervention, while 21 were in the control group and received usual care. Audio-recorded visits were transcribed verbatim and uploaded into NVivo 10, a coding software program. We coded interactions for specific reference to the output of the MedChec tablet intervention, different types of adherence talk and the speech acts (ways of talking) for the adherence talk that was present. We then compared the proportion of types of talk for patients in the intervention vs. control groups. In the intervention group, we also compared adherence noted in the tablet reports with the discussion of adherence in the interactions.We qualitatively examined discussions of nonadherence to HIV medications, to identify who initiated such discussions and the extent to which physicians inquired about the reasons for nonadherence and/or engaged in problem-solving with patients about nonadherence.
RESULTS: Fourteen of the 21 tablet reports indicated ART adherence problems. However, physicians made reference to tablet reports in only 3 of these interactions. Physicians in the intervention group more frequently engaged in any type of "adherence talk", including inquiring about adherence, nonadherence problem-solving, and medication side effects. In both intervention and control interactions, when engaged in adherence talk, physicians most frequently use closed questions (questions with "yes" or "no" answers) and the expression of factual information (for example, explaining the importance of ART adherence). In 12 interactions, equally distributed across groups, providers did not explore reasons for nonadherence or engage in nonadherence problem-solving, despite indications by patients that they were nonadherent.
CONCLUSIONS: Although physicians explicitly referenced the tablet report in only three interactions, physicians in the intervention group exhibited more adherence talk, which might be due to having been exposed to tablet reports. However, because physicians used language forms not conducive to encouraging patients to elaborate on nonadherence, and because some physicians did not explore nonadherence with patients who raised the topic, our findings suggest that doctors could benefit from interventions geared toward how to engage in discussions about and find solutions to improve patient adherence to ART.

THE IMPACT OF ELIMINATING MEDICATION COPAYMENTS ON DISPARITIES IN CARDIOVASCULAR CARE Niteesh K. Choudhry[1]; Katsiaryna Bykov[1]; William Shrank[1]; Michele A. Toscano[2]; Wayne Rawlins[2]; Jessica Myers[1]. [1]Brigham and Women's Hospital and Harvard Medical School, Boston, MA; [2]Aetna, Hartford, CT. (Tracking ID #1640327)

BACKGROUND: Racial and ethnic disparities in cardiovascular care have been widely documented. Reducing copayments for highly effective medications, such as those prescribed after myocardial infarction (MI), has been shown to improve medication adherence and reduce rates of major vascular events; however, the impact of such programs on health disparities is unknown. We used data from the Post-Myocardial Infarction Free Rx Event and Economic Evaluation (MI FREEE) trial to evaluate whether pharmacy benefit design changes had differential effects based on race/ethnicity. In addition, we assessed the accuracy of indirect methods of race/ethnicity identification by comparing results obtained using RAND's geocoding and surname techniques with those based upon self-reported race/ethnicity information.
METHODS: The effect of full prescription coverage as compared to usual prescription coverage for all statins, beta-blockers, angiotensin converting enzyme inhibitors and angiotensin receptor blockers prescribed after MI was examined in 2,387 patients enrolled in the

MI FREEE trial for whom both self-reported and indirect race/ethnicity information was available. Cox proportional hazards models and generalized estimating equations with interaction testing were used to examine the trial's impact on the trial's primary outcome (time to first major vascular event or revascularization) and total health spending for white and non-white subjects. We classified patients as being white using indirect methods if their predicted probability of white race was ≥55 %. We also used each patient's predicted probability of white race to create 100 imputed race variables and then compared the intervention's impact for white and non-white patients.

RESULTS: Providing full drug coverage significantly reduced rates of the primary outcome among patients who self-identified as being non-white (hazard ratio [HR] 0.62, 95 % confidence interval [CI] 0.41–0.94, $p=0.03$) but not for those of white race/ethnicity (HR 0.96, 95 % CI 0.77–1.20, $p=0.74$; p-value for interaction=0.05). Similarly, using self-identified race/ethnicity, the intervention reduced total health care spending among non-whites (relative spending 0.28, 95 % CI 0.14–0.56, $p<0.05$) but not among white subjects (relative spending 1.26, 95 % CI 0.57–2.79, $p=0.56$; interaction p-value <0.001). In contrast, when race/ethnicity was assessed using indirect methods, the impact of full coverage did not differ for white and non-white patients (interaction p-value 0.85–0.93).

CONCLUSIONS: Eliminating copayments for post-MI secondary prevention drugs was significantly more effective at reducing rates of major vascular events or revascularization, as well as total health care spending, among patients who self-identified that they were not white. These results suggest that eliminating cost-sharing for evidence-based post-MI medications may help reduce cardiovascular disparities. In addition, we obtained quantitatively and qualitatively different results using indirect race/ethnicity identification methods, suggesting that these techniques may not accurately capture race and ethnicity.

THE IMPACT OF PRICE TRANSPARENCY ON MEDICAL DECISIONS AND PRACTICE: A SYSTEMATIC REVIEW OF THE LITERATURE Celine Goetz[1]; Stephen R. Rotman[1]; Helen-Ann B. Epstein[2]; Tara F. Bishop[3,4]. [1]New York-Presbyterian Hospital-Weill Cornell Medical Center, New York, NY; [2]Weill Cornell Medical College, New York, NY; [3]Weill Cornell Medical College, New York, NY; [4]Weill Cornell Medical College, New York, NY. (Tracking ID #1638105)

BACKGROUND: Given rising health care costs, policymakers and the medical community have called for more price transparency to allow physicians and patients to make cost-conscious decisions about medical care. The purpose of this study was to systematically review studies that have examined the impact of price transparency on physicians' use of services, on cost of care, or on changes in physician decisions.

METHODS: We performed a systematic review using PubMed, Web of Knowledge, ABI/Inform, Academic Search Premiere for studies published in English between 1982 and 2012. We included articles that studied the effect of price transparency interventions (including educational interventions) on the use of services, cost of care, or changes in physician decisions. We included studies that had a concurrent comparison group and those that used a pre-post design with no concurrent comparison group. We only included studies that provided quantitative results. We did not include studies where the outcome was change in attitudes, but did include studies where the outcome was changes in case-based decisions. One reviewer assessed titles and abstracts. Two reviewers independently reviewed full-text articles. When the reviewers disagreed, an additional reviewer resolved the discrepancy. The following data were extracted from the articles: study design, setting, type of intervention, type of participants, number of participants, outcome measures, and results. The quality of each article was rated using the GRADE criteria.

RESULTS: We identified 16 articles that met our inclusion and exclusion criteria. Nine (56.3 %) studies used a pre-post design; 7 (43.8 %) were prospective with a concurrent control group. Only one study randomized subjects. Five (31.3 %) studies used hypothetical cases and looked for differences in physician decision-making. The other 11 (68.8 %) studies looked at changes in clinical practice and used outcomes of either cost or use of specific tests, drugs, or procedures. The types of interventions varied from educational interventions to labeling supplies and medications to alerts using electronic systems. Eleven (68.8 %) studies demonstrated lower costs or use after the intervention or for the intervention group. Three (18.8 %) had mixed effects and 2 (12.5 %) had no effect.

CONCLUSIONS: Few studies have rigorously assessed the impact of price transparency on use of services, cost of care, or changes in physician decisions. The types of interventions and study designs that have been used have been very heterogeneous. The majority of studies, however, showed lower cost or use with these interventions.

THE IMPACT OF PROFESSIONAL INTERPRETATION ON LENGTH OF STAY IN AN OBSERVATION UNIT Christopher Moreland[1]; Letitica Z. Bresnahan[1]; Wayne Fischer[2]. [1]The University of Texas HSC-San Antonio, San Antonio, TX; [2]The University of Texas Medical Branch, Galveston, TX. (Tracking ID #1645335)

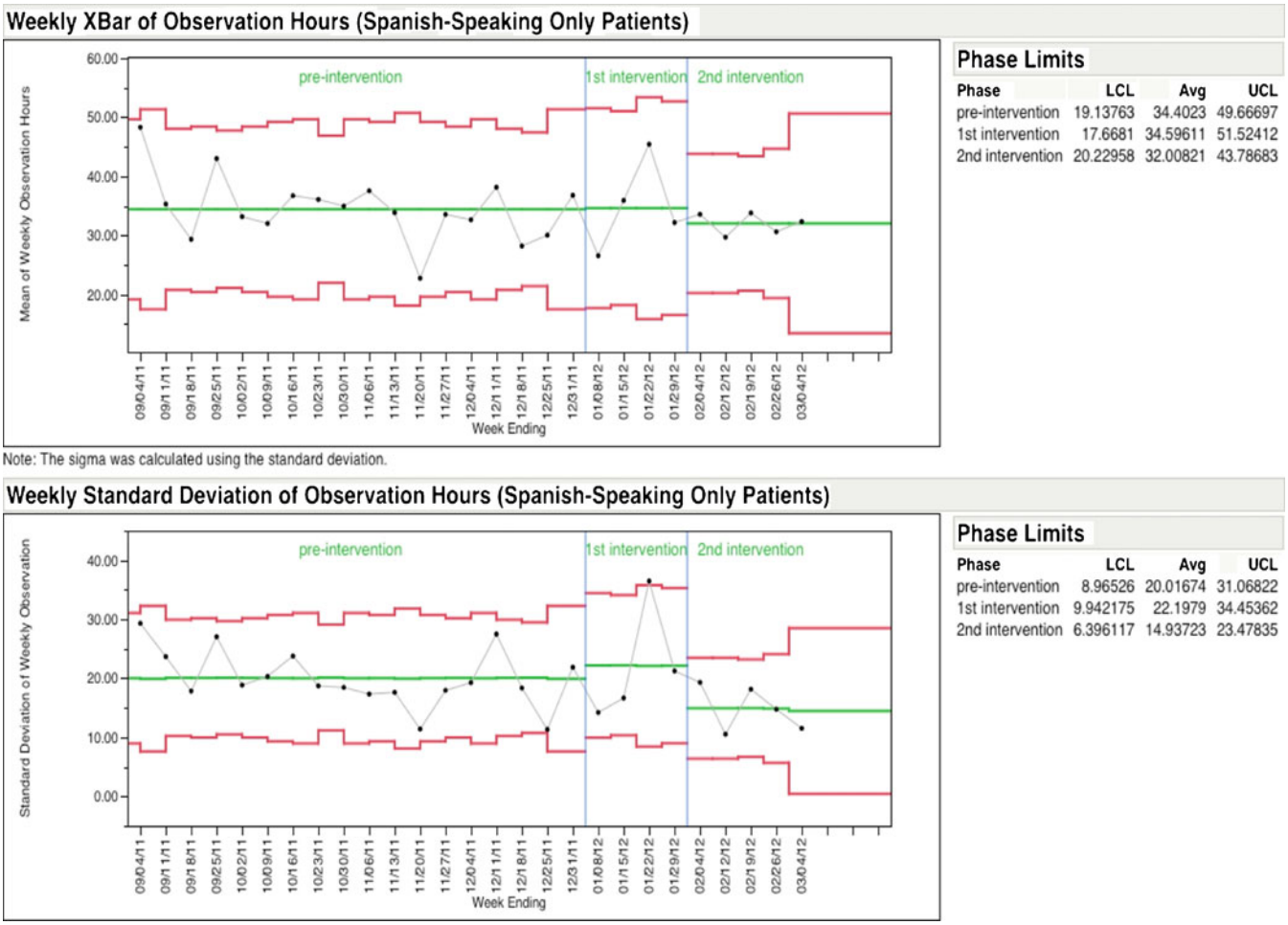
BACKGROUND: Language barriers contribute to poor access to healthcare. According to the U.S. Census 2007 American Community Survey, about 34.5 million Americans spoke Spanish. The Joint Commission requires that hospitals provide interpretation services for limited-English proficient (LEP) people. Professional interpretation can decrease hospital length of stay (LOS) by days. No study to our knowledge has evaluated the impact of interpretation services on LOS in hospital observation units, where LOS is measured in hours.

METHODS: We aimed to measure the impact of Spanish interpretation on LEP patients' LOS in an observation unit. On admission, nurses identified and documented Spanish language use. A Pre-Intervention phase ran September-December 2012, followed by two interpretation phases: telephone and in-person. In January 2012 (Intervention 1), a dual-handset telephone was placed in each room. Providers received education on telephone availability and encouragement to use them with LEP patients. In February 2012 (Intervention 2), a community-based interpretation vendor provided a professional, on-site interpreter for the observation unit during weekdays. The primary measure was observation unit LOS in hours.

RESULTS: Pre-Intervention, there were 319 admissions of Spanish speakers with a mean LOS of 34.4 h (SD 20.5). During Intervention 1, there were 60 admissions with a mean LOS of 34.6 h (SD 23.3). During Intervention 2, there were 65 admissions with a mean LOS of 32.0 (SD 15.4). When comparing Pre-Intervention and Intervention 1 phases, the variances (by F test) were not statistically significantly different, nor were the mean LOS. However, the variances were statistically significantly different between Pre-intervention (420.36) and Intervention 2 (237.44) phases ($p=0.007$); Levene's test recalculation (to avoid normal distribution assumptions) showed $p=0.079$. The upper half of Figure 1 displays the weekly average of observation hours (green) with upper and lower limits (red), while the lower half shows the weekly standard deviation. From the Pre-Intervention to Intervention 2 phases, the number of outliers and the data variation visibly drop.

CONCLUSIONS: For Spanish-speaking patients in an academic county hospital observation unit, telephone interpretation did not seem to impact LOS. In-person interpretation resulted in an absolute reduction in LOS with reduction in variation, suggesting that provider behavior with interpretation services may lead to more predictable patient management patterns in the observation unit; the lack of statistically significant difference may be due to a low N for Intervention 2. Such a LOS reduction in an observation unit, where rapid turnaround is key, should be further evaluated with extended in-person interpretation.

Figure 1



THE RELATIONSHIP BETWEEN PCP PANEL SIZE AND CONTINUITY OF VA PRIMARY CARE David A. Katz[1,2]; Kimberly McCoy[1]; Mary Vaugha Sarrazin[1]. [1]University of Iowa, Iowa City, IA; [2]University of Iowa Carver College of Medicine, Iowa City, IA. (Tracking ID #1640510)

BACKGROUND: The Veterans Health Administration (VHA) faces the dilemma of maintaining continuity of care in the face of increasing demand for services and expanded panel sizes. A key strategy for managing this dilemma is the Patient Aligned Care Team (PACT) model, which aims to distribute the responsibilities of patient care among an interdisciplinary mix of primary care team members, allowing clinicians to provide improved access and care coordination to a large but manageable panel size. The objective of this study is to determine the association between primary care panel size and continuity of care (COC) during the PACT initiative.

METHODS: We conducted a cross-sectional analysis of 180,808 VA outpatients in Region 23 who had at least one primary care visit during each of 3 years (FY2009-11). We used data from the Patient Care Management Module (PCMM) to compute the discrepancy between actual panel size and maximum panel size for each PCP, standardized for a full time equivalent (FTE) position. Maximum PCP panel size at each facility was adjusted for primary care intensity score, support staff to PCP ratio, and clinic space. Patients (pts) of resident providers and VA providers with <1 year of service were excluded. To measure longitudinal COC, data from the 2011 PCMM were linked to VA outpatient datasets; clinic stop codes were used to identify primary care visits. Usual Provider Continuity (UPC) and Modified Continuity Index (MMCI) were calculated for each patient on a scale of 0–1 (where 1 is perfect continuity) and were dichotomized based on the national PACT benchmark (>=0.75). To measure relational continuity, the Survey of Healthcare Experiences of Patients (SHEP) was administered in FY2011 to a subset of 6,196 pts in the analysis sample. SHEP includes items pertaining to interpersonal communication (4 items) and shared decision making (SDM, 2 items). To identify excellent care, we used an "all-or-none" scoring strategy: when all items within a subscale were rated "always," the subscale was assigned a value of 1 (otherwise 0). Multivariable random effects logistic regression models were used to predict superior longitudinal COC, excellent communication, and excellent SDM, after controlling for demographics, disability status, 22 chronic medical and psychiatric conditions [Romano, 1993; Abrams, 2009], number of primary care clinic visits, primary care FTE, PCP participation in a PACT Learning Collaborative, and usual site of care (modeled as a random effect).

RESULTS: Median panel size for a full-time PCP was 1,178 (IQR 982–1295); 59 % of pts were seen by PCPs with panel sizes above capacity. Mean UPC and MMCI scores were higher (0.75 and 0.83) for pts of "above capacity" PCPs, compared to pts of "submaximal capacity" PCPs (0.55 and 0.75), respectively. In multivariable models, there was no association between panel size discrepancy and either COC measure (adj OR=1.000, 95 % CI=0.997, 1.002 for UPC model). Panel size discrepancy showed a weakly positive association with excellent communication (adj OR=1.007, 95 % CI=1.005, 1.009 for each 10 pt increase in panel size); no association was observed for SDM.

CONCLUSIONS: During implementation of the VA medical home model, deviations from the maximum PCP panel size were modest and were not associated with worsened longitudinal or relational COC. Further analyses are warranted to identify panel size thresholds beyond which measures of continuity and access show clinically meaningful decrements.

THE RELATIONSHIP BETWEEN USMLE STEP 1 SCORES, ANNUAL MEDICINE INSERVICE EXAMINATIONS, ATTENDING RATINGS AND PERFORMANCE ON THE ABIM CERTIFYING EXAMINATION Cynthia Kay[2]; Michael Frank[2]; Jeffrey L. Jackson[1,2]. [1]Zablocki VAMC, Milwaukee, WI; [2]Medical College of Wisconsin, Milwaukee, WI. (Tracking ID #1641464)

BACKGROUND: Passing the American Board of Internal Medicine certifying examination is an important goal of medicine residents. Program directors currently use USMLE Step 1 scores to select medicine residents for training and then annual in-service training examinations and attending evaluations to identify medicine residents at risk for failing these boards. Our study's purpose was to explore the relationship between USMLE Step 1 scores, attending evaluations, the yearly inservice examinations and the ABIM board score.

METHODS: We included internal medicine residents at the Medical College of Wisconsin between 2004 and 2012. Attending evaluations assessed residents using the ACGME 6-domain questionnaire. Additional variables included the USMLE Step1 scores from the 2nd year of medical school, resident performance on the annual inservice examination for each year of training and the medicine board score.

RESULTS: There were 232 residents, who participated in 730 annual inservice examinations and had 6,603 evaluations completed by 334 attending physicians. Among the questions completed by attendings, ratings of the resident's medical knowledge (r=0.11) and overall performance (r=0.09) correlated weakly with the ABIM exams, though explained only 2 % of the variance. There was moderate correlation between Step1 USMLE scores, inservice scores and ABIM exam scores (Table 1). Beginning with internship, being in the bottom quartile on the inservice examination markedly increased the risk of failing the certifying boards (PGY1 RR: 7.4, 95 % CI: 2.12–26.05; PGY2: RR: 5.94, 95 % CI: 2.19–16.07, PGY 3: RR 10.5, 95 % CI: 3.12–35.09). Being in the bottom quartile on the USMLE Step 1 test also increased the risk of failing the ABIM exams (RR: 3.65, 95 % CI: 1.2–10.8).

CONCLUSIONS: Monthly attending evaluations were a poor predictor of performance on the ABIM examination. Performance on the Step 1 scores during medical school had a modest correlation with performance on the boards after finishing residency. Beginning with the intern year, inservice examination scores during each year of training had slightly stronger correlation with board performance. Being in the bottom quartile on the USMLE step 1 scores tripled the risk of failing the medicine boards, suggesting that USMLE scores are one reasonable criterion for selecting medicine residents. During residency, and beginning with the intern year, scoring in the bottom quartile increased the risk of failing the boards 7–10 fold, providing program directors the opportunity to intervene. What interventions, if any, would be effective is a question deserving of further research.

Correlation between USMLE, ITE and ABIM-CE scores

	USMLE	ITE
ITE	0.55	
ABIM	0.59	0.68

THE RELATIONSHIP BETWEEN PHYSICIAN UNCERTAINTY AND CRC SCREENING RECOMMENDATIONS IN ELDERLY PATIENTS Carmen L. Lewis. [1]University of North Carolina, Chapel Hill, NC; [2]University of North Carolina, Chapel Hill, NC. (Tracking ID #1641576)

BACKGROUND: To determine whether or not colorectal cancer (CRC) screening could benefit elderly patients with multi-morbidity, physicians estimate individuals' life expectancies and the potential risks and benefits of screening. Physicians' perceptions of the accuracy of these clinical assessments could influence whether physicians seek patient input before making recommendations. The purpose of this study was to examine the relationship between physicians' confidence about their life expectancy estimates, certainty of risk/benefit assessment, and patient centered recommendations for colon cancer screening in elderly patients.

METHODS: We surveyed a random sample of 650 US primary care physicians by mail. Physicians responded to questions about three clinical vignettes involving 80 year old female patients in good, fair, and poor health. We determined physicians' life expectancy estimates for each vignette, as well as their confidence in these estimates for each vignette. Physicians also reported risk/benefit assessments and their perceptions about the certainty of these assessments. We then used logistic regression to determine whether physicians' confidence in their life expectancy estimates or their perceptions of certainty about their risk/benefit assessment was related to patient centered recommendations for CRC screening. A patient centered recommendation was defined as seeking patient input before making a recommendation about screening.

RESULTS: 276 eligible physicians responded (52 % corrected response rate). The proportion of physicians who were extremely or very confident in their estimates of life expectancy varied by vignette (46 %, 38 %, 58 % for good, fair, and poor health). The proportion of physicians who felt that the benefits outweighed the risks of screening ranged from 77 % (good health) to 28 % (fair health) to 6 % (poor health). The proportion of physicians who felt extremely or very certain of the risk/benefit assessment was 67 %, 52 %, and 63 % for the good, fair, and poor health vignettes respectively. The proportion of patient centered recommendations also varied by vignette (45 %, 49 %, and 26 % for good, fair, and poor health; p<.001). Regression analysis for all three vignettes combined demonstrates that as physician confidence decreases, the odds of a patient centered recommendation increase. Compared to extremely confident, the odds increased from 2.8 for very confident, to 3.8 for neutral; to 5.9 for not very confident to 11.5 for not at all confident. Using physicians perceptions that benefits clearly outweigh the risks of screening as the reference category, the odds of a patient centered recommendation are 13.98 when the risks and benefits were perceived as equal and 0.51 when the downsides were perceived as clearly outweighing the benefits. When the physician reports being neither certain nor uncertain about the risk/benefit assessment, they are more than twice as likely to make a patient centered recommendation (OR 2.28), compared to when they are extremely or very certain.

CONCLUSIONS: Physicians' perceived confidence in their life expectancy estimates was inversely related to patient centered recommendations for colon cancer screening in the elderly. Physicians' uncertainty about their risk/benefit assessment also increased the likelihood of a patient centered recommendation. Physicians' perceptions of their clinical assessments may be an important driver of patient centered care.

THE ROLE AND IMPACT OF MEDICATION INTENSIFICATION IN SELF-MANAGEMENT INTERVENTIONS FOR ADULTS WITH TYPE 2 DIABETES: A SYSTEMATIC REVIEW AND METAREGRESSION Sophia Bellin Warren[1]; Shari Bolen[3,5]; Adam T. Perzynski[3,7]; Corinna Falck-Ytter[3]; Donna Windish[5]; Apoorva K. Chandar[6]; Paulette A. Sage[7]; Steve A. Lewis[3]; Carl V. Tyler[2]. [1]Columbia University, New York, NY; [2]The Cleveland Clinic, Cleveland, OH; [3]The MetroHealth System, Cleveland, OH; [4]Case Western Reserve University, Cleveland, OH; [5]Yale University, New Haven, CT; [6]Case Western Reserve University, Cleveland, OH; [7]Case Western Reserve University, Cleveland, OH. (Tracking ID #1638370)

BACKGROUND: Although medication intensification has been associated with improvements in glycemic control for adults with type 2 diabetes (DM), less is known about the role and additional impact of medication intensification (defined as increasing or starting a new diabetes medication) within self management interventions. Therefore, we conducted a systematic review to assess the role and impact of medication intensification in self-management interventions for adults with DM.

METHODS: We searched the MEDLINE, EMBASE, CINAHL and Cochrane Central Register of Controlled Trials databases from inception for original English-language articles. Our search strategy combined terms for Type 2 DM, randomized controlled trials, and self-management interventions. We selected original studies of adults with DM that assessed

the impact of patient activating interventions on A1c. Reviewers extracted data for each article using standardized protocols. We identified which studies reported diabetes medication intensification as part of the intervention. We then conducted unadjusted stratified meta-analyses using a random effects model to account for between study heterogeneity, followed by metaregression to determine the additional impact of medication intensification on A1c.

RESULTS: Out of 10,219 citations, 124 studies compared a self-management intervention to usual care or a minimal control group (i.e. handout) for adults with DM and also measured change in A1c. Of these, 13 studies reported using medication intensification as part of the intervention. Of these 13, nine reported sufficient data on A1c to combine in a meta-analysis. Unadjusted stratified meta-analyses of A1c showed a weighted mean difference (WMD) and 95 % confidence intervals (CI) between intervention and control/usual care arms of −0.64 % (CI −0.93 to −0.34 %; *N*=9 studies) and −0.34 % (CI −0.43 to −0.25 %; *N*=102 studies) respectively for the studies with and without medication intensification reported as part of the intervention. In a metaregression (*N*=111 studies) which adjusted for baseline A1c, study duration and study quality, medication intensification showed no significant difference in A1c between groups when compared to studies which did not report using medication intensification as part of their strategy (Beta coefficient −0.24, 95 % CI −0.59 to 0.11).

CONCLUSIONS: Medication intensification is rarely reported as an additive component to a diabetes self-management intervention, but is more commonly reported as an outcome. Given the suggestion of a larger impact on A1c in studies which combined medication intensification with self-management, we should further investigate methods that promote greater synergism between self-management and medication intensification strategies.

THE ROLE OF PHLEBOTOMY IN IMPROVING THE PATIENT EXPERIENCE OF CARE Neil N. Shah[1,2]; Carol T. DiMeo[1]; Herve Jean-Baptiste[1]; Rebecca Osgood[1]; Nicolas Nguyen[1]; David Elvin[1]. [1]Cambridge Health Alliance, Cambridge, MA; [2]Harvard Medical School, Boston, MA. (Tracking ID #1642605)

BACKGROUND: The inpatient floors of Cambridge Health Alliance (CHA) implemented computerized provider order entry (CPOE) in 2012. Laboratory utilization data demonstrated a rise in the frequency of phlebotomy since CPOE implementation. Possible explanations include an eliminated opportunity to batch labs together while processing hand-written orders and an increased ease in ordering labs multiple times per day. Improving the patient experience of care is one of the core foundations of the Institute for Healthcare Improvement's "Triple Aim," and has been embraced as an institutional priority at CHA. The authors identified frequent phlebotomy as a potential target for improving patient experience and proposed an intervention to reduce the frequency of phlebotomy on the inpatient teaching service.

METHODS: The intervention consisted of an educational campaign (presenting a 30 min lecture at the residents' weekly didactic conference and displaying posters on the inpatient floor with the message: "Patients, Not Pincushions") and an alteration in the CPOE system (an easy-to-use "3 PM" lab option) with the rationale that most afternoon labs could be batched to a single time and patients may avoid multiple blood draws. The effect of the intervention was measured by recording the number of blood draws per patient per day for 4 weeks prior to the intervention and 4 weeks after its implementation. Surveys were administered to all admitted patients on the day prior to the intervention regarding their phlebotomy experience and re-administered to all admitted patients 4 weeks later.

RESULTS: During the 4 weeks preceding the intervention, the average frequency of phlebotomy per patient per day was 1.714 with 40 % and 21 % getting drawn more than once or twice respectively. During the 4 weeks after the intervention began, the average frequency was 1.716 with 43 % and 16 % getting drawn more than once or twice respectively. Before the intervention, the patients rated their phlebotomy experience at 57 % and the courtesy of their phlebotomists at 85 % versus 71 % and 94 % respectively after the intervention. The average patient perceived his/her blood was drawn approximately 3 times per day prior to the intervention versus 2 times afterwards. The average patient rated his/her willingness to recommend the hospital to others at 84 % prior to the intervention versus 92 % afterwards.

CONCLUSIONS: The frequency of phlebotomy remained stable 4 weeks after the intervention began although there was a shift from patients getting drawn three or more times to two times. It's possible that reductions in phlebotomy were limited by an increase in patients who required monitoring of serial troponin or PTT levels (who are often the most phlebotomized patients.) The surveys suggest that patients noted improvements in their experience of phlebotomy, the courtesy of phlebotomists, and their willingness to recommend the hospital to others. Surprisingly, even though the actual frequencies stayed relatively constant, patients perceived they were phlebotomized less often after the intervention. The reasons for these changes are unclear but may reflect a change in the attitude of the staff since the intervention was implemented.

THE ROLE OF RELIGION AT THE END OF LIFE: A MEDICAL SCHOOL CURRICULUM NEEDS ASSESSMENT Zahava N. Brodt; Robert Sidlow. Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1640171)

BACKGROUND: Studies have shown that patients want physicians to attend to their spiritual concerns, and that such attention influences health care decision making. The desire for spiritual support is particularly acute in the context of end of life (EOL) care. Nevertheless, studies show that physicians are poorly prepared to deal with spirituality in the patient encounter. We sought to describe the degree of self-described religious/spiritual competency in EOL care among students at the Albert Einstein College of Medicine (AECOM.) In addition, students were asked about their educational experiences and needs regarding religion and EOL care.

METHODS: An anonymous, online survey was designed by the authors, was pilot tested, and was posted on surveymonkey.com. In September 2012, the entire AECOM student body was solicited via email to participate; requests to participate in the study were repeated for four subsequent weeks. The study was approved by the AECOM IRB.

RESULTS: Two hundred seventeen medical students participated in this study. Seven percent felt "knowledgeable" about the EOL beliefs and practices of Buddhism, 3 % about Confucianism, 7 % about Hinduism, 5 % about Islam, 39 % about Judaism, 21 % about Protestantism, and 23 % about Roman Catholicism. Seventy-four percent of respondents had interacted with a dying patient. Thirty-two percent of this subset reported that spirituality was discussed at some point during their care of the dying patient; 23 % felt "competent" providing religious or spiritual support in this context. A majority of respondents felt they needed more education regarding specific religious beliefs and rituals at the end of life in order to provide meaningful support for the dying patient.

CONCLUSIONS: This study suggests that a majority of students at one medical school were not familiar with the variety of EOL religious beliefs commonly encountered among their diverse patient population. While students often interacted with dying patients, they seldom addressed issues of spirituality with those patients, nor did they feel competent doing so. A majority of student respondents desired more education on the role of specific religions in the care of the dying patient. How to effectively incorporate this topic into a medical school curriculum is unclear at this time.

THEMES FROM FOCUS GROUPS OF VETERANS WITH CHRONIC NON-CANCER PAIN ON HIGH DOSE OPIOID ANALGESICS: LOVE/HATE OF OPIOIDS AND CHALLENGES WITH ALTERNATIVE PAIN CARE STRATEGIES Barbara J. Turner[1,3]; Erin Finley[2,3]; Diandrea R. Garza[1,3]; Shruthi Vale[1,3]; Maureen J. Simmonds[4,3]; Mary Jo Pugh[2,3]. [1]University of Texas Health Science Center San Antonio, San Antonio, TX; [2]South Texas Veterans Health Care System, San Antonio, TX; [3]University of Texas Health Science Center at San Antonio, San Antonio, TX; [4]University of Texas Health Science Center at San Antonio, San Antonio, TX. (Tracking ID #1640133)

BACKGROUND: Thousands of veterans with chronic pain are treated with long-term, high dose opioid analgesics (OAs) but little is known about their experiences/challenges with OAs and acceptance/barriers to alternative pain care strategies. We examined these topics in preparation for a small trial of peer support to improve coping and functional skills.
METHODS: We conducted 3 focus groups with 25 veterans (7–9 in each) prescribed OAs at>=50 mg morphine equivalent daily dose (MED). Focus groups were held in fall 2012 and lasted 1.5 h. A facilitator followed a guide and asked about experiences with OAs, alternatives for pain care, quality of life, problems with medical care, and receptiveness to peer support. Discussions were audio-recorded, transcribed verbatim, de-identified, and reviewed by 3 readers independently for themes based on a predetermined set of topics. Each reader proposed additional themes that were discussed by the research team. Revisions to the coding schema
RESULTS: The 25 participants' mean age was 52 (range 39–70), 32 % women, and 24 % minority. Sixty percent were taking OAs at very high doses (>=100 MED). The vast majority of statements about experiences with OAs addressed problems including: inadequate pain relief, insufficient dosing, needing to try many drugs, fear of not receiving drugs, fear of dependence, and side effects (e.g. "brain messed"). Regarding benefits, some veterans endorsed the value of high doses, methadone, multiple options of drugs, and rotating drugs. A few veterans acknowledged ease of obtaining illegal prescriptions and desirability of a "buzz". Most participants reported using alternatives to manage pain such as: stretching, relaxation, prayer, dogs, steroid injections, physical therapy, massage, chiropractors, water exercises, stimulators, other supplementary pain drugs, assistance devices, chiropractors, and humor. Yet many complained about poor access to and short duration of using these alternatives, especially physical therapy. Most veterans were unhappy, even angry, about many aspects of their medical care including: restricted resources, poor staff support, limited physician education, accusations of drug seeking, discontinuity of care, and scant information about community resources. In regard to mental health issues, several mentioned death as preferable, suicide (denying plans), poor quality of life, severe functional limitations, and social isolation. In response to the idea of peer support, most participants were leery, wanting more professional support and peers with similar pain problems who had done military service while avoiding a "pity party". Positive comments about a peer support program included: having someone to talk to, sharing strategies, value of other types of support groups, and camaraderie with other veterans.
CONCLUSIONS: This qualitative study of veterans on high dose OAs reveals enormous dissatisfaction with OA therapy. Yet participants still wanted to continue these drugs even at higher doses because they are ineffective at the current dose. Many alternatives for pain care are described but few veterans used them long term. Quality of life was poor with severe functional limitations, mood disorders, anger, and frustration with many aspects of care. We received limited support for a peer support program that offers substantial professional oversight/education and careful matching of peers.

THROUGH A GENDER LENS: A VIEW OF GENDER AND LEADERSHIP POSITIONS IN THE DEPARTMENT OF MEDICINE AT AN ACADEMIC MEDICAL CENTER Anne Monroe[1]; Rachel Levine[1]; Jeanne M. Clark[1]; Janet Bickel[2]; Linda Smith Resar[1]. [1]Johns Hopkins University, Baltimore, MD; [2]George Washington University School of Medicine, Washington, DC. (Tracking ID #1642662)

BACKGROUND: Despite increasing numbers in academic medicine, women remain underrepresented in top leadership positions. To better understand women's leadership roles, we compared the numbers and types of leadership positions held by women faculty to those held by men in the Department of Medicine (DOM) at a single academic medical center.
METHODS: We queried Division Directors and Administrators in the DOM at The Johns Hopkins University SOM in 2012. Survey information included financial compensation attached to each leadership position (% FTE and/or salary supplement) and leadership position selection process. The DOM Chair provided rank, gender, and age information for each faculty member. We assigned leadership positions to one of three tiers (Upper, Middle, or Lower) based on perceived contribution to career advancement (visibility) and salary support. Upper-tier positions were highly visible (Chair, Division Director, Associate Dean) and compensated. Middle-tier positions were less visible and compensated (e.g., Fellowship Director). Lower-tier positions were less visible and not compensated (e.g., Clinical Director). We generated summary statistics (means, proportions) for the demographic characteristics of faculty and characteristics of the leadership positions. Chi-square testing was used to compare proportions.
RESULTS: In May 2012, there were 435 DOM faculty: 160 (36.8 %) women and 275 (63.2 %) men. The percentage of women at the Asst. and Assoc. ranks was similar to men (45.4 % v 54.6 % and 39 % v 61 %, respectively). Among Full Professors, women were underrepresented compared to men (18.2 % v 81.8 %). Women were more likely to be at the Assoc. and Full Professor ranks for fewer years compared to men (4.2 y v 7.9 y and 7.4 y v 11.6 y, respectively, $p<0.05$ for both). 208 faculty members held 272 leadership positions. Women were as likely to hold a leadership position as men (46.3 % and 48.7 %, $p=0.62$). Asst. Professor women were more likely to hold a leadership position compared with Asst. Professor men (38.3 % v. 24.8 %, $p=0.04$). 25 positions were Upper-Tier, of which only 5 (20 %) were held by women compared to 20 (80 %) held by men ($p<0.0001$). About one-third of Middle-Tier (36.1 %) and Lower-Tier (35.6 %) positions were held by women. Most women (82.5 %) who held a leadership position held only one position, with fewer men (74.3 %) holding only one position ($p=0.18$). Most positions received either salary support or a salary supplement (83.6 %). There was no difference in compensated positions (Upper- and Middle-Tier v. Lower-Tier) by gender overall ($p=0.88$). However, when examined by rank, Assoc. Professor women were more likely to have a Lower-Tier position compared with Assoc. Professor men (26.7 % v. 11.8 %, $p=0.07$). Median salary support (% FTE) was 17 % (IQR 5 %, 25 %) and did not differ by gender. Chair or chief appointment accounted for the majority of leadership position selection (84 %).
CONCLUSIONS: Despite women holding leadership positions proportionate to their representation in the DOM, they were less likely to hold Upper- Tier positions that traditionally lead to the highest leadership roles such as department chair or medical school dean. Overrepresentation in noncompensated roles at the lower ranks may actually be detrimental to women, in particular as these roles may take away from other activities that contribute to advancement. More research needs to be done on the exact types of "leadership roles" women accept.

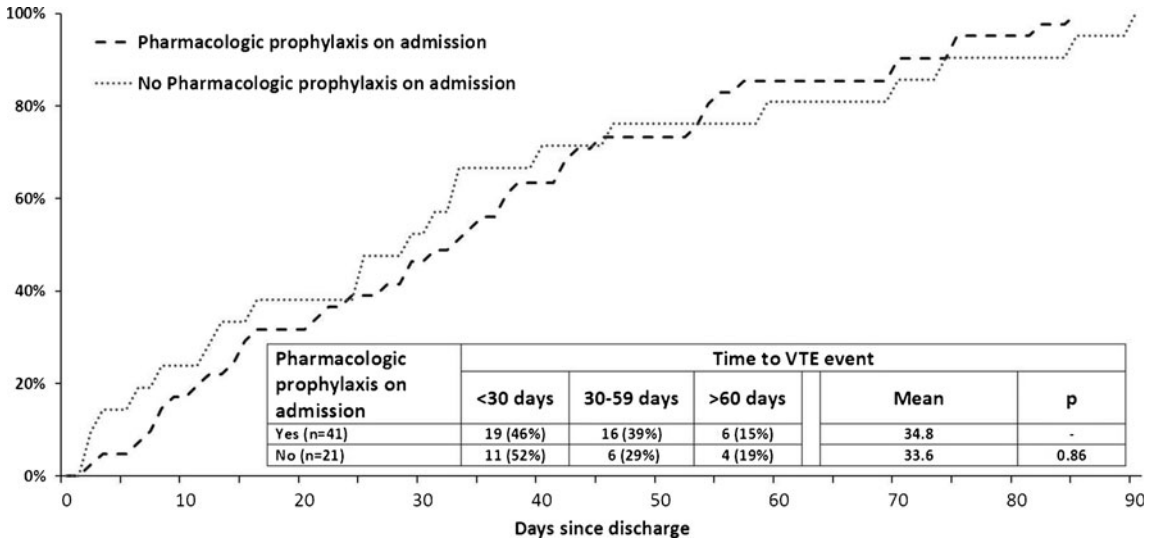
TIMING OF POST-DISCHARGE VENOUS THROMBOEMBOLIC EVENTS AND EFFECT OF PROPHYLAXIS IN HOSPITALIZED MEDICINE PATIENTS Paul Grant[1]; M. Todd Greene[1]; Steven J. Bernstein[1,2]; Julie N. Wietzke[1]; Kristen Cowan[1]; Elizabeth McLaughlin[1]; Scott Kaatz[3]; David Paje[5]; Bobby Lee[5]; James Barron[6]; Scott Flanders[1]. [1]University of Michgian, Ann Arbor, MI; [2]VA Ann Arbor Healthcare System, Ann Arbor, MI; [3]Hurley Medical Center, Flint, MI; [4]Henry Ford Health System, Detroit, MI; [5]Oakwood Healthcare System, Dearborn, MI; [6]Spectrum Health, Grand Rapids, MI. (Tracking ID #1637303)

BACKGROUND: Hospitalized patients are known to be at increased risk for venous thromboembolism (VTE). The timing of post-discharge VTE events and the effect of pharmacologic prophylaxis exposure during hospitalization on such events are not well understood. The Michigan Hospital Medicine Safety Consortium, a statewide collaborative designed to prevent adverse events in hospitalized medical patients, assessed VTE events post-discharge.
METHODS: Using web-based data entry, a nurse abstractor at each participating hospital ($n=35$) collected detailed demographic and clinical data, including all known risk factors for VTE and use of pharmacologic prophylaxis. The occurrence and date of VTE events during a 90-day post-discharge follow-up period among patients who had not experienced a VTE during hospitalization and who were discharged to home or an assisted

living facility were determined by medical record review and follow-up phone calls. Time to 90-day VTE event was stratified by receipt of pharmacologic prophylaxis on admission. Patients were excluded if they were: <18 years of age; admitted for VTE, surgery, or comfort care; had an elevated INR or exposure to systemic anticoagulation on admission; transferred to the intensive care unit during the hospitalization; or had a subsequent inpatient stay prior to a 90-day follow-up VTE event.

RESULTS: Of 25,423 patients included, 247 (0.97 %) had a post-discharge VTE event during 90-day follow-up. Patients who received pharmacologic prophylaxis on the day of admission or the following day (60 %) were older (66.9 vs. 62.3 years, $p<0.001$) and had a higher Caprini score (5.8 vs. 5.1, $p<0.001$), but had the same length of hospital stay (4.4 days, $p=0.99$), compared to those with no prophylaxis. Of the 247 patients with VTE, 132 (53 %) were discharged to home or an assisted living facility and had a VTE date identified. Of these patients, 58 (44 %) had another inpatient stay prior to their VTE event. The subsequent inpatient stay status was not known for 12 (9 %) patients. Among the 62 patients (47 %) who did not have a subsequent inpatient stay, the mean time to post-discharge VTE event did not differ by receipt of pharmacologic prophylaxis on admission (figure).

CONCLUSIONS: Post-discharge VTE among medical patients is uncommon and almost half of patients had a subsequent inpatient stay prior to the 90-day follow-up VTE event. A majority of VTE events in patients without a subsequent inpatient stay occurred within the first 35 days post-discharge. The trajectories of time to VTE events do not appear to be associated with receipt of pharmacologic prophylaxis during hospitalization.



Pharmacologic prophylaxis on admission	Time to VTE event				
	<30 days	30-59 days	>60 days	Mean	p
Yes (n=41)	19 (46%)	16 (39%)	6 (15%)	34.8	-
No (n=21)	11 (52%)	6 (29%)	4 (19%)	33.6	0.86

TO SAVE MONEY ON PRESCRIPTION DRUGS, ARE PATIENTS WILLING TO TRADE OFF CONVENIENCE, SIDE EFFECTS, AND EFFICACY? Margaret Lowenstein[1]; Carolyn C. Cannuscio[2,3]; Madeleine P. Tardif[5]; David Grande[5,3]. [1]Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania, Philadelphia, PA; [3]Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, PA; [4]University of Pennsylvania, Philadelphia, PA; [5]University of Pennsylvania, Philadelphia, PA. (Tracking ID #1640103)

BACKGROUND: Individuals with chronic illnesses face substantial, and often unaffordable, out-of-pocket health care costs, leading many patients to forego needed medical therapy. Cost-related non-adherence has significant negative health ramifications. Strategies are needed to help patients and physicians navigate cost concerns, in order to achieve care plans that optimize affordability and patient outcomes. Prior research has shown that patients want to have conversations with their doctors about cost and believe their doctors can lower their cost burden. However, little is known about patients' willingness to endure tradeoffs like inconvenience, reduced efficacy, and side effects, in order to save money.

METHODS: We conducted a mail survey, with an embedded randomized experiment, in a sample of 1,400 adults nationwide who applied for financial support from a patient assistance program (HealthWell Foundation). A total of 842 responded (107 incorrect addresses, 6 deceased; response rate: 65 %). Participants were randomized to one of two groups that could, theoretically, save either $50 or $150 per month in out of pockets costs by changing their prescription drugs and enduring 10 different tradeoffs across three domains (convenience, efficacy, and side effects). Using a 5-point Likert scale, participants rated their willingness to make each specified tradeoff. A rating from 1 to 2 on any item indicated that a patient was "unwilling" to accept the specified tradeoff in order to save $50 or $150 per month.

RESULTS: Among respondents, 86 % wanted their doctor to consider medication cost when prescribing and 78 % believed that their doctor had the ability to lower out-of-pocket costs. Patients were generally willing to endure inconvenience to save money; only 31 % were unwilling to accept the inconvenience (e.g., more frequent dosing) associated with a cheaper prescription drug. There was no difference between the $50 versus $150 cost savings experimental groups (31 % vs 30 %, $p=0.61$). Patients were generally unwilling to endure reduced efficacy or increased side effects in order to save money. Regardless of the hypothetical monthly cost savings ($50 vs $150), the majority of patients were unwilling to tolerate a higher risk of hospitalization (69 % vs 64 %, $p=0.21$), heart attack (75 % vs 70 %, $p=0.10$), or functional limitations (73 % vs 68 %, $p=0.13$). Similarly, the majority were unwilling to accept greater side effects for cost savings, but there were small but significant differences by experimental group ($50 vs. $150) for headache (81 % vs. 73 %, $p=0.006$), sexual dysfunction (68 % vs. 59 %, $p=0.007$), fatigue (77 % vs. 69 %, $p=0.008$), muscle aches (79 % vs. 71 %, $p=0.014$), and upset stomach (80 % vs 74 %, $p=0.041$) but not urinary frequency (60 % vs. 55 %, $p=0.170$).

CONCLUSIONS: In our study, the majority of patients were open to enduring inconvenience in order to save money on prescription drug costs. Patients were generally opposed to enduring increased side effects, although there were modest increases in willingness when the cost savings were greater ($150/month vs. $50 per month). Regardless of potential cost savings, patients were generally opposed to sacrificing efficacy in order to reduce out-of-pocket costs. Physicians can consider these potential tradeoffs in discussions with patients regarding how to optimize both cost savings and patient outcomes.

TRANSITIONS OF CARE: INTERNAL MEDICINE PGY1 AMBULATORY EDUCATION Rachel K. Miller; Christina R. Whitehouse; Jerry Johnson; Jennifer Lapin; Karen B. Hirschman. University of Pennsylvania, Philadelphia, PA. (Tracking ID #1643097)

BACKGROUND: Transitions of care pose significant risks for complex medical patients. In July 2007, the American College of Physicians, Society of Hospital Medicine, and Society of General Internal Medicine came together to address quality issues and to develop consensus standards for transitions of care between inpatient and outpatient settings. In parallel, the Accreditation Council of Graduate Medical Education (ACMGE) has identified systems-based practice as a core competency or all residents. Still, there are scarce educational interventions for trainees to learn principles of safe transitions. Most also do not actively engage the learners. Our hypothesis was that an internal medicine transitions of care curriculum that spanned the hospital to home through small, interactive group didactics and a post-hospitalization discharge home visit would increase residents' confidence and knowledge in implementing safer discharges.
METHODS: Two cohorts of Internal Medicine interns (PGY1) at a large academic medical center participated in this study between 7/2010 and 12/2011 in the 4 week ambulatory block. A 1 h small group session focused on: identifying vulnerable patients, the interprofessional team, home services and skilled nursing facilities, medication reconciliation, discharge summaries/instructions, and patient communication. The interns went on a post-hospitalization discharge home visit with a visiting nurse led by the University of Pennsylvania Transitions of Care Nursing Team or selected Penn Care at Home nurses. In a debriefing session, each pair of interns described the patient they had seen in the home and key transitions issues that they encountered.
RESULTS: Interns' knowledge and attitudes about transitions of care were captured using pre/post test questions with a 5-point Likert scale. The assessment tool contained questions of knowledge and self-assessment of confidence and attitudes about transitions of care themes. The pre-post analysis on 107 pretest and 90 post-test was conducted using independent *t*-test analysis. The first six items of the knowledge tool were scored and a pre-post analysis using independent sample t-tests on unmatched data found a statistically significant increase in knowledge ($t=-7.268$, $p=.000$). Overall, the interns showed an increased degree of confidence in: identifying potential threats to a well executed transition between sites of care ($p<0.001$); managing the discharge process of complex patients with chronic illness ($p<0.001$); performing medication reconciliation at the time of hospital discharge ($p<0.001$); and knowledge of the home health care services available to patients with chronic illness ($p<0.001$). In addition, they showed increased knowledge in the roles of physical therapists ($p<0.001$), occupational therapists ($p<0.001$), nursing ($p<0.010$), and social work ($p<0.046$). Open ended comments included themes of greater awareness of interprofessional roles and services available in the discharge process, importance of medication reconciliation and discharge documentation.
CONCLUSIONS: This transitions of care education initiative for internal medicine interns showed increased confidence in high risk discharge issues and increased knowledge of community resources and the role of multidisciplinary team members in safe transitions of care. Future directions include narrative analysis of the interns' reflections of the curriculum and further evaluation of the long term impact of a transitions of care education program.

TRANSITIONS OF CARE AT A COMMUNITY HOSPITAL: A SERIES OF QUALITATIVE INTERVIEWS Manik Chhabra; Janet J. Ho; Krisda Chaiyachati; Jing Luo; Trishul Siddharthan; Theodore Long; Donna Windish. Yale University School of Medicine, New Haven, CT. (Tracking ID #1640075)

BACKGROUND: As the Patient Protection and Affordable Care Act measures quality through hospital readmission rates and enforces it financially, research evaluating alterable risk factors has expanded. Most studies on the readmissions challenge have explored the healthcare providers' viewpoint, while few assess the patient's perspective. Because little is known about the patient's experience when transitioning from hospital discharge to home, we have conducted a qualitative study of our readmitted patients to lay the foundation for a patient-centered intervention to improve readmission rates.
METHODS: We completed semi-structured qualitative interviews of patients readmitted to a medicine service within 30 days of discharge at Waterbury Hospital—a 357-bed, private, community teaching hospital in Waterbury, Connecticut using a sample of convenience. Exclusion criteria included the inability to pass a Mini-Cog screen, speaking a language other than English or Spanish, and chart evidence of advanced cognitive impairment. All interviews were conducted while patients were readmitted to the hospital and were audiotaped and transcribed by an independent company. Three investigators independently generated codes from the primary data and developed a final code list using the constant comparative method, and themes were then identified.
RESULTS: Six patients were interviewed: three women, three Caucasian, with a mean age of 49.3 years. All had only high school education, and five received Supplemental Security Income. All patients had insurance; four had Medicaid and one had Medicare. Five patients' admission diagnoses were identical to their prior discharge diagnoses. The average age-adjusted Charlson Comorbidity score was 4.2. Overall, patients stated positive experiences with the hospital discharge process, including medication reconciliation, discharge instructions, and follow-up appointments with primary care providers (PCP). Despite reporting good PCP relationships, when patients experienced changes in health status or unanticipated medication side effects, several reported making the decision to visit the emergency department without PCP input. At home, patients felt capable enacting their care plans, but reported difficulty accessing healthy food and had limited assistance from family members who also faced health and economic barriers.
CONCLUSIONS: Previous literature suggests correlations between increased readmission risks and low socioeconomic status (SES), with subsequent discharge interventions targeted at medication reconciliation and education. We found, however, that despite a low SES, our patients infrequently reported financial obstacles to obtaining medications, access to a PCP, receipt of in-home services (e.g. visiting nurses), or stated confusion about medication instructions. Instead, emergency department visits and readmissions were commonly the result of patients making their own triage decisions that bypassed potential intervention from a PCP. As we continue to interview our readmitted patients, we hope to reveal more patient-driven themes, which will guide potential interventions for reducing Waterbury's readmission rate.

TREATING COMPLEX PATIENTS IN PRIMARY CARE: PHYSICIAN OFFER A NEW VIEW OF COMPETING DEMANDS Danielle F. Loeb[1]; Elizabeth A. Bayliss[2,3]; Carey Candrian[1]; Frank V. deGruy[3]; Ingrid A. Binswanger[1]. [1]University of Colorado School of Medicine, Aurora, CO; [2]Kaiser Permanente, Denver, CO; [3]University of Colorado School of Medicine, DenverAurora, CO. (Tracking ID #1629676)

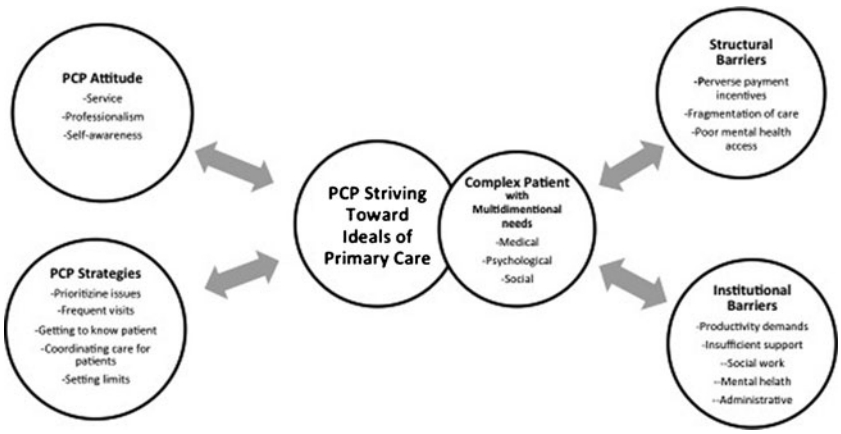
BACKGROUND: Complex patients with multiple chronic conditions present unique management challenges for primary care physicians (PCPs). Polypharmacy, multiple consultants, and conflicting guidelines for their different conditions complicate the care of these patients. We sought to understand PCPs' experiences in managing complex patients, the system barriers and facilitators in their management, and the changes PCPs feel would improve their ability to effectively treat these patients.
METHODS: This study was a part of a qualitative investigation of physician experiences with complex patients. We recruited 15 internal medicine PCPs from 2 university clinics and 3 community health clinics using email notices sent to all physicians in the practices. We used systematic non-probabilistic sampling to achieve an even distribution of participants with respect to gender, years in practice, and practice site. Providers received a working definition of complexity in advance of the interviews and were asked to bring de-identified notes from three patient encounters with patients they considered complex. We conducted open-

ended in-depth interviews. Transcripts were coded and analyzed utilizing a team-based participatory general inductive approach.

RESULTS: PCPs described daily struggles and successes in caring for patients with complicated medical, psychological, and social needs. From these descriptions four primary domains emerged: 1) healthcare system barriers, 2) institutional barriers, 3) the importance of PCP attitudes, and 4) PCPs' personal strategies for managing these patients. Physicians experienced competing demands in their efforts to overcome institutional and structural barriers while trying to live up to their own ideals. (Figure 1) They attributed many of their struggles to inadequate time and resources. In particular, they expressed frustration over the lack of support in addressing patients' social and mental health needs. They defined their successes as times when they were effectively able to fulfill what they saw as their true role as a PCP: managing medical issues to help patients avoid hospitalizations, using their knowledge and trusting relationships with patients to help patients make difficult medical decisions, and coordinating the care of multiple specialists. PCPs felt that systematic changes such as decreasing productivity demands on providers caring for complex patients and improving support services for complex patients would allow them to use their expertise to effectively manage the overall care of these patients.

CONCLUSIONS: In this study, we identified core struggles in the daily practice of PCPs managing complex patients. New models of care such as the patient centered medical home may address some of these struggles. However, whether these models of care alone can meet the time and personnel resource needs of complex patients still needs further investigation.

A New View of Competing Demands



TREATMENT DECISIONS AMONG MEN WITH LOW-RISK PROSTATE CANCER Richard Hoffman[1]; Stephen K. Van Den Eeden[3]; Amethyst Leimpeter[3]; Catherine Tomko[2]; Kimberly Davis[2]; Jun Shan[3]; Kathryn Taylor[2]. [1]Albuquerque VA Medical Center, Albuquerque, NM; [2]Georgetown University, Washington, DC; [3]Kaiser Permanente Northern California, Oakland, CA. (Tracking ID #1638750)

BACKGROUND: Prostate cancer screening can lead to overdiagnosing and overtreating low-risk prostate cancer (PCa). Active surveillance (AS) is an intensive monitoring strategy involving periodic PSA tests, digital rectal examinations, and prostate biopsies that offers active treatment (AT), either surgery or radiotherapy, only for evidence of cancer progression (or for patient request). Although AS mitigates the harms of prostate cancer screening without apparently compromising cancer control, it is not widely utilized. We assessed clinical and decision-making factors associated with selecting AS vs. AT.

METHODS: In the first phase of a longitudinal cohort study, we conducted baseline telephone interviews with 116 (77 % response rate) Kaiser Permanente Northern California men with newly diagnosed (median 23 days), low-risk PCa (PSA<10, Gleason <7). Enrollment is ongoing with a target of 1,470 subjects. Survey domains included socio-demographics, family history, decision-making processes and preferences, and general and disease-specific quality of life measures.

RESULTS: Men were 61.7 (SD=6.7) years old, 84 % were white, 75 % were married, 52 % had completed college, and 57 % were employed. By the time of the baseline assessment, 64 % (N=74) had already made a treatment decision, including 28 % selecting AS, 58 % selecting AT (56 % of whom selected surgery), and 14 % selecting watchful waiting (no intention of undergoing curative treatment). Although the AS and AT groups had similar PSA (mean [SD] 5.7 [1.6] ng/mL vs. 6.0 ng/mL [1.6]) and Gleason scores (both 6), AT patients were younger (60.9 [5.2] vs. 63.5 [7.7], p<0.08), had better physical function (p<0.05), and were more likely to have relatives who died from PCa (26 % vs. 3 %, p<0.05). Treatment groups did not differ on education, PCa knowledge, prostate-related symptoms, anxiety, or depression. AT recipients were more likely to have assumed primary responsibility for making the treatment decision (86 % vs. 63 %), to feel completely sure of their decision (79 % vs. 42 %), and to consider that actively treating the cancer was very important (72 % vs. 52 %), all p values<0.05. Men selecting AS were more likely to engage in shared decision-making (29 % vs. 12 %, p<0.05). Men selecting AT (65 %) were far more likely than AS men (10 %) to receive recommendations for AT, p<0.05. Only 8 (19 %) of the men selecting AT discussed AS.

CONCLUSIONS: Most men with low-risk PCa made treatment decisions within 30 days of diagnosis, usually selecting AT. Men selecting AT were more likely than those selecting AS to highly value active cancer treatment and to be quite certain of their decision. However, men selecting AT were less likely to engage in shared decision-making. Reducing unnecessary treatment for low-risk PCa will likely require providing balanced decision-support information very soon after—or even before—diagnosis.

TREATMENT SEEKING CHARACTERISTICS OF WOMEN PARTICIPATING IN A YOGA INTERVENTION FOR PTSD Shivani M. Reddy[1,2]; Alexandra M. Dick[3]; Megan R. Gerber[1,2]; Karen S. Mitchell[3,4]. [1]Boston University School of Medicine, Boston, MA; [2]VA Boston Healthcare System, Boston, MA; [3]VA Boston Healthcare System, Boston, MA; [4]Boston University School of Medicine, Boston, MA. (Tracking ID #1630738)

BACKGROUND: Veterans and civilians with mental health disorders have a growing interest in complementary and alternative medicine (CAM), though evidence for efficacy is sparse. Patients who seek CAM range in their traditional mental healthcare utilization, from minimal to extensive, and they may face several barriers in accessing mental health services. We describe treatment seeking (TS) characteristics of women with PTSD who participated in a yoga intervention, as well as subsequent perception of PTSD symptoms and symptom management.

METHODS: We conducted a pilot study of a randomized controlled trial at a VA medical center comparing a 12-session weekly yoga intervention with control. Veteran and civilian women ages 18–65 with PTSD or sub-threshold PTSD were included. The intervention consisted of trauma-sensitive yoga; controls completed weekly assessments. Demographic data included age, ethnicity, education, and veteran status. Self-reported measures of TS at baseline included treatment history, characteristics of providers accessed, and reasons for not seeking treatment. We then assessed subsequent treatment uptake among those without prior mental healthcare at post intervention and 1-month follow-up. We also examined interest in treatment, perception of PTSD symptoms, and self-efficacy around symptom management. We used Fisher exact tests to compare yoga and control groups.
RESULTS: Thirty-eight women were randomized to the yoga intervention (n=20) and assessment-only control (n=18). Mean age was 43.3. 53 % were Caucasian, 37 % Black, and 11 % Asian or other. Over 90 % had education beyond high school. The majority of participants (76 %) completed the study. At baseline, the majority of participants reported accessing mental health care in several settings including the VA, community health clinics, and private practices. Forty-one percent of participants had specifically engaged in PTSD treatment prior to the study. Participants reported visits to psychologists and social workers (53 %), primary care physicians (25 %), and psychiatrists (9 %). Over 50 % had seen more than one provider. Of patients without prior treatment, only 1 in 12 participants post intervention and 1 in 10 at follow-up had met with a professional to discuss a mental health problem. However, the majority of patients in both groups expressed interest in PTSD treatment (post-intervention 72 %, follow-up 56 %). 71 % of yoga group participants, compared to 25 % of controls, noticed reduced PTSD symptoms post intervention (p=0.19); this trend was similar at follow-up (69 % yoga vs. 18 % control, p=0.05). Yoga group participants also reported improved ability to self-manage symptoms (Post intervention: 78 % yoga vs. 50 % control, p=0.15. Follow-up: 92 % yoga vs. 9 % control, p<0.001).
CONCLUSIONS: Many women with PTSD participating in a yoga intervention had accessed mental health services, often from multiple providers. During the study, there was limited uptake of traditional therapy, though many treatment-naïve participants expressed interest in PTSD treatment. Additionally, yoga group participants reported improved perception of PTSD symptoms and self-efficacy compared to the controls. Further study is warranted into the role of CAM in conventional mental healthcare utilization.

TREATMENT TRIALS IN INTENSIVE CARE Yael Schenker[1]; Greer A. Tiver[1]; Seo Yeon Hong[2]; Douglas B. White[3]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA; [3]University of Pittsburgh, Pittsburgh, PA. (Tracking ID #1634829)

BACKGROUND: Family members of critically-ill patients in the ICU face complex choices about whether to continue life-sustaining therapies or transition to comfort care. Offering limited trials of intensive care for patients with an uncertain but relatively poor prognosis has been recommended as a way to frame treatment options that accords with many patients' preferences. However, to date it is not know the extent to which treatment trials are discussed or how they are presented in actual practice. We sought to characterize whether and how the option of a treatment trial is discussed with families during decision making about life-sustaining treatment.
METHODS: We conducted a mixed-methods cohort study of audio-recorded family conferences in 5 ICUs at two hospitals in San Francisco, California. We identified conferences about life-sustaining treatment decisions by asking physicians beforehand if they anticipated discussion of withholding or withdrawing treatment or bad news. We used the analytic technique of qualitative description with constant comparative techniques to inductively develop a framework categorizing: 1) types of trials and 2) discussion of advantages or disadvantages of trials. Based on prior work, we also assessed whether and how three key elements of a trial were discussed: clinical milestones to evaluate outcomes of the trial, a suggested timeframe for re-evaluation, and a description of potential actions at the end of the trial. Kappa statistics for our main results ranged from 0.85 to 1.0, indicating excellent inter-rater reliability.
RESULTS: A total of 169 family members and 54 physicians participated in 72 family conferences for patients at high risk of death or severe functional impairment. Audio-recorded conferences took place an average of 10 days after ICU admission. The inpatient mortality rate was 72 %. Trials were offered in 15 % (11 of 72) conferences and consisted of two types: 1) time-limited trials, defined as continuing life-sustaining treatment with a plan to reassess after a defined period of time using clinical milestones and 2) symptom-limited trials, defined as discontinuing life-sustaining treatments but continuing basic medical care aimed at survival—rather than transitioning to a purely palliative approach—with a plan to reassess based on the patient's symptoms. Discussion of advantages and disadvantages of a treatment trial focused on whether a trial would be in accordance with the patient's wishes; whether the patient may be more comfortable, live longer or recover; and whether a trial might provide benefit to the family. Clinicians frequently did not fully address key elements of a trial, such as specific criteria by which its effectiveness would be evaluated and possible next steps based on the results of the trial.
CONCLUSIONS: In this cohort of patients with advanced critical illness, trials were infrequently and incompletely discussed. We present an empirically-derived framework describing two types of treatment trials in intensive care. Additional work is needed to improve communication about treatment trials and evaluate their impact on patient and family outcomes.

TREATMENT WITH DALTEPARIN IS ASSOCIATED WITH LOWER RISK OF BLEEDING COMPARED TO TREATMENT WITH UNFRACTIONATED HEPARIN, IN PATIENTS WITH CHRONIC KIDNEY DISEASE Doyun Park; Margarita Kushnir; Manuela Calvo; Clemencia Solorzano; Mark Sinnet; Henny H. Billett; William Southern. Montefiore Medical Center-Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1642363)

BACKGROUND: Subcutaneously administered low-molecular-weight heparins (LMWH) have emerged as the drugs of choice for hospitalized patients requiring anticoagulation because of their favorable safety profile and ease of use. However, because LMWHs are excreted by the kidneys, and accumulate in patients with chronic kidney disease (CKD), intravenous infusion of unfractionated heparin (UFH) is often used in patients with CKD. We sought to examine the safety of using Dalteparin, a LMWH that has shown minimal tendency to accumulate, in patients with CKD. We hypothesized that any risk associated with accumulation of Dalteparin would be offset by the risks of intravenous infusion of UFH, which requires more frequent monitoring and adjustment of dosing. We therefore compared the risks of bleeding in patients with CKD who are treated with Dalteparin vs. UFH.
METHODS: In this retrospective cohort study we examined all patients with CKD (GFR <60), admitted to the medical service of an urban academic medical center from January 1, 2006 to June 30, 2010 who were treated with treatment doses of Dalteparin or UFH. Treatment doses were defined as >10,000 units of daily for a minimun of 3 days for Dalteparin and intravenous infusion for a minimun of 3 days with at least one activated partial thromboplatin time >50 s for UFH. Smaller doses were thought likely to be used for prophylaxis, and were excluded. Demographic characteristics, laboratory values, ICD-9 code diagnoses, and inpatient medications were extracted for each admission from the electronic medical record. The primary outcome was bleeding, defined as an ICD-9 code for any bleeding event within 60 days of the initiation of anticoagulant therapy. Patients treated with dalteparin vs. UFH were compared with respect to demographic characteristics, length of stay, admitting diagnosis, co-morbidities, history of bleeding, treatment with warfarin, laboratory values (creatinine, liver function tests, hemoglobin, platelet count, INR, aPTT) and bleeding rates using t-tests and chi-squared tests, as appropriate. We constructed logistic regression models to examine the independent association between choice of anticoagulant (Dalteparin vs. UFH) and

bleeding rates, after adjustment for demographic and clinical characteristics of patients. A systematic chart review to confirm bleeding events identified by ICD-9 codes is underway but not complete.
RESULTS: Of 3,546 patients with CKD treated with anticoagulants, 2,045 (58 %) received Dalteparin and 1,501 (42 %) received UFH. Patients treated with dalteparin were older, and had fewer co-morbidities. A total of 355 bleeding events were identified. The incidence of bleeding was 7.6 % in the dalterparin group vs. 11.7 % in the UFH group ($p<0.001$). After adjustment for demographic and clinical characteristics, treatment with dalteparin was associated with significantly smaller risk of bleeding (OR 0.69, 95 % CI: 0.55–0.88) when compared with treatment with UFH. A preliminary analysis of the chart review suggests that 54.0 % of ICD-9 coded bleeding events were confirmed.
CONCLUSIONS: The use of dalteparin in patients with renal insufficiency was associated with a lower rate of ICD-9 coded bleeding events compared to the use of UFH in a group of patients with similar characteristics. Dalteparin appears to be safe to use in patients with CKD. An assessment of the full chart review to confirm the bleeding events is ongoing.

TRENDS AND CORRELATES OF OPIOID ANALGESIC RECEIPT AMONG VETERANS WITH AND WITHOUT HIV: 1999–2010 William Becker[2,1]; E. J. Edelman[1]; Kirsha S. Gordon[2]; Robert Kerns[2,1]; Stephen Crystal[5]; Lynn E. Fiellin[1]; Adam Gordon[3]; Joseph L. Goulet[2,1]; Amy C. Justice[1,2]; David A. Fiellin[1]. [1]Yale University School of Medicine, New Haven, CT; [2]VA Connecticut Healthcare System, West Haven, CT; [3]University of Pittsburgh School of Medicine, Pittsburgh, PA; [4]Rutgers, State University of New Jersey, New Brunswich, NJ. (Tracking ID #1642150)

BACKGROUND: Recent observational studies have demonstrated increased risk of adverse effects of opioid analgesics among those with serious mental illness (SMI) and substance use disorders, conditions that are disproportionately prevalent among Veterans and patients with HIV. In order to characterize change in opioid exposure over time, we sought to examine trends and correlates of opioid receipt in a large, national sample of Veterans with HIV (HIV+) and without HIV (HIV-).
METHODS: Using the Veterans Aging Cohort Study-Virtual Cohort consisting of 41,924 HIV + and 85,470 demographically-matched HIV- patients from 1999 to 2010, our sample included Veterans lacking a cancer diagnosis with ≥1 outpatient or inpatient encounter. Using the 12-year time frame as a single period, we performed descriptive statistics to characterize patients receiving opioids and their receipt patterns—any, high dose (>120 mg/day) and long-term (>90 days) receipt—using equianalgesic conversions to standardize dose. We then constructed multivariable models to assess the relationship between demographic and clinical characteristics and receipt of any, high dose, and long-term opioids, using generalized estimating equations to account for repeated measures. Finally, using each of the 12 years as a serial cross section, we examined trends in the proportion of the sample with any, high dose and long-term receipt as well as total yearly opioid dose, days supplied and median daily dose.
RESULTS: Among 127,394 patients, 67 % received ≥1 opioid prescription during the study period. Among patients receiving opioids, 11 % received high dose and 38 % received long-term therapy. In multivariable analyses, HIV, having an acute pain-related diagnosis, having a chronic pain-related diagnosis, number of pain-related diagnoses, Hepatitis C, diabetes, and smoking (current or former) were positively associated with opioid receipt whereas black race, Hispanic ethnicity, other race/ethnicity, SMI, alcohol use disorder, and drug use disorder were negatively associated with receipt. Among those receiving opioids, HIV, number of pain-related diagnoses, Hepatitis C, SMI, and smoking (current or former) were positively associated, and black race, Hispanic ethnicity, other race/ethnicity, alcohol use disorder and drug use disorder negatively associated with high dose opioid receipt. Also, older age, having a chronic pain-related diagnosis, number of pain-related diagnoses, Hepatitis C, diabetes, SMI, and smoking (current or former), were positively associated, and black race, Hispanic ethnicity, other race/ethnicity, having an acute pain-related diagnosis and drug use disorder negatively associated with long-term opioid receipt. In yearly trends analysis, the proportion of HIV + patients receiving opioids significantly increased from 21 % in 1999 to 40 % in 2010, and from 25 % to 37 % for HIV- patients. The proportion of patients with high dose receipt increased significantly, as did total yearly opioid dose and days supplied. Median daily dose remained stable. Trends were similar in patients with and without HIV.
CONCLUSIONS: We observed an increase in opioid receipt among HIV + and HIV- Veterans, increased odds of any, high dose and long-term opioid receipt among subpopulations at higher risk of adverse effects and decreased odds of receipt among non-white patients. These findings suggest ongoing need for development of risk mitigation and clinical standardization interventions.

TRENDS IN ADVANCE DIRECTIVE USE AND HOSPITALIZATION AMONG ELDERLY AMERICANS, 2000–2010 Maria J. Silveira; John D. Piette. Ann Arbor VAMC HSRD, Ann Arbor, MI. (Tracking ID #1643048)

BACKGROUND: Background: Elderly patients are advised to complete advance directives (i.e. living wills and durable powers of attorney for healthcare) to guide decision-making about the aggressiveness of treatment in the event that they lose decision-making capacity. Studies show that most elderly prefer to limit aggressive care at the end of life, avoid hospitalization, and die at home. We chose to describe population trends in advance directive completion, hospitalization, and place of death for 2000–2010.
METHODS: Methods: We used data from the Health and Retirement Study (HRS), a biennial longitudinal survey of a nationally representative cohort of elderly adults regarding their medical, social, and financial situation. The sample included 6,122 HRS participants who died between 2000 and 2010 and were 60 or older at the time of death. Data were drawn from proxy interviews regarding the decedent's circumstances at death. We used descriptive statistics to examine variation in prevalence of living wills (LWs), durable powers of attorney for healthcare (DPAHC), hospitalization rates in the last year of life, and rates of hospital death by year of death. We used multivariable logistic regression to explore the association between these outcomes and subjects' sociodemographic and clinical characteristics. We accounted for the complex sampling design of the HRS in all analyses.
RESULTS: RESULTS: Most subjects had an advance directive prior to death (63.2 %). The proportion of decedents who had a LW and/or DPAHC at the time of death increased from 47 % in 2000 to 72 % in 2010 ($p=0.000$). DPAHCs were more popular than LW for 10 out of 10 years and rates of DPAHC completion increased more rapidly over time. During the same period of time, the rates of hospitalization in the year prior to death significantly increased, while the rates of hospital death significantly decreased.
CONCLUSIONS: Conclusions: There has been a significant increase in rates of advance directive completion over the last decade, with durable powers of attorney for healthcare being preferred over living wills. During the same time period, however, there was a significant increase in hospitalization rates but a decrease in hospital death, suggesting that advance directives may not protect patients from hospitalization, but instead increase the likelihood that they are discharged prior to death.

TRENDS IN AND CORRELATES OF AWARENESS OF A PREDIABETES DIAGNOSIS AMONG US ADULTS Jeffrey T. Kullgren[1]; HwaJung Choi[2]; Michele Heisler[1]. [1]Ann Arbor VA Healthcare System and University of Michigan, Ann Arbor, MI; [2]University of Michigan, Ann Arbor, MI. (Tracking ID #1642610)

BACKGROUND: An estimated 1 in 3 US adults have prediabetes, an asymptomatic condition associated with an elevated risk for developing type 2 diabetes. This risk can be significantly reduced through lifestyle modification or pharmacotherapy. An important first step in engaging these high-risk patients in programs shown to be effective such as the Diabetes

Prevention Program (DPP) is to ensure that they are aware of their prediabetes diagnosis. Although the main DPP results were published in 2002 and have been widely disseminated, we lack information on current rates of awareness of a prediabetes diagnosis, and correlates of such an awareness. The objective of this study was to describe recent trends in and factors associated with awareness of a prediabetes diagnosis among US adults.

METHODS: We conducted repeated and pooled cross-sectional analyses of data from the nationally-representative 2005–2006, 2007–2008, and 2009–2010 continuous National Health and Nutritional Examination Survey (NHANES). The analytic sample (n=2,178) was comprised of adults without diabetes who met the American Diabetes Association (ADA) criteria for prediabetes used from 2005 to 2010: a fasting plasma glucose of 100 to 125 mg/dL or a 75 g oral glucose tolerance test 2-h glucose of 140 to 199 mg/dL. In the repeated cross-sectional analysis we estimated a univariate logistic regression model to examine the relationship between NHANES cycle and awareness of a prediabetes diagnosis. In the pooled cross-sectional analysis, we used multivariable logistic regression to estimate associations between individual, insurance, and access characteristics and awareness of a prediabetes diagnosis.

RESULTS: Among US adults with prediabetes from 2005 to 2010, only 5.0 % (95 % CI, 4.2 to 6.0) were aware of a prediabetes diagnosis. There was a slightly higher prevalence of awareness in 2009–2010 (6.5 %, 95 % CI, 4.7 to 8.3) compared to 2007–2008 (4.1 %, 95 % CI, 2.7 to 5.5; P= 0.04). In multivariable logistic regression, adults who met one or more ADA criteria for screening for diabetes did not have greater awareness than those who did not meet any ADA criteria [adjusted odds ratio (AOR) 1.99, 95 % CI, 0.36 to 11.13; P=0.42]. However, adults with at least 2 chronic conditions that are not ADA criteria for diabetes screening (e.g., asthma or arthritis) had greater awareness than those without a chronic condition outside of the ADA diabetes screening criteria (AOR 2.51, 95 % CI, 1.17 to 5.40; P=0.02). Additionally, adults with at least 2 outpatient health care visits in the last year had greater awareness than those without any outpatient utilization in the last year (AOR 2.84, 95 % CI, 1.17 to 6.92; P=0.02).

CONCLUSIONS: Despite a slight recent increase, fewer than 1 in 10 US adults with prediabetes are even aware that they have this condition, meaning that an estimated 58 million Americans do not know that they have prediabetes. Individuals with few chronic conditions or little outpatient utilization are even less likely to be aware of a prediabetes diagnosis. This lack of awareness means that millions of Americans who could benefit from strategies proven to reduce rates of progression to diabetes may lack the knowledge and motivation to engage in evidence-based programs.

TRENDS IN THE QUALITY OF CARE AND RACIAL/ETHNIC DISPARITIES IN US HOSPITALS, 2005–2010 Amal N. Trivedi[1,2]; Wato Nsa[3]; Leslie R. Hausmann[5]; Jonathan S. Lee[5]; Allen Ma[3]; Dale W. Bratzler[3]; Kate Goodrich[5]; Fiona M. Larbi[5]; Michael J. Fine[4]. [1]Providence VA Medical Center, Providence, RI; [2]Alpert Medical School of Brown University, Providence, RI; [3]Oklahoma Foundation for Medical Quality, Oklahoma City, OK; [4]VA Pittsburgh Healthcare System, Pittsburgh, PA; [5]Centers for Medicare and Medicaid Services, Baltimore, MD. (Tracking ID #1641183)

BACKGROUND: In 2004, the Centers for Medicare and Medicaid Services (CMS) initiated public reporting on the quality of care in US hospitals for 3 common conditions: acute myocardial infarction (AMI), congestive heart failure (CHF), and community-acquired pneumonia (CAP). Hospitals report performance without stratifying results for vulnerable subgroups; therefore, it is unclear whether potential secular changes in performance are accompanied by corresponding changes in racial and ethnic differences. We examined trends in the quality of care for white, black, and Hispanic patients during the 6 years following the public reporting initiative.

METHODS: We used 2005–2010 data from the Quality Improvement Organization Clinical Data Warehouse, a CMS-maintained all-payer patient-level repository to which approximately 95 % of US hospitals report. We included patients age 18 and older sampled for at least 1 quality indicator. The outcomes were adherence to 18 quality indicators for AMI, CHF and CAP. The primary independent variable was race/ethnicity (non-Hispanic white, black, Hispanic). Covariates included age, sex, comorbidities and the following hospital characteristics: volume, bed size, teaching status, and rural location. We employed hierarchical regression to model within-hospital disparities (quality gaps between whites and minority patients at the same hospital) and between-hospital disparities (quality gaps arising from disproportionate concentration of black or Hispanic patients in low-quality hospitals). We examined change over time in all measures and change in racial/ethnic disparities for measures that had at least a 3 point white-black or white-Hispanic difference in 2005.

RESULTS: The sample included 13,297,043 hospitalizations in 5,013 acute care hospitals. From 2005 to 2010, performance rates improved on all 18 measures, ranging from 3.2 % for receipt of aspirin at discharge (from 95.4 % to 98.6 %; p<0.001) to 49.1 % for receipt of PCI within 90 min (from 42.0 % to 91.1 %; p<0.001). The white-black difference (higher quality for whites) exceeded 3 % for 8 measures in 2005. The white-black gap significantly narrowed over time for 7, ranging from a 2 % decrease in disparity in blood culture prior to antibiotic administration to an 11.9 % decrease in disparities for influenza vaccination (p<0.001 for each change). The white-Hispanic disparity exceeded 3 % for 12 measures in 2005. We observed significant narrowing of this disparity over time for all of these measures. The reductions ranged from a 1.4 % decrease in disparity for guideline-consistent antibiotic selection to a 12.9 % decrease in disparity for pneumococcal vaccination (p<0.001 for each change). In analyses of the 3 measures with the largest racial-ethnic gaps in 2005, changes in within-hospital disparity accounted for 51 %–55 % of the decline in white-black disparity and 23 %–48 % of the decline in white-Hispanic disparity. Changes in between-hospital disparity accounted for 49 %–55 % of the decline in white-black disparity and 52 %–77 % of the decline in white-Hispanic disparity.

CONCLUSIONS: From 2005 to 2010, we observed overall improvements and significantly narrowed racial and ethnic disparities in the quality of hospital care for AMI, CHF, and CAP. Reductions in racial/ethnic disparities were driven both by more equal care for whites and minorities receiving care in the same hospital and improved quality of care among hospitals serving disproportionately higher proportions of minority patients.

TRENDS IN THE AMBULATORY DIAGNOSIS AND TREATMENT OF NON-MALIGNANT PAIN IN THE UNITED STATES, 2000–2010 G. Caleb Alexander[3,5]; Daubresse Matthew[1]; Hsien-Yen Chang[2]; Yuping Yu[1]; Shilpa Viswanathan[1]; Nilay Shah[6]; Randall S. Stafford[5]; Stefan P. Kruszewski[7]. [1]Johns Hopkins School of Public Health, Baltimore, MD; [2]Johns Hopkins School of Public Health, Baltimore, MD; [3]Johns Hopkins School of Public Health, Baltimore, MD; [4]Johns Hopkins Medicine, Baltimore, MD; [5]University of Illinois at Chicago School of Pharmacy, Chicago, IL; [6]Mayo Clinic, Rochester, MN; [7]Stefan P. Kruszewski, M.D. & Associates, Harrisburg, PA. (Tracking ID #1633140)

BACKGROUND: The United States accounts for 5 % of the world's population yet 80 % of prescription opioid consumption. However, escalating rates of prescription opioid use and abuse have occurred in the context of efforts to improve the identification, treatment and management of non-malignant pain. This is important, since chronic pain affects approximately 100 million adults in the United States and pain is the most common reason patients seek health care. We sought to characterize the diagnosis and pharmacologic management of non-malignant pain in ambulatory, office-based settings between 2000 and 2010.

METHODS: We conducted a serial cross-sectional analysis of the National Ambulatory Medical Care Survey (NAMCS), a nationally representative audit of office-based physician visits. Analyses were limited to adults without a diagnosis of malignancy. Our main outcomes included the annual volume of visits with a primary symptom or diagnosis of pain and reported prescription opioid or non-opioid pharmacologic therapy in visits limited to new musculoskeletal pain.

RESULTS: The prevalence of reported pain as a primary symptom or diagnosis consistently represented one-fourth of visits, varying less than 1 % from 2000 through 2010. Patient-reported pain as a primary symptom comprised 21 % to 22 % of visits, whereas provider diagnoses of pain increased nearly 50 % from 2000 (5.7 % of visits with pain as a primary diagnosis) to 2010 (8.5 %). Among all pain visits, opioid prescriptions nearly doubled from 10.1 % to 18.6 %, whereas acetaminophen use increased modestly (2.80 % to 3.41 %) and NSAID use remained unchanged (23.0 %–23.5 % of visits). From two-fifths to one-half (42 %–50 %) of new musculoskeletal pain visits were associated with a pain medication. Rates of opioid utilization increased 62 % from 15 % of visits (2000) to 24 % of visits (2010) and rates of non-opioid pharmacotherapies, such as NSAIDs, decreased from 32 % of visits (2000) to 23 % of visits (2010). Multiple sensitivity analyses supported the robustness of our results and their substantive interpretation.
CONCLUSIONS: Concern among clinicians and policy-makers regarding prescription drug abuse has often been countered by calls to improve the identification and treatment of chronic non-malignant pain. We examine whether the dramatic escalation of prescription opioid sales has been accompanied by similar increases in non-opioid analgesics and changes in pain prevalence. Our findings indicate that the prevalence of reported pain in ambulatory practice has not changed during the past decade. However, patients' symptoms are increasingly diagnosed by clinicians and treated with prescription opioids. Trends in opioid prescriptions have not been paralleled by similar increases in the use of non-opioid therapies, representing an important opportunity to reduce a growing epidemic of prescription opioid abuse.

UNDERSTANDING AFRICAN-AMERICAN PATIENTS' REFUSAL OF PNEUMOCOCCAL VACCINATION Tiffany Brown; Francisco Acosta; Ariane M. Garrett; Ji Young Lee; Stephen D. Persell; David W. Baker; Shira N. Goldman; Kenzie A. Cameron. Northwestern University Feinberg School of Medicine, Chicago, IL. (Tracking ID #1624562)

BACKGROUND: The Advisory Committee on Immunization Practices recommends that adults 65 and older get vaccinated against invasive pneumococcal disease. In 2008, approximately 60 % of older adults reported receiving pneumococcal vaccination (PnVx). However, racial disparities in rates of PnVx exist; only 46 % of African Americans have been vaccinated compared to two-thirds of whites. In one urban academic practice, we found that only 2.9 % of white patients directly refused PnVx after their doctor recommended it, whereas 11.4 % of African Americans refused vaccination. We sought to better understand the reasons African-American patients refused the vaccine.
METHODS: We conducted a mixed method telephone survey of patients in a general internal medicine clinic. African Americans age 65 or older with a documented refusal of PnVx in the electronic health record system were eligible. We assessed a range of beliefs including: (a) perceptions of susceptibility to pneumonia; (b) perceived severity of pneumonia; (c) beliefs about the side effects of PnVx; (d) normative influences; and (e) comparative perceptions of the safety and importance of childhood vs. adult vaccinations. Participants responded to a series of knowledge and belief items on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), and responded to open-ended questions. Participants' medical records were queried to identify adherence to other recommended preventive services (e.g. cancer screenings).
RESULTS: Participants' (N=40) mean age was 73 years, 95 % were female, 72 % had at least some college education, and 35 % self-reported receiving other adult vaccinations. Electronic queries of the participants' medical records indicated that 81 % of the sample had documentation of at least one recommended cancer screening. Participants reported low levels of personal susceptibility to pneumonia (M=2.75, sd=1.43), but recognized that pneumonia could be deadly (M=4.32, sd=0.97). Participants worried about the side effects of PnVx (M=4.13, sd=1.34). Regarding normative influences, participants reported disagreement with the statement "My relatives and/or close friends think that I should get the pneumonia shot" (M=2.30, sd=1.27). Participants felt childhood vaccines were safer (M=4.24, sd=1.22) than adult vaccines (M=3.41, sd=1.40; $p<0.01$). Similarly, participants believed in the importance of childhood vaccinations (M=4.23, sd=1.33), yet were neutral about the importance of booster vaccinations for adults (M=3.16, sd=1.48). Participant responses to open-ended questions provided additional context for their reported perceptions of low susceptibility (e.g., "Well, I really feel that if you take all precautions that brings on pneumonia you shouldn't have it") and high severity (e.g., "[It's] serious, very serious. It's life threatening if it goes untreated").
CONCLUSIONS: Results from our sample of primarily female African-American patients suggest that those who refuse PnVx do understand the severity of pneumonia, yet may not perceive themselves to be susceptible to the disease. Strategies to improve vaccination rates among African Americans may need to include a strong focus on personal susceptibility. Additionally, given the large discrepancies in how this sample perceives childhood vs. adulthood vaccinations, the use of consistency theory in persuasive messages regarding adult vaccination should be explored, focusing on the importance of vaccination across the lifespan.

UNDERSTANDING RESIDENT LEARNING PREFERENCES WITHIN THE NOON CONFERENCE LECTURE SERIES: A QUALITATIVE STUDY Adam Sawatsky[1]; Susan Zickmund[1]; Kathryn Berlacher[2]; Dan Lesky[3]; Rosanne Granieri1. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA; [3]University of Pittsburgh School of Medicine, Pittsburgh, PA. (Tracking ID #1615062)

BACKGROUND: The Accreditation Council for Graduate Medical Education (ACGME) mandates that U.S. residency programs provide regular didactic sessions. The noon conference lecture remains a central means for meeting this mandate. Studies have demonstrated conflicting evidence for long-term knowledge gains and improvement in scores on national standardized exams using this approach. This has led to attempts at innovation in how we teach residents. We conducted a qualitative study to explore the attitudes of residents toward the lecture format to describe their learning preferences and to plan educational interventions.
METHODS: We conducted focus groups with internal medicine, internal medicine-pediatric and preliminary residents at the University of Pittsburgh to discuss their attitudes about noon conference, a lecture series that is designed to teach core medical knowledge to residents. Using standard methods for conducting focus groups, we developed a focus group guide through an iterative process involving core residency faculty. This guide was pilot-tested before the final version was established. A study team member who is trained as a focus group moderator and is independent from the training program moderated the discussions and transcribed them verbatim. The principal investigator reviewed each transcript and developed a codebook; two coders independently applied codes to the transcripts. We used Cohen's κ statistic to calculate inter-coder reliability; the total mean kappa value for the assignment of codes was 0.80. We used qualitative content analysis to summarize the content and identify themes derived from the data.
RESULTS: Of the 144 total internal medicine, medicine-pediatrics and preliminary residents at our institution, 41 (28 %) participated in 7 focus groups. Of the 41 participants, there were 17 (41 %) first-year residents and 24 (59 %) second- and third-year residents, and 22 (54 %) were men. Four main categories emerged from the qualitative analysis: motivations for attendance, content of sessions, teaching methods, and engagement. The main motivations for attendance were learning, eating lunch, and having a break in the day; the main deterrent from attending was a heavy workload. Regarding the content of sessions, residents preferred content that was clinically relevant, common, practical, readily applicable and likely to change their management of patients. In discussion about teaching methods, many residents believed that the most effective lectures had a limited number (approximately 3–5) of clearly-stated learning points and used a framework of clinical cases and questions to illustrate concepts. Residents desired active engagement in a safe environment that encouraged participation without fear of judgment.

CONCLUSIONS: The results of this qualitative analysis provide essential information to medical educators about the motivations and learning preferences of residents. Residents' stated learning preferences in this study are consistent with principles of adult learning, yet these principles are not routinely implemented in the standard lecture format. The lecture format for teaching residents is also not congruent with the ACGME learning objective of application of knowledge to clinical care. This study has begun to evaluate and understand the learning preferences of residents and, in conjunction with principles of adult learning, can guide how we restructure residency education.

UNDERSTANDING THE STRUCTURE AND FUNCTION OF PHYSICIAN-PATIENT INTERACTIONS IN TERMS OF CONTINGENT BEHAVIORS Harry B. Burke; Dorothy Becher; Patrick G. O'Malley. Uniformed Services University of the Health Sciences, Bethesda, MD. (Tracking ID #1640479)

BACKGROUND: The physician-patient interaction is central to medicine. The predominant approach to understanding these interactions has been based on Roter's system of coding participants' direct utterances (the purpose of the utterance and its literal meaning are the same) into one of 37 mutually exclusive and exhaustive categories, summing up the instances of each utterance type, and inferring the characteristics of the interaction. There are two problems with this approach. The first problem is that many times the participants will say something that is indirect and there are more than 37 types of indirect utterances. The second problem is that an interaction, by its very nature, is conditional—the actions of one person are conditional on the actions of the other person. This means that the unit of analysis must be dyadic rather than individual; contingent rather than unilateral; it must include both participants and the meaning of an utterance is known in the context of what the other participant said before and after the utterance.
METHODS: For outpatient physician-patient interactions, we created new a functional unit system composed of 8 types of interactional units. These units are: (1A) discussing a new clinical problem, (1B) discussing an existing clinical problem, (2) reviewing what has happened to the patient since the last visit, (3) discussing treatments and tests, (4A) filing out forms, (4B) ordering screening and prevention tests, (5) medical conversations not directly related to the patient, and (6) social conversation including greetings and closings. Each functional unit includes all the utterances by both physician and patient that are related to that unit. The functional units have high inter-rater agreement. We audio-recorded, transcribed, and coded 10 outpatient physician-patient interactions.
RESULTS: There were 272 occurrences of all the interactional units across the 10 interactions. Discussions of new or existing problems comprised 16 % of the interactional units, reviewing what had happened to the patient since the last visit comprised 28 % of the units, discussing tests and treatments comprised 23 % of the units, filling out forms and screening comprised 17 % of the units, non-patient related medical conversations comprised 5 % of the units, and social conversations comprised 11 % of the units. These interactional units can be used to model the structure of the interaction. One type of structure is how the units are related to each other. We examined the structure of the interaction by determining the probability of occurrence of adjacent units. When the interaction transitions from interactional unit 1A, 33 % of the time it goes to unit 2; and when the interaction is in interactional unit 2, it was preceded by unit 1A 13 % of the time. The most common transition was from unit 2 to unit 3, which occurred 29 times. The chance of transitioning from unit 2 to unit 3 was 38 %, and unit 3 is preceded by unit 2 46 % of the time.
CONCLUSIONS: We suggest that interactions cannot be understood as unilateral activity because they are inherently social; they must be understood in terms of contingent behaviors. We created a new functional unit system, where the units include the contingent behaviors of both participants, and we examined the transitions between units. The units and transitions between units can be used to model physician-patient interactions.

UNDERSTANDING TIME SPENT ABOVE AND BELOW THE TARGET RANGE AMONG PATIENTS RECEIVING WARFARIN Zayd A. Razouki; Adam Rose. Bedford VA Medical Center, Bedford, MA. (Tracking ID #1628372)

BACKGROUND: Poor anticoagulation control, which can be represented by low percent time in therapeutic range (TTR), is a known predictor for morbidity among patients receiving warfarin. While a considerable amount is known about patient characteristics predicting low TTR, little is known about what predicts whether patients will spend time specifically below or above the target range. It is usually assumed that poor control is the same as erratic control, in which a patient spends time both above and below the target range, but this has not been examined. Our goal was to differentiate between patient characteristics associated with a low TTR that has a unidirectional tendency (INR consistently above or consistently below) as opposed to those that are associated with an erratic pattern.
METHODS: We studied 103,897 patients who received warfarin for more than 6 months, with a target INR of 2–3 from 100 Veterans Health Administration (VA) sites between 10/06–9/08. Our primary outcomes of interest were percent time spent above an INR of 3 and percent time spent below an INR of 2. Independent variables included patient demographics, physical and mental illness, number of non warfarin medications, number of hospitalizations during the study period, in addition to anticoagulation indication. All results given below are fully-adjusted for the other variables in our final multivariate model.
RESULTS: Nonwhite race was found to predict more time spent below the target range (unidirectional low TTR). For example, Black and Hispanic patients spent 3.3 % and 1.5 % time more below range, compared to Whites ($p<0.001$), while spending 0.5 %. 0.9 % less time above target ($p<0.001$). Similarly, patients living in high poverty areas spent more time below range (2.1 %) and less time above range (1.5 %) compared to those living in low-poverty areas. Cancer, non-alcohol drug abuse, dementia, and bipolar disorder were also strongly associated more time below the target range (3.1 %, 2.7 %, 2.1 % and 1.9 %, respectively, $p<0.001$) and less time above target. On the other hand, other characteristics were associated with erratic low TTR (more time spent both above and below the target range). For example, patients with alcohol abuse spent 3.6 % more time below target, and 2.5 % more time above target, compared to patients who did not abuse alcohol (both $p<0.001$). Patients hospitalized 4 or more times during the study period spent 7.9 % more time above and 2.1 % more time below target range (both $p<0.001$), compared to patient not hospitalized at all. Similarly, patients who were taking more than 16 medications spent 4.5 % more time below range and 1.6 % more time above range, compared to patients taking 0–7 medications. There were no factors that consistently predicted a unidirectional tendency to spend time above the target range.
CONCLUSIONS: We identified two patterns of poor anticoagulation control, namely poor control with an erratic pattern and poor control with a unidirectional tendency towards low INR. Specific patient-level characteristics predicted one or the other pattern. The most likely explanation for a unidirectional tendency toward low INR is that providers intentionally choose to target a low (guideline-discordant) target range for certain groups of patients. Our results suggest that poor anticoagulation control is not a monolithic phenomenon, but rather a common final pathway for at least two separate phenomena, each of which may need to be addressed on its own terms.

UNEXPLAINED GEOGRAPHIC VARIATION IN OPIOID UTILIZATION IN HOSPITALIZED US MEDICAL PATIENTS Shoshana J. Herzig[1]; MIchael B. Rothberg[2]; Michael Cheung[1]; Long Ngo[1]; Edward R. Marcantonio[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Cleveland Clinic, Cleveland, OH. (Tracking ID #1641125)

BACKGROUND: Recent literature has drawn attention to the high and increasing rates of opioid prescribing and overdose-related deaths in the United States. These studies have focused on community-based and emergency department prescribing, leaving prescribing practices in the inpatient setting unexamined. Considerable variation in use, unrelated to patient characteristics,

could be a marker of inappropriate prescribing practices and poor quality of care.

METHODS: We studied a large cohort of adult admissions to the internal medicine service from July 2009 through June, 2010 using Premier's Perspective database—the nation's largest inpatient drug utilization database, containing administrative data from over 600 hospitals similar in composition to acute care hospitals nationwide. We defined opioid exposure as presence of at least one charge for an opioid medication during the admission. We used a generalized estimating equation with a log link to investigate the association between opioid use and patient characteristics, hospital characteristics, and US census region, controlling for repeated patient admissions with an autoregressive correlation structure.

RESULTS: Our cohort included 1.14 million medicine admissions, spanning 288 hospitals (median age=64 years; 46 % men). Opioids were used in 49 % of admissions. Morphine was the most commonly used opioid medication (20 %), followed by hydrocodone (14 %) and hydromorphone (13 %). Opioids were administered in 39 %, 50 %, 53 %, and 55 % of admissions to hospitals in the Northeast, Midwest, South, and West, respectively. After adjustment for patient demographics, comorbidities, and hospital characteristics, opioid use was more common in patients who were female, aged 25–64 (compared to those older and younger), of Caucasian race, with non-private insurance. The strongest predictor of receipt of opioid medication was US census region; compared to patients in the Northeast, the relative risk of opioid receipt for patients in the Midwest, South, and West were 1.26 (1.26–1.27), 1.35 (1.35–1.36), and 1.41 (1.40–1.42), respectively.

CONCLUSIONS: In this large pharmacoepidemiologic cohort, we found that opioids were used in almost half of hospitalized medical patients. Considerable geographic variation in opioid use was evident even after controlling for patient and hospital characteristics. Increased attention should be paid to the role that inpatient opioid prescribing plays in the increased rates of chronic opioid use and overdose related deaths in the US.

UNMET NEEDS, SERVICE USE AND PATIENT ACTIVATION: IMPLICATIONS FOR PANEL MANAGEMENT TO PROMOTE SELF-MANAGEMENT OF CHRONIC ILLNESS Ashley E. Jensen[1,2]; Katelyn Bennett[1,2]; Rachel Blitzer[1,2]; Scott Sherman[2,1]; Mark D. Schwartz[1,2]. [1]NYU School of Medicine, New York, NY; [2]Veterans Affairs New York Harbor Healthcare System, New York, NY. (Tracking ID #1640260)

BACKGROUND: As primary care shifts to patient centered medical home (PCMH) models, we need to clarify patients' preferences for health care services and support for self-management of chronic illnesses. Need and strategies for support may depend on the level of patient activation, a measure of skills, knowledge, and confidence in managing one's health. To address these questions, we assessed patient activation, unmet care needs, and service use.

METHODS: We surveyed a randomly selected sample of 965 patients at baseline of the Program for Research on the Outcomes of VA Education (PROVE), a controlled trial of the impact of panel management on hypertension and smoking outcomes through the addition of a non-clinical panel management assistant (PMA) and clinical microsystem education to randomly assigned primary care teams at two campuses of the VA New York Harbor Health Care System (NYHHS). Eligible patients were smokers or hypertensive veterans whose last blood pressure reading was uncontrolled (systolic greater than 140 or diastolic greater than 90). We used the Patient Activation Measure (PAM), a reliable and valid, unidimensional, 13-item scale, that scores activation from 0 to 100. PAM scores are divided into 4 stages of activation: Stage 1 individuals may not believe the patient role is important (PAM<=47.0), Stage 2 patients may lack knowledge or skill to take action (47.1–55.1), Stage 3 patients are beginning to take action (55.2–67.0), and Stage 4 patients have taken action but may have difficulty maintaining behaviors over time (>67.0). Other survey items included measures of health care service use and unmet needs, and interest in outreach by telephone from PMAs.

RESULTS: Overall survey response rate was 50 % (481/965). Mean PAM score was 63.3 with a 95 % CI [61.7, 65.0]. Of the 175 hypertensive patients, 72 % were in the highest stage of activation (Stage 4) compared with 35 % of the 266 smoking patients, and 21 % of the 40 patients with both conditions ($p<0.01$). The most common services patients were not currently using but would like to (Unmet Need) were: help to build motivation to improve health (40 %); groups to improve health (36 %); telephone support to monitor and managing health (34 %); and materials to help understand health conditions (32 %). Patients reporting unmet needs had lower PAM scores than those already using or not interested in the service (Table 1). Overall 85 % of patients would not mind being contacted by telephone by PMAs to help them manage their health conditions between visits.

CONCLUSIONS: Our findings indicate gaps in patient support that may be addressed through proactive outreach by PMAs. Patient activation may be a helpful marker of engagement and self-management behaviors to track as we test strategies of population level outreach. Further research is warranted to determine how panel management outreach impacts patient activation, service use, and clinical outcomes.

Table 1: Mean PAM Score by Service Needs and Use

Service	Mean PAM Score		ANOVA p value
Unmet need for service	Used Service	Would not use service	
Help to build motivation to improve health	61.8	64.4	62.3 0.075
Groups to improve health	60.2	62.4	65.3 0.071
Telephone support	59.3	65.7	62.6 0.041
Materials to understand health conditions	60.1	66.5	61.3 0.0040

UNMET HEALTH NEEDS AMONG HOMELESS AND VULNERABLY HOUSED ADULTS IN THREE CANADIAN CITIES Niran Argintaru[1,2]; Catharine Chambers[1]; Evie Gogosis[1]; Susan Farrell[3]; Anita Palepu[5]; Fran Klodawsky[5]; Stephen Hwang[1]. [1]Li Ka Shing Knowledge Institute, St. Michael's Hospital, Toronto, ON, Canada; [2]University Of Western Ontario, Toronto, ON, Canada; [3]University of Ottawa, Ottawa, ON, Canada; [4]University of British Columbia, Vancouver, BC, Canada; [5]Carlton University, Ottawa, ON, Canada. (Tracking ID #1641955)

BACKGROUND: Approximately 150,000 Canadians and up to 3.5 million Americans experience homelessness each year. Homeless individuals experience a high burden of health problems, yet face significant barriers in accessing health care. Less is known about unmet needs for care among vulnerably housed persons—those living in poor-quality or temporary housing, and at high risk of becoming homeless. The objectives of the study presented here were to examine the factors associated with unmet needs for health care in a community-based sample of homeless and vulnerably housed individuals within a universal health insurance system.

METHODS: 1,191 single adults were recruited at shelters, meal programs, community health centers, drop-in centers, rooming houses, and single room occupancy hotels in Vancouver, Toronto, and Ottawa, Canada, throughout 2009. Baseline interviews elicited demographic characteristics, physical and mental health statuses, chronic health conditions, health-related quality of life, health care providers and utilization, perceived barriers to health care, and unmet needs for health care. Multivariate logistic regression was used to identify factors associated with self-reported unmet needs for health care during the past 12 months.

RESULTS: Of the 1,181 participants included in the analysis, 445 (37 %) reported unmet needs for health care. There were no significant differences between homeless and vulnerably housed participants, therefore the two groups were analyzed together. In adjusted multivariate analyses, factors associated with a greater likelihood of reporting unmet needs were employment in the past 12 months (AOR=1.40, 95 % CI=1.03–1.91) and having ≥3 chronic health conditions (AOR=2.17, 95 % CI=1.24–3.79). Having higher health-related quality of life (AOR=0.21, 95 % CI=0.09–0.53), improved mental (AOR=0.97, 95 % CI=0.96–0.98) or physical health (AOR=0.98, 95 % CI=0.96–0.99), and having a primary care provider (AOR=0.63, 95 % CI=0.46–0.85) decreased the likelihood of reporting unmet needs. An analysis of participants reporting one

or more previous mental health diagnoses identifies significantly increased likelihood of unmet need for health care in participants with mood disorders (OR=1.73 95 % CI=1.36, 2.20) and anxiety disorders (OR=1.96 95 % CI=1.48, 2.57).
CONCLUSIONS: Homeless and vulnerably housed adults have a similar likelihood of experiencing unmet health care needs, highlighting that the provision of insecure, poor-quality housing does not improve unmet needs for health care. Despite Canada's universal health insurance system, these populations face sizeable barriers to meeting health care needs and are burdened by a high prevalence of unmet needs for care. Participants with multiple chronic health conditions, worse health status, or no primary care provider were more likely to report unmet needs for health care. It is therefore critical to develop policies and programs that are easily accessible and appropriate for vulnerable individuals in order to meet their unique health care needs. Future studies should identify the types of health care that are lacking and explore effective strategies to reduce barriers to accessing care.

UNMET NEEDS OF CAREGIVERS OF PATIENTS REFERRED TO A DEMENTIA CARE PROGRAM Lee A. Jennings[1]; David B. Reuben[2]; Leslie C. Evertson[2]; Katherine S. Serrano[2]; Linda Ercoli[3]; Zaldy Tan[2]; Neil Wenger[1]. [1]University of California, Los Angeles, Los Angeles, CA; [2]University of California, Los Angeles, Los Angeles, CA; [3]University of California, Los Angeles, Los Angeles, CA. (Tracking ID #1642624)

BACKGROUND: Research has demonstrated that in practice settings, primary care physicians (PCP) do not provide high quality care for patients with dementia. As part of the baseline evaluation of a new comprehensive dementia care management program, we evaluated caregiver reports of dementia care and self-efficacy as well as mental health and burnout.
METHODS: We developed a 9-item pre-visit caregiver survey to assess caregiver perception of the PCP's recognition of the patient's cognitive impairment and its impact on health conditions, the caregiver's experience with advice on dementia-related topics, and the caregiver's self-efficacy for caring for the patient with dementia and for accessing help. Response options were on a five-point rating scale with 1 = strongly agree and 5 = strongly disagree. Caregivers completed the survey as a supplement to the patient pre-visit assessment prior to the program intake visit, and during the intake visit, caregivers completed the PHQ-9 survey about themselves and also completed the 13-item Modified Caregiver Strain Index (CSI). Survey data were analyzed using simple univariate statistics.
RESULTS: To date, 125 patients and 159 caregivers have been evaluated as part of the dementia care program. 99 caregivers of 72 patients have been administered the caregiver pre-visit survey supplement. 51 caregivers (51.5 %) completed the pre-visit supplement survey. Although 44 % of responding caregivers agreed that they have received advice, only 30 % were aware of services available to help them provide care and only 16 % knew how to get community services that will help them provide care. Moreover, only 16 % agreed that they feel confident handling problems like the patient's memory loss, wandering, or behavioral problems, and only 20 % agreed that they feel confident that they can deal with the frustrations of caregiving. Although the majority of respondents (78 %) agreed that the patient's regular doctor understands how memory or behavior problems complicate other health conditions, only 28 % agreed that they have a healthcare professional who helps them work through dementia care problems. One hundred fifty-one caregivers (98.1 %) completed the PHQ-9 with mean score of 4.26 (+/−4.41). 138 caregivers (89.6 %) completed the Modified CSI with a mean score of 11.49 (+/−6.93).
CONCLUSIONS: These initial data from caregivers of patients with dementia referred to a dementia care program demonstrate that although PCPs were perceived as understanding how dementia affects other conditions, most caregivers felt they did not have a healthcare professional to help them with dementia problems, had considerable unmet need, and had low confidence in their ability to manage caregiving. On average, caregivers reported low levels of depression and moderate caregiver strain.

UNPACKING RESIDENT-LED CODE STATUS DISCUSSIONS: RESULTS FROM A MIXED METHODS STUDY Rashmi K. Sharma; Nelia Jain; Eytan Szmuilowicz; Diane Wayne; Kenzie A. Cameron. Northwestern University, Chicago, IL. (Tracking ID #1640547)

BACKGROUND: We previously showed that a multimodality communication skills intervention improved internal medicine residents' ability to perform a code status discussion (CSD) with a standardized patient (SP). However, the impact of education on CSD content and outcomes is unknown. We compared CSDs between intervention and control residents to identify key drivers of code status determination.
METHODS: Fifty-one internal medicine PGY1 residents were randomized to either intervention (n=23) or control (n=28). Intervention group residents received a multimodality CSD skills training program including lectures, deliberate practice of CSD skills, and maintenance of a CSD log. Six months later all residents completed a 15 min videotaped CSD with a single SP portraying a 47-year-old man hospitalized with metastatic colon cancer. Digital recordings were transcribed verbatim, de-identifed, independently reviewed, and coded by two of three coders using an open coding approach. Coders assessed the final CSD determination based on resident statements as: a) full code, b) do-not-resuscitate (DNR), or c) could not be determined. Discrepancies were discussed and resolved by consensus. Chi-square tests were used to evaluate the association between study group (intervention vs. control) and the key themes identified through qualitative analysis.
RESULTS: Inter-rater reliability for code status determination was high (Cohen's kappa=0.89). Three intervention and one control resident (8 %) did not complete code status determination within the allotted time. Final code status determination for the remaining discussions was full code for 12/20 (60 %) in the intervention group and 22/27 (81 %) in the control group (p=0.10). Themes associated with determination of full code included focusing on the mechanics of resuscitation and not providing clinical context, framing the decision as one that only the patient can make, and equating the patient's description of himself as a fighter with a desire to be resuscitated. Themes associated with determination of DNR included: discussion of outcomes of resuscitation and quality of life, discussing resuscitation in the context of patient values/goals, and physician recommendation regarding code status. Compared to controls, intervention residents were more likely to explore patient values/goals (75 % vs. 33 %; p=0.005), provide clinical context when discussing resuscitation (80 % vs. 19 %, p=0.000), and make a recommendation regarding code status (40 % vs. 0 %; p=0.000). They were less likely than controls to equate the patient's use of the term "fighter" with preference for full code (20 % vs. 52 %, p=0.03) and frame the decision as one solely for the patient (25 % vs. 59 %, p=0.02). There were no significant differences between intervention and control residents for discussion of outcomes or quality of life; topics which both groups did infrequently.
CONCLUSIONS: CSD determination was driven primarily by how residents framed discussion of code status, and whether they incorporated patient values and goals and/or made a recommendation regarding code status. Limited by a small sample size, we found a trend toward intervention residents being more likely than controls to conclude the SP desired DNR status. Additional research is needed to evaluate the effect of education on CSD determination in actual patient encounters.

UNSTABLE HOUSING AS A RISK FACTOR FOR POOR DIABETES AND HYPERTENSION CONTROL Michael S. Wolf[1]; Elizabeth A. Bojarski[1]; Laura Curtis[1]; Stacy Bailey[2]; Hilary K. Seligman[3]. [1]Northwestern University, Chicago, IL; [2]UNC-Chapel Hill, Chapel Hill, NC; [3]UCSF, San Francisco, CA. (Tracking ID #1643090)

BACKGROUND: Root causes of known disparities in chronic disease outcomes, including diabetes, are not entirely known. One less-studied, psychosocial risk factor may be unstable housing, which could present enormous challenges for diabetes self-management. The objective of this

study was to examine the association between housing status and glycemic and blood pressure control among low-income patients from primary care clinics in Missouri.
METHODS: A secondary, observational analysis was conducted using baseline data from a clinical trial evaluating a diabetes self-management intervention in patients with type II diabetes. In-person interviews were conducted with 667 patients receiving care in ten federally qualified health centers at three sites in 2008 and 2009. Living situation, socioeconomic and other personal characteristics were collected. Self-reported living situation was defined as stable or unstable housing; the former renting or owning a house or apartment and the latter was defined as temporary arrangements including living with a friend or relative without paying rent, or other. The most recent hemoglobin A1c (HbA1c) value and three blood pressure values recorded prior to the baseline interview were obtained from medical charts, when available (n=631, 95 %). Chi-square and t-tests were used to examine the bivariate associations between demographic variables and tight glycemic and blood pressure control. Separate multivariable logistic regression models, clustered by site, were run for each clinical outcome with housing status as the main independent variable of interest.
RESULTS: Out of 631 diabetic participants with available medical record data; mean age was 54.8 years old (SD=11.1), 63 % were female, and 31 % identified as African-American. 13 % were classified as having unstable housing. In terms of self-care, 72 % had not achieved tight glycemic control (HbA1c≥7.0), and similarly 72 % had also uncontrolled blood pressure (average SBP≥130 or DBP≥80). In bivariated analyses, trends indicated associations between unstable housing and both poorer glycemic control (80 % vs. 71 %, p=0.09) and blood pressure control (81 % vs. 70 %, p=−.04). In multivariable logistic regression models, housing status was significantly associated with both outcomes, adjusting for age, sex, race, educational attainment, income level, and employment status. Those who had unstable housing were more likely to have not achieved tight glycemic control(OR, 1.37; 95 % CI, 1.15 to 1.62; p<0.001) or have controlled blood pressure (OR, 2.65; 95 % CI, 1.06 to 6.60; p=0.04) than those who did not possess stable housing.
CONCLUSIONS: Findings suggest that housing status is strongly related to glycemic and blood pressure control. However, this may go undetected by physicians. Steps should be taken to ensure clinicians routinely assess their patients' psychosocial circumstances and consider these factors in treatment.

USABILITY OF A FAMILY HEALTH HISTORY AND CLINICAL DECISION SUPPORT TOOL FOR PATIENTS AND PRIMARY CARE PROVIDERS Rebekah R. Wu[1,2]; Tiffany Himmel[3]; Karen Powell[5]; Elizabeth Hauser[5,6]; Astrid B. Agbaje[7]; Vincent Henrich[5]; Geoffrey S. Ginsburg[2,3]; Lori A. Orlando[2,8]. [1]VA Healthcare System, Durham, NC; 2Duke University Health System, Durham, NC; [3]Duke University, Durham, NC; [4]UNC Greensboro, Greensboro, NC; [5]Duke University, Durham, NC; [6]VA Healthcare System, Durham, NC; [7]Cone Health System, Greensboro, NC; [8]Duke University Health System, Durham, NC. (Tracking ID #1637191)

BACKGROUND: Family health history (FHH) is the single strongest predictor of disease risk and yet is significantly underutilized in primary care. We developed a patient facing FHH collection tool, MeTree©, with embedded education for patients and providers on the collection (particularly how to collect from relatives) and importance of FHH, as well as decision support for breast cancer, colon cancer, ovarian cancer, hereditary cancer syndromes, and thrombosis. To evaluate the impact of the tool on patients, providers, clinic workflow, and patient care we integrated it into real world clinics and for this abstract we report on the usability of MeTree© for patients and providers.
METHODS: All non-adopted adult English speaking patients with an upcoming routine appointment with their provider at 2 primary care clinics with 14 physicians in the Cone Health System were invited to participate by completing MeTree some time prior to their appointment. Patients and physicians completed surveys on their experience, patients after their appointment and at 3 and 12 months post-visit, physicians after 3 months of integration.
RESULTS: Total patient enrollment was 1,184. Average time to complete MeTree was 27 min. Patients found MeTree: easy to use (93 %), easy to understand (97 %), useful (98 %), raised their awareness of disease risk (81 %), and changed how they think about their health (82 %). Of the 26 % (n=311) asking for assistance to complete MeTree, age (mean 65 sd 9.4 vs. 57 sd 11.7, p-value<0.00) and large pedigree size (24.5 sd 9.81 vs. 22.3 sd 8.41, p-value<0.00) were the only significant factors. 77 % (239) of those requiring assistance were over the age of 60. Patients learned: more relatives had diseases than they realized (20 %), relatives' diseases were more severe (11 %), relatives had diseases they did not know about (39 %), they were mistaken about what diseases some relatives had (18 %), and learned how old relatives were when they got a disease (39 %). Providers (n=14) found MeTree: improved their practice (87 %), improved their understanding of FHH (63 %), made practice easier (75 %), and worthy of recommending to their peers (93 %).
CONCLUSIONS: Our study shows that FHH collection can be a positive experience for patients and providers and can be implemented without disruption to workflow.

USE AND SAFETY OF BUPRENORPHINE IN HIV-INFECTED AND UNINFECTED OPIOID DEPENDENT PATIENTS Jeanette M. Tetrault[1]; Janet P. Tate[2]; Jennifer Edelman[1]; Adam Gordon[3]; Vincent Lo Re[5]; Lynn E. Fiellin[1]; Kendall Bryant[5]; Amy C. Justice[2,1]; David A. Fiellin[1]. [1]Yale University School of Medicine, New Haven, CT; [2]VA Connecticut Healthcare System, West Haven, CT; [3]University of Pittsburgh School of Medicine, Pittsburgh, PA; [4]University of Pennsylvania School of Medicine, Philadelphia, PA; [5]National Institute of Alcohol Abuse and Alcoholism, Rockville, MD. (Tracking ID #1640823)

BACKGROUND: Reports suggest that combined buprenorphine/naloxone (BUP) may cause transaminitis, especially in patients with chronic hepatitis C virus (HCV) infection. This is concerning for HIV-infected (HIV+) patients who may have co-occurring HCV infection and/or unhealthy alcohol use. Additionally, HIV + patients commonly take medications with potential hepatotoxicity. Because BUP is metabolized by the cytochrome P450 3A4 system, medication interactions requiring dose changes are of concern, especially in HIV + patients on atazanavir (ATZ), a cytochrome P450 3A4 inhibitor. We compared the use of BUP in HIV + and HIV-uninfected (HIV-) patients and explored the impact of BUP on liver enzymes. Among HIV + patients we also conducted surveillance for BUP dose decreases with the ATZ.
METHODS: We conducted a retrospective cohort study among HIV + and HIV- patients in the Veterans Aging Cohort Study-Virtual Cohort (between 2003 and 2009). We compared changes in AST, ALT, and total bilirubin (TB) for up to a 365 day exposure period between HIV + and HIV- patients who received a BUP prescription of at least 7 days duration and who had relevant laboratory data. Using a nested case-series analysis, we identified cases of 1) liver enzyme elevation [LEE;defined as an increase of greater than 5 times baseline in ALT or AST or greater than 3.5 times baseline, if baseline was greater than 40 IU/L (normal range for ALT 9–60, normal range for AST 10–40)] and 2)TB elevation [defined as 2X upper limit of normal (normal range 0.2–1.2 mg/dL) among patients with normal TB at baseline] during the exposure period. To assess for evidence of a pharmacodynamic interaction, among HIV + patients we assessed median BUP dose in those patients receiving both BUP and ATZ.
RESULTS: Of the 394 patients with a BUP prescription meeting the inclusion criteria, 39 % were HIV+, 98 % were male, 33 % were white and 76 % were HCV-antibody positive (HCV-Ab +). The median age of the sample was 52 years (interquartile range (IQR) 48–55). The median duration of exposure to BUP was 120 days (IQR 39–346) among HIV + and 143 days (IQR 36–353) among HIV- patients, (p=0.88). The median dose of BUP was 12 mg (IQR 8–16) among HIV + and 16 mg (IQR 8–24) among HIV- patients, (p=0.10). Median ALT decreased 1.0 IU/L (IQR −10.4–9.1) in HIV + and increased 1.0 IU/L (IQR −6.3–7.5) in HIV-patients (p= 0.25); median AST decreased 0.7 IU/L (IQR −6.0–5.4) in HIV + and decreased 1.0 IU/L (IQR −10.7–7.9) in HIV-patients (p=0.5); median TB decreased 0.09 mg/dL (IQR −0.2–0.10) in HIV + and increased

0.02 mg/dL (IQR −0.19–0.19) in HIV-patients (p=0.16). Of 348 patients with available labs, 15 (4.3 %) had LEE; 8 (5.6 %) in HIV + and 7 (3.4 %) in HIV-patients (p=.34). Of 146 patients with normal TB at baseline, 3 had TB elevation, 2 (1.4 %) in HIV + and 1 (0.5 %) in the HIV-patients (p=.95). All cases of LEE and TB elevation occurred in patients who were HCV Ab+. Among HIV + patients, median BUP dose in those receiving both BUP and ATZ (N= 20) was 12 mg (IQR 8–18 mg), compared with 12 mg (IQR 8–16 mg) among those not on ATZ (p=0.51).

CONCLUSIONS: Exposure to BUP is associated with minimal changes in liver enzymes. However, in the setting of HCV infection, cases of LEE and TB elevation did occur in HIV + and HIV-patients, with no differences between the two groups. There was no evidence of a dose adjustment in patients receiving BUP and ATZ. Baseline and periodic liver enzyme tests should be monitored in HCV-infected patients prescribed BUP, regardless of HIV status.

USE OF THE EMR AND ITS EFFECTS ON PATIENT-CENTERED COMMUNICATION AND PATIENTS' EVALUATIONS OF CARE

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BACKGROUND: The electronic medical record (EMR) with its embodiment in the computer should be considered an additional 'interactant' in the medical consultation. Clinicians must engage patient and computer simultaneously or in alternation in an effort to provide medical care. While the evidence is mixed regarding whether physician use of the EMR during the consultation affects patient evaluations of care, few studies have examined the degree to which use of the computer affects the extent to which physicians display patient-centered communication (PCC). In this investigation of physician-patient encounters at a VA clinic, we hypothesized that physicians who spend more time engaging the computer when interacting with the patient will have lower ratings of PCC.

METHODS: General internal medicine physicians (n=21) were recruited from VAMC clinics located in a West Coast city. Five to six patients (follow-up or acute visit) for each physician were recruited to participate in a study of physician-patient communication. Physician use of the computer and the patient-physician interaction in the exam room were captured in real time via videotape of the interaction, videotape of the computer screen, and through the use of the Morae system that records physician clicks and scrolls on the computer. After the visit, patients completed survey of their satisfaction with the visit. Trained coders, blinds to the study's hypothesis, viewed videorecordings of the interactions and rated the physicians' communication along three domains of patient-centeredness—informative, supportive, and partnership-building—which, when summed, created the PCC score. Based on their average proportion of time they used and/or looked at the computer during the visit, physicians were divided into two groups—heavy EMR users (> 50 % of the time looking at/working with the computer) (n=12) and moderate EMR users (< 50 % of time looking at/working with the computer). Multivariable regressions analyses, which controlled for patients' demographics and nesting of patients within physicians, were used to test the study's hypotheses.

RESULTS: The final sample consisted of 121 consultations. Although patients expressed marginally greater satisfaction (p<.09) with physicians who were moderate users of the EMR compared with heavy EMR users, coders of the recorded interactions rated the communication of heavy EMR users as significantly less patient-centered than that of the moderate EMR users (P<.0009). Moreover, in regression analyses controlling for other variables, coders' ratings of the physicians' PCC strongly predicted patients' satisfaction with care (p<.0001).

CONCLUSIONS: In this study of VA general internists' use of the EMR, heavy users of the EMR received lower ratings of PCC which in turn predicted less patient satisfaction. Because patient satisfaction was only marginally related to whether physicians were heavy or moderate EMR users, it would appear some physicians are quite skilled at multitasking and are able to perform necessary EMR tasks as well as communicate in a more patient-centered way. The findings have important implications for clinical training, particularly with respect to use of the EMR in ways that do not interfere with efforts to be patient-centered.

USING ELECTRONIC HEALTH RECORD CLINICAL DECISION SUPPORT IMPROVES QUALITY OF CARE

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BACKGROUND: Electronic health records (EHRs) have been adopted by about 72 % of US physicians. The Medicare and Medicaid EHR Incentive Program, or "meaningful use", incents physicians to adopt EHRs by 2015 or face penalties. When a practice purchases an EHR they can choose which suite of clinical decision support (CDS) functions they want to install. Given this, we sought to examine whether actively turning off any CDS functions had an impact on quality of care.

METHODS: Using cross-sectional surveys, the National Ambulatory and National Hospital Ambulatory Medical Care Surveys, from 2006 to 2009, we analyzed adult outpatient visits to clinics with and without certain CDS for a variety of outcome measures: blood pressure control, cancer screening, health education, receipt of the influenza vaccine, and whether the visit was related to an adverse drug event. We evaluated the following EHR functions, deemed essential by meaningful use: problem lists, preventive care reminders, lab results, lab range notifications, and drug-drug interaction warnings. We used logistic regression, controlling for patient and practice characteristics, with the outcome measures as the dependent variables. Visits were categorized into two groups: any of the CDS functions turned on or off.

RESULTS: There were an estimated 900 million visits to US ambulatory clinics with EHRs from 2006 to 2009; 98 % had some form of CDS. The absence of certain CDS functions reduced the provision of some health outcome measures. Not having preventive care reminders was associated with increased odds of not receiving preventive care (OR 1.1; 95 %CI 1.01,1.26), not receiving health education (OR 1.1; 95 %CI 1.0,1.2), not ordering age-appropriate cancer screening (OR 1.4; 95 %CI 1.1,1.7), and of having uncontrolled blood pressure (OR 1.6; 95 %CI 1.4,1.8). Lacking electronic problem lists increased the odds of not receiving health education (OR 1.1; 95 %CI 1.0,1.3) and of having uncontrolled blood pressure (OR 2.5; 95 %CI 2.2,2.7). The odds of not receiving cancer screening were increased if the provider did not have electronic lab results (OR 1.3; 95 %CI 1.1,1.5) or out of range lab notification (OR 1.2; 95 %CI 1.1,1.5). There were decreased odds of avoiding an adverse drug event visit if the provider did not have drug-drug interaction warnings (OR 0.5; 95 %CI 0.4,0.6), electronic lab results (OR 0.32; 95 %CI 0.27,0.4), or out of range lab notification (OR 0.37; 95 %CI 0.32,0.43). Most of these associations were no longer apparent when examining just those providers who actively turned off the EHR function versus those that had the function turned on. Only 1.8 % of visits to practices with EHRs were to practices with any CDS turned off. There remained increased odds of not providing health education if the provider had actively turned off the electronic problem list (OR 1.3; 95 %CI 1.04,1.6) versus maintaining the function. When examining all of the CDS functions together, there was no significant difference in the odds of attaining any outcome measures based on having any of the functions turned off versus on.

CONCLUSIONS: We found significant associations between the use of certain CDS functions and improved quality of care. Actively choosing to turn off any of the CDS functions was infrequent; turning off the functions eliminated most of these associations. These findings are encouraging that the meaningful use standards will have a significant impact on national quality of care and health outcomes once fully implemented.

USING NATURAL LANGUAGE PROCESSING TO EXTRACT ABNORMAL RESULTS FROM MAMMOGRAPHY REPORTS
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BACKGROUND: Timely follow-up of abnormal test results is increasingly recognized as a key component of healthcare quality. However, numerous studies show that follow-up of abnormal mammography results is frequently inadequate and 28 % of women requiring immediate or short-term follow-up for abnormal mammograms do not receive recommended care. Automated alerts generated when patients' test results are abnormal have been shown to improve test follow-up. However, many test results, such as mammography reports, are stored as free-text and require manual review to identify abnormal results. Natural language processing (NLP) software can be used to automatically extract results from free-text reports and generate alerts for abnormal results. The purpose of the current study is to evaluate the performance of NLP software for extracting results from free-text mammography reports.
METHODS: A random sample of 421 free-text mammography reports completed between January 2003 and January 2012 was manually reviewed by a general internist (CM) and the Breast Imaging Reporting and Data System (BI-RADS) results determined for each. We developed and tested the performance of an NLP model to extract the BI-RADS results from the same set of reports. The two assessments ('gold' standard vs. NLP) were compared to determine the precision, recall and accuracy of NLP for extracting mammography results. Precision, recall and accuracy were calculated as follows: Precision = TP/(TP + FP), Recall = TP/(TP + FN), and Accuracy = (TP + TN)/Total; where TP = true-positive, FP = false-positive, TN = true-negative, and FN = false-negative.
RESULTS: Manual review ('gold' standard) of the 421 mammography reports determined that 3.6 %, 13.5 %, 58.2 %, 12.1 %, 8.6 %, 1.2 %, and 2.9 % of results were BI-RADS 0 thru 6; respectively. When we compared NLP against the 'gold' standard manual review, the results were as follows: Precision=98 % (96–99 %), Recall=100 % (98–100 %) and Accuracy=98 % (96–99 %). The only inaccuracies in the NLP model occurred with mammography reports that had initial BI-RADS results of zero (0) with later addendums documenting result changes (example; changing BI-RADS 0 to BI-RADS 2) based on radiologists' reviews of previous mammography results. In these situations, the NLP model identified the BI-RADS 0 as the final result and did not detect results in the addenda. This occurred in a total of 10 (2.4 %) of the 421 reports and we have since modified the NLP model so that it now identifies results in report addenda.
CONCLUSIONS: We have developed and tested an NLP model that accurately extracts BI-RADS results from mammography reports. Future plans include using the NLP model to generate real-time alerts and reports for providers to help facilitate timely follow-up of abnormal mammography results.

USING OSCE CASES TO ASSESS RESIDENT PHYSICIANS' COMPETENCE IN INTER-PROFESSIONAL COLLABORATIVE PRACTICE
Colleen Gillespie; Barbara Porter; Margaret Horlick; Kathleen Hanley; Jennifer Adams; Jaclyn Fox; Angela Burgess; Sondra Zabar. NYU School of Medicine, New York, NY. (Tracking ID #1639871)

BACKGROUND: Inter-professional collaboration (IPC) is essential to effective and safe practice, especially within new models of team-based, patient-centered care. An understanding of resident physicians' current levels of competence in this area is a critical first step to designing targeted curricula and workplace learning experiences. This study sought to assess internal medicine residents' competence through the use of OSCE cases designed to require IPC. In addition, we examined whether skills in IPC were distinct from other core clinical skills.
METHODS: Widely accepted conceptual frameworks for IPC were used to create checklist items that included clarifying roles; inter-professional communication (using SBAR strategies, eliciting full information from team members); respect (valuing team member information and assessments); and teamwork (in developing a plan, delegation). Response options were not done, partly done and well done, each with descriptive behavioral anchors to enhance accuracy. These skills were assessed in two clinical cases designed to assess IPC with a "Standardized Nurse" - an outpatient case that called for the physician to collaborate with an RN to assess the patient, identify an error, and develop a treatment plan (annual OSCE for Primary Care IM Residents, PGY1-3, n=21) and an emergency department case in which the resident needed to collaborate effectively with an ED RN to evaluate and respond to a patient's chest pain (annual OSCE for PGY 2 Categorical IM residents, n=35). Checklists were completed by the "Standardized Nurse" and included, in addition to IPC, competence in communication, history gathering and physical exam skills. Summary scores were computed as % of items rated well done (Cronbach's alpha >.75 for both cases). Analyses include frequencies for specific items and examination of summary scores.
RESULTS: Our OSCE cases documented deficits in IPC skills. Only 43 % of residents introduced themselves and clarified their role. Less than half of residents (n=26/56) fully explored the RN's knowledge of the situation and even fewer (n=22/56) fully explored the RN's assessment of the situation. More residents demonstrated respect for the RN's contributions (60 % for the information the RN was scripted to provide and 67 % for the RN's suggestions)—however, a third did not. Finally, 38 % of Primary Care residents failed to even discuss the follow-up plan with the RN in the outpatient case. Residents, on average, received an overall inter-professional collaboration score of 53 % (items rated well done) (SD 25 %). Inter-professional collaboration was not significantly correlated with any of the other core clinical skills assessed in the OSCE (e.g., correlation with communication skills=.04, p=.88).
CONCLUSIONS: Findings document the need among our residents for education and training in inter-professional collaboration. Our data also suggest that this is a distinct domain of competence, largely unrelated to other core clinical skills, including communication. While data are not from actual practice and are based on one sample of performance, the fact that many residents were unable to effectively collaborate with the RNs in an "examination" context reinforces that residents may simply lack the necessary knowledge and abilities. Further research should expand beyond collaboration with nurses, however findings are likely to be generalizable to other members of inter-professional care teams.

UTILIZATION AND SOCIODEMOGRAPHIC CHARACTERISTICS OF IRAQ AND AFGHANISTAN WOMEN VETERANS WHO USE AND DO NOT USE VHA PRIMARY CARE
Susan M. Frayne[1]; Andrea Finlay[1]; Vidhya Balasubramanian[1]; Fay Saechao[1]; Ciaran S. Phibbs[1,2]; Patricia M. Hayes[3]; Sally G. Haskell[3,5]; Samina Iqbal[5]; Eric Berg[1]. [1]VA Palo Alto Health Care System, Menlo Park, CA; [2]VA Palo Alto Health Care System, Menlo Park, CA; [3]VA Central Office, Washington, D.C., DC; [4]VA Connecticut Health Care System, West Haven, CT; [5]VA Palo Alto Health Care System, Palo Alto, CA. (Tracking ID #1641034)

BACKGROUND: Women are the fastest growing subpopulation of Veterans Health Administration (VHA) users, nearly doubling in the last 10 years. Despite multiple initiatives of the VHA to meet the unique needs of women Veterans, there are women VHA patients who do not use VHA primary care services. Our objectives were to compare sociodemographic characteristics and mental health (MH)/emergency department (ED) utilization of women Veterans recently returned from military service who do not versus do use VHA primary care (PC) services.
METHODS: Utilizing VHA electronic health records and Iraq/Afghanistan Veteran Roster data, we selected all women Veterans who finished their last deployment during 2009 and used any outpatient VHA service during 2010 (N=5,915). Measures of age, education, race/ethnicity, rank, branch of service, and multiple deployments were drawn from the Roster. Use of PC services, service-connected disability rating, rurality, and annual counts of MH and ED care were collected from VHA health records. PC use differences were tested using an ANOVA for age and chi-square tests

for all other sociodemographic variables. The percentage who had at least 1 visit to each clinic type (MH or ED) and the mean of the number of MH or ED visits as a percent of all outpatient visits were calculated for non-PC and PC users.

RESULTS: Non-PC users (n=885) accounted for 15 % of women in our sample. Non-PC users were less likely to have a service-connected disability rating (18 % vs 42 %; p<.001), more likely to be deployed multiple times (60 % vs. 55 %; p<.01), and were marginally older (29.5 vs. 29.2; p<.001) than PC users, but were similar across other sociodemographic measures. 35 % of non-PC users compared to 54 % of PC users received MH care (p<.001). Rates were more similar for ED care: 16 % for non-PC users versus 17 % PC users (p<.001). MH and ED care comprised a larger proportion of non-PC users' total outpatient visits. Specifically, among non-PC users, visits to MH care accounted for a mean of 28 % of all outpatient visits vs. a mean of 20 % for PC users (p<.001). For ED visits the proportion of total outpatient visits were also different for both groups: among non-PC users, visits to the ED accounted for a mean of 10 % of all visits, vs. a mean of 3 % for PC users (p<.001).

CONCLUSIONS: While VHA has successfully engaged most recently-deployed new women patients in primary care, women without a service-connected disability rating and women with multiple deployments may represent subgroups for whom primary care outreach efforts may be of particular importance. Given that women non-PC users disproportionately visit ED and MH clinics, these settings may be venues appropriate for such engagement efforts.

VALIDATING ALCOHOL SCREENING SCORES AS PATIENT-REPORTED OUTCOME MEASURES - RESULTS OF THE MONITOR STUDY

Katharine Bradley[1,2]; Anna D. Rubinsky[1]; David Au[1,4]; Christopher L. Bryson[1,4]; Carol Achtmeyer[1]; Emily Williams[1,3]; Gwendolyn Lapham[1]; Laura Chavez[1]; Daniel Kivlahan[5]. [1]VA Puget Sound, Seattle, WA; [2]Group Health Cooperative, Seattle, WA; [3]University of Washington, Seattle, WA; [4]University of Washington, Seattle, WA; [5]Veterans Health Administration, Seattle, WA. (Tracking ID #1643959)

BACKGROUND: The Institute of Medicine has called for identification and validation of screening questionnaires that can be used to monitor patient outcomes. The AUDIT-C (scored 0–12) is a validated alcohol screen as well as a scaled marker of alcohol consumption, alcohol-related symptoms, and adverse consequences of drinking, and has been proposed as an alcohol misuse vital sign. However, the validity of the AUDIT-C as a measure of changes in alcohol use is unknown. This study evaluated whether VA outpatients whose AUDIT-C results decreased, stayed the same, or increased at repeat annual screening had the expected parallel differences in 3 objective outcomes associated with alcohol use in the year after their second screen —HDL cholesterol, trauma and hospitalizations for alcohol-related GI conditions.

METHODS: This retrospective cohort study used secondary data from VA and Medicare datasets. Eligible patients received care at 24 VA facilities and were screened with the AUDIT-C on 2 occasions at least 12 months apart 2004–2007. Patients' 1st and 2nd AUDIT-C scores were each categorized into one of 5 drinking groups: two negative-screen groups—no alcohol use (AUDIT-C score 0 points) and drinkers with negative screens (AUDIT-C 1–2 women; 1–3 men)—and 3 positive-screen groups with mild (3–4 women; 4 men); moderate (5–8) or severe (9–12) alcohol misuse. Three outcomes were assessed in the year after the 2nd AUDIT-C: 1) mean HDL cholesterol, a known biomarker of alcohol use; 2) "trauma" defined as a primary inpatient trauma or fracture diagnosis or any outpatient fracture diagnosis in VA or Medicare, and 3) "GI hospitalization" defined as a primary inpatient diagnosis of liver disease, pancreatitis or upper GI bleeding in VA or Medicare. Analyses evaluated each outcome across 25 groups based on patients' 1st and 2nd AUDIT-C scores (5×5 groups), adjusting for age, gender, race, marital status, VA eligibility, days between screens, and facility, and accounting for correlation within facilities. Linear regression was used to estimate mean HDL, and logistic regression was used to estimate the risk of trauma and GI hospitalizations, across the 25 groups.

RESULTS: Of 486,115 VA outpatients with 2 AUDIT-Cs, 61 % (294,662) had their HDL tested in the year after each AUDIT-C. As expected, patients who increased from negative to positive alcohol screen groups had higher HDLs at follow-up (e.g. 51.6 mg/dl; 95 %CI 50.0–53.1) than those who remained negative on their 2nd AUDIT-C (e.g. HDL 41.6; 41.5–41.7), and vice versa. Further, patients who increased from a negative-screen group to a moderate-severe positive-screen group were at higher risk of trauma (e.g. 2.3 %; 1.6–2.9) and GI hospitalizations (e.g. 1.2 %; 0.6–1.8) in the year after their 2nd AUDIT-C than those who remained in a negative-screen group (e.g. 0.4 %; 0.3–0.4 and 0.9 %; 0.5–1.3, respectively). However, those who decreased from a moderate-severe positive-screen group to a negative-screen group were at lower risk of GI hospitalizations but not trauma, compared to those who remained in a moderate-severe positive-screen group. When trauma was restricted to incident trauma, findings were as expected: those who decreased to a negative-screen group were at lower risk.

CONCLUSIONS: Overall findings indicate that changes in AUDIT-C scores have predictive validity. This suggests that AUDIT-C scores at follow-up could be used to evaluate and compare the effectiveness of different approaches to implementing alcohol interventions.

VALIDATION OF A NOVEL SELF-REPORT INSTRUMENT FOR MEASURING PANEL MANAGEMENT IN PRIMARY CARE

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BACKGROUND: To meet demands for evidence-based chronic and preventive services and improve performance, primary care practices are turning toward team-based strategies such as panel management (PM). In PM, non-clinician staff such as medical assistants are given increased responsibility for routine preventive and chronic care, using patient registries to identify care gaps and standing orders to close these gaps. No validated instruments have been published for measuring the degree to which a practice has implemented PM. We developed and tested a self-report Panel Management Questionnaire (PMQ) for primary care clinicians and staff to assess implementation of PM.

METHODS: Our conceptual model of PM included 4 domains: 1. Proper care gap identification by PM staff, 2. confidence in use of standing orders, 3. ability of PM staff to counsel patients regarding needed services, and 4. overall buy-in into the PM model. The 12-item PMQ includes one item to represent each of these domains, with each item applied to three representative service areas: immunizations, cancer screening, and diabetes care. Language on items was tailored into a clinician PMQ and staff PMQ to represent each perspective. A 1–10 Likert scale was used for each item. We calculated a PMQ subscale score for each service type (e.g. immunizations) by averaging scores for the 4 domains, and an overall PMQ score as the mean of all 12 items, with a score of 10 representing the greatest degree of PM implementation. We administered the PMQ to clinicians and staff in 10 county-operated and 5 university-based primary care clinics in San Francisco, CA in various phases of PM implementation using a self-administered questionnaire between February-May 2012. We tested PMQ internal consistency using Cronbach's alpha. We tested external validity at the clinic level, using Pearson's correlation to measure within-clinic agreement between clinician and staff PMQ scores, and the association between PMQ scores and a composite measure of clinic quality of care for the three service areas included in the PMQ (percent of eligible patients with up-to-date Tdap vaccination, breast cancer screening, and hemoglobin A1c and LDL testing for diabetics).

RESULTS: Respondents included 208 clinicians and 136 staff respondents. The response rate was 55 % for clinicians and 65 % for staff. Mean score for the overall 12-item PMQ was 6.0 (SD+1.7, range 2–10) for clinicians and 7.2 (SD+2.3, range 1–10) for staff. Clinician and staff mean scores for each subscale were 6.4 and 7.8 for immunizations, 5.9 and 7.4 for cancer screening, and 5.6 and 6.2 for diabetes care. The scale

demonstrated good internal consistency. Cronbach's alpha for the total 12-item PMQ was 0.84 and 0.92 for clinicians and staff, respectively. Subscale score alphas ranged from 0.59 to 0.62 for clinicians and 0.62–0.91 for staff. Clinician and staff total PMQ scores within each clinic were highly correlated (r=0.77, p< .001), indicating a high convergence between clinician and staff perspectives. We found support for external validity with higher clinician and staff PMQ scores at the clinic level associated with better clinic quality of preventive and chronic care (r=0.35 and r= 0.71, respectively, for clinician and staff).

CONCLUSIONS: The PMQ is a valid tool to measure the degree of implementation of PM by primary care practices. The PMQ holds promise both for use in research on emerging models of primary care and for pragmatic assessment of PM implementation and quality improvement.

VARIABILITY IN RESPONSE: PATTERNS IN PRESCRIBING ANTIPLATELET THERAPY AFTER CYP2C19 GENOTYPING AMONG PATIENTS WITH ACS AND PCI Nihar Desai[1,2]; William Canestaro[3,1]; Donald Chaplin[5]; Lori Martell[5]; Olga S. Matlin[5]; Pavlo Kyrychenko[5]; Troyen A. Brennan[5]; Niteesh K. Choudhry[1,2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]University of Washington, Seattle, WA; [4]CVS CareMark, Woonsocket, RI; [5]Generation Health, Waltham, MA. (Tracking ID #1636420)

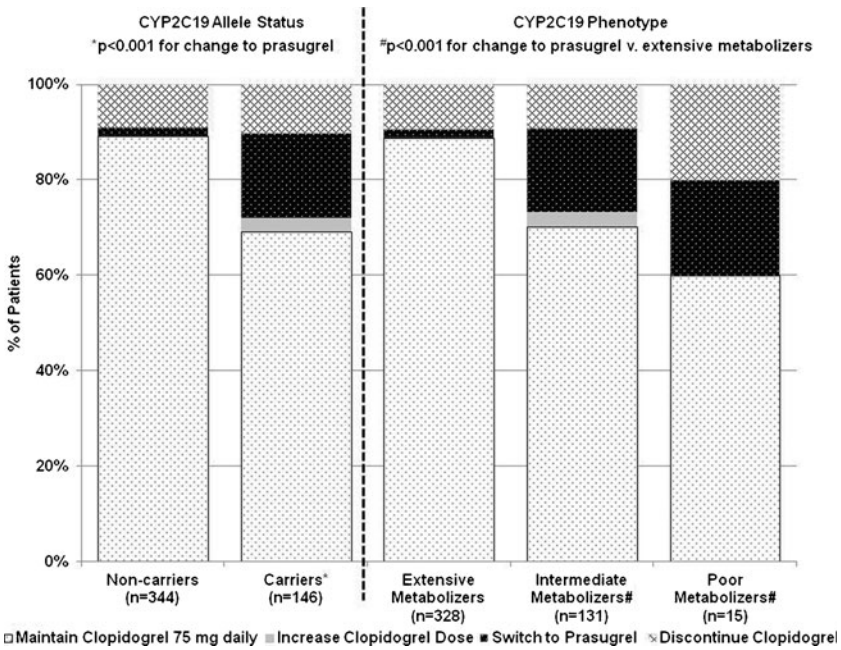
BACKGROUND: Patients treated with clopidogrel who have a loss of function allele for CYP2C19 have an increased risk for major adverse cardiovascular events. In 2010, the US Food and Drug Administration (FDA) issued a boxed warning cautioning use of clopidogrel in patients with such a genotype. Little is known about whether providing genotypic information to physicians and patients changes antiplatelet prescribing patterns.

METHODS: Patients prescribed clopidogrel and their treating physicians were contacted and offered CYP2C19 testing. Genotype and phenotype information was communicated back to consenting patients and their physicians. No specific treatment recommendations were provided. Patients were categorized based on their genotype (carriers v. noncarriers) and phenotype (extensive, intermediate, and poor metabolizers) based upon the presence of 0, 1, or 2 reduced function alleles respectively. Changes in antiplatelet therapy were captured for 90 days after the return of test results.

RESULTS: Between July 2010 - August 2011, 6,032 patients were identified and 499 (8.3 %) underwent genotyping. These patients had a median age of 61 years, 71 % male, 80 % had > 5 co-prescribed medications and 146 patients (30 %) were found to have at least 1 reduced function allele, including 15 (3 %) with 2 reduced function alleles. Although reduced function allele carriers were significantly more likely than non-carriers to have a change in their antiplatelet therapy, only 20 % of poor metabolizers had an escalation in their antiplatelet therapy. In contrast, a small proportion (2 %) of extensive and ultra-rapid metabolizers were changed to more intensive therapy.

CONCLUSIONS: While providers were significantly more likely to alter the antiplatelet regimen in CYP2C19 allele carriers, only 20 % of those at highest risk were switched to prasugrel and a small proportion of extensive metabolizers had their therapy change without a clinically-obvious reason. These prescribing patterns likely reflect the unclear impact and rapidly evolving evidence for clopidogrel pharmacogenomics and have broader implications for the use of genetic testing to guide cardiovascular therapeutics.

Provider Response to CYP2C19 Testing Results By Allele Carrier Status and Phenotype



VARIATION IN DIAGNOSTIC CODING OF PATIENTS WITH PNEUMONIA AND ITS ASSOCIATION WITH HOSPITAL RISK-STANDARDIZED MORTALITY RATES MIchael B. Rothberg[1]; Penelope S. Pekow[2]; Aruna Priya[2]; Peter K. Lindenauer[2]. [1]Cleveland Clinic, Cleveland, OH; [2]Baystate Medical Center, Springfield, MA. (Tracking ID #1641932)

BACKGROUND: Thirty day risk standardized pneumonia mortality rates are now publicly reported for most US hospitals. These rates are based on the outcomes of patients with the principal diagnosis of pneumonia and do not include those with a secondary diagnosis of pneumonia when the principal diagnosis is respiratory failure or sepsis. Our objective was to examine the impact of alternative approaches to identifying patients with pneumonia on hospital risk standardized mortality rates.

METHODS: We conducted a cross-sectional study of pneumonia patients admitted to US hospitals in Premier's Perspective database. We included patients with either a principal diagnosis of pneumonia or a secondary

diagnosis of pneumonia paired with a principal diagnosis of sepsis or respiratory failure between July 2007 and June 2010. We developed multivariable hierarchical generalized linear models with a random effect for hospital to predict each patient's probability of mortality based on age and comorbidities. For each hospital, we calculated risk-standardized mortality rates first excluding, and then including, patients with a principal diagnosis of respiratory failure or sepsis. For each hospital we calculated a predicted rate of sepsis/respiratory failure coding based on patient demographics and co-morbidities, admission to intensive care, and initiation of mechanical ventilation or vasopressor medications in the first 48 h of hospitalization.
RESULTS: After excluding 18 hospitals that had fewer than 100 cases per hospital, our final dataset contained 329 hospitals and 250,016 admissions. The median proportion of pneumonia cases who received a principal diagnosis of sepsis or respiratory failure was 26 % (IQR 18 % to 34 %). When the definition of pneumonia was limited to patients with the principal diagnosis of pneumonia, 2.7 % of hospitals had a risk-standardized mortality rate that was significantly better and 8.8 % significantly worse than the mean. When the definition was broadened to include patients with a principal diagnosis of sepsis or respiratory failure, 12.8 % of hospitals were significantly better and 21.9 % were significantly worse than the mean. This was associated with a change in the outlier status of 29 % of hospitals (43 hospitals' outlier status improved, and 53 hospitals worsened). Hospitals whose outlier status worsened under the broader definition coded a higher than expected proportion of patients with a principal diagnosis of sepsis or respiratory failure (34.3 % vs. 29.7 %, $p=0.01$). Conversely, those whose outlier status improved used the sepsis and respiratory failure codes in the principal position in fewer than expected cases (22.1 % vs. 24.9 %, $p=0.28$)
CONCLUSIONS: Variation in the tendency to use the principal diagnosis of sepsis or respiratory failure may bias current efforts to compare the performance of US hospitals with regard to the outcomes of patients with pneumonia.

VARIATION IN TIME TO PALLIATIVE CARE CONSULTATION BY SERVICE Aziz Ansari; Elizabeth Schulwolf. Loyola University Medical Center, Maywood, IL. (Tracking ID #1643290)

BACKGROUND: Palliative Care consultation services are increasingly available in hospitals across the country. It is well established that length of stay and use of non-beneficial resources drops significantly following palliative care consultation compared with patients of similar illness who do not receive consultation. By reducing time to initial consultation, palliative care services may be better able to meet the needs of patients and families while reducing non-beneficial resource utilization. We sought to determine variation in time to first consult by service line and type of attending physician (hospitalist vs non-hospitalist) as a way of focusing future quality improvement efforts.
METHODS: Our new palliative care consultation program began September 1, 2010. As part of efforts to track operational and quality metrics all cases are recorded in a database. We analyzed data from all consults obtained in the first year of the program (September 1, 2010-June 30, 2011). We determined time to first consult in days for the following services: General Medicine (total, teaching, and non-teaching /hospitalist), all ICU's, MICU, Hematology-Oncology and other services. We further analyzed time to first consult on the general medicine teaching service based on type of attending (hospitalist vs non-hospitalist). Time to consult was compared using the Student's t-test.
RESULTS: There were a total of 282 unique consults: 159 from General Medicine, 65 from any ICU (38 from MICU), 34 from Hematology-Oncology, and 24 from other services. Ninety-five patients on the general medical service were on a teaching service and 56 of those had a hospitalist attending. The number of days to first consult for patients in the ICU was significantly longer than for patients admitted to any other service (10.91 vs 5.59 days, $p<0.001$) including general medicine (10.86 vs 5.13 days, $p<0.001$). This was also true for MICU patients (9.63 vs 5.59 days, $p=0.002$) when compared to all other services. While shorter, there was no significant difference in time to consult when comparing general medicine teaching to non-teaching service (5.85 vs 4.05 days, $p=0.12$). There was also no significant difference when a hospitalist was attending on the teaching service as compared with a non-hospitalist (5.11 vs. 6.92, $p=0.26$). Lastly, there was no difference in time to consult for patients admitted to General Medicine vs Hematology-Oncology (5.13 vs 5.82 days, $p=0.58$).
CONCLUSIONS: Time to palliative care consultation was similar between hospitalists and non-hospitalists for general medical patients. Palliative care consults were called much later in the hospital course when patients were hospitalized in the ICU and may have been beneficial earlier in the patient's clinical course. Future quality improvement efforts aimed at reducing time to initial palliative care consultation should focus on intensive care units.

VARIATIONS IN 30-DAY HOSPITAL READMISSION RATES ACROSS PRIMARY CARE CLINIC SPECIALTIES Ning Tang; Judith H. Maselli; Ralph Gonzales. UCSF, San Francisco, CA. (Tracking ID #1634573)

BACKGROUND: Reducing hospital readmissions is a national health care priority. In October 2012, the Centers for Medicare and Medicaid Services (CMS) enacted financial penalties on hospitals with higher than average risk-adjusted readmissions. Although CMS calculates readmission rates at the hospital level, understanding these rates at the clinic level is critical for developing strategies for improvement. Furthermore, variations in readmission rates across unique primary care practices are not well understood. We set out to develop a methodology for calculating all-cause 30-day hospital readmission rates at the level of individual primary care practices and to identify factors associated with variations in these rates.
METHODS: We analyzed hospital discharge claims from July 1, 2009 to June 30, 2012 for all adults ≥18 years with a primary care provider (PCP) at UCSF. We adapted CMS' methodology for calculating readmission rates by including all discharge diagnoses and grouping patients within their primary care clinic (General Internal Medicine, GIM; Family Practice, FP; Women's Health, WH; Geriatrics, Geri; Combined IM/FP, IM/FP; HIV primary care, HIV; and Concierge IM, C-IM). We built a model to predict readmissions using the demographic and clinical variables with Chi-square $p<0.20$ in an initial bivariate analysis, and then removed, with backward selection, the least significant variables until only those with $p\leq0.05$ remained. Age, log-LOS, and ICU stay were forced in the model, and results were expressed as adjusted odds ratios (OR) with 95 % confidence intervals (CI).
RESULTS: During the study period, there were 12,564 discharges for patients belonging to the 7 clinics. Of these, 8,685 were the first index discharges for each patient and 1,032 had a readmission within 30 days. Readmission rates varied across practices, with HIV being the highest at 18.9 %, followed by Geri at 16.3 %, GIM at 15.3 %, C-IM at 11.6 %, FP at 9.7 %, IM/FP at 9.5 % and WH at 8.4 %. In multivariable analyses, factors associated with variation in readmission rates included: being a patient in the GIM clinic (OR 1.31, CI 1.04, 1.64; ref = FP), male gender (OR 1.32, CI 1.15, 1.52), Medicare (OR 1.44, CI 1.19, 1.75; ref = private), unknown primary language (OR 0.06, CI 0.01, 0.24; ref = English), and the following comorbidities: pulmonary circulatory disease, peripheral vascular disease, renal failure, lymphoma, fluid and electrolyte disorders, and anemia. Having a resident PCP was not significant at the $p=0.05$ level (OR 1.17, CI 0.96, 1.42; Ref = Attending PCP). However, patients with a graduated resident PCP or departed faculty PCP awaiting transfer assignment to a new PCP had OR 1.63 (CI 1.19, 2.23) compared with having a current faculty PCP. The c-statistic for this model was 0.64.
CONCLUSIONS: Primary care practices are important partners in improving care transitions and reducing hospital readmissions, and this study introduces a new way to view readmission rates. Men, people with Medicare, and patients in our GIM clinic were independent risk factors for hospital readmission after controlling for clinic, provider and patient factors. In addition, it appears that PCP turnover is a significant contributor to higher readmission rates. This finding

underscores the importance of continuity of care in the optimal management of patients following hospital discharge. Further exploration of high readmission rates in the GIM practice after controlling for case-mix and hospitalization factors is warranted.

VIRTUAL MEDICATION RECONCILIATION: A PILOT STUDY OF INTERACTIVE MEDICATION RECONCILIATION BY SECURE MESSAGING Leonie Heyworth; Allison M. Paquin; Justice Clark; Victor J. Orlov; Max D. Stewart; Tracey L. Martin; Steven R. Simon. VA Boston Healthcare System, Boston, MA. (Tracking ID #1642568)

BACKGROUND: Adverse drug events (ADE) are the most common of all healthcare associated adverse events. Transitions between inpatient and ambulatory care can lead to ADE and avoidable healthcare utilization affecting up to 20 % of patients. Insufficient monitoring has been identified as a particularly common cause of preventable and ameliorable ADE. We examined the impact of secure messaging for medication reconciliation among a group of patients discharged home following hospitalization.
METHODS: Patients admitted to a Veterans Affairs Medical Center in Boston, MA from June to December 2012 were screened for pilot study participation. Inclusion criteria were age 18 and over, capacity to make medical decisions, primary care recipient at a VA facility and planned disposition home. Patients were excluded from study participation if they (or a caregiver) did not have computer access. Eligible patients were instructed on the use of secure messaging and given a $50 cash incentive for participation. An interactive medication reconciliation template, modeled after AHRQ resources, was developed by the research team. Medication reconciliation of discharge medication lists were facilitated by the study pharmacist and sent to the patient via secure message within 72 h of discharge. Patients replied by checking "yes" or "no" to the listed medication and free-texting comments. Information about the frequency and severity of clinically important medication errors and potential ADE was collected. We conducted bivariate analysis to determine individual characteristics associated with medication errors and potential ADE.
RESULTS: We enrolled 51 Veterans, of whom 48 (94 %) were male. Average age was 61 years and 94 % had health insurance. A total of 51 medication lists were sent, and 33 replies were received (response rate of 65 %). All pilot participants had at least one chronic condition, defined as diabetes, hypertension, prior MI/stroke, hyperlipidemia or heart disease. Overall, we observed a total of 127 clinically important medication errors, 108 of which were found in 51 patient discharges and 19 of which were observed in participant responses. The median number of medication errors per patient was 2 at discharge. In bivariate analysis, clinically important medication errors were significantly more likely to be observed among patients taking greater than 5 medications ($p<0.001$) and those with a hospital length of stay longer than the median of 4 days ($p<0.001$). A total of 23 potential ADE were identified among 15 participants. Potential ADE were significantly more common among patients with greater than 5 medications ($p=0.03$) and in those with a longer length of hospitalization ($p=0.02$) in bivariate analysis.
CONCLUSIONS: Our pilot study demonstrated that the use of secure messaging for medication reconciliation among patients post-discharge is feasible and may be a valuable tool to improve ambulatory medication safety. We found that clinically important medication errors and potential ADE were common. Medication errors and potential ADE occurred more frequently in patients taking more medications and in those with a longer hospital stay. Further research is needed to assess whether our findings are replicable among a larger group of patients post-discharge and among those receiving ambulatory care.

VISIT BASED EHR REMINDERS IMPROVE THE QUALITY OF OUTPATIENT CARE Jason Fish[1]; Deepa Bhat[1]; Brett Moran[1]; Temple S. Howell-Stampley[1]; Lynne Kirk[1]; Michael E. Bowen[1]; Kim Batchelor[1]; David Leonard[1]; Stephen D. Persell[2]; David W. Baker[2]; Ethan Halm[1]. [1]UT Southwestern, Dallas, TX; [2]Northwestern University, Chicago, IL. (Tracking ID #1638946)

BACKGROUND: Current electronic health records (EHRs) are efficient in collecting and storing enormous amounts of patient data; yet, standard build EHRs often provide little or no intelligent decision support to facilitate evidence-based care. We developed and implemented a suite of just-in-time, visit-based, EHR-enabled Best Practice Alerts (BPAs) with exception reporting for 3 chronic diseases and 5 preventative services in 3 academic general medicine practices using the Epic EHR. We assessed the impact of the EHR-based decision support and exception reporting intervention on national quality indicators.
METHODS: We assessed pre-post performance differences on 13 quality indicators for diabetes (DM), heart disease (HD), and heart failure (HF) and 5 preventative services in the 12 months before and after implementation of the BPAs. Time series linear regression was used to adjust for autoregressive errors and secular trends. Rates of change (% per year) in performance in the pre- and post-intervention periods are reported.. Quality measures were satisfied if the recommended care occurred or if an appropriate exception was documented using the BPAs: did not have the disease (e.g. h/o gestational diabetes, not diabetes), not done for medical (contraindications) or patient (refusal) reasons, or done outside of our health system with results not automatically available. Our study sample included all established patients with at least 1 office visit in the past 12 months. The study period included a baseline data period from June 2010 to June 2011 and a post-BPA intervention period from July 2011 to June 2012.
RESULTS: Eligible patients completed 23,437 visits in the pre- and 25,615 visits in the post-intervention period, triggering 33,194 BPAs in the post-intervention period. For the 18 quality indicators, we saw statistically significant improvements in rates per year for 13 indicators ($p<0.05$) and a trend towards improvement in another 2 ($p<0.06$) after adjusting for secular trends. All 5 preventative services had significant improvements: mammography rates improved 9.9 %, colorectal cancer screening 4.5 %, cervical cancer screening 7.2 %, osteoporosis screening 7.3 %, and pneumonia vaccination 7.4 %. For chronic disease metrics, we found significant improvements in lab monitoring (DM LDL: 5.7 %, HD LDL: 4.1 %), medication use (HD beta blocker: 11.4 %, HD ACEI/ARBs: 2 %, HF anticoagulants: 5.3 %, HF ACEI/ARB 2.5 %, HF beta blocker: 6.2 %), and outcomes (DM A1C <8 %: 3.2 %, DM LDL <100: 2.7 %, HD LDL <100: 2.6 %). No improvements were seen for DM A1C monitoring or nephropathy screening. As a comparison, we did not create BPAs for BP monitoring or control for DM or HD. We found no change in BP measurement in either DM or HD; BP control worsened significantly (−4.3 %, $p<0.05$) for DM and improved significantly (3.5 %, $p<0.05$) for HD which had 2 reminder BPAs for beta blocker and ACEI/ARB medication usage. Exception reporting had the biggest impact for preventive services that were done outside of our health system.
CONCLUSIONS: Our suite of visit-based, EHR-enabled BPAs with exception reporting achieved significant but modest improvements in delivery of all of the preventive service and most of the chronic disease metrics we targeted even after adjusting for secular trends. Further improvements in outpatient quality will likely require more intensive case- and population management, audit and feedback, and/or other incentives.

VITAMIN D AND RACIAL DIFFERENCES IN PROSTATE CANCER INCIDENCE AND MORTALITY Glen Taksler[1]; David M. Cutler[2,3]; Edward Giovannucci[5]; Matthew R. Smith[5,6]; Nancy L. Keating[7,8]. [1]New York University School of Medicine, New York, NY; [2]Harvard University, Cambridge, MA; [3]National Bureau of Economic Research, Cambridge, MA; [4]Harvard School of Public Health, Boston, MA; [5]Massachusetts General Hospital Cancer Center, Boston, MA; [6]Harvard Medical School, Boston, MA; [7]Brigham and Women's Hospital, Boston, MA; 8Harvard Medical School, Boston, MA. (Tracking ID #1637882)

BACKGROUND: Prior studies suggest that low vitamin D levels may be associated with higher prostate cancer incidence for white men, but darker skin reduces the body's ability to generate vitamin D from sunshine. The

impact of sunshine on racial disparities in prostate cancer incidence and mortality is unknown.
METHODS: Using the Surveillance, Epidemiology, and End Results (SEER) database, we calculated age-adjusted incidence of prostate cancer among black and white males aged ≥45 years and living in SEER regions, for each race and county during 2000–2009 (N=906,381). Similarly, we calculated county-level rates of prostate cancer deaths among men in the US aged ≥45 years using 2000–2009 data from Vital Statistics (N= 288,874). We linked these data with the average January ultraviolet (UV) index for each county, calculated from NASA satellites, and county- or state-level data on health, wellness, and demographics from the US Census Bureau and Centers for Disease Control and Prevention. We used multivariable regression models to assess whether the UV index moderated the association of black race with incidence and mortality, adjusting for health, wellness, and demographics. Key independent variables of interest were the UV index and an interaction term between black race and the UV index. The interaction term measured the marginal association of black race to the relationship between prostate cancer and the UV index. To reflect each county's relative importance in national data, observations were weighted by the at-risk population of each county and race.
RESULTS: Relative to prostate cancer incidence rates in counties in the lowest decile of the UV index, incidence rates in counties in the 2nd-4th deciles of the UV index were 9–10 % lower for whites (all P≤0.01), 13–16 % lower in the 5th-6th deciles (both P<0.001), and 19–23 % lower in the 7th–10th (highest) deciles (all P<0.001). We observed a similar pattern for blacks, with prostate cancer incidence rates 10–12 % lower in the 2nd–3rd deciles of the UV index (both P≤0.03), 20–23 % lower in the 4th–5th deciles (both P<0.001), 10–22 % lower in the 6th–9th deciles (all P≤0.05), and 34 % lower in the 10th (highest) decile (P<0.001). The racial disparity in incidence rates was 9 % lower for counties in the 4th–5th deciles of the UV index (both P for interaction≤0.02) and 10 % lower for counties in the 10th decile, although this did not reach statistical significance (P for interaction=0.057). Mortality rates were 5–6 % lower for whites residing in the 4th–5th deciles of the UV index (both P≤0.003) and 8–16 % lower in the 6th–10th deciles (all P≤0.001). However, we observed an unexplained increase in prostate cancer mortality rates for black men, and racial differences in mortality rates, with the UV index. Mortality rates for black men were 18–37 % higher, and the racial difference in mortality rates 24–48 % higher, for counties in the 3rd–4th, and 6th–10th deciles (all P≤0.02). This result may be influenced by lack of county-level data in rural areas, primarily located in the 6th, 7th, and 9th deciles of the UV index.
CONCLUSIONS: Prostate cancer incidence for black and white men, the racial difference in incidence, and prostate cancer mortality for white males appear to be inversely associated with ultraviolet radiation from sunshine. Additional research is needed to confirm our findings and assess if optimizing vitamin D levels among men with darker skin can lessen prostate cancer disparities.

WARFARIN ANTICOAGULATION THERAPY AND MORTALITY FOLLOWING GASTROINTESTINAL HEMORRHAGE IN PATIENTS WITH ATRIAL FIBRILLATION IN CLINICAL CARE: THE ATRIA AND ATRIA-CVRN COHORTS Jeffrey M. Ashburner[1,5]; Alan S. Go[2]; Kristi Reynolds[3]; Yuchiao Chang[1]; Margaret Fang[5]; Lisa Fredman[5]; Daniel E. Singer[1]. [1]Massachusetts General Hospital, Boston, MA; [2]Kaiser Permanente Northern California, Oakland, CA; [3]Kaiser Permanente Southern California, Pasadena, CA; [4]University of California, San Francicso, San Francisco, CA; [5]Boston University School of Public Health, Boston, MA. (Tracking ID #1637565)

BACKGROUND: Warfarin therapy reduces the risk of ischemic stroke in patients with atrial fibrillation (AF), but also increases the risk of hemorrhage. Fear of causing hemorrhage in AF patients may result in underuse of warfarin. We examined short and long-term mortality outcomes of gastrointestinal (GI) hemorrhage, the most common site of bleeding, in AF patients on and off warfarin in contemporary clinical care.
METHODS: We evaluated this association by combining two prospective cohort studies from Kaiser Permanente (KP) Northern and Southern California (CA). The AnTicoagulation and Risk Factors In AF (ATRIA) sample includes 13,559 adult AF patients from KP Northern CA, followed from July 1996-September 2003. The ATRIA-CVRN (Cardiovascular Research Network) sample includes 33,247 adult patients with incident AF from KP Northern and Southern CA, followed from January 2006-June 2009. GI hemorrhages were identified by searching hospital databases for primary discharge diagnoses and validated by chart review. Major GI hemorrhages required transfusion of ≥2 units of packed red blood cells. GI hemorrhages were considered exposed to warfarin if the admission record indicated the patient was taking warfarin on or within 7 days before the event. Deaths were determined through medical records and the CA state death registry. Generalized linear modeling was used to estimate the risk ratio (RR) for the association between warfarin status at the time of GI hemorrhage and 30-day mortality. Cox proportional hazards regression was used to estimate the mortality rate ratio (mRR) over the follow-up period. Models were adjusted for cohort, age, aspirin use at the time of hemorrhage, and history of GI hemorrhage and dementia.
RESULTS: The sample included 1520 GI hemorrhages, with 779 (51 %) exposed to warfarin and 741 (49 %) unexposed to warfarin. Median follow-up after GI hemorrhage was 1.4 years (interquartile range [IQR]: 0.4–3.2 years) in ATRIA and 0.7 years (IQR: 0.3–1.4 years) in ATRIA-CVRN. Patients exposed to warfarin at the time of hemorrhage were younger (75.8 vs. 78.8 years), less likely to be male, and to have a history of falls, a prior GI hemorrhage, dementia, and chronic liver disease, and also less likely to be taking aspirin. Among those taking warfarin, 36 % had an international normalized ratio (INR) ≥3.5 at presentation. By 30-days, 6.2 % of patients on warfarin had died, compared to 10.8 % of those not on non-warfarin. After 30 days, an additional 33.8 % of the sample died. Patients on warfarin had a significantly lower risk of 30-day mortality following any GI hemorrhage than those not on warfarin (adjusted RR=0.60, 95 % CI= 0.41–0.88). Similar results were observed in the 918 patients who had a major GI hemorrhage (adjusted RR=0.70, 95 % CI=0.45–1.07). However, there was no association between warfarin use and long-term mortality after the 30-days following any GI hemorrhage (adjusted mRR=1.03, 95 % CI=0.84–1.27) or major GI hemorrhage (adjusted mRR=0.96, 95 % CI=0.74–1.24).
CONCLUSIONS: Warfarin use at the time of GI hemorrhage was associated with a reduced risk of short term mortality. However, this effect was limited to the first 30-days after the event. Warfarin may increase the rate of GI hemorrhage, but short-term outcomes are milder, likely because the hemorrhagic effect of warfarin is either actively or passively reversed or due to residual confounding.

WAS A DECISION MADE? AN ASSESSMENT OF DISCORDANCE AMONG PATIENTS AND PHYSICIANS IN A MEDICAL ONCOLOGY ENCOUNTER. Aaron L. Leppin[1]; Katherine M. James[1]; Cara A. Fernandez[2]; Ashok Kumbamu[1]; Kathleen J. Yost[3]; Victor M. Montori[2]; Jon C. Tilburt[1,2]. [1]Mayo Clinic, Rochester, MN; [2]Mayo Clinic, Rochester, MN; [3]Mayo Clinic, Rochester, MN. (Tracking ID #1619182)

BACKGROUND: Assessing decisional quality presupposes stakeholders agree a decision was made. Scant literature assesses concordance among patients' and providers' ability to recognize when a medical decision has occurred in an oncology encounter. The aim of this analysis was to determine the degree of agreement or lack thereof among medical oncology patients and providers in their ratings of whether a specific medical decision had been made in an outpatient encounter. A secondary aim was to assess for the presence of attitudes or demographic factors that might contribute to any discordance.
METHODS: The first 130 patients and 14 providers enrolled in an observational study assessing cancer communication were considered eligible for this analysis. Patients were at various stages of treatment and were being treated for a variety of cancers at a single center. Patients and providers each completed a survey immediately following a clinical encounter. The surveys contained a common item that asked whether "a specific decision" about cancer care had been made during the encounter; responses were manually and independently double-entered into an electronic database (REDcap Version

3.1.1) and discrepancies were resolved by an independent adjudicator. SAS version 9.2 (Cary, NC) software was used to identify concordant and discordant pairs; pairs in which one response was missing were not included in subsequent analyses (n=8). Bivariate tests of association were used to determine whether patient demographics, ratings of clinicians, and interaction attitude factors, as well as provider assessment of rapport and interaction satisfaction were associated with concordance or discordance. Data were evaluated with the Fisher exact test; significance was established as $p<0.05$.

RESULTS: Patients were 69 % female and 98 % were white. Of 122 encounters considered eligible for analysis, 30 % (n=36) revealed patient-provider pairs with discordant ratings of whether a "specific decision about cancer care" had occurred. About half of the instances of discordance occurred where the provider felt a decision was made and the patient did not (n=19), and the other half where the patient felt a decision was made and the provider did not (n=17). In bivariate analyses, neither patient or provider attitudes toward the encounter, overall satisfaction, nor evaluation of encounter quality predicted whether or not a response pair was concordant or discordant. Patient demographic data also failed to explain the discordance and no distinguishing characteristics of providers with instances of discordance in over half of their clinical encounters (n=2/14) could be found.

CONCLUSIONS: Discordance between patient and clinician perceptions of whether a decision was made in a clinical encounter is common and is not readily explained by demographics or attitudes toward communication quality. Further study may be needed to assess for the presence of marked differences in how patients and providers define "decisions." Surveys may also be inadequate tools for assessing true beliefs and understanding about whether decisions occurred and more qualitative assessments in these regards will be helpful. More concrete and accepted definitions of what constitutes a medical decision may need to be established and confirmed with patients prior to the utilization of shared decision-making tools or communication quality assessments so as not to threaten their validity.

WEIGHT LOSS WITH PHENTERMINE AND TOPIRAMATE EXTENDED-RELEASE IN OBESE AND OVERWEIGHT SUBJECTS OVER 56 WEEKS Robert F. Kushner[1]; Santosh T. Varghese[2]. [1]Northwestern University Feinberg School of Medicine, Chicago, IL; [2]VIVUS, Inc., Mountain View, CA. (Tracking ID #1624371)

BACKGROUND: Obesity is associated with multiple comorbidities, and modest weight loss (5–7 %) has been shown to improve cardiometabolic parameters, thereby delaying or preventing comorbidities. The combination of phentermine and topiramate extended-release (PHEN/TPM ER) was studied as an adjunct to lifestyle modifications (including a reduced-calorie diet and increased physical activity) for chronic weight management at an initial dose of PHEN 3.75 mg/TPM ER 23 mg (3.75/23) daily for 14 days, which is then increased to PHEN 7.5 mg/TPM ER 46 mg (7.5/46) daily, and may include doses up to PHEN 15 mg/TPM ER 92 mg (15/92). The CONQUER trial was designed to evaluate the safety and efficacy of 2 dosages of PHEN/TPM ER in the treatment of obese and overweight adults with ≥2 weight-related comorbidities.

METHODS: The CONQUER trial was a double-blind, placebo-controlled, Phase 3 trial of 2487 obese and overweight subjects (body mass index [BMI] ≥27 and ≤45 kg/m2) with ≥2 weight-related comorbidities randomly assigned to placebo, 7.5/46, or 15/92 plus lifestyle modification for 56 weeks. The primary variables were percent weight loss and the percentage of subjects with ≥5 % weight loss at week 56. Secondary variables included absolute weight loss and the percentage of subjects with ≥10 %, ≥15 %, and ≥20 % weight loss at week 56. Subjects in the 7.5/46 group received 3.75/23 for 1 week prior to increasing the dosage to 7.5/46 in week 2. For subjects in the 15/92 group, dosage was further increased from 7.5/46 to 11.25/69 in week 3 and then to 15/92 in week 4. Thus, at week 56, subjects in the 7.5/46 group had received 7.5/46 for 55 weeks, and subjects in the 15/92 group had received 15/92 for 53 weeks.

RESULTS: Most subjects were female (70 %) and Caucasian (86 %); mean age was 51.1 years, and mean BMI was 36.6 kg/m2. At baseline, 52 % of subjects had hypertension and 16 % had diabetes; 17 % had a history of depression and 16 % were taking antidepressant medication. At week 56, PHEN/TPM ER led to significantly greater weight loss vs placebo (P<.0001, all comparisons), and more subjects achieved weight loss of ≥5 %, ≥10 %, ≥15 %, and ≥20 % when compared with placebo (P<.0001, all comparisons; Table). Of the 2487 randomized subjects, a higher proportion of subjects in the PHEN/TPM ER groups completed the study than in the placebo group (placebo, 62.0 %; 7.5/46, 75.1 %; and 15/92, 73.7 %). The most common reasons for discontinuation were withdrawal of consent (11.0 %), loss to follow-up (10.2 %), and adverse event (4.9 %). Common treatment-emergent adverse events were constipation, dry mouth, and paraesthesia; these effects were dose related and occurred most frequently during titration. There was 1 death of a placebo-treated subject in the CONQUER trial.

CONCLUSIONS: PHEN/TPM ER, when used in combination with lifestyle modifications, is associated with significant and clinically meaningful weight loss in obese and overweight subjects. PHEN/TPM ER was generally well tolerated. The titration schedule was aimed at maintaining clinical benefit by improving tolerability.

Table. Effects on weight loss from baseline to week 56 (ITT-LOCF).

	Placebo (n=979)	PHEN/TPM ER 7.5/46 (n=488)	PHEN/TPM ER 15/92 (n=981)
LS mean percent weight loss, %	-1.2	-7.8*	-9.8*
LS mean absolute weight loss, kg	-1.4	-8.1*	-10.2*
Percentage of subjects with:			
≥5% weight loss	20.8%	62.1%*	70%*
≥10% weight loss	7.4%	37.3%*	47.6%*
≥15% weight loss	2.9%	19.3%*	28.8%*
≥20% weight loss	1.1%	7.6%*	14.4%*

*P<.0001 vs placebo

WHAT ACTUALLY HAPPENS OVERNIGHT? A STUDY DESCRIBING HANDOFFS AT A LARGE ACADEMIC INSTITUTION. Joshua T. Hanson[1,2]; Sahand Rahnama[1]; Tareq Nassar[1]; Luci Leykum[1]. [1]UT Heath Sciences Center, San Antonio, San Antonio, TX; [2]South Texas Veteran's Healthcare System, San Antonio, TX. (Tracking ID #1642604)

BACKGROUND: Changes in duty hour regulations have required more handoffs. These changes have led to increased interest in handoff performance and cross-coverage outcomes. The current handoff literature describes the philosophy behind good or idealized handoffs. However, there is no data on "real-world" handoff performance or the information actually needed for medical decision making. Our institution implemented a night-float coverage system prior to the institution of the 2011 ACGME Common Program Requirements. Our goals were to understand the types of cross-coverage calls received overnight, the data required for medical decision making, and the type of communication to the primary team.

METHODS: Six interns collected data regarding overnight calls. A structured data collection tool was used that included information on the

caller, the reason for the call, where the intern obtained the information needed to respond, and whether physician documentation occurred.

RESULTS: Data on 299 separate encounters over 18 nights were collected. Most calls were initiated by the nursing staff. Eighty (26.8 %) encounters required the use of the hand-off instrument for medical decision making while 165 (55.2 %) encounters required the use of the electronic medical record (EMR). One hundred twelve encounters (37.5 %) resulted in a new medicine being ordered, but only six encounters (2.0 %) resulted in a note being written. Ten (3.3 %) encounters resulted in discussion with the senior resident. Every request for pain medicine resulted in one being prescribed.

CONCLUSIONS: The handoff instrument was used in the minority of encounters while the EMR was consulted to make a clinical decision. This suggests that in the presence of an EMR, a physical handoff instrument is less important. The physical instrument will ideally contain essential information, such as patient identification, code status, tasks to be performed, and may be substantially shorter than the current idealized form. This new model would need trial and validation to determine effectiveness. Given the paucity of notes written despite the frequent occurrence of medications being prescribed, more education may be necessary to demonstrate the use of documentation as a part of communication among care teams. It will be necessary to examine in more detail the activities of nighttime physicians to understand what an ideal handoff actually is and how to best support the advancement of safe and effective care in the hospital after hours.

WHAT AN EMR REVEALS ABOUT WORK HOURS FOR PRIMARY CARE PROVIDERS Maura J. McGuire[1,2]; Gene E. Green[3,2]; Steven J. Kravet[3,2]. [1]Johns Hopkins Community Physicians, Baltimore, MD; [2]Johns Hopkins University School of Medicine, Baltimore, MD; [3]Johns Hopkins Community Physicians, Baltimore, MD. (Tracking ID #1639550)

BACKGROUND: There is an increasing shortage of primary care providers, and a perception of long work hours may be a barrier to careers in primary care. Most data on work-hours comes from self-reports. Time-stamp reports from electronic medical record systems (EMRs) provide an objective way to measure and compare physician work hours.

METHODS: Our group is an academically affiliated, multispecialty group practice with more than 35 practices and 220 PCPs caring for 220,000 patients. We have used an integrated EMR since 2007 for nearly all clinical work, and logged-in time mirrors work time for primary care specialties. The system tracks logged-in time and logs users off after 5 min of inactivity. In response to concerns about workload expressed by our practice teams, we obtained a report of hours logged over a 24 month period in 2010 and 2011. Work time was estimated by counting logged-in hours. Total annual hours were summed, and normalized for the provider's average full time equivalent (FTE) over the year. We collected subjective data on self-reported work hours and perceived difficulty of work in separately administered surveys.

RESULTS: Results for 128 PCPs who spent >50 % of their professional time in clinic are shown in Table 1; providers with significant hospital or management responsibilities were excluded because these activates would not be proportionately captured in the hours log. Assuming a 48-week work-year, general internists worked 59.6 h per week per FTE (range 39 to 113), family physicians 52.6 (35 to 123), med-peds physicians (44.2 to 67.8) and pediatricians 48.4 (39 to 65). Internal medicine hours were significantly greater than pediatrics and family practice hours ($P<0.05$). However, internists saw significantly fewer visits ($P<0.05$) and trended towards fewer RVUs ($P>0.05$). Self-reported weekly hours (Table 2) reflected these trends, although self-reported hours were less than EMR hours. There was no significant difference in hours worked in 2010 and 2011 for any specialty, despite subjective perceptions of "working harder than last year" by 67 % of the group in 2011.

CONCLUSIONS: Despite some limitations, our EMR data provides an objective report of provider work hours and allows us to compare hours vs. productivity for different primary care specialties in our practices. This supports concerns that workload for primary care physicians is significant, even in optimized practices with team-based care like ours. Internists worked the most hours but earned less RVUs, suggesting they incur a high level of uncompensated work relative to other specialties. EMR hours logged by several PCPs were excessive (> 100 per week) raising concerns about safety and quality-of-life. Evaluation of personality, panel case mix and quality of care in association with hours worked may suggest strategies to address variance among PCPs.

Comparison of EMR-Work Hours by Specialty

Specialty	Count	RVU/yr	Visits/yr	EMR Hours per FTE/yr	EMR Hours /yr	P value*
Internal medicine	53	3509	3110	2862	59.6	index group
FamilyPractice	48	3918	3867	2517	52.4	<0.05
Med-Peds	6	4602	4236	2574	53.6	0.354
Pediatrics	21	3984	4551	2324	48.4	<0.05

*Compared to internal medicine index group

Table 2: Self-Reported Hours

Specialty	Hours worked/week	Desired
Internal medicine	54.6	42.9
Family Practice	45.9	44.9
Med-Peds	47.9	45.8
Pediatrics	45.5	40.6

WHAT HAVE YOU DONE FOR ME LATELY: AN EXAMINATION OF PATIENTS' TRUST IN PHYSICIAN OVER TIME Howard S. Gordon[1,2]; Marvella Ford[3]; Oksana Pugach[2]. [1]Veterans Affairs Medical Center, Chicago, IL; [2]University of Illinois at Chicago, Chicago, IL; [3]Medical University of South Carolina, Charleston, SC. (Tracking ID #1623990)

BACKGROUND: Patients' trust in physician is an important aspect of successful patient-physician relationships. Yet few studies have examined the development of trust in physician over time.

METHODS: Patients age 18 or older were treated for an exacerbation of heart failure at one of two Veterans Affairs hospitals. Demographic and visit data were collected at pre- and post-visit interviews using self-report questionnaires during a 6 month follow-up period. Measures included patients rating of trust in their physician (5 item scale, scored on a range from 1 to 100 points) with higher values representing higher trust in physician. Patients rated physicians' supportiveness and informativeness and rated their own self-efficacy to communicate and perceived discrimination in health care. A total of 150 subjects with 523 measurements of trust in physician were used to examine change in trust over time and to examine the association of trust with demographic and visit variables. We used bivariate mixed-effect models to account for repeated measures of trust. We modeled change in trust over time with a multivariable mixed-effects model to account for repeated measures and control for potential covariates.

RESULTS: Patient reported mean (SD) trust scores were 81.1 (17.7), 87.8 (16.5), 84.0 (18.0), and 88.1 (17.8) points before, and after visit 1, and before, and after visit 2, respectively. Patients' mean age was 60 (8.8) years, 65 % of patients were black, 41 % reported income above $20,000, 65 % were from the southern study site, and 59 % saw the same doctor at the two study visits. The mean (SD) time between the two visits was 108 (67.2) days. Race was not significantly associated with trust ($P=0.59$). Patients who perceived discrimination in health care reported a non-significant 5.0 points lower trust ($P=0.15$). Patients who reported that the doctor was more supportive and was more informative reported higher trust (0.6 and 0.5 points, $p<.0001$, respectively). Patients who reported higher self efficacy to communicate and a belief in alternative medicine had 0.4 points ($P<.0001$) and 0.1 points ($P=0.002$) higher doctor trust, respectively. To control for multiple confounders and to model change in trust over time, data were analyzed with a mixed-effects linear model. Pre-visit trust was not statistically different between visits ($P=0.15$). Similarly, post-visit trust did not differ between visits ($P=0.90$). Compared to pre-visit trust, post-visit trust was 5.46 points ($p<.0001$) higher across two visits, after adjusting for other covariates. Post-visit trust was not lower for patients

who were black, reported low income, discrimination, or changed physicians between the two visits ($P>0.05$). Post-visit trust was higher for patients rating physicians as more supportive, holistic, and informative ($P<.01$).
CONCLUSIONS: Patients reported trust in physician improved from before to after a visit, but the gain in trust was not maintained when measured prior to the next visit. Trust was not associated with race or perceived discrimination in health care, but was associated with patients' ratings of doctors' supportiveness and informativeness. This study was small and was limited to patients who kept follow-up visits and results may not generalize to all patients. Longer durations of observation may be needed to examine the development and persistence of trust in physician over time; nonetheless, our results suggest that physicians can earn trust at each visit.

WHAT IS CARE COORDINATION? AN OBSERVATIONAL STUDY OF PRIMARY CARE PHYSICIANS Erin R. McNeely[1]; Timothy P. Stablein[3,4]; Denise L. Anthony[3,4]; Brooke Herndon[1,2]. [1]Dartmouth-Hitchcock Medical Center, Lebanon, NH; [2]Dartmouth College, Hanover, NH; [3]Dartmouth College, Hanover, NH; [4]Dartmouth College, Hanover, NH. (Tracking ID #1636261)

BACKGROUND: Care coordination is widely considered a hallmark of high quality care and is associated with improved patient outcomes. Despite its' importance, the definition of care coordination remains vague and is used to refer to a wide variety of functions. Without a clear definition, it is difficult to measure and reward this critical activity. We set out to identify the specific activities that primary care physicians perform in order to coordinate their patients' care with the goal of helping to refine the operational definition of care coordination.
METHODS: We conducted an observational study of 12 primary care physicians (PCPs) working in a multi-specialty group practice with 3 geographic sites in New Hampshire. We selected our sample purposely to include a distribution by specialty (6 Family Medicine physicians and 6 General Internists) and gender (4 male and 8 female). A trained observer spent one full day with each physician and manually recorded all of the work PCPs performed outside of face-to-face office visits. For each PCP we recorded the number of incoming and outgoing communications and whether they were conducted in-person, by phone or electronically. Further, we collected qualitative information on the content of each communication and the role it played in patient care. We calculated descriptive summary statistics using Stata 11.0.
RESULTS: The 12 PCPs in our study conducted a total of 1,144 communications outside of face-to-face visits, and the number per PCP per day ranged from 25 to 227. The number of incoming and outgoing communications was nearly equal (47 % and 53 % respectively). Slightly under half of all communications were conducted electronically with 25 % conducted in writing, 9 % in person, and 4 % by phone. Approximately one third of the communication conducted by PCPs outside of face-to-face visits was dedicated to coordinating patient care. These communications involved reviewing consultations by specialists, reviewing and interpreting test results, communicating the significance of consultations and test results with patients, delegating follow-up work to others, and formulating plans of care with patients and other providers.
CONCLUSIONS: Consistent with prior work, the primary care physicians in our sample conducted a large volume of work outside of face-to-face office visits. Approximately one third of this work was dedicated to coordination of patient care. There was substantial variation in the amount and type of care coordination performed by each provider. Further work is needed to determine whether the patterns observed in this study are consistent across other populations in order to develop a clear operational definition of care coordination as performed by primary care physicians.

WHAT IS TAUGHT, WHAT IS CAUGHT: ANALYSIS OF MESSAGES DELIVERED AND RECEIVED DURING TEACHING ROUNDS WITH AN EMPHASIS ON PATIENT SAFETY MESSAGES Diane L. Levine; Srinivasa Reddy Kamatam; Prateek Lohia; Nagaratna Sarvadevabatla; Mohan B. Palla. Wayne State University, Detroit, MI. (Tracking ID #1641951)

BACKGROUND: Formal curricula have been developed to teach patient safety. However, a significant amount of teaching occurs at the point of care. A PubMed review identified no literature related to teaching patient safety during daily rounds. Our objective was to study the nature and frequency of patient safety messages delivered on rounds and compare with other traditional topics such as Evidence based Medicine (EBM), teaching physical examination (PE), providing feedback and discussions of professionalism, as well as, newer topics such as cost effectiveness. In addition, we were interested in identifying the nature and frequency of messages received by residents and students on rounds.
METHODS: This was an IRB approved prospective cohort study conducted on the Internal Medicine teaching services at Detroit Receiving Hospital. Informed consent was obtained from all participants. During the first week of the study the attending physician carried a pocket digital recording device with a microphone during rounds to record all teaching and acclimate and decrease the impact of recording on teaching. During the second week of recording (active study period), attending physicians were asked immediately after rounds to reflect on their teaching and estimate and document (on coded cards) the number of teaching messages in 6 pre-specified domains including cost effectiveness, EBM, feedback, patient safety, professionalism, and teaching PE. Residents and students were likewise asked to reflect, estimate, and document the number of teaching messages in each domain. Team members did not discuss teaching messages and all cards were collected before the rounding team disbanded. Recordings were downloaded and transcribed. Patient and participant identifying information was removed. One way analysis of variance was used to compare differences in messages delivered by attending physicians and those received by residents and students. Post hoc tests helped to identify significant differences between groups.
RESULTS: Five attending physicians documented delivery of 156 messages during the active study week for an average of 6.25 messages per rounding session. Attending physicians delivered a variable number of messages in each domain and documented delivering messages related to EBM most frequently and professionalism least frequently. Twelve residents received an average of 10.29 messages per rounding session; 7 students received an average of 17.53. Patient safety messages (28, 17.9 %) were second only to EBM (40, 25.6 %) in total number of messages delivered. The average number of patient safety messages delivered per rounding session was 1.08. Residents perceived 1.99 safety messages and medical students 3.35. Students perceived more messages than attending physicians delivered in 3 domains including patient safety ($p=0.036$), feedback ($p=0.000$), and cost effectiveness ($p=0.037$). A trend for significance was noted for EBM ($p=0.056$). Difference between residents' and students' perception regarding feedback messages was also significant ($p=0.004$); students perceived more messages than residents.
CONCLUSIONS: Rounds are an effective way to teach patient safety. Residents and students were able to recall patient safety messages taught by attending physicians at the point of care. In fact, they perceived more messages than attending physicians recalled teaching. Qualitative analysis of recorded audiotapes will allow for better understanding of the nature of patient safety messages taught on rounds.

WHEN GUIDELINES COLLIDE: ADHERENCE TO USPSTF RECOMMENDATIONS FOR SCREENING MAMMOGRAPHY AMONG PRIMARY CARE SPECIALTIES Jennifer Corbelli; Melissa McNeil. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1642011)

BACKGROUND: In 2009, USPSTF guidelines for breast cancer screening changed significantly. New guidelines recommended biennial mammography in women starting at age 50. Conversely, ACS and ACOG continued to recommend yearly mammography starting at age 40. This new lack of consensus garnered significant attention in the media, and caused confusion and concern among patients and providers. The extent to which providers have implemented new USPSTF recommendations for breast cancer screening is unknown. The primary aim of this study is to examine and compare current attitudes and practices of internists, family physicians,

and gynecologists with respect to screening mammography, in view of new USPSTF guidelines.

METHODS: We conducted a cross-sectional study at a large academic medical center. Both resident and attending physicians in three primary care specialties (internal medicine, family medicine and gynecology) were electronically surveyed. Our survey was adopted with permission from National Survey of Primary Care Physicians' Cancer Screening Recommendations and Practices. Survey items assessed respondents' breast cancer screening practices in women of different ages and breast cancer risks. We used descriptive statistics to generate response distribution for each survey item. We used Chi-square tests to compare survey responses across specialties.

RESULTS: Our overall response rate was 55 % (316/575). An overall majority of providers in internal medicine (65 %), family medicine (64 %), and gynecology (92 %) recommended breast cancer screening starting at age 40 (p-value<0.001) vs. age 50. Similarly, a majority of providers in internal medicine (77 %), family medicine (74 %), and gynecology (98 %) recommended annual (vs. biennial) mammograms (p=0.003). Gynecologists were significant more likely than both internists and family physicians to recommend initial mammography at age 40 vs. age 50 (p=<0.0001) and to recommend yearly vs. biennial mammography (p=0.0003). .

CONCLUSIONS: USPSTF guidelines for screening mammography have not been embraced by primary care providers across various specialties. This finding is most pronounced among gynecologists, who are significantly more likely than internists and family physicians to both initiate screening mammography at age 40 vs. age 50, and to screen annually vs. biennially. The extent to which these findings may be driven by patient vs. provider preference is an area for further research. These results suggest that unless further data on the risks and benefits of screening mammography becomes available, disparate practice patterns among specialties and individual providers are likely to continue. Breast cancer screening is an area of profound significance to patients and their advocates: in light of current clinical uncertainty, the importance of individualized risk-assessment and shared patient/provider decision-making is paramount.

WHEN PHYSICIANS AND PATIENTS DISAGREE: CLINICAL EXPERIENCE AS A DETERMINANT OF PHYSICIANS' WILLINGNESS TO COMPLY WITH THE REQUESTS OF PATIENTS AT THE END OF LIFE John M. Thomas[1,2]; John R. O'Leary[3]; Terri Fried[4,5]. [1]VA Connecticut Healthcare System, West Haven, CT; [2]Yale University School of Medicine, New Haven, CT; [3]Yale University School of Medicine, New Haven, CT; [4]Yale University School of Medicine, New Haven, CT; [5]VA Connecticut Healthcare System, West Haven, CT. (Tracking ID #1637126)

BACKGROUND: Although increasing attention has been paid to patient autonomy in the United States over the past few decades, research characterizing physicians' attitudes in the care of patients at the end of life suggests that physicians are often unwilling to comply with the requests of decisionally capable patients. Little is known about the effects of clinical experience on physicians' willingness to comply with the requests of decisionally capable patients at the end of life.

METHODS: We surveyed attendings and residents about their willingness to honor the requests of the same decisionally capable elderly patient in 5 scenarios involving different requests regarding end-of-life treatment, including requests to withhold life-sustaining treatment, to withdraw life-sustaining treatment, to give dangerously high doses of narcotics, to prescribe a lethal amount of sleeping pills, and to give a lethal injection in its current illegal state. We asked physicians to state whether they would comply with each request, to recall whether they had ever been asked by a patient to perform each request, and to cite factors influencing their willingness to perform each request. Finally, we asked physicians whether they would be willing to give a lethal injection if it were legal.

RESULTS: Respondents included 191 attendings and 240 residents (58 % response rate). While a large majority of both attendings (92–100 %) and residents (71–94 %) were willing to comply with each of the requests to withhold intubation, to extubate, and to give high doses of narcotics, a significantly larger proportion of attendings versus residents were willing to comply with each of these requests. There were no significant differences in the small proportions of attendings (1–3 %) and residents (4–5 %) willing to prescribe a lethal amount of sleeping pills and to give a lethal injection in its current illegal state. A significantly larger proportion of residents (32 %) versus attendings (19 %) were willing to give a lethal injection if legal. After adjusting for sociodemographic factors, attending status was independently associated with increased willingness to extubate (AOR=3.0, 95 % CI=1.6–5.7) and with decreased willingness to give a lethal injection if legal (AOR=0.5, 95 % CI=0.3–0.8). When attendings were asked directly about influences on their willingness to extubate and to give high doses of narcotics, most cited reasons related to their clinical experiences, and when asked about influences on their willingness to prescribe a lethal amount of sleeping pills and to give a lethal injection, most attendings cited the existence of other palliative options as well as legal and moral concerns.

CONCLUSIONS: Training level was an important determinant of physicians' willingness to perform multiple patient requests at the end of life, and sociodemographic differences between attendings and residents did not account for these differences. Our findings suggest the role of clinical experience as influencing physicians' attitudes towards performing the requests of decisionally capable patients at the end of life.

WHERE YOU LIVE SUGGESTS HOW WELL YOU ADHERE: A NATIONAL COHORT OF PATIENTS BEGINNING STATIN THERAPY Andrew M. Davis[1]; Dima Qato[3]; Michael S. Taitel[2]; Jenny Jiang[2]; Elbert S. Huang[1]. [1]University of Chicago, Chicago, IL; [2]Walgreens, Deerfield, IL; [3]University of Illinois College of Pharmacy, Chicago, IL. (Tracking ID #1642292)

BACKGROUND: Non-adherence to cardiovascular medications is associated with worse health and economic outcomes. A metric of medication adherence has been added to national CMS quality monitoring. Medication adherence is consistently lower among minorities, and is thought to be an important contributor to poorer risk factor control and higher cardiovascular morbidity and mortality in these populations. Studies of adherence typically are limited geographically and focus on insured populations. To our knowledge, no national studies have explored the association of neighborhood racial composition and medication adherence, data that could inform the design of local neighborhood and retail pharmacy programs in chronic disease management, as well as co-pay policies.

METHODS: The study assessed patients in the national Walgreens database who began statin therapy for the first time during the first quarter of 2012. Individual patient adherence was defined as 'patient days on therapy' (PDOT) out of 180 days, dated from the initial prescription fill. Patients were linked to neighborhoods using their home addresses, with block group specific racial and socioeconomic variables from the 2010 U.S. census linked to each neighborhood. A typical block group (BG) has 1500 residents, five-fold finer than the zip code or census tract level. There were 332,193 patients with valid home addresses, and full plan and co-pay data existed for 328,130. Mean age was 60.2, and 49.5 % were female. A generalized linear model for repeated measures quantified the association between patient statin adherence at 6 months and neighborhood racial composition, adjusting for individual factors of age, gender, payer (Medicaid, Medicare, private insurance, cash), co-pay amount, use of 30-day vs. 90-day refill, and mental health prescription use, as well as the neighborhood characteristics of urban vs. rural location, educational attainment (% with college degree), and median household income.

RESULTS: The study cohort closely matched U.S. census distributions. As block groups became more racially or ethnically homogeneous, even controlling for multiple confounders, strong clinically significant (10–14 day) negative associations were seen in statin adherence for blacks and Hispanics. There was a strong inverse positive association for whites (13 days). No effect was seen for Asians (data not shown).

CONCLUSIONS: Clinically important disparities in statin adherence are associated with neighborhood racial and ethnic homogeneity, even

controlling for age, co-pay, payer, and basic socioeconomic factors. Awareness and monitoring of national and local adherence patterns, and exploration of their relation to various neighborhood characteristics can inform pharmacy and neighborhood-based programs designed to improve adherence. This innovative approach also calls attention to the equity of national quality metrics for medication adherence.

Blacks in BG BG Distribution (census) BG Distribution (study) Patient Distribution (study) Patient # PDOT (days), CI
Under 25 % 83.4 % 83.6 % 85.1 % 279257 124.3 (122.1–126.4)
25 to 49 % 7.5 % 7.5 % 7.0 % 22834 118.8 (116.6–121.1)
50–74 % 3.8 % 3.8 % 3.4 % 11089 113.7 (111.3–116.2)
75 % or more 5.0 % 5.1 % 4.6 % 14950 110.3 (107.8–112.5)

Hispanics in BG BG Distribution (census) BG Distribution (study) Patient Distribution (study) Patient # PDOT (days), CI
Under 25 % 80.1 % 79.5 % 79.2 % 260028 122.1 (119.9–124.3)
25 to 49 % 9.6 % 10.6 % 10.8 % 35554 118.7 (116.4–120.9)
50–74 % 5.2 % 5.6 % 5.4 % 17790 114.5 (112.2–116.9)
75 % or more 4.8 % 4.3 % 4.5 % 14758 111.7 (109.3–114.1)

WOMEN VETERANS AND COMPREHENSIVE CARE: CHALLENGES FOR DESIGNATED WOMEN'S HEALTH PCP'S Alicia A. Bergman. Roudebush VAMC, Indianapolis, IN. (Tracking ID #1639673)

BACKGROUND: A key aspect of VA's plan for improving care for women veterans is to establish a national model of comprehensive and integrated clinical primary care. Using this approach, a single designated women's health primary care provider (PCP) in the same location sees patients for not only primary care issues, but also gender-specific care. Although it is ultimately expected to be the predominant model of care for women veterans at every VA site, on a local level at the Indianapolis Roudebush VA Medical Center, there have been difficulties with rolling out the one-provider model. The goal of this qualitative study was to identify barriers and facilitators encountered by PCPs to providing comprehensive women's health care services.
METHODS: In-depth interviews were conducted with 15 of the 36 designated women's health PCPs across five primary care clinics at the Roudebush VA Medical Center in Indianapolis, IN. Purposive and snowball sampling techniques were used to identify PCPs, aiming for diversity in sex, experience, length of VA service, and practicing site/service.
RESULTS: Qualitative thematic analysis of the interviews revealed six major barriers: 1) space and structure; 2) time; 3) support staff; 4) comfort level; 5) education; and 6) scheduling/logistics. Problems with space and structure pertained to not having a sufficient number of rooms to conduct pap and pelvic exams, an awkward layout of the available rooms, and a lack of privacy. As for time, 30 min was not perceived as sufficient to address primary care needs, chronic pain, mental health, and military sexual trauma issues, along with gender-specific care. For pap and pelvic exams in particular, time is needed to search for equipment, a female chaperone, and to wait for the patient to get undressed and dressed. Moreover, according to some PCPs, women veterans are more communicative than male veterans. Another barrier discussed by PCPs was difficulty in finding support staff to assist, (i.e., insufficient numbers of support staff), lack of support staff knowledge and/or comfort assisting, with some refusing to assist. Comfort level was also a barrier for PCPs, based on perceived patient discomfort with gender-specific care due to military sexual trauma, perceived patient discomfort when the patient-provider relationship is new, and finally, perceptions by male PCPs that women veterans prefer female PCPs. Education and Training were discussed as barriers by several PCPs insofar as they were not given sufficient educational resources to keep their skills up, and they did not know what training was required and what was optional. Finally, the barrier of scheduling and logistics pertained to the inability, as discussed by several PCPs, to plan ahead for pap smear and pelvic exam appointments.
CONCLUSIONS: Gaining in-depth knowledge about PCPs' struggles in one VA medical center with moving to the one-provider model, can help to shed light on potential challenges faced by PCPs across other sites. Specific strategies are outlined that can potentially inform wider implementation efforts as well as serve as a brainstorming platform from which new work flow process solutions can emerge.

WOMEN'S EXPERIENCES WITH ISOTRETINOIN RISK REDUCTION COUNSELING Carly Werner[1]; Melissa Papic[2]; Noel Prevost[3]; Laura Ferris[3]; E. Bimla Schwarz[1,2]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA; [3]University of Pittsburgh, Pittsburgh, PA. (Tracking ID #1638424)

BACKGROUND: Isotretinoin is an important treatment for debilitating skin disease, such as scarring acne. Because pregnancies exposed to isotretinoin are at increased risk of severe birth defects, use of isotretinoin is restricted to those registered with the iPLEDGE program. In an effort to reduce risk of isotretinoin-induced birth defects, this program includes educational materials for both patients and clinicians and requires female patients to undergo monthly serum pregnancy tests. Unfortunately, these restrictions have created gender-based disparities in isotretinoin treatment without significantly reducing rates of isotretinoin-exposed pregnancies.
METHODS: To explore women's experiences with the counseling they received about isotretinoin and risk reduction while participating in the iPLEDGE program, we conducted structured interviews with 16 women who had used isotretinoin for severe skin disease. Content analysis was performed using a grounded theory approach by two independent coders; discrepancies were resolved by consensus with the assistance of a third author when necessary.
RESULTS: Interviewees ranged in age from 17 to 34 years; 12 participants were White, 2 were Hispanic, 1 was Black, and 1 was Asian. None had become pregnant while using isotretinoin. Participating women clearly understood that isotretinoin increases risk of birth defects. Most described the counseling they had received prior to initiating isotretinoin treatment as "scary" and anxiety provoking. Women had less understanding of how they could most effectively protect themselves from becoming pregnant while taking isotretinoin. For many participants, iPLEDGE was their first introduction to contraception; few reported other formal instruction on contraception. Few received counseling on contraceptives other than "the pill." In particular, women had limited knowledge of highly effective reversible contraceptives such as the subdermal implant or intrauterine contraception. Few remembered being encouraged to speak with a family planning specialist prior to using isotretinoin, rather, most recalled being advised to either take an oral contraceptive or continue whatever contraceptive strategy they had previously employed. Women cited multiple influences on their contraceptive choices including discussions with friends and family, their physicians, the internet, and the media; however, some women expressed concerns about the accuracy of the information available from each of these sources. Most participants were surprised to learn that reversible contraceptives exist that are significantly more effective than the pill and upset that "no one ever told me" about these options. Women expressed interest in a brief overview of available contraceptives that would highlight the relative effectiveness and safety of available contraceptives. Women preferred a single-page summary and web-based resources to more comprehensive printed materials.
CONCLUSIONS: The iPLEDGE program increases women's anxiety about using isotretinoin. Offering women considering treatment with isotretinoin additional information on intrauterine and subdermal contraceptives may enable more women to successfully protect themselves from the medication-induced birth defects they fear.

IPAD-BASED PATIENT EDUCATION AND DATA COLLECTION FOR COLORECTAL CANCER SCREENING David P. Miller[1]; Nancy M. Denizard-Thompson[1]; James L. Wofford[1]; Don Babcock[2]; Kathryn E. Weaver[3]; Larry D. Case[2]; John Spangler[4]; Michael Pignone[5]. [1]Wake Forest School of Medicine, Winston-Salem, NC; [2]Wake Forest School of Medicine, Winston-Salem, NC; [3]Wake Forest School of Medicine, Winston-Salem, NC; [4]Wake Forest School of Medicine, Winston-Salem, NC; [5]University of North Carolina School of Medicine, Chapel Hill, NC. (Tracking ID #1637140)

BACKGROUND: Health care providers often report they lack time to counsel patients about preventive health topics. To reduce the burden on busy clinicians, many health care systems use educational brochures or websites. However, these strategies may not be effective for the one-third of Americans with low health literacy skills or for those who lack internet access. New methods are needed to improve patient education in the office while minimizing additional time demands on busy clinical staff. A system that could collect relevant health information from patients could offer additional time savings. We sought to determine the feasibility of using an iPad to both collect health information from patients and deliver an educational message about colorectal cancer (CRC) screening.
METHODS: We pilot tested a novel iPad program about CRC screening in a convenience sample of English-speaking patients, aged 50–74 years, from two primary care clinics affiliated with an academic medical center (one serving primarily low-income/underinsured patients and the other serving primarily hospital employees and families). A research assistant invited patients to participate while they were waiting for their physician in the clinic exam room. The program consisted of a brief 16-item baseline survey, a 5 min educational video, and a 17-item post-program survey. We designed the iPad program for a mixed literacy audience with minimal prior computer experience. Only one question was displayed on the screen at a time, possible answers were placed in large intuitive buttons, and all survey questions and responses were read aloud by a narrator unless the patient chose to turn this feature off. Patients' health literacy level was assessed using the previously validated item, "how confidant are you filling out medical forms by yourself?" Patient knowledge of CRC screening was assessed with 5 items in the baseline survey and repeated in the post-program survey.
RESULTS: All 40 participants who enrolled in the study completed the iPad program. Participants had a mean age of 60 years (range 51–72), 68 % were female, 70 % were white, and 20 % had limited health literacy. The vast majority of participants (90 %) completed the iPad program with 1 episode of assistance or less (28 of 32 adequate literacy patients, and 8 of 8 limited literacy patients). After watching the iPad program, CRC knowledge scores increased significantly for both limited and adequate literacy patients. At baseline, only 55 % of participants answered at least 4 of the 5 knowledge questions correctly compared with 90 % of participants on the post-program survey ($p<0.001$). Over 80 % of both limited and adequate literacy participants stated they preferred the iPad video to a brochure (88 % and 81 % respectively). All 40 participants (100 %) stated the survey questions were easy to read, and 37 (93 %) stated the survey buttons were easy to touch.
CONCLUSIONS: This novel iPad CRC screening program designed for a mixed literacy audience with limited computer skills was well accepted by patients. Regardless of literacy level, the vast majority of participants preferred the iPad program over traditional patient education brochures. Future research should investigate ways mobile technology can enhance patient education in the medical office.

"FRIENDING" PHYSICAL ACTIVITY: RESULTS FROM THE SOCIAL NETWORKING FOR ACTIVITY PROMOTION WITH CELL PHONES (SNAP-C) STUDY Jennifer Kraschnewski[1]; Liza S. Rovniak[1]; Daniel R. George[2]; Erica Francis[1]; Christopher Sciamanna[1]. [1]Penn State Hershey Medical Center, Hershey, PA; [2]Penn State Hershey Medical Center, Hershey, PA. (Tracking ID #1641461)

BACKGROUND: Programs designed to help sedentary adults increase their physical activity (PA) are often effective in the short-term, but these effects are rarely maintained. Technology-based physical activity programs, such as those using cell phones, may help expand social networks that could support maintenance of PA. However, little research has explored how to engineer social networks to increase opportunities for PA. This study aims to explore the efficacy of using cell phones to engineer social networks using Facebook to provide long-term support for active lifestyles.
METHODS: Study Design - We conducted a randomized controlled trial to evaluate the effectiveness of a cell-phone based intervention to promote PA relative to an attention control group (emphasizing good nutrition). Study Participants - 87 participants were age and gender-matched prior to randomization to either an eight-week physical activity group or the control group. Inclusion criteria were: ages 25–64, sedentary, English-speaking, able to participate in moderate-intensity physical activity, ownership of a smart phone, and home computer with Internet access. Exclusion criteria were: body mass index greater than 39.9, consumption of 5 or more drinks of alcohol/day, current pregnancy, and living outside of the preselected study neighborhoods. Intervention - The physical activity intervention consisted of cell phone-based messaging and access to a cell phone-based Facebook private group site focused on PA. The attention control group consisted of similar procedures focused on good nutrition. Following randomization, participants attended a single introductory face-to-face meeting for their respective group to obtain an orientation to the program activities and meet fellow participants. Assessments—In-person assessments of outcomes were conducted at baseline and post-program (8 weeks). Objective measures included body mass index, waist circumference and blood pressure. Participants self-reported physical activity and nutrition using validated measures. Statistical Analysis—ANCOVA was used to compare study groups, adjusted for baseline values on outcome measures.
RESULTS: Most participants were women, white, middle-aged, and obese. No significant differences were observed between groups at baseline, suggesting successful random assignment. 88 % of participants completed the post-program assessment. PA group participants had a significant increase in PA when compared to control participants, including 85.2 MET (Metabolic Equivalent of Task)-minutes/week more of leisure-time activity ($P<0.03$). Participants in the PA group also had a statistically significant ($P<0.006$) decrease in waist circumference of 2.1 cm (3.62, 0.62) from baseline. Further, participants were actively engaged in the study's website. Almost two-thirds of participants engaged in discussion on the study's Facebook page at least every other week. The program received excellent reviews, with almost all participants (92 %) stating that they would recommend the program to other people.
CONCLUSIONS: We demonstrated the feasibility and initial efficacy of a cell phone-based intervention using Facebook to engineer social networks to improve engagement in PA. Future studies are necessary to determine the longer-term effects of this intervention on PA and objective measures of health.

"I'M GOING TO KILL HIV." PERSPECTIVES OF AFRICAN AMERICAN WOMEN IN THE DEEP SOUTH ON ANTIRETROVIRAL THERAPY ADHERENCE. Margaret R. DeMoss[1]; Loida Bonney[1]; Jennifer Grant[1]; Judith Barker[2]; Robin Klein[1]. [1]Emory School of Medicine, Atlanta, GA; [2]University of California, San Francisco, San Francisco, CA. (Tracking ID #1634428)

BACKGROUND: Despite evidence of stabilization in some areas of the US, HIV infection in black women is a growing epidemic in the Deep South. Although efforts to care for this population are in process, racial and gender disparities in morbidity and mortality exist due to a variety of factors including suboptimal adherence to highly active antiretroviral therapy (HAART). Using a phenomenological approach to qualitative inquiry, we sought to investigate aspects influencing adherence in an urban setting.
METHODS: We conducted a qualitative study of the factors influencing HAART adherence among black women with HIV/AIDS in an urban setting in the Deep South. Women were identified for participation by telephone or formal letter using an electronic medical record review of a public hospital system in Atlanta, Georgia, screened for eligibility, and then invited to participate by telephone or letter. Inclusion criteria specified women who had been aware of their HIV status for at least 2 years and had been linked to care previously. Individuals then underwent single face-to-face confidential in-depth semi-structured interviews about their HIV. Participants were asked about their racial, gender, and socioeconomic identities and how these affected treatment of their HIV. In addition, questions were directed to include experiences with racism, sexism, prior or current substance abuse, criminal activity, romantic relationships, and

experiences with the health care system and HAART. Two researchers independently reviewed the interview transcripts searching for commentaries which offered insight into how participants interpret their lives. Commentaries were collapsed into themes and codes.
RESULTS: One hundred eleven black women were identified during the initial chart review and seventy-eight were eligible to participate. Largely, there was no response to recruitment attempts. Data from the first twelve to enroll and successfully complete the interview process were analyzed. Most of the women were on HAART therapy at the time of interview and expressed knowledge of the role of HAART in management of their HIV disease. They stated it would keep them from getting sick and keep them alive, but it was unclear if they fully realized this when they were first started on HAART. They cited several reasons for not taking or stopping the medicines including wanting to avoid side effects, being in denial, and not feeling normal when taking HAART. Overall, three themes had effects on HAART adherence; (1) sentinel events (such as a near death from opportunistic infection) lead to changes in perspective and motivated women to adhere to HAART, (2) recognition that one had the personal strength necessary for adherence to therapy also motivated women to adhere, and (3) relationships with healthcare providers, especially trust issues, impacted adherence both positively and negatively.
CONCLUSIONS: These findings suggest that HAART adherence is a complex issue among urban black women with HIV in the Deep South. Those caring for this patient population need to recognize the influence of sentinel events, personal strength, and healthcare relationships as opportunities to improve adherence.

"THE WORST IS WHEN WE'RE WORKING AT ODDS": PCP PERSPECTIVES ON BARRIERS TO REPATRIATING PATIENTS FROM SPECIALTY TO PRIMARY CARE Jennifer J. Monacelli; Sara Ackerman; Nathaniel Gleason; Chanda Ho; Michael Wang; Don Collado; Ralph Gonzales. UC San Francisco, San Francisco, CA. (Tracking ID #1640467)

BACKGROUND: Improving care coordination and communication between primary care providers (PCPs) and specialists is a central principle of the Patient Centered Medical Home Neighborhood. Little is known about how PCPs and specialists decide if ongoing specialty follow-up care is needed for a given patient. In a separate abstract, we report survey results showing discordance between specialists and PCPs when asked to identify patients under their mutual care whose condition could be managed exclusively by the PCP. Here we report results of interviews with PCPs in which possible reasons for this discordance, including barriers to patient "repatriation" to the PCP, were explored. We identify several themes that provide insight into the complex reasons for fragmented care and key areas for improvement.
METHODS: Specialists (n=59) in 5 academic medicine subspecialty practices (cardiology, endocrinology, gastroenterology, pulmonology, and rheumatology) completed a 4-item, self-administered survey following each patient visit (n=104–173 surveys per specialty). PCPs with patients captured in the survey received a similar survey. 20 PCPs with ≥4 patients (from a total of 30 eligible PCPs) were randomly selected to participate in a semi-structured interview following completion of the survey, and 16 PCPs obliged. The interview elicited explanations of discordance in specialist and PCP responses to the survey question: "Could this diagnosis be managed exclusively by the PCP?" Five members of the study team performed independent analysis of interview notes and transcripts, followed by group discussions to reach consensus on key themes.
RESULTS: For cases in which the PCP was amenable to patient repatriation, but the specialist was not, explanations included: scope of PCP expertise (e.g. specialist underestimation of PCPs' ability to manage certain conditions); differences in clinical judgment (e.g. PCPs report being less aggressive than specialists in managing certain conditions); specialty follow-up "culture" (e.g. automatic scheduling of follow-up visits and absence of a common understanding of when and how to repatriate patients); and perceived financial gains derived from specialty follow-up visits. In addition, long-term, satisfying patient-specialist relationships were emphasized as both a benefit to the patient and a barrier to repatriation. For cases in which the specialist supported repatriation and the PCP did not, explanations included: scope of PCP expertise (e.g. specialist overestimation of PCPs' ability to manage certain conditions); competing time demands (e.g. PCPs report difficulties managing patients with multiple complex comorbidities within given time constraints); limited patient access to PCP for follow-up care; and PCP desire for specialist co-management of patients (e.g. for patients whose condition defies diagnosis). Patient preferences and provider liability concerns were identified as barriers to repatriation under both types of discordance.
CONCLUSIONS: These findings highlight complex forces that may impact the duration of follow-up care with a specialist, including clinical, procedural, financial, social, and cultural factors. Reducing barriers to repatriation for appropriate patients could decrease health care costs, alleviate access issues in specialty care, and simplify care coordination between physicians. Future studies should include specialty perspectives on discordance issues.

"THEY DON'T UNDERSTAND IT." PERCEIVED IGNORANCE AS A DETERRENT TO DISCLOSURE OF HIV STATUS IN A SAMPLE OF BLACK WOMEN IN THE SOUTH Kara Leverette[1]; Loida Bonney[1,2]; Jennifer Grant[1]; Judith C. Barker[3,2]. [1]Emory Univerisity, Atlanta, GA; [2]Center for AIDS Prevention Studies, San Francisco, CA; [3]University of California, San Francisco, San Francisco, CA. (Tracking ID #1639413)

BACKGROUND: Unlike several other demographic groups nationwide, Black women in the South have increasing rates of HIV infection and disproportionately high rates of adverse HIV-related outcomes. Effective care for HIV requires regular attendance at an HIV medical care provider who prescribes highly active anti-retroviral therapy (HAART), and adherence to that therapy. Both of these aspects of care have been a challenge for Black women in the South. Serostatus disclosure has been linked with higher levels of adherence and associated with improved sense of social wellbeing among HIV-positive individuals, but negative experiences related to disclosure have also been reported. Motivators for HIV status non-disclosure has been previously reported, however, to our knowledge, motivators among Black women in the urban South have not been studied in-depth. This study investigated Southern Black women's perspectives on motivators for serostatus non-disclosure from a phenomenological perspective.
METHODS: We identified women from a chart review of an electronic medical record of an HIV primary care clinic in Atlanta, Georgia. Women were recruited for participation by telephone call or formal letter. Twelve in-depth open-ended face-to-face 45–60 min interviews with HIV-positive Black women were conducted and audio-recorded. Inclusion criteria specified that women had been aware of their HIV serostatus for at least 2 years and had been linked to HIV care. Women were asked to give narratives about their experiences with HIV including, but not limited to learning about their diagnosis, and disclosing of serostatus. They were asked to describe the attitudes of their family, friends, acquaintances and community at large toward HIV positive people; to whom they have disclosed as well as time to disclosure. Transcribed narratives were examined thematically, coded and qualitatively analyzed.
RESULTS: One hundred eleven Black women were identified by record review. Contact was attempted with 78 who screened eligible to participate. There was a high rate of non-response. Data from the first 12 to enroll and successfully complete the interview were analyzed. Respondents ranged from 23 to 68 years of age, had been diagnosed an average of 19 years, and, at the time of the interview were all actively engaged in HIV care. In 8/12 (67 %) of interviews, perceived ignorance about HIV among family members, acquaintances, and others encountered in the women's communities emerged as a major motivator for non-disclosure. Women feared mistreatment and stigmatization from those whom they believed had limited HIV literacy. Several women discussed negative experiences where those with perceived limited HIV literacy mishandled the disclosed HIV

status. It was common for these black women to limit disclosure following unpleasant experiences. Women who had not disclosed limited social support.

CONCLUSIONS: Anticipation of negative experiences with others around HIV disclosure can motivate women not to disclose, and thus to limit their social support for improved adherence with HIV medical care appointments and HAART therapy. Understanding the perceptions of Southern black women surrounding disclosure and their communities can inform efforts to increase community HIV literacy and can potentially reduce the psychosocial burden of the HIV diagnosis among Black women to improve adherence and ultimately improve outcomes.

"I'M NOT SWEATING MY HAIR OUT": OVERCOMING PHYSICAL ACTIVITY BARRIERS IN AFRICAN AMERICAN WOMEN

Amy G. Huebschmann[1]; Lucille C. Johnson[2]; Andrea L. Dunn3. [1]University of Colorado School of Medicine, Aurora, CO; [2]The Center for African American Health, Denver, CO; [3]Klein Buendel, Inc., Golden, CO. (Tracking ID #1637219)

BACKGROUND: Only 36 % of U.S. African American (AA) women meet the Healthy People 2010 physical activity objectives compared to 50 % of Caucasian women. Lower rates may be related to cultural barriers, including the costs and time required to restyle hair after exercise—a reported barrier in one-third of AA women. To inform future interventions, a key qualitative segment of this mixed-methods study sought to identify both hairstyle-related and non-hairstyle-related physical activity barriers and facilitators in AA women.

METHODS: The study was co-developed by a community health and academic investigator with input from key stakeholders. To date, we have completed four of 8 planned focus groups with AA women in the Denver area. Focus groups were stratified by age (30–49 years; 50–75 years) and physical activity levels (<60 min/week vs. ≥60 min/week), and led by trained AA female facilitators. Data codes for hairstyle-related facilitators and barriers were developed from phrases of similar meaning in an iterative coding scheme.

RESULTS: Thirty AA women have participated. The major hairstyle-related barriers and facilitators involved perspiration. Specific barriers were the time burden to restyle hair after perspiring and the cost burden from needing more hairstyle products and more hair salon visits due to regular aerobic exercise. However, certain hairstyles facilitated activity because perspiration has minimal effects on them (e.g., "Before I got my 'locks' [hairstyle], I was like I'm not sweating my hair out"). Other hairstyle-related facilitators were: high self-efficacy to restyle hair after perspiration; reducing exercise intensity to avoid sweating, and choosing "my health over my hair". These themes were reported across all strata of age and activity. The major non-hairstyle-related barriers were: lack of time, lack of motivation ("laziness"), and health concerns such as arthritis pain with activity. The major non-hairstyle-related facilitators were: an exercise partner/group, enjoyable activities (e.g., walking, dance classes), and specific motivations to do regular physical activity, such as "being healthy", to relieve stress, or to set a good example for children and/or grandchildren.

CONCLUSIONS: AA women whose hairstyle is affected by perspiration may avoid physical activity because of the financial and time burden associated with restyling their hair. Future interventions that provide group physical activity options and that build self-efficacy to restyle hair after perspiration may allow more regular aerobic exercise for AA women.

CLINICAL VIGNETTES

"TIPS" FOR AVOIDING CAVERNOUS SINUS THROMBOSIS

Jenna Kay; Dustin T. Smith. Emory University, Atlanta, GA. (Tracking ID #1594567)

LEARNING OBJECTIVE 1: Recognize the signs and symptoms of cerebral venous and sinus thrombosis (CVST) and obtain appropriate, timely imaging to initiate early treatment.

LEARNING OBJECTIVE 2: Counsel patients on ear hygiene and the risks associated with the use of cotton swabs.

CASE: A 45-year-old man with no medical history presented for evaluation with 2 weeks of left eye swelling, double vision, headaches, and right-sided neck pain. Review of systems was notable for fever and night sweats. On physical exam, he was febrile and tachycardic to 119. He had severe left-sided chemosis with restricted gaze and swelling of the right neck. His vision and retinal exam were normal. His WBC count was 27,000 cells/mm3. CT of the head showed left-sided proptosis, soft tissue swelling, mastoiditis, and thickening of the right platysma muscle. Empiric vancomycin and piperacillin-tazobactim were started. The following day, the patient's eye swelling increased and his vision deteriorated. CT angiography of the head showed left cavernous and dural sinus thrombosis and right internal jugular vein thrombosis. A heparin infusion was started. Piperacillin-tazobactam was discontinued and ceftriaxone and metronidazole were initiated. Over the next 48 h, the patient's vision improved. His fever and leukocytosis resolved. Otoscopic exam of the left ear revealed purulent material and tips of cotton swabs in the tympanic membrane. Upon questioning, the patient remembered using cotton swabs to clean his ears in the past. Blood cultures grew Actinomyces naeslundii and meyeri. He received antibiotics for 6 weeks and warfarin for 3 months. He was counseled on ear hygiene and the risks associated with the use of cotton swabs. The patient experienced a full recovery apart from a persistent left abducens palsy.

DISCUSSION: Cerebral venous and sinus thrombosis (CVST) is an uncommon condition that is becoming more frequently recognized with the availability of MRI. Seventy-five percent of patients are women. Most patients have thrombosis in more than one area of the cerebral drainage system. Headache is the most common symptom. Other signs/symptoms include evidence of intracranial hypertension (vomiting, papilloedema, visual disturbances), neurologic deficits, seizures, and coma. Infectious cavernous sinus thrombosis, as in this patient, classically causes headache, fever, and eye symptoms. Patients with severe papilloedema may develop permanent vision deficits without treatment. Importantly, head CT is normal in up to 30 % of cases. Brain MRI is the most sensitive exam for identifying occlusions with CT venography as an alternate modality. Predisposing factors include malignancy, prothrombic states, pregnancy, infection, inflammatory disease, and trauma. In this patient, otitis media after cotton swab-induced injury and foreign body retention led to septic thrombophlebitis, and no additional work-up for malignancy or prothrombotic state was pursued. Treatment consists of reversing the underlying cause if possible, controlling seizures and intracranial hypertension if present, and initiating anticoagulation, although the optimal duration of therapy is unknown. If detected early, most patients make a complete recovery.

"TYPE-1" PRESENTATION

Junwa Kunimatsu; Riri Watanabe; Atsuto Yoshizawa. National Center for Global Health and Medicine Hospital, Tokyo, Japan. (Tracking ID #1635759)

LEARNING OBJECTIVE 1: Recognize that clinicians should consider adult T-cell leukemia/lymphoma(ATLL) when a patient from the endemic area of HTLV-1 presents a rapidly progressive lymphadenopathy and/or hepatosplenomegaly.

LEARNING OBJECTIVE 2: Recognize that, even if symptomatic, a patient with undiagnosed ATLL may not know his or her own HTLV-1 status.

CASE: A 40-year-old Japanese man presented with a month history of red eyes, polydipsia, and polyarticular pain. No weight change, ophthalmalgia, and visual disturbance was reported. He saw an ophthalmologist 3 weeks before the current evaluation, and conjunctivitis was diagnosed but his eyes were not improved. He had not traveled abroad recently. He lived with his family in Tokyo. He smoked tobacco, but did not use alcohol or illicit drugs. On examination, vital signs were normal. Bilateral conjunctivas were congested. The neck was supple. No cutaneous lesion was noted. The joints showed no swelling. The examination was otherwise normal. Platelet count was 115,000/mm3. Lactate dehydrogenase was 472 mg/dl. The

electrolytes, creatinine, albumin, and liver enzymes were normal. Although the patient denied any recent sexual contact with a high-risk person and had not had episode of diarrheal disease, persistent conjunctivitis and polyarthralgia led us to consider a "Reiter-like" condition; i.e., reactive arthritis. We prescribed NSAIDs for his joint pain. Two weeks later, the patient additionally reported fever and night sweat. Newly-onset cervical lymphadenopathy and splenomegaly were noted. CT and FDG-PET scan revealed multiple enlarged lymph nodes in the neck, supraclavicular fossae, and mediastinum bilaterally, with highly uptakes of FDG. Lymph node biopsy showed a mature T-cell lymphoma. Later, HTLV-1 was detected from blood sample. Consequently, we reached the diagnosis of adult T-cell leukemia-lymphoma(ATLL).
DISCUSSION: ATLL is geographically clustered, with prevalence in southwestern Japan(mainly on Okinawa and Kyushu), the Caribbean, West Africa, southern America, and Australia. The clinical presentation and disease course vary remarkably; some patients have an indolent, asymptomatic course for years, but the majority of patients present with rapidly progressive manifestations, as seen in this case. In regard to clinical reasoning, the clinical presentation of our case contained some pitfalls in retrospect. Firstly, no hypercalcemia is evident despite of marked dipsia. Hypercalsemia is a important clue in diagnosing symptomatic ATLL. We reasoned excess polydipsia can mask even an overt hypercalcemia. Secondly, the patient had not known his own HTLV-1 status, and had no family history of HTLV-1 associated diseases. Although we took his history of birthplace: Miyazaki prefecture(Kyusyu region), we did not consider ATLL on the first evaluation. Lastly, the patient is relatively young for ATLL, while the median age at onset of ATLL is 50 to 60 years. In general, a combination of arthritis and conjunctivitis in sexually active, young patientsleads clinicians to think of reactive arthritis. We speculated that his red eyes were a nonspecific conjunctivitis, although ATLL is associated with uveitis. The clinical features of this patient's acute illness, which included rapid enlargement of lymph nodes and spleen, are consistent with a disease progression of ATLL. Clinicians should consider an early phase of symptomatic ATLL when a patient from the endemic area of HTLV-1 presents a rapidly progressive lymphadenopathy and/or hepatosplenomegaly.

"UNBREAK MY HEART": TAKOTSUBO'S CARDIOMYOPATHY AND MOBITZ II BLOCK Peter-Trung Phan; Shivtej Kaushal. Medical College of Wisconsin, Milwaukee, WI. (Tracking ID #1622851)

LEARNING OBJECTIVE 1: Recognize that Takotsubo's cardiomyopathy is a disease that should be included on the differential for a presentation of acute coronary syndrome and that its prognosis is generally favorable.
LEARNING OBJECTIVE 2: Understand that second degree heart block can be caused by Takotsubo cardiomyopathy
CASE: A 65 year-old female with hypothyroidism and depression presented to the hospital for an elective ganglion cyst removal and incidentally was found to be in 2:1 atrioventricular (AV) block on telemetry. She subsequently was admitted to the hospital and upon further evaluation, had been having symptoms of syncope, fatigue, and palpitations for 1 month. Her electrocardiograms showed the aforementioned 2:1 AV block, but also alternating right and left bundle branch blocks. Electrolytes and thyroid stimulating hormone were normal, and chest radiograph did not show any abnormalities. She was not on any medications that would cause AV block. Her echocardiogram showed a left ventricular ejection fraction (LVEF) of 40–45 %, no significant valvular abnormalities, and akinesis of the anteroseptal and anterior walls. Her initial troponin was negative, but progressively became elevated to eight times normal levels. The patient underwent temporary transvenous cardiac pacing and coronary artery catheterization. Her cardiac catheterization showed a right-dominant system with an 80 % stenosis of the ostial segment of the right coronary artery. However, the left ventriculogram showed hyperdynamic basal segments, mid and distal segment ballooning and akinesis, consistent with Takotsubo cardiomyopathy. The patient was prescribed a beta-blocker, statin, and angiotensin converting enzyme inhibitor and had a cardiac resynchronization therapy pacing (CRT-P) device implanted. She did well throughout her hospitalization and continues to follow in clinic.
DISCUSSION: Takotsubo cardiomyopathy mimics a myocardial infarction in its symptoms, electrocardiographic findings, and cardiac biomarkers. However, it is rare, occurring once in every 5000 hospitalizations. It is usually associated with emotional stress and has a predilection for elderly women. In Takotsubo cardiomyopathy, patients can develop pulmonary edema and other complications of heart failure with an in-hospital mortality from 1 % to 8 %. Patients who survive the acute episode will have normalization of their LVEF within 4 weeks. One of the proposed mechanisms of this pathology involves catecholamine toxicity and a localization of beta-adrenergic receptors in the apex. Without treatment, the condition is self-limited with a recurrence of 10 %. Also, it has been reported that only 5 % of Takotsubo cardiomyopathies are complicated with AV block and even fewer are treated with CRT-P. We present a case that may give us further insight on the pathophysiology of Takotsubo cardiomyopathy and demonstrate a differential for patients presenting with acute coronary syndrome that has a favorable prognosis.

5-AMINOSALICYLIC ACID INDUCED AGRANULOCYTOSIS Ahmet A. Oktay; Fritzie S. Albarillo; Dima Dandachi; Samaneh Dowlatshahi; Laura Raftery. Saint Francis Hospital, Evanston, IL. (Tracking ID #1635473)

LEARNING OBJECTIVE 1: Increasing the awareness of a serious adverse effect of 5-Aminosalicylic Acid (5-ASA); agranulocytosis.
LEARNING OBJECTIVE 2: Recognizing the general features of the diagnosis and management of drug-induced agranulocytosis.
CASE: A 74 year-old male patient, who lived independently, was brought to the ED after he was found lying on the floor of his apartment. He was awake but confused and not able to provide a reliable history. Information was obtained from medical records. He had a PMH of hypertension, type-2 diabetes mellitus, coronary artery disease, systolic CHF and Crohn's disease. He had no past surgical history or known drug allergies. His medications included aspirin, budesonide, docusate, omeprazole, niacin, metoprolol, lisinopril, isosorbide mononitrate, gabapentin, rosuvastatin and 5-ASA which was started 2 months back when Crohn's disease was diagnosed with colonoscopy and biopsy. He had remote history of cigarette smoking but no history of alcohol or illegal drug abuse. On physical exam; his temperature was 100.9 °F, BP was 93/48 mmHg and heart rate was 98 beats/minute. He appeared sick. Mild wheezing was auscultated on both lungs. Abdomen was distended with diffuse tenderness. Initial CBC showed: hemoglobin, 9.9 mg/dL; WBC count, 500/μL (neutrophils 0 %, lymphocytes 88 %, monocytes 12 %); and platelet count, 90.000/μL. His CBC was within normal limits (except hemoglobin: 11.3 mg/dL) 2 months prior. Initial imaging studies showed bilateral interstitial edema on chest X-Ray and focal narrowing of transverse colon on CT-abdomen/pelvis. He was admitted to the ICU with neutropenic fever. 5-ASA was discontinued. After blood cultures were obtained, he was started on broad-spectrum IV antibiotics and granulocyte colony-stimulating factor (G-CSF). Bone marrow aspiration and biopsy were performed and revealed maturation arrest with no bands, neutrophils, myelocytes, and metamyelocytes identified. His blood culture grew Klebsiella pneumoniae. Agranulocytosis persisted for 8 days despite G-CSF; his absolute neutrophil count (ANC) began recovering (ANC: 180/μL) on day 8 and by day 9, it was 4600/μL. He was discharged to a nursing home after 4 weeks of hospital stay.
DISCUSSION: Neutropenia is defined by ANC <1500/μL; agranulocytosis generally refers to the absence of granulocytes in the peripheral blood. Drugs and infection are two important causes of acquired neutropenia. Sulfasalazine, which contains 5-ASA linked to a sulfapyridine moiety, has been associated with both neutropenia and agranulocytosis. 5-ASA, a first-line therapy for inflammatory bowel disease, does not have the sulfa moiety thought to be responsible for neutropenia. However, in post marketing surveillance 5-ASA has been implicated as a cause of agranulocytosis; which is not widely known. In our patient detection of agranulocytosis 2 months after the start of 5-ASA, supports our suspicion of drug toxicity. We speculate that the agranulocytosis preceded the K.pneumoniae, a colonizer of the alimentary

canal, and that prompt antibiotic therapy was crucial in his surviving sepsis. We think patients who are on 5-ASA should be informed about and monitored for the potential side effects including neutropenia and/or agranulocytosis which can be fatal.

62 YEAR-OLD MAN WITH COUGH, HEMOPTYSIS AND A PULMONARY MASS Aisha Siddiqi; Tushar A. Tuliani; Kevin Belgrave; Donald P. Levine; Diane L. Levine. Wayne State University, Detroit, MI. (Tracking ID #1642030)

LEARNING OBJECTIVE 1: Recognize the importance of making a histologic diagnosis for all masses
LEARNING OBJECTIVE 2: Diagnose a rare cause of an upper lobe mass
CASE: A 62 year old man presented with a chief complaint of cough and hemoptysis. The patient had been in his usual state of health until 1 year prior to admission (PTA) when he developed progressive right-sided pleuritic pain associated with unintentional weight loss. One month prior to admission he developed a cough, which was productive of thick and bloody sputum occurring multiple times a day. He denied any fever or chills. Past medical history was significant for tuberculosis in the 1980s requiring a prolonged course of treatment (2 years; records not available). Family history was negative for cancer. Social history was significant for a 30 pack-years of cigarette smoking and alcohol abuse. On admission, the patient appeared cachectic. He was tachypneic. Physical exam was remarkable for increased tactile vocal fremitus and decreased breath sounds in the right upper lung field anteriorly. Chest radiography revealed a well-circumscribed right upper lobe mass with the appearance of an aspergilloma. Sputum smear and culture were negative for acid-fast bacilli and fungal elements. A serum aspergillus galactomannan antigen was negative. CT scan of the thorax showed areas of calcification and necrotic tissue with a cavitation surrounded by scarring. A CT-guided biopsy demonstrated tumor cells positive for vimentin, smooth muscle actin and CD 99. A bone scan revealed no primary bone sarcoma, but showed invasion into the upper anterolateral right ribs. The patient was referred to oncology.
DISCUSSION: The patient's history of tuberculosis and scarring, characteristic findings on chest radiography and history of hemoptysis were highly suggestive of aspergilloma. However, the negative aspergillus galactomannan antigen was inconsistent with this diagnosis prompting biopsy of the mass. The positive CD 99 immunohistochemistry supported a diagnosis of Ewing's Sarcoma (ES)/ Primitive Neuroectodermal Tumor (PNET). Primary extra-osseous Ewing's Sarcoma of pulmonary origin is exceedingly rare and is unassociated with traditional risk factors for lung cancer such as smoking or exposure to chemicals/dusts. Mutation of chromosome 22 is highly characteristic. To date, only 11 cases have been reported. In addition, unlike primary osseous Ewing's Sarcoma, nearly all cases (10) have been reported in adults. Primary localized Ewing's Sarcoma of the bone has a median survival of 100 months. In contrast, localized extra-osseous Ewing's Sarcoma has a poor prognosis with a median survival of 15 months. Although chemotherapy responsive, treatment only improves survival by 1 year. This case highlights the importance of making a histologic diagnosis. Treatment for aspergilloma would have delayed diagnosis and potentially compromised this patient's opportunity for response to chemotherapy. Also, making the diagnosis of primary pulmonary Ewing's Sarcoma allows for appropriate end of life discussions and planning.

A 20 YEAR OLD MAN WITH FEVER, DIZZINESS AND CONFUSION…; DR. GEETA LAUD, DR. DIVYA KAUSHIK, ALEXANDER RITTER MSIV. MONTEFIORE MEDICAL CENTER, BRONX, NY. Divya Kaushik; Alexander Ritter; Geeta Laud. Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1643205)

LEARNING OBJECTIVE 1: Recognize the clinical presentation, EEG and MRI findings of viral encephalitis.
LEARNING OBJECTIVE 2: 2. Emphasize the importance of immediate treatment with anti-viral medication and possible indications for adjunctive treatment with dexamethasone.
CASE: A 20 year-old man presented with 1 day of headaches, confusion, vomiting and dizziness. On exam, he was febrile to 102 with marked pallor, dryness, delusions, and severe drowsiness. There were no focal neurological deficits. Treatment with Cefepime, Vancomycin and Acyclovir was begun. The initial CSF analysis revealed WBC 51, RBC 4, Lymphocytes 97, Glucose 62, protein 24 and ultimately returned positive for HSV by PCR. Antibiotics were discontinued and the patient was maintained on IV Acyclovir. During the first week of hospitalization, the patient was severely symptomatic with unrelenting fevers, photophobia, severe headache, dizziness, disorientation, ataxia, and delusions. MRI of the brain revealed an acute corpus collosum infarct, and signal abnormalities in the medial temporal lobes. The EEG revealed epileptiform activity with temporal spikes. On repeat MRI, after 8 days on acyclovir, there was increased diffuse inflammation and brain stem edema. A four-day course of Dexamethasone, 10 mg IV daily, was initiated. The patient became afebrile within 6 h and his dizziness, ataxia, confusion, and headaches improved. He completed a 28-day course of Acyclovir and a negative HSV PCR was confirmed on repeat lumbar puncture. A third MRI revealed a resolved corpus infarct. The patient symptomatically improved and remained afebrile but had persistent short term memory loss.
DISCUSSION: HSV encephalitis is a devastating disease, which accounts for approximately 10 % of cases of encephalitis in the United States. Even with appropriate treatment and early intervention, the prognosis is guarded. Almost two thirds of treated patients will have a post-encephalitic syndrome comprised of varying degrees of neuropsychiatric behavioral abnormalities such as, Kluver-Bucy Syndrome (loss of normal anger and fear responses, and sexual disinhibition), anterograde amnesia, and motor, speech, and seizure disorders. With treatment the mortality rate at 6 months is approximately 15 % and severe disability is approximately 20 %. Our patient exhibited another clinical feature of HSV encephalitis, a corpus collosum infarct. The finding is thought to represent a transient signal abnormality theoretically caused by an overwhelming cytokine-mediated response to the virus, as opposed to true infarct. Although our patient received appropriate and timely treatment with Acyclovir, his symptoms and MRI findings initially persisted without much improvement. This prompted a discussion of steroids as an adjunctive treatment. A literature search for evidence to support the use of steroids in HSV encephalitis yielded a retrospective, non-randomized, multivariate regression study of 45 patients from Nihon University Department of Medicine in Japan (2005). This study showed that steroid treatment in HSV encephalitis reduced severe post-encephalitic complications and death. The significant improvement of this patient supported the use of corticosteroids in this disease.

A 36 YEAR OLD GENTLEMAN WITH SHORTNESS OF BREATH: A RARE "SINUS" PROBLEM Navya Nambudiri[2]; Vinod E. Nambudiri[1,2]; Nabil Shafi[2]; Jayashri Aragam[2]. [1]Brigham and Women's Hospital/Harvard Medical School, Brookline, MA; [2]Veterans Affairs Medical Center West Roxbury, West Roxbury, MA. (Tracking ID #1638895)

LEARNING OBJECTIVE 1: Recognize structural abnormalities of the heart are important differential diagnoses for an acute presentation of congestive heart failure.
LEARNING OBJECTIVE 2: Diagnose ruptured sinus of Valsalva aneurysms as presenting with dyspnea on exertion, chest pain, and a new onset continuous murmur.
CASE: A 36-year-old male presented with dyspnea on exertion for 3 weeks. His symptoms began after a high-intensity workout. The dyspnea worsened intermittently and was associated with a squeezing sensation, more noticeable with ambulation. Review of systems was notable for orthopnea, a 15-pound weight gain over 3 weeks, and a gurgling sound heard while lying supine. Review of systems was negative for fevers,

chills, close sick contacts, and lower extremity edema. Past medical history was notable for tricuspid regurgitation and hypertension. He took no medications at home. His father had hypertension and hyperlipidemia, and his mother had systemic lupus erythematosus. There was no family history of sudden cardiac death. Physical exam findings included a JVP up to the level of the ear, bibasilar crackles, a palpable liver 4 cm below the costal margin, and bilateral ankle edema. A 3/6 systolic ejection murmur was appreciated throughout the precordium, loudest at the left lower sternal border and axilla, which was not augmented with handgrip. S1 and S2 were preserved and the PMI was non-displaced. A right ventricular heave was noted. Chest x-ray showed pulmonary edema. EKG showed normal sinus rhythm without ST or T-wave abnormalities. Transthoracic echocardiogram showed preserved ejection faction and a non-coronary sinus of Valsalva aneurysm with continuous left-to-right shunt into the right atrium due to aneurysmal rupture, confirmed on CT-Angiography and transesophageal echocardiography.
DISCUSSION: Sinus of Valsalva aneurysms are rare cardiac structural abnormalities. They may be found on the right, noncoronary, or left sinuses of Valsalva, with right sinus aneurysms as the most common (70–90 %). Men are more commonly affected than women, and there are reports of higher rates in Asian countries compared to Western populations. They may be congenital or acquired. Common associated heart structural anomalies are ventricular septal defects or bicuspid aortic valves. Sinus of Valsalva aneurysms are often asymptomatic if unruptured. They may be seen on transthoracic echocardiography, transesophageal echocardiograpy, CT-angiography, or cardiac MRI. Rupture of sinus of Valsalva aneurysms is most common in the third or fourth decade of life. Ruptured sinus of Valsalva aneurysms may become symptomatic with a clinical presentation of sudden hemodynamic collapse or a more gradual presentation of heart failure due to aortic-cardiac shunting, as was seen in our patient. The patient underwent repair of the ruptured sinus of Valsalva aneurysm with a bovine pericardial patch without surgical or post-surgical complications. He was started on metoprolol, aspirin, and lisinopril and continued to do well at 3 months follow-up.

A BAD CONNECTION RESOLVED: PATIENT SURVIVES AORTOENTERIC FISTULA Mahmuda Islam; Adnanul Karim; Jingdong Su; Aiman Shokr; Roger D. Smalligan. Texas Tech University Health Sciences Center, Amarillo, TX. (Tracking ID #1635940)

LEARNING OBJECTIVE 1: Recognize clinical features of aortoenteric fistulas.
LEARNING OBJECTIVE 2: Diagnose aortoenteric fistulas in patients with occult clinical features.
CASE: A 64-year-old male presented with 2 days of melena, crampy epigastric pain and dyspepsia. He had a past medical history of HTN, COPD and substance abuse. He smoked 2 packs per day and drinks 5–6 beers/day. Family history was positive for premature CAD. On physical examination BP 170/60 and pulse was 80. He had mild epigastric tenderness and a palpable pulsatile mass was noted with the remainder of exam normal. Labs were normal except for mild anemia. GI was consulted and EGD was negative. The patient's pain and melena persisted so a repeat EGD was performed which showed bleeding from a duodenal ulcer that was missed on first pass. A CT of the abdomen without contrast showed an infrarenal abdominal aortic aneurysm (AAA) of 5.3×5.1 cm with duodenum draped over the anterior aspect of the aneurysm with indistinctness and irregular inflammatory appearance between the aorta and the duodenal wall. The patient was underwent surgical repair of the duodenal ulcer-AAA and required axillary-femoral and femoro-femoral bypasses in the process. Post-operative course was complicated by Strep. viridens infection at the surgical sites which was treated with ceftriaxone and rifampin. The patient developed delirium tremens as well and required prolonged mechanical ventilation, tracheostomy and PEG tube placement. He weaned eventually and was able to be transferred to a rehab hospital.
DISCUSSION: Aortoenteric fistulas (AEF) are rare but life threatening, occuring in 0.3–2 % of open AAA repairs. Development of primary, spontaneous AEF usually results from the AAA eroding into the 3rd or 4th portion of the duodenum as was seen in our patient. Eighty-five percent are atherosclerotic, 8 % mycotic, and 1 % due to media necrosis. Secondary AEF occurs in the setting of prosthetic aortic valve surgery when a pseudoaneurysm develops at the suture line of AAA repair or by direct mechanical effects of scarring between bowel and suture line. Risk factors for AEF therefore include AAA repair, prosthetic aortic grafts, aortic stent placement, radiation, infection of graft, PUD, diverticular disease, tumor and trauma. Patients typically present like our patient with upper GI bleeding, crampy abdominal pain and a pulsatile mass. Lower GI bleeding is occasionally seen and catastrophic bleeding can occur with any AEF. EGD and abdominal CT are crucial to making the diagnosis and MRI with contrast is not frequently used. This case is an important reminder to internists of the importance of considering aortoenteric fistulas in the differential of patients with acute GI bleeding, especially if the above risk factors are present, principally a history of AAA.

A BELLY FULL OF JELLY Ashwin Sridharan; Marcus A. Bachhuber; Patrick Hourani. Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1635264)

LEARNING OBJECTIVE 1: Identify the differential diagnosis of ascites without portal hypertension
LEARNING OBJECTIVE 2: Understand the pathophysiology and clinical presentation of pseudomyxoma peritonei
CASE: A 61 year-old man presented with several years of progressive abdominal and lower extremity swelling. The swelling had become profound in the past several weeks and he could barely ambulate. He denied a history of liver, cardiac, or kidney disease, or any drug use, transfusions, high-risk sexual behavior, or recent travel. The patient's abdomen was markedly distended with ascites and a right-sided inguinal hernia was noted. He had 3+ pitting lower extremity edema to the thigh. No peripheral stigmata of liver disease or chronic alcohol use were found. His cardiac exam was normal with a normal jugular venous pressure. Laboratory studies revealed a serum albumin of 2.9 g/dL, with normal serum aspartate and alanine aminotransferases, alkaline phosphatase, creatinine, urinalysis, and coagulation studies. Studies for viral hepatitis were negative. Diagnostic paracentesis revealed yellow, thick, mucinous ascites with 411 leukocytes/mm3, 14 % polymorphonucleocytes. The serum albumin-ascites gradient was 0.9 g/dL, indicating that portal hypertension was not likely present. Bacterial and mycobacterial cultures were negative. Fluid cytology and peritoneal biopsy were unremarkable. Computed tomography of the abdomen and pelvis with intravenous contrast revealed massive loculated ascites with small calcifications along septations. No masses or lymphadenopathy were noted. As the ascites was not likely due to hepatic, cardiac, renal, pancreatic, or infectious etiology, a mucin-producing neoplasm (pseudomyxoma peritonei) was suspected. Exploratory laparoscopy was performed. Fifteen liters of mucinous ascites were drained and a 38×20×11 cm mass originating from the appendix was discovered. A right hemicolectomy with end ileostomy was performed. Pathology revealed appendiceal mucinous adenocarcinoma. The patient declined chemotherapy. He remains alive 2 years after initial presentation.
DISCUSSION: Ascites related to portal hypertension is commonly encountered by the internist, but cases without portal hypertension present a diagnostic challenge. Processes leading to ascites without portal hypertension include local or metastatic peritoneal carcinomatosis (most common), tuberculosis, pancreatitis, bile ascites, and chylous ascites from lymphatic system leakage. Pseudomyxoma peritonei is a rare cause of ascites characterized by diffuse collection of gelatinous material from mucin-producing implants on peritoneal surfaces. Mucin-producing tissue can be either adenoma, termed disseminated peritoneal adenomucinosis, or adenocarcinoma, termed peritoneal mucinous carcinomatosis. Typically these neoplasms arise in the appendix. Peritoneal spread is thought to occur when an appendiceal neoplasm occludes the lumen of the appendix and ruptures it, seeding the peritoneum with mucin-producing cells. The abdomen slowly accumulates this mucinous ascites over months to years, leading to increased abdominal girth or a new inguinal hernia, the two most common presenting complaints of this condition. Computed tomography findings are often non-specific, but abdominal septations with calcifications raise the suspicion of this disease. In conclusion, the presence of ascites

without portal hypertension should prompt a broad differential diagnosis, and appendiceal tumors should be considered in cases of mucinous ascites.

A BLOODY BEAST HIDING IN THE CHEST Salman J. Bandeali; Vu Hoang; Lee Lu. Baylor College of Medicine, Houston, TX. (Tracking ID #1643313)

LEARNING OBJECTIVE 1: Report a rare cause of massive hemoptysis from uterine cancer metastases.
LEARNING OBJECTIVE 2: Realize endometrial cancer may recur even after a total abdominal hysterectomy.
CASE: A 67-year-old Caucasian female presented with complaint of having coughed up a cup of bright red blood after multiple bouts of vigorous coughing. Over the past 3 months, patient developed a dry cough which did not resolve with anti-histamines and cough suppressant. She was diagnosedwith reactive airway disease and prescribed bronchodilators but to no avail. She denied any fever, chills, night sweats, travel, and sick contacts but endorsed a 9 lbs weight loss in past 6 months. Her past medical history was significant for endometrial cancer 12 years ago treated with total abdominal hysterectomy, bilateral salpingo-oophorectomy, and pelvic lymph node dissection. She had been disease free since then and had been discharged from gynecology clinic 7 years ago. During exam, the patientstarted coughing bright red blood with clots (1000 mL in 10 min). She became tachypneic (24/min) with accessory muscle use, tachycardic (110/min), and hypoxic. She was immediately intubated with a double lumen endobronchial blocker tube.An emergent IR-guided embolization was attempted;however, no active bleeding site could be identified except for a prominent right bronchial artery in which a coil was deployed. Pulmonary circulation was normal. The patient however did not stop bleeding and required multiple blood transfusions. Thoracic surgery was consulted, and sheunderwent right sided lobectomy. Pathology revealedpulmonary metastases from recurrent uterine adenocarcinoma. The patient tolerated the surgery well and was discharged with oncology follow up for chemotherapy.
DISCUSSION: Almost 100 % of recurrence of uterine cancer occurs within 3 years after treatment. Our patient was 12 years without evidence of disease. Surveillance is usually based on regular follow-ups and evaluation via history and physical exam. Recurrence sites include vaginal/pelvic (50 %) and distant metastases in the abdomen or lungs (50 %). Massive hemoptysis is defined as expectoration of 600 mL blood in 24 h. It constitutes only 5 % of all hemoptysis cases;however, it is a medical emergency and is associated with significant mortality and morbidity. The most common causes of hemoptysis include tuberculosis, lung cancer, and bronchiectasis. To our knowledge, this is the first case of recurrent uterine cancer presenting as massive hemoptysis from pulmonary metastases. The co-existence of massive hemoptysis and malignancy has been shown to have a mortality rate of 80 %. Hence, even in the absence of uterus and after 12 years "free" of disease, endometrial cancer can recur and present with massive hemoptysis due to pulmonary metastases.

A BROKEN HEART AND A BROKEN BACK: THE DIAGNOSTIC CHALLENGE OF BACK PAIN Christopher D. Velez; Jason A. Korcak. Montefiore Medical Center, Bronx, NY. (Tracking ID #1643089)

LEARNING OBJECTIVE 1: Identify the clinical features of the serious causes of back pain.
LEARNING OBJECTIVE 2: Recognize the association between pyogenic vertebral osteomyelitis and infectious endocarditis.
CASE: A 54-year-old man with no past medical history presented with back pain for 1 month, as well as fever for 3 days. After presenting with less severe symptoms 1 week earlier, the patient returned with the worst back pain of his life. He denied a history of similar symptoms, trauma, recent procedures, including dental work, and intravenous drug use. The patient was from Albania, but had been living in the US for several decades. He had a fever of 102 ° F, poor dentition, a normal cardiac exam, marked mid-thoracic paraspinal tenderness, and a normal neurologic exam. The white blood cell count was 8.2 k/μL, the erythrocyte sedimentation rate was 79 mm/hr, and the C-reactive protein was 10.1 mg/dL. Blood cultures rapidly grew Streptococcus oralis in all four bottles. Transesophageal echocardiography showed moderate mitral valve regurgitation and a mobile 8 mm vegetation on the anterior leaflet of the mitral valve consistent with infectious endocarditis. MRI of the spine demonstrated abnormal bone marrow signal at the level of the T5 and T6 vertebrae consistent with osteomyelitis and diskitis, as well as an adjacent left paraspinal phlegmon.
DISCUSSION: Back pain presents a diagnostic challenge for the internist. While back pain is the fifth most common reason for all physician visits, there is no clear etiology found in over 80 % of cases. Although patients often receive a diagnosis of nonspecific musculoskeletal injury, several key warning signs necessitate consideration of a broader differential diagnosis. Progressively worsening back pain, unremitting pain, or signs of systemic illness, including unexplained fever or weight loss, should raise concern for infection, malignancy, or inflammatory disease. Focal neurologic findings, such as the radicular pain of disc herniation or saddle anesthesia in cauda equina syndrome, should also prompt a more extensive work-up. In addition, back pain may represent referred pain from other conditions, including aortic dissection and diseases of the pelvic and abdominal viscera, such as pancreatitis. In our case, the severity of the back pain, fever, and elevated inflammatory markers were important warning signs. The patient's back pain arose from hematogenous spread of S. oralis to the paraspinal region of the thoracic vertebrae in the setting of native valve endocarditis. Approximately 30 % of patients diagnosed with pyogenic vertebral osteomyelitis also have concomitant infective endocarditis. This relationship highlights the diagnostic challenge of back pain. While back pain is a common complaint with a typically benign etiology, internists must be aware of the clinical signs and symptoms that may indicate more serious causes.

A CASE REPORT OF DIZZINESS FROM AN OROPHARYNGEAL CANCER Takeomi Nakamura; Christine Kwan. Teine Keijinkai Hospital, Sapporo, Japan. (Tracking ID #1642584)

LEARNING OBJECTIVE 1: To recognize that dizziness may be caused by bradycardia from carotid sinus hypersensitivity syndrome from orpharyngeal cancers.
LEARNING OBJECTIVE 2: To use carotid sinus massage as a method to assess dizziness.
CASE: A 44 year-old Japanese man with no significant past medical history presents with acute onset dizziness described as spinning of everything around him. It continued for past hour. He also reported that he has sometimes felt shortness of breath and palpitations be-fore admission. He denied other constitutional symptoms as fever, weight change, or fatigue. He also denied neurological symptoms as syncope, speech changes, asymmetrical weakness, or head changes including vision and hearing. His wife reported that he snores loudly while sleeping but no orthopnea or PND. He has no medication or any allergies. He smokes 1 pack/day x20years. He does not drink. His occupation is a truck driver. His family history is unremarkable. Physical examination shows blood pressure of 120/71 mmHg, pulse of 48 beats /minute, respiratory rate of 20/minute, O2 Saturation of 98 %, and temperature of 37.5c. Head and neck exam reveals erythematous, swollen tonsils and right cervical lymphadenopathy at 5×5 cm, nontender, hard, and fixed with recurrence of dizziness and nausea with palpitation along with concurrent telementry's showing bradycardia to 40 beats/minute, junctional rhythm with retrograde atrial waves in all leads, and sinus pause of 2 s. Neurological exam is within normal limits. The rest of the examination is unremarkable. Laboratory testing, including complete blood counts and chemistry, is within normal limits. Head magnetic resonance imaging reveals a right oropharyngeal mass concerning for a malignancy. Biopsy results show malignant tumor with cervical node involvement. The patient is then started on chemotherapy and radiotherapy with gradual improvement of the dizziness.
DISCUSSION: Hypersensitivity of the afferent or efferent limbs of the carotid sinus reflex arc result in vagal activation and/or sympathetic

inhibition, leading to bradycardia and/or vasodilation may also be called carotid sinus syndrome or carotid sinus syncope. While the patient does not present with syncope, he has pre-syncopal symptoms of dizziness. In patients with an unknown cause of syncope, carotid sinus massage can help diagnose carotid sinus hypersensitivity syndrome in more than 25 % of cases. Of course, the massage should not be performed on those with a carotid bruit or transient ischemic attack/stroke in the past three As a matter of fact, the pathophysiology of carotid sinus syndrome secondary to head and neck malignancy is not well understood. Local pathologic conditions adjacent to the carotid sinus such as enlarged lymph nodes, operation scars, and mechanical pressure by a mass on carotid sinus or by actual invasion of the carotid sinus, sinus nerve or glosso-pharyngeal nerve by tumor have been postulated to produce carotid sinus syndrome. In our presented case, the cancer involved cervical lymph node and they produced sustained compression on the carotid sinus resulting in carotid sinus syndrome. After starting chemoradiation, the patient was followed for 7 months without dizziness or any other related symptoms. We can recognize that dizziness may be caused by bradycardia from carotid sinus hypersensitivity syndrome from orpharyngeal cancers with cervical node in-volvement.

A CASE OF CHRONIC, LOCALIZED LYMPHADENOPATHY Tanya Gupta; Karen Levy; Sophia M. Li; Neil J. Farber. University of California—San Diego, School of Medicine, La Jolla, CA. (Tracking ID #1622993)

LEARNING OBJECTIVE 1: Recognize the differential diagnosis of lymphadenopathy
LEARNING OBJECTIVE 2: Recognize clinical and pathologic features of angiomyomatous hamartoma
CASE: The cause of isolated lymphadenopathy without accompanying clinical symptoms can be challenging to approach given the large number of possible etiologies. As discussed in this vignette, developing a differential based on the extent of lymphadenopathy (localized vs. generalized) and chronicity may help narrow the approach. The patient is a 67 year old male with history of bullous pemphigoid presenting with worsening peripheral edema. Bilateral lower extremity edema and inguinal lymphadenopathy began shortly after initiating prednisone for treatment of pemphigoid. Prednisone was tapered after 3 months and mycophenolate was subsequently initiated for 1 month, at which time the edema significantly worsened causing balance problems and 10 pound weight gain. He denied fever, chills, dyspnea, cough, chest pain. Of note, patient had history of exposure to raw milk and to a sibling with tuberculosis, but no exposure to wild animals. On physical exam, patient was well appearing with vitals within normal limits. Exam was only remarkable for 3+ pitting edema of bilateral lower extremities, edema of genitals, and significant bilateral inguinal lymphadenopathy. Lymphadenopathy was not appreciated in the neck. Routine CBC and BMP were within normal limits, ALT 37, AST 48, total protein 5.7, and albumin 3.5. Patient had a quantiferon negative test. CT abdomen and pelvis revealed large calcified mesenteric node 3.2×2.5 cm and enlarged bilateral inguinal nodes with central necrosis. Approximately 7 months after onset of lymphadenopathy, inguinal excisional biopsy revealed vascular and smooth muscle proliferation suggestive of angiomyomatous hamartoma.
DISCUSSION: As an isolated physical exam finding, lymphadenopathy can have an extensive number of causes. Thus, qualifying the patient's lymphadenopathy as chronic and localized helps narrow the initial differential to infectious causes, such as tuberculosis, lymphogranuloma venereum, brucellosis, and tularemia; auto-immune causes, such as sarcoid; and tumors such as angiomyolipoma, lymphoma, Kaposi's sarcoma, and metastasis. In this case, the ultimate diagnosis of angiomyomatous hamartoma came from its classic pathologic findings on biopsy. Angiomyomatous hamartoma is a benign cause of inguinal lymphadenopathy in which normal lymph node architecture is replaced with smooth muscle cells, adipose cells, and vessels extending from the hilum to the surface of the node. Since it was first described in 1992, a total of 18 other cases have been reported. Most of these cases involved inguinal nodes, with the exception of a few involving femoral nodes, one involving popliteal nodes, and one in cervical nodes. The pathogenesis remains unclear, though it has most recently been thought to be prompted by impaired lymphatic flow. Mycophenolate use has been associated with lymphoproliferative disorders and sarcoidosis, which raises the question of a possible association with development of angiomyomatous hamartoma in this patient. Additionally, bullous pemphigoid has been noted in patients with lymphoma, raising the question of a possible association of pemphigoid with angiomyomatous hamartoma as well. Because this disorder is benign, chemotherapy and radiation are not required. Rather, surgical excision of nodes restores lymphatic flow and leads to resolution of edema without recurrence.

A CASE OF CRYPTOSPORIDIAL DIARRHEA IN AN IMMUNE-COMPETENT ADULT Naba R. Mainali; Patrick Quinlan; Anene Ukaigwe; Shailaja Amirishetty. Reading Health System, West Reading, PA. (Tracking ID #1621816)

LEARNING OBJECTIVE 1: To recognize the clinical presentation and diagnosis of cryptosporidial diarrhea.
LEARNING OBJECTIVE 2: To describe the management of cryptosporidial diarrhea in an immune-competent patient.
CASE: Diarrhea caused by Cryptosporidium is most commonly seen in patients with HIV/AIDS or other immuno-compromised conditions like Diabetes Mellitus, patients on high dose of steroids or immuno-suppressants. The organism is a parasite that infects gastrointestinal epithelium producing potentially life threatening diarrhea in AIDS but usually self-limited diarrhea in immune-competent hosts. Here in, we present an interesting case of persistent diarrhea caused by Cryptosporidium in an immune-competent adult requiring treatment with nitazoxanide. A 43-year-old female presented to the Emergency Department complaining of diarrhea, abdominal discomfort and nausea for the last 10 days. To begin with, she had diarrhea, vomiting, nausea and low grade fever. After 3 days, she stopped vomiting and became afebrile. However, she continued to have diarrhea and nausea. She went to local medical center and was treated with normal saline and antiemetics with the provisional diagnosis of viral gastroenteritis and was sent home. She had minimal relief but again continued to have the similar symptoms with loss of appetite and weight loss. On the 10th day, she decided to come to our hospital for the further evaluation. She denied fever, chills, abdominal pain, and burning micturition at the time of presentation. She denied any history of allergy, unusual food intake, sick contacts, bloody stools, HIV risk behavior and travel to other countries. Physical exam revealed blood pressure of 90/68 mm Hg and heart rate of 88/min with slightly dry oral mucosa without lymphadenopathy and rashes. Abdominal exam showed mildly tender abdomen with hyperactive bowel sounds. Heart, lungs and neurological examination were essentially normal. Laboratory findings revealed normal CBC, sodium 141 meq/L, potassium 3.1 meq/L, magnesium 1.3 meq/dL, bicarbonate 28 meq/L, blood urea nitrogen (BUN) 7 meq/L, creatinine 0.75 mg/dL. CT scan of the abdomen and pelvis revealed gas and fluid distended colon with wall thickening. Colonoscopy showed only mild proctitis. Rota virus antigen, Giardia antigen, Clostridium difficile toxin, HIV 1/2 antibodies were all negative. Stool culture for Cryptosporidium was found to be positive. She was treated with normal saline, electrolyte replacement and nitazoxanide 500 mg orally twice daily for total of 3 days. She became completely symptom free on the fifth day of starting treatment. She was then discharged to home without any medications. She was asymptomatic on 1 month follow up visit.
DISCUSSION: In immunocompetent hosts, Cryptosporidium can cause acute or persistent diarrhea associated with low grade fever, nausea, vomiting and weight loss. Confirmatory diagnosis of cryptosporidiosis requires microscopical detection of the parasite in tissues or body fluids. The easiest and quickest method of detecting oocysts is modified acid-fast staining of the organism on microscopical examination of the stool. Cryptosporidiosis in immune-competent hosts is usually self-limiting and no specific treatment is required as compared to highly active anti-retroviral treatment and/or antiparasitic agents in patients with AIDS. Nitazoxanide reduces the load of parasites and currently a treatment of choice for cryptosporidiosis in immunocompetent individuals if not self-limited.

A CASE OF HYPOXIA IN A TEENAGER Priti Dangayach; Nainesh Shah; Achilia Morrow. Baylor College of Medicine, Houston, TX. (Tracking ID #1601482)

LEARNING OBJECTIVE 1: Recognize the association between cigarette smoking and acute eosinophilic pneumonia.
LEARNING OBJECTIVE 2: Recognize the clinical features of AEP, a potentially life threatening yet fully reversible disease
CASE: An 18-year-old Caucasian female presented to the emergency room with nausea, vomiting, and non-bloody diarrhea associated with fevers, chills, and epigastric pain. She noted an outbreak of food poisoning at the shelter where she lives. Her medical history included depression and anxiety. On review of systems, she noted a mild cough minimally productive of yellow sputum for the past month after initiating smoking several cigarettes daily. She denied shortness of breath, hemoptysis, and chest pain. She had no known allergies and denied use of alcohol, drugs, or new medications. On examination, her temperature was 103 F, heart rate 130–140 beats/minute, normotensive, with a respiratory rate of 35 with an oxygen saturation of 85 % on room air. Her oxygen saturation improved to 95 % with 3 L of supplemental oxygen by nasal cannula. She had course breath sounds with diminished air movement in bilateral lung fields. ABG showed pH 7.43, PCO2 24.3, P02 149 on 3 L O2. Her WBC count was 26,200 uL with a differential of 90 % neutrophils, 5 % lymphocytes, 4 % monocytes, and 1 % eosinophils. A chest x-ray showed moderate bibasilar reticulonodular opacities. An abdominal CT scan was performed for her abdominal symptoms, which incidentally noted diffuse groundglass opacities in the right middle lobe and lingula with bilateral intralobular septal thickening. To further investigate the findings, bronchoscopy with bronchoalveolar lavage (BAL) was performed. The cell count differential revealed marked eosinophilia (34 % eosinophils). Routine cultures, cytology, AFB stain and culture, ova and parasite exam, and hypersensitivity panel were negative. The diagnosis of acute eosinophilic pneumonia (AEP) was made with cigarette smoking as the etiology. She was initiated on 60 mg of oral prednisone daily and was educated on her "allergy" to cigarettes. Her chest x-ray, oxygen saturation, and tachypnea remarkably improved, and she was discharged from the hospital on room air with a three-week prednisone taper. After discharge, she resumed smoking. Within a week of doing so, she returned to the ED with symptoms of subcostal pain and cough. Her symptoms again improved with steroids.
DISCUSSION: Although this patient's presenting gastrointestinal symptoms are not classic for AEP, the findings of fever, hypoxemic respiratory failure, and BAL with greater than 25 % eosinophilia with significant response to corticosteroids are diagnostic of AEP. Literature suggests recent onset cigarette smoking is a trigger for this acute hypersensitivity reaction. Re-exposure to cigarette smoke helped confirm that this was the inciting agent for the patient's AEP. Without prompt treatment, this disease can progress to respiratory failure, necessitating mechanical ventilation. This case highlights the importance for physicians to recognize cigarette smoking as an inciting agent for acute eosinophilic pneumonia in order to recognize this potentially life threatening yet fully reversible disease.

A CASE OF MULTIPLE MYELOMA INVOLVING THE THYROID GLAND Anthony P. Sertich; Nazrul Chowdhury; Steven Urban. Texas Tech University Health Sciences Center, Amarillo, TX. (Tracking ID #1631261)

LEARNING OBJECTIVE 1: Recognize that multiple myeloma can present with a thyroid mass.
LEARNING OBJECTIVE 2: Understand that biopsy of a thyroid mass is necessary in euthyroid patients with suspected malignancy.
CASE: A 61-year-old white female presented with a neck mass that had enlarged over 4 months coupled with an unintentional 10 pound weight loss. Her past medical history was pertinent for questionable monoclonal gammopathy of undetermined significance. Her physical exam was remarkable for a large, hard, and uneven thyroid mass that moved with deglutition. Cervical lymphadenopathy was absent. Complete blood count (CBC) showed a hemoglobin of 7.6 g/dL with a platelet count of 37,000. Peripheral smear showed Rouleaux formation. The creatinine was 1.2; total protein was 7.6, and the albumin 3.7. Serum calcium was 17 mg/dL. Urinalysis revealed 2+ proteinuria, but no urinary light chain was detected. Thyroid studies were normal. Serum lactate dehydrogenase was 1066 IU/L. The serum immunoglobulins were as follows: IgA- 23 mg/dL IgG-2300 mg/dL IgM- 28 mg/dL Serum protein electrophoresis (SPEP) and serum immunofixation confirmed monoclonality. The serum free light chain assay yielded IgG Kappa of 19.4 mg/L and Lambda as 0.3 mg/L, with a Kappa/Lambda ratio of 61 (abnormal <0.03 or >32). Computed tomography (CT) of the neck showed a 10×8×8 cm thyroid mass. Positron emission tomography (PET)/CT showed a high standardized uptake value (SUV) in the mass. Skeletal survey showed no osteolytic lesions, and magnetic resonance imaging (MRI) of the spine and pelvis showed no lytic lesions or spinal cord involvement. Biopsy of the mass showed diffuse infiltration with multiple clonal plasma cells, and biopsy of the bone marrow exhibited 90 % plasma cells with Kappa light chain, CD 138 positivity.
DISCUSSION: Multiple myeloma (MM) is a malignant plasma cell disorder of the bone marrow. Extramedullary involvement is uncommon, and thyroid involvement is extremely rare, with only three reported cases in the global literature. Although there are many case reports of solitary plasmacytomas involving the neck or thyroid cartilage, this case represents multiple myeloma presenting in the thyroid, with CD138-positive monoclonal plasma cells. It is important to differentiate between extramedullary MM and solitary plasmacytoma because of the stark contrast in prognosis between the two. Local radiotherapy leads to long-term clinical stability in at least 90 % of cases of solitary plasmacytoma, and unless complication warrants surgical intervention, the radiotherapy is sufficient for an average 10 year survival. However, MM carries with it a worse prognosis, especially in cases with extramedullary spread, thus identification of MM early can increase survival in those afflicted. This means a high clinical suspicion for those at risk (e.g., a history of MGUS) even if the classic vertebral presentation is not suspected. One should always consider unusual locations, such as the central nervous system, lungs, sphenoid sinus, orbit, ovaries, colon, liver/spleen, and thyroid, as potential extramedullary presentations of MM. If suspicion is high, urgent biopsy and laboratory analysis should be ordered to evaluate for MM. The difficulty arises in quantifying suspicion for those in primary care to ensure MM is caught early; we present a case that lays the foundation for establishing these guidelines.

A CASE OF TAKOTSUBO CARDIOMYOPATHY WITH ACQUIRED LONG QT INTERVAL AND HIGH DEFIBRILLATION THRESHOLD. Mahmoud Abdelghany[1]; Genevieve Brumberg[2]; Jan Nemec[3]. [1]Conemaugh Memorial Medical Center, Temple University, Johnstown, PA; [2]Conemaugh Memorial Medical Center, Temple University, Johnstown, PA; 3UPMC Heart and Vascular Institute, Pittsburgh, PA. (Tracking ID #1642876)

LEARNING OBJECTIVE 1: Patients who develop Takotsubo cardiomyopathy may have underlying channelopathy with a propensity to acquired long QT, higher DFT and long term risk of sudden death. Determining the correlation among these factors may better elucidate the mechanism of acquired arrhythmias and help in identifying high risk patients in an otherwise healthy population.
CASE: Introduction: Takotsubo Cardiomyopathy rarely presents with sudden death. Cases needed high DFT have been associated with low EF and dilated heart. Here we present a case of Takotsubo cardiomyopathy who failed cardioversion twice and needed above 25 J to converts during DFT testing although she had a normal EF and a non-dilated heart. Case:The patient is a 60 year old female who presented with sudden loss of consciousness after a stressful family event and was found to be in ventricular tachycardia. She required multiple defibrillations as well as antiarrhythmics during the initial resuscitation. Urgent cardiac catheteriza-

tion showed no significant coronary artery disease. Left ventriculography showed severe apical hypokinesia with ballooning consistent with Takotsubo cardiomyopathy. EF was 30 %. During the next several hours her QT interval prolonged dramatically to more than 700 milliseconds but subsequently normalized. Echocardiography 3 days later showed mitral valve prolapse with mild to moderate mitral regurgitation and improvement of EF to 50 %. Given initial presentation and multiple risk factors, the patient had a dual chamber implantable cardioverter defibrillator (ICD) placed. During DFT testing the patient failed two shocks at 25 joules but was successfully cardioverted at 30 joules after exclusion of the proximal coil.

DISCUSSION: Patients with Takotsubo cardiomyopathy may present with a dramatic abnormality of ventricular repolarization, including deep negative precordial T waves, QT interval prolongation and rarely torsades de pointes. The exact mechanism of repolarization abnormality is uncertain, but may be related to the effect of prolonged excessive β-adrenergic stimulation on myocardial Ca2+ handling or local ventricular edema. These same factors may explain the high DFT seen in our patient. Although sudden death is rare in Takotsubo, a patient presenting with cardiac arrest, transient left ventricular dysfunction, and dramatic repolarization abnormalities has clear risk for ventricular arrhythmia. Studies have shown up to 10 % recurrence rates for Takotsubo cardiomyopathy, placing this patient at risk for recurrent sudden death for which an implantable cardioverter defibrillator was placed.

A CURIOUS CASE OF RECURRENT RHABDOMYOLYSIS Benjamin Click; Thomas Radomski; Harish Jasti. University of Pittsburgh, Pittsburgh, PA. (Tracking ID #1641169)

LEARNING OBJECTIVE 1: Identify the differential diagnosis of recurrent rhabdomyolysis.

LEARNING OBJECTIVE 2: Describe a classic presentation and the treatment of McArdle disease in an adult.

CASE: A 20 year-old male was admitted to our hospital for management of recurrent rhabdomyolysis. His first episode occurred when working as a firefighter extinguishing a house fire. The second instance followed a series of short-distance sprints, and his current presentation occurred after direct trauma to his legs. Each episode was characterized by myalgias, followed by morning stiffness, and dark urine lasting several days. He also reported a life-long history of exercise intolerance with easy fatigability. He was diagnosed with diabetes mellitus 4 months prior to admission and was briefly treated with metformin, which was later discontinued in favor of insulin due to intolerance. He also experienced an episode of ventricular tachycardia at the age of 15 for which he underwent an ablation. His family history was notable for his mother and a maternal uncle with dermatomyositis and a maternal uncle with an undifferentiated myositis. The patient denied any alcohol, tobacco, or drug use. Physical exam revealed a tired-appearing young man in no acute distress. He was afebrile with normal vital signs. Cardiac, lung, abdominal and dermatologic exams were unremarkable. Musculoskeletal exam revealed 5/5 strength throughout, with no joint tenderness, swelling, or deformity. Labs revealed a CPK 78,465, LDH 2657, AST 492, ALT 272, Alk Phos 61, Tbili 0.9. A basic metabolic panel and CBC were unremarkable. A TSH was normal. CRP was 1.9. RF, ANA, and Anti-Jo-1 Abs were also negative. A cytogenetic analysis was ultimately performed, revealing mutations in two exons of the PYGM gene encoding the myophosphorylase enzyme. This was consistent with McArdle disease.

DISCUSSION: Rhabdomyolysis is a common clinical entity encountered by general internists. It is frequently caused by direct trauma, hyperthermia, infection, or exposure to toxins and drugs. When recurrent rhabdomyolysis is identified, it is important to investigate for underlying inflammatory and metabolic etiologies, such as dermatomyositis, polymyositis, and inclusion body myositis, in addition to the family of glycogen storage diseases. McArdle disease is a glycogen storage disease caused by mutations in the myophosphorylase enzyme. Patients often present as teenagers or young adults with exercise intolerance, fatigue, myalgias, muscle cramps, and myoglobinuria. Common diagnostic tools include muscle biopsy, electromyography, genetic testing, and forearm lactate exercise testing. Muscle biopsy shows focal decreased myophosphorylase activity on immunohistochemical staining. Electromyography demonstrates myotonic discharges, fibrillations, and positive waves. Genetic testing of the myophosphorylase gene reveals mutations in approximately 97 % of McArdle disease patients. Treatment of McArdle disease includes sucrose administration prior to dynamic exercise with low-impact warm up activity and a balanced diet of carbohydrates, protein, and fat. Other potentially beneficial therapies include creatinine and vitamin B6 supplementation. For our patient, given his family history and recurrent nature of rhabdomyolysis, further investigation of potential genetic disorders and inflammatory myopathies yielded a definitive diagnosis of McArdle disease.

A CUTE RASH Erin C. Contratto. University of Alabama Birmingham, Birmingham, AL. (Tracking ID #1642499)

LEARNING OBJECTIVE 1: Recognize the importance of evaluating past medical history and medication exposures in patients presenting with a rash.

LEARNING OBJECTIVE 2: Demonstrate the need for early skin biopsy in patients presenting with an atypical rash.

CASE: A 45-year-old white female presented with a 1 month history of erythematous nodules on her chest, abdomen and back. The nodules were not painful, nonpruritic and varied in size. The nodules appeared first at her oophorectomy scar and then spread to the remainder of her trunk. She denied any systemic symptoms or recent medication changes. Her past history was remarkable for ductal carcinoma in situ (DCIS) 2 years prior and genotype positive for Breast Cancer type 1 (BRCA1). She underwent bilateral mastectomy and prophylactic oophorectomy at the time of DCIS diagnosis and completed chemotherapy with doxorubicin and cyclophosphamide. Routine imaging 7 months prior to the appearance of the rash was negative for malignancy. Physical examination demonstrated several 0.5 to 5 cm firm, erythematous papules scattered over her chest, abdomen, back and bilateral upper and lower extremities. She had no lymphadenopathy or visceromegaly. Laboratory evaluation noted white blood cell count 6200/mL, hemoglobin 13.6 gm/dl, platelets 226,000/mL, and a normal differential. Punch biopsy revealed a dermal infiltrate of large cells with irregular nuclei, consistent with leukemia cutis. Bone marrow biopsy aspirate and flow cytometry were normal. She underwent induction chemotherapy for acute myelogenous leukemia with cytarabine and daunorubicin. Within 30 days her skin lesions faded completely. A repeat skin biopsy at 14 days and repeat bone marrow biopsy at 30 days were normal. The patient then received traditional consolidation chemotherapy for acute myelogenous leukemia, and had no evidence of recurrence for 6 months.

DISCUSSION: Leukemia cutis is a form of secondary extramedullary acute leukemia, defined by cutaneous infiltration of neoplastic leukocytes. Patients with leukemia cutis present with erythematous papules and nodules of varying sizes, affecting multiple body sites. Lesions can occur at prior sites of trauma, consistent with the Koebner phenomenon. Lesions are often asymptomatic, typically occur after the patient has a known diagnosis of leukemia, and are a poor prognostic sign. Diagnosis of leukemia cutis is confirmed by skin biopsy; thus, early skin biopsy is appropriate to rule out malignancy when evaluating patients with a persistent rash. Aleukemic leukemia cutis, a form of primary extramedullary leukemia, presents when dermatologic findings precede hematologic manifestations of leukemia. Despite the absence of bone marrow infiltrates, patients with aleukemic leukemia cutis, are considered to have acute leukemia. Risk factors for developing acute myelogenous leukemia and myelogenous leukemia cutis include prior exposure to tobacco smoke, petroleum products or chemotherapy, particularly exposure to alkylating agents such as cyclophosphamide. Due to the low incidence of disease, treatment methods for patients with aleukemic leukemia are not standardized. Several recent case reports have described relative success in treating extramedullary leukemia with standard chemotherapy regimens for acute myelogenous leukemia, in order to prevent further progression of disease.

A DIFFICULT DILEMMA: MANAGEMENT OF ACTIVE SYSTEMIC LUPUS ERYTHEMATOSUS IN THE SETTING OF CONCOMITANT INFECTION AND ALTERED MENTAL STATUS Michael Spagnola; Sara Wikstrom. George Washington University, Washington, DC. (Tracking ID #1643082)

LEARNING OBJECTIVE 1: Recognize the management dilemma in treating a patient with active systemic lupus erythematosus with a known infection
LEARNING OBJECTIVE 2: Recognize the broad differential for altered mental status in a patient with active systemic lupus erythematosus
CASE: A 48-year old woman presented to our hospital with fevers, fatigue, confusion and weight loss after a recent admission to an outside hospital where she was diagnosed with systemic lupus erythematosus (SLE) and treated with 3 days of high dose corticosteroids. On physical examination, she had a blunted affect and waxing and waning mental status. She had bilateral crackles in the lower lung fields and bilateral pitting lower extremity edema. Laboratory studies revealed an elevated ANA titer, low complement levels, nephrotic range proteinuria, severe hypoalbuminemia and acute kidney injury. A kidney biopsy was obtained and the patient was treated with high dose IV corticosteroids and cyclophosphamide for suspected lupus nephritis. The patient's mental status improved somewhat and her acute kidney injury resolved. Her respiratory status acutely worsened, requiring her intubation. A CT of the chest revealed a 1 cm abscess in the right upper lung and bilateral pleural effusions. The patient was initially started on broad spectrum antibiotics for presumed hospital acquired pneumonia, but was switched to four drug therapy for tuberculosis after her tracheal aspirate grew mycobacterium tuberculosis. The patient's IV corticosteroids were continued as she has symptoms and lab findings consistent with active SLE. The patient's mental status continued to deteriorate. She became increasingly disoriented, began confabulating and complaining of visual hallucinations. A CT head showed no acute findings and a MRI brain showed non-specific focal white matter disease in the bilateral frontal lobes. A lumbar puncture was negative for meningitis or encephalitis. At this point, the patient's family insisted that she be transitioned to oral corticosteroids as they were concerned for steroid-induced psychosis, despite the reservations of her medical team who believed that the IV corticosteroids were necessary in the setting of an active SLE flare. The patient subsequently developed tonic clonic seizures and was emergently treated with anti-epileptic drugs, IV corticosteroids and azathioprine for presumed lupus cerebritis. She had no further seizures and her altered mental status gradually resolved. Her corticosteroids were slowly tapered and the patient was discharged 5 weeks later with oral corticosteroids, azathioprine, tuberculosis treatment, and anti-epileptic drugs.
DISCUSSION: This case illustrates a management dilemma as the patient had active systemic lupus cerebritis which required treatment with corticosteroids. Her subsequent immunosuppression led to the development of a new infection. In this case, it was important to control her active SLE with corticosteroids and treat the active infection concomitantly. This case also demonstrates the wide differential diagnosis for altered mental status in a patient receiving treatment for active SLE. In this patient's case, the diagnosis of lupus cerebritis was reached only after an extensive workup for infectious, structural, medication-related and psychiatric causes for her altered mental status was obtained.

A FATAL RASH: IT'S ALWAYS LUPUS! Auras R. Atreya; Sonali Arora; Scott Halista; Thomas Higgins. Baystate Medical Center/Tufts University School of Medicine, Springfield, MA. (Tracking ID #1639107)

LEARNING OBJECTIVE 1: Recognize rheumatological conditions presenting primarily as skin disorders.
CASE: A 47 years old lady with no significant past medical history presented to the hospital with a skin rash that started just 1 month back but progressively worse over past 2 weeks. She had no previous dermatological history. What initially started as a 'few pimples' on the face, progressed to a significant rash that included the face (eyebrows, nose, chin and malar area and ears), chest back, fingertips, axillary and genital area. On examination, there was a widespread scaly, crusted eruption with perivaginal desquamation. There were certain areas that appeared purpuric and even hemorrhagic. Her pinnae appeared dark and necrosed and she presented due to increasing swelling and tenderness. There were few oral and genital ulcers. Purplish skin changes of the fingertips of both hands and toes in the absence of digital ulceration. She had tried over-the-counter calamine and bacitracin creams/lotions. She denied any constitutional symptoms, fevers, chills, nausea, vomiting, diarrhea, abdominal pain, weakness or new medications. Preliminary bloodwork was significant for anemia, leucopenia (2400/mm3), thrombocytopenia (48,000/mm3), elevated liver enzymes (AST 283 units/L and ALT 79 units/L) and CRP (4.7 mg/dL); ESR was normal. Complement levels were low (C3 55 mg/dL, C4 8 mg/dL) and infective work-up was negative. Dermatology and Rheumatology consults were obtained and a vasculitic process was considered as the primary differential given acuity of onset and widespread involvement; she was started on empirical steroids. Skin biopsy revealed erythrocytic extravasation with focally prominent perivascular infiltrate with nonspecific immunoperoxidase staining. Hospital course was complicated by acute hypoxic respiratory failure requiring intubation. CT chest showed diffuse bilateral ground-glass opacity and patchy areas of consolidation reflecting thought to be pneumonitis. A presumptive diagnosis of SLE was made, confirmed by a positive ANA titer. Plasmapheresis and Cyclophosphamide therapy was attempted, but the patient rapidly deteriorated with ARDS, ventilator-acquired pneumonia, septic shock and oliguric renal failure and died. Her family chose not to perform an autopsy. family chose not to perform an autopsy.
DISCUSSION: While SLE is best known as a multi-system disorder involving skin, joints, kidneys, hematological and immunological systems, patients presenting purely with dermatological involvement are less common. Classic skin lesions include malar rash, discoid rash, alopecia etc. What makes this case unique were crusty lesions with purplish digits suggesting a vasculitic process, which progressed with amazing alacrity to involve other organs. In the acute setting, immunosuppression with steroids, cyclophophamide/azathioprine/methotrexate and IVIG/plasmapheresis form the mainstay of treatment for serious SLE flares. Unfortunately, despite early recognition of this condition, these measures could not save our patient.

A GREAT MASQUERADER Christina M. Cruz; Yelena Averbukh. Montefiore Medical Center, Bronx, NY. (Tracking ID #1642474)

LEARNING OBJECTIVE 1: To recognize hemophagocytic lymphohistiocytosis as a potential mimicker of sepsis syndromes
LEARNING OBJECTIVE 2: To diagnose hemophagocytic lymphohistiocytosis
CASE: Twenty-six year-old woman with rheumatoid arthritis, on steroids, methotrexate and adalimumab (initiated 8 weeks prior to presentation), presenting with fever and rash. Fever developed 2 weeks before presentation, for which she was prescribed Trimethoprim/sulfamethoxazole for presumed urinary tract infection. Three days after starting antibiotics she developed diffuse itching followed by a diffuse, erythematous rash, which initially began on trunk and progressively spread to upper and lower extremities. Vital signs were significant for BP 90/50, HR 140 s, RR 40 and oxygen saturation of 80 % on room air. Other findings included bilateral rales in all lung fields, regular tachycardia without murmurs, and morbilliform rash on trunk, arms and thighs bilaterally, without desquamation or bulla. Serum chemistries were significant for hemoglobin 8.6, platelets 94 and WBC 2,700, AST 153, ALT 117, ferritin 11,700 ng/ml, triglycerides 343 mg/dl and fibrinogen 101 mg/dl. Chest radiograph revealed diffuse interstitial prominence. She was transferred to the intensive care unit for management of presumed septic shock where she required pressors and ventilator support. Extensive infectious workup was negative. Abdominal ultrasound revealed mild splenomegaly. Given the negative infectious workup and hyperferritinemia other etiologies were considered. She was diagnosed with hemophagocytic lymphohisticytosis. She was treated with a course of steroids with clinical improvement. Bone marrow

biopsy revealed normocellular marrow with trilineage hematopoiesis and no morphological evidence of hemophagocytic lymphohistiocytosis.
DISCUSSION: Hemophagocytic lymphohistiocytosis (HLH) is a rare, and often fatal, disorder of unregulated immune activation. The initial signs and symptoms can mimic common infections and sepsis syndromes, however the treatment differs. It is more commonly seen in children, but it is also recognized in adults. HLH can be familial or sporadic, and typically secondary to infection, malignancy or rheumatologic disease. The incidence in adults is unknown, in part secondary to the difficulty in recognizing HLH. In 2001, the Histiocyte Society published updated diagnostic criteria and since then these have served as the gold standard for diagnosis of HLH. These criteria include various genetic mutations or 5 of 8 of the following: fever, splenomegaly, cytopenias (affecting at least 2 of 3 lineages in the peripheral blood), hypertriglyceridemia and/or hypofibrinogenemia, hemophagocytosis in bone marrow, spleen, lymph nodes, or liver, low or absent NK-cell activity, ferritin >500 and elevated soluble CD25 (soluble interleukin-2 receptor). Moreover, ferritin concentrations >10,000 microg/liter were 90 % sensitive and 96 % specific for HLH, with very minimal overlap with sepsis, infections, and liver failure. Interestingly, hemophagocytosis is neither sensitive nor specific, with one, small case control study quoting a sensitivity of 83 % and specificity of 60 %; others show that it is not uncommon to have an initial negative bone marrow biopsy. Recognition and diagnosis of HLH are of utmost importance given it relatively high mortality with quotes of 2 month survival in those left untreated. Treatment usually involves immunosuppressive therapy with steroids and chemotherapeutic agents.

A GUT FEELING ABOUT A RASH Tanvir Haque. University of North Carolina, Chapel Hill, NC. (Tracking ID #1628101)

LEARNING OBJECTIVE 1: Recognize common signs, symptoms, and presentation of Henoch-Schönlein Purpura
LEARNING OBJECTIVE 2: Diagnose Henoch-Schönlein Purpura with gastrointestinal involvement
CASE: A 62 year old woman presented with 5 days of severe abdominal pain, joint pain, and rash. Abdominal pain was band-like, radiated across her upper abdomen and back, and associated with bilious emesis, but no hematemesis, melena or hematochezia. She has started no new medications except for Ibuprofen for her new joint pains. Her epigastrium was mildly tender, but without any peritoneal signs. She had a scattered, flat, erythematous, non-blanchable, macular rash involving her bilateral lower extremities, concentrated on the shins and plantar aspects of her feet. Additionally, she had tender swelling of her bilateral 2nd, 3rd and 4th metacarpophalangeal joints and wrists. Initial lab work revealed normal platelet, and white blood cell count, creatinine, urinalysis, lipase and transaminases. C Reactive Protein was mildly elevated at 8 mg/dL, Erythrocyte Sedimentation Rate was 5 mm/hr. Abdominal CT revealed diffuse wall thickening and mucosal enhancements of the second and third portions of the duodenum. Esophagogastroduodenoscopy, demonstrated severe duodenitis with evidence of severe bowel edema, ulcerations, and submucosal hemorrhage in the second and third part of the duodenum, with biopsy showing severe neutrophilic inflammation with erosion and hemorrhage. Within 48 h of presentation, her rash advanced to a raised, purpuric quality. Skin biopsy revealed neutrophilic inflammation involving adjacent blood vessels. Direct immunofluorescence revealed IgA and fibrinogen deposition in the walls of superficial dermal vessels, consistent with Henoch-Schonlein Purpura (HSP). Initiation of high dose corticosteroids led to gradual improvement of her rash, arthralgias and abdominal pain. She was discharged with a steroid taper and follow-up 3 months off steroids revealed resolution of all symptoms and normal kidney function.
DISCUSSION: The combination of abdominal pain, joint pain, and rash are commonly seen in general internal medicine. Vasculitis is an uncommon cause of the above symptoms, and HSP, while primarily a disease of children, is often more severe in adults, particularly with renal involvement. HSP vasculitis is an inflammatory process involving IgA-mediated immune complex deposition into vessel walls, which activates the complement system and promotes neutrophilic infiltration into blood vessels. Diagnosis, as it did in this case, is often times confirmed by tissue biopsy. This patient had a common presentation of the disease; however, it was striking that she first developed vasculitis in her bowel—a harbinger for later findings on her skin. Treatment regarding HSP can be controversial, however, it is widely held that immunosuppression with corticosteroids is key, especially in adults with evidence of renal compromise. This case illustrates a common presentation of adult HSP, but underscores the severity of possible gastrointestinal involvement, as well as the importance of early recognition to minimize complications and initiated early treatment.

A HIGH PRESSURE SITUATION: A RARE CAUSE OF HEADACHE IN A 37 YEAR-OLD MAN Jacqueline Chu; Dean Xerras. MGH, Boston, MA. (Tracking ID #1638630)

LEARNING OBJECTIVE 1: Recognize characteristics of intracranial hypertension in men
LEARNING OBJECTIVE 2: Diagnose idiopathic intracranial hypertension
CASE: A healthy 37 yo man presented to the ED with a sudden onset, sharp occipital headache after bending to pick up a cable. He suffered the worst headache of life and presented for evaluation. He was concerned of mild vision changes, citing a slight "tunnel" to his vision. He had photophobia, and nausea with one episode of vomiting. No fevers, history of trauma or fall. He had a 30 lb weight gain in the last 4 months; in the prior year he had intentionally lost 30 lbs via diet and exercise, but recent return to old habits allowed him to regain the weight. No significant headache history or family history of migraines, although his twin brother was just diagnosed with benign intracranial hypertension. He did not smoke, drank socially, and used marijuana occasionally. He took no medications. On examination, he was a well-nourished average-sized man with pupils equal and reactive to light and extraocular movements intact, with very slight reduced ability to abduct the R eye medially. He had normal strength, sensation and reflexes throughout. His headache was slightly worse when bending over and his gait was unaffected. A non-contrast CT of the head was normal, and a diagnostic lumbar puncture demonstrated an opening pressure of 45 cm H2O with closing pressure of 28. There was no xanthochromia nor were there abnormal cell counts or chemistries on the CSF. The patient was managed with acetazolamide and after 4 days a repeat LP had a normal opening pressure of 16 cm H2O. He was encouraged to exercise, lose weight, and continue his acetazolamide.
DISCUSSION: A relatively infrequent diagnosis in the general public, idiopathic intracranial hypertension is more rare still in men. Traditionally thought of as a diagnosis in obese women in their 20s–40s, IIH presents with different characteristics in men than women. Men with IIH most often come to attention because of visual changes and less likely from headache, although our case was an exception. Men present with worse visual acuity and reduced visual fields and were at higher likelihood of having severe visual loss. Though our patient was not obese, he had recently had a 30 lb weight gain. Of note, his twin brother had just been diagnosed with idiopathic intracrianial hypertension; a few case reports comment on twins presenting with the diagnosis, and in these cases patients have been diagnosed in the same year of age, with slightly lower mean age and weight. Early diagnosis of intracranial hypertension is important for protection of visual acuity and prevention of optic atrophy. Diagnosis requires a documentation of intracranial pressure > 20 cm H20, and negative radiographic imaging for space-occupying lesions with normal CSF chemistries and cell counts. Idiopathic intracranial hypertension requires exoneration of venous sinus thrombosis, uremia, endocrine disturbances or medication effects (tetracycline, OCP use, vitamin A toxicity) causing pseudotumor. Treatment with acetazolamide is a carbonic anhydrase inhibitor that reduces CSF formation and hence can be titrated up to control intracranial pressure; topiramate works similarly. During treatment careful monitoring by neuroophthalmology is important to monitor for papilledema and intervene via optic nerve fenestration or VP shunting if medical therapy fails.

A NEW FACIAL EXPRESSION TO BOTOX Aakash Aggarwal; Emerald Banas; Praveen Sampath; Ajoy Roy. SUNY Upstate Medical University, Syracuse, NY. (Tracking ID #1638099)

LEARNING OBJECTIVE 1: Present a rare case of anaphylaxis to Botox
CASE: A 47 year old African American male presented with complaints of dysphagia. As reported by the patient, he had a long standing history of endoscopically confirmed achalasia and already had had a surgical myotomy as well as a pneumatic dilation with temporary relief of symptoms but now had recurrence of symptoms. A barium swallow revealed no esophageal emptying while the patient was supine and a slow emptying while the patient was upright. During the endoscopy the patient was premedicated with Fentanyl 200 mcg IV and Midazolam 5 mg IV. Notably the patient had received both Fentanyl and Midazolam in previous endoscopies without any complications. During the procedure, 90 units of botulinum toxin(botox) was injected into the lower esophageal sphincter. Soon after the injection the patient's eyes and face started swelling up, Systolic blood pressure was in the 220's and patient was tachycardic in the 120's and his oxygen saturation dropped into the 70's. Intubation was attempted but was unsuccessful due to extreme vocal cord edema. An emergency cricothyroidotomy was performed and the patient was also given 100 mg of hydrocortisone IV and 50 mg of diphenhydramine IV and then shifted to the medical intensive care unit(MICU) after stabilization. In the MICU, the patient was ventilated using the cricothyroidotomy tube for 2 days and given IV dexamethasone. The cricothyroidotomy tube was taken out due to the risk of tracheal stenosis and endotracheal intubation was done. A day after the intubation, the patient was extubated successfully and transferred to the floor and discharged to home in stable condition the next day.
DISCUSSION: Botulinum toxin is a neurotoxin produced by the spore forming anaerobic bacillus, Clostridium botulinum. Its therapeutic use was first studied in the 1960s and was finally used in the 1980's. In 1993, Pasricha and colleagues demonstrated its use in achalasia. We present a rare case of anaphylactic reaction to botox. Anaphylaxis is defined as acute onset of an illness (minutes to several hours) involving the skin, mucosal tissue, or both and at least one of the following: A) Respiratory compromise B) Reduced blood pressure (BP) or associated symptoms and signs of end-organ dysfunction A systematic study of 20 randomized clinical trials was done on the adverse effects associated with the use of botulinum toxin type A for spasticity associated with cerebral palsy. No adverse effects were reported among six studies. Botox use was mostly associated with mild respiratory effects, falls, seizures and unspecified pain. Serious side effects of botox are very rare and only one case of anaphylaxis to botox was found in the literature. However, in that publication, the Botox was reconstituted in 1 % lidocaine, which raises the question that the anaphylaxis may have been due to lidocaine instead of the Botox. Despite the reported safety of any drug, all drugs deserve preparation for an emergency reaction. This is very important with a drug like Botox as it is being used more and more in a wide variety of GI conditions including achalasia.

A PLUMBER'S DREAM Jordan Turk; Aman Shah; Lauren Shapiro. Montefiore Medical Center, Bronx, NY. (Tracking ID #1642381)

LEARNING OBJECTIVE 1: Recognize that mechanical heart valves can cause symptomatic anemia
LEARNING OBJECTIVE 2: Diagnose and treat anemia associated with mechanical heart valves.
CASE: A 39-year-old woman presented with shortness of breath, new dyspnea on exertion, general malaise, and subjective fevers for 2 weeks. She has a history of mechanical aortic and mechanical mitral valve replacement within the past year for a unicuspid aortic valve and mitral valve incompetence of unknown origin. Presenting vitals were a temperature of 98.9 F, blood pressure of 95/65 mmHg and a heart rate of 110 bpm. She appeared jaundiced, tachycardic, with a new 4/6 holosystolic murmur at the cardiac apex, radiating to the axilla, clear lungs, jugular venous distension to 14 cm and 2+ pitting edema extending to the knees bilaterally. Labs: WBC of 11.2 K/ul, hemoglobin of 5.8 g/dL (baseline is 10 g/dL), MCV of 103.6 Fl, LDH of 2499 U/L (normal: 100–190 U/L), total bilirubin of 2.8 mg/dL, direct bilirubin of 0.5 mg/dL, an undetectable haptoglobin level, reticulocyte count of 5 %, and 1+ schistocytes on peripheral blood smear. These labs were normal prior to her valvular replacements. Echocardiogram showed new severe mitral paravalvular regurgitation. The patient was transfused and CT surgery was consulted. The patient had her mitral valve replaced without complication. One month following surgery, the patient's hemoglobin returned to her baseline.
DISCUSSION: An internist will commonly manage patients with mechanical heart valves. An understanding of the complications associated with these valves is essential to decreasing potential morbidity and mortality. A common complication that should be recognized is microangiopathic hemolytic anemia caused by mechanical heart valves. The valves create turbulent flow as blood passes through, exposing cells to greater sheer stress than native valves. Red blood cells lyse under this increased pressure resulting in mechanical hemolysis. The cells may face even greater sheer stress if the mechanical valve develops a paravalvular leak, which is characterized by an abnormal backward flow between the ring of the mechanical valve and the annulus of the native valve. Further hemolysis can occur due to concurrent iron deficiency as it causes increased red blood cell fragility. Patients will present with common complaints of anemia such as fatigue, dyspnea on exertion and palpitations. They also present with signs of intravascular hemolysis such as darkening of their urine, or yellowing of their skin. Physical exam may reveal jaundice, tachycardia, a flow murmur, change in the characteristic of a previous existing murmur, and signs of heart failure. Laboratory assessment favoring diagnosis include anemia, elevated LDH, elevated indirect bilirubin, elevated reticulocyte count, decreased haptoglobin, and schistocytes on peripheral blood smear. This mechanical hemolysis, is generally mild, however it may be severe in up to 15 % of patients. Mild cases of anemia are managed conservatively with iron supplements and/or blood transfusions, while more severe cases may require surgical intervention including valve replacement.

A PUZZLING CASE OF NAUSEA AD NAUSEAM Kavel Visrodia; Raina Shivashankar; Amy T. Wang. Mayo Clinic Rochester, Rochester, MN. (Tracking ID #1642615)

LEARNING OBJECTIVE 1: Recognize causes of thyroid dysfunction in the context of primary adrenal insufficiency.
LEARNING OBJECTIVE 2: Consider adrenal insufficiency in a symptomatic hypothyroid patient who worsens with thyroxine replacement.
CASE: A 58-year-old woman presented with 10 days of worsening nausea, vomiting, fatigue, generalized weakness and dry cough. Her medical history was significant for hypothyroidism diagnosed 18 months ago when she presented to her primary care provider for unremitting nausea. Work up at that time revealed a TSH 7.4 mIU/L, normal T3, T4, TPO antibodies and she was started on thyroxine replacement, though her symptoms worsened. On presentation to our institution, her blood pressure was 61/50 and pulse was 60. Physical examination revealed decreased skin turgor, dry mucous membranes and hyperpigmentation of her face, neck, arms and palmar creases. Over the last year, she noted compliments on her "tan" and questions regarding "dye" on her palms. Labs showed a normocytic anemia (hemoglobin, 9.9 g/dL), hyponatremia (124 mmol/L), hyperkalemia (6.0 mmol/L) and raised creatinine (1.2 mg/dL). Chest x-ray suggested an atypical pneumonia and a random cortisol returned low at 4.2 mcg/dL. She received 9 l of IV fluids, antibiotics, and stress doses of dexamethasone were initiated due to concern for adrenal crisis. She had rapid clinical improvement with resolution of her nausea. Adrenal function tests confirmed primary adrenal insufficiency with baseline AM cortisol <1.0 mcg/dL, which minimally increased to 1.3 mcg/dL 30 min after cosyntropin challenge (0.25 mg IV), and aldosterone <4.0 ng/dL. Repeat TSH was 2.4 mIU/L while on thyroxine. Abdominal CT and extensive infectious workup was unremarkable, while a 21-hydroxylase antibody level was elevated (60 U/mL), confirming the diagnosis of autoimmune adrenalitis.

DISCUSSION: We describe a case of unrecognized primary adrenal insufficiency in which elevated TSH along with symptoms suggestive of adrenal insufficiency may have been a first clue to early diagnosis. Thyroid function abnormalities are often seen with adrenal insufficiency given that cortisol deficiency impairs thyroid function resulting in an elevated TSH. During crises, thyroxine replacement can accelerate cortisol degradation exacerbating symptoms of hypocortisolism, and should be avoided. In the absence of autoimmune thyroid disease, thyroid function abnormalities often resolve with glucocorticoid replacement. Alternative thyroid dysfunction may be secondary to coexisting autoimmune hypothyroidism, supported by elevated antibodies to thyroglobulin or anti-thyroid peroxidase, suggesting autoimmune polyglandular syndrome (APS1 or APS2). APS2 is inheritable, more prevalent and characterized by autoimmune thyroiditis, autoimmune adrenal insufficiency and type 1 diabetes mellitus. 18 months prior, our patient had negative TPO antibodies, thus coexisting autoimmune hypothyroidism (and APS) was thought to be less likely. Because her symptoms worsened with thyroxine replacement, it is likely that her elevated TSH was due to adrenal insufficiency. The patient was discharged with endocrinology follow up for optimizing steroid doses and discontinuation of thyroxine. This case highlights the importance of maintaining a wide differential when working up chronic nausea and fatigue, especially in the setting of thyroid abnormalities. Adrenal crisis is potentially life threatening, and early diagnosis of adrenal insufficiency may help prevent an acute decompensation.

A QUESTION OF AMYLOID? Claiborne Childs. NYH-WCMC, New York, NY. (Tracking ID #1643534)

LEARNING OBJECTIVE 1: Review the diagnostic criteria for primary amyloidosis
LEARNING OBJECTIVE 2: Review useful studies for detecting amyloidosis
CASE: A 38-year-old man presents to his primary care physician with a chief complaint oftwo to three months of fatigue and decreased exercise tolerance. Initial labs revealed anemia, an elevated creatinine, and high urine protein. The patient was subsequently referred to a nephrologist for further work-up of renal disease. One month later, the patient began to develop worsened fatigue, increased swelling in lower extremities, and dyspnea on exertion. Repeat labs showed worsened kidney disease and he was referred to the ED for admission and further work-up. During the hospitalization, the patient was started on dialysis in the setting of acute renal failure. A renal ultrasound showed echogenic kidneys without cysts, malignancies, or other structural abnormalities. Urinalysis was notable for pyuria, microscopic hematuria, and elevated protein. Urine cultures were negative. On physical exam, an abnormal third heart was noted and a subsequent cardiac echocardiogram revealed diffuse hypokinesis, left ventricular hypertrophy, moderate pulmonary hypertension, and aejection fraction of 20 %, findings suggestive of systolic heart failure. In determining how to correlate this patient's renal and cardiac disease multiple studies where ordered. Of note, the kappa and lambda light chains as well as kappa/lambda ratio were found to be elevated, suggestive of a protein deposition disease. Subsequently, an abdominal fat pad biopsy stained positive for apple-green birefringent material on Congo red stain under polarized light, consistent with amyloid. The patient underwent cardiac catheterization, which showed normal coronary arteries and mild pulmonary hypertension. A biopsy of the right ventricular myocardium was obtained and was ultimately negative for amyloid. Cardiac MRI was deferred because of the patient's renal failure. The patient improved following the initiation of dialysis and was later discharged from the hospital.
DISCUSSION: The criteria for diagnosis of primary amyloidosis include all of the following: 1) Presence of an amyloid-related systemic syndrome (ex. renal, liver, heart, or gastrointestinal tract involvement). 2) Positive amyloid staining by Congo red in any tissue (ex. fat aspirate, bone marrow or organ biopsy) or the presence of amyloid fibrils on electron microscopy. 3) Evidence that the amyloid is light chain-related established by direct examination of the amyloid, and 4) Evidence of a monoclonal plasma cell proliferative disorder (ex., presence of a serum or urine M protein, abnormal serum free light chain ratio, or clonal plasma cells in the bone marrow). Approximately 2–3 % of patients with primary amyloidosis will not meet criteria. With regard to evaluation, the initial work-up should include: serum free light chain ration, serum and urine immunofixation, and a fat pad biopsy. Abdominal fat pad biopsies are positive in 60–80 % of cases. When cardiac amyloid is suspected, endomyocardial biopsy hasbeen shown in prior studies to be greater than 90 % sensitive for detecting diffuse cardiac involvement. The sensitivity of cardiac MRI in diagnosis of cardiac amyloid is still unknown. This case illustrates the complexity of amyloidosis and the variability of results. In cases where patients present with multi-organ dysfunction, it should be considered.

A RARE BIRD Brian J. Secemsky; Marcia Glass. University of California—San Francisco, San Francisco, CA. (Tracking ID #1626496)

LEARNING OBJECTIVE 1: Recognize atypical clinical patterns of varicella zoster virus
LEARNING OBJECTIVE 2: Identify characteristic CSF patterns of varicella meningitis
CASE: A 38 year-old man presented to an outside hospital for 3 weeks of worsening headaches, fevers, nocturnal diaphoresis and altered mental status. After 4 days of treatment, the patient came to our medical center for further care. He was fully oriented with photosensitivity, oropharyngeal exudates and tender bilateral cervical lymphadenopathy. His neck was stiff and painful to palpation. He had no rashes. Lumbar puncture revealed cloudy cerebral spinal fluid with an opening pressure of 13, white blood cell count of 428 with 54 % lymphocytic predominance, protein of 88 and glucose of 37 (serum glucose 102). Cellular specimen predominantly consisted of small, mature-looking lymphoid cells with admixed larger lymphocytes. Cerebral spinal fluid workup was positive for varicella zoster virus using polymerase chain reaction. The patient was unsure if he had chicken pox as a child but said he was exposed to varicella from an infant with chickenpox 1 week prior to the onset of his symptoms. He was treated for 2 days as an inpatient with marked clinical improvement. The patient preferred not to take intravenous antibiotics and went home with a regimen of oral acyclovir.
DISCUSSION: Varicella zoster virus (VZV) is a herpesvirus that causes two distinct diseases: varicella (chickenpox) and herpes zoster (shingles). In unvaccinated populations, these clinical forms of VZV have incidences of up to 95 % and 35 %, respectively. While these discrete illnesses classically involve a rash, uncommon manifestations of VZV can make an early diagnosis challenging to internists. As seen in our patient, this is especially true in lieu of skin findings. For this reason, it is imperative for practitioners to be aware of the extra-integumentary signs of VZV infection. Aseptic meningitis is a rare complication of VZV infection that can occur in either stage of infection. Consistent with our patient's CSF analysis, lumbar puncture often reveals a lymphocytic pleocytosis with an elevated protein concentration. A concomitant positive varicella PCR is a useful laboratory finding in diagnosing VZV meningitis. Because oral antivirals have minimal CSF penetration, intravenous acyclovir is the treatment of choice. Since our patient preferred not to take intravenous therapy at home, he was discharged on oral acyclovir. Our patient was admitted for subacute meningitis without a rash, making the diagnosis of VZV infection challenging. After the varicella PCR returned positive, we obtained a key history of VZV exposure. Internists should be wary of atypical VZV manifestations, and should always get an exposure and vaccination history of varicella zoster virus when diagnosing subacute meningitis.

A RARE CASE OF PUSTULAR PSORIASIS AND VANCOMYCIN-INDUCED LINEAR IGA DISEASE MIMICKING TEN Shira Eytan; Celine Mestel; Bradley Flansbaum. Lenox Hill Hospital, new york, NY. (Tracking ID #1635545)

LEARNING OBJECTIVE 1: To recognize a rare but known side effect of Vancomycin.

LEARNING OBJECTIVE 2: To recognize anchoring bias in difficult diagnoses.
CASE: A 77 year old female with a remote history of mild psoriasis, previously controlled with topical medication, presented with erythema of her left forearm and a scaly rash, worse on her thighs. She had multiple erythematous patches with small 2–3 mm pustular clusters across her skin, sparing the face, palms, and soles. Her appearance was consistent with psoriasis; however, her left arm was atypically more erythematous than elsewhere on her body. Her outpatient dermatologist was treating the patient for cellulitis. On admission, she received vancomycin. After several days of antibiotic therapy, her left arm was unchanged and the body wide patches worsened and became more confluent. As the patient was afebrile with a normal WBC count, infection seemed unlikely, and we stopped antibiotics. Her rash began to improve and she went home on topical steroids with dermatology follow-up. Forty-eight hours later, she returned to the ED complaining of leg edema, and again received vancomycin. Her rash worsened. She then developed lesions on her oral and vaginal mucosa, with significant desquamation and >10 % skin sloughing (erythrodermic flare). Given the patient's deterioration, we transferred her to an outside burn unit for management of possible TEN. Punch biopsy revealed Linear IgA Disease. After cessation of vancomycin, her skin improved. However, she developed MSSA bacteremia and required a prolonged hospital stay.
DISCUSSION: Linear IgA Disease (LAD) is a rare autoimmune disorder with an estimated incidence of 1/250,000 cases per year. The etiology may be idiopathic or drug-induced. Drug-induced LAD develops within 1–15 days of medication exposure, and usually improves after cessation of the offending drug. We report a case of a 77-year-old immunocompetent patient with pustular psoriasis who was "misdiagnosed" with cellulitis. She in fact developed linear IgA Disease, mimicking toxic epidermal necrolysis (TEN). Her IgA condition was likely secondary to vancomycin. Our patient had known psoriasis, and her severe skin pathology, "consistent with her prior history," misled the caring physicians. The delayed diagnosis was due to anchoring bias. Although our patient's disease was rare, cognitive bias may have played a role in impeding transfer and altering her care. The diagnosis may have been made earlier by recognizing the uncharacteristically evolving skin lesions. They corresponded to antibiotic administration; the pattern of her clinical progression was also not typical of her baseline diagnosis.

A RARE CASE OF DISSEMINATED MUCORMYCOSIS IN A PATIENT WITHOUT SEVERE IMMUNOCOMPROMISE Arta Lahiji[1]; Yasmeen Kabir[1]; Wilson Quezada[2]. [1]UCLA Olive View Medical Center, Sylmar, CA; [2]Columbia University Medical Center, New York, NY. (Tracking ID #1642929)

LEARNING OBJECTIVE 1: Disseminated mucormycosis should be considered and aggressively managed even in patients without severe immunocompromise.
CASE: This is a 68 year-old female with a past medical history of uncontrolled DMII, end stage renal disease on dialysis, and congestive heart failure (CHF) admitted with acute on chronic CHF. She developed worsening shortness of breath and a chest CT on hospital day (HD) #10 showed a large RLL cavitating pneumonia and she was started on empiric broad spectrum antibiotics. A pigtail catheter and subsequently a larger chest tube was placed on HD #11. Pleural fluid cultures grew H. influenzae, C. albicans and Rhizomucor sp, and amphotericin B and posaconazole were started on HD #16. The patient was not a good surgical candidate and despite aggressive antifungal therapy, suffered two PEA arrests after an episode of severe hemoptysis. Resuscitation was unsuccessful and the patient died HD #20. Post mortem examination revealed disseminated mucormycosis involving the lung, pancreas, thyroid, and spleen.
DISCUSSION: Mucormycosis is a rare fungal infection that typically occurs with an underlying condition including diabetes mellitus (DM), malignancy, organ transplantation, injection drug use, bone marrow transplantation, and renal failure. Common primary infection sites include sinus, pulmonary, cutaneous, cerebral, gastrointestinal, and renal. Patients with DM typically present with rhinocerebral, pulmonary, and sino-orbital disease. Disseminated disease (infection at > 2 non-contiguous sites) has been reported in 23 % of cases, typically occurs in patients with severe immunocompromise, and is associated with a mortality of 96 %. Treatment involves a combination of antifungal therapy, surgical debridement, and/or lobectomy. While mucormycosis may occur in patients with no immune impairment, or greater immunocompetency, such as in DM alone, disseminated mucormycosis typically occurs in patients with severe immunocompromise. In a series of 929 patients, the risk factors that were shown to be associated with disseminated mucormycosis include burns, prematurity, and deferoxamine use, while DM was not shown to be a risk factor, and was actually associated with a decreased odds of disseminated disease (OR=0.29, 95 % CI 0.17–0.51). Disseminated mucormycosis as seen in our patient with underlying DM and renal failure without severe immunocompromise is uncommon but nevertheless was fatal despite aggressive antifungal therapy. While treatment typically significantly improves survival, mortality remains high particularly in disseminated disease, as evident even in our patient without severe immunocompromise.

A RARE CAUSE OF ANGINAL CHEST PAIN Pooja Sethi; Ankit Madan; Philip Putnam; Tamjeed Arshad. University Of Alabama Birmingham Montgomery, Montgomery, AL. (Tracking ID #1642860)

LEARNING OBJECTIVE 1: To learn about a rare cause of anginal chest pain.
LEARNING OBJECTIVE 2: To discuss management of an unusual cause of angina.
CASE: A 52 year old African American male with diabetes mellitus, hypertension, and family history of coronary artery disease presented to clinic with episodes of intermittent, sharp, shooting, non-radiating, mid sternal chest pain which is 10/10 in intensity. The pain was relieved with sublingual nitroglycerin. He denied any palpitations, paroxysmal nocturnal dyspnea or orthopnea. Physical exam showed normal vital signs, no JVD, normal heart sounds without murmurs on auscultation. There was no pedal edema. A 12-lead EKG shows normal sinus rhythm, no ST segment changes, normal QT interval and borderline left ventricular hypertrophy (LVH). His echocardiography showed normal LV ejection fraction with mild LVH. The patient underwent cardiac stress testing that showed inducible angina with apical and septal ischemia. He was treated with aspirin and clopidogrel and taken for elective cardiac catheterization. The cardiac catheterization showed 70 % stenosis in the Left anterior descending (LAD) territory. Incidentally noted was a Right coronary artery (RCA) to left ventricle (LV) fistula. The fistula was considered asymptomatic. The LAD was stented and the patient was discharged. The patient remained asymptomatic for 6 months but again developed recurrent chest pain similar to previous episodes. The possibility of stent thrombosis was considered and a repeat catheterization was done which showed a widely patent stent. Again noted was the RCA to LV fistula but now the RCA was very ectatic and three times the normal size. The patient was scheduled for coronary bypass surgery and the fistula was ligated and repaired. Patient tolerated the procedure well. He remains chest pain free at 12 month follow up visit.
DISCUSSION: A communication between a coronary artery and a heart chamber is called coronary cameral fistula and involvement of any segment of the systemic or pulmonary circulation is called coronary arteriovenous fistula. The incidence of Coronary Artery Fistula (CAF) is 0.1 % in patients undergoing cardiac catheterization and 0.002 % in the general population. Most CAF drain in the right side of the heart. Fistula draining into the left ventricle is extremely rare and account for 3 % of all CAF. Despite the occurrence of systolic murmur in majority of cases, our patient did not have any appreciable murmur throughout patient care. Most coronary artery fistulas are small, do not cause any symptoms, and are clinically undetectable. Larger, detectable fistulae are usually three times the size of a normal caliber of a coronary artery and can cause symptoms or complications such as myocardial ischemia because of a coronary steal mechanism, congestive heart failure, infective endocarditis, and rupture or thrombosis of the fistula. Treatment of CAF depends on presence of

symptoms. Treatment of asymptomatic fistulas remains controversial but expert opinion favors early treatment in most cases. For symptomatic fistulas, coronary artery bypass surgery with fistula repair is the treatment of choice. Newer modalities like percutaneous embolization for fistula repair are being explored.

A RARE CAUSE OF JAUNDICE AND AUTOIMMUNE HEMOLYTIC ANEMIA: DON'T FORGET EBV Shira Eytan; Bartosz Walczyszyn; Robert E. Graham. Lenox Hill Hospital, new york, NY. (Tracking ID #1622219)

LEARNING OBJECTIVE 1: To recognize the less common complications of infectious mononucleosis.
CASE: An 18 year old man with no significant past medical history presented to our emergency room with jaundice. He reported a transient urticarial rash, paroxysmal fevers, sore throat, myalgia, neck fullness, fatigue, abdominal discomfort and yellowing of the eyes and skin 1 week prior to presentation. He denied any medications. Social and family history were noncontributory. On physical exam vital signs were notable for a T-max of 102 °F. Pertinent findings revealed jaundice, scleral icterus, erythematous oropharynx with enlarged tonsils, and 1–2 cm tender posterior auricular, submandibular and cervical lymphadenopathy bilaterally. On abdominal exam, mild tenderness to palpation of left upper quadrant was noted and hepatosplenomegaly was appreciated. Pertinent labs revealed a total bilirubin of 8.2 mg/dL, direct bili 1.8 mg/dL, alk phos 215 U/L, ALT 370 U/L, AST 269 U/L. CBC showed lymphocytosis of 22×103/μL with 52 % lymphocytes, Hgb 12.3 g/dL, Hct 32.9 %, MCV 100.8 fL. Hepatitis screen for transaminitis showed reactive HBsAb, but was otherwise negative, as was the HIV screen. Given his jaundice with elevated indirect bilirubin, further workup was done which showed LDH 1061 U/L, haptoglobin 8.0 mg/dL, and reticulocyte count 4.8 %, consistent with hemolysis. CT Abdomen/Pelvis performed for abdominal pain showed hepatomegaly of 19 cm and splenomegaly of 17.4 cm in cephalocaudal length. Inpatient workup the next day revealed Infectious Mono test for heterophile antibodies to be positive. Furthermore, EBV IgM and IgG both returned positive, consistent with recent infection. Direct Antiglobulin Test was sent for workup of anemia and returned positive, confirming autoimmune hemolytic anemia. The patient was monitored another day to follow his CBC; his Hgb stabilized at 10 gm/dL, LFTS and WBC began to decrease and patient was discharged home with close follow up and diagnosis of infectious mononucleosis complicated by autoimmune hemolytic anemia and transaminitis.
DISCUSSION: Epstein-Barr Virus (EBV) is one of the human herpesvirus and a common cause of infectious mononucleosis and children and young adults, and often presents with symptoms of fever, pharyngitis, lymphadenopathy, and splenomegaly. Autoimmune hemolytic anemia is an established but rare (~1:1000 patients) complication of EBV which may be life-threatening. Our case describes infectious mononucleosis that exemplifies the more uncommon complications that may occur. Our patient's first presentation was jaundice and an urticarial rash, and he was found to have autoimmune hemolytic anemia. Practitioners need to have high clinical suspicion for EBV, even with a presentation of hemolytic anemia and hepatitis, in order to avoid further extensive work up. This complication may be lethal, and needs to be closely monitored.

A RARE CAUSE OF RIGHT UPPER QUADRANT ABDOMINAL PAIN Soujanya Sodavarapu; Amanada Scott; Stephen Hosea. santa barbara cottage hospital, santa barbara, CA. (Tracking ID #1626133)

LEARNING OBJECTIVE 1: Right upper quadrant (RUQ) abdominal pain is often associated with biliary, hepatic or gastrointestinal ailments. This case demonstrates a patient who presented with severe RUQ pain and an initially negative workup. Only after closely reviewing her history of transient upper back pain, was it discovered that vertebral osteomyelitis with radiculopathy was the cause of this patient's abdominal pain.
CASE: This patient is a 50-year-old female with a history of right lower extremity osteomyelitis who presented to the emergency department (ED) with acute onset of upper back pain and shortness of breath. In the ED, her vital signs were normal and her white count was noted to be 14.2 with 30 % bands. In addition, her CRP was elevated at 162. The patient had a chest x-ray and CT of the chest with contrast; both studies were unremarkable. The patient was started on broad spectrum antibiotics and admitted. The next morning, her back pain had resolved, but in its place, a sharp, RUQ abdominal pain began. This pain did not radiate, was constant, and was not associated with nausea, vomiting, diarrhea or constipation, but she did complain of a decreased appetite. On exam, she was extremely tender in the RUQ and was guarding on palpation. The pain was exacerbated by deep breaths, but murphy's sign was negative. Her liver enzymes, liver function tests and ultrasound of the abdomen were normal. She had a HIDA scan that showed patent ducts. Upper Endoscopy also showed no abnormalities. The patient was requiring high doses of I.V. morphine and a proton pump inhibitor did not offer any relief. At this point, a closer review of her initial presentation with transient back pain lead to obtaining an MRI of spine focusing on T6-T8 levels. The MRI revealed early discitis/osteomyelitis at T5-T7. Given her chronic osteomyletitis and many debridements, likely a bacteremia had seeded the vertebral bodies and the disc. The patient was started on I.V. toradol, and her RUQ pain significantly improved. Both her blood cultures and her wound culture grew group B streptococcus which was consistent with the likely etiology. The patient was then discharged with 6 weeks of I.V. antibiotics and outpatient follow up.
DISCUSSION: Right upper quadrant pain is a common complaint and is immediately associated with diseases such as cholecystitis, hepatitis and biliary colic. Other causes such as pneumonia or subdiaphragmatic abscess are also considered by most physicians. But sometimes when the etiology remains elusive, one needs to closely review the case and consider other, more unique causes of abdominal pain such as vertebral osteomyelitis.

A RARE OPPORTUNISTIC INFECTION Himabindu Kadiyala; Zichun Feng. Michael Debakey VA Medical Center, Houston, TX. (Tracking ID #1638752)

LEARNING OBJECTIVE 1: To learn about a rare opportunistic infection causing multi-system disease.
CASE: Our patient is a 54 year old Caucasian male with a past medical history of HIV-AIDS, CD4 count of 4, not on HAART or prophylactic antibiotics, history of multiple pneumocystis pneumonia, who presented with complaints of worsening abdominal pain and diarrhea. One week prior to admission, patient started to experience crampy abdominal pain along with diarrhea, fever, and chills. The diarrhea was non-bloody, small volume, watery, and mucoid. Review of systems is otherwise negative except for 10 lb unintentional weight loss in the last 5 months, and chronic cough productive of greenish sputum. On exam, patient was febrile to 102 F, hemodynamically stable, and O2 saturation 95 % on room air. Lung exam revealed occasional rhonchi but no crackles. There was tenderness to palpation in upper abdomen. CT abdomen showed non-obstructive pattern and likely colitis. Chest X-ray was clear. Quanteferron Gold was negative from 1 month ago. Pt was started on IV fluids, Ciprofloxacin and Flagyl for colitis. Stool studies were ordered. The day after admission, patient suddenly became short of breath and desaturated to 70–80's on 2 L oxygen. Breathing was labored with use of accessory muscles. After giving 100 % non-rebreather mask, patient's oxygen saturation increased to 94 %. A repeat chest x-ray showed widespread interstitial nodular opacities, most concerning for PCP. Bactrim and steroids were started. Patient was transferred to MICU. Overnight, patient had further respiratory distress on 100 % oxygen and was intubated and mechanically ventilated. Bronchoscopy with BAL revealed parasites consistent with Strongyloides larvae. Ivermectin and Albendazole were started immediately. Later, stool cultures were also positive for larvae of Strongyloides. Studies for pneumocystis were negative.
DISCUSSION: Strongyloides is a common parasite in developing countries. However, in developed countries, strongyloides is a rare parasite infection that affects mostly elderly and/or immunocompromised patients. Infection occurs when filariform larvae in soil penetrate the skin, enter the

bloodstream, and are carried to the lungs, where they escape from capillaries into alveoli and ascend the bronchial tree to the glottis. The larvae are then swallowed and carried to the duodenum and upper jejunum, where maturation to the adult stage takes place. The female parasite matures and lives embedded in the mucosa, where its eggs are laid and hatch. Rhabditiform larvae, which are non-infective emerge, and migrate into the intestinal lumen and leave the host via the feces. In the soil, the rhabditiform larvae metamorphose into the filariform or infective larvae. The time from larval penetration of the skin by filariform larvae until their appearance in the feces is 3–4 weeks. Patients usually present with pruritic dermatitis at the site of larval penetration, diarrhea, epigastric pain, nausea, malaise, weight loss, cough, rales, transient pulmonary infiltrates, and eosinophilia. Diagnosis requires finding the larval stages in feces or duodenal fluid. Ivermectin is the drug of choice. In disseminated disease, combination of Ivermectim and Albendazole are used.

A RECURRENT INTESTINAL HEMATOMA IN NEUROFIBROMATOSIS TYPE 1 Yaser Alkhatib[1]; Philip Kuriakose[2]. [1]Henry Ford Hospital, Detroit, MI; [2]Henry Ford Hospital, Detroit, MI. (Tracking ID #1624088)

LEARNING OBJECTIVE 1: Intestinal hematoma can develop in neurofibromatosis type 1, and it has never been described in the literature
CASE: A 32-year-old African American male presented to our hospital with abdominal pain, nausea, and vomiting which started 1 day prior to presentation. He denied any trauma, recent accidents, or history suggestive of coagulopathy. His past medical history was significant for neurofibromatosis type-1 and a laproscopic evacuation of spontaneous intestinal hematoma 1 year ago. He was not on any medications. He admitted drinking 2–3 beers on the weekends, but denies smoking or using illicit drugs. Physical examination showed a patient who was in pain, with diffuse abdominal tenderness mostly in the right upper quadrant. A suspicion of acute pancreatitis was raised; however patient had normal amylase and lipase levels. Ultrasound of the abdomen ruled out presence of gallbladder stones. His hemoglobin was stable initially, but started to drop few hours later. Acute abdominal series was suggestive of small bowel obstruction and CT scan raised a suspicion of intestinal hematoma, which was similar in site to the previous one. Patient was sent to interventional radiology for embolization of the bleeding artery, however, it failed to identify a source of bleeding. Patient was then kept NPO, with naso-gastric (NG) tube for gastric decompression. Two days later, the patient started to improve, and his NG tube was removed. He tolerated oral feeds and didn't require any surgery. His hemoglobin stabilized after transfusing 2 units of PRBCs. A repeat of CT scan 4 weeks later showed resolution of the previously seen hematoma. He was diagnosed with recurrent spontaneous intestinal hematomas secondary to neurofibromatosis type-1.
DISCUSSION: Neurofibromatosis type-1 (von Recklinghausen's disease) is one of the most common autosomal dominant hereditary tumor syndromes. The hallmark of the disease is the presence of café-au-lait spots and cutaneous neurofibromas. Gastrointestinal involvement has been described in different forms, including true neurogenic tumors (neurofibromas, Schwannomas), interstitial cell of Cajal lesions (GIST tumors), neuroendocrine tumors (carcinoids, gastrinoma, insulinoma), and rarely vasculopathies. Spontaneous intestinal hematoma has never been described in the literature. Herein we present the first reported case of recurrent spontaneous intestinal hematoma as a gastrointestinal manifestation of neurofibromatosis type-1 which might be secondary to a vasculopathy, or other unidentified reason.

A SNEAKY SICKLE Kenneth Levin; Caley McIntyre; Deepa Bhatnagar. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640518)

LEARNING OBJECTIVE 1: Recognize the causes of microcytic anemia
LEARNING OBJECTIVE 2: Understand the role of hemoglobin electrophoresis in microcytic anemia Understand the complications of a sickle-cell variant

CASE: A 56 year-old man initially presented with chest pain. This left-sided chest pressure was associated with shortness of breath and fatigue. His past medical history included hypertension, hyperlipidiemia, peripheral vascular disease and coronary artery disease requiring coronary artery bypass grafting. He was initially evaluated for an acute coronary syndrome with three negative troponins and an echocardiogram which showed no change from prior imaging. The patient's laboratory evaluation revealed a hemoglobin of 7.6 g/dL. Mean corpuscular volume was 68.2 fL and red cell distribution width was 17.2 um. Platelets were mildly decreased at 135×103/uL. Serum iron studies were normal. Ferritin was normal. Reticulocyte count was 1.5, corrected to 0.8 with 23 % immature reticulocytes. Colonoscopy and EGD showed no signs of active or recent bleeding. A peripheral blood smear showed occasional schistocytes with no sideroblasts or basophilic stippling. A hemoglobin electrophoresis was performed given the unexplained microcytosis. It showed Hemoglobin A1 of 14.8 %, Hemoglobin S of 73.8 %, Hemoglobin A2 of 6.5 %, Hemoglobin F of 4.9 % and Hgb C of 0 %, consistent with Sickle Beta + Thalassemia. The patient was transfused with 2 units of packed red blood cells in the hospital and started on folate supplementation. He was cautioned against use of iron-containing multivitamins or supplements. He was also instructed to have an annual dilated fundus exam and cautioned to take his blood pressure medication daily.
DISCUSSION: A general internist often encounters anemia in their practice. An approach to the work-up for anemia is key to ensuring no diagnosis is missed. The differential diagnosis for microcytic anemia commonly includes iron deficiency anemia, anemia of chronic disease, lead poisoning, sideroblastic anemia, and hemoglobinopathies. When a hemoglobinopathy is suspected, a hemoglobin electrophoresis should be ordered as the results will usually be definitive for diagnosis. Sickle-beta + thalassemia is an example of a hemoglobinopathy and is a rare variant of sickle cell disease. Patients are compound heterozygotes, inheriting one gene for hemoglobin S and one gene for beta thalassemia. This abnormality results in variably decreased production of Hb A and increased production of Hb S. It is milder than its counterpart, sickle-beta-0-thalassemia, in which the body has no beta-hemoglobin chains and is thus unable to produce Hb A. Most cases are discovered incidentally, with patients on average identified by age 8. Only 14 % of patients will experience acute chest syndrome and about 1/3 will have splenomegaly. Priapism and aplastic crises are uncommon. Sickle-beta + thalassemia does have an association with proliferative retinopathy and can occur in approximately 20 % of patients. Patients also have a higher risk of ischemic cardiac disease than the general population due to small-vessel disease. Recognition of the cause of microcytic anemia is crucial as it can lead to appropriate counseling and treatment for patients.

A SEARCH FOR SCROFULA Matthew T. Corey. Boston Medical Center, Cambridge, MA. (Tracking ID #1637799)

LEARNING OBJECTIVE 1: Diagnose tuberculous adenitis in a patient with unexplained cervical lymphadenopathy
CASE: A 34-year-old woman came to clinic complaining of a painful lump on the right, anterior neck. She first noticed the mass 6 months prior. On swallowing, the patient felt the mass was rising up and impinging on her throat. She had emigrated from Ethiopia 3 years earlier, worked as a nurse's assistant, and was never sexually active. Review of systems elicited a 5 kg, one-year weight loss, with no fevers, night sweats, or dysphagia. On exam, a smooth, mobile mass was palpated, 3×4 cm in size, and tender. Rapid HIV testing was negative. Computed tomography of the neck with contrast showed a conglomerate of necrotic lymph nodes in the right neck, with additional lymphadenopathy found in the right mediastinum and perihilar region. Fine needle aspiration biopsy of the neck mass found necrosis and inflammatory cells, but no malignancy. Tissue staining was negative for acid-fast bacilli, but a DNA:RNA probe revealed drug-sensitive Mycobacterium tuberculosis. The patient was hospitalized with airborne precautions, and induced sputum testing showed no acid-fast bacilli in sputum for 3 days. She was discharged on oral anti-

tuberculosis therapy. At clinic 3 months later, the mass had greatly decreased in size and was no longer painful.
DISCUSSION: When first seeing a young, healthy patient complaining of tender, enlarged lymph nodes, the clinician should consider a wide differential. History and physical, including examination of the axillary, inguinal, and supraclavicular areas, could lead to diagnoses of pharyngitis, mononucleosis, cat-scratch disease, or inflammatory disorders like sarcoid. An HIV test is imperative, as early seroconversion often presents with lymphadenopathy. Fever, weight loss, fatigue, and night sweats in a patient with lymphadenopathy immediately suggest hematologic malignancy, and often prompt excisional node biopsy. However, as patients born in endemic areas become ever more common in the United States, this same constellation of symptoms may suggest TB. Tuberculous lymphadenitis, historically called "scrofula," is the most common extrapulmonary manifestation of tuberculosis. Lymphatic drainage from an infected lung to the right supraclavicular chain is seen as the likeliest etiology of TB adenitis, but dental caries or tonsillar disease have also been proposed. Geldmacher et al. estimate that 7.5 % of TB patients present to clinics in northern Germany with adenitis, and of these cases, 63.3 % involve cervical lymph nodes. Epidemiologic studies worldwide show that TB adenitis is more likely to appear in young women than in older or male patients. To conclude, tuberculous adenitis should appear on the differential of any at-risk patient who appears with lymph node enlargement on history or exam.

A TRICKY TROPONIN Morgan J. Katz; Matthew N. Peters. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640395)

LEARNING OBJECTIVE 1: Identify pseudoaneursym of the mitral-aortic intervalvular fibrosa as a potential primary cause of common cardiac conditions.
LEARNING OBJECTIVE 2: Recognize trans-esophageal echocardiogram as the diagnostic test of choice to identify pseudoaneurysm of the mitral-aortic intervalvular fibrosa.
CASE: A 22 year-old man presented after 6 h of crushing and substernal chest pain and associated shortness of breath. He had recent methicillin resistant staphylococcus aureus endocarditis secondary to intravenous drug abuse for which he underwent treatment with 6 weeks of intravenous vancomycin. This was followed by aortic valve replacement with a bioprosthetic valve. On the current presentation, he was afebrile, had a blood pressure of 103/70 mmHg, a heart rate of 101 beats/min and his oxygen saturation was 98 % on room air. He had a 3/6 systolic ejection murmur loudest at the right 2nd intercostal space with radiation to the right carotid. The initial electrocardiogram revealed sinus tachycardia with T-wave inversions in the lateral precordial leads and his serum troponin I was 0.11 g/dL. A bedside transthoracic echocardiogram (TTE) revealed a left ventricular ejection fraction of 35 % with an eccentric aortic regurgitation jet. The bioprosthetic aortic valve showed no signs of vegetations. A possible abscess was noted at the aortic root. A subsequent transesophageal echocardiogram (TEE) revealed a pseudoaneurysm of the mitral-aortic intervalvular fibrosa (P-MAIVF) with associated partial dehiscence of the aortic valve, causing a paravalvular leak. The patient's chest pain was thought to be secondary to compression of the left circumflex coronary artery by the pseudoaneurysm. After he was stabilized and eradication of endocarditis was confirmed, he was scheduled for repair of the P-MAIVF as well as replacement of the faulty bioprosthetic aortic valve.
DISCUSSION: The mitral-aortic intervalvular fibrosa (MAIVF) is an area of fibrous tissue between the mitral and aortic valves. First described in 1966, P-MAIVF is a rare and potentially fatal condition due to infection of the MAIVF that can cause aneurysmal compression of the surrounding areas leading to myocardial infarction by compression of coronary arteries, pulmonary hypertension from compression of the pulmonary arteries, and mitral regurgitation from compression of the anterior leaflet of the mitral valve. Patients with a history of infective endocarditis or prior aortic valve repair presenting with new anginal symptoms or signs of cardiac decompensation should be evaluated with TEE as TTE is not sufficient to diagnose P-MAIVF. Once identified, surgical intervention should be performed to remove the aneurysm. P-MAIVF formation in endocarditis is a result of the poor vascular supply to the MAIVF. Whereas valvular infections in endocarditis may be cured with intravenous antibiotics, eradication of infection within the MAIVF is more difficult due to poor antibiotic tissue penetration. Infection and aneurysmal formation of the MAIVF is an unusual complication of endocarditis; the risk of infection is enhanced by the presence of aortic regurgitation due to endothelial damage and increased pathogen exposure via the regurgitant jet. Internists must be aware of this serious and potentially fatal complication so that TEE and prompt surgery consultation can be obtained as the symptoms and findings can easily be misdiagnosed as acute coronary syndrome.

A TAP TB RECKONED WITH Jean M. Mensz; Kevin D. Hauck; Lauren Shapiro. Montefiore Medical Center, Bronx, NY. (Tracking ID #1642586)

LEARNING OBJECTIVE 1: Recognize ascites as a clinical presentation of peritoneal tuberculosis.
LEARNING OBJECTIVE 2: Diagnose peritoneal tuberculosis when acid-fast staining and culture are initially negative.
CASE: A 34 year-old man from Mexico with a history of alcohol abuse complained of several weeks of generalized abdominal pain, nausea, vomiting, and increasing abdominal girth. He was febrile with scleral icterus and abdominal distension on exam. Serum amylase was 53 U/L; lipase was 67 U/L; aspartate aminotransferase was 107 U/L; alanine aminotransferase was 57 U/L; total bilirubin was 3.7 mg/dL; direct bilirubin was 1.8 mg/dL; alkaline phosphatase was 147 U/L. The peripheral white blood cell count was 14.4 k/uL. Blood, urine, respiratory and stool cultures did not grow any bacteria. Serologies for hepatitis B, C and HIV were negative. An ultrasound revealed ascites, with fluid analysis showing 960 white blood cells (336 neutrophils and 499 lymphocytes); ascites albumin was 1.6 g/dL and serum albumin-ascites gradient (SAAG) was 0.9 g/dL. The patient continued to have fevers, despite empiric treatment for spontaneous bacterial peritonitis with ceftriaxone, prompting the search for other diagnoses. No malignant cells were found on ascites cytology. Acid-fast bacilli (AFB) staining and culture of the ascites fluid were negative. Tuberculin skin testing was negative, but interferon-gamma release assay (IGRA) was positive. A CT scan of the abdomen revealed hepatic steatosis and peritoneal thickening. The patient was treated with rifampin, isoniazid, pyrazinamide, and ethambutol for suspected peritoneal tuberculosis (TB), with rapid resolution of fever and improvement in ascites. Eight weeks later, Mycobacterium tuberculosis was identified by DNA probe on ascites AFB culture.
DISCUSSION: Global incidence of TB is declining, but nearly 9 million new cases were diagnosed in 2011. Peritoneal TB accounts for less than 5 % of TB cases worldwide, but untreated, has mortality greater than 50 %. Index of suspicion must be high as the symptoms are nonspecific and the diagnostic yield of most tests is low. Infection occurs via hematogenous spread, or by ingestion of infected sputum, unpasteurized milk, or other infected food. The most common signs and symptoms are fever, abdominal pain, and ascites. Risk factors include cirrhosis, peritoneal dialysis, chronic steroid use, and HIV infection. The first step in diagnosis is analysis of ascites, which usually reveals a SAAG less than 1.1 g/dL and a predominance of lymphocytes. The presence of fever and normal ascites cytology distinguish TB from peritoneal carcinomatosis, which can have similar findings on ascites analysis. Tuberculin skin testing is often negative during active disease; IGRAs, which measure release of interferon-gamma by T cells in response to TB-specific antigens, likewise cannot distinguish between active and latent disease. Ascites AFB staining and culture have very low sensitivity, and detection of Mycobacteria may require 4 to 8 weeks. More rapid diagnostic methods are

polymerase chain reaction testing of ascites fluid for TB, and the measurement of ascites adenosine deaminase (ADA), an enzyme involved in lymphocyte maturation. Levels of ADA above 40 IU/L are sensitive and specific for peritoneal TB, but sensitivity declines in cirrhosis. Laparoscopy and peritoneal biopsy are invasive options for diagnosis when other testing is unrevealing. Treatment is as for pulmonary TB, and upon initiation of therapy, symptoms frequently improve rapidly.

A WHOLE CLOT OF PROBLEMS WITH CROHN'S DISEASE
Brandon J. Mauldin; Matthew N. Peters; Morgan J. Katz; Chad S. Miller. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640537)

LEARNING OBJECTIVE 1: Recognize the association between inflammatory bowel disease and venous and arterial thromboembolism.
LEARNING OBJECTIVE 2: Understand the importance of minimizing risk factors associated with thromboembolism in patients with inflammatory bowel disease.
CASE: A 34 year-old man with Crohn's disease presented with 3 week history of increased lower extremity swelling. He noted bilateral ankle swelling which gradually progressed to his upper thighs. He'd been diagnosed with Crohn's disease 7 years prior and experienced frequent flares. His home medications included 250 mg of daily oral azathioprine and biweekly injections of 40 mg adalimumab. Vital signs were a temperature of 99.6° Fahrenheit, blood pressure of 109/72 mmHg, heart rate of 121 beats/min and oxygen saturation of 95 %. Physical exam was significant for a cachectic man with pitting edema extending from his bilateral feet to upper thighs. Laboratory studies were notable for an albumin of 0.5 U/L. The patient's edema was presumed to be secondary to malnourishment and he was started on total parenteral nutrition. Over the next few days the patient was persistently tachycardic (heart rate 110–130 bpm). A CT scan of the abdomen and pelvis with contrast was done to evaluate the extent of his intestinal inflammation due to Crohn's. His associated disease burden appeared unchanged from 6 months prior; however the scan showed the development of a large right renal artery thrombus and the appearance of nearly 20 bilateral pulmonary emboli in the lower lung fields. He was initiated on a therapeutic heparin drip and underwent right renal artery thrombectomy. After the procedure, he was started on 5 mg oral warfarin with concurrent administration of 1 mg/kg of subcutaneous enoxaparin until his warfarin was therapeutic. Within several days the patient's tachycardia began to resolve.
DISCUSSION: Inflammatory bowel disease (IBD) predisposes patients to numerous extra-intestinal manifestations with venous and arterial thromboembolism causing high rates of morbidity and mortality. IBD patients have a 3-fold increase in occurrence of venous thromboembolism and a greater than 2-fold increase in associated mortality. Arterial thromboembolism also occurs at significantly higher rates with a pronounced increase in occurrence of coronary and cerebral artery thrombosis. The overall occurrence of thromboembolism among IBD patients is as high as 10 %; however post-mortem studies within the same population have shown an incidence approaching 40 %. The diagnosis of thromboembolism among IBD patients may be drastically under-recognized. Pathogenesis is attributed mainly to an increased incidence of acquired risk factors, such as increased inflammation and an increase in homocysteine, which is secondary to vitamin deficiency (B9, B6, B12). Support for these mechanisms is that the majority of thromboembolic events have been demonstrated to occur during active IBD flares and in patients with high disease burdens where the levels of inflammation are high and overall nutritional intake is low. It's critical for physicians to recognize the association between IBD and thromboembolism; the threshold for appropriate diagnostic testing should be extremely low. The risk of thromboembolism should be minimized by limiting severity of inflammation with adequate pharmacological therapy, eliminating predisposing risk factors (immobility, use of central intravenous catheters, smoking, use of oral contraceptives), and providing adequate vitamin supplementation.

A CASE OF BILATERAL BELL'S PALSY- AN UNSOLVED CLINICAL PUZZLE
Karuppiah Arunachalam[1,2]; Karthikeyan Venkatachalam[3]; Robert Colgrove[1,2]. [1]Mount Auburn Hospital, Cambridge, MA; [2]Harvard Medical School, Cambridge, MA; [3]Crittenton Hospital, Rochester Hills, MI. (Tracking ID #1640797)

LEARNING OBJECTIVE 1: Recognition of bilateral Bell's palsy, an unusual case and discussion of differential diagnosis.
LEARNING OBJECTIVE 2: Management of a patient with bilateral Bell's palsy
CASE: A 34 year old previously healthy male presented with bilateral facial weakness and difficulty drinking. He had lower extremity tingling sensation and was evaluated at the emergency department 1 week before the above presentation. He had no complaints of extremity weakness, no changes in vision and hearing, no history of fever, headache, recent travel or exposure to insects. He received flu shot 10 days before the presentation. His sibling has a history of HIV with Hodgkin's lymphoma. On exam, he was found to have bilateral lower motor neuron facial palsy with bell's phenomenon. No other focal neurological deficits. White blood count was elevated to 13.18. MRI brain showed 4 mm lesion in left centrum semiovale demonstrating enhancement, two other non enhancing lesion in body and splenium of corpus callosum. Lumbar puncture done showed high white count containing all lymphocytes and monocytes with elevated protein. Presumptive diagnosis of neurological Lyme disease was made and patient was started on intravenous ceftriaxone. However, Lyme antibody, blood and CSF Lyme PCR were negative. Serology for syphilis, west nile virus, HIV, VZV were also negative. Cryptococcal CSF antigen was also negative. Serum ACE level was within normal limits. The patient had gradual improvement of his facial weakness. He was treated with rapid tapering course of prednisone for 6 days. He received ceftriaxone for 14 days intravenously. His facial palsy has nearly completely resolved.
DISCUSSION: The upper part of face is involved in Bell's palsy unlike upper motor neuron lesion of the facial nerve. Bilateral Bell's palsy, an uncommon presentation mostly associated with a complex disease or part of a syndrome. Literature reviews showed most of the bilateral Bell's palsy are caused by Lyme, sarcoidosis, HIV and EBV. Also there was a single case reported after intra nasal influenza vaccine but no case reported after inactivated flu vaccine injection. This patient didn't have any confirmed diagnosis but we empirically treated as Lyme as it was the commonest cause. Prednisone was given for the possibility of idiopathic nature and it reduces the inflammatory process as well. Considering the MRI findings of the patient demyelinating disease like GBS and multiple sclerosis was also ruled out. The lesions found in the MRI brain didn't correlate with the clinical findings. An attempt should be made to rule out all the possibilities that cause bilateral Bell's palsy. Overall, as in unilateral Bell's palsy bilateral involvement also has favourable prognosis.

A CASE OF ADVANCED TESTICULAR CANCER IN A SOCIETY OF RACIAL AND SOCIOECONOMIC HEALTH DISPARITY
Michael Kaufman; Diane L. Levine. Wayne State University, Detroit, MI. (Tracking ID #1642083)

LEARNING OBJECTIVE 1: Recognize the impact of delayed diagnosis of testicular cancer.
LEARNING OBJECTIVE 2: Recognize inequalities related to cancer disproportionately experienced by African-Americans.
CASE: A previously healthy 32-year-old African-American male presented to the hospital with a unilateral 15-cm painless testicular mass and significant abdominal pain. He noticed growth of the mass over a 6–8 months period while concurrently experiencing weight loss of over 40 lb. Physical exam revealed a unilateral enlarged testicular mass as well as a large mass extending into his abdomen. A CT scan revealed extensive metastasis in the retroperitoneum and lungs, with asymptomatic bilateral femoral deep vein thrombosis and a pulmonary embolism. Chemical studies revealed markedly elevated levels of hCG and LDH indicative of malignancy. Diffuse lymphadenopathy compressing multiple vital struc-

tures such as the renal vessels causing hydronephrosis and encasement of the inferior vena cava presented significant challenges for management of his comorbidities. Microscopic analysis revealed pure seminoma, a surprising diagnosis given the extensive metastasis seen on presentation, with staging at pT3N3M1aS3.
DISCUSSION: Testicular cancer is the most common malignancy in males 15–35 years old. The presentation usually includes testicular swelling and, depending on the extent of disease, extra-testicular manifestations of metastatic disease. Additional characteristic biochemical markers can specify the status and progression risk of the cancer. Most cases of seminomatous testicular cancer present at an early stage and are readily treatable. This case presents an opportunity to review a common malignancy in a patient with very few epidemiologic risk factors for developing a seminoma. His advanced disease presentation, complex management of multiple comorbidities combined with his African American race and lower socioeconomic status (SES) highlights an unusual paradigm shift in testicular cancer epidemiology from the more typical high SES Caucasian to the lower SES, less educated male patient. Beyond the unexpected clinical presentation, this case then presents multiple avenues of discussion regarding the unfortunate effects of racial disparities on disease presentation and progression that are plaguing our healthcare system today.

A CASE OF BONE MARROW GRANULOMA Eugenia Tsai; Yelena Averbukh. Montefiore Medical Center, Bronx, NY. (Tracking ID #1638221)

LEARNING OBJECTIVE 1: Identify the differential diagnosis of bone marrow granuloma.
LEARNING OBJECTIVE 2: Recognize the presentation of T-cell lymphoma.
CASE: A 73 year-old man presented with 3 weeks of generalized weakness, confusion, nightly fevers, constipation and anorexia with a 15 lb weight loss. He had a low-grade temperature (37.8C), elevated heart rate (104 bpm), conjunctival pallor and petechial rash on his trunk, upper and lower extremities. His respiratory exam was clear to auscultation. He did not have any palpable lymph nodes or hepatosplenomegaly. Serum chemistries were remarkable for corrected calcium of 13.6 mg/dL, AST of 98 U/L and ALT of 90 U/L. CBC was remarkable for WBC of 2.0×10×6/L (ANC=0.2), hemoglobin of 7.3 g/dL and platelet count of 13×10×9/L. Sputum culture for AFB was negative. Serology tests for HIV, hepatitis B, hepatitis C, cytomegalovirus, Epstein-Barr virus, parvovirus B19, human T-lymphotropic virus Type I (HTLV-1) were negative. Chest x-ray did not reveal any pulmonary consolidation or hilar lymphadenopathy. High-resolution chest CT revealed no lymphadenopathy or pulmonary lesions. Bone marrow biopsy revealed hypercellularity (100 %) of atypical lymphocytes and numerous non-necrotizing epithelioid granulomas. AFB and GMS stains did not reveal microorganisms. Additional studies revealed an abnormal predominance of CD3- and T-cell receptor alpha/beta positive T-cells confirming a T-cell lymphoproliferative disease.
DISCUSSION: Granuloma is a type of inflammation that can occur in a wide variety of diseases. Broadly the diseases associated with granulomas may be classified in three groups: autoimmune/inflammatory, infection and neoplasm. Sarcoidosis is the best known autoimmune/inflammatory disease that may affect the bone marrow. Isolated bone marrow involvement without pulmonary manifestation is uncommon, occurring in <5 % of the cases. Infectious organisms such as mycobacteria, pneumocystis and Cryptococcus should be ruled out as they are culprits amenable to treatment. Tuberculosis is typically, albeit not always, associated with caseation. Viral infections including, but not limited to, HIV, CMV and EBV are also occasionally associated with granuloma formation. Certain drugs, such as procainamide, have been implicated in bone marrow granuloma. Neoplastic diseases, particularly Hodgkin's lymphoma, have been reported to produce granulomas in the bone marrow. The granulomas represent inflammatory responses to the neoplasm that is perceived as foreign. Alternatively, abnormal cytokine release by neoplastic cells may induce local granulomatous inflammation. It is rare for non-Hodgkin lymphoma or multiple myeloma to present initially with bone marrow granuloma. Adult T-cell lymphoma/leukemia (ATL) is a highly aggressive disease that accounts for 15 % of non-Hodgkin's disease. T-cell neoplasms comprise four groups: cutaneous, extranodal, nodal and leukemia, with each group further consisting of several subtypes. Common, albeit non-specific, constitutional symptoms include malaise, fever, weight loss and anorexia. Laboratory findings include pancytopenia and hypercalcemia. Presentation with numerous granulomas in the bone marrow in the absence of hepatosplenomegaly or lymphadenopathy is unusual. Immunophenotyping and T-cell receptor gene rearrangement analysis can confirm the diagnosis by demonstrating malignant clones. ATL should be included in the differential diagnosis of granulomatous inflammation in the bone marrow in patients presenting with pancytopenia.

A CASE OF ERYTHEMA NODOSUM LEPROSUM IN A 23-YEAR-OLD MARSHALLESE MAN PRESENTING WITH RASH. Erin Liu[1]; Chunrong Lin[1]; Kuo-Chiang Lian[2,1]. [1]John A. Burns School of Medicine at the University of Hawai'i, Honolulu, HI; [2]The Queen's Medical Center, Honolulu, HI. (Tracking ID #1626978)

LEARNING OBJECTIVE 1: Lepromatous leprosy is a rare disease affecting the skin and peripheral nerves that should be considered in patients from endemic areas who present with a rash. Rarely, leprosy may present with erythema nodosum. Early recognition of this disease is important as early leprosy treatment is essential to avoid complications.
CASE: A 23-year-old man presented to the emergency departmentwith evolving rash over 2 weeks. The rash was non-pruritic and started on his lower limbs and gradually spread upwards to the rest of his body, including his face and ears. One week after the rash appeared, he developed fever and generalized pain in his hand and foot joints. The patient had no allergies and no family history of skin disease. He was born in the Marshall Islands but had been living in the United States for the past 5 years. He had no known history of STDs. He had no recent history of international travel and none of his close contacts hada similar rash. Physical examinationrevealed multiple erythematous nodules and papules on the head and neck, disseminated brown and erythematous macules and papules on trunk and limbs, including hands. Palpable purpura and hyperpigmented patches were present on his lower anterior legs. Mild synovitis of his finger joints and bilateral inguinal lymphadenopathy were present. There was no mucosal involvement. Diagnostic testing revealed a white blood cell count of 3.0×109/L and erythrocyte sedimentation rate of 80 mm/hr. A skin biopsy was performed and was histologically diagnostic of lepromatous leprosy. Cytology also demonstrated neutrophilic infiltrate and karyorrhectic debris consistent with erythema nodosum leprosum. Fite stain demonstrated numerous intracellular acid-fast bacilli. A modified treatment protocol consisting of dapsone, rifampin and moxifloxacin was initiated. In addition, patient was also treated with prednisone for inflammatory symptoms.
DISCUSSION: This case describes erythema nodosum with systemic symptoms as an atypical presentation of lepromatous leprosy. It illustrates the importance of maintaining a high clinical suspicion for leprosy in a patient who presents with a disseminated erythematous nodular and maculopapular rash. Although it is rare, it should be included in the differential for an unexplained rash in a patient from an endemic area.

A CASE OF MULTIDRUG RESISTANT NOCARDIA PSEUDOBRASILIENSIS. Vimalkumar Veerappan Kandasamy; Ajaykumar Kaja; Khaled M. Abouelezz; Mary Tadros. Creighton University Medical Center, Omaha, NE. (Tracking ID #1642343)

LEARNING OBJECTIVE 1: Emphasize Nocardia pseudobrasiliensis as an emerging pathogen causing disseminated infections in immunocompromised host.
LEARNING OBJECTIVE 2: Recognize the importance of differentiating N. pseudobrasiliensis from N. brasiliensis and choosing appropriate antimicrobials.

CASE: A 79 year old Caucasian male was admitted with multiple abscesses in the lower extremities. Patient had a history of left hand abscess for the past 1 year. Lower extremity abscesses started 6 months ago and were progressively getting worse with increasing pain. He received several courses of antibiotics with moderate relief. His past medical history was significant for Myasthenia Gravis, on prednisone therapy for the last 2 years. Vital signs were stable. On examination, patient had multiple tender swellings in the both lower extremities. Laboratory data was significant only for leucocytosis. Patient was started empirically on vancomycin and piperacillin-tazobactam. Magnetic resonance imaging (MRI) of the lower extremities showed multifocal complex lesions and fluid within the muscle bed without any evidence of osteomyelitis. Largest lesion measured approximately 10×8 cm in the left biceps femoris muscle complex. Ultrasound guided drainage of large abscesses was done. The organism was identified presumptively as Actinomyces based on gram stain and colonial morphology. Vancomycin and piperacillin-tazobactam were discontinued and he was then started on ampicillin. Cultures later revealed the organism to be Nocardia. Genetic analyzer confirmed the species as Nocardia pseudobrasiliensis which was resistant to penicillin, cephalosporins, trimethoprime-sulfomethoxazole and sensitive to moxifloxacin and linezolid. CT chest and MRI brain did not show any disseminated abscesses. Patient was started on moxifloxacin and remarkable improvement was noted.

DISCUSSION: Nocardia pseudobrasiliensis is an emerging species of Nocardia, first identified in 1996. Only few cases have been reported so far. This case emphasizes the difficulties in diagnosing Nocardia infection which may lead to inappropriate antimicrobial therapy. The distinction between Actinomyces and Nocardia species is of extreme clinical importance. On gram stain, Nocardia and Actinomyces species are morphologically indistinguishable. Nocardia species can be identified by modified acid-fast staining and their ability to grow under aerobic conditions, neither of which is a characteristic of Actinomyces. Nocardia infections range from localized cutaneous infections to invasive and disseminated disease. Nocardia brasiliensis is one of the most common species isolated in Nocardiosis. A recent study demonstrated that 60 % of apparent N. brasiliensis associated with pulmonary or disseminated disease, belonged to a new taxonomy named N. pseudobrasiliensis. Because of these associations and a different susceptibility pattern, it is prudent to recommend screening of all N. brasiliensis isolates to rule out possible N. pseudobrasiliensis. Disk-diffusion method for ciprofloxacin susceptibility provides a rapid screening test, as 95 % of N. pseudobrasiliensis strains are susceptible compared with none of N. brasiliensis strains. In a study of 43 cases of N. pseudobrasiliensis, 70 % involved the lung, 23 % involved the CNS, and 37 % had disseminated disease. The majority of patients were receiving corticosteroids (74 %) or had AIDS (14 %). Isolates of N. pseudobrasiliensis, unlike isolates of N. brasiliensis, are strongly associated with invasive disease.

A CASE OF NON-REMITTING MENINGITIS Ravi Thimmisetty; Ritu Madan; Kyle Register; Mansumeet Singh; Mary Tadros. Creighton University Medical Center, Omaha, NE. (Tracking ID #1641996)

LEARNING OBJECTIVE 1: 1. To learn about non-infectious causes of meningitis.

LEARNING OBJECTIVE 2: 2. To learn about diagnosis and management of neurosarcoidosis.

CASE: A 47-year-old African American male presented to ER with complaints of gradually progressive severe headache of 3 weeks duration.He also reported nausea, vomiting, blurring of vision and imbalance for last 1 week. His past medical history was significant for pulmonary sarcoidosis, TIAs, diabetes, COPD, hypertension and hyperlipidemia. He denied any drug abuse.On exam, he was drowsy, had neck rigidity and bilateral papilledema. CT scan of head was normal. Routine labs were normal. ESR was slightly elevated. CSF was obtained for analysis .It was clear, Gram stain did not show any organisms, WBC 93 (97%Lymphocytes), RBC 27, protein 109 and glucose 55. MRI showed leptomeningeal and ependymal enhancement as well as punctate infarcts and hemorrhages. A CT angiography did not show any vascular disease. He was started empirically on treatment for bacterial and viral meningitis as well on high dose steroids with the diagnosis of neurosarcoidosis in mind. He responded well to the treatment in a span of 24 h and was taken off antibiotics and continued to do well over next 72 h. He was discharged home on prednisone 1 mg/kg for 2 weeks and close follow up with neurology.

DISCUSSION: Neurosarcoidosis can be the only manifestation of sarcoidosis in about 1 % of patients.It is a relapsing-remitting or progressive course punctuated by episodic deteriorations. It can affect the central or peripheral nervous system and manifest as meningitis, vasculitis, isolated seventh or eighth cranial nerve involvement, myelopathy, pituitary dysfunction or peripheral neuropathy. The dearth of pathognomonic symptoms,varied presentations, absence of specific diagnostic criteria, and lack of standardized treatment regimens make the diagnosis and management of sarcoidosis challenging even for experienced clinicians. Therefore it is imperative for healthcare providers to consider the Neurosarcoidosis in patients with sarcoidosis who develop neurological symptoms. Treatment is steroids and using alternative agents like mycophenolate, azathioprine, methotrexate if they do not respond to steroid or if steroids are contraindicated and the duration is approximately 1 year. It is important to recognise the disease early as prognosis of acute neurosarcoidosis is often superior to that of chronic disease. By being aggressive, we started treatment at an early stage of disease in our patient.

A CASE OF RECURRENT PULMONARY EDEMA ATTRIBUTED TO CHRONIC OCCLUSION OF OBTUSE MARGINAL BRANCH Karuppiah Arunachalam; Ambalavanan Arunachalam; Indumathy Varadarajan; Eunice Y. Chuang; Jeffrey Leavitt. Mount Auburn Hospital, cambridge, MA. (Tracking ID #1642630)

LEARNING OBJECTIVE 1: To recognise that recurrent pulmonary edema can be caused from the atherosclerosis of obtuse marginal branch as it supplies the posterior papillary muscle, malfunction of which can lead to increasing mitral regurgitation.

CASE: An 80 year old male with 6 recurrent admissions for pulmonary edema over a period of 3 months, presented with sudden onset of dyspnoea associated with palpitations and sweating around 4 AM in the morning awakening from sleep. This was the exact presentation in last few admissions and he was discharged 2 days back after treatment for the same symptoms. Past medical history was significant for paroxysmal atrial fibrillation, COPD, AV malformation of cecum and chronic anaemia. On exam, heart rate found to be irregular, bilateral basilar crackles and pan systolic murmur was present. Lab investigation showed stable hematocrit, mild troponin leak of 0.06 and BNP was 659. He was started on aggressive diuresis, metoprolol tartrate and lisinopril. Echocardiogram showed ejection fraction of 45 %, moderate pulmonary artery hypertension and mitral regurgitation. This patient also had cardiac catheterisation during the sixth admission which showed mild to moderate coronary artery disease with sub-total occlusion of obtuse marginal branch of left circumflex coronary artery. No intervention was done. The reason for recurrence was analysed and cardiac catheterisation was done again to specifically place bare metal stent on obtuse marginal branch and the patient was subsequently discharged next day with dual anti-platelet therapy for 1 month.

DISCUSSION: Our patient's heart failure initially attributed to paroxysmal atrial fibrillation and aortic stenosis was managed adequately during every admission using lasix, metoprolol, lisinopril and digoxin. Failure of medical management to control the recurrence of episodes and findings of coronary angiogram made us to think that transient papillary muscle dysfunction could be a possibility. Papillary muscle ischemia causes transient mitral valve regurgitation. Anatomically obtuse marginal branch supplies the posterior papillary muscle as a single blood supply whereas anterior papillary muscle has a dual blood supply from left anterior descending branch and obtuse marginal branch. Our patient was followed up for over 6 months; he didn't have any further ER visits or admission for pulmonary edema. The decision to take the patient to the cardiac

catheterization lab analysing the recent catheterisation the patient had 1 month ago, and specifically noting the obstruction of the obtuse marginal proved invaluable. Follow up of patient acts as an evidence that recurrent pulmonary edema was caused by obtuse marginal branch occlusion. This case illustrates the need to consider papillary muscle dysfunction in case of recurrent pulmonary edema.

A CASE WITH UNCOMMON CAUSE OF CHEST PAIN PRESENTED TO ED Mirai Ido; Yushi Kawazoe; Junya Okumura; Yasuteru Sugino; Shinichi Mizuno; Mitsunori Iwase. Toyota Memorial Hospital, Toyota Aichi, Japan. (Tracking ID #1642881)

LEARNING OBJECTIVE 1: Learn that Mediastinum tumor can be included in differential diagnosis of chest pain.
LEARNING OBJECTIVE 2: Recognize the diagnostic approach to thymic carcinoma.
CASE: A 59-year-old woman presented to emergency department complaining of cough and chest pain. She had been suffering from a cough for several years. Acute chest pain started a few days ago, which radiated to both of the shoulders. The pain aggravated when she bent forward. Her past medical history was significant for uncontrolled hypertension, uterine myoma, and urolithiasis. Her mother died of AMI and her brother died from unknown cause at the age of 57. She does not take any medications. She was a never smoker and did not drink alcohol. She was alert and oriented with a temperature of 38.5 °C, blood pressure of 202/108 mmHg, heart rate of 110 beats per minute, respiration rate of 18 and oxygen saturation of 98 % on room air. Physical examination was unremarkable except for the tenderness on her chest. CXR showed widening mediastinum. Contrast enhanced CT scan was performed in order to rule out aortic dissection, which showed a tumor in anterior mediasinum, and was enhanced heterogeneously. Lab data including tumor markers was unremarkable. PET-CT scan showed abnormal accumulation of FDG in the tumor region without distant metastatic which indicate stage three in Masaoka staging. The result of biopsy was a thymic carcinoma. Since surgical resection was not feasible, chemotherapy was chosen as the treatment. Following NCCN Guidelines, we selected carboplatin and paclitaxel regimen. After two courses of therapy, tumor regression rate was 35 % and her symptoms had almost dissapeared. As the next step, we planned surgical resection.
DISCUSSION: Thymic tumor is a rare disease, and thymic carcinoma consists of less than 5 % of the tumor. The peak incidence is in the 60s, and most of them are squamous cell carcinoma. Up to one-half of the tymic tumors are diagnosed incidentally, based upon a radiographic abnormality in an asymptomatic patient. Thymic carcinoma tend to be more aggressive than thymomas, and most patient present with cough, chest pain, phrenic nerve palsy, or super vena cava, that are related to the size of the tumor and its effects on adjacent organs. In our case, her chest pain was probably from the invasion to the chest wall or the nerve, and the cough she had for several years might be a cause of compressing airway by the tumor. CXR, CT scan, MRI, PET-CT scan are useful diagnostic tool for making a diagnosis of mediastinum tumor. Differential diagnosis such as lung cancer and aortic aneurysm are easy to rule out using these images. There are no standard treatments but combined modality treatments are commonly selected. When surgical resection is not feasible, chemotherapy and radiotherapy are performed. In our case, carboplatin and paclitaxel therapy regressed the tumor size and improved her symptoms. The prognosis is poor since distant metastasis and lymphotic metastasis are common. We planned surgical resection for improvement of her prognosis. We experienced a case of thymic carcinoma that presented with chest pain at ED.

A CHALLENGING CASE OF NODULAR LYMPHANGITIS Mona Hassan; Eiad Sabia; Sean Drake. Henry Ford Hospital, Dearborn, MI. (Tracking ID #1635043)

LEARNING OBJECTIVE 1: The diagnostic approach to nodular lymphangitis
LEARNING OBJECTIVE 2: Mycobacterium marinum diagnosis and treatment How to treat nodular lymphangitis due to mycobacterium marinum
CASE: A 57-year-old female with a past medical history of hepatis C presented with a single erythematous papule on her right thumb. Her entire thumb later became erythematous and she developed multiple papules in a linear ascending pattern along her forearm in a lymphatic distribution. She was initially treated as an outpatient with clindamycin and Keflex for suspected cellulitis with no improvement. Later, antibiotic therapy was extended to Vancomycin with no response. ID service were subsequently consulted and treated her with Itraconazole for sporotrichosis based on the appearance of the papules. At that time a punch biopsy was performed, which was remarkable only for a dermal abscess with focal necrosis. The patient failed to respond to Itraconazole and the culture remained negative so a repeat punch biopsy was performed a week later. Four weeks later the culture grew Mycobacterium Marinum and Itraconazole was discontinued and Clarithromycin and Ethambutol were started to cover Mycobacterium marinum infection. The patient's nodules began to clear and will continue this regimen for 6 months with close follow up for complete clearing of nodules.
DISCUSSION: Mycobacterium marinum is the most common non-tuberculous mycobacterium that can lead to opportunistc infections in Humans. It usually presents in the form of inflammatory nodules with a sporotrichotic distribution. The extent of cutaneous involvement, number of nodules and systemic features depends on the immunological status of the patient. Mycobacterium marinum is an important condition to consider in a patient presenting with nodular lymphangitis. It can lead to superficial or deep cutaneous infections. Superficial infections can usually be treated with Minocycline, clarithromycin, doxycycline or trimethoprim-sulfamethoxazole as monotherapy. However, M. marinum is a multi-drug resistant species and therefore, combination therapy may be required. In cases of severe infections, including those with a sporotrichoid distribution pattern, a combination of rifampicin and ethambutol seems to be the recommended regimen. Cryotherapy, electrodesiccation, photodynamic therapy and local hyperthermic therapy have been reported as effective therapeutic alternatives. This case demonstrates that M. marinum infection should always be suspected in cases with poor-healing wounds in upper extremities.

A COMMON COMPLAINT UNVEILS A DEADLY DISEASE: A UNIQUE PRESENTATION OF INFECTIVE ENDOCARDITIS Julie M. LeCleir. Medical College of Wisconsin Affiliated Hospitals, Inc., Milwaukee, WI. (Tracking ID #1623938)

LEARNING OBJECTIVE 1: Diagnose infective endocarditis when it presents with lesser known manifestations of the disease.
CASE: A 33-year-old man presented with low back and hip pain described as sharp, constant pain that prevented him from ambulating to the point where he had to be carried by his significant other. His past medical history included anxiety and multiple ankle surgeries for a traumatic injury 5 years prior. He denied bowel or bladder incontinence, fevers, or intravenous drug use. Physical examination was notable for severe back pain with any movement and a previously undocumented holosystolic heart murmur radiating to the axilla. Magnetic resonance imaging of the lumbar spine demonstrated multiple small fluid enhancements in the ileopsoas muscle and bilateral kidneys concerning for abscesses. Empiric antibiotics were begun. A transthoracic echocardiogram was performed and demonstrated a vegetation on the mitral valve. Peripheral blood cultures were positive for Enterococcus faecalis 12 h after they were drawn. Diagnostic work-up was consistent with the diagnosis of mitral valve endocarditis with microembolic spread found in the temporal lobe, ileopsoas muscle, kidneys, and paraspinous muscles. After intravenous antibiotics, his back pain largely resolved.
DISCUSSION: Infective endocarditis is often diagnosed through clinical findings prior to performing definitive tests. Due to its highly variable presentations, many diagnostic criteria have been created and modified over time. The most widely used criteria in current medical literature are Duke's criteria, originally developed in 1994, and later expanded to include

echocardiographic features rather than clinical findings alone. Duke's major criteria include positive blood cultures for organisms typical of endocarditis and echocardiographic evidence of vegetations on valves or new valvular regurgitation, and Duke's minor criteria include intravenous drug use, fever, vascular phenomena, and immunologic phenomena. Musculoskeletal complaints are common in patients with infective endocarditis, but they are not included in these criteria. These musculoskeletal manifestations of endocarditis often mimic rheumatologic conditions, a dilemma which can delay appropriate diagnosis and treatment. Many reports even indicate that musculoskeletal symptoms, including arthralgias, myalgias, arthritis, and back pain, antedate the diagnosis of infective endocarditis by several weeks. Once antibiotic therapy is started for infective endocarditis, these symptoms resolve. The variety of presentations of this disease, specifically in regard to musculoskeletal findings, should encourage clinicians to continue to think beyond the accepted criteria to expedite diagnosis and therapy for infective endocarditis.

A COMPLICATED CASE OF PAGET SCHROETTER SYNDROME (PSS) Haitham Al Ashry; Hamza Tantoush; Ahmed Abuzaid; George Mansour; Nithan C. Birch. Creighton University, Omaha, NE. (Tracking ID #1642223)

LEARNING OBJECTIVE 1: PSS is a relatively rare condition that can be easily missed in the primary care setting. Early recognition is crucial to ensure timely treatment and avoidance of residual disabilities.
LEARNING OBJECTIVE 2: Symptoms can be non specific and often mimic a muscular strain.
CASE: An active 27 y/o ♀ presented to the IM clinic with right upper extremity pain and swelling. After failing an empiric trial of NSAIDS, for presumed muscle strain, a right upper extremity U/S demonstrated a right subclavian vein thrombosis. Warfarin was initiated. Hypercoagulable workup was positive only for a lupus anticoagulant antibody, which was not demonstrated on repeat testing 12 weeks later. After several months of Warfarin therapy, the patient presented with reoccurring symptoms and venography showed a new DVT in the right subclavian vein. Catheter directed intravenous thrombolysis and resection of the first right infraclavicular rib were performed at that time. Symptoms reoccurred for a third time 3 months later and venography showed near total collapse of the distal subclavian vein. Balloon angioplasty was done and stent was placed. Warfarin was discontinued at that time in favor of clopidogrel and aspirin. The patient remained clot free for 6 months after stent placement; however, residual right upper extremity edema persisted despite a compression sleeve and physical therapy.
DISCUSSION: PSS refers to axillary-subclavian vein thrombosis associated with strenuous activity of the upper extremities. It accounts for 10 % for all upper extremity deep venous thrombosis and most commonly presents in young and active men. Anatomical abnormalities and repetitive endothelial trauma from muscular strain are the key pathogenic factors. The role of underlying hereditary thrombophilias is debatable. Compression U/S is the preferred initial test and contrast venography is the gold standard for diagnosis. Therapeutic options include : anticoagulation, fibrinolysis, thoracic outlet decompression (TOD) or combination of any or all of these options. Stent placement without surgical decompression is an independent risk factor for re-thrombosis. The success of fibronylisis diminishes as the time from symptoms' onset to treatment increases.

A FORTY-NINE YEAR OLD IMMUNOCOMPROMISED MALE WITH PNEUMOCOCCAL BACTEREMIA Rebecca Glassman; Howard Libman. Beth Israel Deaconess Medical Center, Boston, MA. (Tracking ID #1631488)

LEARNING OBJECTIVE 1: Understand the risk factors for developing invasive pneumococcal infection
LEARNING OBJECTIVE 2: Be aware of newly revised Advisory Committee on Immunization Practices (ACIP) recommendations for pneumococcal vaccination in immunocompromised hosts
CASE: A 49 year-old male with a history of HIV infection, Hodgkin's lymphoma (372 days status-post autologous stem cell transplantation), and asplenia presented to the emergency room with rigors, weakness, and hypotension. He was admitted to the intensive care unit with presumptive septic shock. Shortly after admission, blood cultures (4/4 bottles) grew gram-positive cocci, which were identified as Streptococcus pneumoniae. Antibiotic therapy was changed from vancomycin to ceftriaxone, and the patient's hemodynamics quickly improved. He was discharged home on levofloxacin to complete a 14-day course. Notably, the patient had not received pneumococcal vaccination following stem cell transplantation.
DISCUSSION: Invasive Streptococcus pneumoniae infection, including bacteremia and meningitis, is a highly morbid event. The overall incidence of pneumococcal infection has been estimated at 23.2 cases per 100,000 population, with the majority of cases occurring in persons aged <2 and >65 years old. Immunocompromised patients (e.g. HIV-infected persons, transplant recipients, asplenic individuals) carry a 20-fold increased risk of invasive disease. For adults with hematologic cancer, the rate of invasive pneumococcal infection in 2010 was 186 per 100,000, and for those with HIV the rate was 173 per 100,000. Higher risk in these populations is related to impaired cell-mediated and humoral immunity. Vaccines used for prevention of invasive pneumococcal disease include PPSV23 and PCV13. PPSV23 is composed of capsular polysaccharides, which induce the formation of antibodies. In patients with impaired B-cell immunity, this vaccine is not strongly immunogenic. PCV13 couples carrier proteins to the capsular polysaccharides, utilizing a T-cell response, to augment immunologic response. The GRADE trial investigated the efficacy of PCV13 and PPSV23 vaccines in immunocompromised persons and concluded that the use of both preparations conferred the greatest protection. The new ACIP vaccination schedule reflects these findings. Pneumococcal vaccine-naïve adults >19 years with immunocompromising conditions should first receive PCV13 vaccine followed by PPSV23 vaccine no sooner than 8 weeks later. PPSV23 vaccine should be re-dosed in 5 years. In adults previously vaccinated with PPSV23, the recommendation is for PCV13 vaccine to be given at least 1 year after the last PPSV23 dose and for PPSV23 to be repeated no sooner than 8 weeks after PCV13. In patients who have undergone hematopoietic cell transplant, a three-dose series of the PCV13 vaccination is initiated 3 to 6 months post-transplant, with a single dose of PPSV23 given 8 weeks after the final dose of PCV13. Streptococcus pneumoniae can cause life-threatening infection in immunocompromised persons. Primary care practitioners should be aware that the ACIP now recommends the use of both PCV13 and PPSV23 vaccinations in this population to broaden serotype coverage and enhance immunologic response.

A MAN AND HIS ITCHY DRESS Brian Ciampa. Montefiore Medical Center, Bronx, NY. (Tracking ID #1634613)

LEARNING OBJECTIVE 1: Recognize the presentation, severity and diagnostic criteria for DRESS syndrome.
LEARNING OBJECTIVE 2: Understand that telaprevir is associated with severe skin reactions including TEN, DRESS syndrome, and SJS.
CASE: A 66 year-old man presented with 3 weeks of a progressively worsening rash. He also had fever, chills, pruritis and facial edema. He was noted to be rigorous, had a temperature of 101.3, heart rate of 108, and blood pressure of 84/47. He had an erythematous, maculopapular rash with areas of confluence and desquamation on his face, anterior chest, and arms. He was unable to open his eyes because of facial edema. The remainder of the exam was unremarkable. Two months prior to admission he had begun treatment for Hepatitis C with pegylated interferon, ribavirin and telaprevir, a new protease inhibitor. On admission, his aspartate transaminase (SGOT) and alanine transaminase (SGPT) were 41 and 42 respectively, but rose to 120 and 113 on day four, and were 73 and 110 the day of discharge. Eosinophilia was noted with an eosinophil count of 800 per microliter (25 %) on admission, peaking at 1000 per microliter (31 %) on day two, and falling to 500 per microliter (8 %) the day of discharge. Immunoglob-

ulin E was 1394. HHV-6 IGG was positive with a titer of 1:40, and HSV type 1 and 2 antibodies were positive with a high index. Skin biopsy revealed "spongiotic and purpuric perivascular dermatitis with eosinophils." He was given the diagnosis of drug-related eosinophilia with systemic symptoms (DRESS syndrome) secondary to telaprevir. He was treated with antihistamines, topical steroids and a PO steroid taper. He was discharged with close outpatient follow up with an allergist when his symptoms improved.

DISCUSSION: In December 2012 the FDA added a black-box warning for telaprevir in combination with ribavirin and pegylated interferon concerning severe skin reactions including DRESS syndrome, toxic epidermal necrolysis, and Stevens-Johnson syndrome. DRESS syndrome is a life-threatening drug reaction that is characterized by a severe skin eruption, fever, eosinophilia and systemic organ involvement. It normally occurs within 2 to 6 weeks after exposure to a medication, and can worsen despite stopping the offending agent. Classically, carbamazepine and allopurinol have been implicated in DRESS syndrome, but more and more drugs are being added to the list. DRESS syndrome is associated with herpes virus reactivation, specifically HHV-6, but also Epstein-Barr virus (HHV-4) and HHV-7. Diagnosis can be difficult, and a scoring system has been developed that consists of seven points: fever greater than or equal to 38.5 °C, enlarged lymph nodes, eosinophilia, atypical lymphocytes, skin involvement, organ involvement, resolution taking greater than or equal to 15 days, and ruling out other causes. Each of these is worth one point, while two points are given to higher levels of eosinophilia. If the score is >5 it is considered a definite case, 4–5 is a probable case, 2–3 is possible and <2 is considered "no case". The most frequently involved organ is the liver (51 %), but kidney, muscle (including the heart), lung and CNS involvement have also been described. DRESS syndrome is fatal in roughly 5–10 % of cases. Treatment of DRESS syndrome involves corticosteroids and withdrawal of the offending agent. IVIG has also been used with some success. Recovery tends to occur after 6 to 9 weeks.

A NON-MALIGNANT ENDOBRONCHIAL TUMOR IN A SMOKER. Anene Ukaigwe; Oluwakemi Fagbami. The Reading Health System, West Reading, PA. (Tracking ID #1643209)

LEARNING OBJECTIVE 1: Recognise non malignant causes of lung masses.

CASE: A 67 year old man presented with hemoptysis for 3 weeks. There was no fever, weight loss or chest pain. He had a 9 pack year tobacco abuse history, but quit 37 years ago. Physical examination was unremarkable. Chest xray showed old granulomatous changes. CT thorax showed soft tissue mass measuring 7.0×5.6×7.5 cm in right lower lobe of lung extending into the mediastinum, narrowing the right lower lobe bronchi and pulmonary vein. There was associated pretracheal and right hilar lymphadenopathy concerning for granulomatous disease or malignancy. At bronchoscopy a polypoid lesion in the right bronchus occluding the superior segment and cobblestoning down to the basilar segments with right middle lobe extension. Histopathology showed ulcerated polypoid lesions, chronic inflammation with herpes virus inclusions. HSV1 antibody titres were positive, HIV antibody screens; negative and Immunoglobulin levels were normal. A 3 week course of acyclovir led to some resolution of the mass radiologically.

DISCUSSION: Pulmonary Inflammatory pseudotumors are rare, reported to be 0.04–1.4 % of lung tumors. It is speculated to result from exaggerated inflammatory response to injurious lung stimuli including trauma and chronic infections with mycobacteria, actinomyces, nocardia, mycoplasma and herpes viruses. Immunoglobulin G4-related sclerosing disease has also recently been described as an autoimmune process that is histologically similar to inflammatory tumor, which may be explain to the occurrence in adults. More than 50 % of the patients are less than 40 years of age, with no gender or sex differences (10). Symptoms range from none to include cough, fever, hemoptysis, weight loss, chest pain, post obstructive pneumonia or mediastinal invasion. There are no distinguishing radiologic features; it frequently shows a solitary lesion. Pathologic patterns include organizing pneumonia type, fibrous histiocytoma type and lymphoplasmacytic type, suggesting an inflammatory etiology but no prognostic significance of this classification is unknown. Antiviral therapy has also reportedly shrunken HSV associated tumors as was seen in this case. Steroid therapy has shown some benefit, with success speculated to be previously undiagnosed IgG4 sclerosing disease. Surgery in the definitive therapy for all inflammatory tumors but for selected patients trial of appropriate medical therapy, may be worthwhile to shrink this tumor with no malignant potential.

A PICTURE IS NOT ALWAYS WORTH A THOUSAND WORDS: MAKING THE DIAGNOSIS OF ENDOCARDITIS PRIOR TO IMAGING Brent W. Thiel; Harish Jasti. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1642196)

LEARNING OBJECTIVE 1: Identify the signs and symptoms associated with endocarditis.

LEARNING OBJECTIVE 2: Discuss the sensitivity and specificity of imaging studies and the Duke criteria.

CASE: A 49 year-old female, with a history of hepatitis C and IV heroin use, presented with 3–4 weeks of acute worsening of her chronic low back pain and lower extremity weakness, along with a 2-day history of new left foot pain. She reported being clean for 1 year until injecting heroin 2 days ago. Review of systems was notable for subjective fevers, diffuse abdominal pain, oliguria, and increasing shortness of breath. On physical exam, she was afebrile and tachycardic, with a 2-liter oxygen requirement. Pertinent findings included left eye-lid conjunctival and palatal hemorrhages, pretibial petechial rash, nail bed splinter hemorrhages, a dusky/cool left foot, and absence of a cardiac murmur. Notable labs included WBC 15.6 (14 % bands), platelets 9, BUN 114, Cr 4.2, RF 57, total bilirubin 4.8, AST 119, and ALT 50. Urinalysis revealed 6 RBC, 9 WBC, and 30 protein. Blood cultures were positive for gram positive cocci in clusters. CT scan demonstrated multiple peripherally located cavitary and non-cavitary pulmonary nodules. Transthoracic echocardiogram (TTE) was negative for vegetations. She was diagnosed with probable native valve endocarditis by Duke criteria (5 minor criteria) and started on empiric vancomycin and cefepime. The regimen was later changed to high dose continuous infusion nafcillin after blood cultures revealed MSSA. A subsequent transesophogeal echocardiogram (TEE) demonstrated vegetations on the tricuspid, pulmonic, and aortic valves, as well as a patent foramen ovale.

DISCUSSION: Patients with IV drug use are at significant risk for development of infective endocarditis. Estimates range from 150 to 2000 per 100,000 person-years. However, these patients often present with other complaints and without obvious signs of endocarditis. It is critical to make the diagnosis so that empiric therapy can be started expeditiously, especially due to the poor sensitivity of less invasive imaging techniques. TTE has a high specificity (98 %) and moderate sensitivity (60–70 %), but can be non-diagnostic in up to 20 % of patients due to body habitus and anatomy. TEE has a higher sensitivity (75–95 %) and preserved specificity (85–98 %); however, it is not widely available, more invasive, and less rapidly performed. The Duke criteria, developed in 1994, integrate clinical, historical, and imaging data to help make the diagnosis. The criteria have a sensitivity of 90 %, specificity of >95 %, and a negative predictive value of >92 %. A definitive diagnosis of endocarditis by Duke criteria consists of 2 major criteria, or 1 major and 3 minor criteria, or 5 minor criteria. Major criteria include: (1) sustained bacteremia by an organism known to cause endocarditis; (2) endocardial involvement demonstrated by echocardiogram or a new valvular vegetation. Minor criteria include: (1) a predisposing condition (IV drug use, catheters, poor dentition, hemodialysis, diabetes, intracardiac devices); (2) fever; (3) vascular phenomena (pulmonary emboli, splinter hemorrhages, Janeway lesions); (4) immune phenomena (rheumatoid factor, glomerulonephritis, Osler's nodes, Roth spots); (5) blood cultures not meeting major criteria. Our case demonstrates that application of the Duke criteria with careful history taking and examination can more rapidly yield a diagnosis of endocarditis with equivalent sensitivity and specificity to that of a TEE.

A PUZZLING CASE OF MYCOBACTERIUM ABSCESSUS Amrita John; Steven Opal. Memorial Hospital of Rhode Island, Pawtucket, RI. (Tracking ID #1642808)

LEARNING OBJECTIVE 1: The incidence of rapidly growing Non-Tuberculosis Mycobacterium (NTM) infection has been increasing worldwide. There is need for high degree of clinical suspicion in order to accurately diagnose rapidly growing Non-Tuberculosis Mycobacterium (NTM) as the cause for recurrent soft tissue swelling.
LEARNING OBJECTIVE 2: It is equally important to distinguish M.abscessus from other NTM since the management and prognosis are different.
CASE: A 50-year-old female presented with a progressive swelling between the first and second digits of her right hand of 4 months duration. 3 months after onset, she visited the Emergency Department, underwent an incision and drainage and took 7 days of Doxycycline. Within a month the swelling had recurred. Of note, she could recall a small cut on her right thumb while gardening, a week prior to symptom onset. Exam showed a firm 1.5×1 cm swelling between the interdigital space of her right first and second digits. There was no localized lymphadenopathy or limitation in range of movements. MRI of the hand reported a hyper vascular enhancing lesion adjacent to the first metacarpophalangeal joint, without any bony erosions or marrow enhancement. Preliminary report from samples sent from the Emergency Department showed gram-positive, auramine/rhodamine fluorescent and acid-fast positive rods. These organisms were difficult to culture. The sample was processed at three different laboratories before it was identified by nucleic acid analysis as Mycobacterium abscessus, later confirmed by standard culture and methodology. Surgical excision of the mass revealed necrotizing granulomatoid nodules with chronic inflammation, granulation tissue and dense fibrosis suggestive of granuloma annulare on histopathology. Patient was empirically initiated on Clarithromycin and Doxycycline. Inability to tolerate Doxycycline along with sensitivity patterns showing resistance to this antibiotic resulted in switching to a combination therapy of Clarithromycin and Ciprofloxacin which has been successful to date, with no further recurrences.
DISCUSSION: Mycobacterium abscessus (formerly part of "M.chelonae-complex") are the most pathogenic and chemotherapy-resistant of all rapidly growing Non-Tuberculosis Mycobacterium (NTM). Skin and soft tissue infections are often secondary to trauma or as a post surgical complication due to contaminated surgical instruments and supplies. They can occur in both immune competent and compromised hosts. Molecular tools such as the sequence analyses are preferred in the detection since methods based solely on microscopy, solid and liquid cultures, Bactec systems, and species-specific polymerase chain reaction may produce misleading results. M.abscessus is resistant to all first-line tuberculosis drugs. Early combination therapy is preferred to monotherapy with duration guided by clinical response. Surgery is indicated for abscesses, extensive disease, when drug therapy is limited by resistance or adverse effects, and in localized pulmonary disease poorly responsive to medical therapy. This particular case highlights the need for high degree of clinical suspicion even with absence of a pathognomonic clinical picture and variable histopathology findings in order to accurately diagnose rapidly growing Non-Tuberculosis Mycobacterium (NTM) as the cause for recurrent soft tissue swelling. It is equally important to distinguish M.abscessus since the management and prognosis is different from other NTM.

A RARE PRESENTATION OF COCAINE TOXICITY Emerald Banas; Meghan Rane; Aakash Aggarwal; Arman Khorasani-zadeh; Badal Kalamkar. SUNY Upstate, Syracuse, NY. (Tracking ID #1643215)

LEARNING OBJECTIVE 1: To recognize and promptly manage posterior reversible encephalopathy syndrome
LEARNING OBJECTIVE 2: To recognize the more unusual etiologies of PRES
CASE: A 33 y.o. previously healthy man was brought to the hospital after being found unconscious. He regained consciousness and became agitated. As his condition worsened, he had to be intubated for airway protection. On exam, he was hyperthermic at 42.7 C and tachypneic at 32 cycles/min. Cardiac exam revealed distinct S1 and S2, tachycardic rate at 114 without any murmurs. Urine toxicology screen was positive for cocaine and neglible for acetaminophen, salicylate, ethanol and ethylene glycol were within normal limits. His ICU course was complicated with rhabdomyolysis, which led to acute renal failure requiring hemodialysis. He was finally extubated and was stable to be transferred to the floor. At this time, he was noted to be hypertensive with SBP ranging from 150 to 170 mmHg and DBP ranging from 70 to 100 mmHg. However, he started exhibiting confusion, tremors and delirium. He developed blurry vision and he was able to count fingers at 1 ft, OU. On exam, he was not oriented to person, time and place. He could not understand complex sentences and was not able to perform serial 7 subtractions. However, memory was intact. Extraocular movements were limited in terms of rightward gaze. Funduscopic exam was essentially normal. An MRI of the brain without contrast showed confluent subcortical white matter T2/FLAIR hyperintensity involving bilateral occipital and posterior temporal lobes consistent with posterior reversible encephalopathy syndrome. He was then started on nifedipine ER 30 mg daily and labetalol 300 mg BID. Blood pressure was well controlled with these medications and symptoms gradually resolved. On follow up 1 month after discharge, he was already taken off hemodialysis and has adequate urine output. He has been off nifedipine and only required labetalol 100 mg BID for adequate blood pressure control.
DISCUSSION: PRES is a clinical radiographic syndrome with varied etiologies. As in this case, it may atypically present after cocaine overdose. Easily recognized risk factors include a rapid rate of blood pressure elevation in the setting of renal failure, where fluid overload, electrolyte abnormalities and uremia may play a role. It is exemplified here how a high clinical suspicion in the appropriate settings can lead to prompt recognition and management. This played an important role in preventing permanent damage and potential fatal consequences in an otherwise reversible condition.

A RARE CASE OF CAP PRESENTING WITH PNEUMOCOCCAL MENINGITIS WITH PNEUMOCEPHALUS. Kameron Ashker; Sourabh Prabhakar; Nitin Bhanot; Supriya Narasimhan. AGH, Pittsburgh, PA. (Tracking ID #1645011)

LEARNING OBJECTIVE 1: To recognize a cause of pneumocephalus from an infectious process, that is not a gas producing organism.
LEARNING OBJECTIVE 2: The importance of early recognition of sinus disease and treatment in order to prevent complications such as pneumocephalus and menigitis.
CASE: A 68-year-old female with history of hypertension and atrial fibrillation (on anticoagulation) was found unresponsive at home by her daughter. A week prior to this, the patient was prescribed azithromycin for 5 days for an upper respiratory tract infection. On presentation, she had a temperature of 38.5 C and was in respiratory distress. Lab work revealed white cell count of 24,000 per mm3 with 31 % bands. Chest x-ray revealed right lower lobe infiltrate, consistent with pneumonia. CT scan of head showed pneumocephalus anteriorly in the frontal region without any evidence of trauma. Lumbar puncture (LP) was deferred since her INR was elevated secondary to warfarin use. The patient was admitted to the ICU and started on broad spectrum antimicrobials (cefepime, vancomycin, acyclovir, ampicillin), and dexamethasone. MRI brain done 24 h later showed abnormal signal within the sulci consistent with meningitis and extensive sinus disease with fluid in the mastoids bilaterally. Three days into admission, an LP was performed that revealed WBCs 143/mm3 (89 % neutrophils), glucose 99 mg/dl, and protein 221 mg/dl. CSF S. pneumoniae antigen was positive. Blood and sputum cultures drawn at the time of admission grew Streptococcus pneumoniae. Based on the antimicrobial susceptibility pattern, antibiotics were deescalated to vancomycin. The patient's mental status improved and she was discharged to complete a 3 week course of antibiotics. Pneumocephalus is a rare complication of pneumococcal meningitis.
DISCUSSION: An extensive literature review has only revealed 3 case reports that have demonstarted pneumocephalus in the presence of

concomitant mastoiditis or sinusitis. We present an uncommon manifestation of pneumococcal infection in a relatively immunocompetent individual.

A RARE CASE OF VALPROATE INDUCED HYPERAMMONEMIC ENCEPHALOPATHY(VHE). Amareshwar Podugu; Mohamad Adam; Asha Chakka. Canton Medical Education Foundation, Canton, OH. (Tracking ID #1638709)

LEARNING OBJECTIVE 1: To increase clinicians awareness of VHE, a rare but potentially fatal adverse effect of Valproate (VPA) therapy.
CASE: 78 year old male with diabetes mellitus type 2 and anxiety was admitted with hypoglycemia, later had a witnessed generalized tonic clonic seizures and endotracheal intubation for airway protection. No other significant history. Admission vitals, labs and exam were unremarkable other than what mentioned. Home meds include Zoloft 100 mg PO daily, Lantus & Novolog insulin. Levetericetam 1000 mg I.V Q12h and Valproic acid 2000 mg I.V Q12h were initiated. He was extubated on day 3, but subsequently required re-intubation in less than 48 h for worsening mentation. Day 8, with continued treatment for seizures, ammonia levels were noted to be marginally elevated at 82 with 'normal' liver functions (LFT's). VPA level was with in normal limit (79). EEG showed generalized slowing in the theta and delta ranges with predominance of beta noted frontally and bilaterally, indicating encephalopathy. Day 9, a decision was made to withdraw VPA as his clinical picture along with EEG showed encephalopathy associated with marginal hyperammonemia. Day 11, his mentation started improving. Consequently, his mentation was back to his baseline.
DISCUSSION: The above patient encounter describes the rare but extremely dangerous complication of VPA induced hyperammonemic encephalopathy (VHE). Our case features the discordance between encephalopathy and marginally elevated ammonia levels & therapeutic VPA levels with concomitant use of Levetericetam, after a brief exposure to VPA. VPA is one of the most commonly used antiepileptic drugs or mood stabilizers. Common adverse effects include gastrointestinal disorders, bone marrow toxicity, and hepatic injury. VPA-induced encephalopathy is a rare and severe adverse effect. The incidence of VHE is not known, but asymptomatic increases in serum ammonia are seen in 16–52 % of patients receiving VPA therapy. One of the mechanisms by which this occurs is thought to involve valproate induced carnitine deficiency, thus impairing the conversion of ammonia to urea. Clinical signs include mental-status changes, increased seizure frequency and delirium. The symptoms of VHE are often times misdiagnosed as worsening of underlying neurological or psychiatric condition. Barring other underlying conditions, patients with VHE may have no other laboratory derangement's than elevated serum ammonia. VPA levels may be normal and do not necessarily correlate with the degree of hyperammonemia or the severity of symptoms. EEG's show generalized slowing and increased epileptiform discharges. Other anticonvulsants may potentiate the effects of VPA. The primary therapy is withdrawal of VPA; L-carnitine supplementation may decrease ammonia levels and improve symptoms. The diagnosis of VHE needs high index of suspicion. Caution should be exercised while treating patients with abnormal mentation on VPA and emphasis should be made to not to overlook the diagnosis of VHE in the presence of normal valproate levels and marginally elevated ammonia levels as seen in our patient. Untreated VHE can lead to a life-threatening coma. So, it is critical to increase the clinicians' awareness of VHE.

A RARE CAUSE OF HEPATIC VEIN THROMBOSIS IN A YOUNG MAN Dima Dandachi; Habtamu Asrat; Sathish kumar Krishnan; Ahmet A. Oktay. Saint Francis Hospital, Evanston, IL. (Tracking ID #1643150)

LEARNING OBJECTIVE 1: Recognize that hepatic vein thrombosis can occur as a complication of fusobacterium infection
LEARNING OBJECTIVE 2: Recognize that fusobacterium infection might occur even without preceding upper respiratory tract, periodontal or gastrointestinal infection
CASE: A 27-year-old previously healthy man presented to the ED with 3 weeks history of persistent fever with temperature around 102 °F and right sided pleuritic chest pain. Later, he started having night sweats and chills. The chest pain had gradually subsided to a right upper quadrant (RUQ) constant dull ache associated with malaise, poor appetite and 5 lb of weight loss over 3 weeks period. Review of systems was negative otherwise. He was a former cigarette smoker, consumed alcohol socially with no illegal drug abuse. He denied any history of recent travel or sick contacts or risky sexual behavior. His family history was irrelevant. Physical exam was unremarkable except for tachycardia (HR: 119 /min) and fever (Temp: 101 °F, oral). Initial laboratory analysis revealed leukocytosis (WBC 21 k/mm cu, neutrophils; 86 %), elevated ESR; 75 mm/hr, mildly elevated AST, ALT and Alk Phos; 281. Serologies for HIV, CMV, EBV, hepatitis viruses; Quantiferon-gold and blood cultures came back negative. ECG and cardiac enzymes were normal. Transthorasic echocardiograghy did not show any vegetations. He was started on IV ceftriaxone and doxycycline for possible pneumonia because of right basilar infiltrates on CXR. However, fever and RUQ pain did not resolve. So an abdominal MRI was done which showed right hepatic vein thrombus and four lesions with enhancement of thickened rim consistent with multiple hepatic abscesses in the right hepatic lobe. The abscesses were drained. The antibiotic regimen was changed to IV Meropenem and Vancomycin and he was anticoagulated with, initially enoxaparin, and then warfarin. Hypercoagulable workup was negative as well as serologies for E.histolytica, Brucella, Bartonella, Toxoplasmosis. Cultures from the three out of four abscesses grew Fusobacterium Nucleatum (FN) and this was thought to be related to the hepatic vein thrombosis. The patient denied any recent history of dental work, gingival disease or sinusitis. His oral exam and CT-sinus were negative. Immunoglobulin levels were within normal limits. He clinically improved, fever resolved and WBC count normalized. He was discharged home on oral metronidazole and Levofloxacin.
DISCUSSION: Hepatic vein thrombosis is a rare condition, which is usually caused by one or several thrombogenic conditions, of which myeloproliferative disorders are the most frequent. We report a case of hepatic vein thrombosis in association with fusobacterium infection. Fusobacterium species are anaerobic gram negative bacilli that are associated with periodontal infections and jugular vein thrombophlebitis(Lemierre's syndrome). Our literature search revealed only a few cases of portal vein thrombosis associated with fusobacterium. These cases were usually preceded by upper respiratory or gastrointestinal infection. Our patient is unique that he developed hepatic vein thrombosis associated with fusobacterium without evidence of upper respiratory or gastrointestinal infection. Clinicians need to be aware of the life-threatening complications associated with fusobacterium infection

A RARE INSERTION: HTLV-1 INDUCED ADULT T-CELL LEUKEMIA-LYMPHOMA (ATLL) Doyun Park; Geeta Laud. Montefiore Medical Center, Bronx, NY. (Tracking ID #1642824)

LEARNING OBJECTIVE 1: 1. Review epidemiology, clinical presentations, diagnostic criteria, and different subtypes of ATLL
LEARNING OBJECTIVE 2: 2. Recognize indication for chemotherapy and absence of therapeutic guidelines
CASE: A 43 year-old male patient (pt) with no past medical history presented with intermittent left-sided abdominal pain and chronic fatigue. Exam revealed a palpable spleen tip. Labs showed WBC of 136.5 with 94 % lymphocytes, calcium of 11.6, and LDH 524. CT scan revealed splenomegaly and diffuse lymphadenopathy. Peripheral blood cytometry showed 81 % abnormal cells expressing CD4 and CD25 concerning for ATLL. Bone marrow biopsy showed 90 % hypercellularity with patchy infiltration by atypical lymphocytes. Pt's human T-cell lymphotropic virus 1 (HTLV-1) antibody test returned positive and he was diagnosed with stage 4A ATLL. Pt underwent one cycle of the EPOCH before enrollment in a trial therapy of EPOCH plus Bortezomib and Raltegravir. Normalization of cell lines was achieved within 1 month of starting chemotherapy. However, a lumbar puncture performed during prophylactic intrathecal methotrexate revealed atypical cells

with irregular contoured nuclei concerning for CSF involvement of ATLL. Pt has since been receiving intrathecal Cytarabine via an Ommaya. 5 months post diagnosis, Pt's peripheral cytometry showed 6.6 % abnormal T-cells and a repeat CT scan of thorax showed complete resolution of his lymphadenopathy, confirming pt's partial response (PR) to therapy. Throughout treatment, pt has maintained an ECOG score of 0 and a Karnofsky score of 100.
DISCUSSION: Adult T-cell leukemia-lymphoma (ATLL) is a peripheral T-cell neoplasm associated with infection by the oncoretrovirus HTLV-1. Transmission occurs via breastfeeding, sexual intercourse, and blood products. The risk of HTLV-1 infected individuals developing ATLL is only 4–5 % with development usually occurring after a decades-long dormancy period. Diagnostic criteria for ATLL include: immunochemical expression of T-cell surface antigens and cytokine receptors (CD4 or CD25 positivity), presence of atypical mature lymphocytes (with hyperlobulated "flower-like" appearance of their nuclei), and positive HTLV-1 serology. Clinical features of ATLL include hepatosplenomegaly, lymphadenopathy, lytic lesions, and hypercalcemia. ATLL also impairs T-cell mediated immunity, leading to frequent opportunistic infections (OI). ATLL is divided into two major groups: aggressive and indolent, which are then subdivided into acute leukemic/lymphomatous and smoldering/chronic variants, respectively. Therapy is offered to those with aggressive ATLL and "unfavorable" chronic types (characterized by high blood urea nitrogen, high LDH and low albumin), whereas those with favorable indolent types are monitored initially. There is currently no guideline for treatment of ATLL, but once an aggressive disease is diagnosed pts should be enrolled in a clinical trial that consists of multiregimen combination chemotherapy plus intrathecal chemotherapy due to moderate risk for central nervous system involvement at diagnosis. Pts should also receive OI prophylaxes if possible. Prognosis for ATLL is poor, with a median survival of 7.7 months for the acute variant, but a randomized trial with a Japanese multiregimen LSG 15 (VCAP-AMP-VECP) demonstrated a promising 3 year survival of 24 %. As demonstrated by our pt, prompt diagnosis and aggressive chemotherapy can lead to partial response of a meaningful duration and excellent functional status during treatment.

A SIMPLE RASH OR A DEADLY KILLER? Jessica Hurst. Boston University, Boston, MA. (Tracking ID #1642832)

LEARNING OBJECTIVE 1: Distinguish mild drug eruptions from severe cutaneous adverse reactions
LEARNING OBJECTIVE 2: Recognize patients at risk for disseminated strongyloides
CASE: A 79 year old male with Stage IVB mantle cell lymphoma presented with fever several hours after receiving cycle 2 of bendamustine and rituximab. His only other symptom was a pruritic rash for 2 weeks. One week prior to presentation, hydrochlorothiazide and allopurinol (initiated 6 and 4 weeks prior, respectively) were stopped due to concern for drug rash; a prednisone taper was prescribed with no improvement. There was some concern that the patient had not discontinued these medications due to low health literacy and language barrier. The patient emigrated from Haiti to the US 4 years prior. On exam, temperature 102.6, heart rate 120. He was ill-appearing with a mildly erythematous, maculopapular eruption on chest, back, upper extremities with mild excoriations. No desquamation, ulceration, facial edema, oral ulcers, lymphadenopathy. WBC 14.7, eosinophils 7.6 (1.2 8 weeks prior), complete metabolic panel normal. The patient received acetaminophen, cefepime which were stopped after 48 h as he quickly defervesced and CXR, blood, urine cultures were negative. For his rash with eosinophilia, there was high concern for drug eruption including DRESS (drug reaction with eosinophilia and systemic symptoms), early Stevens-Johnson syndrome (SJS), or disseminated strongyloides (DS). Hydrochlorothiazide and allopurinol were held. Skin biopsy showed interface dermatitis consistent with a drug eruption. Strongyloides ELISA and stool O&P exams were normal. Ultimately he was thought to have a drug eruption due to allopurinol, based on the time course of the rash, its morbilliform appearance, and allopurinol's propensity to cause drug eruptions. After several days, the rash began to improve and eosinophils decreased to 1.2
DISCUSSION: Early in the course of a suspected drug rash, it may be difficult to differentiate between benign drug eruptions and more serious cutaneous reactions. Early SJS can present as a morbilliform rash with later development of mucocutaneous involvement; serial exams are thus important. When eosinophilia is present, DRESS must be considered. This patient did not have lymphadenopathy or evidence of organ involvement and had rapid resolution of symptoms after stopping suspected medications, making DRESS unlikely. In certain populations, DRESS may be mimicked by disseminated strongyloides, also presenting with rash, hypereosinophilia, and fever. This patient had many risk factors for DS: prior residence in an endemic area, pre-existing absolute eosinophilia (potentially indicative of chronic strongyloides), use of rituximab. Mortality of DS is nearly 90 % if untreated, largely due to associated gram negative rod sepsis. Patients from endemic areas who present with eosinophilia should undergo testing for strongyloides prior to initiation of immunosuppressants. Early on, it can be challenging to distinguish between a benign drug eruption and potential dangerous rash. Clinicians must have a high level of suspicion for DRESS, SJS, and DS in the appropriate clinical setting.

A SNAKE'S KISS CAN BE AS DEADLY AS HIS BITE Manisha Bhide; Bryan Brimhall. University of Colorado Denver, Aurora, CO. (Tracking ID #1638197)

LEARNING OBJECTIVE 1: To present a case of febrile illness with hematochezia due to non typhoid salmonellosis from handling pet snakes.
LEARNING OBJECTIVE 2: To increase public awareness regarding precautions for pet handling
CASE: A 34 years old male presents with 1 week of fevers upto 103 F, chills, nausea, vomiting, and bloody diarrhea. Past medical history is negative. He works as a veterinarian technician and owns a pet boa constrictor, two dogs, and one cat. On physical exam, his temperature is 101.4 Fahrenheit, pulse is 92 BPM, blood pressure is 102/66 mmHg, respiratory rate is 16, and oxygen saturation is 95 % on room air. He is in moderate distress, lying in bed in the fetal position. His mouth is dry. Abdomen is soft, diffusely tender, and non-distended. Otherwise his physical exam is normal. Laboratory data demonstrate a lactate, cbc, bmp, and urinary analysis within normal limits except a creatinine of 1.36 mg/dl. The most likely etiology of this patient's symptoms are from an infectious source in the gastrointestinal tract. Infectious colitis with bloody diarrhea raises the possibility of invasive bacteria such as E. coli, Salmonella, Shigella, Campylobacter, Yersina, Vibrio parahaemolyticus or Clostridium dificile. Parasites such as E. histolytica could also cause a bloody diarrhea. He was treated for sepsis with marked improvement. On the second day of admission his blood cultures became positive for gram negative bacteria, later found to be salmonella, not typhi, serogroup C1. Our patient likely contracted Salmonella from handling his pet snake and then preparing food without hand washing. The salmonella isolated from the blood cultures was sensitive to ciprofloxacin and he was discharged on a 14 day course. He was instructed on the importance of hand washing and not handling his snake on kitchen counter surfaces.
DISCUSSION: Sources for salmonella infection in the United States vary widely. There are an estimated two to four million cases of salmonellosis per year in the United States with gastroenteritis being the most common presentation. Salmonella accounts for 9 % of all bacterial food borne illnesses. The most common etiology is improperly handled food. In 2006, there were large multi-state outbreaks of salmonella linked to consumption of tomatoes, fruit salad, and peanut butter. Another known food source is egg yolks, with one in every ten thousand egg yolks being infected with Salmonella enteritis. Animals known to cause Salmonella enteritis include ninety percent of reptiles, such as iguanas, bearded dragons, and snakes. Three to five percent of all cases of salmonellosis in humans are due to exposure to turtles, birds, rodents, dogs, and cats. It is not efficacious to treat reptiles with antibiotics for salmonella and only increases antibiotic resistance. All pet stores are encouraged to provide information to customers regarding salmonella when purchasing a reptile. Very few states actually require by law that information be given. The infectious dose of

Salmonella required for clinical illness varies. As little as five bacteria are required to produce illness in disease susceptible hosts. Antibiotic, previous gastric surgery, antacids or H2 blockers can also reduce the infectious dose. Information regarding salmonella transmission from pets and regulations can be found by calling the pet industry joint ad council at 1-800-553-7387.

A SUCCESS AMONG FAILURES: CEFTAROLINE SALVAGE THERAPY IN COMPLICATED METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) BACTEREMIA Bindu B. Yalamanchili; Faisal Khasawneh. Texas Tech University Health Sciences Center, Amarillo, TX. (Tracking ID #1629992)

LEARNING OBJECTIVE 1: Recognize the causes and potential solutions for first-line antibiotic failure in patients with MRSA bacteremia.
CASE: A 29-year-old previously healthy Hispanic male was admitted with a 6-day history of fevers, chills, shortness of breath and left arm cellulitis. He was involved in a scuffle with the police about a week prior. On presentation, he had severe sepsis with acute kidney injury and pulmonary septic emboli. He was started empirically on vancomycin and piperacillin/tazobactam. His blood cultures grew MRSA with a vancomycin minimal inhibitory concentration (MIC) of 1. His condition worsened with higher fevers and WBC counts. He also developed cutaneous pustules that grew MRSA with vancomycin MIC of 2. His antibiotics were changed to daptomycin and clindamycin with no improvement. Fevers peaked at 101.5 ° F with a WBC count of 32,000/μL. CT scan of the chest without contrast showed cavitary changes in some of the septic emboli and new areas of consolidation. CT of left arm and abdomen showed no abscesses. Follow up blood cultures and transesophageal echocardiogram were negative. His antibiotics were changed to ceftaroline with gradual improvement, and he finished a six-week course without side effects.
DISCUSSION: MRSA continues to cause a significant morbidity and mortality. Despite better understanding of its resistance patterns and newly developed antibiotics, it continues to pose a formidable therapeutic challenge. Vancomycin and daptomycin are first line antibiotics for treating MRSA bacteremia. Vancomycin is reasonably well tolerated and is inexpensive. MRSA with MIC≤2 is considered susceptible to vancomycin but clinical failure has been reported in MRSA infections with MIC between 1 and 2. This results from the low probability of current dosage regimens achieving the appropriate vancomycin concentration exposure (AUC/MIC≥400). Daptomycin, on the other hand, is expensive, not suitable to treat pneumonias, and resistance to it has already been reported. Ceftaroline is a novel cephalosporin that has high affinity to penicillin binding protein 2a, a MRSA specific penicillin binding protein, which correlates with its efficacy against this pathogen. It is bactericidal and demonstrates time-dependent killing. It is currently approved for treating community-acquired pneumonia and skin and soft tissue infections. Clinical data to support its use in MRSA bacteremia is limited but in a rabbit endocarditis model it compared favorably to other antibiotics. Further studies to investigate its use in MRSA bacteremia are warranted.

A THYROID NODULE THAT WASN'T: RENAL CELL CARCINOMA METASTATIC TO THE THYROID Archana Satyal Chaudhary; Julian Diaz Fraga; Richard Alweis. The Reading Hospital and Medical Center, West Reading, PA. (Tracking ID #1642382)

LEARNING OBJECTIVE 1: The rare entity of metastatic disease to the thyroid is usually clinically silent and found incidentally or during autopsy. Renal, lung, breast and lymphoid tissue are common sources with renal cell carcinoma (RCC) accounting for most of the cases. Thyroid metastasis from RCC is a late complication, averaging 7.5 years after curative nephrectomy, but it can occur after more than 20 years. Local tumor recurrence and other distant metastases are generally absent in these cases, making surgical resection of the solitary thyroid metastatic site potentially curative.
CASE: 71-year-old female was found to have an incidental, asymptomatic thyroid mass when presenting for an unrelated fall. Clinical examination revealed a 3 cm hard, non-tender, fixed mass on the left thyroid lobe without lymphadenopathy. Blood count, basic chemistries, and thyroid function tests were within normal limits. Ultrasound revealed a solid hypoechoic 5.2×3×2.5 cm left thyroid mass without invasion of surrounding structures. Past medical history was significant for clear cell type RCC with curative right nephrectomy performed 20 years prior. Cytopathology from fine needle aspiration was consistent with metastatic clear cell type RCC. There was no further evidence of local tumor recurrence or other distant metastases by imaging studies. A subtotal thyroidectomy was performed and she has been disease free during one-year of follow up.
DISCUSSION: Only 150 cases of clinically recognized metastatic renal cell carcinoma to thyroid have been reported. The clinical findings are nonspecific, including a neck mass, weight loss caused by hypercalcemia, dysphagia, and hoarseness, but absence of symptoms is common. Although prognosis associated with such metastasis is poor, prompt recognition with appropriate surgical intervention can be curative. Thus, metastatic RCC to the thyroid should be considered in any patient presenting with a thyroid mass and a medical history of even a remote renal cell carcinoma.

A WORD IS WORTH A THOUSAND PICTURES: TIMELY COMMUNICATION TO AVOID DELAYS IN URGENT DIAGNOSTIC IMAGING Christopher J. Smith. University of Nebraska Medical Center, Omaha, NE. (Tracking ID #1636880)

LEARNING OBJECTIVE 1: Recognize risk factors for nephrogenic systemic fibrosis (NSF) and strategies to minimize these risks.
LEARNING OBJECTIVE 2: Understand the importance of proactive communication with other providers to avoid delays in urgent MRI for patients with advanced renal failure.
CASE: Day 1: A 41 year-old woman presented with 1 week of progressive neck pain and 2 days of fevers and chills. Her past medical history included AIDS (CD4 count of 49) and ESRD requiring hemodialysis (HD). On exam, she was febrile and tachycardic with slurred speech. Her tunneled HD catheter had no signs of infection. Pain severely limited the range of motion of her neck. CSF fluid analysis revealed a pleocystosis (WBC 62, neutrophils 47 %, lymphocytes 15 %). Protein was elevated and glucose was low. Gram stain was negative for bacteria. Blood cultures and additional CSF studies were ordered, the HD catheter exchanged, and empiric antimicrobials started for meningitis. An echocardiogram and MRI of the brain and C-spine were also ordered. Day 2: The patient was more confused and somnolent. She was febrile, tachycardic, and hypotensive. She had a new holosystolic murmur heard best at the left upper sternal border, nuchal rigidity, decreased lower extremity strength, and diminished lower extremity DTRs. She was transferred to the ICU and vasopressor support initiated. The CSF culture remained negative. Blood cultures grew S. aureus. The MRI ordered the day prior had not been performed due to a policy prohibiting gadolinium use in patients with renal failure. The ordering physician was not informed of the delay. Following discussion with the on-call Radiologist, MRI was performed and revealed cervical discitis, osteomyelitis, and epidural abscess causing central canal stenosis. A vegetation from the SVC to the right atrium was revealed by transesophageal echocardiogram. After a prolonged stay, including cervical corpectomy and fusion, the patient improved clinically, but ultimately left the hospital against medical advice.
DISCUSSION: Balancing the risks and benefits of contrast agent use in patients with renal failure is a problem frequently encountered by internists. Nephrogenic systemic fibrosis (NSF) is a potentially fatal fibrosing disease caused by gadolinium-based contrast agents (GBCA) seen exclusively in patients with advanced kidney failure. Although it primarily affects the skin, deeper organs can be involved. Patients on HD exposed to GBCA have a 5 % risk of developing NSF. In patients with urgent need for MRI, this risk must be weighed against the benefits of definitive diagnosis and treatment. It is important that internists know their institution's policy for GBCA use in patients with renal failure and that they initiate timely communication with other providers, including Radiologist and Nephrol-

ogists, to avoid delays in patient care. Strategies to minimize the risk of NSF include using safer gadolinium formulations at the lowest possible dose and performing immediate HD after MRI.

A "QUESO FRESCO" CONUNDRUM—ACUTE HEPATITIS DUE TO BRUCELLOSIS Arta Lahiji; Sahar Soleymani; Phuong-Chi Pham; Glenn Mathisen. UCLA, Sylmar, CA. (Tracking ID #1643229)

LEARNING OBJECTIVE 1: Although uncommon, consider the diagnosis of brucellosis in patients with unexplained fever and hepatitis, especially if there is a history of animal exposure or ingestion of raw dairy products

CASE: This is the case of 32 year-old male with no significant past medical history who presented with abdominal pain accompanied by a 20 lb. weight loss, a 2 month history of intermittent high fever (up to 40 ° C) and night sweats. He works in southern California as a cook and denied a history of travel, contact with farm animals or recent ingestion of raw milk or cheese. Vital signs demonstrated fever to 40 ° C, BP: 117/73 mm Hg., heart rate of 76 bpm and RR:17. His physical examination was normal except for a few small petechiae on the soft palate and a palpable spleen tip. Laboratory studies revealed panyctopenia with white count 2.7 cells/mm3, hemoglobin 12.3 gm/dL and a platelet count of 100 K. Liver tests were markedly elevated (AST 1038: ALT 1377: AP 310: TBil:1.4) and abdominal CT revealed a mildly enlarged liver (20 cm) and splenomegaly (15 cm). Serological studies for viral hepatitis were negative for acute or chronic infection. The patient was started on empiric broad spectrum antibiotic therapy (vancomycin and cefepime) but he continued to remain febrile. On day 3, blood cultures taken on admission were positive for small gram negative "coccobacillary" organisms (identified as Brucella melitensis) and the patient was diagnosed with brucellosis. Following the return of the blood cultures, the patient's antibiotic therapy was changed to intravenous gentamicin (5 mg/kg/day) and doxycycline (100 mg PO BID). Over the next 4 days he had resolution of fever/symptoms and he was discharged on a planned 8 week course of rifampin and doxycycline. On closer questioning, the patient stated that he loved dairy products and frequently ingested "queso fresco" (raw cheese) from Mexico. At the 5 week follow-up, the patient felt well and the abnormal laboratory results had completely resolved.

DISCUSSION: Brucellosis is a zoonotic infection that is transmitted to humans after contact from infected animals such as sheep, cattle, or goat, or from their food products such as unpasteurized milk and cheese. It is sometimes called "undulant fever", because of the intermittent, "undulating" quality of the fever as seen in this case. In addition to constitutional signs (fever, weight loss, night sweats), brucellosis can have multi-organ involvement including osteoarticular (SI joints, spondylitis), genitourinary (epididymoorchitis), hematologic (leukopenia, anemia, thrombocytopenia), cardiac (endocarditis, pericarditis), neurologic (meningitis, myelitis, radiculitis), ocular (uveitis), and dermatologic (petechiae, ulcerations) manifestations. Mild liver enzyme elevation is common in brucellosis (50 % of cases); however, overt hepatitis, as in this case is much less common (3–6 % of cases). Although uncommon, consider the diagnosis of brucellosis in patients with unexplained fever and hepatitis, especially if there is a history of animal exposure or ingestion of raw dairy products (milk/cheese).

A.N.C. -THE KEY THAT UNLOCKED THE CAUSE OF MY STOMACH PAIN! Kelli Pitt. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1641524)

LEARNING OBJECTIVE 1: Identify the differential diagnosis of abdominal pain in immunocompromised patients.

LEARNING OBJECTIVE 2: Recognize the clinical presentation of typhlitis (neutropenic enterocolitis) and dangers of invasive evaluation. Understand the pathophysiology of typhlitis, which will aid in management.

CASE: A 31 year-old man presented with 1 month of progressively worsening abdominal pain and fever. He also noted nausea and vomiting but no changes in his bowel habits. He was febrile and tachycardic. There was mild tenderness in the right lower quadrant. There was no guarding or rebound tenderness, although pain was elicited with flexion of the right hip. His medical history was significant for AIDS with a CD4 count of 1. An extensive infectious work-up was performed and included the following: CMV PCR, histoplasma antigen, cryptococcal antigen, cryptosporidium, stool ova and parasite, stool gram stain and culture, C. difficile PCR, serum H. pylori IgM, and serum AFB and blood cultures. All tests returned negative. Abdominal CT revealed diffuse wall thickening of the cecum and proximal ascending colon with associated stranding and edema, no free air or fluid, and a normal appearing appendix. These findings were consistent with typhlitis. Of note, CBC revealed an absolute neutrophil count (ANC) of 370.

DISCUSSION: Abdominal pain with fever is a presenting complaint commonly encountered by the Internist with a vast differential spanning from mild disease, such as gastritis, to more severe and life threatening causes such as pseudomembranous colitis. This differential broadens more so in patients with HIV due to impaired host defense to opportunistic infections including CMV, MAC, and cryptosporidium as well as bacterial, parasitic, and fungal infections. Other entities that should be considered include HIV/AIDs cholangiopathy, mesenteric infiltration, pancreatitis and lymphoma. Typhlitis should be considered in any neutropenic patient who presents with fever and abdominal pain, particularly in the right lower quadrant. Other symptoms can include abdominal distention, nausea, vomiting, diarrhea, and peritoneal signs. Imaging with CT is most useful in supporting the diagnosis of typhlitis and can aid in ruling out other causes in an otherwise negative work-up. HIV patients, such as this one, have loss of cellular immunity and are susceptible to infection in addition to pronounced inflammation that leads to intestinal mucosal injury. Bacterial invasion of the bowel wall occurs, leading to cecal inflammation and edema that may progress to necrosis, ulceration and perforation. These patients are at increased risk of perforation with invasive procedures such that colonoscopy should be avoided and surgery reserved for those with significant complications. Patients should be managed conservatively with bowel rest, broad-spectrum antibiotics, and often granulocyte-colony stimulating factor to aid in increasing the neutrophil count. Typhlitis usually resolves once the ANC rises above 500–1000, at which time the patient can be safely evaluated with colonoscopy to confirm diagnosis. Typhlitis is a well known cause of morbidity and mortality affecting patients with neutropenia. Although most commonly seen in patients post chemotherapy, this diagnosis should be considered in all neutropenic patients who present with fever and abdominal pain, as demonstrated in our patient with AIDS.

AKI AND ITP AND THE INFECTIONS THAT BIND THEM TOGETHER Pooja Sethi; Ankit Madan; Khalid Rasheed; Philip Putnam. University Of Alabama Birmingham Montgomery, Montgomery, AL. (Tracking ID #1642822)

LEARNING OBJECTIVE 1: To recognize Disseminated Histoplasmosis (DH) as an opportunistic infection and understand its clinical manifestations.

LEARNING OBJECTIVE 2: To learn about the rare complications associated with DH and their appropriate management.

CASE: The patient is a 35 year old African American lady recently diagnosed with HIV, not on HAART, presented to the ER with 2 day history of fever, vomiting, diarrhea, and fatigue. On physical exam she had temperature of 103, oral thrush, and lower abdominal tenderness. Urine analysis showed 53 WBC, leukocyte esterase positive. Hemoglobin was 8, WBC 7000 with a normal differential, and platelets of 220,000. Creatinine was 9, elevated from 1.2 2 weeks prior. CD4 was 19 and viral load was 1,000,000. She was treated for pyelonephritis with Ceftriaxone but continued to spike fever. Her antibiotics were broadened to vancomycin and zosyn. On hospital day three, patient developed severe epistaxis and her platelet count dropped to 26,000. Peripheral smear showed schistocytes and intracellular yeast, and

blood cultures confirmed yeast forms. The patient was started on Amphotericin. Fungal culture and urine histoplama antigen confirmed the diagnosis of Disseminated Histoplasmosis. Diagnosis of Thrombotic thrombocytopenic purpura (TTP) was also a concern since she had fever, anemia, thrombocytopenia, and renal failure. The patient was transferred for plasmapheresis, but a repeat peripheral smear showed no schistocytes. ADAMST13 was elevated, favoring alternative diagnosis. The patient was treated as Idiopathic thrombocytopenic purpura (ITP) and started on corticosteroids. Amphotericin B was continued. Her symptoms improved. Initial lab abnormalities returned to normal within a week, and she was discharged with a creatinine of 1.2 and platelets of 165,000.

DISCUSSION: DH should be considered in advanced HIV patient, who present with nonspecific symptoms. It has a multitude of presentations with mucocutaneous, respiratory, GI or hematological derangements. There are very few case reports with complications of AKI and ITP in DH, and to our knowledge none so far with both complications in a single patient. Histoplasma may cause direct platelet membrane damage or antibody-mediated platelet damage, releasing ADP and serotonin, which leads to platelet aggregation and increased clearance from circulation. HIV-associated nephropathy causes FSGS. Clinicians should be careful to exclude other causes, particularly those of acute onset. Histoplasmosis causes renal insufficiency, and shows granulomatous interstitial nephritis on kidney biopsy. Therapy with amphotericin B results in dramatic improvement in symptoms and lab values, whereas HIV-associated nephropathy tends to be more indolent and progressive. A delay in diagnosis can be fatal.

AL AMYLOIDOSIS: WHEN YELLOW MEETS CONGO RED Kendrick B. Gwynn; Tiffany Walker; Kimberly D. Manning; Kristina L. Lundberg; Robin Klein. Emory University School of Medicine, Atlanta, GA. (Tracking ID #1634557)

LEARNING OBJECTIVE 1: AL amyloidosis can involve multiple systems including bone, liver, heart and muscles

LEARNING OBJECTIVE 2: AL amyloidosis must be considered even in the presence of other pre-existing systemic conditions

CASE: 55 year old female history of sarcoidosis presenting with several weeks of bilateral upper extremity weakness and jaundice. She reported having diffuse abdominal pain, decreased oral intake, dark urine but denied nausea, diarrhea, or acholic stools. The patient had a previous history of multiple compression fractures of L1, L4, L5 and bilateral hip replacements. Exam was significant for a thin appearing female with icteric sclerae, jaundiced skin and tender hepatomegaly about 4 cm below the costal margin. Neurologic exam was significant for 4/5 proximal muscle upper extremity strength but no other focal deficits. Labs on admission were significant for AST 82 U/L, ALT 45 U/L, alkaline phosphatase 1828 U/L, total bilirubin 5.7 mg/dL, total protein 6.1 gm/dL and albumin 2.9 gm/dL, CPK 16 U/L, ESR 82 mm/hr. Throughout the hospital course total bilirubin peaked at 17.4 mg/dL. Muscle biopsy showed Type II fiber atrophy and EMG showed primary myopathy. Liver biopsy showed proteinaceous infiltrate staining positive for amyloid. SPEP and UPEP were within normal limits. Transthoracic echocardiogram showed preserved systolic and diastolic function. Serum free light chains were elevated with kappa/lambda ratio of 0.10. Bone marrow biopsy was significant for primary immunoglobulin light chain amyloidosis (AL) without clonal cell population. She was discharged with follow up with oncology with plans to begin dose adjusted bortezomib and dexamethasone.

DISCUSSION: Immunoglobulin light chain amyloidosis, previously known as primary amyloidosis is a disease caused by light chain deposition in various organs. Presenting features of systemic AL amyloidosis include non-diabetic nephrotic range proteinuria, restrictive cardiomyopathy, increased BNP in the absence of primary heart disease, hepatosplenomegaly, carpal tunnel syndrome, unexplained facial or neck purpura, or macroglossia. Diagnosis is made by tissue biopsy with immunohistochemical staining. Liver involvement in AL amyloidosis is seen in up to 70 % of patients. Most frequent presenting lab abnormality is an alkaline phosphatase greater than 500. Poor prognostic indicators include the presence of heart failure, total bilirubin greater than 2 or platelets greater than 500,000. Median survival is 9 months with five-year survival of 17 %. Myopathy is uncommon in systemic amyloidosis but can present with nerve conduction abnormalities seen in up to 82 % of patients and patients typically presenting with muscle pseudohypertrophy. Osteolytic lesions of the bone can lead to pathologic fractures and bone pain. Treatment involves chemotherapy plus hematopoietic stem cell transplant or chemotherapy alone in transplant ineligible patients. The aforementioned case highlights the hepatic manifestations of AL amyloidosis. Furthermore, it underscores the importance of considering all possible diagnoses as the patient's history of sarcoidosis was proved to be inactive and unrelated in this case and obscured the initial workup.

ABDOMINAL PAIN AND QUADRIPARESIS: ACUTE INTERMITTENT PORPHYRIA AT ITS WORST Venkata N. Kollipara; Jingdong Su; Roger D. Smalligan; Bindu B. Yalamanchili; Steven Urban. Texas Tech University Health Sciences Center, Amarillo, TX. (Tracking ID #1634959)

LEARNING OBJECTIVE 1: Diagnose porphyria in patients with intermittent abdominal pain, especially if there is any associated neuropathy.

LEARNING OBJECTIVE 2: Recovery from porphyria associated neuropathy can take months to years for complete recovery, Early diagnosis and promt management can prevent disabillity and suffering of affected patients.

CASE: A 21-year-old female presented with severe abdominal pain, nausea and intractable vomiting for 4 days. She had been having similar symptoms intermittently for the past 4 years requiring multiple admissions. She had a cholecystectomy on the previous admission with no relief of pain. The pain was severe, diffuse, and constant with no aggravating or relieving factors. Her appetite was decreased and she was constipated. On examination, she was hypertensive and tachycardic. Lungs were clear and heart sounds normal. The abdomen was diffusely tender without guarding or rebound tenderness and bowel sounds were present. She developed profound bilateral wrist drop and foot weakness over several days after admission leading to quadriparesis. Lab work revealed hyponatremia, hypokalemia, and hypomagnesaemia. Her urine was dark-colored hence blood, urine and fecal samples were sent on suspicion of porphyria early on. Porphyrin was markedly elevated in the blood and porphobilinogen and ALA were high in the urine. The diagnosis of Acute Intermittent Porphyria (AIP) was made and the patient was treated with intravenous Hematin for 7 days, dextrose solution IV and nutritional support. Her abdominal pain resolved promptly, however, her peripheral neuropathy with profound weakness, (distal motor dysfunction > proximal) was treated for weeks with physical and occupational therapy.

DISCUSSION: Acute intermittent porphyria (AIP) is a rare autosomal dominant metabolic disorder caused by a defect in the hepatic pathway of heme biosynthesis. It was first described by Stokvis in 1889. Inherited deficiency of porphobilinogen deaminase (PBGD) is the underlying cause of acute intermittent porphyria. Acute attacks are usually precipitated by stressors such as fasting, low carb diets, alcohol intake, infections and certain medications. Typical symptoms of AIP include intermittent abdominal pain and bloating, nausea, vomiting, constipation or diarrhea, urinary retention or incontinence, tachycardia, fever, sweating, tremor, and peripheral neuropathy. Our patient's abdominal pain had caused repeated admissions where cholecystitis, idiopathic gastroperesis, and IBS had been considered. We also thought of marijuana-induced hyperemesis syndrome and drug-seeking behavior. Once the patient developed quadriparesis and her screening tests returned positive for porphobilinogen the diagnosis of AIP was confirmed. The neuropathy of AIP is due to the metabolic effects on the peripheral as well as central sensory and motor nervous systems. Recovery from the neuropathy can take months to years. As mentioned, our patient's neuropathy showed very slow improvement during her 60 days of hospitalization though she could walk with help at the time of discharge. This case reminds internists to include porphyria in the differential of young patients with intermittent abdominal pain, especially if there is any associated neuropathy. Early diagnosis with avoidance of inciting factors,

as well as prompt management if complications occur, can prevent severe disability and suffering for affected patients.

ABDOMINAL PAIN AND NEUROPATHY Manisha Bhide. University of Colorado Denver, Aurora, CO. (Tracking ID #1633757)

LEARNING OBJECTIVE 1: Recognize and review Acute Intermittent Porphyria. This case illustrates a typical presentation of an uncommon illness.
CASE: 34 year female presented with severe epigastric pain since 2 days. This was associated with nausea, uncontrolled hypertension, headache, fatigue, anxiety, muscle weakness and paresthesia in hands and legs. Past Medical history was significant for Hypertension controlled with Labetalol 600 mg BID and Diltiazem 240 mg/day. She had a similar episode of abdominal pain 20 year ago, that was associated with confusion. Details of this attack were not available. Family History was negative. Exam revealed BP 170/99, pulse 90/min, age appropriate well oriented afebrile pt, in obvious distress due to abdominal pain. Epigastric tenderness was noted. Neurological evaluation noted 4/5 strength in biceps and hand muscles bilaterally and 5/5 in all other muscles. Reflexes were normal. Red urine with large blood on dipstick was noted, but no RBC on urine microscopy. Leukocyte esterase and nitrite was negative. Pt was given opiates to control pain. Higher dose anti-hypertensives were given along with hydration. A diagnostic test was done. This helped guide the further management. Differential diagnosis of her abdominal pain is broad and includes gastritis, cholecystitis, appendicitis, pancreatitis, pyelonephritis, diabetic Ketoacidosis, vasculitis, Sarcoidosis, Botulism, lead toxicity and Guillain-Barre syndrome can cause epigastric pain with neuropathy. Acute intermittent porphyria (AIP) should always be in differential diagnosis of acute abdominal pain and neuropathy. A high index of suspicion is needed to diagnose this life threatening illness and avoid inappropriate therapies that can exacerbate the attack. Pt had red urine and urine porphyrins (porphobilinogen and coproporphyrin) were high consistent with diagnosis of AIP. Pt was given IV dextrose 300–500 g as a 10 % solution, with monitoring of serum sodium, since that can cause hyponatremia. Pt also received Panhematin infusion 3–4 mg/kg. Her attack slowly resolved and pt was sent home with regular Panhematin infusions.
DISCUSSION: Porphyria is caused by deficiency of enzymes in heme synthesis. AIP is due to Porphobilinogen (PBG) deaminase deficiency. It is autosomal dominant condition with variable penetrance. Incidence is about 1 in 20,000. Alcohol, Barbiturates, starvation, infections and many medications acutely worsen the accumulation of porphyrins, precipitating an attack. The pain of acute abdomen is due to toxic neurological effect of the porphyrins. Acute abdomen is the most common presentation of AIP. Typical Neuropathy of AIP is proximal motor neuropathy. This happens in 10–40 % of AIP attacks. Neuropsychiatric symptoms are manifested by anxiety, hysteria and altered mental status. Paresis involving respiratory muscles and hands can occur. Autonomic neuropathy is manifested by ileus, tachycardia and hypertension. Hypothalamic involvement can cause SIADH and hyponatremia. Photosensitive dermatitis can occur, but is rare during acute attacks. Panhematin and dextrose both act by decreasing porphyrins- ALA and PBG. Frequent Hemin therapy will cause increase in ferritin and pt may need phlebotomy. Liver transplant can be considered in extreme cases and is curative. AIP increases risk for renal insufficiency and hepatocellular carcinoma and this needs long term monitoring.

ABSTRACT TITLE: "AN INTERESTING SUMMER EXPERIENCE" Mahmoud A. Abu Hazeem. Creighton University Medical Center, Omaha, NE. (Tracking ID #1642684)

LEARNING OBJECTIVE 1: To recognize hyperthermia as a cause for shock, NSTEMI and multiorgan failure.
CASE: 39 y/o Caucasian male was brought to the emergency room unconscious, found lying near a lake in bright sunlight on a hot summer day. On examination he was completely unresponsive, Vitals—Temperature-109.1. BP: 82/28, HR: 170, RR- 26. Heart, lung and abdomen examination was normal. Neurologic examination revealed hyporeflexia, meningeal signs were negative. He was intubated in the ER for airway protection. Relevant labs include- Anion gap- 18, Osmolar gap-normal, Lactate- 4.6, Bicarbonate- 19, Creatinine-2.0, AST- 130, ALT- 251, CPK- 3838, Urine drug screen was positive for THC, amphetamines and opiates, blood alcohol level- negative. CT head was negative. Aggressive passive and active cooling interventions via a femoral vein catheter, cold IV fluids, cooling blankets were initiated. He remained intubated in the ICU for 5 days during which his clinical course was complicated by mixed shock, disseminated intravascular coagulation, non ST elevation myocardial infarction, GI bleed, rhabdomyolysis and seizures. He was treated with pressors, antibiotics, anti epileptics, also received blood and cryoprecipitate. On day 6 following extubation he was back to his baseline and was discharged home after an outpatient referral to a drug rehabilitation program.
DISCUSSION: Heat related illnesses occur when there is an imbalance between heat production and heat loss, resulting in elevated body temperature. These syndromes can vary from minor heat illnesses namely heat cramps, heat rash to more significant heat exhaustion, heat syncope and the most severe and life threatening heat stroke. Heat stroke in addition to elevation in body temperature is characterized by mental status changes which usually occur when body temperatures are over 105.8 °F when the body often looses the ability to sweat. Symptoms range from nausea, weakness, lightheadedness, headache and muscle cramps to hallucinations, vertigo, syncope or coma. Classical heat stroke occurs more common in elderly or young children where there is elevation in ambient temperatures.. In addition to mental status changes patients with heat stroke present with severe dehydration, hypernatremia, elevated liver, renal function tests, coagulopathy and rhabdomyolysis which were all present in our patient. Imaging of the brain is important to rule out an intracerebral bleed. Management includes rapid cooling to achieve a core temperature goal of at least 102.2. In addition to the passive cooling techniques intravascular heat exchange catheter systems and hemodialysis with a cold dialysate were proven successful. Aspirin and acetaminophen have no effect on hyperthermia and are not recommended. Sedation with benzodiazepines and often paralytics may be necessary to eliminate any further heat production. Cooling alone improves cardiac function, hypotension and eliminates dysrhythmias. In conclusion heat stroke is highly fatal and early diagnosis and prompt resuscitation is the key in management.

ACQUIRED FACTOR VIII DEFICIENCY: A RARE BUT OVERLOOKED BLEEDING DIATHESIS Christopher Sankey; Radhika Shah. Yale New Haven Hospital, New Haven, CT. (Tracking ID #1633120)

LEARNING OBJECTIVE 1: Recognize Acquired Factor VIII Deficiency as a cause for bleeding diathesis.
CASE: An 81 year old woman presented with a 5 day history of worsening left upper extremity edema in the absence of trauma. Upon admission, vitals signs were stable and physical exam was remarkable for ecchymosis and non-pitting edema of the left mid-forearm extending proximally past the elbow. Upper extremity venous doppler was notable for a hematoma with no evidence of thrombosis. A bleeding diathesis was suggested by an elevated aPTT of 58 s. Subsequent hematologic testing demonstrated no correction of aPTT with mixing and a factor VIII inhibitor level of 105 Bethesda Units, the highest level ever recorded in our hospital. Collectively, these results suggested a diagnosis of acquired factor VIII deficiency. Over the next several days, the left arm edema progressed, with subsequent involvement of the right upper extremity, neck, and back. The patient was aggressively treated with activated factor VII, prednisone, and rituximab. No compartment syndrome developed in the upper extremity and she remained hemodynamically stable. After treatment, there was a reduction of her inhibitor titer to 38 Bethesda Units. Further investigation did not reveal a malignancy or autoimmune precipitant. She was ultimately discharged home with arrangements for outpatient hematology follow up.
DISCUSSION: This case describes a bleeding diathesis attributed to an acquired factor VIII inhibitor in an elderly patient. Acquired factor VIII

deficiency is a rare bleeding disorder (1 to 4 cases per million per year) caused by antibodies against factor VIII clotting factor. While uncommon, it is associated with significant morbidity and mortality in the setting of severe bleeding. The typical age distribution of the disorder is biphasic, with a minor peak at age 20–30 and a major peak at age 68–80, as in the case of our patient. Bleeding usually occurs in the skin, muscles, soft tissues and mucus membranes; this is in contrast to hereditary factor VIII deficiency, which usually presents with hemarthrosis. Diagnosis of factor VIII inhibitor in a patient with a suspected bleeding diathesis is suggested by a prolonged aPTT and a negative mixing study. Subsequently, factor VIII and factor VIII inhibitor levels can be established and used to guide therapy. Acquired factor VIII inhibitor is usually associated with other medical conditions, including malignancies and autoimmune disorders and should be investigated at the time of diagnosis. In 50 % of cases, no associated medical condition is found. In conclusion, acquired factor VIII inhibitor should be considered in the differential diagnosis of a bleeding diathesis, especially in the elderly population. This disorder can cause significant morbidity and mortality, requires immediate hematology evaluation, and can easily be screened with an initial aPTT.

ACUTE ASEPTIC MENINGITIS ASSOCIATED WITH HERPES ZOSTER REACTIVATION IN AN IMMUNOCOMPETENT ADULT Iani Patsias; David Paje. Henry Ford Hospital, Detroit, MI. (Tracking ID #1640203)

LEARNING OBJECTIVE 1: Recognize aseptic meningitis as a rare but potential complication of shingles in patients who develop acute neurologic symptoms.
LEARNING OBJECTIVE 2: Describe the appropriate management of aseptic meningitis due to varicella zoster.
CASE: A 61-year-old female with a history of hypertension and neurofibromatosis type 2 with chronic occipital headaches, presented to the emergency department with a 3-day course of frontal headache and a painful rash on her left flank. She described the headache as dull, different from her usual, 10/10 in intensity, worsened by sitting upright, unrelieved with NSAIDs, and associated with nausea, vomiting, photophobia and phonophobia. On admission, she was afebrile and had a blood pressure of 176/86 mmHg. Examination revealed a vesicular rash with erythematous base from the left paravertebral area extending anteriorly following the left T6-T7 dermatome. She was lethargic with poor attention span, but otherwise she had no other significant neurologic findings. Her blood tests were all within normal limits. MRI showed chronic findings related to neurofibromatosis type 2, including stable bilateral acoustic neuromas, mildly enlarging meningiomas involving the posterior falx and left anterior middle cranial fossa, and probable schwannoma or neurofibroma in the left Meckel's cave. CSF obtained through lumbar puncture revealed normal glucose, elevated protein and lactic acid, and leukocytosis (635/cu mm) with lymphocytosis (91 %). CSF cultures were negative, but PCR was positive for Varicella Zoster and Epstein-Barr virus. The patient was given Gancyclovir 2.5 mg/kg IV bid for 14 days, resulting in prompt resolution of symptoms.
DISCUSSION: Aseptic meningitis is a rare complication of herpes zoster reactivation. While subclinical meningeal irritation can occur in as much as 30–40 % of patients with shingles as manifested by CSF pleocytosis, only a rare few (0.5–2.5 %) develop full blown clinical aseptic meningitis. The underlying pathophysiology is unclear, particularly in immunocompetent patients. Symptoms may include high fever, severe headache, cervical rigidity, seizure, ataxia, hemiplegia, or even coma. These symptoms may occur within days after the appearance of the skin lesions. A high index of suspicion is important since some patients, such as in this case, may only complain of new onset headaches. CSF analysis is necessary for definitive diagnosis; PCR is widely used because of its speed and accuracy. Effective treatment requires intravenous administration of nucleoside analogues, such as acyclovir or ganciclovir, since oral regimens do not achieve sufficient drug levels. Patients usually recover fully without significant complications. While there are rare reports of Varicella Zoster meningitis in vaccinated patients, vaccination remains the most important strategy in the management of herpes zoster infections. Aseptic meningitis should be considered in patients with shingles who develop acute neurologic symptoms. Prompt recognition leads to appropriate management with intravenous antiviral agents.

ACUTE DIVERTICULITIS: NOT JUST FOR THE YOUNG AT HEART Komal D'Souza; Stacie Schmidt. Emory University School of Medicine, Atlanta, GA. (Tracking ID #1634945)

LEARNING OBJECTIVE 1: Recognize that diverticulitis can occur in individuals less than 40 years of age.
LEARNING OBJECTIVE 2: Identify the factors predicting a worse prognosis in young persons with diverticulitis.
CASE: A 26 year old male with no significant past medical history presented to the walk-in clinic of a large urban academic hospital reporting sub-acute left lower quadrant abdominal pain for 1 month. The pain was worsened with straining during defecation. There was associated hematuria at the end of his urinary stream, but he denied frank blood loss, fevers/chills, emesis, scrotal/perineal pain or penile discharge. The patient had presented to multiple ERs and was diagnosed with UTI/prostatitis for which he was discharged with antibiotics on several different occasions. He noted no change in symptoms despite completing the medications prescribed. On exam, he was obese, afebrile and tachycardic (HR 114). There was tenderness to palpation in the left lower quadrant, along with significant subcutaneous firmness extending from the superior iliac spine to the midline abdomen. No overlying cellulitis or abscesses were noted, andthere was no rebound or guarding. Labs from a recent ER visit were notable for a leukocytosis of 9.7 K/mol with a left shift, and a hemoglobin of 9.8 (microcytic). A urinalysis was notable for proteinuria, hematuria, pyuria, leukocyte esterase and nitrites. A urine culture was negative for micro-organisms. Given his prolonged symptoms and abdominal findings on exam, a CT of the abdomen/pelvis was ordered. It revealed perforated sigmoid diverticulitis with multi-loculated, multifocal pelvic abscesses and a colo-vesicular fistula. The patient was urgently admitted to the general surgery service, where he underwent exploratory laparotomy with sigmoid colectomy and end colostomy, small bowel resection, and ureteral stent placement. The pathology specimen from the original surgery revealed diverticuli with fibrosis.
DISCUSSION: Acute diverticulitis is a common disease in North America, with greater than 300,000 related hospital admissions in the U.S. in 2004. Diverticular disease is caused by herniation of the mucosa and sub-mucosa of the colonic walls. Diverticulitis arises from diverticulosis when inflammation in the diverticulum leads to perforation or abscess formation. The burden of disease mostly occurs in the elderly, with diverticulosis present in less than 10 % of individuals under 40, but between 50 % and 60 % in adults over the age of 80. There are some studies that indicate that diverticulitis may present more aggressively in younger patients, perhaps secondary to a delay in diagnosis in younger individuals simply because of their age. A retrospective chart review of patients age 40 and younger showed that obesity and fever upon presentation may be associated with a complicated course in younger patients with diverticulitis. This case highlights the importance of a broad differential for abdominal pain in all patients, regardless of their age. Just as older adults can present with acute appendicitis, younger individuals can present with acute diverticulitis. This patient had numerous encounters with physicians before the diagnosis was made. Despite having symptoms classic for diverticulitis—left lower quadrant abdominal pain and signs of systemic illness, the diagnosis was missed on several occasions. Although this diagnosis may not be common among younger adults, it must always be considered in patients who present with similar symptoms.

ACUTE EPIGLOTITIS AS THE PRESENTING FEATURE OF MULTIPLE MYELOMA Andreea Bujor; Eunice Y. Chuang; Indumathy Varadarajan. MAH, Cambridge, MA. (Tracking ID #1642553)

LEARNING OBJECTIVE 1: Recognize that bacterial infections, especially from encapsulated organisms such as Streptrococcal pneumonia, can be the initial presentation of Multiple Myeloma.

CASE: 72 year old gentleman with diabetes presented with 2 days of fever, progresive shortness of breath and sore throat. On admission, vitals where as follows: T 104.2 F, RR 40, oxygen saturation 92 % on 2 L NC. A laryngoscopy revealed redness and swelling of epiglottis with abundant secretions. Laboratory data showed WBC 7250/cmm, hemoglobin 9.8 g/dL, hematocrit 28 %, platelets 81000/cmm, creatine 0.9, albumin 3.7 g/dL, total protein 10.9 g/dL, calcium 10.2 mg/dL. A CT scan of the neck and chest showed diffuse thickening of the epiglottis with regional narrowing. Patient developed respiratory distress, requiring endotracheal intubation and he was admitted to the ICU. Blood cultures grew Streptococcus pneumoniae, treated with Ceftriaxone. Serum protein electrophoresis revealed an abnormal band measuring 3.6 g/dL in the gamma region. Serum immunofixation electrophoresis identified monoclonal IgG kappa. IgA and IgM levels were diminished. Bone marrow showed abnormal plasma cells consistent with plasma cells myeloma. Free kappa lambda was 120.35 and beta 2 microglobulin 4.91 mg/L. Therefore, new diagnosis of multiple myeloma was established. Patient made an uneventfull recovery from epiglottittis and was extubated 6 days later. He was discharged and started on Bortezomib, Lenalidomide and Dexamethasone as outpatient.
DISCUSSION: The most common presenting features of multiple myeloma (MM) are anemia, lytic lesions, hypercalcemia, and renal failure. MM is associated with a susceptibility to bacterial infections, specifically for encapsulated organisms. However, there are only scattered case reports of pneumococcemia at the time of diagnosis of multiple myeloma, and to the best of our knowledge this is the first report showing pneumococcal epiglottitis as the initial presentation of MM. Thus, this clinical scenario might be a red flag for underlying MM in patients without other risk factors for pneumococcal infection. Furthermore, adult cases of epiglotittis are rare, with an overall incidence of 0.98/100,000/year. In the majority of cases in adults, blood cultures are negative, but when positive the etiology is predominantly H. influenzae. Our case highlights the importance of a thorough evaluation in cases of adult pneumococcemia. Therefore, MM should be considered in a patient presenting with pneumococcal infection. Suspicion should be especially high when there is evidence of leukopenia, anemia, prior bacterial infections, renal failure, and indirect evidence of a paraproteinemia.

ACUTE GENERALIZED EXANTHEMATOUS PUSTULOSIS IN A LUPUS PATIENT RECENTLY INITIATING HYDROXYCHLOROQUINE. Mary E. Wiles; Robin Klein; Daniel D. Dressler; Francois Rollin. Emory, Atlanta, GA. (Tracking ID #1635453)

LEARNING OBJECTIVE 1: Promote awareness of dermatologic side effects, including Acute Generalized Exanthematous Pustulosis, that may be caused by hydroxychloroquine
LEARNING OBJECTIVE 2: Recognize the rash of Acute Generalized Exanthematous Pustulosis
CASE: A 36 year old female with systemic lupus erythematosus presented to the Emergency Room with rash and lip swelling. Two weeks prior, the patient started taking Hydroxychloroquine 400 mg daily and prednisone 20 mg daily. She developed swelling, redness, and pain on her lips, but attributed this to something she had eaten. She took Benadryl but the rash continued to spread over her face and neck over the next few days. The rash worsened prompting her to visit the ER twice, where she was treated with IV Benadryl and Bactrim. Her rash continued to worsen and she was admitted for further evaluation. Exam revealed diffuse, pruritic, pustular rash involving her oral mucosa, palms, and soles, with convalescence and superimposed impetigo in the malar region. She was afebrile. Posterior cervical lymphadenopathy and difficulty opening her mouth were noted. She had joint pain with active and passive movement of the knees, wrists, and ankles but no effusions. Laboratories revealed a leukocytosis with a WBC of 25.1×109/L with 8 % bands, 1 % eosinophils. Transaminases were normal. Treponemal IgG, HIV, and hepatitis serologies were negative. Blood cultures grew coagulase negative staph and wound cultures showed normal skin flora. Skin biopsy showed focal spongiosis along with edema in the papillary dermis and dermal scattered perivascular lymphohistiocytic infiltration with rate neutrophils and eosinophil's, which was consistent with Acute Generalized Exanthematous Pustulosis. The patient was seen by Dermatology and Rheumatology who felt like the rash was likely a reaction to Hydroxychloroquine. The patient was started on hydroxyzine, topical steroids, antibiotics for possible superimposed cellulitis, and prednisone. She had complete desquamation of her skin over the next few weeks and approximately 3 months after discharge experienced telogen effluvium.
DISCUSSION: Our patient presented with Acute Generalized Exanthematous Pustulosis, an acute progressive rash attributed to hydroxychloroquine therapy. The differential diagnosis of acute skin reactions is broad and includes viral infection, drug reactions, and autoimmune diseases. Drug reactions are a common cause of skin eruptions or rashes and common offenders include sulfa drugs, antibiotics, and anti-inflammatory medications. Drug reactions may range from mild skin eruptions to severe cases including Stevens-Johnson syndrome, toxic epidermal necrolysis, hypersensitivity vasculitis, DRESS syndrome, and exanthematous pustulosis. Acute Generalized Exanthematous Pustulosis is an acute rapidly progressive rash—a reaction characterized by sudden eruption of numerous small pustules arising within large areas of edematous erythema, which usually begins on the face—attributed to HCQ therapy in this patient. 90 % of cases are related to medication administration and it appears, on average, 5 days following medication administration. Presentation may be profound, accompanied by fever, hepatitis and eosinophilia in some cases. AGEP is usually self-limited and resolves with removal of the offending agent. Incidence of AGEP is 1–5 cases/million per year and there are less than 25 reported cased in the literature of AGEP induced by HCQ. Mortality approaches 5 % so caution is warranted.

ACUTE HYPOXIA AND FEVER: INFECTION UNTIL PROVEN OTHERWISE? Elizabeth Snapinn; Alda Maria Gonzaga. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1638815)

LEARNING OBJECTIVE 1: To recognize the importance of avoiding premature closure of the differential diagnosis
LEARNING OBJECTIVE 2: To recognize Antisynthetase syndrome as a cause of interstitial lung disease (ILD)
CASE: A 45 year old healthy woman presented with fevers and 22 lb. weight loss. She was in her usual state of health until 2 months prior to presentation when she was treated for an eyelid rash concerning for contact dermatitis, and soon began experiencing weight loss. A week prior to presentation, she began to have daily fevers, cough and dyspnea. She presented to her PCP, was found to have an opacity on chest x-ray, and was treated for community acquired pneumonia as an outpatient. When she did not improve and continued to have daily fevers she was admitted for further evaluation. In the hospital, a chest CT showed atelectasis and infectious workup including blood and urine cultures, EBV, CMV and HIV serologies was negative. She was found to have an elevated ESR and CRP, and so an ANA, anti-phospholipid antibodies, anti-dsDNA and ANCA were drawn and all were found to be negative. She improved over several days and was discharged, however over the next 3 weeks she had a significant progression of her dyspnea with ongoing daily fevers. She presented to the ED and was found to be hypoxic to a pOx of 88 % with activity, to have anterior dry crackles on exam, and to have new basilar opacities on chest x-ray. Further history was significant for contact with chickens and rabbits as well as recent travel to the Caribbean. Repeat chest CT showed bibasilar ground glass opacities. An expanded infectious differential was considered, but blood cultures and BAL for viruses, fungus, AFB and Nocardia were negative. VATS was performed, and the biopsy showed acute organizing pneumonia without specific cause. Pulmonary function tests (PFTs) showed a restrictive pattern with loss of diffusing capacity. Further rheumatologic workup was then pursued and was significant for PL-12 antibodies consistent with antisynthestase syndrome. She was treated with a course of oral steroids with resolution of her dyspnea and improvement in her PFTs over the next several months.
DISCUSSION: Antisynthetase syndrome is a sub-group of inflammatory muscle disease characterized by the presence of one of several antisynthetase antibodies and comprises 20–40 % of cases of dermatomyositis and polymyositis. Interstitial lung disease is a common feature of this

syndrome and can present without symptoms of myositis, especially when the antibodies are to PL-12. Though this syndrome is quite rare, several studies have found that in populations of patients with idiopathic interstitial lung disease and no other signs of connective tissue disease, 6–8 % have antisynthetase syndrome. Thus, when considering a patient who presents with interstitial lung disease and no obvious cause, antisynthetase syndrome should be a consideration. The case also highlights the importance of preventing premature closure. In this case, the patient's unusual exposures led to prolonged exploration of the infectious pathway, and her previously negative rheumatologic workup led away from rheumatologic causes. The history of an eyelid rash could have been helpful in making the diagnosis, but only retrospectively was this felt to be a heliotrope rash. The focus on the patient's infectious exposures without consideration of all of her presenting symptoms led to a delay in diagnosis and more testing than required.

ACUTE INTERMITTENT PORPHYRIA ATTACK BY A 'SAFE' MEDICATION Andrew Goins[1]; Jacob Lepard[2]; Gregory Nieckula[1]; Maria Tudor[1]. [1]University of Tennessee College of Medicine Chattanooga, Chattanooga, TN; [2]University of Tennessee Health Sciences Center, Memphis, TN. (Tracking ID #1623969)

LEARNING OBJECTIVE 1: Maintain a high index of suspicion of possible drug interactions
LEARNING OBJECTIVE 2: Recognize repeated presentations may represent undiagnosed disease
CASE: A 29 year-old female with past medical history significant for multiple medical visits for abdominal pain, bipolar disorder and endometriosis presented to the emergency department complaining of difficulty ambulating and paresthesias in her hands and arms. Four weeks earlier, the patient had been placed on an increased dose of duloxetine. Her family history was positive for porphyria. Neurologic exam revealed generalized weakness with 1/5 strength in the upper extremities and 2/5 in the lower extremities, intact cranial nerves, no sensory deficits, and absent bilateral patellar, biceps, and brachioradialis reflexes. The patient recalled having had recent outpatient studies at an outlying facility for evaluation of weakness. They included an electromyelogram and magnetic resonance imaging of the cervical spine, as well as Hepatitis A, B and C antibodies, free thyroxine, thyroid stimulating hormone, glycosylated hemoglobin, human immunodeficiency virus, C-reactive protein, Lyme titers, serum protein electrophoresis, anti-neural antibodies, and a myasthenia gravis panel. The day after admission, the results became available: they were within normal limits—with exception of the electromyelogram, which showed a pure motor neuropathy. It was considered that she may have an attack of acute intermittent porphyria (AIP)—which could explain her symptoms and neurological findings. Urine porphobilinogen and erythrocyte porphobilinogen deaminase (ePBG) were ordered. Intravenous panhematin was started; Neurology and Hematology consults were requested. The patient experienced a rapid deterioration in her condition, including delirium and respiratory muscle weakness, requiring intubation and transfer to intensive care. Shortly thereafter, AIP was confirmed with a urinary porphobilinogen level of 72 mg/L (0–2 mg/L). She recovered slowly with supportive care and was discharged.
DISCUSSION: The porphyrias are caused by partial deficiencies of enzymes used in the synthesis of heme. Heme is required for many cell processes, one of which is the production of cytochrome P450 (CYP) enzymes. Many medications up-regulate the CYP system, which requires de novo synthesis of heme. The enzyme deficiency, coupled with increased pathway demand, leads to a high concentration of intermediate components (porphyrins) of the heme production pathway. It is the buildup of this intermediate that causes the toxicity seen in acute intermittent porphyria, manifested by abdominal pain, vomiting, constipation, and psychiatric symptoms. Drug reactions are sometimes occult and often unanticipated. In this particular case, the chronology of events reveals a dramatic adverse drug reaction. A literature review reveals that duloxetine is listed as probably not porphyrinogenic. A single case report showing a causal association was found, but was brought into question because the symptoms could have been explained as side effects of duloxetine and ePBG levels were not measured. Based on the Naranjo probability score of "probable likelihood", timing of events, and unclear safety of duloxetine in porphyria, this patient likely experienced a porphyric crisis induced by duloxetine. To our knowledge, this is the first report with supporting lab data to suggest a possible association between duloxetine and AIP.

ACUTE KIDNEY INJURY IN AN HIV-INFECTED PATIENT: A COMPLEX CLINICAL SCENARIO Monique Duwell; Sara Wikstrom. The George Washington University, Washington, DC. (Tracking ID #1642471)

LEARNING OBJECTIVE 1: Recognize the multiple potential etiologies of renal failure unique to the HIV-infected population
CASE: The patient is a 61 year-old African-American male who presented with 4 weeks of progressively worsening shortness of breath, leg swelling and fatigue. Medical history was significant for HIV (CD4 97) diagnosed 6 months previously. Medications were emtricitabine, tenofovir, lopinavir, ritonavir, and trimethoprim/sulfamethoxazole (TMP-SMX). Physical exam was notable for crackles of the lung bases, and pitting edema of the lower extremities. Initial labs revealed acute kidney injury (creatinine 11.2 mg/d), as well as metabolic acidosis (CO2 10.8 mmol/L). Urinalysis showed glucosuria (200 mg/dl) and proteinuria (100 mg/dl) and granular casts were visualized. Ultrasound showed echogenic kidneys and left hydronephrosis. CT revealed a soft tissue mass of the left renal hilum and ureter, shown to be 8×5 cm by MRI. A left ureteral stent was placed, but the patient's renal function failed to improve, and he initiated hemodialysis. Percutaneous biopsy of the renal/ureteral lesion showed atypical lymphoid proliferation suggestive of plasma cell neoplasm, but was insufficient for diagnosis. Bone marrow biopsy then confirmed plasmablastic lymphoma. The patient's serum kappa/lambda ratio (233), was consistent with kappa light chain gammopathy. Additionally, his uric acid level rose to 20.1 mg/dL, necessitating rasburicase and allopurinol. The patient tolerated one round of chemotherapy for the plasmablastic lymphoma and was discharged to a rehabilitation facility with plan for continuation of hemodialysis and chemotherapy.
DISCUSSION: HIV-infected patients are at risk for a variety of unique causes of acute kidney injury (AKI), in addition to those that impact the general population. As this case demonstrates, these causes may co-occur in the HIV-infected patient with AKI, creating a complicated clinical picture. First, HIV antiretroviral therapy can causes nephrotoxicity. The patient's initial metabolic acidosis and glucosuria was suggestive of Fanconi Syndrome, which can be caused by tenofovir. The evidence of acute tubular necrosis seen on urine microscopy was also consistent with tenofovir nephrotoxicity. In addition, medications given to prevent opportunistic infections in patients with HIV, such as the SMX-TMP, are also potentially nephrotoxic. Second, HIV-associated nephropathy (HIVAN) may also have been contributing to this patient's renal failure. The patient's African descent and advanced HIV disease placed him at higher risk for development of HIVAN. However, renal biopsy, required for definitive diagnosis, was not completed. Third, the patient's lymphoma also likely contributed to his renal failure. Plasmablastic lymphoma is a rare variant of diffuse large B-cell lymphoma, which is more common in HIV-infected patients. Lymphoma infiltration into the kidney may have contributed to renal failure. Additionally, light chain gammopathy and the elevated uric acid, both associated with the patient's lymphoma, may have caused light chain or urate nephropathy. In summary, the internist must recognize the range of unique etiologies of AKI in patients with HIV. As this case shows, these causes may include nephrotoxicity associated with medications, such as tenofovir; HIV-associated nephropathy; and complications from rare malignancies that disproportionately affect patients with HIV, such as plasmablastic lymphoma.

ACUTE CHEST SYNDROME IN PREGNANCY-DOUBLE TROUBLE Ankit Madan; Pooja Sethi; Kavita Tripathi. University of Alabama at Birmingham,Montgomery, Montgomery, AL. (Tracking ID #1642869)

LEARNING OBJECTIVE 1: Recognize acute chest syndrome as an important cause of morbidity and mortality in pregnant sickle cell patients.

LEARNING OBJECTIVE 2: Identify that early recognition and aggressive management is very important to prevent adverse maternal and fetal outcomes.
CASE: A 23 year old African-American female with past medical history of sickle cell disease presented with chief complaints of bilateral upper extremity and back pain. She was 28 weeks pregnant. These symptoms were recurrent and she had numerous admissions for sickle cell crises in the last 4 months. She denied any other symptoms. She was on folic acid but had stopped taking hydroxyurea 9 months back. Her heart rate was 127 beats per minute. Other vitals were stable. Physical examination was within normal limits. Pertinent labs include white cell count 18000, hemoglobin 8.4, and hematocrit 23. Hemoglobin electrophoresis revealed hemoglobin S 84 % and hemoglobin A 2.8 %. Chest x-ray was clear On day 3, patient developed shortness of breath, cough productive of greenish phlegm and mid-sternal chest pain. Oxygen saturation was 92 % on 4 l by nasal mask. Patient was using accessary muscles of respiration and had bibasilar crackles. Chest x-ray and CT scan of chest revealed right middle and lower lobe infiltrates consistent with consolidation. Patient had elective cesarean section the same day and received full red-cell exchange transfusion and was placed on piperacillin-tazobactam. She improved symptomatically. Post-transfusion hemoglobin S was 22 %. Male infant was born 28 weeks preterm and was admitted to neonatal intensive care unit. His respiratory and hemodynamic status was stable.
DISCUSSION: Acute chest syndrome is defined as new pulmonary infiltrate on chest x-ray consistent with consolidation involving at least one complete lung segment accompanied by chest pain, fever, tachypnea, wheezing, cough or hypoxemia. Three primary mechanisms include pneumonia or systemic infection, fat embolism and direct pulmonary infarction from Hemoglobin-S containing erythrocytes. Higher incidence of acute chest syndrome is reported in pregnant women with painful episodes. Higher incidence of sickle cell crises can be expected as use of hydroxyurea is contraindicated in pregnancy. Maternal adverse outcome includes preterm labor, increased likelihood of cesarean delivery, pre-eclampsia, eclampsia and placental abruption. Adverse fetal outcomes arise from complications of prematurity like respiratory distress syndrome, necrotizing enterocolitis, patent ductus arteriosus, intraventricular hemorrhage, apnea and retinopathy of prematurity. Moderate to severe episode which our patient had is defined as involvement of at least two or more lobes along with decreased oxygen saturation require full red-cell exchange transfusion. Goal is to reduce hemoglobin S to less than 30 % while keeping hemoglobin to less than 10 gm/dl. Full exchange transfusion appears to be more iron-neutral than partial exchange transfusion. Exchange transfusion can be performed manually or by apheresis machine. Third generation cephalosporin and a macrolide can be safely used in pregnancy to cover for atypical bacteria as well as streptococcus pneumonia and hemophilus influenzae. Prognosis depends on timing of institution of therapy.

ACUTE HEPATIC FAILURE IN ADULT-ONSET STILL'S DISEASE - A RARE MANIFESTATION: DRAMATIC RESPONSE TO PULSE METHYLPREDNISOLONE THERAPY Nalini Valluru; Michael Windham; Venkata S. Tammana; Eyasu Mekonen. Howard University Hospital, Washington, DC. (Tracking ID #1645499)

LEARNING OBJECTIVE 1: Manage potentially fatal hepatic failure in the setting of Adult Onset Still's Disease
CASE: We present a case of 22-year-old woman with no significant medical history who initially came with fever, arthralgias, myalgias and sore throat. On examination she was noted to have maculopapular skin rash, cervical and axillary lymphadenopathy. Laboratory data showed elevated transaminases, markedly elevated ferritin levels and negative HIV ELISA test. Serologic markers for rheumatic diseases were negative. Bone marrow and excisional lymph node biopsies ruled out lymphoproliferative disorders. She was then diagnosed with Adult Onset Still's Disease based on Yamaguchi diagnostic criteria and was started on prednisone. Three months later, while being on tapering dose of steroid, she presented with fever, arthritis and abdominal pain. She denied history of tobacco, alcohol or recreational drug abuse. Physical examination was significant for fever of 101.6 F, conjunctival pallor, icteric sclera, cervical lymphadenopathy, right upper quadrant tenderness with negative murphy's sign. Laboratory data revealed elevated bilirubin, markedly elevated transaminases, normocytic anemia and abnormal coagulation panel. Serum ferritin levels were markedly elevated. Ultrasound abdomen was unremarkable. Extensive workup excluded possible causes of liver failure including drug-induced liver injury, viral hepatitis, autoimmune hepatitis, hereditary disorders and other collagen diseases. She was promptly started on intravenous methylprednisolone pulse therapy with remarkable improvement in her symptoms and normalization of liver enzymes.
DISCUSSION: Adult-Onset Still's Disease (AOSD) is a rare systemic inflammatory disorder of unknown etiology, first described by Eric Bywaters in 1971. It is characterized by daily fevers of at least 39 F arthralgias or arthritis, evanescent, salmon-colored, nonpruritic, macular or maculopapular rash, and leukocytosis >10,000 cells/mm3. Other common symptoms include sore throat, myalgia, lymphadenopathy, splenomegaly, and abdominal pain. Markedly elevated serum ferritin levels have been frequently seen. AOSD is a clinical diagnosis and several diagnostic criteria have been proposed of which Yamaguchi criteria is widely accepted. Hepatic involvement is frequently observed in the course of AOSD. Abnormal liver function tests is seen in 76 % and about 44 % of patients have hepatomegaly. Severe hepatitis and hepatic failure are rare complications of AOSD. Liver dysfunction and fulminant hepatic failure may occur at the time of AOSD diagnosis, during the corticosteroid taper, or many years after symptom control. It has been shown that circulating Interleukin-18 is markedly increased in patients with fulminant hepatic failure or acute hepatitis. Principal treatment options for AOSD include NSAIDs, glucocorticoids, disease modifying anti rheumatic drugs (DMARDs), biologic agents. Review of the literature showed that pulse steroid therapy is efficacious in treating acute systemic flares of the disease such as severe hepatic involvement, pleuritis, cardiac tamponade, disseminated intravascular coagulation and other complications. Acute liver failure is a rare complication of AOSD. Exclusion of all potential causes of liver failure is essential prior to making the diagnosis of AOSD-associated liver injury. Prompt diagnosis and initiation of right therapy helps in recovery from serious liver injury, preventing the need for urgent liver transplantation.

ACUTE ISCHEMIC MYOCARDIAL INJURY FOLLOWING ADMINISTRATION OF DEFINITY CONTRAST IN A PATIENT WITHOUT CORONARY ARTERY DISEASE Katherine Fyall; Shadi Ayyoub; Lisa Staton. University of Tennessee College of Medicine Chattanooga, Chattanooga, TN. (Tracking ID #1623771)

LEARNING OBJECTIVE 1: Report an undocumented adverse event following administration of the Definity echocardiography contrast agent
CASE: A 57 year-old white female with a history of postpartum cardiomyopathy diagnosed 11 years prior presented to the emergency department with progressive exertional dyspnea, orthopnea, and peripheral edema for the previous few days. She had neither seen a cardiologist nor had symptoms for many years. The patient was admitted with a diagnosis of acute congestive heart failure and her symptoms resolved quickly with diuretic therapy. Physical examination was only remarkable for trace peripheral edema. Other than a very mildly elevated brain natriuretic peptide (BNP) at 158 pg/ml, her initial laboratory tests including 3 sets of cardiac enzymes were within normal limits. Electrocardiogram (EKG) showed normal sinus rhythm with a previously documented left bundle branch block. Chest x-ray revealed cardiomegaly with pulmonary congestion. An echocardiogram was ordered to evaluate her heart failure, and Definity was used during the study to improve the diagnostic yield due to her large body habitus Immediately after Definity injection, the patient started having a burning sensation at the site of the injection followed by burning in the chest and shortness of breath. She was able to complete the test, but the pain intensified and was severe before subsiding after approximately 30 min. ECG at the time of the event did not reveal any ischemic changes, but troponin I rose to peak at 10.68 ng/ml 6 h later. The

echocardiogram showed a left ventricular ejection fraction of 35 %, grade II diastolic dysfunction, and moderate mitral regurgitation. Cardiac catheterization done the following morning was negative for coronary artery disease (CAD). She was observed throughout the day without further incident and was discharged to follow up with her cardiologist.
DISCUSSION: Definity is a contrast agent used to improve the diagnostic yield of echocardiography. The agent has survived a battery of clinical investigations after the Food and Drug Administration (FDA) placed a black box warning on the label, declaring it contraindicated for patients with cardiopulmonary disease such as myocardial infarction and pulmonary hypertension. The FDA subsequently recalled the contraindications after further exploration yielded a favorable risk-safety profile. Studies continue to be published that demonstrate the safety and utility of the agent. In the articles reviewed, we did not identify any cases of Definity-related acute coronary syndrome or myocardial injury in a patient without CAD. The immediacy of the reaction and lack of catheterization findings support our theory that the Definity-induced vasospasm was significant enough to cause myocardial injury. Although Definity is a crucial tool for the evaluation of patients with functional heart disease, it is important to recognize and anticipate occasional adverse reactions. Other serious reactions include anaphylactoid reactions, respiratory distress, and cardiac arrhythmias. We are reporting this case of probable Definity-induced vasospasm as an adverse event so that other clinicians are aware and prepared for such events. We support the continued observation of the FDA's recommendation for a 30-minute monitoring period after administration of the agent.

ACUTE KIDNEY INJURY DUE TO OXALATE NEPHROPATHY Sarah Apgar. Yale-New Haven Hospital, New Haven, CT. (Tracking ID #1641916)

LEARNING OBJECTIVE 1: Recognize the association of Roux-en-Y gastric bypass with oxalate nephropathy, a rare cause of acute kidney injury.
CASE: A 52-year-old man with a history of obesity with Roux-en-Y gastric bypass (RYGB) in 2002, chronic back pain, diabetes, hypertension and benign prostatic hypertrophy presented with 1 day of alteration in mental status and tremors. In the preceding 4 months, he had two similar admissions for altered mental status secondary to acute kidney injury (AKI) and poor clearance of narcotics. He was on multiple medications including gabapentin, topiramate, OxyContin and benazpril. Physical examination demonstrated a lethargic male with intermittent myoclonic jerks. After foley catheter placement, 350 cc of urine output was recorded. Blood work revealed a creatinine of 7.0 mg/dL (2.2 mg/dL 1 week prior), potassium 5.7 mmol/L, and bicarbonate 11.3 mmol/L. Urinalysis showed 1+ protein with many white blood cells and occasional granular casts on microscopic analysis. No evidence of hydronephrosis was found on renal ultrasound. The patient was admitted and a naloxone drip and intravenous fluids were administered. Despite treatment, his creatinine continued to rise and myoclonic jerks persisted. Hemodialysis was initiated for treatment of possible gabapentin toxicity. Renal biopsy was consistent with oxalate nephropathy. Subsequent interview revealed that the patient was eating one pound of almonds per week. Creatinine stabilized and he was discharged off dialysis and on a low oxalate diet. Subsequent outpatient evaluation showed hyperoxaluria. Serum creatinine 7 months later is stable at 1.8 mg/dL.
DISCUSSION: Oxalate nephropathy is characterized by tubular crystalline deposits of calcium oxalate that result in tubular injury, interstitial fibrosis and progressive renal insufficiency. Etiologies include primary (hereditary) hyperoxaluria, ingestion of substances which are metabolized to oxalate, such as ethelyene glycol or high doses of vitamin C, and enteric hyperoxaluria. Enteric hyperoxaluria occurs with inflammatory bowel disease, pancreatic insufficiency or gastric bypass. First described in patients who underwent jejunoileal bypass in the 1970s, oxalate nephropathy has also been documented as a complication of RYGB. The mechanism of hyperoxaluira after RYGB is uncertain but presumed to be related to fat malabsorption. Normally, calcium binds oxalate in the colonic lumen and is excreted in the feces. In the setting of fat malabsorption, free fatty acids bind calcium, resulting in increased free oxalate levels. Free fatty acids also increase the permeability of the colon to oxalate. Oxalate nephropathy can occur anywhere from 4 to 96 months after RYGB. Most cases lead to progressive renal failure requiring chronic dialysis. Treatment includes a low oxalate diet and calcium supplementation to help bind intestinal oxalate.

ACUTE LEUKEMIC PERICARDITIS IN A CHALLENGING CLINICAL SITUATION: A CASE REPORT Arshad A. Javed[2,1]; Muhammad A. Shahzad[2,1]; Sagar Mallikethi Lepakshi Reddy[3,1]. [1]Detroit Medical Center, Detroit, MI; [2]WSU/DMC, Detroit, MI; [3]WSU/DMC, Detroit, MI. (Tracking ID #1625991)

LEARNING OBJECTIVE 1: Assess your patient daily anticipating new physical findings leading to specific diagnosis.
LEARNING OBJECTIVE 2: Recognize patient with acute leukemic pericarditis when other possible causes of pericarditis are also present.
CASE: A 71-year-old African American male with history of AML (FLT3−, NPM1+) in remission for 2 years, and chronic obstructive pulmonary disease presented to our hospital with gradually worsening dyspnea, fatigue and weakness for 2 days. Few hours after presentation, patient had an episode of massive hematemesis followed by abdominal pain and severe respiratory distress that necessitated endotracheal intubation. Laboratory examination was remarkable for white blood cell count of 221,000/μL, hemoglobin of 2.3 g/dL and platelet count of 19,000/μL. There was neutropenia and peripheral blood smear was full of blast cells. His creatinine increased gradually from baseline of 1.5 to 3.9 mg/dL and BUN was elevated at 60 mg/dL. On the third day of admission, physical examination demonstrated characteristic pericardial friction rub with three components. Electrocardiogram showed low voltage complexes. Echocardiography showed moderate pericardial effusion without signs of constrictive pericarditis or pericardial tamponade. Family members were explained poor prognosis and they opted for no aggressive treatment. Patient eventually died after 6 days of hospitalization. His family declined autopsy.
DISCUSSION: Leukemic infiltration of the pericardium is extremely rare but still exists. This case describes the clinical characteristics of rapidly progressive leukemic pericarditis in a patient with AML in relapse. Cytarabine induced pericarditis mostly occurs within hours to days of initiation of chemotherapy and hence was unlikely cause in our patient. This patient developed mild uremia secondary to tumor lysis syndrome, which rarely causes pericarditis within 2 days. Hence, pericarditis and pericardial effusion was attributed to relapse of AML. Pericardial effusion has little impact on outcome of patients with leukemia. Pericarditis in leukemia can be from hemorrhage, infection or rarely direct infiltration by leukemic cells. Mostly these effusions are trivial or minimal and only 5–7 % are moderate to large. Left and right heart catheterization shows equalization of diastolic pressures in right and left ventricles with dynamic respiratory variations. But, definitive diagnosis of leukemic pericarditis is only possible after pericardial biopsy. Clinicians need to be aware of such rare diagnosis, which helps in avoiding unnecessary therapeutic modalities such as hemodialysis.

ACUTE URINARY TRACT INFECTION INDUCED PULMONARY EMBOLISM Masato Yoshihara[1]; Naomi Otowa[2]; Hiroshi Miyake[3]; Mitsunori Iwase[1]. [1]Toyota Memorial Hospital, Toyota, Japan; [2]Toyota Memorial Hospital, Toyota, Japan; [3]Toyota Memorial Hospital, Toyota, Japan. (Tracking ID #1630379)

LEARNING OBJECTIVE 1: Note that pulmonary embolism (PE) presents with non-specific symptoms.
LEARNING OBJECTIVE 2: Recognize acute infection as a risk factor for PE.
CASE: A 75-year-old woman with no significant past medical history presented to the emergency department with an episode of syncope after voiding. Five days prior to admission, right-sided flank pain had

developed. The following day, she began to feel short of breath which was exacerbated when lying supine at night. Two days prior to admission, the patient visited her primary care physician and was diagnosed as having urinary tract infection with hydronephrosis in the right kidney. Treatment with cefcapen was initiated. On the day of admission, the patient transiently lost her consciousness and fell down after urination. On arrival, the patient reported dyspnea but denied having chest pain, nausea, diarrhea, or tarry stool. Throughout the course of illness, the patient was afebrile. She took no regular medications and had no known allergies. She did not smoke and denied regular use of alcohol. Her family history was negative for cardiovascular disease. On examination, the temperature was 35.5 °C, the systolic blood pressure was 90 mmHg, the heart rate was 110 beats per minute, the respiratory rate was 30 breaths per minute, and the oxygen saturation was 80 % while breathing ambient air. The heart and lung examinations were normal. Aside from the right-sided hydronephrosis, plain chest-and-abdominal computed tomography (CT) was normal. An echocardiogram revealed normal contractility of left ventricle, but tricuspid valve regurgitation was noted with mild right ventricle dilatation. The estimated atrio-ventricular pressure gradient was 60 mmHg. Contrast-enhanced CT revealed bilateral pulmonary emboli. No evidence of emboli or thrombi was revealed elsewhere in the body. The patient was diagnosed with submassive PE and anticoagulant therapy was administered along with supplemental oxygen. On the 6th day of admission, involution of the emboli was confirmed by contrast-enhanced CT. On the 8th day, the patient became independent of supplemental oxygen. On the 14th day of admission, the patient was discharged. Screening tests for coagulopathies, including protein-C deficiency, were negative.

DISCUSSION: Prompt recognition and initiation of therapy is essential to improve the outcome in patients with pulmonary embolism (PE). Its presenting symptoms and signs, however, are variable and often non-specific. Classical risk factors for PE include immobilization, recent surgery, and malignancy. On the other hand, acute infectious disease is a less well-known risk factor for PE. Liam Smeeth et al. found that acute infection transiently increase the risk for PE. Especially in patients with urinary tract infection (UTI), the incidence ratio for PE is 2.11 in the first 2 weeks after the onset of symptoms. Venous thrombosis has three major precipitants; venous stasis, increased coagulability, and vascular damage. Infection could affect all of these via physical damage to the vessel walls and subsequent endothelial activation. In our case, the patient did not have the typical risk factors for PE, thus UTI could have contributed to the development of PE. Clinicians must always keep in mind that PE may coexist in patients with an acute infectious disease.

AGRANULOCYTOSIS DUE TO UNNECESSARY TRIMETHOPRIM-SULFAMETHOXAZOLE THERAPY Pierre E. Blais[1]; Priti Dangayach[1]; Curtiss Moore[1]; Himabindu Kadiyala[2,1]. [1]Baylor College of Medicine, Houston, TX; [2]Michael E DeBakey VA Medical Center, Houston, TX. (Tracking ID #1642466)

LEARNING OBJECTIVE 1: 1. Recognize agranulocytosis as an adverse effect of trimethoprim-sulfamethoxazole, and remember to weigh the benefits versus risks in the administration of all medications.

LEARNING OBJECTIVE 2: 2. Develop an approach to the work-up of new onset agranulocytosis.

CASE: A 68-year-old Hispanic male smoker with no significant medical history presented to his primary care doctor with pharyngitis, dysphagia, odynophagia, and hoarseness. One week prior to the development of his symptoms, he had completed a 5 day course of trimethoprim-sulfamethoxazole following an incision and drainage of a 2×2 cm furuncle on his back. He denied any weight loss, night sweats, fevers, or chills. On presentation he was afebrile with a heart rate of 84 and blood pressure 138/80. Profuse thrush was noted on his tongue, soft palate, and posterior pharynx. ENT was consulted and performed a direct laryngoscopy which revealed extention of thrush to the vallecula, epiglottis, arytenoids, and false vocal cords. His initial white blood count was 1,600 cells/cmm with an absolute neutrophil count of zero. One year ago his blood counts were in normal range. Peripheral blood smear demonstrated no atypical leukocytes or leukoblasts. Serologies for HSV and CMV were negative. HIV, hepatitis panel, blood cultures, ANA were negative. B12 and folate levels were within normal limtis. His acquired agranulocytosis was determined to be secondary to trimethoprim-sulfamethoxazole use. His hospital course proceeded favorably. Cell counts rose briskly and normalized by day four of admission. Thrush and hoarseness resolved, and his counts continued to be normal on follow-up studies 2 weeks after discharge. He was advised to avoid trimethoprim-sulfamethoxazole in the future.

DISCUSSION: Trimethoprim-sulfamethoxazole has been found to have potential to cause a decrease in any of the hematologic cell lines, but isolated agranulocytosis is very uncommon. The literature proffer a rate of 1.2 cases of agranulocytosis per million in patients treated with this medication. Recovery of neutrophil counts usually begins within 1–3 weeks after stopping the offending agent. Outside the setting of hematologic malignancy or recent chemotherapy, the differential diagnosis for acquired, symptomatic agranulocytosis includes drug-induced, infectious, and primary immune etiologies. Initial work-up of agranulocytosis should include a peripheral blood smear to rule out atypical leukocytes and evidence of autoimmune sequelae. Conditions that cause immunosuppression such as HIV should also be investigated. Bone marrow biopsy should be reserved for cases of neutropenia prolonged beyond 1–3 weeks. In this case, trimethoprim-sulfamethoxazole was administered following incision and drainage of a superficial abscess. Antibiotic use for this purpose has been unequivocally proven to be unnecessary in the literature. While empiric antibiotic therapy often has a role in evidence-based clinical practice, this case provides another example in which the risks have proven to far exceed the benefits.

ALCOHOL WITHDRAWAL AFTER WEEKS OF ABSTINENCE: AN UNEXPECTED COMPLICATION Juliana Yang[1]; Amber Galarowicz[1]; Sarah Nickoloff[1,2]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]Zablocki VA Medical Center, Milwaukee, WI. (Tracking ID #1596686)

LEARNING OBJECTIVE 1: Recognize alcohol withdrawal and delirium tremens in patients weeks after last ingestion.

CASE: A 58 year old male with a past medical history significant for alcohol dependence and type 2 diabetes was admitted to the VA for right third toe osteomyelitis. He reported drinking six to eight beers per day and his last drink was the night before admission. Urine drug screen was negative for illicit drugs, and he had no symptoms of alcohol withdrawal during initial admission. He was started on culture directed therapy, underwent toe amputation, and was subsequently transferred to a subacute unit. On hospital day 17, 16 days after his last alcohol ingestion, the patient became acutely confused and started to experience vivid hallucinations. He was transferred to the acute hospital unit. Minutes after transfer, the patient had a witnessed tonic-clonic seizure. He was given lorazepam and transferred to the intensive care unit (ICU). His condition deteriorated, and he developed metabolic acidosis and respiratory distress. Due to high lorazepam requirement in the setting of respiratory compromise he was placed on noninvasive positive pressure ventilation and started on lorazepam infusion. His clinical status then stabilized. Series of studies were done to investigate alternate causes of seizure, including images studies, transthoracic echocardiogram, infectious, metabolic and nutritional deficiency workups. Antibiotics were reviewed with pharmacy and infectious disease consultants. The workup was unremarkable, and it was determined that delayed delirium tremens was the cause of his seizure.

DISCUSSION: Mortality caused by excessive alcohol consumption shows no signs of abatement. The World Health Organization attributes an estimated 2.5 millions deaths worldwide per year to the consumption of alcohol. It is essential that physicians recognize symptoms of alcohol withdrawal in a timely manner so that treatment can be initiated. Alcohol causes both enhanced inhibitory tone and depressed excitatory tone in the central nervous system (CNS). Chronic and constant alcohol intoxication

causes adaptive changes in the CNS. During withdrawal, the suppressive effects of alcohol are abruptly stopped, and the CNS demonstrates compensatory overactivity. Patients experience symptoms of increased sympathetic tone ranging from anxiety and agitation to hallucinations and seizures. Alcohol withdrawal symptoms usually start 6 to 12 h after the last ingestion. Early symptoms typically include tremors, anxiety, headaches and palpitations. The peak of these symptoms, in addition to hallucinations and withdrawal seizures, usually occur after 24 to 48 h. Approximately 5–20 % of patients who experience alcohol withdrawal will progress to delirium tremens (DT) within 2 to 4 days if not treated. The associated mortality rate for DT is 1–5 %. It is nearly impossible to predict which patients will progress from early to late stages of alcohol withdrawal. There is a paucity of cases in the current literature describing delayed DT, and the exact pathophysiology remains unclear. Due to the high mortality rate associated with DT, it is important for clinicians to be aware that DT may occur 2 weeks or later after the last alcohol ingestion, as seen in this patient.

ALL HANDS ON DECK: NEUROCOGNITIVE EFFECTS OF HIV Ryan Brown; Deepa Bhatnagar. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640080)

LEARNING OBJECTIVE 1: Identify a cause of lower extremity weakness in HIV
LEARNING OBJECTIVE 2: Recognize HIV-Associated Neurocognitive Disorders (HAND). Understand HAND's subtypes and categorization.
CASE: A 35 year old man presented with lower extremity weakness for approximately 6 months. The weakness originally manifested with a limp, which progressed to a need for a walker and finally wheelchair use for the 2 weeks prior to presentation. He also complained of worsening vision and a rash for "several months." His family reported the patient had decreased cognitive abilities, including memory and emotional lability. He had recently begun to have bladder incontinence. He was alert, oriented, and able to follow commands. He had 1/5 strength in his lower extremities and 5/5 in his upper extremities. Sensation was intact diffusely. He had hyporeflexia in his Achilles' tendon. Sphincter tone was intact. Vision in his left eye was absent. He had a diffuse maculopapular rash. Laboratory data revealed a positive HIV test with a CD4 count of 17. CSF studies had a glucose of 53, protein of 100 and a white blood cell count of 3. It grew no organisms or fungi. RPR and CSF VDRL were negative. His ANA level was normal. Brain MRI revealed diffuse subcortical white matter hyperintensity. Images of the cervical and lumbar spines were negative. T-Spine MRI suggested meningitis. The diagnoses were HIV-Associated Neurocognitive Disorders (HAND) and CMV Retinitis. He was discharged to an HIV clinic for initiation of highly active anti-retroviral treatment (HAART) and started on ganciclovir.
DISCUSSION: HIV-Associated Neurocognitive Disorders (HAND) is a term encompassing a continuum of neurological disease within the HIV/AIDS population. It represents a wide range of symptoms, including memory, attention, language and motor function. The term was first introduced in 1987, revised in 1991 by the American Academy of Neurology and updated again in 2007 by a National Institutes of Health working group. The current HAND continuum has three stages: it begins with Asymptomatic Neurocognitive Impairment (ANI), worsens to Mild Neurocognitive Disorder (MND) and progresses to HIV-Associated Dementia (HAD). Literature sometimes, albeit confusingly, also uses the terms HIV Encephalopathy or HIV Dementia Complex in replacement of HAD. The diagnosis of HAND is determined by assessing five areas of neurocognitive functioning. The number of neurocognitive domains affected and the extent of impairment on daily living are the main factors used to determine the classification. There is variability within the course of HAND and much improvement can be seen with the mainstay therapy, HAART. The patient's lower extremity weakness affecting ambulation has also been reported in four cases in South Africa. In all cases, lower extremity reflexes were affected, while sensory and sphincter symptoms were spared. Similar to our patient, the other reported cases were new diagnoses of HIV who had been previously healthy. The most likely etiologies are HIV-related motor neuropathy or an unusual variant of Guillain-Barre Syndrome, both of which are not well understood. Given our patient's clinical presentation and negative infectious work-up, our patient was diagnosed with HAND's most severe form, HAD.

ALL THAT IS TRANSIENT IS NOT TIA Sarah H. Van Tassel; Michael J. Plakke; Khan K. Chaichana; Anthony A. Donato. Reading Health System, West Reading, PA. (Tracking ID #1635133)

LEARNING OBJECTIVE 1: Develop a differential diagnosis for transient focal neurological events
LEARNING OBJECTIVE 2: Recognize disease processes that mimic transient ischemic attacks (TIA)
CASE: A 77-year-old right-handed male with hypertension presented to the emergency department reporting an episode of anomic aphasia and alexia. The patient was in his usual state of health until he returned from the mailbox the previous afternoon and was unable to read the mail. He further discovered he was unable to name familiar people and objects such as his children, grandchildren, and golf clubs. These symptoms lasted for several hours but resolved completely by the morning. He denied prior similar episodes, headache, head injury, loss of consciousness, seizure-like activity, fever, and sick contacts. He had no history of stroke, transient ischemic attack (TIA), or psychiatric diagnoses. He had a remote history of Bell's Palsy with incomplete recovery. On admission, his vital signs were stable, and complete neurological examination was non-focal except for an old right facial droop. A computed tomography (CT) scan of his brain showed no abnormalities. Subsequent magnetic resonance imaging (MRI) with contrast demonstrated vague areas of signal hyperintensity in the FLAIR and T2 weighted images involving the parenchyma of the entire left temporal lobe and into the left occipital lobe. Lumbar puncture was negative for Lyme and herpes simplex virus by PCR and cryptococcal antigens. He was discharged from the hospital in stable condition and readmitted several weeks later for stereotactic guided needle biopsy of the left temporal lobe tumor. Microscopic examination diagnosed diffuse astrocytoma. Follow up for radiation therapy was scheduled.
DISCUSSION: While transient ischemic attack is the most common diagnosis in patients with cardiovascular risks and transient neurological symptoms, the differential also includes brain tumors, metabolic disturbances, multiple sclerosis, subdural hematomas, cerebral amyloid angiopathy, encephalopathies, compressive myelopathy, arteriovenous fistulas, and psychiatric disorders. The mechanism by which brain tumors result in transient focal neurological symptoms is thought to involve mechanical changes that result in pressure on structures adjacent to the tumor. Given the history and physical examination, TIA was the working diagnosis in our patient prior to the MRI findings. Recent scientific studies have advanced our understanding of the definition and evaluation of TIA. In particular, the new tissue-based definition of TIA highlights the importance of early MRI. Until recently, patients who presented with transient neurological symptoms that resolved completely and normal CT scans were often discharged with the frustrating diagnosis of "possible TIA." Early MRI distinguishes patients with and without evidence of cerebral infarction, thus enhancing risk stratification. Moreover, early MRI may more accurately identify disease processes that mimic TIA, such as with our patient. Physicians caring for patients with transient focal neurologic symptoms should consider neuroimaging with MRI when presented with similar diagnostic dilemmas. Following MRI, our more focused differential diagnosis included viral encephalitis versus infiltrating neoplasm, and the diagnosis of diffuse astrocytoma was confirmed with biopsy.

AMIODARONE-INDUCED MYXEDEMA COMA: DON'T FORGET THE THYROID GLAND Balakumar Krishnarasa; Donna Seminara; Abhirami Vivekanandarajah. STATEN ISLAND UNIVERSITY HOSPITAL, Staten Island, NY. (Tracking ID #1641774)

LEARNING OBJECTIVE 1: Recognize the potential life threatening thyroid conditions associated with amiodarone use especially in the geriatric population.

LEARNING OBJECTIVE 2: Assess thyroid function periodically during and after amiodarone therapy.

CASE: A 78-year-old man with hypertension, atrial fibrillation, hypercholesterolemia and gastroesophageal reflux disease presented to the hospital with confusion, new-onset ascites, hypotension (BP 90/50) and hypothermia (temperature 93.9 F). He underwent a paracentesis that did not reveal infection. Laboratory parameters including a complete metabolic profile and complete blood count were normal. CT of the head was negative. Chest x-ray was negative. Microbial cultures were ordered; he was placed on empiric antibiotics and admitted to the general medical floor. Shortly after, he suffered a cardiac arrest. CPR was successful and he was transferred to the ICU. Medications on admission included metoprolol, amiodarone, simvastatin, omeprazole and tamsulosin. The patient had been taking amiodarone for 6 months prior to admission to the hospital for atrial fibrillation. The thyroid function studies prior to initiation of amiodarone were normal. Physical examination was significant for ascites, bilateral lower extremity non-pitting edema and delayed deep tendon reflexes diffusely. Further laboratory testing reveled TSH of 314 mIU/L. The patient was presumed to have myxedema coma likely induced by amiodarone. He was given a loading dose of intravenous levothyroxine 200 mcg followed by 100 mcg daily. He was also given intravenous glucocorticoids. Amiodarone was discontinued. His clinical condition improved. Eventually, intravenous levothyroxine was switched to oral levothyroxine.

DISCUSSION: Amiodarone is a potent anti-arrhythmic agent used in the treatment of ventricular and supraventricular tachyarrhythmias. It is an iodine-rich compound which contains approximately 37 % of iodine by weight. Pathophysiology of amiodarone-induced hypothyroidism (AIH) is enhanced susceptibility to inhibitory effect of iodine on synthesis of thyroid hormone which can be explained by Wolff-Chaikoff effect. This effect can be accelerated in pre-existing thyroid conditions. It can also happen in patients without underlying thyroid disease. Although AIH is a mild entity, it can be rarely severe and a life-threatening disease resulting in myxedema coma. The risk of AIH is increased in elderly patients due to pre-existing thyroid disease. The risk is independent of daily or cumulative dose of amiodarone. Myxedema coma can be defined by decreased mental status, hypothermia, hypotension, hypoventilation, hyponatremia, bradycardia, and generalized non-pitting edema. Laboratory findings include a very high TSH, and very low free T4 values. Treatment includes discontinuing amiodarone and intravenous supplementation of levothyroxine and glucocorticoids. In conclusion baseline thyroid function should be evaluated when initiating amiodarone therapy. Serum TSH and free T4 levels should be reassessed periodically during the amiodarone treatment period and at least for 1 year after amiodarone is discontinued.

AMYLOIDOSIS: THE FORGOTTEN FACTOR X DEFICIENCY
Anita Pudusseri; Ellen Wexler; Robert E. Graham. Lenox Hill Hospital, New York, NY. (Tracking ID #1596722)

LEARNING OBJECTIVE 1: Recognize that amyloidosis may present with acquired coaguloapathies

CASE: A 51 year old male presented to the hospital with chief complaint of persistent nausea and cough for over 1 year. Past medical history was significant for hypertension and gastroesophageal reflux disease. His cough was productive of "white- sticky, non bloody" sputum, associated with 10 episodes of a "dark- green, non bloody" vomitus within the last 24 h. Upon review of systems, he endorsed a 55 lb weight loss in 6 months, fatigue, weakness, subjective low grade fevers and depression from this on-going problem. Admission vital signs and physical examination was normal besides a 2×2 cm, immobile, non-tender left submandibular palpable lymph node. Initial laboratory analysis were as follows: white cell count, 11,100 μl with a normal differential; hemoglobin, 12.7 g/dL; hematocrit, 36.9 g/dL. Coagulation studies revealed a prothrombin time, 16.2 s and partial thromboplastin time, 31.3 s. There was complete correction of the PT upon mixing studies. Complete metabolic panel revealed normal values with exception of total protein of 10.7 g/dL and alkaline phosphatase of 278 U/L. Urinalysis was significant for 100+ mg/dL of glucose; small bilirubin; 15 mg/dL of ketones; 300+ mg/dL of protein. CXR and a right upper quadrant sonogram were normal. His primary care doctor had conducted an esophagealgastroduodenoscopy (EGD) positive for severe gastritis and negative colonoscopy. He had also seen a hematologist with work up significant for an "M-spike" but no evidence of cancer (negative skeletal survey, CXR, MRI Brain and CT Chest). Factor X level was 30 % (normal 50–150 %). Excisional lymph node biopsy revealed amyloidosis.

DISCUSSION: This case highlights the difficulty in establishing a diagnosis of amyloidosis. However, the association between acquired coagulopathies and amyloidosis should not be forgotten. What prompts internists to pursue factor deficiencies is the complete correction of the prothrombin time (PT) and partial thromboplastin time (PTT) upon mixing studies. Factor X is a coagulation factor involved in both the intrinsic and extrinsic pathways. Thus, it would be reasonable to suspect prolongation in both the PT and PTT; yet in our case only the PT was prolonged. Factor X deficiency, specifically, is the most common coagulation factor deficiency in AL amyloidosis patients. There is a reported incidence of 8.7–14 %. The insufficiency arises as the half-life of factor X is reduced due to its fusion to amyloid fibrils. In a study of 368 patients with AL amyloidosis, factor X activity below 50 % of normal were found in 32 of the 368 patients. 18 of these patients had bleeding complications. The most severe complications were seen in the 12 patients with factor X activity below 25 % of normal. Fortunately, our patient did not experience any bleeding complications with a factor X activity at 30 %. Most of the evidence of treatment plans in patients with factor X deficiency associated with AL amyloidosis arise from of case reports. Complete remission and normalization of the factor X levels have been reported with high-dose chemotherapy, autologous stem cell transplantation, recombinant factor VIIa and plasma exchange. Splenectomy has been shown to improve coagulopathies as it removes a considerable amount of amyloid deposition.

AN INFARCTION COMPLICATION: A REVISIT FROM THE PAST
Armaan Shaikh; Benjamin Jenny. Medical College of Wisconsin Affiliated Hospitals, Milwaukee, WI. (Tracking ID #1624131)

LEARNING OBJECTIVE 1: Recognize a ventricular septal infarct as a complication of a myocardial infarction

LEARNING OBJECTIVE 2: Treat an infarct related ventricular septal defect medically

CASE: A 92 year-old woman with a history of hypertension, dyslipidemia and coronary artery disease (CAD) with remote four-vessel coronary artery bypass grafting presented to the emergency department with a 4 days history of nausea, vomiting, and generalized weakness and a 24-hour history of presyncope. On initial evaluation, the troponin T was significantly elevated (30 times the upper limit of normal) with a small increase in creatine kinase muscle isoenzyme (CKMB). In addition, the patient was found to be in complete heart block with a left bundle branch block and sporadic sinus pauses lasting roughly 10 s. On exam, a 3/6 holosystolic murmur was heard throughout the entire heart field and noted to be loudest along the left parasternal border. Transthoracic echocardiogram (TTE) revealed a thinned, dyskinetic anteroseptum and anterior wall with color Doppler evidence of a serpiginous, moderately sized ventricular septal defect (VSD) with active left to right flow. Transvenous pacing and afterload reduction were initiated and options of VSD repair (open verses percutaneous) were discussed with the patient. On hospital day 4, the patient's predominant rhythm was noted to be sinus rhythm with first-degree AV block with an underlying left bundle branch block and premature ventricular contractions. Follow-up TTE revealed a preserved ejection fraction with a decrease in pulmonary systolic

pressures when compared to the initial TTE. The patient continued to have intermittent complete heart block, leading to permanent pacemaker placement on hospital day 6. Given the patient's continued hemodynamic stability and disinterest in VSD repair, medical management was continued for this condition, and the patient was discharged home in improved condition.

DISCUSSION: In an era when early coronary reperfusion is commonly achieved through either percutaneous intervention or thrombolytic therapy, late mechanical complications, such as VSDs, are less frequently seen. These mechanical complications are the result of completed transmural infarcts that did not have the benefit of early reperfusion therapy. Our patient presented several days following an anterolateral myocardial infarction with classic enzyme patterning: mild CK and CKMB elevation along with a significantly elevated troponin T. This pattern is typical of a late presenting MI given the short duration of CKMB and long duration of troponin elevation. Infarction VSDs can be repaired with an open approach or percutaneously. However, the repair is limited by the health of the surrounding myocardium and typically requires several weeks before the surrounding tissue is able to support sutures. If medical management is pursued, care is centered on minimizing afterload and controlling heart rate.

AN ODYSSEY OF THE MIND: CONFIRMING THE DIAGNOSIS OF CONVERSION DISORDER Gary Mitrevolis[1]; Changwan Ryu[1,2]. [1]SUNY Upstate Medical University, Syracuse, NY; [2]Syracuse VA Medical Center, Syracuse, NY. (Tracking ID #1618570)

LEARNING OBJECTIVE 1: Promote awareness of underlying mental health disorders among our veterans.

LEARNING OBJECTIVE 2: Encourage innovation to facilitate the diagnosis of complex disorders.

CASE: The patient is a 59 year old veteran with no past medical history who presented to our facility for a 2 month history of increasingly frequent, involuntary jerking movements in both of his legs. He also complained of diffuse leg cramps and weakness with ambulation. He denied any recent history of trauma, fevers, chills, rashes, exposure to toxins or drugs, travel, or dietary changes. His neurologic examination was significant for synchronous, myoclonic spasms in both legs. Within 2 weeks of admission, he developed dysarthria, diplopia, and weakness in the right side of his face and body. His work-up proved to be negative, which included MRI of his brain and spine, electroencephalograms, lumbar punctures, duodenal biopsy for Whipple's disease, Creutzfeldt-Jakob antibodies, paraneoplastic antibodies, and tests for heavy metals, TSH, folate, B12, RPR, ANA, ESR, CRP, HIV, and Lyme. Along with these symptoms, he began having generalized seizures. However, during these episodes, the patient was trembling, not tonic-clonic jerking, and we started to suspect that his symptoms were psychogenic. With our neurology service, we tested this theory by telling him that he would receive an "anti-seizure medication," which was actually normal saline. When he had another seizure-like episode and gave him the "anti-seizure medication," the episode ended. We then told the patient that we would give him a "seizure-inducing medication," which was also normal saline. When we gave him the "seizure-inducing medication," the seizure-like activity resumed, and when we immediately infused his "anti-seizure medication," the activity stopped. This helped to confirm our diagnosis of a conversion disorder. After consulting our psychiatry service, we found that his conversion disorder stemmed from his long-standing post-traumatic stress disorder from his combat duty in Vietnam, and recent life stressors triggered these neurologic symptoms. With further psychological support, he clinically improved and was discharged home.

DISCUSSION: Conversion disorders typically present with neurologic symptoms that cannot be explained by another condition. Its diagnosis requires a complete investigation for other diseases, exclusion of deliberate feigning, and identification of a psychological mechanism. The determination of conversion disorder is wrought with unnecessary laboratory tests, excessive imaging studies, and fruitless invasive procedures. However, there are no accepted strategies for making this diagnosis, and we present this case to demonstrate one unique method. When encountering a medical challenge like a conversion disorder, innovation and creativity play an instrumental role for timely diagnosis and optimal management. Another objective for this case was to illustrate the significance of addressing the mental health of our veteran population. Our case demonstrated one of the consequential pitfalls of neglecting a vital area of need among our veterans. Our VA medical centers will need to be more cognizant of the mental health issues that prevail among our growing veteran population, and as physicians, our charge will be to lead initiatives that promote these issues.

AN OLD ROOKIE OF TAKAYASU ARTERITIS Tatsuya Sato; Junwa Kunimatsu; Riri Watanabe; Atsuto Yoshizawa. National Center for Global Health and Medicine Hospital, Tokyo, Japan. (Tracking ID #1636040)

LEARNING OBJECTIVE 1: Recognize Takayasu arteritis as a potential candidate of fever of unknown origin even in elderly patients.

LEARNING OBJECTIVE 2: Recognize that 18 F-FDG PET/CT is a reasonable modality as a diagnostic tool when clinicians work-up an elderly patient with fever of unknown origin plus impaired renal function.

CASE: An 80 year-old Japanese man with past medical history of lung tuberculosis presented with a month of neck pain, low-grade fever and fatigue. He first saw his primary care physician and subacute thyroiditis was suspected based on cervical pain, low-grade fever up to 37.5 °C and marked elevation of C-reactive protein levels: 33 mg/dL (reference range: 0–0.3). Thyroid function tests were, however, within normal limits and his cervical pain continued after a month follow-up. He visited our department for further investigation. On examination the patient reported fatigue, mild pain in the left posterior neck. No goiter, lymphadenopathy, headache, or muscle pain was observed. There was no difference in blood pressure between both arms. No cutaneous lesion or rash was noted. Muscle tenderness and weakness were absent. The temporal arteries were pulsatile, with no tenderness on palpation, and the visual acuity was normal. His chest was clear on auscultation and his heart sounds were regular with no murmur. The examination was otherwise normal. Enhanced body CT revealed diffuse thickening of arterial wall including left common carotid artery, aorta, brachiocephalic artery, and mesenteric arteries. 18 F-FDG PET/CT was conducted to detect the focus of inflammation and strong linear 18 F-FDG uptake was observed in these arteries. No uptake was found in either of temporal arteries. He was diagnosed as Takayasu Arteritis (TA) before symptoms due to ischemia develops and corticosteroid treatment was started.

DISCUSSION: In this case, giant cell arteritis (GCA) is naturally another differential diagnosis considering his age, but for three reasons we believe TA is the more likely diagnosis. First, there were no clinical symptoms and signs of polymyalgia rheumatic (PMR) and/or GCA such as visual disturbance, jaw claudication, temporal artery tenderness, shoulder and pelvic girdle muscle pain or upper arm tenderness. GCA presents with some localized symptoms more often than TA. Second, TA is more common than GCA in Japan. Third, a nationwide cohort study in Japan has shown that TA occurs in elderly population. This result supports the fact that age is not used to distinguish TA and GCA in Asian countries. The possibility of GCA still remains since neither ultrasonography nor a biopsy of temporal arteries was performed on this patient. However, the reasons listed above indicate that TA is more likely diagnosis for this patient. "An old rookie" is celebrated in Japan, although we know TA most commonly affects women of childbearing age. 18 F-FDG PET/CT is an emerging modality that can be applied to variety of inflammatory diseases, since it can visualize inflammation and increased metabolism in earlier stages of the disorders. It has been featured in Japan as a

tool to diagnose fever of unknown origin (FUO). The application of 18 F-FDG PET/CT can safely assist the diagnosis of aortitis in its early phase. This case illustrated that TA is a potential candidate of FUO even in elderly patients. 18 F-FDG PET/CT can be a reasonable modality when clinicians work-up an elderly patient with FUO plus impaired renal function.

AN OPIATE RUSH DUE TO ORAL THRUSH Matthew George; Sean Drake. Henry Ford Hospital, Detroit, MI. (Tracking ID #1638548)

LEARNING OBJECTIVE 1: Recognize the possibility of Fluconazole inhibiting metabolism of opiate medications
LEARNING OBJECTIVE 2: Recognize when it is appropriate to use systemic anti-fungal medications.
CASE: 45 year old female with a significant past medical history of chronic back pain for which she takes Oxycodone and Oxycontin. She was recently diagnosed with Tinnitus by ENT and started on oral steroids and later transitioned to steroid injections into tympanic membrane. She presented to General Medicine clinic complaining of oral thrush and was started on fluconazole 200 mg Q day for a week. Over the next 7 days she developed intense lethargy, dizziness, episodes of passing out in her food while eating, and had extreme weakness. She came back to the General Medicine clinic 1 week later with these new symptoms. She was found to be tachycardic, hypotensive, and hypoxic. There was concern that she may be showing signs of sepsis and was admitted to the hospital for further infectious workup. In the hospital, she had a work-up including: CBC, chest xray, CT PE protocol, U/A and culture, blood culture, abdominal ultrasound, head CT, and influenza test—all of which were negative.. The fluconazole was stopped and she was treated with nystatin mouth wash instead. Her vitals, symptoms, and mental status all improved during the admission and she was discharged on hospital day number 3. The working discharge diagnosis was that her fluconazole had inhibited the metabolism of her chronic opioid pain medication, therefore causing signs and symptoms of overdose. Patient was seen 2 weeks after discharge from hospital and had re-started opioid medications at home without any further symptoms.
DISCUSSION: There have been various case reports and studies implicating ketoconazole causing opiate and other drug toxicities. Fluconazole, however has historically been thought of as only a moderate inhibitor of cytochrome p450 3a4 and has been less well studied. There have been case reports implicating it with fentanyl and carbamazepine, and also a study with midazolam. This case highlights two important considerations. The physician should either decrease a patient's opiate dosage if giving fluconazole, or if possible, avoid systemic anti-fungal for oral thrush and use local antifungal mouth wash instead.

AN UNCOMMON CAUSE OF DYSASTHESIA AND PRURITUS Julie B. Silverman[1,2]; Nicholas Compton[1,2]. [1]VA Puget Sound, Seattle, WA; [2]University of Washington, Seattle, WA. (Tracking ID #1638993)

LEARNING OBJECTIVE 1: Recognize the signs and symptoms of Sezary syndrome
LEARNING OBJECTIVE 2: Review the epidemiology and clinical course of Sezary syndrome
CASE: A 62-year-old man presented to establish care. He complained of numbness and tingling on his chest and arms for 2 years. His past medical history was notable for a long history of untreated pernicious anemia, now treated with vitamin B-12 injections. He was previously diagnosed by a neurologist with peripheral neuropathy and prescribed gabapentin. The patient denied fevers, weight loss, rash, and pruritus. Neurologic and skin exams were unremarkable. Labs -including CBC, electrolytes, LFTs, vitamin B-12, hemoglobin A1c, iron studies and TSH- were within normal limits. Months later, the patient returned complaining the dysasthesia, which he likened to "hundreds of fire ants crawling on your skin and biting you," had spread to his groin and back. He again denied constitutional symptoms or skin changes. He was referred to neurology, where workup revealed normal thiamine, copper and zinc levels and an unremarkable EMG. The patient returned to primary care complaining the burning was now intolerable. He also reported daily episodes of skin flushing. Exam was negative for lymphadenopathy or rash. However, his skin was notable for doughiness and deep furrows on his forehead, which had previously not been observed. Repeat CBC showed lymphocytosis with highly suspicious atypical lymphoid cells. Flow cytometry revealed an abnormal T-cell population comprising 49 % of WBCs. PCR analysis confirmed T-cell clonality. The patient was diagnosed with T-cell lymphoma. Due to the level of blood involvement and immunohistochemical analysis, the lymphoma was further characterized as Sezary syndrome (SS). Skin biopsy revealed an atypical lymphoid infiltrate in the superficial dermis along with large cell transformation, which occurs in about 25 % of Sezary patients. The patient completed two rounds of romidepsin with inadequate response. He is undergoing treatment with pralatrexate.
DISCUSSION: This case illustrates the potential difficulty in diagnosing SS. SS is a leukemic type of cutaneous T-cell lymphoma (CTCL) characterized by adenopathy, erythroderma and circulating atypical lymphoid cells. Incidence is estimated to be 0.3 per million persons. The average age of diagnosis is 55 years, and there is a 2:1 male predominance. Because of the non-specific symptoms, diagnosis can be delayed, with a 4.2-year median time to diagnosis. In this case, more than 3 years elapsed between onset of dysasthesia and diagnosis. The most common symptom of SS is pruritus, which is often resistant to antihistamine treatment. Erythroderma is another frequent sign. Like pruritus, the differential for erythroderma is broad -including dermatitis, psoriasis and drug reaction. Dysasthesia is a less common, but not unusual, symptom. Other signs include alopecia, keratoderma, nail dystrophy and skin edema. Occasionally patients develop leonine facies, as in this patient, due to dermal infiltration of the face. CTCL prognosis varies by age and stage at time of presentation. Most patients with early-stage disease have indolent courses and may never require systemic therapy. For those with advanced disease, prognosis is generally poor. Median survival for patients with SS is less than 4 years. Despite its low prevalence, SS should be considered in patients presenting with unrelenting pruritus, unexplained erythroderma or other unusual dermatologic complaints.

AN UNFORGETTABLE CAUSE OF GI BLEEDING! Hani Snounou; Samian sulaiman; Luis F. Guzman; Salih Samo. Saint Francis Hospital, Evanston, IL. (Tracking ID #1624285)

LEARNING OBJECTIVE 1: -To recognize a rare congenital cause of massive gastrointestinal (GI) bleeding.
CASE: A 32 year old male presented with sudden onset, massive rectal bleeding which was not associated with defecation or trauma. He had a history of Klippel Trenaunay Syndrome (KTS) with multiple admissions for bleeding, mainly as hematuria and one episode of self limited rectal bleeding 4 years ago. Physical examination at time of admission was remarkable for BP 55/29, HR 135, RR 22. His abdomen was soft and non tender, with active red blood oozing from his rectum. He was noted to have extensive varicose veins on the right leg and scrotum. His labs showed Hg 7.1 g/dL, Platelets 148 K/mL, AST 522 IU/L, ALT 257 IU/L, Bilirubin 1.7 mg/dL, and INR 1.7. The patient underwent EGD and no active bleeding was found; colonoscopy showed long, large, and dilated tortuous veins in the rectosigmoid colon, with large amount of red and clotted blood all the way to the ascending colon. He underwent angiography which showed hypervascularity of one of the superior mesenteric artery branches supplying the right colon. This area was embolized, but the patient continued to bleed. Subsequently, he underwent rectosigmoid resection. Grossly, the resected left colon and rectum showed extensive varicosis. During his hospitalization he required transfusion of total of 50 units PRBCs, 18 units FFP, 26 units

platelets, and 10 units cryoprecipitate. Post OP course was complicated by hemoperitoneum, worsening Coagulopathy, fecal peritoinitis, sepsis, and right leg DVT. He was sent to OR 3 times for hemoperitoneum evacuation and wound dehiscence closure. Eventually, he was intubated because of worsening of the sepsis and respiratory failure. Later on he was transferred to a tertiary care center for more advanced care.
DISCUSSION: Klippel Trenaunay Syndrome (KTS) is a rare congenital vascular anomaly. The syndrome is characterized by a triad of varicose veins and venous malformation, cutaneous capillary malformation and hypertrophy of the bone and soft tissue. Visceral vascular malformation in KTS can involve GI tract, spleen, liver, bladder, lung and heart. The most common bleeding sites in the GI system are the distal colon and the rectum. The spectrum of the GI bleeding varies from asymptomatic occult to life threatening bleeding. Transfusion dependent and life threatening bleeding episodes necessitate definitive surgical therapy with resection of the involved bowel segment.

AN UNLIKELY CULPRIT CREATING AN UNCONTROLLED INR Joshua Kra; Alfred Burger. Beth Israel Medical Center, New York, NY. (Tracking ID #1628745)

LEARNING OBJECTIVE 1: Recognize that in patients on warfarin, moderate doses of acetaminophen can significantly raise the INR
LEARNING OBJECTIVE 2: Discuss the mechanism of this drug-drug interaction, via direct effect of acetaminophen on the vitamin K cycle, not hepatotoxicity or alterations in warfarin metabolism
CASE: A 63 yo man with multiple prior DVTs on long-term warfarin therapy presented with rectal bleeding. He was compliant with medications, had no changes to his warfarin dosing, no recent antibiotic or herbal supplement use, and no changes in dietary habits. He fell 2 weeks prior to admission and was using acetaminophen 650 mg q6 h for severe wrist pain. On the day of admission, the patient was seen by his primary doctor and had an INR of 7.5 - it was 2.3 3 weeks prior; he was advised to hold warfarin and go to the ED if he began to bleed. Later in the day after having a bowel movement he saw blood on the toilet paper and in his underwear but had no abdominal pain, blood in the actual stool, or change in stool color. The bleeding resolved with EMS applying pressure to the area on the way to the ED. PE revealed external hemorrhoids with evidence of recent bleeding. Labs were INR of 9.8, hemoglobin 10.4, LFTs normal. He was given vitamin K 2 mg sq in the ED and 2.5 mg PO. After admission he had no more bleeding episodes, with vital signs and CBC remaining stable. An x-ray revealed a distal radial fracture which was treated by splint immobilization and oxycodone. The INR decreased to 2.6 within 48 h, and the patient resumed his home dose of warfarin. He was advised to stop acetaminophen, as this was a possible etiology for the elevated INR.
DISCUSSION: Acetaminophen is generally the analgesic of choice for people on warfarin. It is considered to have a better safety profile than aspirin or NSAIDs, which predispose people to increased bleeding through platelet inhibition or injury to gastric mucosa. However there is a recognized but underappreciated drug-drug interaction which causes an elevation in INR if acetaminophen is taken at moderate doses of 1.5–4 g per day for over 3 days. These doses are generally considered safe from a hepatotoxicity standpoint. This interaction was first reported in 1968, and several early cases described this potentiating effect of acetaminophen on warfarin. Prospective randomized trials studying this relationship have found a statistically significant rise in the INR and bleeding episodes at the previously mentioned doses. The explanation as to how acetaminophen effects the INR of patients on warfarin is quite novel. As opposed to other agents that alter the metabolism of warfarin thus increasing or decreasing its effect, acetaminophen acts through its metabolite NAPQI causing a direct inhibition of the vitamin K cycle. Vitamin K is reduced to its active form by vitamin K reductase (VKOR), the enzyme inhibited by warfarin. NAPQI disrupts the vitamin K cycle directly, including direct inhibition of VKOR and raising the INR of patients on warfarin. Currently there are no specific recommendations on reversing over-anticoagulation from the combination of warfarin and acetaminophen, outside the general recommendations of treating an elevated INR. Thus, patients on warfarin who are on significant doses of acetaminophen for several days should have the INR closely monitored for any possible interaction.

AN UNUSUAL CASE OF CHEST PAIN: PERICARDITIS SECONDARY TO HYDRALAZINE-INDUCED LUPUS Katherine Wrenn. Beth Israel Deaconess Medical Center, Boston, MA. (Tracking ID #1642457)

LEARNING OBJECTIVE 1: Recognize clinical manifestations of drug-induced lupus
LEARNING OBJECTIVE 2: Diagnose drug-induced lupus
CASE: A 60-year-old male with hypertension, hyperlipidemia, diabetes, and coronary disease presented to the emergency department reporting a two-day history of intermittent chest pain with exertion, followed by an episode of chest pain at rest. He denied associated symptoms. His electrocardiogram was unchanged, and cardiac enzymes were negative. He was admitted for a stress test, which was negative for ischemia. During the admission, he developed fevers, leukopenia, transaminitis, arthritis, and new onset atrial fibrillation. His exam was notable for a pericardial friction rub and pulsus paradoxus of 12. Echocardiogram revealed a moderate pericardial effusion with evidence of elevated intra-pericardial pressure, and he underwent pericardiocentesis. Diagnostic work-up revealed a positive antinuclear antibody (ANA) with a 1:160 titer. Anti-dsDNA antibody was negative, but anti-histone antibody was positive. He had been on hydralazine for 1.5 years, and was diagnosed with hydralazine-induced lupus. Hydralazine was discontinued, he was started on prednisone and hydroxychloroquine, and he has since fully recovered.
DISCUSSION: More than 80 medications have been identified as causes of drug-induced lupus (DIL). Procainamide, hydralazine, and quinidine are most commonly implicated; other medications include minocycline and anti-TNF alpha therapy. Unlike idiopathic systemic lupus erythematosus (SLE), which usually affects females ages 20–40, DIL affects men and women equally, with the average age of onset around 50. Clinical manifestations vary based on the inciting agent, and range from limited cutaneous involvement to systemic symptoms including fever, myalgias, arthralgias, arthritis, hepatosplenomegaly, and serositis. Hematologic abnormalities, renal disease, and neurologic disease are less common. Symptoms are generally milder than with SLE, but some cases are life threatening. Typical symptoms of hydralazine-induced lupus include fever, rash, arthralgias, myalgias, pleuritis, and leukopenia (1). Pericarditis is less common, occurring in <5 % of cases (2). Approximately 95 % of patients with DIL have a positive ANA, and >90 % have anti-histone antibodies. Anti-dsDNA antibodies are rare. When a patient taking one of the implicated medications presents with the above symptoms, DIL should be suspected. However, confirming the diagnosis can be difficult, as there are no formal diagnostic criteria for DIL. A proposed set of criteria includes sufficient and continuing exposure to a specific medication, at least one symptom compatible with SLE, no previous history of SLE, and resolution of symptoms within weeks to months after discontinuation of the medication (2). The presence of anti-histone antibodies in the absence of anti-dsDNA antibodies strongly suggests DIL, but is not an official criterion for diagnosis (2). ANA positivity is also not a requirement for diagnosis. In general, DIL is a reversible condition with a favorable prognosis, but it is critical to diagnose early. Treatment involves cessation of the medication and supportive care. NSAIDs and anti-malarial agents may be used for musculoskeletal symptoms, and severe cases may benefit from treatment with corticosteroids. If symptoms do not resolve after stopping the medication, other diagnoses should be considered. 1. Chang C, et al. Drug Saf 2011; 34(5):357–374. 2. Borchers AT, et al. Ann NY Acad Sci 2007; 1108:166.

AN UNUSUAL CASE OF FATIGUE Kevin A. Johnson; Maryam Sattari. University of Florida, Gainesville, FL. (Tracking ID #1638182)

LEARNING OBJECTIVE 1: 1. Recognize potential role of vitamin D deficiency in fatigue and daytime sleepiness.

LEARNING OBJECTIVE 2: 2. Diagnose and treat vitamin D deficiency.
CASE: A 61 year old male presented with complaint of daytime sleepiness, specifically in the afternoons. His past medical history was only significant for colon cancer that has been in remission since surgical resection and completion of systemic adjuvant chemotherapy in 2005. Previously, he worked fulltime and exercised on an almost daily basis. However, the fatigue had gradually worsened over last 2–3 months and now despite continuing to get 7–8 h of sleep, he had started to experience difficulty with his normal tasks at work, napped almost daily after work, and had even started to skip some of his exercise sessions due to fatigue. He reported good sleep hygiene and denied new familial or occupational stressors, snoring, apnea, difficulty sleeping, sleep disruptions, depression, or anxiety. In fact, his review of symptoms was only positive for chest pain that was worse in the afternoon when he felt tired. He did not take any prescription medications and denied use of tobacco, alcohol, or recreational drugs. Physical exam did not reveal any significant abnormalities. All investigative studies including serum testosterone, thyroid function tests, vitamin B12 level, CBC, EKG, and exercise stress echocardiogram were normal. In absence of a common etiology explaining patient's symptoms, serum Vitamin D level was checked and found to be low (18.4 ng/mL; reference range >30 ng/mL). Vitamin D replacement with ergocholecalciferol 50,000 IU weekly was initiated and follow up in 2 months revealed appropriate increase in vitamin D level (28.2 ng/mL) and complete resolution of daytime sleepiness. Patient reported improvement of his previous symptoms within 2 weeks of initiation of vitamin D supplementation and was now able to perform his previous daily routine without difficulty.
DISCUSSION: A growing body of evidence points to effects of vitamin D beyond its classically described impact on metabolism of calcium and phosphorus. Vitamin D deficiency has recently been linked with a wide range of disease states including metabolic syndrome, type 2 diabetes mellitus, incident hypertension, malignancies of breast, prostate, and colon, poor stress resilience, depression, cognitive decline, increased risk for fall and disability among elderly, multiple pulmonary disorders, chronic pain, low back pain, overt painful myopathy, and all-cause mortality. However, to our knowledge, there has only been one previous published report of hypersomnia that was attributed to vitamin D deficiency. Fatigue and daytime somnolence are symptoms which may result from a vast number of etiologies and a comprehensive approach to each patient is needed. If well-known causes of fatigue and daytime sleepiness are ruled out, vitamin D deficiency should then be considered, based on our case coupled with the previous report. We suggest that clinicians entertain vitamin D deficiency as a rare cause of otherwise unexplained fatigue and daytime somnolence. This easily detectible deficiency can be managed effectively, potentially preventing more invasive and expensive work-up.

AN UNUSUAL CASE OF HYPERCALCEMIA Yan Yan S. Xie; Danit Arad. Montefiore Medical Center, Bronx, NY. (Tracking ID #1633815)

LEARNING OBJECTIVE 1: Review the clinical features and pathogenesis of sarcoidosis.
LEARNING OBJECTIVE 2: Recognize a rare side effect of pegylated interferon and ribavirin in the treatment of Hepatitis C virus infection.
CASE: 54 year-old man presented with 2 months of worsening shortness of breath and generalized weakness. He had a history of Human immunodeficiency virus infection (HIV) on antiretroviral therapy and hepatitis C virus (HCV) infection. Patient reported his symptoms started shortly after he was initiated on triple therapy for HCV with Telaprevir, ribavirin and peginterferon alfa-2a. He completed 14 out of 48 weeks of therapy. Treatment was terminated 5 weeks prior to admission for waxing and waning course of anorexia, lethargy and constipation. Despite termination of treatment, patient continued to have worsening symptoms. Physical exam showed hyperpigmented scaling plagues on scalp and dermal flesh-colored plaque on the face. Laboratory results were significant for serum calcium corrected for albumin of 14.5 mg/dl and an elevated serum Angiotensin-converting enzyme at 256 U/L. Computed tomography scan of the chest showed bilateral mediastinal lymphadenopathy. Skin biopsy of the scalp revealed granulomatous dermatitis, sarcoidal type. A diagnosis of sarcoidosis with severe hypercalcemia likely induced by HCV antiviral therapy was made.
DISCUSSION: Sarcoidosis is a multisystem granulomatous disorder of unknown etiology. It is characterized by the presence of non-caseating granulomas in involved organs such as the skin, lung, lymph nodes, brain, kidneys and heart. The prevalence of sarcoidosis in the general population varies from 0.001 % to 0.04 %. Sarcoidosis has been associated with several environmental and infectious agents whose pathogenesis involves immunological mechanisms that are only partially understood. However, the immunological abnormalities of the early sarcoid reaction are well-known. Immunological hallmarks of the disease include highly polarized expression of type 1 T helper (Th1) cells response, leading to increased productions of cytokines such as interleukin (IL)-2, tumor necrosis factor (TNF)-α, and interferon (INF)-γ. The release of INF-γ and TNF-α promotes macrophages activation and aggregation, resulting in development of granulomatous inflammation. The prevalence of sarcoidosis in HCV infected patients is reported to vary from 0.1 % to 0.2 %, which is higher than the general population. A recent analysis revealed that among cases of coexisting sarcoidosis and chronic HCV infection, nearly 75 % of sarcoidosis was triggered by antiviral therapy. The precise mechanism behind antiviral therapy induced sarcoidosis is not completely understood. However, it is well recognized that pegylated interferon is a potent simulator of the differentiation of CD4+ T-cells towards a Th1 type immune response which is strongly involved in the pathogenesis of sarcoidosis. Ribavirin may also play a role in enhancing the Th1 response by increasing production of IL-12, INF-γ, TNF-α, and by lowering the Th2 response. More than 180 million people are infected with HCV worldwide. The recommended therapy for HCV infection is the combination of a pegylated interferon and ribavirin. This is an uncommon case of sarcoidosis manifested by severe hypercalcemia, bilateral hilar lymphadenopathy and cutaneous lesions in a man who received antiviral therapy. Internists should be aware of this unusual but clinically important complication of combined pegylated interferon and ribavirin therapy.

AN UNUSUAL CAUSE OF HYPERTHYROIDISM Mary Anne Mani; Kenneth C. Raney. Methodist Dallas Medical Center, Dallas, TX. (Tracking ID #1641176)

LEARNING OBJECTIVE 1: Recognize cystic teratoma as a cause of hyperthyroid symptoms
CASE: A 31-year-old Caucasian female with a past medical history significant for hypertension and hyperlipidemia presented with a one-week history of weakness, tachycardia, palpitations and periodic sweats. She denied headache, shortness of breath, fever, chills, nausea, vomiting, diarrhea or weight change. She denied any pain or lumps in her neck. She had similar symptoms several months earlier and was treated with Avapro for hypertension. Her family history was significant for hypertension, diabetes and coronary artery disease. There was no family history of thyroid disease. Social history was non-contributory. Review of systems was positive for palpitations, tremors and anxiety. Vital signs were within normal limits except for tachycardia. Physical exam did not show thyromegaly or neck tenderness. Supraclavicular and axillary lymphadenopathy were absent. Lungs were clear to auscultation bilaterally. Heart exam showed tachycardia with regular sinus rhythm and a 2/6 systolic murmur along the left sternal border. Neurological exam was significant for the absence of tremors. Laboratory results indicated normal CBC and BMP but decreased TSH (<0.01 uIU/mL) and increased free T4 levels (3.23 ng/dL). Thyroid hormone levels had previously been normal. The tumor markers alpha fetoprotein, beta hCG, metanephrine and normetanephrine were within normal limits. EKG showed sinus tachycardia. Chest x-ray indicated a soft tissue density on the superior left heart border. CT angiogram showed a complex, left mediastinal mass measuring 7.1×6.1×6.3 cm containing fatty and soft tissues as well as calcification. There was some mass effect on the pulmonary outflow tract but no vascular

encasement. There was no adenopathy, pleural effusions or metastases. A thyroid uptake scan was not performed. Echocardiogram showed mild mitral and tricuspid regurgitation. A biopsy of the anterior mediastinal mass confirmed a benign mature cystic teratoma with abundant epithelium, keratin, sebaceous glands and patchy chronic inflammation and fibrosis. Immature and neuroepithelial elements were absent. The patient was treated with a high dose of methimazole (30 mg BID) to control hyperthyroid symptoms. Surgery, which was delayed till thyroid hormone levels were controlled, involved left thoracotomy with resection of the mediastinal mass. The patient did not require methimazole after surgery.

DISCUSSION: The altered level of thyroid hormones could have been caused by acute thyroiditis, a thyroid nodule or a thyroid adenoma. However, the patient had no goiter or neck tenderness. The patient was not taking any medications that could have caused thyroiditis, or have a recent history of radiation or parathyroid surgery. There was no evidence for struma ovarii or metastatic thyroid cancer. Symptoms could have been caused by a germ cell tumor via direct stimulation of the TSH receptor. Germ cell tumors account for 15 % of anterior mediastinal masses and can be mature teratomas, seminomas or nonseminomatous germ cell tumors. The normal levels of beta hCG and alpha-fetoprotein ruled out the presence of seminomas or nonseminomatous germ cell tumors. Biopsy showed that the mass was a mature teratoma and surgical removal resulted in alleviation of symptoms. To our knowledge, this is the first report of hyperthyroid symptoms being caused by a teratoma. Histological studies are ongoing to examine the mass for the presence of thyroid tissue.

AN UNUSUAL CAUSE OF HYDROCEPHALUS Zhe Chen; Yelena Averbukh. Montefiore Medical Center, Bronx, NY. (Tracking ID #1636545)

LEARNING OBJECTIVE 1: To consider multiple etiologies in patients presenting with dural enhancement.

LEARNING OBJECTIVE 2: To recognize a clinical syndrome consistent with Idiopathic Hypertrophic Pachymeningitis.

CASE: A 48 year old African-American woman presented with headache and nausea for 3 weeks. On examination, she also had pain with flexion and extension of her neck. Neurological exam was otherwise normal. Her initial laboratory tests were normal. Head CT showed hydrocephalus of unclear etiology, and brain MRI showed significant right-sided dural enhancement. Subsequent CSF studies showed no signs of meningitis with negative bacterial and mycobacterial cultures. Tests for infectious etiologies such as syphilis, HIV, and Lyme disease were negative. Rheumatologic studies were also negative. Chest CT was negative for evidence of sarcoidosis or malignancy, as well as other infectious or inflammatory processes. She underwent placement of a ventricular-peritoneal shunt and dural biopsy. Biopsy showed dura with reactive and inflammatory changes, but no organisms and granuloma. Given the finding of dural enhancement without evidence of other clear infectious, inflammatory, and malignant etiologies, and the exclusion of other causes of hydrocephalus, the patient was subsequently diagnosed with Idiopathic Hypertrophic Pachymeningitis (IHP) and discharged with improvement of her symptoms.

DISCUSSION: General internist commonly encounter complaints of headache and nausea. Careful evaluation for commonly encountered conditions that tailor to specific risk factors in a systematic manner would usually lead to the diagnosis. But at times, even a extensive work up would only lead to a diagnosis of exclusion. There is a wide array of causes of dural enhancement, including infectious, inflammatory and neoplastic disorders. Infectious etiologies include tuberculosis commonly seen in immunocompromised patients from endemic areas and neurosyphilis seen in patients with limited access to healthcare resources. Neurosarcoidosis should also be considered in the differential, as well as other vasculitides. Finally, malignancy can also cause dural enhancement and thus must be considered. The initial clinical approach to this radiologic finding is to assess for these possible causes. However, in rare instances, an etiology of dural enhancement cannot be elucidated, and a subsequent diagnosis of exclusion of Idiopathic Hypertrophic Pachymeningitis (IHP) would be made that literally translates from Latin as 'thickened fat meninges'. Patients with IHP usually present with headache, cranial nerve palsies, and ataxia, but the clinical presentation can be highly variable. Patients may present with clinical entities secondary to compression by a thickened inflamed meninges such as venous sinus occlusions, cerebral ischemia, intracranial hemorrhage, and obstructive hydrocephalus, which we saw in our patient. Meningeal biopsy may be required to exclude other causes of dural enhancement. Pathological findings usually consist of fibrous thickening and inflammatory changes. The treatment of IHP is also variable and based on the clinical progression of disease. Often times, spontaneous resolution of both clinical symptoms and signs occur. Corticosteroid therapy is also effective in controlling disease progression. Rarely, steroids are ineffective, and treatment with chemotherapy such a cyclophosphamide and azathioprine have also been tried. In some rare instances, surgical incision may be warranted.

AN UNUSUAL COMPLICATION OF INFECTIVE ENDOCARDITIS Megha Prasad. Mayo Clinic, Rochester, CA. (Tracking ID #1642862)

LEARNING OBJECTIVE 1: Recognize small vessel vasculitis as a potential complication of infective endocarditis

LEARNING OBJECTIVE 2: Understand the management of c-ANCA vasculitis

CASE: A 69 year old veterinarian with a history of myelodysplastic syndrome and aortic valve replacement 3 years prior, presented with a 3 month history of fever, 20 lb weight loss, purpuric lower extremity rash and progressive kidney failure. Our patient had blood cultures positive for streptococcus acidominimus 2 months prior to presentation, with a transesophageal echocardiogram confirming vegetations on his prosthetic aortic valve placed in 2009, and a mitral paravalvular abscess with native vegetations. He was treated for endocarditis with intravenous penicillin, ceftriaxone and gentamicin. On repeat transesophageal echocardiogram, vegetations and abscess had resolved. On admission, the patient underwent extensive laboratory testing. Creatinine was 6.5 mg/dL, increased from 1.0 mg/dL 4 months prior. Urinalysis was significant for >100 RBCs, RBC casts, and dysmorphic RBCs. Initial antineutrophilic cytoplasmic antibody (c-ANCA) was negative and anti-proteinase antibody-3 (PR-3) was 6.3 U (reference: <1 U). c-ANCA was later found to be positive on subsequent titers. The patient underwent renal biopsy to further evaluate the abnormal urinalysis in the setting of positive PR-3 and c-ANCA. Renal biopsy was consistent with c-ANCA positive focal segmental necrotizing and crescentic glomerulonephritis in addition to mesangial proliferative glomerulonephritis compatible with IgA nephropathy. Further renal decline prompted dialysis. Skin biopsy of the lower extremity lesion revealed leucocytoclastic vasculitis. Our patient's hospital course was further complicated by the development of seizures revealing a subarachnoid hemorrhage on computed tomography (CT) of the head. Our patient was diagnosed with ANCA-associated systemic vasculitis. His renal dysfunction and subarachnoid hemorrhage were explained by this vasculitis. We initiated prednisone 60 mg daily and gradually noted improvement in his functional capacity, resolution of his seizures, and improvement of his renal function. PR-3 decreased to 1.9 U at dismissal.

DISCUSSION: We describe the need to consider a rheumatological etiology when managing a patient with persistent symptoms after treatment for endocarditis. In these patients, it is important to consider vasculitis as a potentially fatal complication. Our patient's initial fever of unknown origin was attributed to endocarditis. Further evaluation upon transfer, in the setting of his constellation of symptoms including renal failure, rash, and systemic symptoms led us to the diagnosis of c-ANCA vasculitis, which has been described in the literature as a rare complication of infective endocarditis. Immunosuppression was successful in managing this patient's symptoms and decreasing his antibody titers.

AN UNUSUAL PRESENTATION OF WEST NILE VIRUS Katrin Usifo; Jennifer Dooley; Shadi Ayyoub; William C. Crowe. University of Tennessee College of Medicine Chattanooga, Chattanooga, TN. (Tracking ID #1623688)

LEARNING OBJECTIVE 1: Recognize the clinical features of West Nile Virus.
LEARNING OBJECTIVE 2: Suspect West Nile Virus encephalitis even when diagnostic testing is negative.
CASE: A 56 year-old female with no significant past medical history presented to the hospital in July after being found unresponsive at home. She had nausea, vomiting, and diarrhea 1 week prior. In the emergency department she was obtunded, tachycardic, tachypneic, and had a temperature of 103 °F. She was intubated for airway protection. Head CT was negative. LP revealed clear fluid with 36/mm3 RBCs, 92 mg/dL protein, 84 mg/dL glucose, 81/mm3 WBCs, 80 % lymphocytes. CSF gram stain showed no organisms and rare WBCs. CSF was negative for Neisseria meningitidis, Steptococcus pneumoniae, Haemophilus influenzae, Mycobacterium tuberculosis, and Cryptococcal antigen. VDRL, HIV, and HSV were negative. CSF ELISA for West Nile Virus (WNV) IgG and IgM were negative. She was initially treated with Rocephin, Zosyn, Vancomycin, Acyclovir, and Flagyl. The patient remained unresponsive to deep painful stimuli. MRI was suggestive of encephalitis. Testing for Ehrlichia chaffeensis and Human granulocytic ehrlichiosis IgG and IgM was negative. LP repeated 9 days after initial presentation showed clear fluid with 45/mm3 RBCs, 68 mg/dL protein, 59 mg/dL glucose, 5/mm3 WBCs, 95 % lymphocytes. This CSF culture had no growth and no isolated viruses. CSF cytology showed lymphocytes and monocytes with rare granulocytes and no evidence of malignancy. Serum WNV IgG and IgM checked 17 days after initial presentation were negative. Seizure activity developed 11 days into the hospital course and was confirmed by EEG. Unfortunately, her neurological status never improved despite treatment with antibiotics, steroids, and anti-epileptics. The family elected to withdraw care, and the patient passed away with an unclear cause of encephalitis. An autopsy determined the cause of death to be from encephalitis, but the cause of encephalitis was not determined until tissue samples were sent to the Center for Disease Control (CDC) for further analysis. The CDC identified the cause of her encephalitis as West Nile Virus.
DISCUSSION: WNV should be strongly considered in patients greater than 50 years old who have onset of unexplained fever, encephalitis, meningitis, or flaccid paralysis during mosquito season (June to October). Evidence of cases of WNV infection in 2012 in the United States have exceeded that of any other—with 1590 cases and 65 deaths as of August 2012. Eighty percent of persons infected with the WNV are asymptomatic. Twenty percent present with fever, lymphadenopathy, myalgia, headache, or rash. Less than 1 % of infected patients present with neuroinvasive disease, and in these patients LP and testing of the CSF for detection of WNV IgM antibody as well as serologic testing are recommended. WNV ELISA tests have a sensitivity of 96.2 %and specificity of 98.4 %. A single negative test does not rule out infection. WNV IgM antibodies in the blood or CSF are positive in most infected patients within 8 days of symptom onset. Viral culture is the gold standard, but it is rarely positive except in autopsy material from the brain and other solid organs.

AN ATYPICAL PRESENTATION OF IGA NEPHROPATHY Christopher Rombaoa; Kah Poh Loh; David Burgess; Owolabi Ogunneye; Ashish Verma. Baystate Medical Center/Tufts University, Springfield, MA. (Tracking ID #1642954)

LEARNING OBJECTIVE 1: Recognize the atypical clinical presentations IgA nephropathy
LEARNING OBJECTIVE 2: Recognize the variability of light microscopic findings in IgA nephropathy
CASE: Our patient is a 55-year-old Caucasian male who presented with a three-week history of progressively worsening lower extremity and trunk edema associated with a 70 lbs weight gain; preceded by a flu-like illness. He denied any significant flank pain, fever, shortness of breath, orthopnea, gross hematuria, or change in urine output. His past medical, family and social history were non-contributory. On admission he was hypertensive with a blood pressure of 144/79, with otherwise stable vital signs. Physical examination demonstrated anasarca of the trunk and bilateral lower extremities. His initial creatinine on presentation was 1.4 mg/dL and peaked at 3.4 during the hospitalization. Total and LDL cholesterol were elevated at 420 and 314 respectively. Liver function test was normal. A 24-hours urine collection revealed 28 g of daily proteinuria. Urinalysis revealed several red cell casts, Maltese crosses, and fat droplets. Immunological studies were positive for ANA, with normal complement and immunoglobulin levels. Serum and urine immunofixation studies, viral serology, lupus screen, anti-GBM and ANCA were all within normal limits. Given the highly suggestive findings of intrinsic renal disease, a kidney biopsy was performed. Light microscopy revealed hypercellular glomeruli with varying degrees of endocapillary proliferation. In addition, there was some evidence of focal double contours and lobulation, suggestive of membranoproliferative glomerulonephritis. Electron microscopy demonstrated significant effacement of foot processes as well as electron dense deposits in subepithelial and subendothelial locations. Finally, Immunofluorescence studies showed diffuse mesangial deposits of IgA and C3, clinching the diagnosis of IgA nephropathy. The patient was treated with aggressive diuresis, high dose corticosteroids, and cyclophosphamide with gradual resolution of his symptoms.
DISCUSSION: IgA nephropathy is the most common primary glomerulonephritis in the majority of developed countries. This case is interesting in that it outlines that atypical clinical and histological presentations of IgA nephropathy. Less than 10 % of IgA nephropathy presents with nephrotic syndrome or rapidly progressive glomerulonephris; our patient on presentation was found to have both. On light microscopy, the typical morphological lesion observed is mesangial proliferation nonetheless in 20 % of the cases, double contours resembling idiopathic membranoproliferative glomerulonephritis may also be observed. Despite the uniform aspect of immunofluorescence findings in IgA nephropathy, the variability of light microscopic findings still poses significant challenges in histological classification.

AN INTERESTING AND RARE CAUSE OF ABDOMINAL PAIN Alpa Vora. Saint Francis hospital, Evanston, IL. (Tracking ID #1624370)

LEARNING OBJECTIVE 1: To know that Splenic infarct is an uncommon cause of abdominal pain.
LEARNING OBJECTIVE 2: To accurately and diagnose and to know work up and management of Splenic infarct. To timely detect life threatening complications of Splenic infarct.
CASE: 55 year old patient with PMH of pancreatitis in 2000, GERD, HTN, Gout, Kidney stones and Migraine, presented to ER with complaint of Lt UQ abdominal pain associated with nausea without vomiting, girdle like burning pain 10/10, constant, better with Advil, worse with food, lying on left side. No h/o Fever/ chills /melena or hematochezia/ urinary symptoms. He had h/o EGD and colonoscopy about 3–4 year back, with normal results. Social history- Chronic Alcoholic, regularly takes neat Scotch 6 to 8 Oz, Smoker–3PPD×40 year. Physical Examination: Vitals normal, Pt Alert and oriented, no distress, Chest: CTAB, Cardiac: S1S2+, No murmur/ rub/gallop, Abdomen: Soft, NT, ND, BS+, Digital Rectal Exam: Normal, non significant prostate, heme-occult negative. Labs: Hb- 16.9, WBC- 15, 300, Platelets-210,000, BMP- normal,Amylase- 84, Lipase- 6, UA, LFT, Cardiac markers- normal. EKG- NSR, No ST- Tchanges Imaging: CT Abdomen- Splenic infarct. Hypercoagulable workup- positive for Lupus anticoagulant, aPTT- raised TEE - mobile arch atheroma as well as multiple non mobile atheromas in the descending aorta, no intracardiac clots, vegetations/ no shunts. Clinical course: Pt was

initially started on anticoagulation with Lovenox, hydration, analgesics. Surgical service was put on consult. Patient was treated conservatively. He was started on Aspirin, plan was to start Coumadin only if there is any evidence of future embolism, per Cardiology. Hematology service was on consulted, lupus anticoagulant was positive. He was started on Coumadin due to high risk of thrombosis, to be continued life long. He was watched for any complications and was discharged home in 10 days.
DISCUSSION: Splenic infarction is a rare cause of acute abdomen. It must be suspected in patient with hematologic diseases or thromboembolic conditions. The most common onset symptom is left-upper quadrant abdominal pain. Additional symptoms include fever and anemia. Laboratory may show elevated white blood cell and platelet counts. The diagnosis of splenic infarction is based both on clinical presentation and imaging studies. Angio-computed tomography is the diagnostic procedure of choice. Ultrasonography and conventional radiology are useful in the differential diagnosis with other abdominal and thoracic diseases mimicking splenic infarction. Splenectomy is performed for persistent symptoms or a complication of the infarct (splenic pseudocyst, abscess, or hemorrhage). An uncomplicated splenic infarction can be managed safely with medical treatment, but early surgical intervention (splenectomy) is necessary to lower the mortality rate of a complication of the infarct.

AN UNUSUAL AND TERMINAL CAUSE OF SYNCOPE Yogita Segon; Ankur Segon. Medical College of Wisconsin, Milwaukee, WI. (Tracking ID #1619494)

LEARNING OBJECTIVE 1: To recognize that aggressive orophyrangeal squamous cell cancer can lead to syncope
LEARNING OBJECTIVE 2: To appreciate a clinical scenario in which evaluation of carotid arteries is an appropriate part of syncope work up
CASE: 63 year old male with history of locally advanced ((T4 - deep muscle invasion, N2b - multiple ipsilateral neck lymph nodes, M0), left sided base of tongue squamous cell cancer presented to the emergency room with multiple episodes syncope over 2–3 weeks. He was treated with chemoradiation 6 months prior to current admission. Follow up imaging after chemoradiation showed progressive disease. He was then started on palliative cetuximab 1 month prior to current admission. During current admission, work up for syncope was commenced. EKG and cardiac enzymes were negative. There were no events on telemetry. Review of his last CT scan from 4 months prior to admission showed encasement of left carotid artery. A repeat CT scan of his neck was performed. It showed remarkable tumor progression with extensive lymphadenopathy and compression of both of his carotid arteries by a combination of tumor burden, lymph nodes and post-radiation edema. Surgical resection of the mass and local radiation therapy were both deemed inappropriate due to location of tumor and its relative radioresistance in the past. In addition, there was concern that radiation could cause worsening edema and precipitous worsening of patient's condition by causing complete occlusion of the carotid arteries. This information was discussed with patient and his wife and he is currently in home hospice. In the 2 weeks since discharge, he feels he has been able to minimize further episodes of syncope by limiting and modifying his activities.
DISCUSSION: Recurrent syncope due to malignancy is uncommon. Head and neck cancer can lead to recurrent syncope by two mechanisms. Neurally mediated syncope can occur due to carotid body invasion or involvement of the vagus nerve. Syncope due to reduced blood flow in carotid arteries is uncommon and requires involvement of both carotids. While it is possible that our patient was passing out due to tumor pressure mediated firing of baroreceptors in his carotid bodies, we think reduced carotid blood flow was the more likely culprit. This is based upon the fact that he only started having syncopal events after involvement of his contralateral carotid artery. Finally, our case highlights the importance of imaging the carotid arteries in patients with history of head and neck cancer who present with syncope. Imaging of carotid arteries is not merited during routine diagnostic work up of syncope unless a neurological event is suggested by history or if focal signs and symptoms are present. However, such an evaluation should be considered in patients who have a history of head and neck cancer, especially if the cancer has been relatively resistant to treatment or locally advanced in the past.

AN UNUSUAL CAUSE OF COUGH Aparna Sharma; Kokila Bindiganavile Nagendran; Harvey Friedman. Saint Francis Hospital, Evanston, IL. (Tracking ID #1631543)

LEARNING OBJECTIVE 1: Recognize an unusual presentation of Allergic Bronchopulmonary Aspergillosis (ABPA)
CASE: An 89 year old Caucasian male with a history of coronary artery disease, stroke and aortic valve replacement was evaluated due to an abnormal chest x-ray showing right upper lobe collapse. The patient reported productive cough with whitish sputum for the preceding 5–6 months but denied fever, chills, hemoptysis, wheezing, chest pain, dyspnea, sick contacts, weight loss, night sweats, tobacco use or seasonal allergies. His travel history included a trip to California 8 months back. His vital signs were normal and physical exam was significant for mildly decreased breath sounds in the right upper lung field. Laboratory values were significant for a white cell count of 7.2 k/mm3 with eosinophilia (15.9 % eosinophils) 4 months back, the patient was hospitalized for "pneumonia" at which time the chest x-ray showed a similar appearance. CT scan of the chest demonstrated right main stem bronchus narrowing with resultant collapse and post-obstructive pneumonia in the right upper lobe. Bronchoscopy was notable for thick inspissated mucous obstructing the right upper lobe bronchus but no endobronchial lesions were noted. Biopsy showed benign bronchial mucosa with chronic inflammation and numerous Charcot Leyden crystals. Cytology was negative for malignant cells. Fungal, acid fast bacilli (AFB) cultures and fungal serologies (Blastomyces, Coccidioides and Histoplasma) were negative as well. Upon current presentation, bronchoscopy showed an obstructed right upper lobe bronchus with thick and tenacious mucus. Bronchial cultures were negative for fungus and AFB. Cytology was negative for malignant cells. Serum total IgE levels were 1134 kU/L (normal range 2–114) and IgE specific to A. terreus was positive. A diagnosis of ABPA was made and treatment with Prednisone and Itraconazole was initiated. Serum total IgE levels were 708 kU/L at 2 weeks, 129 kU/L at 2 months and 100 kU/L (within normal range) at 5 months.
DISCUSSION: Allergic bronchopulmonary aspergillosis (ABPA) is an IgE mediated hypersensitivity reaction directed against Aspergillus antigens that are inhaled into the upper and lower respiratory tract. It is known to occur mostly in patients with underlying asthma and less commonly in patients with cystic fibrosis. This vignette highlights an unusual presentation of the disease due to the lack of a prior history of asthma in the patient described above. Moreover, the mean age of onset of ABPA is usually in the third or fourth decade of life whereas this patient first developed symptoms at the age of 89 years. ABPA caused by A. terreus is rare and most cases reported in the literature describe a different species, A. fumigatus as the etiologic agent. Treatment involves a combination of steroids and antifungals (Itraconazole or Voriconazole) for a period of 3–6 months. Treatment efficacy is monitored via serial serum IgE levels. It is important to recognize unusual presentations of ABPA as early detection and treatment reduces the risk of progression to fibrotic disease and subsequent morbidity.

AN UNUSUAL PRESENTATION OF AN ACOUSTIC NEUROMA—BILATERAL PAPILLEDEMA WITHOUT HYDROCEPHALUS Maryam Mahmood; Anthony A. Donato. Reading Health System, Reading, PA. (Tracking ID #1628842)

LEARNING OBJECTIVE 1: Recognize an unusual presentation of acoustic neuromas

CASE: Bilateral papilledema is a relatively rare condition that is typically accompanied by increased intracranial pressure. We present an unusual case of a unilateral acoustic neuroma associated with bilateral papilledema in the absence of increased intracranial pressure. A 57-year-old woman presented with a two-week history of worsening morning headaches, bilateral blurred vision and loss of color vision. Review of symptoms also found intermittent right-sided hearing loss and tinnitus. Examination revealed an alert, normotensive patient. On fundoscopy bilateral optic disc edema and retinal edema were noted. Visual acuity of 20/150 OD and 20/400 OS were significantly worsened from her previous refractive error. Extraocular muscle, visual field and slit lamp examinations were normal. Sensorineural hearing loss in the right ear was confirmed by pure tone audiometry, hearing in the left ear was normal, as was the rest of the neurologic exam. MRI of the brain demonstrated a smooth 20 mm by 24 mm acoustic neuroma at the right cerebellopontine angle cistern with localized mass effect. No evidence of increased intracranial pressure was apparent on neuroimaging. A lumbar puncture revealed opening pressure of 24 cmH2O and mildly elevated cerebrospinal fluid protein of 95 mg/dL, with an otherwise unremarkable cerebrospinal fluid analysis. The patient was referred for radiation therapy for the symptomatic acoustic neuroma.
DISCUSSION: Acoustic neuromas account for about 8 % of all intracranial tumors, usually presenting with hearing loss, tinnitus, disequilibrium, facial numbness and headache. Visual symptoms are much less common, but when they occur they are associated with larger tumors that compress the adjacent fourth ventricle. Papilledema in the absence of increased intracranial pressure is believed to be the result of an unusual constituent of CSF that impairs CSF reabsorption through blockage of the arachnoid granulations with a resulting communicating hydrocephalus.

ANAPHYLAXIS TO LEVOFLOXACIN: RARE REACTION TO A COMMON DRUG Qura Tul Ain Rashid; Joseph T. Knapper; Robin Klein. Emory University School of Medicine, Atlanta, GA. (Tracking ID #1638348)

LEARNING OBJECTIVE 1: Review the serious side effects of levofloxacin.
LEARNING OBJECTIVE 2: i) Recongize anaphylaxis associated with flouroquinolones as rare but severe reaction to flouroquinolones. ii) Appreciate the potential for these anaphylactic reactions when prescribing floroquinolones to patients.
CASE: A 63 year old woman presented to the emergency department with 2 weeks of shortness of breath, productive cough and chest tightness. She denied any chest pain, fevers, chills, or hemoptysis. Past history was significant for hypertension and chronic obstructive pulmonary disease (COPD) requiring home oxygen. Patient reported compliance with Symbicort and Ipratropium inhaler. She reported medication allergies to Darvocet and Benadryl. Severity of the reaction to these medication was unclear. On admission, her heart rate was 97 bpm and blood pressure was 125/68 mmHg. Exam revealed expiratory wheezes diffusely in all lung fields. Chest X-ray revealed no acute infiltrate. She was admitted for a COPD exacerbation and treated initially with oral prednisone and doxycycline. The patient became more dyspneic and medication was switched to oral Levofloxacin and intravenous steroids. The patient reported the sensation of throat swelling and difficulty breathing within minutes of taking first dose of levofloxacin. She became acutely tachypneic and diaphoretic. She had swelling of the tongue and face and developed an urticarial rash on trunk, face and all four extremeties. She became hypotensive and developed PEA arrest. Chest compressions were initiated and return of spontaneous circulation was obtained. She was intubated, transferred to the intensive care unit, and was treated with epinephrine, steroids and H2 blockers. Her clinical status improved, facial swelling decreased, and rash resolved. She was extubated and ultimately discharged home a few days later.
DISCUSSION: Fluoroquinolones are broad-spectrum antibiotics used for the treatment of many types of infections including those of the respiratory tract. Levaquin in particular is one of the most prescribed drugs in the world, with sales exceeded $1.5 billion in 2010. It is generally well-tolerated. The most frequently cited side effects in adults are gastrointestinal problems such as nausea, vomiting, and diarrhea and CNS problems including headaches, dizziness, and insomnia. Serious side effects include prolonged QT, torsades de pointes, hypersensitivity reactions, and Stevens Johnsons syndrome. Anaphylaxis is a severe reaction that arises in response to the release of inflammatory mediators and cytokines. Anaphylaxis associated with flouroquinolones is rare with an estimated frequency of 1.8 per 10 million days of treatment based on reports. Studies show that the rates of anaphylaxis are comparable with different fluoroquinolones. Anaphylaxis after the first dose or within the first 3 days of starting the medication occurred in 43 % of cases in one study. The occurance after first-ever intake suggests a mechanism where sensitization is not necessary. This case illustrates the rare but grave potential for anaphylactic reactions with fluoroquinolone use. Despite their frequent use and good overall safety profile, fluoroquinolones can prompt serious reactions that are difficult to predict. Class-based cross-reactivity is high and anaphylaxis cannot be reliably predicted with either skin-testing or basophil activation testing. Physicians need to be aware of these consequences when prescribing floroquinolones to their patients.

ANOMALOUS AORTIC ORIGIN OF CORONARY ARTERY AND SUDDEN CARDIAC DEATH: CONSIDERATION OF DIAGNOSTIC AND TREATMENT APPROACHES. Beata A. Kaczkowska; Terrence J. Sacchi. New York Methodist Hospital, Brooklyn, NY. (Tracking ID #1643518)

LEARNING OBJECTIVE 1: Coronary artery anomalies are the fifth most common cause of sudden cardiac death (SCD). Despite having a low prevalence, they account for approximately 15 % of all sudden cardiac deaths. We assess and recognize diagnostic, preventive and therapeutic approaches of this rare coronary anomaly.
CASE: A 43 year-old previously asymptomatic female with a long history of aerobic exercise and no personal or family history of heart disease or cardiac arrest presented as SCD after a witnessed collapse while running on a treadmill. The subjective data were unobtainable due to her unconscious state. The physical examination was unremarkable. The objective data showed normal hemogram, chemistry, cardiac biomarkers, electrocardiogram (EKG) and echocardiogram (ECHO). Coronary angiography revealed an anomalous origin of the left anterior descending (LAD) and left circumflex (LCX) coronary arteries from the right sinus of Valsalva. The LAD, LCX and right coronary artery (RCA) had separate ostia. These findings were subsequently confirmed by computer tomography coronary angiography (CTCA). Intraoperatively, in addition to an anomalous aortic origin of coronary arteries, the LCX demonstrated an unusual course, turning sharply off the sinus and coursing rightward behind the aorta. The vessel was also tightly encased in a fibrous sheath in an almost intramural fashion. No vessel coursing between the great arteries was found. She underwent an unroofing surgical repair. Postoperatively, a cardioverter-defibrillator (ICD) was implanted. She remains symptom-free.
DISCUSSION: The clinical presentation of individuals with coronary artery anomalies may be chest pain, palpitations or syncope, especially with exercise, although it can be sudden death. Anomalous coronaries are rarely diagnosed in asymptomatic individuals. Diagnostic modalities such as EKG, stress testing and ECHO can miss 80–100 % of coronary anomalies. Preceding symptoms may be the only predictors of SCD therefore unexplained symptoms of cardiac ischemia or syncope especially in young individuals should receive further scrutiny. The prevalence of an anomalous aortic origin of a coronary artery from the opposite sinus is 0.1–0.3 %. The incidence and associated SCD risk remain unclear due to lack of diagnostic criteria and reliance on postmortem data. Mortality is 0–

50 % and 30–100 % with anomalous RCA and LAD respectively. Five documented cases of several affected family members support its possible hereditary transmission yet no guidelines exist for screening families. Transthoracic ECHO with attention to the coronary arteries, transesophageal ECHO, CTCA, cardiac magnetic resonance imaging and coronary angiography are diagnostic. The ultimate treatment is surgical repair, making timely identification crucial in this repairable condition. Postsurgical mortality is rare (1.5 % incidence). Although no recommendations exist, given the highly atypical coronary course an ICD was recommended in our patient solely on clinical impression, not per published guidelines. The question arises whether an ICD can be protective and further reduce mortality.

ANOTHER LUPUS FLARE? Eric M. Nelsen; Tony Chon. Mayo Clinic, Rochester, MN. (Tracking ID #1636459)

LEARNING OBJECTIVE 1: Recognize the infectious causes of elevated liver enzymes and abdominal pain in patients with SLE.
LEARNING OBJECTIVE 2: Diagnosis and treat systemic CMV infection.
CASE: A 51 year old female with a history of SLE on mycophenolate mofetil therapy presented to an outside facility with 2 weeks of multiple systemic complaints including subjective abdominal pain, nausea, fevers, fatigue and headache. Her fevers were as high as 38.9 celsius. Her headaches were described as a dull ache wrapping around her head. On admission she was found to have elevated liver enzymes, AST 349 U/L, ALT 503 U/L and an alkaline phosphatase of 459 U/L with a normal bilirubin. CT and ultrasound imaging were negative for acute cholecystitis with no evidence of cholelithiasis; but did show some liver parenchymal inflammation with gallbladder wall thickening. Due to strong concern for SLE flare, she was subsequently transferred to our facility. Her anti-DNA and complement levels were within normal limits thus our Rheumatology colleagues believed the patient was not having a flare of her SLE and recommended holding the mycophenolate until infection was ruled out. Due to the severity of her headache and her overall clinical picture, she underwent lumbar puncture on admission. CSF showed a protein of 38 mg/dL, glucose of 40 mg/dL with 2 total nucleated cells. Additional history found that the patient had been camping the last two weekends with multiple mosquito bites, however no known tick exposure. Infectious disease work-up was negative for West Nile, anaplasma, Ehrlichia, Q fever, and Lyme disease. Due to her elevated liver enzymes and systemic symptoms, hepatitis serologies for B and C were checked and found to be negative. Additionally her HSV IgM antibodies and EBV PCR were negative. Due to her immunosuppressive history a CMV IgM serology was checked and found to be positive. The elevation in liver enzymes and the thickening of the gallbladder were thought to be due to her CMV infection. For treatment of her systemic CMV infection with IV ganciclovir which was transitioned to PO valganciclovir after 24 h. Given her low serum CMV PCR, it was felt that she did not need an ophthalmology evaluation for retinitis. Her symptoms improved and she was discharged home on valganciclovir in stable condition.
DISCUSSION: Abdominal pain with nausea and vomiting can occur in up to 30 % of patients with SLE. Additionally, liver enzyme abnormalities in SLE are relatively a common presentation. Most patients have low level elevation in AST, ALT. Autoimmune liver disease is uncommon in patients with SLE. It is important to recognize the pattern of liver enzyme elevation related to SLE and rule out other causes. In this patient her SLE markers of disease (complement and anti-DNA levels) were stable pointing away from a SLE flare thus leading to an infectious disease work-up. Systemic CMV infection can have a wide range of clinical presentation. It is important to recognize which patients are at risk for systemic CMV infection. This patient had been on long standing immunosuppressive medications thus putting her at risk. Her presenting symptoms and elevated liver enzymes could all be explained by systemic CMV infection. Once her CMV infection was treated, her symptoms and clinical status improved. Systemic CMV infection should remain on the differential in immunosuppressed patients presenting with constellation of symptoms including fever, malaise, fatigue, headaches, and abdominal pain.

ANTISYNTHETASE SYNDROME: THE TIP OF THE ICEBERG. Anna Corey. University of Wisconsin Hospital and Clinics, Madison, WI. (Tracking ID #1642768)

LEARNING OBJECTIVE 1: Identify the constellation of symptoms that comprise the antisynthetase syndrome.
LEARNING OBJECTIVE 2: Recognize the importance of evaluating for underlying malignancy in all patients presenting with inflammatory myopathy.
CASE: A 65-year-old woman with a history of GERD presented with 3 months of exertional dyspnea, dry cough, and worsening reflux symptoms. She had completed several courses of antibiotics for presumed community-acquired-pneumonia without improvement in her symptoms. Vital signs were normal and physical exam unremarkable. Chest radiograph showed multifocal bibasilar opacities. She was diagnosed with aspiration pneumonitis and treated with high dose proton-pump inhibitor and anti-reflux measures. After some initial improvement in her symptoms, she returned several weeks later with worsening dyspnea, fatigue, myalgias and arthralgias of her hands, wrists and knees. She also complained of dry eyes and thickening of the skin on her hands. Vital signs were normal. Physical exam revealed tenderness and swelling of both wrists and right 2nd and 5th MCP joints and tenderness upon palpation of the upper arms. There was also dry, thickened skin on the palmar surfaces of her fingers. Lung exam revealed bibasilar crackles. No lymphadenopathy or rashes were noted. Initial laboratory evaluation revealed mildly elevated CK and transaminitis. Chest CT showed basilar peribronchovascular groundglass, nodular and reticular pattern opacities associated with bronchiectasis, consistent with nonspecific interstitial pneumonia (NSIP). Transbronchial lung biopsy revealed interstitial mononuclear inflammation and mild fibrosis, also consistent with NSIP. By this time, anti-Jo-1 antibody returned positive. The unifying diagnosis was thought to be antisynthetase syndrome and she was started on prednisone 1 mg/kg daily with improvement in her symptoms. Unfortunately, the CT chest had also revealed left axillary lymphadenopathy. A workup for breast cancer was pursued and although clinical breast exam and diagnostic mammogram were negative, lymph node biopsy revealed carcinoma consistent with a breast primary. She underwent mastectomy and axillary lymph node dissection and is currently undergoing chemotherapy. In terms of her antisynthetase syndrome, the myalgias and arthralgias have resolved, dyspnea has significantly improved, and CK has normalized. She is still followed closely by Rheumatology, as it is unclear if her symptoms will return after completion of chemotherapy.
DISCUSSION: Antisynthetase syndrome is an idiopathic inflammatory myopathy characterized by interstitial lung disease, myositis, arthritis, Raynaud's phenomenon and "mechanic's hands". It is associated with antibodies against aminoacyl-tRNA-synthetases, the most common of which is anti-Jo1 antibody (anti-histidyl-tRNA synthetase). Although dermatomyositis is known to be associated with underlying malignancy in up to a third of patients, there is thought to be a negative association between interstitial lung disease, particularly in the antisynthetase syndrome, and malignancy in patients with inflammatory myopathy. Newer studies and case reports, however, are showing that there is greater association between the antisynthetase syndrome and underlying malignancy than was previously thought. Thus, as this case demonstrates, it is important to evaluate for maligiancy in all patients diagnosed with inflammatory myopathy.

AORTOESOPHAGEAL FISTULA AS A RARE CAUSE OF CHEST PAIN Christopher Sankey. [1]Yale School of Medicine, New Haven, CT; [2]Yale-New Haven Hospital, New Haven, CT. (Tracking ID #1637197)

LEARNING OBJECTIVE 1: Understand aortoesophageal fistula (AEF) as a rare cause of chest pain and upper gastrointestinal hemorrhage.
LEARNING OBJECTIVE 2: Review clinical characteristics and etiologic factors in AEF.
CASE: A 47-year-old Hispanic male with active intravenous heroin abuse presented with 2–3 weeks of severe ("11"/10) chest discomfort. The pain was described as constant, though the severity waxed and waned, and located sub-sternally with intermittent radiation to the left arm. The patient's symptoms were exacerbated by movement, and there was no relationship to oral intake. His intravenous heroin use was intermittent, with last use reported 3 days prior to presentation. On admission, the patient was febrile to 101.7 °F, and physical examination was remarkable for point tenderness of the xiphoid process but otherwise without cardiac murmur or peripheral stigmata of infective endocarditis. Laboratory testing revealed normal chemistries, a mild leukocytosis of 16,000/μL, and negative troponin T. Electrocardiogram, chest radiograph, and echocardiogram were unremarkable. CT of the chest demonstrated diffuse esophageal thickening and extensive mediastinal soft tissue enhancement. The patient underwent an upper endoscopy, which revealed no luminal irregularities of the esophagus or stomach. Esophagram suggested a mild degree of inflammatory narrowing, but no extravasation of contrast. A diagnosis of mediastinitis was made, though etiology remained elusive. The remainder of the patient's medical course was complicated by two separate against medical advice discharges. Ultimately, the patient returned to the Emergency Department with abrupt-onset hematemesis, occurring the day prior and on the morning of re-admission. Hemoglobin dropped from 14 to 7 g/dl, and he was admitted to the intensive care unit. In the MICU, he manifest an acute upper gastrointestinal hemorrhage, hemodynamic instability, and died that afternoon. Autopsy revealed the presence of an aortoesophageal fistula.
DISCUSSION: Aortoesophageal fistula (AEF) is a rare entity, accounting for a small percentage of all upper gastrointestinal hemorrhages at autopsy. Aorto-enteric fistula is most often located in the third portion of the duodenum, but has been described in all segments of the gastrointestinal tract from esophagus to rectum. The AEF may permit high-pressure aortic blood to enter the esophagus (and yield an often fatal gastrointestinal hemorrhage) or less frequently for bacteria to enter the aorta and mediastinum (and yield aortitis or mediastinitis), both of which occurred in our patient. The massive hematemesis encountered with AEF can possibly be differentiated from esophageal variceal bleeding due to the "bright" arterial hue of an AEF-related hemorrhage in contrast with a darker venous variceal source. An additional clinical characteristic to distinguish AEF is Chiari's triad, present in approximately 65 % of cases. This classically includes an esophageal injury, a self-resolving or "sentinel" hemorrhage, and re-bleed with exsanguination hours to days later. Chest pain is present in approximately 60 % of cases. The majority (90 %) of AEFs can be attributed to thoracic aortic aneurysms, foreign body ingestions, or esophageal malignancies. The etiology of our patient's AEF remains a mystery, as there was no evidence for any causative etiology at autopsy.

APICAL HYPERTROPHIC CARDIOMYOPATHY, A BENIGN FORM OF HEART DISEASE? Hannah HallMaria G. Frank[2]. [1]University of Colorado Internal Medicine Residency, Denver, CO; [2]Denver Health and Hospital Authority, Denver, CO. (Tracking ID #1624629)

LEARNING OBJECTIVE 1: Recognize classic EKG findings of apical hypertrophic cardiomyopathy.
LEARNING OBJECTIVE 2: Recognize apical hypertrophic cardiomyopathy is not a benign form of heart disease.
CASE: Apical hypertrophic cardiomyopathy (AHCM) is a subtype of hypertrophic cardiomyopathy first described as a benign disease in Japan. The risk of sudden cardiac death in AHCM is thought to be lower than classic hypertrophic cardiomyopathy. However, recent cases in the literature report adverse outcomes in AHCM, especially in the non-Asian population. We present a patient with ventricular fibrillation (VF) arrest secondary to AHCM which raises the question of whether further intervention and monitoring is necessary. A 52 year old Hispanic male with history of epilepsy and untreated diabetes presented with VF arrest followed by return of spontaneous circulation. His exam was significant for a systolic murmur and amnesia post-event. There was no family history of sudden cardiac death. Initial EKG showed ST elevations without evidence of significant coronary artery disease on cardiac catheterization. Troponins peaked at 594. Subsequent EKGs revealed prominent T wave inversions in the anterolateral leads. Transthoracic echo (TTE) showed apical hypertrophy, akinesis, and thrombus. MRI revealed left ventricular AHCM with the "ace-of-spades" sign at end diastole, apical thrombus with edema and scar consistent with myocardial infarction due to subendocardial hypoperfusion. An automatic implantable cardioverter defibrillator was placed before discharge.
DISCUSSION: AHCM was first described in Japanese patients with left ventricular apical hypertrophy with wall thickness of 15 mm and above, giant negative T waves in the precordial leads and a spade-like configuration of the LV at end-diastole. The prevalence of AHCM is 15 % in Japan vs. 3 % in the US. One Canadian retrospective study of 105 patients with AHCM found 0.1 % annual mortality, with 30 % experiencing morbid events (12 % atrial fibrillation, 10 % myocardial infarction). They concluded AHCM has a benign prognosis and not a risk for cardiac death. However, there have been multiple reports of supraventricular tachycardia, sustained monomorphic ventricular tachycardia, VF and myocardial ischemia. A 3-year prospective South Korean observational study with 454 AHCM patients showed an all-cause mortality of 9 % with 5 % cardiovascular mortality. Our case illustrates the need for further research to address clinical predictors and guidelines for the management of AHCM, where adverse clinical events seem to be more prevalent than previously considered.

ARIPIPRAZOLE INDUCED RHABDOMYOLYSIS Eunice Y. Chuang; Indumathy Varadarajan; Arooj Hyat. Mount Auburn Hospital, Cambridge, MA. (Tracking ID #1642299)

LEARNING OBJECTIVE 1: - Recognize the clinical features of rhabdomylosis
LEARNING OBJECTIVE 2: - Identify aripiprazole as a potential cause for rhabdomyolsis
CASE: 30 year old former gymnast women presented with excruciating pain in her quadriceps for few hours. One day prior, she returned to the gym after more than 1 year of being physically inactive. She spent an hour doing lower extremity thrusts and felt sore afterwards. However, the pain progressed throughout the night and she noticed her urine was darker. Past medical history is significant for compartment syndrome 6 months prior related to history of surgeries in tibia, factitious disorder, self-mutilation and borderline personality disorder. Medications included fluoxetine, aripiprazole and guanfacine. She denied family history of rheumatological or muscle disease. Physical exam was unremarkable with stable vital signs. Laboratory data showed normal electrolytes, BUN and creatine. CPK was 34787 U/L. Urinalysis showed 3+ blood, 1+ albumin and some amorphous crystals. Toxicology screen was negative. Patient was admitted and given high-volume intravenous solution replacement daily. CPK trended up to 93815 U/L 2 days later but it was down to 8146 U/L 4 days later. Renal function was always stable. She was discharged home to see rheumatology as outpatient. Rheumatology recommended discontinuing the aripiprazole 20 mg daily as a possible cause of the rhabdomyolysis. Patient had been on aripiprazole for 4 years, however the day she returned to the gym before admission, was the first time she had worked out on aripiprazole. CPK checked 2 months later was 57 U/L.
DISCUSSION: Aripiprazole is a drug used commonly. It is a partial agonist at dopamine-2 (D2), dopamine-3 (D3), and serotonin-1A (5-HT1A) receptors, with antagonist activity at serotonin 2A (5-HT2A) receptors used for schizophrenia, bipolar disorder and depression. Common side effects include headache, anxiety, nausea, dizziness, insomnia and weight gain. All

atypical antipsychotics can cause rhabdomyolysis in the neuroleptic malignant syndrome. However, there are a few reports of isolated increases in CPK levels with atypical antipsychotics. RM is a rare side effect of Aripiprazole. Its proposed mechanism is the antagonist activity at 5-HT2A receptors in the skeletal muscle, which would compromise the uptake of glucose and lead to changes in the sarcolemma; ultimately increasing its permeability to creatine kinase. We report a case of rhabdomyolysis in a patient on aripiprazole associated with a modest amount of physical activity. The patient's rhabdomyolysis was finally resolved after discontinuation of aripiprazole. It is important to recognize the possibility of the individual susceptibility for rhabdomyolysis in every patient on this medication. RM is a potentially life-threatening complication that can lead to electrolyte imbalances and acute kidney injury. This adverse event should be evoked when a patient on aripiprazole presents with muscle pain, unexplained fatigue or weakness.

ASYMPTOMATIC PROSTATITIS, AN UNCOMMON MANIFESTATION OF BRUCELLOSIS Elizabeth Selden[1]; Lindsay Innes[1]; Seagram M. Villagomez[2,3]. [1]NYU Medical Center, New York, NY; [2]VA Harbor New York Healthcare System, New York, NY; [3]NYU, New York, NY. (Tracking ID #1642410)

LEARNING OBJECTIVE 1: Recognize an unusual clinical manifestation of Brucellosis

CASE: A 66 year old Hispanic man with no known medical history presented to the emergency room with 1 month of fever. He was well prior to this illness and denied cough, nausea, vomiting, diarrhea, abdominal pain, dysuria, or rash. Over the past month, he had daily drenching night sweats and developed new right hip and back pain. He moved to the United States from Ecuador in 1972 and last visited Ecuador 5 years ago. Most recent travel was to Florida 6 months ago. He worked in a seafood restaurant cooking and gardening and 3 months ago noticed several "mosquito bites" after pruning bushes. He had unprotected sex with 3 female partners in the past year and no prior HIV tests. He served in the US military in the Vietnam War where he was treated for gonorrhea twice. Friends in Ecuador had sent him soft cheese, which he ate 1 month ago. He was up to date with cancer screening: colonoscopy was unremarkable in 2008 and PSA was normal in 2011. Laboratory studies on admission showed mild elevation in transaminases and hyponatremia, which normalized with intravenous fluids. Complete blood count and differential were normal. CT scan of the chest, abdomen and pelvis were significant only for enlarged prostate. Prostate-specific antigen was elevated to 10. Urinalysis was unremarkable. Exam demonstrated an enlarged, boggy and non-tender prostate. The patient remained febrile. Admission blood cultures were initially interpreted as gram-positive bacilli and the patient was empirically treated with vancomycin. On day 3, blood culture results were changed to gram-negative coccobacilli. Further speciation revealed Brucella species, confirmed by the New York State Department of Health to be Brucella abortus. The patient had an unremarkable transesophageal echocardiogram. He was started on a six-week course of rifampin and doxycycline, defervesced and was discharged on hospital day 11.

DISCUSSION: Brucellosis is a serious public health problem in the Mediterranean, Western Asia, Latin America and Africa; however in the US, the CDC estimates that there fewer than 200 cases reported yearly (1). Since implementation of domestic livestock eradication programs, risk factors for Brucella infection include hunting and butchering, consumption of unpasteurized dairy products from endemic areas, and laboratory work (1). Given that only 25–35 % of cases present with focal organ system involvement and presenting symptoms are often non-specific, it is thought to be greatly underreported (2). Concerns about future use as a biological weapon due to the ease of transmission via aerosolization make familiarity with Brucellosis paramount (1; 3). Almost any organ system can be involved although most common is musculoskeletal. The genitourinary system is second most-affected, more often in the form of epididymoorchitis—Brucella prostatitis is rare (3). In this case the key historical element, consumption of unpasteurized cheese, was elicited on admission. However diagnosis lagged by several days, hinging on blood culture results, highlighting the difficulty in making an uncommon diagnosis when the presentation is atypical. References: 1. Summary of notifiable diseases: United States, 2009. MMWR weekly report 2011 May;58(53):1–100. 2. Wise RI. Brucellosis in the United States. Past, present, and future. JAMA 1980 Nov;244(20):2318–22. 3. Pappas G, Akritidis N, Bosilkovski M, Tsianos E. Brucellosis. NEJM 2005 Jun;352(22):2325–36.

ATHLETE'S HEART Mohammed Bahaa Aldeen; Rahul Chandra. Texas Tech Univ Health Sciences Center, Amarillo, TX. (Tracking ID #1631234)

LEARNING OBJECTIVE 1: Recognize athletic training as an important physiologic cause of cardiac repolarization abnormalities manifest as ST and T wave changes seen on a 12 lead EKG.

LEARNING OBJECTIVE 2: Distinguish above physiologic changes from other serious pathology like hypertrophic obstructive cardiomyopathy in the differential diagnosis.

CASE: A 27-year-old healthy young man was sent for evaluation of his unusual EKG. Patient had complaint of mid-sternal, sharp, burning chest pain. There was also associated sour taste in the mouth. Episode had lasted only 20 min, promptly responded to antacids, and did not reoccur. Past medical history was esophageal reflux only. Patient did not smoke or take any medications. No history of street drug abuse. No family history of cardiomyopathy or sudden cardiac death. He exercised regularly. Activities included lifting 300 lb of weights and also running. There was no chest discomfort with exercise. No history of exertional syncope. No history of thromboembolic events or leg swelling. No fever or flu like illness. On examination BP was 130/80, pulse 60/min, afebrile, normal oxygen saturation. He was very well built and muscular. BP was equal in both arms. No jugular venous distention. His cardiac exam was normal, no murmurs or rubs. Respiratory exam was normal. No leg swelling. Remaining exam was normal. Patient's EKG had significant deep asymmetric T wave inversions in the V4-V 6, I, aVL, II, III and aVF leads. T waves in lead V3 were biphasic. He also had 1 mm ST depression in V 5- V6, II, III and aV. There were no PR depressions and changes were not consistent with pericarditis. QT interval was normal. Repeat EKG showed these changes persisted, though he remained pain free. Cardiac troponins were negative. Other labs hemoglobin, toxicology, electrolytes, renal function were normal. White count and ESR were normal. Chest X ray was normal. Though chest pain description was non-cardiac (reflux related); he underwent investigations to explain his bizarre and unexplained EKG. Echocardiography showed normal LV systolic and diastolic function, LVEF 65 %, normal chamber size, normal valves, and normal wall motion. No features of hypertrophic obstructive cardiomyopathy seen. However, left ventricular posterior wall was thick (15 mm). Nuclear stress test showed no reversible ischemia. Telemetry negative for arrhythmia. Patients EKG changes were diagnosed to be a physiologic finding due to his intense athletic training.

DISCUSSION: The Athlete's heart develops physiologic adaptation to meet increased cardiac output demand by increases in LV End diastolic diameter and increase in left ventricular wall thickness (up to 16 mm). EKG in athletes can manifest sinus bradycardia, isolated voltage criteria for LVH, early repolarization, ST elevation, ST depression and T wave changes. Diagnostic dilemma occurs in distinguishing these physiologic EKG findings from those in true cardiac pathology like hypertrophic obstructive cardiomyopathy (HOCM). Echocardiogram and occasionally cardiac MRI may be needed to help distinguish these. It's important to consider the type and intensity of physical training, race, body habitus, and the time the EKG was obtained in relation to training; in order to better understand the 'normal' spectrum of EKG changes in athletes. Career implications arise here. Not recognizing physiology would unnecessarily end a promising athletic career. Not recognizing HOCM would put the person at risk of sudden death.

ATYPICAL PRESENTATION OF ATYPICAL CHEST PAIN Rupel Dedhia; Elizabeth L. Bolen. Rush University Medical Center, Chicago, IL. (Tracking ID #1619827)

LEARNING OBJECTIVE 1: Recognize sternoclavicular joint septic arthritis as an unusual cause of atypical chest pain.
LEARNING OBJECTIVE 2: Diagnose and manage sternoclavicular joint septic arthritis.
CASE: A 54-year-old man with a history of Hepatitis C, heroin abuse, and hypertension presented with a 1 day history of sharp, non-exertional, non-radiating right sided chest pain with associated dyspnea. Symptoms lasted 15–20 min at rest. Patient also reported neck and right shoulder pain. The initial evaluating physician documented a normal physical examination. The patient was ruled out for acute coronary syndrome by ekg and laboratory markers and radiographic evaluation including a doubutamine stress echo and CT chest PE protocol was normal. The patient was discharged home with a diagnosis of atypical chest pain. He returned 6 days later with worsening chest and shoulder pain. Upon examination, he was febrile at 100.9 and was noted to have erythema and warmth of the right sternoclavicular joint with decreased range of motion in the right shoulder. Labs revealed a WBC count of 18.9 and urine toxicology was positive for opiates. Plain radiographs of the right shoulder were normal. Initial peripheral blood cultures grew gram-positive cocci in clusters so broad spectrum antibiotics including Vancomycin and Zosyn were administered. The patient remained febrile with a Tmax of 101.7. A CT chest was repeated and revealed a mixed solid and cystic soft tissue process extending from the level of the thyroid cartilage down to the anterior portion of the superior mediastinum. The patient went to the operation room where debridement of the sternoclavicular joint revealed a yellow, purulent discharge (culture grew MSSA). Final speciation and sensitivities of the peripheral blood cultures also revealed MSSA. The head of the clavicle was debrided and partially excised. Pathology revealed inflammation and necrotic tissue. Patient's antibiotics were switched to IV cefazolin to complete 6 weeks of therapy. The patient continues to do well and has closely followed up in our clinic.
DISCUSSION: Sternoclavicular (SC) joint septic arthritis is a rare (comprising <1 % of all joint infections) cause of atypical chest pain that is often life threatening if not diagnosed correctly. Plain radiographs are frequently normal; therefore identification of risk factors along with a thorough physical examination can assist providers in early diagnosis to prevent serious complications such as abscess formation, osteomyelitis, mediastinitis, and empyema. Risk factors include IVDU, peripheral infections, diabetes mellitus, trauma and infected central venous access. Recognizing common presenting symptoms of SC joint septic arthritis can be challenging. Symptoms can be vague from chest pain (reported in 78 % of cases) to shoulder and neck pain. Treatment involves early surgical debridement and long-term IV antibiotics. Treatment duration depends on the identified organism and the extent of the infection. The most commonly isolated pathogen in intravenous drug users is Staphylococcus aureus, followed by Pseudomonas aeruginosa. Identifying unusual causes of atypical chest pain such as SC joint septic arthritis necessitates a high level of clinical suspicion by identifying risk factors (intravenous drug use in our patient) and performing a thorough physical examination.

AUSTRIAN SYNDROME: A RARE TRIAD Justin L. Guthier; Rita Pechulis. Lehigh Valley Health Network, Allentown, PA. (Tracking ID #1628699)

LEARNING OBJECTIVE 1: Increase awareness of a deadly clinical syndrome, rare now in a culture of pervasive antibiotic therapy
LEARNING OBJECTIVE 2: Recognize the association of pneumonia, endocarditis and meningitis seen with invasive pneumocccal bacteremia
CASE: A 64 year old male, with no medical history, presented in respiratory distress to the emergency department. The patient had not seen a doctor in 20 years and had been ill for 3 weeks with cough, fever and lethargy. The patient's wife admitted the patient had a significant history of alcohol and tobacco use. On the day of admission, the patient was found lying on the floor nonverbal and disoriented. A chest x-ray found a right upper lobe infiltrate and an EKG revealed Afib with RVR. Early differential diagnosis included meningitis/encephalitis vs. CVA vs. sepsis. A lumbar puncture revealed hazy CSF, glucose <1, WBC 174 and neutrophils 86. The patient was admitted to the intensive care unit for management of VDRF, meningitis, pneumonia and rate control of Afib. The patient was initiated on broad spectrum antibiotics and dexamethasone. Microbiology results returned positive for pneumococcal urinary antigen, as well as blood cultures positive for s. pneumonia. Given the presence of disseminated bacteremia, the patient underwent TEE which revealed a mitral valve vegetation of 0.4 cm and a 0.3 cm aortic valve vegetative strand. Since there was no evidence of aortic insufficiency and only mild mitral regurgitation, valve replacement was deferred and the patient was managed medically. Numerous MRI's were performed which revealed development of and subsequent worsening subdural empyemas. The patient deteriorated over the course of his ICU stay. Eleven days after admission, the patient suffered a cardiac arrest but was successfully resuscitated. With no clinical improvement and continued deterioration, discussions with family ultimately yielded a decision for comfort care.
DISCUSSION: Invasive pneumococcal illness is a rare clinical occurrence, with only 54 cases having been reported. In 1881, Osler wrote, "Meningitis is a very rare complication of pneumonia and may occur apart from endocarditis…". Today, with common use of antibiotics, invasive pneumococcal disease is rare, yet still carries a high mortality. The triad, now termed Austrian syndrome, was described in a 1956 paper by Robert Austrian. Patients typically are chronically ill males in their 5th–6th decade and have a history of alcoholism. Other risk factors include splenectomy, dural fistulas and immunosuppression. Endocarditis is typically left sided and predominantly involves the aortic valve. However, there are subtle presentations which involve the mitral valve. Our case is unique in that both the aortic and mitral valves exhibited vegetations. Given increasing rates of penicillin resistance, effective treatment necessitates analyzing antibiotic sensitivities. In patients with indications for valve replacement, urgent surgery has been associated with more favorable outcomes rather than conservative management. Dexamethasone has been shown to improve outcomes in patients with pneumococcal meningitis and in patients with Austrian syndrome. Despite medical and surgical advancements since Osler first described the triad in 1881, invasive pneumococcal infection still carries a high mortality. Prompt diagnosis and aggressive treatment are tantamount to surviving this severe infection.

BACK PAIN AND BLINDNESS: UNUSUAL COMPLICATION OF ULCERATIVE COLITIS Artur Viana; Jacob Feldman. Boston Medical Center, Boston, MA. (Tracking ID #1642357)

LEARNING OBJECTIVE 1: Recognize arterial thromboembolism as a complication of active inflammatory bowel disease
CASE: A 31 year old black male recently discharged for ulcerative colitis (UC) exacerbation returns to the hospital with worsening bloody diarrhea, back pain, and fevers up to 102 F. Examination revealed a febrile, tachycardic, well developed man in mild distress, mild left lower quadrant pain and no CVA tenderness. Laboratory findings were significant for WBC 12.7 K/μL (70 % PMNs), Hgb 9.0 g/dL, Platelets 555 K/μL, and Cr 0.7 mg/dL, negative Clostridium difficile toxin assay and a UA showing 1+ protein, trace leukocyte esterase, 11–30 WBCs and 1+ bacteria. After urine and blood cultures were obtained, the patient was started on IV cefepime, vancomycin and metronidazole, given concerns for sepsis of unclear source. Intravenous hydrocortisone was initiated for UC flair and home oral and rectal mesalamine were continued. On hospital day 4, the patient had an episode of transient right monocular vision loss that resolved within 1 min. Ophthalmologic evaluation was unremarkable

and MRI/MRA brain showed no acute intracranial abnormalities. Multiple blood and urine cultures were negative and despite broad-spectrum antibiotics, the patient continued to have daily fevers. CT abdomen showed several new wedge-shaped hypoattenuating regions in both kidneys, which could represent either renal infarcts or pyelonephritis. A TTE, as well as a TEE did not show any evidence of cardiac, aortic root or ascending aorta thrombus. Hypercoagulable work up was significant for increased factor VIII activity, at 178 % (normal 50–150 %), normal AT3, protein C and S, homocysteine, cardiolipin antibody and lupus anticoagulant. Anticoagulation was deferred given the patient's significant hematochezia with anemia and he was started on aspirin alone. Antibiotics were discontinued and the patient remained afebrile for the remainder of his hospital stay. His bowel movements decreased in frequency and returned to normal. He was discharged on oral prednisone, oral and rectal mesalamine as well as a daily aspirin.

DISCUSSION: This is a case of bilateral renal infarcts and transient monocular vision loss related to a severe ulcerative colitis flair. Inflammatory bowel disease (IBD)-associated arterial thromboembolism (TE) is uncommon but may result in significant morbidity and mortality. Arterial TE involving cerebral, retinal, coronary, carotid, splanchnic, iliac, renal, upper and lower limbs arteries and aorta have been described and seem to parallel disease activity, although the mechanism is unknown. The differential diagnosis for this patient's renal lesions included pyelonephritis. However, given negative urine cultures in the absence of urinary symptoms, as well as bilateral nature of radiographic findings, in conjunction with the patient's recent amaurosis fugax strongly support the diagnosis of a renal arterial thromboembolic event. This is corroborated by continued clinical improvement after antibiotics were stopped. Optimal treatment of arterial TE in IBD patients remains ill-defined, but should be directed to the clinical scenario and very frequently involves anticoagulation, which is often limited by bleeding. In this case, due to severe anemia requiring transfusion, anticoagulation was deferred and the patient was treated with aspirin alone.

BACK TO SCHOOL: A CASE OF INFECTIOUS DIARRHEA Kristen Marrone; Dinah Foer. Yale New Haven Hospital, New Haven, CT. (Tracking ID #1642574)

LEARNING OBJECTIVE 1: 1. Discuss clinical signs and symptoms of acute giardial infection

LEARNING OBJECTIVE 2: 2. Review of the diagnostic options for infectious diarrhea

CASE: A 42-year-old female elementary school teacher with past medical history of irritable bowel syndrome and obsessive-compulsive disorder was admitted to a general medical service with 11 days of abdominal cramping and watery, non-bloody diarrhea. She had presented to her primary physician at symptom onset, where initial workup was negative and she was empirically started on a proton pump inhibitor. She subsequently came to the Emergency Department due to continued symptoms 1 week later. On admission, her physical exam revealed normal vital signs including orthostatics, hyperactive bowel sounds, diffuse tenderness to palpation in her abdomen, and a hemoccult negative rectal exam. She denied any nausea, vomiting, bloody or dark stool, changes in diet, recent antibiotic use, recent travel, outdoor activities, or sick contacts. Her admission laboratory data was within normal limits except for a mild transaminitis with aspartate aminotransferase (AST) of 57 U/L and alanine aminotransferase (ALT) of 70 U/L, hypomagnesemia with magnesium 1.6 mg/dL, and hypophosphatemia to 1.9 mg/dL. Stool studies were significant for positive fecal leukocytes and positive giardia antigen. Her stool ova and parasites exam revealed moderate giardia lamblia trophozoites. She was aggressively rehydrated and started on metronidazole with dramatic improvement in her symptoms prior to discharge.

DISCUSSION: This case is of interest to General Internists because diarrhea is a common symptom prompting patients to seek medical care, and giardia is a unique etiology that requires specific diagnostic tests and treatment. Acute giardiasis presents with 1 to 8 weeks of watery diarrhea, steatorrhea, malaise, abdominal discomfort and flatulence; 50 % of symptomatic patients have significant weight loss. Vomiting, fever, blood- or mucus-tinged feces are rare. It should be included in the differential diagnosis of patients with diarrhea with exposure to daycare centers, the wilderness, known recent travel, is immunosuppressed, or lives in an area with known recent outbreak. In the evaluation of suspected severe infectious diarrhea, initial testing includes fecal leukocytes or lactoferrin, fecal occult blood test, and routine stool culture. Stool testing for ova and parasites should also be part of the evaluation in patients with those exposures listed above, and clostridium difficile stool antigen for those with recent antibiotic exposure. Recently developed stool antigen immunoassays for giardia may also be used. Acute giardiasis should be treated with aggressive rehydration therapy with diet alterations to correct fluid and electrolyte abnormalities. All symptomatic patients with giardiasis should be treated with an antibiotic of the nitroimidazole class or nitazoxanide.

BARTONELLA ENDOCARDITIS PRESENTING WITH GASTRO-INTESTINAL SYMPTOMS Prabhat Singh[1]; Hammad Arshad[1]; Ross DiMarco[2]; Mohamed H. Yassin[3]. [1]UPMC mercy, Pittsburgh, PA; [2]UPMC mercy, Pittsburgh, PA; [3]UPMC mercy, Pittsburgh, PA. (Tracking ID #1617867)

LEARNING OBJECTIVE 1: Recognize Bartonella as one of the cause of culture negative endocarditis.

LEARNING OBJECTIVE 2: Bartonella serology should be sent early in cases of culture negative endocarditis. Although serology is usually not diagnostic but it is the main screening test to suspect Bartonella endocarditis.

CASE: We present a case of 28-year-old female who came with fever, abdominal pain and diarrhea. Her symptoms were progressively worsening and included generalized fatigue, fever and exertional dyspnea. The patient was taking ibuprofen multiple times daily for 2 months to control her symptoms. She was previously healthy except for history of mitral valve prolapse and denied history of intravenous drug abuse. She worked as a schoolteacher, and she got a healthy cat just before getting sick. On presentation, she was worked up for possible cholecystitis. Her work up was negative for gastro-intestinal source. Echocardiogram revealed moderate to severe mitral valve regurgitation and 1.5×0.9 cm vegetation in the posterior leaflet of mitral valve. The patient was transferred to our facility for valve surgery. Her Bartonella serology was positive with IgG titer of 1: 1024. Subsequently, she underwent mitral valvuloplasty along with excision of vegetation, reconstruction of posterior leaflet and annulus. The vegetation was sent for molecular testing with polymerase chain reaction (PCR) and DNA sequencing which came back positive for Bartonella henselae. All Blood cultures including bartonella cultures remained negative.

DISCUSSION: Bartonella is a major cause for culture-negative endocarditis. The diagnosis of Bartonella endocarditis is made based on serological or molecular testing as it is difficult to grow on routine laboratory culture. Bartonella is a fastidious, facultative intracellular, Gram-negative bacillus. It causes multiple clinical syndromes including cat-scratch disease, bacteremia, chronic lymphadenopathy, myelitis, endocarditis, osteomyelitis and bacillary angiomatosis. Bartonella henselae and B. quintana are two major species causing most of illnesses in human. B. Quintana is common in homeless and alcoholic whereas B. Henselae is common in patients with underlying valvular disease and transmitted by cat bite, scratch and cat fleas. Kittens are more likely to be infected and to pass the bacterium to people. Culture negative endocarditis remains a diagnostic dilemma accounting for 5 % to 30 % of the cases. Serological detection is a good screening test for the diagnosis of bartonella endocarditis. As per previous studies serum with an IgG antibody titer≥1:800 predicts bartonella endocarditis in 95.5 % of the cases. Molecular diagnosis with PCR is a very useful technique for demonstrating Bartonella DNA in cardiac valvular tissue, especially when fresh valvular tissue is used. As per modified Duke's criteria, this case demonstrated 1 major (endocarditis) and 2–3 minor clinical criteria of infective endocarditis i.e. fever and positive serology/PCR. However it presented with gastro-intestinal symptoms that are uncommonly reported in literature. Thus endocarditis should be considered a part of disease spectrum caused by bartonella and more cases will emerge with the progress in medical diagnostics. Patients with pre-existing valvular disease should be educated about the risk of transmission of these organisms with cat exposure and cat fleas.

BEWARE OF DOXIES: TARGETING THE DRUG REACTION WITH EOSINOPHILIA AND SYSTEMIC SYMPTOMS (DRESS) SYNDROME Jay Liu[1]; Julie Simpson[5]; Mona Rizeq[4,6]; Robert Burke[2,3]. [1]University of Colorado Anschutz Medical Campus, Aurora, CO; [2]Department of Veterans Affairs Medical Center; Eastern Colorado Healthcare System, Denver, CO; [3]University of Colorado School of Medicine, Aurora, CO; [4]Department of Veterans Affairs Medical Center; Eastern Colorado Healthcare System, Denver, CO; [5]University of Colorado School of Medicine, Aurora, CO; [6]University of Colorado School of Medicine, Denver, CO. (Tracking ID #1638171)

LEARNING OBJECTIVE 1: Recognize and appropriately manage the DRESS syndrome
LEARNING OBJECTIVE 2: Risk-stratify patients with drug reactions
CASE: A 64 year-old man presented 5 days after developing a pruritic rash on his hands, which rapidly spread to involve his entire body despite a 4 day course of topical and oral steroids. He also noted shortness of breath, lower extremity edema, and 2 days of fever. He had returned from sub-Saharan Africa approximately 4 weeks prior and was taking doxycycline for malarial prophylaxis; other medications included hydrochlorothiazide and lisinopril for hypertension, and meloxicam for osteoarthritis. On physical exam, he had a violaceous, non-blanching targetoid rash on his limbs and trunk. A single buccal ulcer was noted; his oropharynx was otherwise normal.. There was non-painful cervical lymphadenopathy but no other lymph node involvement. No obvious ulcers were noted on examination of his ocular membranes but golden-colored crusting of his eyelids was present. His penile exam was negative for ulcers and examination of his joints was unremarkable. No hepatosplenomegaly was noted on physical exam. Eosinophilia (peaking at 5,000 cells/ul) with leukocytosis (without atypical lymphocytes), mild transaminitis, and acute kidney injury were found on laboratory testing. Testing for the presence of tick-born, parasitic, bacterial, treponemal, and viral infection was negative; imaging did not suggest malignancy. A skin biopsy 1 week after presentation demonstrated changes consistent with a drug reaction. His RegiSCAR score was calculated at 6 (definite case of the DRESS syndrome). With discontinuation of his doxycycline and treatment with high-dose corticosteroids, the patient's symptoms resolved and did not return.
DISCUSSION: Drug reactions are a common challenge in the general physician's practice. A systematic approach is needed to assess the severity of the illness; awareness of less common manifestations is critical to appropriate triage. The presence of a targetoid rash and involvement of mucosa triggered concern for potential Stevens Johnson Syndrome (SJS) spectrum disease and led to hospitalization in the ICU. However, in this case, the lack of epidermal sloughing, high fever, and evidence of organ involvement did not suggest this diagnosis, but rather erythema multiforme (EM), an uncommon initial presentation of the DRESS syndrome. Other diagnostically confounding infectious, inflammatory, and malignant conditions were ruled out before a diagnosis of DRESS syndrome was made. The DRESS syndrome is a clinical diagnosis supported by tissue pathology. The use of the RegiSCAR score helps categorize the likelihood of DRESS and allows development of a growing body of literature on this rare condition. Many medications have been associated with DRESS, but doxycycline is a rare cause, with only 4 cases reported. Supportive treatment with recognition of the DRESS syndrome may make the difference between a positive outcome and multi-organ failure. As our medical pharmacopeia grows, the general internist will increasingly be depended upon for early detection and coordination of care in these complex drug reactions.

BEYOND THE DARKNESS … AN ENLIGHTENING OVERVIEW OF OPTIC NEURITIS WITH NORMAL IMAGING. Javeria Haque; Harvey Friedman. Saint Francis Hospital, Evasnton, IL. (Tracking ID #1642403)

LEARNING OBJECTIVE 1: To identify the diagnostic dilemma of optic neuritis.
LEARNING OBJECTIVE 2: To learn about the risk of developing multiple sclerosis in a patient with optic neuritis but normal brain imaging.
CASE: 34 year old female presented with blurring of vision for the past 2 weeks. The patient had trouble seeing from her left eye, as if there was a black hole in the center of her vision. She had mild dull pain behind her left eye as well. She denied headaches, fevers or chills. She experienced no weakness in her body and did not have any sensory deficits. She did not have bowel or bladder dysfunction. The patient has no past medical history and family history was significant for an aunt having multiple sclerosis. On exam, the patient had normal vitals. Her neurological exam was essentially normal except for left eye central and temporal upper quadrant visual impairment. She had afferent pupillary delay in the left eye. Ophthalmoscopy revealed a normal appearing fundus and optic disc. All pertinent labs were normal except for positive ANA and AntiRNP antibodies. An MRI of the brain and orbits with contrast showed no evidence of demyelinating disease or optic nerve signal alteration. Cerebrospinal fluid analysis (CSF) revealed normal cell counts, protein and glucose. She had an elevated IgG index 0.87 (normal<0.66) and more than 5 well defined gamma restriction oligoclonal bands that were absent in the corresponding serum. She received 3 doses of intravenous Solumedrol. The patient endorsed to improvement in her symptoms gradually.
DISCUSSION: Optic neuritis is a demyelinating, inflammatory condition of the optic nerve usually resulting in monocular visual loss. About 92 % patients experienced retro-orbital pain in the optic neuritis treatment trial (ONTT). Optic neuritis is widely associated with multiple sclerosis (MS), with up to 50 % of patients with MS experiencing it at some point in their illness. Optic neuritis was the initial presentation of MS in about 15–20 % patients. The diagnosis of optic neuritis with or without MS is made with magnetic resonance imaging (MRI), CSF analysis (presence of myelin basic protein, IgG index and oligoclonal bands), Visual evoked responses and optical coherence tomography. MRI of the brain and orbits with gadolinium helps prognosticate the risk of developing MS. Optic nerve inflammation can be demonstrated in up to 95 % of patients on contrast MRI in acute demyelinating optic neuritis. The longitudinal extent of nerve involvement as seen on MRI correlates with visual impairment at presentation and with visual prognosis. In the ONTT, the risk of MS after 15 years was 72 % among those with one or more lesions on MRI versus 25 % among those with no lesions. The risk did not significantly differ between single versus multiple lesions. The risk of developing MS is even lower with normal brain MRI along with atypical features of optic neuritis such as no pain, no light perception vision at presentation, severe disc swelling or retinal exudates.

BEYOND "COMPLICATED" UTI: EMPHYSEMATOUS PYELONEPHRITIS SECONDARY TO PERFORATED DIVERTICULITIS WITH COLOCOLONIC FISTULA Melissa Y. Wei; Lesley Miller. Emory University, Atlanta, GA. (Tracking ID #1638868)

LEARNING OBJECTIVE 1: Recognize and manage emphysematous pyelonephritis
LEARNING OBJECTIVE 2: Learn how the "poppy seed test" can be used to identify the source of an intra-abdominal abscess
CASE: A 58 yo obese female smoker with chronic UTIs and urolithiasis s/p recent bilateral ureteral stent removal presents with 1 week of fatigue, nausea and sharp lower abdominal pain, 8/10 severity, worse with urination, and associated with dysuria, malodorous urine and hematuria but no fevers, chills, sweats, emesis or flank pain. She took Bactrim for symptom-triggered UTIs for 3 months. On admission she is afebrile with heart rate 85 and blood pressure 102/65. Her lower abdomen is mildly tender but soft and nondistended. There is no costovertebral angle tenderness. Labs reveal leukocytosis of 18.7×10^9/L (66 % neutrophils), microcytic anemia with hemoglobin 9.1 mg/dL and MCV 78, thrombocytosis of 843×10^9/L, creatinine 1.9 mg/dL (baseline 1.2 mg/dL) and HgbA1c 7.1. Urinalysis has 3+ protein, 3+ hemoglobin, >50 WBC, >50 RBC and bacteria. CT reveals a severe gas-forming infection of the left kidney tracking into the left retroperitoneum and left psoas, bilateral hydronephrosis, bilateral large calculi, extensive bladder wall thickening and a pelvic mass vs. fluid collection. Zosyn and levofloxacin are initiated for Klebsiella pneumonia on urine culture. Progression of the left psoas abscess, pelvic fluid collection and right hydronephrosis necessitates bilateral percutaneous nephrostomy placement. A positive poppy seed test

reveals perforated diverticulitis with colocolonic fistula as the abscess source. Meanwhile, fine needle aspiration of the pelvic mass reveals poorly differentiated carcinoma with unknown primary. She undergoes pelvic mass resection, left hemicolectomy, ileostomy, total abdominal hysterectomy and bilateral salpingo-oophorectomy. Operative findings include a large retroperitoneal abscess communicating with the colon. Gynecologic pathology is negative but cystoscopy reveals high grade urolitheal tumor. Postoperatively she develops right arm pain from a pathologic humerus fracture. PET shows extensive bone metastasis. She is not a candidate for palliative radiation or chemotherapy and discharges to hospice.

DISCUSSION: Emphysematous pyelonephritis (EPN) is a rare, acute, life-threatening necrotizing infection characterized by gas formation in the renal parenchyma, collecting system or perinephric tissue. EPN primarily affects middle-aged female diabetics whose excess glucose kindles a favorable environment for gas-forming microbes. Patients may present with vague symptoms that delay diagnosis, but rapid deterioration frequently follows. Diagnosis and classification are achieved through X-ray or CT. Radiographic staging directs definitive treatment with percutaneous drainage or possibly nephrectomy in the presence of diffuse gas with renal destruction (Pontin 2009). Patients should receive resuscitation and gram-negative rod coverage. The course can be severe and fatal if not treated promptly. One must distinguish EPN from emphysematous pyelitis, or gas in the collecting system only, which has an excellent prognosis and recovery with antibiotics alone. While CT promptly diagnosed EPN it did not reveal whether the psoas abscess was the consequence or etiology of EPN. Rather a highly sensitive and specific poppy seed test (Kwon 2007) involving oral ingestion of poppy seeds followed by visualization of the seeds in the psoas abscess drain revealed perforated diverticulitis as the source of EPN.

BILATERAL BELLS PALSY IN ACUTE LYMPHOBLASTIC LEUKEMIA Rigoberto Ramirez[1]; Daniel Cheeran[1]; Philippe Prouet[2]; Ronni M. Miller[3]; Ivan Carabenciov[4]; Eileen Marley[3]; Harris Naina[5]. [1]University of Texas Southwestern Medical Center, Dallas, TX; [2]LSU Health Shreveport, Shreveport, LA; [3]Parkland Health and Hospital Systems, Dallas, TX; [4]University of Texas Soutwenstern Medical Center, Dallas, TX; [5]University of Texas Southwestern Medical Center, Dallas, TX. (Tracking ID #1644258)

LEARNING OBJECTIVE 1: Recognize that bilateral Bells palsy in acute lymphoblastic leukemia can be sign of central nervous system involvement.
LEARNING OBJECTIVE 2: Management of bilateral Bells palsy in acute lymphoblastic leukemia

CASE: A 41 year old Hispanic man with history of Type 2 diabetes mellitus was admitted to outside hospital after presenting with profound weakness, weight loss, and syncope. A complete blood count showed hemoglobin of 3.6 gm/dL, WBC 224 X 109/L, platelet count 54×109/L. His peripheral blood smear showed 72 % immature blasts. A bone marrow biopsy confirmed the diagnosis of Acute pre-B-cell Lymphoblastic Leukemia (ALL). He was started on combination chemotherapy Hyper CVAD. He was discharged from the hospital following chemotherapy and advised to follow up in local county hospital due insurance issue. Unfortunately, patient was lost to follow-up. Almost 2 months later patient reported experiencing new onset posterior occipital headache, teeth numbness, and right lower facial tingling. He subsequently developed right-sided facial droop and returned to outside hospital for evaluation where he was again noted to have a very high white count and treated with hydroxyurea and fluids. Work up for stroke and meningitis were negative. Ten days later patient presents to our institution now with progression of his numbness, tingling, and bilateral facial weakness. General exam was remarkable for thinly built man with bilateral temporal wasting, and alopecia. A CNS examination revealed bilateral facial droop, inability to raise eyebrows, or perform facial expressions. Sclera remained visible when patient shut eyes. Facial sensation remained intact. Notable hyporeflexia on musculoskeletal exam with 1+ reflexes in upper and lower extremities. On admission his WBC was 5.4 with 65 % blasts. An MRI of brain was unremarkable. A CSF analysis showed lymphoid blasts. Further studies confirmed the relapse of his initial ALL. He received part 1B of hyper CVAD which consist of both cytarabine and methotrexate, with good CNS penetration. In addition he received twice a week intra thecal chemotherapy with methotrexate. Though his CSF blasts cleared after 3 doses, his symptoms did not improve at all. After 4 weeks of this treatment there no symptomatic improvement, hence we proceeded with 24 cGy of whole brain radiation (WBRT). Unfortunately there was neither clinical nor symptomatic improvement after chemo and WBRT.

DISCUSSION: Central nervous system (CNS) involvement is identified at the time of diagnosis in less than 10 % of adult (ALL). Peripheral type facial nerve paralysis (Bell's palsy) is mainly seen clinically as the idiopathic type. Patients who develop CNS leukemia only 20 % develop cranial nerve palsies. Very rarely Bell's palsy could be the initial presentation of ALL. Majority of these patients will have a complete response following either radiation or chemotherapy or combination treatment. Occasionally these damages can be permanent. Unfortunately our patient did not respond to either chemotherapy or radiation. It is possible that a delay in treating his leukemia could have contributed to permanent damage. It is important to keep ALL as a differential diagnosis for either unilateral or bilateral Bell's palsy

BLIND FROM A GI BLEED-A UNIQUE CARE OF BILATERAL OPTIC NEUROPATHY Dmitriy Dvoskin; Pratik K. Dalal; Tanya George. SUNY Upstate Medical Center, Syracuse, NY. (Tracking ID #1642034)

LEARNING OBJECTIVE 1: Recognize serious complication of GI Bleeding.
LEARNING OBJECTIVE 2: Rapid diagnosis and intervention is the key to saving vision.

CASE: Optic neuropathy is defined as visual loss associated with optic disc swelling of pallid nature. In adults over 50 years of age, ischemia is the most common cause of optic neuropathy. Specific causes associated with atherosclerosis, hypertension, surgical complications have been noted in the literature. However loss of vision from bilateral optic neuropathy secondary to a GI bleed is an exceedingly rare but important complication. Fifty-six year old male presented with the chief complaint of bilateral vision loss for 2 days. His vision was limited to light sources, sharp movements, and silhouettes of people. Concomitantly he was experiencing weakness and worsening dyspnea on exertion. The patients past history was significant for chronic back pain for which he takes 10, 325 mg aspirin daily. Patient admits to having a mild occipital headache associated with the sudden vision change. He also had "black and thin" diarrhea for the past 2 days and two episodes of coffee ground emesis 2 days. Physical examination revealed stable vital signs. Ophthalmologic exam showed PERRL, poor visual fields, unable to identify objects at a distance of 6 inches. Rectal examination was positive for occult blood. Complete blood count revealed hematocrit of 14.6, hemoglobin of 4.7, and normal white blood cell and platelet count. CT head was negative. Bidirectional endoscopy was significant for mild striped erythema in antrum. Colonoscopy showed diverticulosis in the sigmoid colon. Ophthalmology was consulted secondary to suspicion for Giant Cell Arteritis and performed an intravenous fluorescein angiography (IVFA) which was normal, and; concluding that the diagnosis is consistent with posterior ischemic optic neuropathy secondary to acute on chronic anemia secondary to a small intestine GI bleed secondary to NSAID usage

DISCUSSION: Posterior ischemic optic neuropathy (PION) is a diagnosis of exclusion thought to result from infarction of the retro-bulbar optic nerve. Our literature review shows that PION is a rare occurrence and mostly associated with surgical complications and dialysis, but rarely reported secondary to gastrointestinal bleeding. Few studies to date have evaluated the etiology of PION. The study by Sadda et al. showed, retrospectively, that 39 % of patients are secondary to surgical procedures, 8 % secondary to Giant Cell Arteritis (GCA), and 44 % secondary to non-arteritic systemic disease. Study further supported that patients with Non-arteritic disease was more amenable to recovery. The primary differential diagnosis is Anterior Ischemic Optic Neuropathy (AION), which is more commonly seen. In order to distinguish between these two diagnoses one must perform a dilated ophthalmologic examination. AION presents with a normal appearing optic nerve head. Treatment in the case of acute gastrointestinal bleed is the replacement of volume and providing optimal oxygenation to tissue. Strong suspicion of GCA is always imperative and steroids should be given

immediately followed by temporal artery biopsy. Patients with non-arteritic PION experience about a one third improvement in their visual deficit with time but arteritic PION has shown to rarely improve. In the case of our patient, immediate fluid resuscitation and blood product resuscitation resulted in mono-ocular vision improvement by approximately 50 %.

BRAIN ABSCESS: WHEN COMMON HEADACHE BECOMES UNCOMMON Sarah W. DeParis; Khan K. Chaichana; Anene Ukaigwe; Michael J. Plakke; Richard Alweis. Reading Health System, West Reading, PA. (Tracking ID #1607500)

LEARNING OBJECTIVE 1: Identify the most common presenting symptoms of brain abscesses and the frequency at which they occur.
LEARNING OBJECTIVE 2: Recognize that the diagnosis of brain abscess requires a high index of suspicion in the setting of head and neck infections.
CASE: A previously healthy 66-year-old woman presented to the emergency department with complaints of headache, confusion, and clumsiness of 2 days' duration. She stated she was "not feeling like herself" and had a bifrontal headache that later localized to the right occipital region. Additionally, she had been dropping things and bumping into things on her left side. She endorsed nausea but denied vomiting, fever, diplopia, and seizures. At presentation, she was afebrile and normotensive with a normal white count. Physical examination revealed a subtle left sided hemiparesis and a left visual field defect to confrontation, but no other focal abnormalities. An initial concern for stroke led to a CT scan of the brain and subsequent MRI, which indicated an 18 by 20 mm ring-enhancing lesion in the posterior right parietal lobe with surrounding edema without midline shift. Stereotactic-guided lesion aspiration yielded purulent material that was culture positive for Streptococcus viridans and Haemophilus influenzae. Further questioning elicited a history of chronic sinusitis with an episode 2 weeks prior to admission. She received ceftriaxone for 1 month and has had no long-term sequelae.
DISCUSSION: Brain abscesses are foci of infection within the brain parenchyma. Although uncommon, they are a serious complication of common head and neck infections and often present nonspecifically, which can result in delayed diagnosis. Headache is the most common symptom of brain abscesses, which may present with few or no other findings. Fever is only present in about 50 % of patients, focal neurological deficits in 50 %, seizures in 25 %, and neck stiffness in 15 %. Patients with a history of sinusitis may have direct spread of infection from the paranasal sinuses, with Streptococcus and Haemophilus species being among the most common causative organisms. Therefore, a high index of suspicion is necessary to prevent delay in diagnosis.

BREAST MALIGNANCY MASQUERADING UNDER THE CLOAK OF ACUTE URTICARIA Erin P. O'Donnell; Cooper Wriston; Rachel Havyer. Mayo Clinic, Rochester, MN. (Tracking ID #1625048)

LEARNING OBJECTIVE 1: Recognize the potential association between urticaria and underlying systemic disease, including malignancy.
CASE: Presenting in more than 20 % of the general population, urticaria is a common disorder characterized by intensely pruritic, erythematous, raised plaques with or without associated angioedema. Common triggers of new onset urticaria include infection, allergic reactions, or medications. Although often idiopathic, the presence of urticaria can be associated with underlying systemic disease. A 58-year-old woman presented with a flat, erythematous, pruritic rash involving her palmar surfaces bilaterally. Within days, the rash progressed to generalized edematous annular plaques located on her forearms, lower extremities, upper abdomen, suprapubic area, and buttocks. She then developed deep dermal swelling of her hands, lip and face prompting initiation of systemic steroid treatment, resolving the eruption. Skin biopsies were consistent with urticaria showing dermal edema with mixed dermal and pannicular inflammation with abundant eosinophils. Due to unknown etiology, a thorough workup was pursued. Laboratory studies including thyroid function, serum protein electrophoresis, complement, anti-nuclear antibody, autoimmune blistering disease studies, flow cytometry, and Lyme disease serology were normal as was a chest x-ray and urinalysis. Routine age-appropriate cancer screening was ordered. Mammography revealed four lesions in her left breast. Ultrasound-guided core needle biopsies revealed that three of the four lesions demonstrated grade 1 invasive ductal carcinoma. Mastectomy was performed with clear margins and negative sentinel node biopsy. Following surgery, steroids were gradually tapered off and no recurrence of rash had occurred at 4 weeks post operation.
DISCUSSION: This case demonstrates the atypical association between breast malignancy and acute urticaria and emphasizes the importance of age-appropriate cancer screening in patients presenting with urticaria of unknown etiopathogenesis. Acute urticaria is a clinical diagnosis based on history and physical exam findings and confirmed by skin biopsy. Careful history focused on typical triggers of urticaria, including ingestion, infection, travel, medication, endocrinopathies, physical triggers, and systemic symptoms should be reviewed. Importantly, many systemic diseases may initially present as urticaria. To date, only two cases have been reported connecting breast cancer with chronic or acute urticaria. Although more commonly associated with paraproteinemias, other investigations have shown the association between urticaria and solid tumors of the lung, brain, ovary, thyroid, colon or rectum. The case we described supports a possible association between breast malignancy and urticaria. Thus, symptoms and signs of urticaria with unknown cause should prompt a thorough history, physical examination, and review of age-appropriate cancer screening.

BUBBLE IN THE BRAIN- NOT TO BE TAKEN LIGHTLY! Kalpana Nagarkar; Nazish Ahmad; Muhammed Bokhari. Capital Health Regional Medical Center, Trenton, NJ. (Tracking ID #1628465)

LEARNING OBJECTIVE 1: There is an abundance of literature describing best practice, complications, and treatment of venous air embolism associated with central line catheter use. Utilization of central venous catheters is increasing. With increased utilization comes the responsibility to improve commonplace knowledge and ensure that practice guidelines and protocols are dependable and consistent.
LEARNING OBJECTIVE 2: Air embolism should be taken into consideration when treating venous catheters, and appropriate treatment administration and radiological examinations must be performed immediately if level of consciousness or vital signs deteriorate.
CASE: Air embolism is a well-published complication arising from central venous catheter use. Literature and case studies provide information regarding clinical sequelae. This case report describes the neurological complications likely caused by a cerebral air embolism related to central venous catheter removal. We report a 48 year old Caucasian man who was admitted due to swelling of his left leg. Venous duplex of the left leg showed presence of a large DVT and the CT of his chest showed multiple sub segmental PE. The patient was started on heparin drip and later bridged with warfarin therapy. His work up for hypercoagulable state was negative. The patient was being discharged. While he was sitting in a reclining position in his chair, during the process of removal of his central venous catheter from the right side of the neck, he rapidly became confused, diaphoretic, and his mental status declined. He also had a seizure activity with incontinence of bladder. He received 2 doses of 1 mg IV lorazepam. After sometime the patient regained consciousness. Patient remained in postictal phase for some time. Later on examination he did not show signs of any cranial nerve involvement nor was there any weakness. EEG was unremarkable. CT angiography of the brain showed presence of air in the cavernous sinus and along the pterygoid plexus. The patient was then transferred to ICU for overnight observation. He gradually improved and at the time of discharge, the patient did not have any neurological deficit.
DISCUSSION: Venous air embolism is an infrequent complication of invasive diagnostic and therapeutic maneuvers. The cardiovascular, pulmonary, and central nervous systems may all be affected, with severity ranging from no symptoms to immediate cardiovascular collapse. Therapeutic interventions include mechanical measures, such as positioning, withdrawal of air from the right atrium, and measures aimed at reducing bubble size and treatment with hyperbaric oxygen.

BUGS, DRUGS, OR IMMUNE SYSTEM FLUBS, WHAT CAUSES LIMBIC ENCEPHALITIS? MOREOVER, WHAT CAUSES ANTI-N-METHYL-D-ASPARTATE RECEPTOR ENCEPHALITIS? Maria G. Frank[1,2]; Camille Ladanyi[2]; Paul Brittain[2]. [1]Denver Health Hospital Authority, Denver, CO; [2]University of Colorado, School of Medicine, denver, CO. (Tracking ID #1641416)

LEARNING OBJECTIVE 1: To promote awareness over a recently described cause of limbic encephalitis (LE).
LEARNING OBJECTIVE 2: To describe a case of encephalitis clinically consistent with N-methyl-D-aspartate Receptor (NMDAR) encephalitis (NMDARE) .
CASE: A previously healthy 27 year-old female, initially admitted to the inpatient psychiatry service for psychosis, progressed to catatonia, autonomic dysfunction, and respiratory failure requiring tracheostomy. Her medical history was significant solely for poly-substance abuse including methamphetamines. Her current illness was preceded by a self-reported "influenza" 2 months prior to developing progressive behavioral changes, movement disorders, and delusions. These symptoms lead to a diagnosis of schizophrenia. Her exam was significant for catatonia, aphasia, dyskinesias, intermittent hypotension, hyperthermia, and hyper-salivation. EEG showed intermixed slowing consistent with a catatonic state. CSF was normal, with negative NMDAR antibodies, bacterial culture, and viral PCRs. Autoimmune and malignancy work-ups were also negative. Despite laboratory evidence, clinical suspicion for NMDARE remained high. Thus the patient received treatment with IVIG, methylprednisolone, plasmapheresis and rituximab leading to a pronounced clinical improvement. She was discharged to the acute rehabilitation service.
DISCUSSION: Anti-NMDARE, a type of LE, was first described in 2007 as a paraneoplastic syndrome presenting in young females (median age: 22) with teratomas (49–59 %). Since then, numerous cases not associated with malignancy, affecting both genders have been reported. The California Encephalitis Project conveyed that NMDARE is more frequent than any viral encephalitis alone. Most cases begin with viral prodromes, either respiratory or gastrointestinal, with subsequent development of psychiatric disorders (72–83 %) or seizures (76–82 %). Within 10–21 days secondary stages develop which are characterized by decreased levels of consciousness, hypoventilation, autonomic instability, and dyskinesias. NMDARE has a predictable course as well as highly effective treatment options. Therefore, a high degree of suspicion for NMDRE must be maintained, as 75 % of adults will show complete recovery after early treatment. Even though most cases are consistent both clinically and in response to treatment, the real etiology remains elusive (infectious vs. paraneoplastic vs. autoimmune). This raises the question of whether different subsets of patients are suffering from the same malady. Our patient displayed the typical clinical course for NMDARE, EEG findings consistent with LE, unrevealing MRI (50 % of cases), as well as an exceptional response to immunosuppressive therapy. However, NMDAR antibodies were negative in both the serum and CSF. Few case reports exist noting patients presenting with classic clinical NMDARE progression, without laboratory evidence of antibodies, but with profound response to treatment. Several studies have questioned etiologies other than malignancy including molecular mimicry and methamphetamine use. In light of 41 % of patients presenting without an identifiable tumor, the possibility of other unknown immunological triggers presents an intriguing topic for further research. Although research and education are vital to furthering our knowledge regarding NMDARE, maintaining a multidisciplinary approach to the diagnosis, treatment, and rehabilitation are cardinal to the recovery of our patients.

CATCHING A BAD BREAK Michael T. Shoffeitt; A Domnica Fotino. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1641599)

LEARNING OBJECTIVE 1: Recognize a pathologic fracture.
LEARNING OBJECTIVE 2: Understand the indications to test for vitamin D deficiency. Be familiar with the importance of maintaining proper vitamin D metabolism.
CASE: A 26 year-old Hispanic man presented complaining of right ankle pain following a twisting injury on a curb. History was notable for working nights as a bartender and regularly drinking alcohol to excess. He had a poorly balanced diet consisting largely of hamburgers. Body mass index was normal. His right ankle was ecchymotic with swelling of the medial and lateral aspects. There was tenderness to palpation of the right medial malleolus, and he was unable to bear weight on his right. Radiographs of the ankle revealed a non-displaced fracture of the lateral malleolus. A 25-hydroxyvitamin D level was obtained and resulted at 6.9 nanograms per milliliter. All other laboratory data was unremarkable. The patient underwent open reduction and internal fixation of his fractured distal tibia. Oral supplementation with ergocalciferol (vitamin D2) was initiated at a dose of 50,000 International Units (IU) twice weekly for 4 weeks, to be followed by 50,000 IU weekly. He was also given nutritional counseling.
DISCUSSION: Vitamin D deficiency is common, with a worldwide prevalence estimated around one billion, and commonly underdiagnosed. It should be considered in anyone with a fragility fracture, defined as a fracture occurring spontaneously or following a minor trauma. Risk factors for deficiency include old age and obesity; reduced skin synthesis (from inadequate outdoor exposure, dark skin pigment, sunscreen use, or living above 35° latitude); low dietary vitamin D intake; chronic glucocorticoid or anti-epileptic drug use; chronic liver and kidney disease; and malabsorptive conditions, such as irritable bowel syndrome, celiac disease, and following bariatric surgery. This patient's deficiency likely resulted from a combination of low sun exposure, dark skin, and poor diet. In addition to the fracture this patient suffered, vitamin D deficiency places him in a cohort at risk for various extraskeletal manifestations. These include an increased risk of colorectal and prostate cancer, cardiovascular disease, autoimmune disease, and infections. All professional societies with a position on the matter agree that 25-hydroxyvitamin D levels below 20 nanograms per milliliter are suboptimal for skeletal health. The target level for replacement is 20–30 nanograms per milliliter. Less certainty exists as to the optimal level of 25-hydroxyvitamin D or the benefits of replacement as regards extraskeletal health. Treatment consists of encouraging food consumption high in vitamin D and supplementation. Cod liver oil, sardines, salmon, and tuna have the highest concentration of vitamin D, as well as certain fortified foods. Deficient individuals should initially receive 50,000 IU of vitamin D2 per week for at least 8 weeks, and when starting levels are below 15 nanograms per milliliter initial therapy can be twice weekly. Following repletion, the Institute of Medicine recommends 200 IU of dietary vitamin D for children and adults to maintain healthy levels, but many experts agree that 800 to 1,000 IU a day is more appropriate for individuals with inadequate sun exposure.

CEREBRAL VENOUS THROMBOSIS IN A PATIENT WITH SICKLE CELL TRAIT Navitha Ramesh; Sarah Suliman; Ziad Alkhoury. Unity Health System, Rochester, NY. (Tracking ID #1642296)

LEARNING OBJECTIVE 1: Sickle cell disease (homozygous) is a well known cause of cerebrovascular thrombosis. Very few cases of cerebrovascular thrombosis associated with sickle cell trait(heterozygous) have been reported in literature.It is a challenging condition because of the variability of clinical symptoms and is often unrecognized at the initial presentation.
LEARNING OBJECTIVE 2: The key point here is that we should always look for a cause of the cerebral venous thrombosis even after the patient is stabilized and treated appropriately with intravenous fluids, heparin and anticoagulants.
CASE: Our patient is a relatively healthy 49 year old African -American female who presented with severe, right sided, 8/10 headache for 5 days duration. Associated symptoms included nausea and vomiting. Patient denied visual symptoms, fever, chills, weakness, numbness, chest pain, palpitation, involuntary movements or loss of consciousness. She does not consume alcohol, smoke or use recreational drugs. She has never been on oral contraceptive medications. Her family history is not significant for any cardiovascular disorders, stroke or malignancy. Upon admission, her vitals were stable, she was not in acute distress. She appeared mildly dehydrated. Funduscopy was done with no papilledema. Physical examination including cardiovascular, pulmonary, abdominal and central nervous

system examination were within normal limits. Blood work including complete blood count, comprehensive metabolic profile, prothrombin time and activated partial prothrombin time were within normal limits. Lumbar puncture showed normal opening pressure, normal cell count, normal protein and normal glucose levels. CT scan of the head revealed abnormal appearing transverse sinus suspicious for possible sinus thrombosis. Hence, an MRV was done which showed transverse and sigmoid sinus thrombosis. Patient was started on IV heparin and coumadin, heparin was discontinued after 2 days of therapeutic INR. Patient was discharged home after 4 days in the hospital. Coagulation panel including Anti thrombin III, protein C, protein S, factor V Leiden were all normal. Hemoglobin electrophoresis was also done which showed that the patient had HgA 56.4 %, HgA2 3.8, HgS 39.8. Hence our patient was diagnosed to have cerebral venous thrombosis due to sickle cell trait.
DISCUSSION: Cerebral venous thrombosis is a rare type of cerebrovascular disease affecting about 5 people per million and accounts for 0.5 % of all strokes. Headache is the most common presenting complaint occurring in about 90 % of cases. Many studies have suggested that the risk of sickling in sickle cell trait with high hemoglobin S approaches that in sickle cell disease. Hemoglobin S values were >36 % in the few cases of cerebral venous thrombosis associated with sickle cell trait that were reported in literature. Hemoglobin electrophoresis should be carried out in young African -American patients, especially women with unexplained thrombotic phenomenon.

CLOTS OF DEFICIENCIES Meredith Barnes; Michelle M. Guidry. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1639836)

LEARNING OBJECTIVE 1: Understand the diagnosis and rapid initial treatment of suspected thrombotic thrombocytopenic purpura (TTP).
LEARNING OBJECTIVE 2: Recognize the role of ADAMTS13 in idiopathic TTP.
CASE: A 19 year-old man with no prior medical history presented with 1 month of lethargy and headache as well as 2 weeks of abdominal pain and vomiting. On the day of presentation, family members found the patient speaking incoherently and dragging his left leg while walking. He was febrile to 101.8 °F and unable to follow commands. He withdrew to painful stimuli with his right arm and leg, but there was no spontaneous movement or pain response of the left arm or leg. His muscle stretch reflexes were 2+ throughout. His pupils were equal, pinpoint and sluggish. The abdomen was tender to palpation with no organomegaly. A non-contrast CT of the head was normal. His urine toxicology revealed tetrahydrocannabinol. His platelet count was 8,000/μL, hemoglobin 7.4 g/dL, hematocrit 21.3 %, creatinine 1.34 mg/dl, LDH 885 U/L, reticulocyte count 7.5 % and total bilirubin 4.5 mg/dL. Numerous schistocytes were seen on peripheral blood smear. Coagulation studies were normal. While a central line was placed, he received IV methylprednisolone, immediately followed by plasmapheresis. Plasma exchange of 1.5 times the plasma volume was administered for five consecutive days. The platelet count was stable around 200,000/μL and the LDH was <200 U/L. His mental status and neurologic function recovered by the third day. Plasma exchange was continued every other day for another week. At the time of discharge, the creatinine and hemoglobin were within normal limits. The ADAMSTS13 activity level, drawn prior to plasmapheresis, returned at <10 % of normal.
DISCUSSION: The internist must quickly recognize suspected thrombotic thrombocytopenic purpura (TTP) so treatment can begin immediately. Mortality exceeds 90 % without treatment. Cases rarely present with all the features of the classic pentad: fever, microangiopathic hemolytic anemia (MAHA), renal abnormalities, neurological changes, and thrombocytopenia. TTP must always be considered in the differential of unexplained thrombocytopenia and anemia. Plasma exchange is the treatment of choice for TTP and is performed daily to replace 1.0 to 1.5 times the patient's plasma volume with fresh frozen plasma. Treatment continues until the platelet counts remain >150,000/μL for several days. Addition of steroids, aspirin or dipyridamole has not demonstrated benefit. If plasma exchange must be delayed, steroids and a fresh frozen plasma infusion can be used in the interim. Approximately 75 % of patients with idiopathic TTP have either an acquired or congenital deficiency of a von Willebrand factor (vWF) cleaving protease, known as ADAMTS13. Without this protease, abnormally large vWF multimers cause excessive platelet accumulation, leading to microvascular thrombosis. ADAMTS13 activity levels are clinically useful at the time of diagnosis as a prognostic indicator: more severe deficiency indicates greater risk for relapse. The utility of measuring the level serially or during remission is unknown.

CLOZAPINE AND BRUGADA - UNLIKELY BUT TRUE Anene Ukaigwe; Adetokunbo Oluwasanjo; Anthony A. Donato. The Reading Health System, West Reading, PA. (Tracking ID #1643064)

LEARNING OBJECTIVE 1: Early recognition and management of potentially fatal cardiotoxic effects of the antipsychotic, clozapine.
CASE: A 47-year-old man presented with a 3 day history of fever, cough, dyspnea, orthopnea and one episode of syncope. His past history was significant for treatment resistant schizophrenia and he had recently been started on clozapine. He had no prior history of cardiac arrest, ventricular fibrillation or syncope. There was no family history of sudden cardiac death. Physical examination revealed fever and tachycardia. Cardiovascular exam was normal. EKG showed a new RSR' pattern in V1 and V2 with a coved ST segment elevation in V1-V3 in keeping with a type 1 Brugada pattern. Echocardiogram was normal. Troponins were negative. The Brugada pattern spontaneously resolved 24 h later, after cessation of the recently started clozapine. Fever and tachycardia resolved 72 h after presentation with treatment of underlying community acquired pneumonia. He was counseled to avoid tricyclic antidepressants, Selective Serotonin Reuptake inhibitors(SSRIs), class I antiarrhythmic agents like flecainide and propafenone.
DISCUSSION: Clozapine is a dibenzodiazepine antipsychotic with strong affinity for D4-dopaminergic receptors. It also has serotonergic, noradrenergic, histaminergic and cholinergic receptor blocking abitities. It has been shown to have the lowest mortality of the antipsychotic drugs. It is indicated in treatment resistant schizophrenia or schizoaffective disorders, and is especially useful in cases of schizophrenia associated with suicide. It has the added advantage of causing less extrapyramidal side effects due to its limited D2 receptor antagonism. In spite of these benefits, its use has been limited by need to monitor for side effects with complete blood counts and echocardiograms for life threatening agranulocytosis and cardiomyopathy. Brugada pattern is due to genetic defects that result in altered action potential in the right ventricle without structural changes. It predisposes to syncope, ventricular arrhythmia and sudden cardiac death. Brugada pattern may be unmasked by fever and tachycardia, but in our index case, the Brugada pattern resolved with persistence of the fever and tachycardia making those unlikely causes. Brugada pattern or any other specific EKG changes have not been previously associated with clozapine. The potential mechanism by which clozapine may cause this is unknown. This case illustrates that clozapine may unmask Brugada pattern and this has implications in establishing guidelines for monitoring therapy. Clinicians should be aware that even when the echocardiogram is normal, EKG may reveal other life threatening abnormalities that are easily treated with cessation of offending agents and avoiding other potential triggers of fatal arrhythmias.

CMV MONONUCLEOSIS AND COLITIS IN A PREVIOUSLY HEALTHY ADULT Maureen C. Dale; Christine D. Jones. University of North Carolina- Chapel Hill, Chapel Hill, NC. (Tracking ID #1640588)

LEARNING OBJECTIVE 1: Recognize the symptoms concerning for mononucleosis in an adult patient.
LEARNING OBJECTIVE 2: Recognize the importance of investigating possible immunocompromised states in patients with organ-specific manifestations of CMV infection.
CASE: A 30-year-old woman with a history of migraines presented to the emergency department with approximately 2 weeks of headaches not consistent with her previous migraines that coincided with fevers, nausea, vomiting, diarrhea, and general malaise. Her diarrhea had resolved 1 week prior

to presentation, and for the past week she had been constipated, intermittently passing stools that were mostly blood. She was febrile to 38.5 °C. A non-contrasted CT of her head was unremarkable, and a lumbar puncture showed less than 1 RBC/mm3, 1 total nucleated cell/mm3, protein <10 mg/dl and glucose 54 mg/dl. CSF bacterial cultures were also negative. She was sent home from the ED but returned 2 days later due to her ongoing fever, malaise, and headache. Her exam was notable for an absence of cervical lymphadenopathy or splenomegaly. Her abdomen was mildly distended and tender to palpation throughout. Rectal exam revealed 2 large collapsed external hemorrhoids but no gross blood. Labs were notable for a drop in her hemoglobin from 7.1 to 6.6 g/dL, an MCV of 67, WBC of 5.6×109/L, ALC of 2.8×109/L, ANC of 1.6×109/L, with atypical lymphocytes noted in the blood smear. Iron levels were found to be <10 mcg/dL, ferritin was 13 ng/ml, and reticulocyte percentage was 2.2 % for a reticulocyte index of 0.6. Her AST and ALT were elevated at 96 and 127 u/L respectively, with normal bilirubin and alkaline phosphatase levels. Monospot testing was negative. Further testing revealed a negative HIV Ab and positive CMV IgM. She was transfused 2 units of packed red blood cells with appropriate elevation of her hemoglobin, and underwent colonoscopy, which showed diverticulosis and erythematous mucosa in the rectum. Biopsy revealed mild chronic active colitis and CMV viral cytopathic effect; CMV PCR from the biopsy was also positive. She was treated with a two-week course of valgancyclovir with resolution of her hematochezia.

DISCUSSION: CMV mononucleosis is frequently associated with systemic symptoms such as malaise, myalgias and headache and is less typically associated with cervical lymphadenopathy and exudative pharyngitis than EBV mononucleosis. Transmission is similar: by close contacts, most likely from contact with bodily secretions, or after transfusion of leukocyte containing blood products. Labs are often notable for relative lymphocytosis with presence of atypical lymphocytes, as well as moderate elevation of AST, ALT and alkaline phosphatase. Infection typically lasts for 2–6 weeks. Gastrointestinal CMV infections rarely occur in immunocompetent hosts although can be seen in primary CMV infection. Indeed, this patient's biopsy revealed possible underlying ulcerative colitis, which may have increased her vulnerability to infection. Immunocompetent patients do not typically undergo treatment with antivirals for CMV mononucleosis as it is a self-limited illness, however drug therapy is often initiated in patients with organ-specific manifestations such as colitis.

COUGH SYRUP TO EASE A TROUBLED HEART Naomi Karlen; Morgan J. Katz; Ardalan Minokadeh. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640331)

LEARNING OBJECTIVE 1: Recognize the importance of having a systematic way of diagnosing the cause of chronic cough.

LEARNING OBJECTIVE 2: Understand the importance of regular healthcare maintenance in preventing life altering disease consequences.

CASE: A 39 year-old man with no past medical history presented with 8 weeks of cough. The cough occurred every 3–4 days, more frequently at night and in the morning, was productive of greenish-yellow phlegm, and was relieved by cough syrup. He reported 30–40 lb of weight loss, subjective fevers, fatigue, lower extremity edema, and posttussive vomiting. He denied smoking and healthcare check-ups for 5 years. Blood pressure was 160/129 mmHg, heart rate 103, mucous membranes were dry, JVD was present, heart was regular rate and rhythm, PMI was non-palpable, breath sounds were clear bilaterally, and 1+ pitting edema from foot to mid-shin was present bilaterally. Sputum culture was negative, WBC 5.4 103/μL, troponin-I 0.13 ng/mL, BNP 1476 pg/mL. Chest radiograph showed mild-moderate cardiac silhouette enlargement and intersitial lung markings. EKG revealed sinus tachycardia, left axis deviation, left atrial enlargement, and left ventricular hypertrophy. Transthoracic echocardiogram revealed four chamber enlargement, severely decreased left ventricular systolic function, ejection fraction less than 20 %, moderately increased systolic pulmonary artery pressure, restrictive filling consisted with severely elevated left atrial pressure, and left ventricular end diastolic pressure.

DISCUSSION: While "common diseases are common," patients do not always present commonly with those diagnoses. In these cases, clinicians may be treating test findings instead of symptoms. Chronic cough is a frequent complaint seen by health care providers. Pulmonary causes often spring to mind, especially in younger patients. However, although less prevalent, cough can be the presenting symptom in heart failure. The mechanism cough plays in heart failure is well documented, and usually is the byproduct of pulmonary congestion. It is useful to have an approach to chronic cough when a patient's symptoms do not match their physical exam or test findings. A thorough way of navigating the differential is anatomically followed by non-anatomical causes—sinuses (post nasal drip), esophagus (gastroesophageal reflux disease), cardiac (congestive heart failure), pulmonary (asthma, bronchitis, infection), malignancy (multiple anatomical locations), smoking, and medications (angiotensin-converting enzyme inhibitors). Using a systematic approach to narrow down causes assists in faster evaluation and treatment. This case highlights the importance of regular health care maintenance with early intervention and treatment of hypertension, which is unfortunately ubiquitous in many patient populations. Early detection and appropriate treatment can easily prevent long-term morbidity and mortality. In this particular case, had the patient sought a general check up earlier, it is likely that the development of heart failure could have been avoided. Thus, when serving patients who have not had appropriate health care maintenance, physicians should keep in mind that common disease processes can lead to disastrous consequences that present in seemingly innocuous ways.

CALMING THE HEART. Elinor Lee[1]; Anna Kolpakchi[1,2]; Lee Lu[1]. [1]Baylor College of Medicine, Houston, TX; [2]MEDVAMC, Houston, TX. (Tracking ID #1621418)

LEARNING OBJECTIVE 1: Recognize that cisplatin can cause sinus bradycardia.

LEARNING OBJECTIVE 2: Realize that cisplatin does not have to be discontinued; however, patients, especially those with resting bradycardia or on AV nodal blocking agents, should be monitored.

CASE: A 29-year-old female with nodular sclerosing stage IIB Hodgkin's lymphoma had a relapse after receiving 6 cycles of ABVD (doxorubicin, bleomycin, vinblastine, and darcarbazine) and 2 cycles of AVD and was admitted for ESHAP (cisplatin, etoposide, methylprednisolone, and cytarabine) salvage therapy. Patient had no history of heart disease. On admission, patient's heart rate (HR) was 76 and regular with BP 120/70. Physical exam was normal except for four enlarged left anterior cervical and left supraclavicular lymph nodes. After day two of chemotherapy, patient's pulse was 52, and on day three, HR was 42 and regular. BP remained 120/70. Patient denied dizziness, lightheadedness, syncope, shortness of breath, palpitations, or chest pain. Serial EKGs showed sinus bradycardia. All electrolytes, including magnesium and potassium, were normal. Thyroid studies and transthoracic echocardiogram were normal. On day four of hospitalization, patient developed abdominal pain, nausea, and vomiting. She was diagnosed with cholecystitis, requiring cholecystectomy. Chemotherapy was stopped, and after 2 days, HR improved to 70 s. On a follow up outpatient visit a week after discharge, HR was 81, and clinical response to chemotherapy was excellent. A month later, patient was admitted for cycle 2 of ESHAP. On admission, HR was 76. After 2 days of cisplatin, HR trended down to 50, and by the third day, HR reached 40. EKG showed sinus bradycardia. Mild hypokalemia and hypomagnesemia were corrected without changes in heart rate. She remained asymptomatic. The patient completed a 5 day course of chemotherapy, and 2 days later, HR was 86. After a thorough literature search, cisplatin was identified as a cause of the bradycardia.

DISCUSSION: Well known arrhythmias attributed to cisplatin include atrial fibrillation, supraventricular tachycardia and bundle-branch blocks. Sinus bradycardia is rare. Our literature search yielded two case reports. The pathophysiology remains unclear, but cisplatin may play a direct toxic effect on the myocardial cells or disrupt the cardiac conduction system by depositing around the sinoatrial node. In our patient, the resolution of bradycardia after discontinuation of cisplatin suggests a temporal relationship. Sinus bradycardia due to cisplatin is asymptomatic and reversible; hence, there is no need to stop cisplatin or adjust the dose. To recognize

this side effect is important because patients like ours have limited options but respond well to salvage chemotherapy. Additionally, patients with resting bradycardia and those taking AV nodal blocking medications need to be monitored while receiving cisplatin.

CAN TREATMENT OF A COMMON MEDICAL ILLNESS EXACERBATE AN UNDERLYING MALIGNANCY? Dean Drizin; Luke Peters; Kelly McCaffrey; Kristin A. Stratton. University of Colorado School of Medicine, Aurora, CO. (Tracking ID #1631752)

LEARNING OBJECTIVE 1: Recognize the potential for adverse effects of digoxin use on patients with active estrogen-sensitive cancers
CASE: A 76-year-old man presented with a six-week history of progressively worsening dyspnea on exertion. He also noted new lower extremity edema and three-pillow orthopnea. His past medical history included moderate aortic stenosis, rate controlled atrial fibrillation, and locally-advanced ductal carcinoma of the breast that was estrogen receptor (ER)/progesterone receptor (PR) positive (+), human epidermal growth factor receptor two negative (−). This was previously treated with mastectomy and six cycles of docetaxel, doxorubicin, and cyclophosphamide therapy. His medications included diltiazem, digoxin, warfarin, and tamoxifen. He had a three out of six mid-peaking systolic murmur at his right upper sternal border that radiated to the carotids, his jugular venous pressure was elevated at 16 cm, and his heart rate was irregularly irregular. There were decreased breath sounds at the right lung base with dullness to percussion and decreased tactile fremitus. He had warm distal extremities with significant bilateral lower extremity pitting edema. There was severe aortic stenosis on trans-thoracic echocardiogram with a left ventricular ejection fraction of 25 %. A computerized tomography scan revealed widely metastatic disease with a right-sided pleural effusion, bony sclerotic lesions, enlarged lymph nodes, and a renal mass. The patient opted for limited evaluation and medical treatment of his newly-diagnosed congestive heart failure given his concurrent metastatic breast cancer. Tamoxifen was discontinued due to the cancer progression and the patient was started on anastrazole. Digoxin was discontinued given the drug's possible association with breast cancer.
DISCUSSION: Heart failure, atrial fibrillation, and breast cancer are common conditions encountered by the internist. Digoxin is a medication used to treat both cardiac conditions. Digoxin has a narrow therapeutic index and well known adverse effects when outside of the therapeutic range including vision and mental status changes, gastrointestinal symptoms, and dysrhythmias. Digoxin is also associated with gynecomastia in males even when used within the therapeutic range, perhaps due to the drug's similarity in structure with estradiol. Recent observational studies in women show digoxin use increases the incidence of ER+ breast and uterine cancers but has no impact on the incidence of relatively ER- ovarian and cervical cancers. While these observational studies are cause for concern, the safety of digoxin use in patients with established ER+ cancers has not yet been examined in prospective randomized controlled studies nor is it known whether tamoxifen, an antagonist of the ER in breast tissue, inhibits digoxin's possible effects on estrogen-sensitive cancers. The prevalence of congestive heart failure, atrial fibrillation, and breast cancer is increasing worldwide. Internists should be aware of the potential for adverse interactions between treatments for these common medical conditions.

CANNABIS ABUSE : A RARE CAUSE OF ACUTE PANCREATITIS Tabish Jalal; Harsha Ramchandani. St Mary Mercy Hospital, Livonia, MI. (Tracking ID #1636378)

LEARNING OBJECTIVE 1: 1. To increase awareness of adverse effects of cannabis
LEARNING OBJECTIVE 2: 2. To learn how to approach a case of acute pancreatitis
CASE: Our patient is a 26 year old Caucasian male who was admitted to the hospital for severe abdominal pain for 1 day. Past medical history was significant for lower back pain. He denied smoking cigarettes, drinks alcohol socially and smokes medical marijuana for back pain. On admission, his vitals were normal, physical exam was positive for epigastric and right lower quadrant tenderness. His significant labs were elevated lipase 860 (reference range: 0–60 U/L), TG 301, LDL 136, HDL 35 and Cholesterol 231. Urine drug screen was positive for cannabis. Serum alcohol level was <3. Ultrasound abdomen, HIDA scan and CT abdomen were normal. With conservative measures, his symptom improved and was discharged on third day of admission with the instructions to avoid marijuana. When performing the Naranjo algorithm for assessing probability of an adverse drug reaction, the patient was considered to have "probable" pancreatitis secondary to THC.
DISCUSSION: According to NIH, 16.7 million Americans over the age of 12 year use marijuana. Side effects of marijuana include nausea, vomiting, pancreatitis, decreased short-term memory, dry mouth, red eyes, impaired perception and motor skills. More serious side effects include panic, paranoia, or acute psychosis. Medication-induced pancreatitis is a rare cause, only accounting for approximately 2 % of all cases of pancreatitis. The most frequently implicated medications are metronidazole, tetracycline, azathioprine, furosemide, thiazide diuretics, angiotensin converting enzyme inhibitors, didanosine, aspirin, valproic acid, and codeine. An even rarer cause that has been implicated recently in the literature is tetrahydrocannabinol (THC). Exact mechanism of cannabis induced pancreatitis is not known. It should be a diagnosis of exclusion. In our patient, other causes of pancreatitis were ruled out. He did not have significant alcohol use, nor was there any family history of pancreatitis. Cholelithiasis was not present and triglyceride levels were slightly elevated not enough to cause pancreatitis. Furthermore, he was not receiving any medications known to cause pancreatitis, except marijuana. Although the exact mechanism remains a mystery, cannabis use should be considered a risk factor for the development of acute pancreatitis and among general population awareness should be created for side effects of Cannabis.

CATASTROPHE! Auras R. Atreya; Eimear Kitt; Behdad Besharatian; Ashish Verma; Michael DeMatteo. Baystate Medical Center/Tufts University School of Medicine, Springfield, MA. (Tracking ID #1639085)

LEARNING OBJECTIVE 1: Recognize early the challenging diagnosis of Catastrophic Antiphospholipid Antibody Syndrome (CAPS), in order to direct management appropriately as the condition is life-threatening.
CASE: KP, a 26 years old African-American male with SLE, non-compliant with his outpatient steroid therapy, presented with 3 days of constitutional symptoms and was found to have acute kidney injury, pancreatitis, profound anemia needing transfusion (Hb 5.7), thrombocytopenia, acute decompensated heart failure with troponin elevation. Echocardiogram showed global hypokinesis with regional areas of akinesis, suggestive of infarction. He was started on high dose steroids for presumed SLE flare. Subsequently, he had massive upper GI bleed; EGD revealed gastritis as well as esophageal varices. US of liver revealed portal vein thrombosis with cavernous transformation and splenic vein thrombosis. His renal function worsened necessitating dialysis. He became more somnolent with development of neurological deficits; CSF analysis showed no signs of infection and an MRI demonstrated disseminated sub-acute ischemic infarcts. At this point, concern for a more serious condition such as concomitant antiphospholipid syndrome was raised. Renal biopsy showed multifocal arterial and arteriolar thrombi, consistent with CAPS. There was no evidence of lupus nephritis. Positive serology (anti-cardiolipin IgM 25 ug/mL) helped confirm diagnosis of CAPS and he was started on anticoagulation, cyclophosphamide and plasmapheresis. Eventually, KP recovered from his cataclysmic disease and was discharged to a rehabilitation center with long-term warfarin and prednisone therapy.
DISCUSSION: Catastrophic antiphospholipid syndrome (CAPS) was first described by Ronald Asherson in 1992 and is diagnosed using the classification criteria proposed by the International Congress on Antiphospholipid in 2011. This includes the presence of all of the following: evidence of involvement of≥3 organs; manifestations occurring simultaneously or in less than 1 week; histopathological confirmation and serological confirmation (anticardiolipin/lupus anticoagulant/anti-beta2 glycoprotein antibodies). Although this condition is fairly uncommon in patients with antiphospholipid syndrome (<1 %), it is a life-threatening

condition with greater than 50 % mortality. The pathogenesis of this disease is still unclear, but it is postulated that certain triggers (eg. infection) facilitate a 'cytokine storm' that promotes inflammation and thrombosis. Treatment options include anticoagulation, steroids, cyclophosphamide, plasmapheresis. Additional therapies such as rituximab, eculizumab and IVIG have been used with some success for refractory CAPS. In our patient, the presence of cerebral infarcts, myocardial infarcts, renal thrombosis, ischemic gastritis, portal vein thrombosis, pancreatic injury within a short duration raised concerns for a serious disorder. Histological and serological tests confirmed the diagnosis. Despite lack of experience with this disorder, prompt review of medical literature and early sub-specialist consultation were vital to ensure a favorable outcome.

CAUTION:LITHIUM INDUCED MULTIORGAN DYSFUNCTION IN THE ELDERLY Amitpal S. Nat; Amritpal S. Nat; Meghan Rane; Josh Harrison. SUNY Upstate, Liverpool, NY. (Tracking ID #1642895)

LEARNING OBJECTIVE 1: Recognize medications/ conditions that can predispose patients to Lithium toxicity.
LEARNING OBJECTIVE 2: Management options in patients with Lithium toxicity.
CASE: We present a 72 y.o. minimally responsive male with Parkinson's disease, HTN, diabetes, and bipolar disorder on lithium carbonate 450 mg ER qHS and 300 mg daily. Patient presented with hypotension at 80/47 mmHG, hypothermia at 35.4 °F, and bradycardia with heart rate of 40 bpm, and apneic respirations. Atropine was given and heart rate responded to 60's. The patient was admitted to the ICU for chronic lithium toxicity. Lithium level was 3.5 mEq/L. Patient underwent urgent intubation, aggressively hydrated with saline, and underwent hemodialysis and made a fully recovery after prolonged stay in the ICU. Lithium levels and creatinine normalized. ROS were unobtainable secondary to patients' clinical status. Other medications included lisinopril, aspirin, duloxetine, olanzapine, paroxetine, metformin, and aripiprazole. Lithium was discontinued from the medication list. CBC was remarkable only for WBC of 11.2 mcL. BMP was remarkable for hyponatremia at 134 mEq/L and creatinine level of 3.5 mg/dL with baseline level 0.7 mg/dL prior. Anion gap was 0. Calcium was 7.1 mg/dL. TSH, free T4, PT/INR, lactate, and all cultures were unremarkable. Chest x-ray revealed a left lower lobe pneumonia. Ct head was unremarkable. Physical exam revealed a minimally responsive patient with GCS of 10 and severely dry oral mucosa. Cardiac and pulmonary auscultation revealed bradycardia and decreased breath sounds on left lower lobe respectively. Neurologic exam was unremarkable except for altered mental status.
DISCUSSION: Lithium carbonate is a well known and effective drug used in the treatment of bipolar disorder. It has a narrow therapeutic index and is cleared by the kidneys. Hypovolemic states, underlying renal insufficiency and increased age can predispose patients to Lithium toxicity. Three classes of drugs to avoid in these patients are angiotensin converting enzyme inhibitors (ACEi), nonsteroidal anti-inflammatory drugs (NSAID's), which cause an acute decline in GFR, and diuretics, which promote renal sodium wasting. This was supported by Juurlink and colleagues who concluded initiating loop diuretics or ACEi significantly increased the risk of lithium toxicity and hospitalization was almost six times and four times more likely for those initiating loop diuretic and ACE inhibitors respectively compared with case controls. This was evident with our elderly patient whose pneumonia, dehydration, and medications such as lisinopril and aspirin predisposed him to severe chronic Lithium toxicity. The mainstay of treatment for Lithium toxicity is fluid therapy. The goal of saline administration is to increase GFR, urine output, and promote the excretion of lithium. Hemodialysis is indicated for severe lithium toxicity with levels >4 mEq/L and >2.5 mEq/L with clinical signs of toxicity. Toxicology and nephrology are important consultations in Lithium toxicity. Our case is of importance because it cautions clinicians to recognize certain medications/conditions that can predispose patients to toxicity. Close monitoring of lithium levels and frequent office visits can allow physicians to have better control over preventing complications of the drug. The importance of hydration, correcting the underlying etiology, and dialysis play a pivotal role in patient outcomes to minimize multiorgan dysfunction and possibly death.

CHALLENGES AND MANAGEMENT OF CENTRAL NERVOUS SYSTEM COCCIDIOIDES Morgen Yao-Cohen; Ami Parekh; Melicent Peck; Sarah Doernberg. UCSF, San Francisco, CA. (Tracking ID #1640777)

LEARNING OBJECTIVE 1: Identify unique presentations of Coccidioides immitis CNS infection.
LEARNING OBJECTIVE 2: Management of chronic coccidioidal meningitis and simultaneous reactive myelitis.
CASE: A 35 year-old man with past medical history significant for coccidioidal meningitis (CM) presented in November 2012 with severe shoulder pain worsening over several weeks and right arm weakness. In 2010, he had no known medical conditions and was vacationing in San Diego, CA. He returned home to Australia, where 6 months later he presented with pleuritic chest pain. He was initially treated for bacterial pneumonia and then bacterial meningitis with worsening symptoms of headache, photophobia and fever. Eventually, a CT chest showed a cavitary lesion and a biopsy grew Coccidioides. He completed a six-week course of intravenous amphotericin before transition to oral fluconazole. He was maintained on fluconazole 800 mg daily. Despite this, he had ongoing fatigue, shoulder spasms and pain radiating down his right arm that worsened several weeks before his November 2012 presentation. He also had several weeks of low-grade fevers, but no photophobia or headache. On presentation, he had a temperature of 100 F, 4/5 strength in right deltoid and biceps with absent right biceps reflex, negative jolt test and severe pain with palpation of the cervical spine and neck flexion (positive Lhermitte's sign). Lumbar puncture had leukocytosis to 103, total protein 1028 and glucose 13. MRI of the cervical spine showed increasing leptomeningeal enhancement of C2–C7 with myelitis at C3–C4 and pre-syrinx formation from CSF block. HIV test was negative. Fluconazole was increased to 1200 mg daily and intravenous amphotericin was added when no improvement was seen after 4 days. After 10 days of treatment, he became unable to abduct his shoulder. Repeat MRI showed interval worsening of cord involvement extending to T1-2 with worsening pre-synrinx and extramedullary cystic components concerning for microabscesses. Within 24 h of starting steroids, he had dramatic improvement of his neurologic examination and pain symptoms. He was treated for 24 days with intravenous amphotericin. Steroids were tapered off with stable neurologic findings. High dose fluconazole will be continued indefinitely.
DISCUSSION: CM is challenging to treat because of associated complications and difficulty clearing the pathogen from CSF. Presentation of CNS exacerbations can be varied and it can be difficult to differentiate whether an acute presentation is from progression of disease or inflammatory response to the pathogen. Management of CM has shifted over time. Prior to development of azoles in the 1980s, treatment centered on intrathecal amphotericin because of poor intravenous CSF penetration. Treatment of CM has evolved to rely on high dose azoles. Intrathecal or intravenous amphotericin is reserved for azole non-responders. Although highly controversial, steroids may be given to patients with focal neurologic deficits even in the setting of active fungal infection given the morbidity and potential irreversibility of neurologic sequelae. Data for this is scarce. Ventriculoperitoneal shunts are placed in patients with hydrocephalus. Some patients may benefit from neurosurgical procedures to remove fungal abscesses. Patients presenting with CNS symptoms and CM benefit from a multispecialty team including infectious disease, neurology, medicine, pain specialists and neurosurgery.

CHEST PAIN IN A YOUNG, HEALTHY FEMALE. IS PHYSICAL EXAM REALLY NECESSARY? Maria G. Frank[1,2]; Susan L. Calcaterra[1,2]; John Cunningham[1,2]. [1]Denver Health Hospital Authority, Denver, CO; [2]University of Colorado School of Medicine, Denver, CO. (Tracking ID #1641305)

LEARNING OBJECTIVE 1: - To promote awareness and to remind providers about the diversity of entities leading to chest pain and to stress the importance of performing a detailed physical examination.

LEARNING OBJECTIVE 2: To describe a case of a spontaneous left radial artery occlusion in a previously healthy 27 year-old female

CASE: A previously healthy 27 year-old female presented to the emergency department complaining of sudden onset of upper left-sided chest pain radiating to left upper extremity associated with clamminess of the hand. The pain started at rest and she had no prior history of similar episodes. She denied trauma to chest, neck or upper extremity. She was not on any medications or herbal preparations and had no significant past medical or surgical history. Her social history revealed tobacco dependence and family history was relevant for mother with thrombophilia and multiple episodes of thromboembolic events. There were no pertinent findings during review of systems. Physical examination was noteworthy for markedly decreased left radial pulse when compared to the right, all other pulses were symmetric, and left hand was warm and appeared well perfused. There was tenderness to palpation over left infra-clavicular area. Exam was otherwise unremarkable. Laboratory tests including Basic Metabolic Panel, Liver Function Tests, Cellular Blood Count, INR, prothrombin, PTT and urine-analysis were normal. Computed tomographic angiogram (CTA) of chest and upper extremities revealed a lack of opacification of the left radial artery. Trans-Thoracic Echocardiogram (TTE) showed no embolic source. General Surgery was consulted with concern for acute limb ischemia; with decision to anti-coagulate patient and to pursue hypercoagulability work up. Results are pending at the time of this report but based on patient's family history, clinical presentation and CTA results, it was presumed that patient's spontaneous arterial occlusion was secondary to thrombophilia. She will be followed at Hematology clinic.

DISCUSSION: Spontaneous radial artery occlusion is rarely found in young patients and certainly hardly included among chest pain differential diagnosis. It has been described in older individuals with known thromboembolic disease, as well as malignancy. Radial artery occlusion has been identified as a complication of trauma and surgical or vascular interventions. There has been limited case reports of patients with Factor V Leiden mutation (FVLM) and associated arterial thromboembolic events, and only one report referred to radial artery occlusion associated with FVLM. Other thrombophilic disorders including protein C deficiency, protein S deficiency and anti-thrombin III deficiency have been infrequently associated with arterial thrombosis. In our case, a comprehensive history and meticulous physical examination prompted the CTA that led to diagnosis and treatment of an unusual malady. In these times of rapidly advancing technology and minimal face-to-face time spent with patients it is imperative to reinforce the use and teaching of examination skills as it can have a substantial effect in medical care, as demonstrated by our case.

CHEST PAIN IN A YOUNG WOMAN WITH SPONTANEOUS CORONARY ARTERY DISSECTION Hirotaka Matsuura; Christine Kwan. Teine Keijinkai Hospital, Sapporo, Japan. (Tracking ID #1639470)

LEARNING OBJECTIVE 1: To recognize that spontaneous coronary artery dissection (SCAD) is one of the causes of acute coronary syndrome (ACS)

LEARNING OBJECTIVE 2: To consider SCAD in young women who present with chest pain without coronary artery disease (CAD) risk factors

CASE: A 40-year-old Japanese woman with no significant past history presents with one-hour history of sudden onset chest pain while showering after swimming for an hour. She describes the pain as squeezing, continuous, located substernally, 8–10/10, non-radiating, and not worsened or improved by anything. She has no diaphoresis, palpitations, respiratory or gastrointestinal symptoms, fever, sick contacts, back or leg pain, recent immobilization, trauma or new activities. She denies family history of premature cardiac disease. She has a 3.75 pack-year smoking history, one beer occasionally and no drug use. She only swims once a year. On exam, her body mass index is 28 kg/m2 with blood pressure 146/100 mmHg, pulse 78 beats/minute, respiratory rate 24 /minute, O2 saturation 97 % room air, and temperature 36.1C. She is alert and oriented ×3 and not in acute distress. Her cardiac exam shows regular S1 and S2 with no murmurs, gallops or rubs and no tenderness to palpation of the chest wall. The rest of the exam is within normal limits. Electrocardiogram (ECG) reveals ST elevation in leads I, aVL, and V1–V6 with no reciprocal changes; troponin and creatine kinase are negative. Total cholesterol is 238 mg/dL, LDL 127 mg/dL, HDL 33 mg/dL, TG 530 mg/dL, and HbA1C 5.2 %. Coronary computed tomography (CT) reveals a lesion in the proximal left anterior descending artery. Coronary angiography then shows a 99 % occlusion in the corresponding area; intravascular ultrasonography (U/S) shows the true lumen's being compressed by a false lumen. Percutaneous coronary intervention (PCI) with a drug eluting stent is performed to reopen the lesion with initiation of aspirin, clopidogrel, carvedilol, candesartan and rosuvastatin. She is discharged after 8 days.

DISCUSSION: This woman has symptoms concerning for ACS but no CAD risk factors except for a mild smoking history and low HDL. ECG certainly shows ST elevation, but it may be interpreted as early repolarization syndrome. Her biomarkers are also negative except for heart-type fatty acid binding protein. Even though she has a relatively low pre-test probability of ACS, it should still be considered because the causes of ACS do not only include atherosclerotic plaque rupture; while SCAD can also cause ACS in 0.2 % of cases. Vanzetto et al. report that 8.7 % of ACS cases in women younger than 50 years old are caused from SCAD. Also, more than 70 % of SCAD cases occur in women. SCAD occurs when an intimal tear followed by intramedial hemorrhage into the false lumen compresses the true lumen resulting in obstruction of blood flow causing myocardial infarction. The causes of intimal tears include atherosclerosis, peripartum episode, connective tissue disorders, vasculitis, exercise, oral contraceptive use, and idiopathy. Symptoms depend on the amount of flow but are similar to ACS from atherosclerotic plaque rupture. Diagnosis is made by coronary CT, angiography, intravascular U/S, and/or optical coherence tomography. Like treatment for ACS from atherosclerosis, SCAD patients are medically managed along with PCI and coronary artery bypass graft. In conclusion, because SCAD can cause ACS, one should consider this life-threatening syndrome even in younger women with chest pain.

CHICKEN-AND-EGG DILEMMA: A CASE OF GLIOSARCOMA AS AN UNUSUAL PRIMARY NEOPLASM Khan K. Chaichana; Michael J. Plakke; Sarah H. Van Tassel; Anthony A. Donato. Reading Health System, Reading, PA. (Tracking ID #1642597)

LEARNING OBJECTIVE 1: Identify the fundamental features of gliosarcoma.

LEARNING OBJECTIVE 2: Recognize the metastatic potential of gliosarcoma.

CASE: A previously healthy left-handed 72-year old male presented to the emergency department with complaints of left facial numbness and spasms of his left upper extremity, as well as an episode of slurred speech and expressive aphasia that had completely resolved before arrival. On physical examination he had stable vital signs and was asymptomatic. Neurological exam was completely non-focal. Computed tomography (CT) scan and magnetic resonance imaging (MRI) of the brain identified a large, 3.2-cm mass in the posterior right frontal lobe with extensive edema, without herniation, hemorrhage, or ischemia. CT scan of the chest, abdomen, and pelvis revealed an irregular, 9.0-mm left upper lobe lung mass concerning for a primary pulmonary neoplasm. Given the high risk of the intracranial mass causing increasing intracranial pressure and possibly cerebral herniation, craniotomy with resection was urgently performed. Examination of the permanent sections of the surgical specimens showed biphasic glial and metaplastic mesenchymal components, diagnostic of gliosarcoma (GSM). Subsequent non-invasive work-up of the pulmonary lesion discovered on pre-operative CT scan was highly indicative of metastatic GSM. After discussing these findings with the patient, he elected to forgo further interventions and was discharged home.

DISCUSSION: Identification of an intracranial neoplasm on diagnostic imaging often creates a diagnostic quandary: is it a metastatic focus or primary brain tumor? Suspicious extracranial lesions found on work-up are considered possible primary sites. Given the low probability of intracranial neoplasms to metastasize, rarely do internists consider the intracranial

neoplasm a primary malignancy and the systemic lesions as possible metastatic foci. However, this is precisely the case with GSM. GSM is a rare type of glioblastoma (GB) consisting of both gliomatous and sarcomatous tissue. It is estimated that GSM accounts for 2.1 % of GB. As with GB, it has a predisposition for older men and a clinical presentation consistent with a rapidly expanding brain tumor, including aphasia, headache, hemiparesis, and seizures. GSM is notable for its strong propensity to spread hematogenously to the lungs and liver, with reports of metastatic foci to numerous other sites. The metastatic potential of GSM is thought to be due to the sarcomatous component, reflecting the tendency of sarcomas to disseminate through the bloodstream. The brain is a common site for metastatic foci, but internests seldom consider that primary intracranial malignancies have the potential for systemic dissemination. GSM is an example that this is possible and should be included in the differential diagnosis when lesions suspicious for malignancy are found inside and outside the brain.

CHOLEDOCHAL CYSTS: A DISEASE OF ALL AGES Vimalkumar Veerappan Kandasamy; Ajaykumar Kaja; Nachiket Patel; Pallavi Bellamkonda. Creighton University Medical Center, Omaha, NE. (Tracking ID #1642305)

LEARNING OBJECTIVE 1: Understand the principles of diagnosis and treatment of choledochal cysts.
LEARNING OBJECTIVE 2: Recognize the atypical presentation of choledochal cyst in adults.
CASE: An 80-year-old Hispanic female with a past medical history of hypertension and hyperlipidemia presented to the emergency room with complaints of a 4-hour history of severe epigastric abdominal pain, nausea and vomiting. She had a history of a cholecystectomy 25-years ago. Patient denied alcohol use. Her vitals were within normal limits. Physical examination was significant for epigastric abdominal tenderness. Pertinent laboratory data included: total bilirubin of 1.7 mg/dL, alkaline phosphatase of 183 IU/L, AST of 536 IU/L, ALT of 266 IU/L, lipase of 3386 units/L, white blood cell count of 10.71 k cells/mcL, and triglycerides of 66 mg/dL. A diagnosis of pancreatitis was made, but there was no clear etiology. Magnetic resonance cholangiopancreatography(MRCP) was done which showed a dilated common hepatic duct with a maximal diameter of 10 mm, and a common bile duct (CBD) diameter of 8 mm. There were no stones in the CBD. Endoscopic ultrasound showed sludge in a type 1 choledochal cyst with no mass lesions. An endoscopic retrograde cholangiopancreatography (ERCP) confirmed the presence of a type 1 choledochal cyst. Multiple balloon sweeps with removal of sludge and a biliary sphincterotomy were performed. There was good drainage of barium contrast at the end of procedure. The patient improved clinically and her lab values normalized.
DISCUSSION: Choledochal cysts are classified into five categories based upon the site, extent and shape of the cystic anomaly. A type 1 choledochal cyst is the most common biliary cyst representing 79 % of all choledochal cysts. Although symptoms can occur at any age, 80 % of patients with biliary cysts will present before the age of 10. Neonatal patients generally present with obstructive jaundice and an abdominal mass, whereas, adult patients present with abdominal pain, fever, nausea, vomiting and jaundice. The symptoms from a choledochal cyst usually result from bile stasis, stone or sludge formation, recurrent super infection and inflammation. About 20 % of cases in adults initially present as pancreatitis due to stone and protein plug formation. Protein plugs form from albumin-rich exudates, chronic inflammation, or mucin hypersecretion from dysplastic epithelium. Diagnostic workup includes abdominal ultrasonography, which may show a cystic mass in the right upper quadrant separate from the gallbladder. Endoscopic ultrasound allows for good visualization of the intrapancreatic portion of the common bile duct. Computed tomography is superior to ultrasonography in imaging the intrahepatic bile ducts, distal bile duct and the pancreatic head. Nevertheless, MRCP is considered the gold standard for diagnosing choledochal cysts. ERCP allows for the performance of therapeutic procedures. Patients with type I cysts are treated with surgical resection of the cysts due to the significant risk of malignancy, provided they are good surgical candidates. In poor surgical candidates, interventions such as laparoscopic cholecystectomy or ERCP can be performed. A high level of suspicion is required for diagnosis, particularly for type I cysts, which may go undiagnosed unless considered in the differential diagnosis of patients found to have ductal dilation, as it can clinically mimic many other conditions like acute or chronic biliary obstruction.

CHRONIC DIARRHEA IN A VIETNAM WAR VETERAN Alisa Thamwiwat; Jeffrey T. Bates. Baylor College of Medicine, Houston, TX. (Tracking ID #1642018)

LEARNING OBJECTIVE 1: Diagnose strongyloides infection accurately when stool samples are negative for parasites.
LEARNING OBJECTIVE 2: Recognize the availability of the newer luciferase immunoprecipitation systems (LIPS) assay in the diagnosis of strongyloides infection.
CASE: A 63-year-old-male Vietnam War veteran noted a six-month history of watery diarrhea; he was admitted for volume depletion. The patient had been in Vietnam for 1 year in 1970; there were no recent travels. Vital signs demonstrated a BP of 85/41 mmHg and a pulse of 101 beats per minute; the physical examination was otherwise unremarkable. His hypotension and tachycardia resolved with volume repletion. Lab work revealed peripheral eosinophilia of 20.9 %. Three stool samples were negative for ova and parasites. Serum enzyme-linked immunosorbant assay (ELISA) demonstrated a positive strongyloides IgG Ab. His serum was sent to the National Institutes of Health (NIH) for a luciferase immunoprecipitation systems (LIPS) assay; it was also positive for strongyloides. The patient was treated with ivermectin 200 ug/kg/day for 2 consecutive days. Two weeks post-discharge, his eosinophilia had decreased to 11.6 %; 2 months post-discharge, it had decreased to 5.3 %, and his diarrhea had resolved.
DISCUSSION: Invasive strongyloidiasis is endemic in the tropical and subtropical areas of Southeast Asia and Africa. It is uncommon in the United States, with a prevalence of approximately 4 % concentrated in the eastern areas of the country; for those patients diagnosed in this country, the infection is most commonly found in immigrants and refugees from endemic areas. Although three stool samples were negative for parasites, the sensitivity of detecting strongyloides in the stool is low, estimated at only 50 % with three samples. Additionally, although the strongyloides IgG ELISA was positive, the positive test can be secondary to cross-reactivity from helminth infections. The newer LIPS assay for strongyloides has been shown to be not only more sensitive, but also more specific, as studies demonstrate no cross-reactivity from helminth infections. Further, for patients who either are immunocompromised at baseline or will be administered corticosteroids, an accurate diagnosis becomes particularly important, because hyperinfection syndrome and disseminated disease can develop; without treatment the mortality rate approaches 100 % in these super-infected patients. Clinicians must consider invasive strongyloidiasis in patients with chronic diarrhea and peripheral eosinophilia, especially in people who inhabit endemic areas. Negative stool studies for parasites should not exclude its diagnosis, and the newer LIPS assay can identify strongyloides infection with greater sensitivity and specificity than the more commonly used ELISA.

CIPROFLOXACIN IMPLICATED IN ACUTE HEPATITIS Youssef Nasr; Edgardo M. Flores Anticona; Alex Essenmacher; Kassem Bourgi; Lucero C. Chueca Villa. Henry Ford Hospital, Detroit, MI. (Tracking ID #1625032)

LEARNING OBJECTIVE 1: Recognize that drug-induced liver injury is a possible but rare side effect of ciprofloxacin.
LEARNING OBJECTIVE 2: Understand that ciprofloxacin-induced liver injury is reversible by stopping this antibiotic early.
CASE: The patient is a 41-year-old woman with a history of recurrent right kidney stones and one episode of urinary tract infection (UTI) many years ago treated with Bactrim. She presented to primary care with 1 week of right-sided flank pain and urinary symptoms. She was diagnosed with a

Streptococcus viridans UTI and treated with ciprofloxacin. The urinary complaints resolved, but she started to have right upper quadrant discomfort and jaundice a few days after starting the antibiotic; this led to hospital admission for further evaluation. Laboratory testing showed elevated liver function tests: aspartate aminotransferase (AST) 1058 IU/L, alanine aminotransferase (ALT) 806 IU/L, total bilirubin of 11.5 mg/L with a direct bilirubin of 6.5 mg/L, and alkaline phosphatase 315 IU/L. Other causes of acute hepatitis such as acetaminophen intoxication, acute viral hepatitis, and autoimmune liver disease were ruled out. Doppler ultrasonography of the liver was negative for vascular obstruction and cholelithiasis. A liver biopsy was performed, and the pathology revealed marked lobular disarray, lobular and portal lymphocytes, occasional eosinophils, and no plasma cells consistent with drug-induced liver injury. Ciprofloxacin was discontinued, and symptoms as well as liver injury markers improved.

DISCUSSION: Ciprofloxacin is a fluoroquinolone antibiotic commonly used to treat a variety of bacterial infections of the urinary tract, gastrointestinal system, skin, and complicated intraabdominal infections. Ciprofloxacin is generally well tolerated and has a favorable side-effect profile. Liver injury can develop following the use of many drugs both prescription and over-the-counter. Fourteen cases of ciprofloxacin-induced liver injury were reported but only two patients, similar to our case, were not on any other medication, confirming this rare side effect. Drug-induced liver injury (DILI) can be classified in several ways: by its clinical presentation and laboratory features, the mechanism of hepatotoxicity, and/or its histological findings. The diagnosis of DILI can be difficult, so obtaining a careful drug history is important but not always reliable. Features suggesting drug toxicity include lack of illness prior to ingesting the drug, clinical illness or biochemical abnormalities developing after beginning the drug, and improvement after the drug is withdrawn. A high index of suspicion is necessary to expeditiously establish the diagnosis and permit withdrawal of the drug before the damage is irreversible.

CLASSIC HEMATOLOGIC FINDINGS HELP DIAGNOSE PERNICIOUS ANEMIA IN A PATIENT WITHOUT NEUROLOGIC DEFICITS Andrew Antony[1]; Yelena Averbukh[2]. [1]Albert Einstein College of Medicine, Bronx, NY; [2]Montefiore Medical Center, Bronx, NY. (Tracking ID #1625104)

LEARNING OBJECTIVE 1: To construct a wide differential diagnosis in patients presenting with megaloblastic anemia

LEARNING OBJECTIVE 2: To recognize the presentation of B12 deficiency in patients presenting with non-specific complaints

CASE: A 47 year-old Dominican man with no significant past medical or surgical history presents with weakness and weight loss. Review of systems is negative for chest pain, shortness of breath, melena, numbness and tingling in his extremities or abnormal balance and gait. Physical exam reveals conjunctival pallor, but there is no rash, scleral icterus, thrush, lymphadenopathy, ascites, hepatosplenomegaly, or edema. There are no focal deficits on neurologic exam. Laboratory values are significant for: hemoglobin 5.8, hematocrit 16.7 %, MCV 112, reticulocyte index 2.1, platelets 136,000, INR 1.1, PT 11.4, aPTT 24.1, LDH 3522, haptoglobin 6, total bilirubin 1.6. Coombs test is negative, iron is 126, TIBC is 244, transferrin is 195, percent saturation is 52, ferritin is 751. He has a folate of 10.8 and a vitamin B12 of 60. Anti-intrinsic factor antibody is negative, and anti-parietal cell antibody is positive. Blood smear demonstrates hypochromia, macrocytosis, basophilic stippling, anisocytosis, poikilocytosis, normoblasts, hypersegmented neutrophils and teardrop cells. The patient improved rapidly after transfusion of 2 units packed red blood cells. He was treated with cyanocobalamin 1000 mcg IM daily for 7 days, and discharged with a plan for weekly injections for 1 month, and then monthly injections with follow-up.

DISCUSSION: Folate and B12 deficiency must be ruled out in patients with megaloblastic anemia. This patient has very low levels of B12, and demonstrates classic laboratory findings of B12 deficiency such as anemia and thrombocytopenia. Peripheral smear shows hypersegmented neutrophils and teardrop cells, consistent with B12 deficiency. Once decreased nutrient intake and malabsorption are ruled out, autoimmune processes are considered. Pernicious anemia is an autoimmune disease with peak onset at age 60, which results in decreased B12 absorption. It is most commonly associated with anti-intrinsic factor antibodies, but patients may only have anti-parietal cell antibodies. Serum gastrin may be elevated, while pepsinogen is often decreased. Patients may have co-morbid autoimmune diseases such as thyroid abnormalities or vitiligo. Less common causes of megaloblastic anemia including tropical sprue and Diphyllobothrium latum infection should be considered if travel history is appropriate. In older patients, myelodysplastic syndrome is possible and may warrant bone marrow biopsy. This previously healthy 47 year-old man presents with nonspecific symptoms of weakness and weight loss. He does not have focal neurologic deficits associated with B12 deficiency, but has classic hematologic abnormalities. Prevalence of B12 deficiency increases with increasing age. The classic lesion is subacute combined degeneration of the spinal cord, but more subtle findings such as decreased vibration sense are common. Hematologic and neurologic manifestations may both be present, but either may occur in isolation. Neurologic manifestations are thought to be a late-stage phenomenon, most often occurring after 3–6 months of deficiency. If not treated, damage may become irreversible after 6–12 months. It is important to consider B12 deficiency as patients may only present with nonspecific symptoms, and if untreated, B12 deficiency may result in irreversible neurologic damage.

CLOMIPHENE-INDUCED HYPERTRIGLYCERIDEMIA AND ACUTE PANCREATITIS Sean Iwamoto; Anthony Yin; Susanna Tan; Sara L. Swenson. California Pacific Medical Center, San Francisco, CA. (Tracking ID #1642795)

LEARNING OBJECTIVE 1: Recognize clomiphene's role in male reproductive endocrinology and the mechanism of clomiphene-induced hypertriglyceridemia and acute pancreatitis.

LEARNING OBJECTIVE 2: Distinguish secondary causes of hypertriglyceridemia and acute pancreatitis.

CASE: A 43-year-old male presented to the emergency department with acute epigastric pain, nausea, and vomiting. He had a history of severe hypertriglyceridemia with prior elevations to 1000 mg/dL that had been lowered to normal levels with omega-3 fatty acids and simvastatin. He denied prior episodes of pancreatitis, cholelithiasis, peptic ulcer disease, reflux symptoms, alcohol abuse, and increased fat intake. The patient was hemodynamically stable, and his abdominal examination demonstrated tenderness to palpation in the epigastric region without distension, rigidity, rebound, or guarding. Pertinent initial labs included: lipase of 2702 U/L, total cholesterol of 251 mg/dL, triglycerides of 1099 mg/dL, and glucose of 257 mg/dL. A CT with contrast revealed an acute, mild pancreatitis of the body and tail without necrosis or hemorrhage as well as fatty liver and a normal biliary tree and gallbladder. The patient received antiemetics, aggressive intravenous fluids, analgesics, and bowel rest. We discontinued his home clomiphene. By day 2, his triglycerides and lipase had decreased to 341 mg/dL and 413 U/L, respectively. The patient was discharged on gemfibrozil and a higher dose of omega-3 fatty acids and counseled to stop clomiphene and abstain from high fat and cholesterol-rich foods and alcohol.

DISCUSSION: This case illustrates a rare association between clomiphene and both hypertriglyceridemia and acute pancreatitis. Our patient had been taking clomiphene for hypoandrogenism for 4 months prior to presentation. Although he had a history of hypertriglyceridemia, his triglyceride level had been normal for at 1 year. Clomiphene, a selective estrogen receptor modulator, stimulates gonadotropin release from the anterior pituitary by inhibiting testosterone aromatization to estrogen and metabolization to dihydrotestosterone via 5alpha-reductase. It is indicated for ovulation induction in females with ovulatory disorder or polycystic ovary syndrome. It has also been administered to treat male oligospermia and hypoandrogenism secondary to hypogonadism. Our literature review found only four case reports describing hypertriglyceridemia and/or acute pancreatitis following clomiphene treatment, all involving women. This may be the first reported case in a man. Clomiphene is proposed to exacerbate hypertriglyceridemia, especially in patients with familial

hypertriglyceridemias. Proposed mechanisms include: 1) increasing hepatic production of triglyceride-carrying very low density lipoproteins, 2) decreasing triglyceride clearance by reducing the levels of lipoprotein lipase and hepatic lipase, and 3) augmenting insulin resistance. Clomiphene has mixed estrogen agonistic effects but is mainly antagonistic. Its chemical structure resembles that of tamoxifen, another estrogen analog that has been shown to increase triglyceride levels and cause acute pancreatitis. Other medications or disease states that elevate triglyceride levels and can lead to acute pancreatitis include corticosteroids, beta-blockers, diuretics, isotretinoin, protease inhibitors, hyperestrogenemia of pregnancy, poorly controlled diabetes, hypothyroidism, multiple myeloma, systemic lupus erythematosus, lymphoma, and alcohol excess, all of which were absent in our patient.

CLOPIDOGREL HYPERSENSITIVITY REACTION AFTER PLACEMENT OF A DRUG-ELUTING STENT Saifullah Nasir[1,2]; Jeffrey T. Bates[2,1]. [1]Baylor College of Medicine, Houston, TX; [2]Houston VAMC, Houston, TX. (Tracking ID #1640757)

LEARNING OBJECTIVE 1: Recognize thienopyridine-induced drug reactions in patients who have undergone a percutaneous coronary intervention with stent placement.
LEARNING OBJECTIVE 2: Manage thienopyridine-induced drug reactions in patients who have undergone a percutaneous coronary intervention with stent placement.
CASE: A 65-year-old Caucasian male with a history of coronary artery disease was admitted with acute coronary syndrome. He underwent a percutaneous coronary intervention (PCI) with placement of an everolimus drug-eluting stent and was discharged on dual anti-platelet therapy with aspirin and clopidogrel. He returned 6 days later with a skin rash. He had not taken clopidogrel previously; there had been no other changes to his medications. He had neither recent travel or camping history nor recent changes in his diet. His vital signs were normal. His rash was morbilliform, fixed, pruritic, and located throughout his anterior trunk, back, and thighs. There was no involvement of mucous membranes or airway compromise. Laboratory studies, including a CBC, were normal; there was no peripheral eosinophilia. During his three-day admission to the hospital, we did not discontinue his clopidogrel; he was treated with loratadine, ranitidine, diphenhydramine, and prednisone at 1 mg/kg. His rash resolved within 24 h of initiation of treatment; he was discharged on these medications with a 15-day taper of prednisone. At post-discharge follow-up visits at both 1 week and 1 month he continued to be asymptomatic.
DISCUSSION: Clopidogrel hypersensitivity reactions present clinicians with the dilemma of how to continue dual anti-platelet therapy in patients who have recently undergone a stent placement. Although not widely reported, clopidogrel hypersensitivity has been documented to be as high as 1.6 %. In this case we were able to successfully continue clopidogrel in a patient with a clopidogrel allergy by transiently employing both steroids and histamine receptor blockers. This method has been described in the literature as a safe way to manage patients with a cutaneous reaction but without airway angioedema or a desquamating (Stevens-Johnson type) reaction. Another option might be to substitute a non-thienopyridine such as ticagrelor. Different thienopyridines such as prasugrel and ticlopidine may have significant cross-reactivity in patients with a clopidogrel allergy and should not be given. Clinicians need to be prepared to recognize and manage thienopyridine-induced drug reactions, as dual anti-platelet therapy remains necessary in patients who have undergone a recent PCI.

CLOZAPINE INDUCED ACUTE COLONIC PSEUDO-OBSTRUCTION David Weir; Casey R. Benton. Mount Sinai, New York, NY. (Tracking ID #1617891)

LEARNING OBJECTIVE 1: To recognize the signs and symptoms of acute colonic pseudo-obstruction or Ogilvie's syndrome
LEARNING OBJECTIVE 2: To review the physiology and management of acute colonic pseudo-obstruction
CASE: A 26-year-old man with a history of paranoid schizophrenia presented to our emergency department with fever and altered mental status after recent initiation of clozapine therapy. He was unable to give a coherent history because of his mental status. His vital signs were notable for a temperature of 39 C, pulse of 144, and blood pressure of 86/48. A chest radiograph was unremarkable, and laboratory studies revealed a WBC of 9,800 with 40 % bands, CPK of 2977 U/L, lipase of 810 U/L, ALT of 86 U/L and AST of 116 U/L. He required endotracheal intubation for airway protection and his hypotension improved with IV fluids and antibiotic therapy. On hospital day 2 he developed increasing abdominal distension and rigidity. A CT scan with oral contrast revealed a diffusely distended large bowel to 11.8 cm with air-fluid levels and no transition point consistent with Ogilvie's syndrome. Colonoscopic decompression showed inflammation and ischemia throughout the transverse and descending colon with some superficial ulcerations but no overt perforation, however, clinically he failed to improve. Given the concern for ischemia he was taken to the operating room for a laparotomy which revealed multiple transmural ulcerations and two contained perforations.
DISCUSSION: The gastrointestinal (GI) side effects of psychotropic medications are commonplace and vary from mild dyspepsia to life-threatening illnesses. Clozapine, an atypical antipsychotic, has been shown to be effective in patients with treatment-resistant schizophrenia. Well known for the life threatening side effect of agranulocytosis, more common and equally serious are the myriad of GI reactions. Constipation associated with clozapine occurs in 15–60 % of patients while acute obstruction remains relatively uncommon. Acute colonic pseudo-obstruction (Ogilvie's syndrome) is the dilation of the colon and symptoms of obstruction without a mechanical cause of obstruction. This condition is frequently associated with medications, infection, metabolic disturbances, and trauma or surgery. In a series of 22 cases of clozapine induced GI hypomobility the most common clinical findings were abdominal pain and distension in 55–73 % and vomiting or constipation in 45–55 % of patients. The pathophysiology of Ogilvie's syndrome is thought to be a result of unbalanced autonomic innervation of the gut. Clozapine has been implicated via both its anticholinergic and antiserotonergic properties. It's a high-affinity antagonist for 5-HT3 receptors which reduce colon transit time and reduce intestinal sensitivity to distension. Treatment of Ogilvie's syndrome includes both surgical and medical interventions. In the presence of ischemia, perforation, or cecal volvulus surgery is first-line therapy. In their absence conservative management can be considered by keeping the patient NPO, NG and rectal tube suctioning, correction of electrolyte disturbances, and treatment of reversible causes. If unsuccessful, a trial of neostigmine should be considered and if this fails colonoscopic decompression should be attempted. In the absence of a response to conservative medical, pharmacologic, and endoscopic interventions surgical decompression should be pursued. This case illustrates an under recognized and often life-threatening complication of clozapine therapy.

COGNAC ENEMA MIMICKING ACUTE ISCHEMIC COLITIS Giovanna Rodriguez; Prashant Sharma; Francesco Notar. New York Methodist Hospital, Brooklyn, NY. (Tracking ID #1642454)

LEARNING OBJECTIVE 1: Recognize the clinical features of patients using alcohol enemas
LEARNING OBJECTIVE 2: Manage patients with severe colonic mucosal damage from alcohol enemas
CASE: A 57 year-old male with a history of obesity with laparoscopic adjustable gastric band, hypertension, and dyslipidemia presented because of a 1 day history of rectal bleeding associated with nausea, left lower quadrant (LLQ) pain, and tenesmus. He self-administered a cognac enema a day earlier but did not reveal this on admission. He denied fevers, chills, or diarrhea and had no recent travel history or sick contacts. A colonoscopy 2 years earlier for cancer screening showed normal results. He denied recreational drug use and smoking, but admitted to occasional alcohol use. Physical examination was benign except for LLQ tenderness and guaiac-positive stools. Blood test results were pertinent for leukocytosis of 15,000/mm3 on admission. Lactate, stool culture and PCR for Clostridium difficile

were negative, while stool was positive for WBCs. Abdominal x-ray showed dilated small bowel loops in the left abdomen, and CT with contrast showed colonic thickening of the entire colon. The patient revealed the next day that he had used an unspecified amount of a cognac enema intentionally before sexual relations with his wife. Sigmoidoscopy showed moderate colitis with erythema, scattered ulcerations, and a 2 cm laceration in the distal rectum. Histopathology showed edema and hemorrhage in the lamina propia and superficial necrosis, and was interpreted as "consistent with acute ischemic colitis". He was initially treated with intravenous ciprofloxacin and metronidazole, given his leukocytosis, WBCs in stool and colitis seen on imaging. Once the self-administered an alcohol enema was acknowledged, antibiotics were discontinued and he received mesalamine orally and rectally, with resolution of symptoms.
DISCUSSION: Identifying patients who use alcohol enemas requires a high index of suspicion. There are no identifiable features that can be recognized early on admission, so as to avoid going through extensive, expensive and even avoidable work up. The clinical characteristics include an afebrile patient with bright red blood per rectum, tenesmus, negative lactate, negative stool work up, evidence of colitis on imaging, endoscopic evidence of colitis and superficial mucosal damage on histopathology. It is unknown how common the use of alcohol enemas is, but there are some isolated incidents in the news. For example, a college student was found to have a blood alcohol content (BAC) of 0.4 % in 2012 after a fraternity party, while in 2004 a woman gave her husband 2 bottles of sherry per rectum, which raised his BAC to 0.47 % and led to his death. Alcohol is known to cause severe mucosal damage, which can mimic acute ischemic colitis. In laboratory animals, the changes demonstrated by alcohol throughout the gastrointestinal tract include epithelial disruption, vascular congestion, lymphatic damage. Seven cases of colonic damage caused by alcohol enemas have been reported, either accidentally or intentionally, and despite the severity of mucosal damage, all patients recovered within a week of conservative management.

COLONIC SCHISTOSOMIASIS AS INCIDENTAL FINDING IN A PEDUNCULATED POLYP. Ahmad Aldeiri; Abdallah Kobeissy; Osama Alaradi. Henry Ford Hospital, Detroit, MI. (Tracking ID #1638280)

LEARNING OBJECTIVE 1: Diagnose Schistosomiasis in a colonic polyp.
CASE: A 50 year old man was referred to outpatient gastroenterology clinic for evaluation of chronic abdominal discomfort and intermittent rectal bleeding. The patient is originally from Yemen, but he moved to the United States more than 40 years ago. There was no personal or family history of colon cancer or bleeding. His physical examination was normal with no signs of portal hypertension. Further laboratory tests showed a white blood cell count of 10,400/mm3 (4000–11,000/mm3) with 5 % eosinophils (0.5–4 %). There was no evidence of anemia, or abnormal liver and kidney function tests. Upper endoscopy revealed hiatal hernia but no evidence of ulcer or mass. Colonoscopy demonstrated a single pedunculated polyp (5–9 mm in size) in the transverse colon without any stigmata of bleeding. The polyp was completely removed by hot snare. Medium-sized hemorrhoids were also seen in the anus during the procedure. Pathologic examination showed colonic mucosa with edema and non-caseating granulomas surrounding foreign-body type material consistent with schistosomiasis. The patient was treated with a 1 day course of praziquantel 60 mg/kg.
DISCUSSION: Schistosomiasis is an endemic disease in South America, Africa, Asia and the Middle East, affecting over 200 million people worldwide. Intestinal schistosomiasis is rarely reported in the United States, and is exclusively seen among travelers from endemic areas. Two species of schistosomes commonly produce intestinal disease: Schistosoma mansoni and japonicum. Colonic schistosomiasis occurs due to deposition of schistosoma ova in submucosa producing inflammatory reaction and granuloma formation, which can result in ulceration, bleeding, microabscess formation, and can also give rise to polyps and result in neoplastic transformation. On colonoscopy mucosa may appear normal, edematous, with petechial hemorrhage in acute schistosomal disease, and flat or elevated yellow nodules, polyps in chronic schistosomiasis.

COMA: HYPERTHYROID OR HYPOTHYROID. Pakhadi Buddhadev; Mihir S. Shah. St Francis Hospital, Evanston, IL. (Tracking ID #1635012)

LEARNING OBJECTIVE 1: Thyroid storm is a severe form of thyrotoxicosis that usually presents with tachycardia, fever, seizures, vomiting, diarrhea or arrhythmia. It can also present with atypical features like apathy and coma. If not treated aggressively, it can be rapidly fatal. We present such a case which was a diagnostic challenge.
CASE: An 87 year old gentleman presented to the ER with nausea, vomiting and fever. He complained of feeling weak since the past 1 week. Past medical history was significant for Diabetes Mellitus type 2, hypertension, CHF, pacemaker placement and stroke. He had no history of thyroid disease in the past. Within 2 h of being admitted, he became incoherent, and confused. He was transferred to the ICU for evaluation of encephalopathy. In a few minutes he slipped into coma and was intubated to protect his airways. His pulse was 124/min, regular, BP 138/68 mmHg, RR 24/min, temperature 100.4 F, and saturating at 98 %. On physical exam he was sweating diffusely, pupils were reactive to light; neck showed a prominent thyroid gland, heart, lung and abdomen exam was normal. Laboratory tests revealed blood glucose of 145 mg/dl, a normal renal and liver panel, and normal cardiac markers. Hemoglobin was 10.5 gm/dl, WBC 5.8, HgA1C 6.7 %, BNP 2032 pg/ml (normal<100), HbA1c 6.8, TSH<0.005 uIU/ml (normal, 0.4–5.4), Free T4 5.36 ng/dl (normal, 0.70–2.0), T4 19 μg/dL(normal, 4.6 to 12.0 μg/dL), T3 407.5 ng/dl (normal, 80 to 200 ng/dL), free T3 14.1 pg/ml (normal 1.70–4.20), TSI 1298 %(normal<130 %), TPO antibody 14 IU/ml (normal<35). Repeat TFT showed same results. EEG was suggestive of encephalopathy, CT head showed old infarct. Ultrasonography of thyroid showed diffuse thyromegaly and increased vascularity. A diagnosis of thyroid storm was made and patient was started on Propylthiouracil, Lugol's iodine, propranolol and methylprednisone. Our patient gradually improved and was extubated on day 8 of admission. He was coherent and back to baseline. He was discharged to a rehabilitation center. On follow up I123 uptake scan was done which showed 60 % uptake.
DISCUSSION: Apathetic thyrotoxicosis is an exceedingly rare presentation of thyroid storm. The clinical picture is of apathy rather than hyperactivity and cardiovascular manifestations may predominate, tachycardia is almost always present. Although this is a disease of the elderly, it has been reported in all age groups. Our search revealed only a few case reports of elderly hyperthyroid patients presenting with apathy and coma during thyroid storm. Almost all report improvement in mental status after antithyroid therapy. Our patient's mental status was assessed daily by holding sedation every morning; there was good correlation between mental status and thyroid hormone levels. Our case is a little unusual since we did not have elevated TSI or TPO levels. We want to present this case to highlight that in elderly individuals, checking the thyroid hormone levels is important and the presence of atypical features like apathy or coma should not defer one from contemplating the diagnosis.

COMMON VARIABLE IMMUNODEFICIENCY: AN UNCOMMONLY DIAGNOSED DISORDER IN COMMON POPULATION Hirva Mamdani; Diane L. Levine. Wayne State University, Detroit, MI. (Tracking ID #1640760)

LEARNING OBJECTIVE 1: Recognize Common Variable Immunodeficiency as an uncommon yet possible cause of recurrent infections.
CASE: A 25 years old African American man presented with fever, productive cough, and shortness of breath with chest X ray showing consolidation in the left lower lobe. He was treated for community acquired pneumonia with appropriate antibiotics. Two months later, the patient returned to the hospital with similar complaints and chest X-ray showing left upper lobe consolidation. Patient had history of multiple hospitalizations in the preceding years for pneumonia involving different locations (one of which was associated with H. influenza bacteremia which is very rare in this age group in the context of pneumonia). CT thorax during each episode revealed consolidation in different locations along with stable

mediastinal, bilateral hilar and subcarinal lymphadenopathy. A transbronchial lung biopsy during past admissions revealed patchy interstitial thickening with fibrosis and acute neutrophilic inflammatory infiltrates. Recurrent infection with encapsulated organisms (H. influenza and Strep pneumoniae) raised the possibility of humoral immune deficiency which was further reinforced by indeterminate rapid HIV test (an antibody mediated response based test). This fact prompted us to check immunoglobulin levels which revealed very low IgG, A, M and E levels with low CD 19 (mature B cell marker) consistent with the diagnosis of Common Variable Immunodeficiency. CD3 (T cell marker) and CD56 (natural killer cell marker) were normal. Anti pneumococcal antibody titer was also negative indicating deficient immune response to previous infections/immunizations. HIV quantitative RNA was un-detectable. Hilar lymphadenopathy on previous CT scans can be secondary to infectious process or be a part of CVID associated non sarcoid granulomatous disease/lymphoma. Patient was treated with antibiotics and given IV Immunoglobulin infusion.
DISCUSSION: Common Variable Immunodeficiency (CVID) is a primary immunodeficiency disorder characterized by impaired B cell differentiation with defective immunoglobulin production. The condition affects about 1 in every 25,000 individuals, involves multiple organ systems, and typically remains undiagnosed for 5 to 7 years after the onset of symptoms. Although recurrent infections warrant testing for common conditions like HIV and cystic fibrosis, uncommon conditions such as common variable immunodeficiency should also be included as a part of differential diagnosis. Having a high index of suspicion for humoral immune deficiency when confronted with recurrent infections with encapsulated organisms, especially when associated with bacteremia, could have led to earlier diagnosis, avoidance of multiple invasive investigations, and early institution of appropriate treatment in this patient.

CONNECTING THE DOTS: CUSHING'S SYNDROME AND ANTERIOR MEDIASTINAL MASS Lena Scotto; Yukako Honda; Susanna Tan; Melissa E. Weinberg; Sara L. Swenson. California Pacific Medical Center, San Francisco, CA. (Tracking ID #1631570)

LEARNING OBJECTIVE 1: Recognize thymic neuroendocrine carcinoma as a rare cause of an anterior mediastinal mass and Cushing's syndrome.
LEARNING OBJECTIVE 2: Treat thymic neuroendocrine carcinoma and the symptoms and complications of ectopic Cushing's syndrome.
CASE: A 31 year old gentleman with past medical history of testicular cancer status post orchiectomy presented to an outside hospital with shortness of breath caused by hypertensive emergency and pulmonary edema. A CT angiogram of the chest demonstrated a 5.5×6.4×5.1 cm anterior mediastinal mass that encircled and narrowed the left innominate vein, as well as elevation of the right hemidiaphragm. Once stabilized, he was transferred to our hospital for work-up of his mediastinal mass. He described a 40 lb weight gain, multiple rib fractures after minimal trauma, and sensation of substernal "bulge" for 1 year. On physical exam, he exhibited a moon face, gynecomastia, dorsocervical fat pad, truncal obesity, abdominal striae, and muscle wasting. His clinical presentation in the context of the mediastinal mass raised concern for Cushing's syndrome caused by ectopic ACTH production. Morning cortisol was elevated at 61.5 μg/dL, ACTH at 190 pg/mL, and urine free cortisol at 4738.9 μg/24 h (urine creatinine 2.07 g/24 h). An 8-mg overnight high-dose dexamethasone suppression test confirmed ACTH-dependent Cushing's syndrome with a post-test morning cortisol of 60.2 μg/dL and ACTH of 277 pg/mL. His high ACTH level suggested an ectopic source. A CT-guided needle core biopsy of the mass demonstrated features most consistent with thymic neuroendocrine carcinoma, focally varying from well-differentiated (carcinoid) to poorly differentiated (small cell carcinoma). Given possible phrenic nerve and vasculature invasion, the patient was not a surgical candidate. His hospitalization was complicated by diabetes mellitus, hypokalemic alkalosis, depression, and hypertension necessitating eight anti-hypertensive medications. Ketoconazole was initiated for management of ectopic Cushing's syndrome. He was treated with cisplatin, etoposide and fosaprepitant and discharged with plans for continued outpatient chemotherapy and radiation.
DISCUSSION: An ACTH-producing neuroendocrine thymic tumor is a rare cause of both Cushing's syndrome and an anterior mediastinal mass. Approximately 92 cases have been reported in the literature since 1980. The peak incidence is in the second to fourth decade, with a ratio of men to women of 1.5:1. Our case illustrates how the co-existence of two entities—Cushing's syndrome and mediastinal mass—can make an otherwise rare diagnosis very plausible. ACTH-dependent Cushing's syndrome was diagnosed by extremely elevated serum ACTH and 24 h urine free cortisol and by failure to suppress serum ACTH and cortisol with dexamethasone administration. While surgery is the treatment of choice, patients with locally infiltrative tumors or metastasis, such as our patient, are not surgical candidates and less established treatment with chemotherapy and/or radiotherapy is pursued. As evidenced by our patient, management of Cushing's symptoms, especially hypertension, presents a significant challenge. Hypertension caused by elevated cortisol does not respond well to typical anti-hypertensive medications, but may respond to spironolactone, ARBs/ACE inhibitors and ketoconazole. Treatment of patients with thymic neuroendocrine tumors requires close follow-up and careful medication adjustments as the tumor shrinks and symptoms diminish.

CONSERVATIVE ANTICOAGULATION FOR ATRIAL FIBRILLATION IN THE ELDERLY: A CASE, A WARNING AND A LITERATURE REVIEW Kamesh Sivagnanam; Dhara Chaudari; Mohammad Al Madani; Atif Saleem; Kais Al-Balbissi. East Tennessee State University, Johnson City, TN. (Tracking ID #1642136)

LEARNING OBJECTIVE 1: Clinicians should be less conservative with anticoagulation of AF in the elderly given substantial benefit. Risks must be evaluated on a case by case basis without prejudice.
LEARNING OBJECTIVE 2: Multiple studies have shown that age related fall risk is usually not a contraindication for anticoagulation as benefit substantially outweighs risk in most situations.
CASE: A 91 year old lady with chronic atrial fibrillation on digoxin but not anti-coagulated for fall risk, congestive heart failure on furosemide, hypothyroidism on levothyroxine and normal renal function presented with complaints of persistent diarrhea for 3 months that was exacerbated for 1 day. Patient also had diffuse abdominal pain, dyspnea, chest pain radiating to her throat, dry cough, lightheadedness, vomiting and palpitations. Examination revealed rapid irregularly irregular heart rate, mild hypotension, crepitations in lung bases and diffuse abdominal tenderness. There were non specific ST segment changes on the electrocardiogram. Labs revealed elevated troponins (0.15 ng/ml->0.39 ng/ml->0.43 ng/ml) and positive stool hem-occult. Gastrointestinal work up was negative for inflammatory bowel. Chest X-Ray showed small pleural effusions and atelectasis versus pneumonia. CT scan of the abdomen with contrast showed thickened walls of the intestinal loops (~1 cm), a clot in the superior mesenteric artery and bilateral renal subacute infarcts. Echocardiogram was baseline. A diagnosis of atrial fibrillation with rapid ventricular rate, non- ST elevation myocardial infarction (NSTEMI) and mesenteric ischemia was made. Patient was admitted and started on fluids, IV heparin and empiric antibiotics and was kept Nil per oral. A Cardiology consult was placed and no further interventions were recommended for a non-coronary troponin elevation. Gastroenterology recommended conservative management with continued anticoagulation with chronic warfarin and heparin for bridging. With time, patient's symptoms improved. She tolerated a diet and was eventually discharged to an assisted living facility with a therapeutic INR.
DISCUSSION: There exists a great discrepancy between evidence based medicine and clinical practice in the realm of anticoagulation for atrial fibrillation(AF) in the elderly. History of falls, mild bleeding risk and mental status are often used as excuses for not anticoagulating a patient. In the above patient, not anticoagulating atrial fibrillation was the primary culprit causing thromboembolism to the kidneys and bowel. She also had a component of chronic ischemia of the bowel (bowel thickening on CT, prolonged symptoms) secondary to chronic thromboembolism. Multiple studies have observed clinicians taking a conservative approach to anticoagulating AF in the elderly although they constitute the group that derives the most benefit from anticoagulation. Meta-analyses have shown

that a patient needs to have close to 300 falls in a year for the risk of anticoagulation to outweigh benefit. Treatable bleeding risk and age are not justifiable reasons for withholding anticoagulation.

CONSTIPATION AS A PRESENTATION OF PERNICIOUS ANEMIA Rebecca Witt; Sara Wikstrom. George Washington University, Washington, DC. (Tracking ID #1644082)

LEARNING OBJECTIVE 1: Recognizing significant constipation as a unique presentation of pernicious anemia
CASE: An otherwise healthy 48 year-old woman presented to our hospital with 5 weeks of constipation. She reported having only 1–2 bowel movements per week and stated that they required significant straining. A high fiber diet, stool softeners and enemas did not provide any relief. She denied any melena or hematochezia. She denied abdominal pain but endorsed significant rectal pain for 3–4 weeks that initially occurred only with defecation but then became constant. Review of systems was positive for a 30-lb weight loss over 6 weeks, but no fevers or night sweats. Her vital signs were significant for a heart rate of 125 with a blood pressure of 119/80. Physical exam was significant for pale conjunctiva, anicteric sclera and yellow oral mucosa with petichiae. Her abdomen was soft, non-tender and non-distended. Bowel sounds were normal. Rectal exam revealed stool in the rectal vault but was negative for masses or hemorrhoid. Stool guaiac was negative. Extremity, neurologic, and skin exams were normal. Initial labs were significant for Hb 3.8 and Hct 12.1, MCV 100, WBC 2.41, platelet 55. Total bilirubin was 2.3, direct was 0.0. Workup for hemolysis revealed a reticulocyte index of 0.3, LDH of 10,582, undetectable haptoglobin, and negative DAT. The peripheral smear revealed poikilocytosis, tear drop cells, occasional nucleated RBCs and dysplastic WBCs. HIV, hepatitis, and parvovirus studies were negative. Her vitamin B12 level was <159. Blood flow cytometry was normal, and the patient declined a bone marrow biopsy. Gastric parietal cell antibody was elevated at 47.6 units (nl <=20.0) and qualitative study for intrinsic factor blocking antibody was positive. She was diagnosed with pernicious anemia and discharged on vitamin B12 supplementation. Two weeks later she followed up in clinic where her CBC had nearly normalized.
DISCUSSION: Our patient presented with significant pernicious anemia. Interestingly, she also presented with a unique but previously described symptom of vitamin B12 deficiency: constipation. The hematologic abnormalities in B12 deficiency are secondary to a failure in DNA synthesis. Cobalamin is a co-factor in the conversion of homocysteine to methionine, which is necessary for DNA synthesis and normal neural function. In cobalamin deficiency, abnormal fatty acids may accumulate in myelin or methylating reactions may be defective. Damage to the posterior columns of the spinal cord gives rise to paresthesias, sensory loss and ataxia. Damage to the corticospinal tracts presents with weakness, spasticity, and hyperreflexia. It is conceivable that the enteric nervous system can be affected by similar mechanisms leading to autonomic dysfunction of the gut, which would manifest as a motility disorder such as constipation. Other symptoms of autonomic dysfunction associated with vitamin B12 deficiency are impotence, urinary incontinence and orthostatic hypotension. In fact, 35 % of cases of vitamin B12 deficiency are associated with some form of autonomic dysfunction.

CORD COMPRESSION: AN ONCOLOGIC EMERGENCY NECESSITATING PROMPT AND EVIDENCE BASED INTERVENTION Jeffrey V. Brower[1]; Gary Schreiber[2]. [1]St.Francis Hospital, Evanston, IL; [2]St. Francis Hospital, Evanston, IL. (Tracking ID #1622177)

LEARNING OBJECTIVE 1: To recognize the presentation of spinal cord compression.
LEARNING OBJECTIVE 2: To assess and manage cord compression in a timely and evidence based manner.
CASE: 63 yo male presented with complaints of numbness and weakness in bilateral lower extremities from mid-thigh to pedal plantar surface × 2 days. He also endorsed abdominal bloating with absence of bowel movement × 3 days and inability to void urine × 1 day. He reported hemoptysis with mild SOB as well as 10 lb weight loss over the last 1 month. Denied other constitutional symptoms, hemi-weakness or N/V. Endorsed 10 pack/year history of smoking. On physical examination he was awake, alert and appeared cachectic. Vital signs within normal limits. Neck and axillary exam revealed palpable adenopathy with the largest measuring 2 cm in the right axilla. Cardiovascular; normal rate and rhythm. Lung exam revealed decreased breath sounds left upper lobe. Abdomen; normal bowel sounds, soft slightly distended, non-tender. Rectal exam; normal tone, FOBT negative. Neurologically strength was 5/5 with no sensory deficits bilateral upper extremities, 3/5 bilateral lower extremities with parasthesias from mid-thigh to pedal plantar surface. Reflexes 2+ bilateral upper and lower extremities. Gait was unable to be assessed. The remainder of the neurological examination was within normal limits. Chest X-ray revealed focal consolidation/mass in medial aspect of left upper lung. Lumbar spine MRI demonstrated spondylotic changes without evidence of cord compression. Thoracic MRI revealed an 8.5 cm mass originating in the left upper lung extending into the bodies of T2-T5 with compression at T3-T4 by direct extension into the spinal canal. Radiation Oncology and Neurosurgery were consulted with deferred management to Radiation Oncology due to the extent of local disease. Corticosteroids were initiated and he emergently received 300 cGy of radiation therapy prior to admission. While hospitalized he required Foley catheterization re: urinary retention. Further work-up and evaluation included a biopsy of the right axillary node revealing poorly differentiated squamous cell carcinoma. He subsequently received nine more fractions of 300 cGy for a total of 3000 cGy utilizing anterior and posterior fields. At the completion of palliative radiotherapy the Foley catheter was removed with resumption of bladder control. He had some persistent difficulties with bowel movement and regained minimal function of his lower extremities.
DISCUSSION: Cord compression occurs in 5–10 % of all cancer patients and represents and oncologic emergency requiring rapid and appropriate intervention. Thoracic spine is the most common site of compression from malignancy. This case thus highlights an important presentation for internists to recognize. Radiotherapy is the definitive treatment modality for cord compression along with concomitant steroid administration. Studies have demonstrated that radiotherapy alone provides equivalent results to laminectomy plus radiation and is effective in over 85 % of cord compression cases. Radiation therapy is often incompletely understood by many physicians. Here we will present the evidence-based recommendations for the delivery of radiotherapy and initiation of corticosteroids in order for internists to better understand treatment in the setting of cord compression. We also intend to provide internists the ability to more effectively communicate with radiation oncologists to improve overall patient care.

CORONARY ARTERY DISEASE IN A YOUNG WOMAN WITH TURNER SYNDROME Miriam T. Levine. Wayne State University School of Medicine, Detroit, MI. (Tracking ID #1642521)

LEARNING OBJECTIVE 1: Recognize the increased risk of atherosclerosis and coronary artery disease (CAD) in women with Turner's Syndrome (TS).
LEARNING OBJECTIVE 2: Treat women with TS with hormone replacement therapy (HRT) to reduce CAD risk.
CASE: A 40-year-old woman with TS, hypertension, and obesity presented with a 3-hour history of non-radiating retrosternal chest pressure, dyspnea, diaphoresis, nausea and restlessness. Home medications were chlorthalidone and levothyroxine. She had discontinued HRT 10 years prior. She had no family history of CAD and had never smoked. Admission vitals were T 36.6, BP 142/82, HR 59, RR 20, SpO2 98 %, BMI 31.6. She was diaphoretic and in pain. Cardiac and respiratory exams were normal. EKG revealed STEMI. Cardiac catheterization showed 100 % occlusion of the left anterior descending artery and an ejection fraction (EF) of 25 % with severe apical hypokinesis. A drug-eluting stent was placed and she was started on aspirin, clopidogrel, carvedilol, lisinopril, and rosuvastatin. Lipid profile was LDL 174 and HDL 38. Chest pain resolved and she was

discharged on hospital day 4; however, she was readmitted 2 days later with worsening chest pain. EKG showed ST elevation in leads I and II, V1 and V2. Cardiac catheterization revealed in-stent re-thrombosis despite adherence to antiplatelet therapy. Thrombolysis was performed and clopidogrel was switched to prasugrel. Her EF as per ventriculogram was estimated at 30 % but she had no signs or symptoms of heart failure. She was discharged on hospital day 3 in stable condition.

DISCUSSION: TS is associated with increased CAD risk; this increased risk is multifactorial. TS is associated with an atherogenic lipid profile. A Polish study found women with TS had higher BMI and waist-hip ratios, lower HDL, higher LDL levels, and higher fasting glucose levels. A Danish study noted that women with TS may be twice as likely to develop CAD compared with the general population. Women with TS are also at increased risk of insulin resistance. Type 2 diabetes mellitus is 2–4 times more common in women with TS and tends to develop at a younger age. Impaired glucose tolerance affects 10–34 % of women with TS, including girls as young as 5 years old. Fortunately, the cardiovascular risk profile of young women with TS is modifiable. 24 % of patients discontinue HRT after puberty induction. As HRT improves fat-free mass, waist-hip ratio, and insulin sensitivity, women with TS should maintain HRT until the natural age of menopause. TS patients should also have annual fasting blood glucose and lipid profiles and (as applicable) weight-loss counseling. Some questions remain. The effect of aggressive lipid lowering is unknown. The root cause of increased CAD risk is also still in question. A comparison of women with TS and women with 46,XX karyotype and premature ovarian failure found those with TS had higher LDL and triglyceride levels, and smaller LDL and HDL particle size, than their counterparts. This supports the role of as-yet undetermined genes on the X chromosome and not just hypoestrogenism. Recognizing the increased CAD risk of women with TS is crucial to providing appropriate care. Physicians should provide appropriate counseling about lifestyle modifications, screen for modifiable risk factors, and treat accordingly. They should also encourage patients to remain on HRT until the natural age of menopause. This may decrease morbidity and mortality in TS patients

CRYOFIBRINOGENEMIA: NOT JUST SKIN DEEP. Zahrae Sandouk; Zaid Alirhayim; Syed Hassan; Waqas Qureshi. Henry Ford Hospital, Detroit, MI. (Tracking ID #1617882)

LEARNING OBJECTIVE 1: Recognize the clinical features of cryofibrinogenemia and its relationship with connective tissue disorders.

LEARNING OBJECTIVE 2: Identify the reasons for under-diagnosis and misdiagnosis of cryofibrinogenemia.

CASE: A 61-year-old woman with rheumatoid arthritis presented to the hospital with a four-day history of palpable purpura. They first appeared on her arms and progressed to her thighs and legs. The patient had no other skin lesions or ulcers, no joint or muscle pain. She denied any sick contacts, fever, confusion, bleeding or easy bruising. She had not been taking any new medications or anticoagulants. There was no family history of hematologic disorders. Her examination was significant for numerous large, irregularly shaped purpuric lesions over her lower extremities and buttocks. The lesions were non-tender to palpation and distributed randomly. The rest of her examination was non-contributory. Her disseminated intravascular coagulation profile that included D-dimer, fibrinogen levels and fibrin split products, was negative. A vasculitic work up was done. Skin punch biopsy showed dermal edema with fibrin thrombi within superficial dermal vessels without vasculitis. She left against medical advice before a diagnosis was made. The patient had presented few months earlier with similar symptoms. The working diagnosis was drug-induced rash attributed to hydroxycloroquine. The medication was held, she was given steroids with mild improvement. She returns to the emergency department 2 days later with ischemic necrosis of the skin and sepsis. She was admitted to the intensive care unit, treated with intravenous antibiotics and fluids. Her wounds were debrided. Further laboratory work up showed positive cryofibrinogens and negative cryoglobulins with α2-macroglobulin in her protein panel.

DISCUSSION: Patients with cryofibrinogenemia are usually asymptomatic and sometimes present with purpuric lesions that may complicate into necrosis and sepsis. The prevalence of asymptomatic cryofibrinogenemia is approximately 2 to 9 % of normal subjects. One reason for misdiagnosis is that the presenting symptoms offer a wide differential diagnosis. Although there are no specific criteria for diagnosis, case series have identified common clinical features of the disease to include presence of cryofibrinogens, absence of cryoglobulins, elevated serum levels of α1-antitrypsin and/or α2-macroglobulin, and skin biopsy showing the thrombi in blood vessels. Another aspect for underdiagnosis is the mishandling of blood samples leading to false negative results. Blood should be collected in tubes containing oxalate, citrate, or ethylenediaminetetraacetic acid. After collection, the blood should be stored at 37 °C until centrifuged. Then the plasma should be stored at 4 °C for 72 h. Cryofibrinogens will develop between 24 and 72 h after cooling. There are two types of the disease: essential and secondary cryofibrinogenemia. The most frequently associated disorders include malignancy, infections, inflammatory processes or thromboembolic conditions. Connective tissue diseases, such as rheumatoid arthritis, are strongly mentioned in the literature. Treatment is usually targeted at dissolving these thrombi and may include using fibrinolytic agents such as stanozolol, or immunomodulators such as glucocorticoids and cytotoxic agents. Outcomes are limited to case reports making generalized statements regarding treatment difficult.

DAPSONE INDUCED METHEMOGLOBINEMIA Likhitesh G. Jaikumar. The Cleveland Clinic foundation, Cleveland, OH. (Tracking ID #1643012)

LEARNING OBJECTIVE 1: To recognize and manage patients with drug induced methemoglobinemia.

LEARNING OBJECTIVE 2: To recognize the inadequacy of pulse oximetry and identify Saturation gap and its clinical utility in patients with methemoglobinemia.

CASE: 75 year male with known past medical history of Autoimmune encephalitis on immunosuppressive therapy, seizure disorder, Pulmonary embolism and hypothyroidism was noted to have nocturnal hypoxemia at nursing home. The patient's family also noted oxygen saturations ranging from 80 to 90 at home with associated change in his mental status from baseline. He was brought to the Emergency room for evaluation. His home medications were lamotrigine, Cellcept, Prednisone, Dapsone, Coumadin, Levothyroxine and Finasteride. In the ER his oxygen saturation improved briefly with oxygen but plateaued around 89–92, requiring about 6 l of oxygen via nasal canula. On examination his appeared drowsy without any focal neurological signs. He did not appear to be in any distress except cyanosis of his lips. His cardiac and respiratory exam was unremarkable. His initial lab work including CBC, CMP, LFTs and urine analysis were within normal limits. INR was therapeutic. Chest X-ray and Contrast infused CT per PE protocol was negative. Echocardiogram showed normal Ejection fraction, grade 1 diastolic dysfunction with normal pulmonary artery pressures. He was admitted to medicine floors with diagnosis of hypoxemia and altered mental status. A blood gas analysis revealed methemoglobin level of 13 rising to 16 over the next 6 h and then to 18. He continued to be without any distress but required high flow oxygen to maintain oxygen saturation at 90–93 %. He was admitted to the Medical ICU for observation and Dapsone was held. His methemoglobin levels rose up to 21 % and then slowly declined over a period of 3 to 4 days and did not require methylene blue for treatment.

DISCUSSION: Methemoglobinemia occurs when the iron moiety of hemoglobin is oxidized from ferrous to ferric state, forming MetHb. MetHb renders it incapable of oxygen transport; if severe it leads to tissue hypoxia. Dapsone is a well recognized drug induced etiology for methemoglobinemia. Healthy patients can tolerate low levels of methemoglobin and cyanosis is the first sign of underlying MetHb. However as MetHb levels rise symptoms of dyspnea, headache and dizziness can occur and further rise in levels can lead to arrhythmia, acidosis, seizures, coma and death. Early recognition of methemoglobinemia is vital as withdrawal of the offending agent is the first step in treatment. It is key to recognize that

saturation value by pulse oximetry becomes unresponsive to incremental supplemental oxygen and the concept of 'saturation gap' measured after a blood gas measurement will further assist as a valuable clue along with cyanosis and chocolate colored blood for the diagnosis of methemoglobinemia. Although methylene blue is a treatment option, withdrawal of the offending drug is the mainstay of treatment and clinicians caring for patients receiving Dapsone should be aware of methemoglobinemia. They should also be aware of factors that precipitate, role of co morbidities and should it happen, know how to manage it effectively.

DEADLY ACT OF VANISHING Ankit Madan; Omair Atiq; Pooja Sethi. University of Alabama Birmingham Montgomery, Montgomery, AL. (Tracking ID #1642830)

LEARNING OBJECTIVE 1: Recognize rare occurrence of vanishing bile duct syndrome has been reported in Hodgkin's lymphoma.
LEARNING OBJECTIVE 2: Discuss the importance of initiating chemo radiotherapy in achieving liver-failure free survival.
CASE: 54 year old African American male with history of hodgkin's lymphoma presented with abdominal pain and fever for 1 day. Pain was in left upper quadrant, sharp, non-radiating and associated with subjective fever and non-bloody diarrhea. Sclera was icteric. Vitals Blood pressure 119/63, heart rate 134 and temperature 103.1 F. Abdomen was tender in left upper quadrant. Bowel sounds were decreased without guarding or rigidity. Pertinent labs at admission included total and direct bilirubin 7.6 and 5.3 respectively, AST 139, ALP 305, hemoglobin 6.6, hematocrit 19 and INR 1.75. MRI abdomen revealed hepatomegaly with numerous nodular densities worrisome for diffuse infiltrative liver parenchymal disease without any intra or extra-hepatic biliary duct obstruction. Cultures were negative. Patient was placed on broad spectrum antibiotics, vasopressors and ventilator support from admission but he deteriorated. Total and direct bilirubin kept increasing and reached a maximum of 21.8 and 13.8 respectively. Platelet count decreased to 13,000 and patient needed total 13 platelet transfusions. His creatinine increased to 3.3. We were unable to obtain liver biopsy since patient was critically ill. We decided to treat him with dose modified ABVD(Adriamycin,Bleomycin,Vinblastine and Decarbazine) regimen suspecting vanishing bile duct syndrome. Patient expired the next morning.
DISCUSSION: Vanishing bile duct syndrome refers to a group of acquired disorders resulting in progressive destruction and disappearance of intrahepatic bile ducts and ultimately cholestasis. It is often associated with primary biliary cirrhosis, drugs, infections and neoplastic process. Cholestasis in Hodgkin's disease can be caused by hepatic infiltration by lymphocytes, biliary obstruction, hemolysis, viral hepatitis and toxicity from chemotherapeutic agents. However, cholestasis due to vanishing bile duct syndrome is rare. Literature comes from case reports. The exact mechanism is unknown. However, it is proposed to be due to production of cholestastic cytokines from tumor cells. Due to paucity of cases that develop vanishing bile duct syndrome, its clinical course is not well defined. Definitive diagnosis requires a liver biopsy if possible. Pathology should reveal absence or destruction of intrahepatic bile ducts. Treatment of underlying Hodgekin's lymphoma is of utmost importance if this disease process has to be reversed. This includes ABVD (Adriamycin, Bleomycin, Vinblastine and Decarbazine) or MOPP (Mustargen, Oncovin, Procarbazine and Prednisone) regimen and field radiotherapy. Since patients usually have liver failure, chemotherapy more often needs to be dose modified. There is mixed evidence regarding prognosis. Many case reports have mentioned it to be irreversible carrying a grave prognosis while other authors believe it is potentially reversible with treatment. Our patient expired after initiation of chemotherapy.

DEMENTIA WITH LEWY BODIES: A COMMON COMMONLY MISSED DIAGNOSIS Shobhit Gupta; Leena Jalota; Anthony A. Donato; Robert Freed. Reading Hospital, Reading, PA. (Tracking ID #1641972)

LEARNING OBJECTIVE 1: Recognize the clinical features of lewy body dementia in a patient with acute hallucinations
LEARNING OBJECTIVE 2: Treat a patient with lewy body dementia
CASE: A 75-year-old female on treatment for depression presented to the emergency room for an acute change in mental status initially diagnosed as hyperactive delirium. CT scan and MRI of the brain were unremarkable, and there were no acute laboratory abnormalities. The patient described very well-formed visual hallucinations that began 1 week prior to admission. She also complained of insomnia for many weeks, and her family noted that she was acting out her dreams while sleeping. Repeated mental examination throughout the day revealed significant fluctuations in both her mood and cognition. Mental status exam deficits included domains of language and praxis, but fully intact orientation. Based on this constellation of clinical symptoms she was diagnosed with DLB. A geriatric psychiatry evaluation corroborated the diagnosis. Seroquel was subsequently started, which stopped all hallucinations and stabilized her mood.
DISCUSSION: DLB accounts for 20 % of dementia diagnoses in the US. Studies suggest survival time after diagnosis is shorter for DLB than Alzheimer's disease (7.7 vs. 9.3 years). Classic clinical symptoms for DLB include visual hallucinations, parkinsonism, cognitive fluctuations, sleep disorders, and neuroleptic sensitivity. DLB is commonly misdiagnosed as acute delirium, but can be distinguished from delirium by a proper neuropsychological evaluation. Given these patients' sensitivity to older neuroleptic agents, use of behavioral modifications, cholinesterase inhibitors, and newer atypical neuroleptics in very low doses are recommended to control symptoms.

DEPRESSION AND CAPACITY? AN ETHICAL QUESTION ON AUTONOMY Brian Cruz. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640094)

LEARNING OBJECTIVE 1: Understand the nature of depression and suicidality as limitations to decision-making capacity.
LEARNING OBJECTIVE 2: Recognize the role of surrogates in patients without capacity Recognize that end-of-life wishes prior to a suicide attempt are still valid should a patient lose capacity following a suicide attempt.
CASE: A 55-year-old woman presented after being found unresponsive following a suicide attempt via ingestion of acetaminophen. She initially required intubation for airway protection and vasopressors for hypotension, but she improved over the next few days and was extubated. She expressed regret at trying to end her life. She then developed sepsis and re-intubation was recommended. She refused intubation and requested to be "Do Not Resuscitate/Do Not Intubate" status. Psychiatry was consulted and determined that she did not have capacity to make this decision based on her untreated depression and recent suicide attempt. The patient was re-intubated. The ICU and hepatology teams agreed that she had a poor prognosis and would likely develop other life-threatening conditions. Following re-intubation, she continued to express a desire to discontinue aggressive measures and transition to comfort care, despite the almost certain nature of death. Her three adult children and both parents also wanted her to have comfort care only. They affirmed that, prior to her suicide attempt, she had routinely expressed she would not want life-support. They demonstrated understanding of the medical situation, including the risks and benefits of treatment. The hospital Ethics Committee was consulted. Since her treatment course was likely to require long-standing use of life-sustaining measures with an overall high likelihood of death, it was determined that the patient's wishes in this situation, assuming her decision-making capacity was intact, would be to discontinue life-sustaining treatment and begin comfort measures. Aggressive interventions were stopped and she expired.
DISCUSSION: Decisions regarding end-of-life care are influenced by ethical considerations and legal statutes that the general internist needs to take into account. Autonomy of the individual is a cornerstone of medical ethics, which generally allows a patient to refuse medical treatment. An exception is when a patient has impaired decision-making capacity, which often occurs as a result of a mental illness or suicide attempt. These patients are treated with life-sustaining measures in acute settings, even if they object. However, loss of capacity does not mean that one forfeits autonomy. To determine what the patient's desires would be if she or he had capacity, physicians look to advanced directives or appointed surrogates. The patient in our case had neither; in these cases, states have legal statutes that grant surrogacy to the patient's family members. In the

state of Louisiana, surrogates can decide to withhold and withdraw life-sustaining measures only if the patient is diagnosed as having a terminal and irreversible condition by two physicians4. Our patient's case was not terminable and irreversible; therefore the decision of comfort care was based on what her wishes would have been if she had capacity.

DIABETES INSIPIDUS AS THE PRESENTING MANIFESTATION OF A RARE PITUITARY DISORDER Dustin T. Smith; Jenna Kay; Danielle Jones. Emory University, Atlanta, GA. (Tracking ID #1594529)

LEARNING OBJECTIVE 1: Consider lymphocytic hypophysitis in the differential diagnosis of pituitary masses and hypopituitarism, particularly in peripartum women and those with other autoimmune diseases.
LEARNING OBJECTIVE 2: Recognize that biopsy is the gold standard for diagnosis of lymphocytic hypophysitis but is not required for initiating treatment in the proper clinical context.
CASE: A 47-year-old man with a remote history of stroke presented after a mechanical fall without loss of consciousness. He reported increased thirst and urination as well as headaches without vision changes. Vital signs including orthostatics were normal and physical exam was unremarkable. Visual fields were intact and there was no thyromegaly or skin abnormalities. Laboratory studies revealed hypernatremia with the remainder of the chemistry panel normal. CT of the head showed no acute abnormalities but revealed a 10-mm suprasellar mass not seen on prior imaging. During hospitalization, the patient complained of extreme thirst and consumed up to 15 L of fluid daily. Further studies revealed a urine osmolality of 69 mOsm/kg. Prolactin was borderline elevated and testosterone was low. TSH, GH, IGF-1, cortisol, FSH, LH, and ACTH were normal. MRI of the brain showed an enlarged pituitary gland with thick infundibulum and features of lymphocytic hypophysitis. He received intranasal desmopressin and his urine output decreased. Urine osmolality and serum sodium normalized. The patient was diagnosed with central diabetes insipidus due to lymphocytic hypophysitis and hypopituitarism. Thereafter, he received desmopressin and testosterone replacement with periodic laboratory monitoring.
DISCUSSION: Sellar masses are typically caused by pituitary adenomas and less frequently by other malignant or benign tumors or physiologic enlargement of the pituitary gland. Presenting symptoms/findings include headache, vision changes, hormonal abnormalities, or incidental imaging findings. Lymphocytic hypophysitis is a rare cause of sellar masses and hypopituitarism. It is an autoimmune disorder characterized by a lymphocytic pituitary infiltrate that causes enlargement of the gland and destruction of pituitary cells. It is most often seen in peripartum women. Common symptoms include headache and visual disturbances. Over 1/2 patients have secondary hypoadrenalism. Diabetes insipidus occurs in 1/3 of patients. Concurrent autoimmune diseases such as thyroiditis or systemic lupus erythematosus are common. MRI is the standard imaging modality of the pituitary gland and reveals a pituitary mass, often indistinguishable from an adenoma. In contrast to pituitary tumors, hypophysitis is typically symmetrical and homogeneous with thickened but nondisplaced stalk. In addition, prolactinomas typically are associated with prolactin levels >200 ng/dL. Biopsy is the gold standard for diagnosis but is not required for initiating treatment in the proper clinical context. For this patient, the presentation of diabetes insipidus along with convincing imaging led the medical team to forgo definitive biopsy. In the absence of visual field disturbances, surgical therapy is withheld. Inflammation often resolves spontaneously, and the use of steroids for refractive cases is controversial. Because hypophysitis is rare, no definitive guidelines for treatment exist. Patients should receive appropriate hormonal replacement therapy and long-term serial monitoring for development of other endocrine abnormalities.

DIAGNOSING A PATIENT WITH GRANULOMATOUS DISEASE: BETTER THAN A COIN FLIP? Kimberly M. Tartaglia; Tyler Oostra. Wexner Medical Center at the Ohio State University, Columbus, OH. (Tracking ID #1631198)

LEARNING OBJECTIVE 1: Compare distinguishing characteristics and diagnostic criteria for sarcoidosis and disseminated histoplasmosis.
LEARNING OBJECTIVE 2: Review the risks of treating patients with immunosuppressant medications who have disseminated histoplasmosis.
CASE: A 44 year old man with no past medical history presented with bilateral parotid gland enlargement and xerostomia. Workup revealed cervical and mediastinal lymphadenopathy, and mediastinoscopy with lymph node biopsy showed non-necrotizing granulomas. Additionally, the patient endorsed a 30 lb weight loss over 3 months, and he was noted to have hypercalcemia (Ca=11.5) and acute kidney injury (Cr 2.8 from normal baseline.) While admitted for intravenous hydration and renal biopsy, fungal immunodiffusion showed an H band suggestive of active disseminated histoplasmosis. Renal biopsy revealed granulomatous interstitial nephritis consistent with a diagnosis of sarcoidosis. Before starting systemic steroids for sarcoid renal involvement, additional work-up for histoplasmosis was sent. Fungal blood cultures, urine Histoplasma antigen, fungal complement fixation, and Histoplasma antigen on bronchoalveolar lavage were negative. However, immunodiffusion for Histoplasma was repeatedly positive with an H band. Therefore, itraconazole was initiated prior to starting prednisone.
DISCUSSION: Sarcoidosis and disseminated histoplasmosis are both granulomatous diseases that can have similar clinical presentations and can be very difficult to distinguish in certain patients. Laboratory tests including fungal cultures, antigen testing, immunoserologic tests, and special tissue stains can all be used to help distinguish histoplasmosis from sarcoidosis. In our patient, the diagnosis of sarcoidosis was called into question by positive serologic testing. The immunodiffusion test for histoplasma has a sensitivity of 90 % and is more specific than complement fixation; however there are reports of a positive test in patients with other granulomatous diseases. A previously published case report from our institution discusses a patient with pulmonary histoplasmosis who evolved to develop sarcoidosis. Additionally, there have been numerous other case reports of patients diagnosed with sarcoidosis who have developed disseminated histoplasma infections. Whether sarcoidosis or treatment for sarcoidosis predisposes patients to histoplasma infections is unknown. Immunosuppression is the greatest risk factor for disseminated histoplasmosis; however, approximately 20 % of patients with disseminated histoplasmosis have no risk factors for the disease. Sarcoidosis has no defined etiologic agent but evidence is accumulating that there is a close relationship between histoplasmosis and sarcoidosis. Our case highlights this complex potential relationship and demonstrates the difficulty in distinguishing sarcoidosis from histoplasmosis. With the concern that sarcoidosis may be a risk factor for disseminated histoplasmosis, we recommend treatment with antifungal for patients with evidence of active Histoplasma infection prior to initiating immunosuppressant medications for sarcoidosis.

DIARRHEA IN AN EXPATRIATE: EXOTIC OR ROUTINE? Shing-Yu Lin. Emory University, Atlanta, GA. (Tracking ID #1630112)

LEARNING OBJECTIVE 1: Recognize that Clostridium difficile is a common cause of diarrhea even in unusual cases.
LEARNING OBJECTIVE 2: Understand the clinical presentation of c. difficile.
CASE: A 30 year old American expatriate living in Costa Rica for the past 6 years presents with 2 weeks of diarrhea. He reports watery, non-bloody diarrhea for 2 weeks associated with abdominal pain and fevers. He was seen at a hospital in Costa Rica and treated with Albendazole empirically. His symptoms persisted and he visited an internist who prescribed Levaquin. His temperature increased to 40 °C and came to the United States for further evaluation. Work up from Costa Rica was negative for parasites and bacterial infections including but not limited to E. Coli, Entamoeba histolytica, Giardia intestinalis, Ancylostoma duodenale, Acaris lumbricoides, Enterobius vermicularis, Strongyloides sterocoralis, Taenia saginata. Patient endorsed good food hygiene although he did report drinking from a stream and had eaten some undercooked chicken recently. Upon evaluation he was febrile with a temperature of 39.1 Celsius. Overall he was well developed and well nourished, with a benign abdominal exam. Cardiac exam revealed no murmurs, breath sounds were clear, and skin exam was unremarkable.

Laboratory studies showed WBC of 5.1, hemoglobin of 13.0 gm/dL, platelets of 240, and an unremarkable extended chemistry panel. Stool studies were repeated and negative for salmonella, giardia, campylobacter, shigella, e. coli, vibrio, yersenia, microspordium, ova and parasites. Positive findings include elevated stool lactoferrin and Clostridium difficile. He was treated with Flagyl. His fever and diarrhea subsequently improved and he was discharged home.
DISCUSSION: Clostridium difficile associated diarrhea (CDAD) is characterized by watery diarrhea. CDAD has varying degrees of severity from mild to moderate diarrhea to sepsis and death. Classically, CDAD was described in the health care setting associated with recent antibiotic use. Other risk factors include recent hospitalization, advanced age, and gastric acid suppression. However, an increasing proportion of cases of CDAD are community-associated infections. In our case, the patient presented with fever and diarrhea. The differential diagnosis of acute diarrheal illnesses in adults is broad. It includes a range of infectious processes including exotic parasitic infections, food borne illnesses, viral infections, and CDAD. Our patient's exposure to unfiltered water, undercooked meat, and living in a foreign country sparked an extensive work up to rule out both food borne bacterial infections and parasitic infections seen in a tropical locale. The patient did provided some clues in his history that suggested this diagnosis including the quality of his diarrhea, and use of antibiotics. This case illustrates that a common culprit can still be the cause of disease even in patients with a history of exotic travel and exposures. Physicians need to remember to consider all the causes of diarrhea even when the patient's history is painting a different picture.

DIFFICULTY IN BREATHING AFTER DELIVERY : IS IT SERIOUS? Nattachai Suwachittanont; Thaksa-on Wirotwan. Klaeng Hospital, Rayong, Thailand. (Tracking ID #1639203)

LEARNING OBJECTIVE 1: Recognize postpartum cardiomyopathy in a patient who presents with unexplained dyspnea during postpartum period.
LEARNING OBJECTIVE 2: Outline the management of postpartum cardiomyopathy.
CASE: A 24-year-old woman was presented to emergency department due to acute dyspnea. She was 7 days postpartum from her second pregnancy. She had no previous pulmonary or cardiovascular problem but had preeclamsia during her pregnancy. The patient reported a one-day history of febrile, cough and shortness of breath. On physical examination, she had marked respiratory distress. Her blood pressure was 141/91 mmHg, pulse rate 114 beats per minute, respiratory rate 30 breaths per minute, temperature 38 °C and the oxygen saturation 82 % when the patient was breathing ambient air. There were crakles and wheezing in both lung fields. Cardiac ausculatation demonstrated regular rapid rhythm without any murmur. Pitting edema 2+ was noted on both legs. The remainder of examination was unremarkable. Electrocardiogram showed sinus tachycardia with left ventricular hypertrophy by voltage criteria. Her chest radiograph revealed cardiomegaly, bilateral diffuse infiltration and fluid in right minor fissure. Laboratory data was normal. She was diagnosed as congestive heart failure due to postpartum cardiomyopathy after other causes had been rule out. The patient was given a non-rebreathing mask and 40 mg of furosemide intravenously at emergency department which increased her oxygen saturation up to 91 %. During admission, she received intravenous furosemide, enalapril and spironolactone. The next 4 days, her symptom was improved. Her oxygen saturation was 96 % on room air and chest radiograph showed smaller heart size and decrease pulmonary infiltration. Then she was discharged in stable condition.
DISCUSSION: Postpartum cardiomyopathy (PPCM) is a rare but fatal medical condition. It was reported 1:3,000–1:4,000 of pregnancies with 6–10 % mortality rate. Although there is no definite etiology of PCCM has been claimed, recent studies demonstrate that inflammatory processes, viral infections, autoimmunity and genetic mechanisms are leading hypotheses. Risk factors of this disease include multiparity, advanced maternal age, multifetal pregnancy and preeclampsia. Patients with PPCM usually present with shortness of breath, orthopnea and pitting edema at lower extremities. According to a high number of death rate, clinician should suspect PPCM in any postpartum patient with unexplained dyspnea. Many studies state that there is possibility to misdiagnose PCCM for other diseases like pulmonary embolism or pneumonia. Further investigations, such as chest radiograph, electrocardiogram and echocardiogram, should be obtained as soon as possible in order to make a diagnosis and start the appropriate treatment early at the emergency department. Management of PPCM is similar to that of heart failure with dilated cardiomyopathy. Effective treatment is the use of diuretics, ACEI or ARB, spironolactone and beta-blocker. Targeted therapy, pentoxifylline, intravenous immunoglobulin, immunosuppressive agents and bromocriptine, have shown some benefits but required further studies.

DILEMMA OF PLASMAPHARESIS Zakaria Almuwaqqat. saint francis hospital, Evanston, IL. (Tracking ID #1628954)

LEARNING OBJECTIVE 1: Recognize the clinical features of malignant hypertension and chronic kidney disease with end-organ damage.
LEARNING OBJECTIVE 2: Diagnose secondary thrombotic microangiopathy (TMA) and understand the specificity of low ADAMTS-13 enzyme level in TMA.
CASE: - A 34 year-old Haitian native (immigrated 10 year ago) presented to the ED with 4 weeks history of headache,nausea, vomiting, blurred vision. He reported generalized weakness, exercise intolerance, dyspnea on exertion and frequent urination for several months. PMHX: High BP in a previous screening exam several years ago. Family Hx: Hypertension in siblings Social: Non Smoker, no ETOH or illicit drugs. Meds: None Allergy: NKDA Physical Exam: - Vitals: BP; 274/169, HR; 101/min, Temp; 98 °F, RR 18 min, SpO2; 98 % (on room air), BMI 24.7 kg/m2. General: Alert, Oriented x 3, appeared ill. Lungs: Clear to auscultation bilaterally. Heart: Regular rate and rhythm, S1/S2 (normal), S4 present. Abdomen: Soft, no distention or tenderness, normoactive BS. Extremities: No pretibial edema. Skin: Turgor normal, no skin rash. Neuro: No focal neurological deficits. - Labs Cr: 24.5, BUN 138, HB 10.5, WBC 8.5, plt 80, Trop 0.25, LDH 661, peripheral smear—schistocytes, VWF (ADAMTS) protease activity 65 %. X ray chest normal, Echo : concentric LVH, LVEF 72 %, Impaired LV relaxation, trivial MR, TR. Renal US: total loss of corticomedullary differentiation bilaterally s/o medical renal disease. - In Hospital course The patient was admitted to ICU with the diagnosis of sever uncontrolled HTN, CKD and possible ESRD. BP was controlled with IV labetalol infusion, hemodialysis was initiated on the second day of admission. Initial labs were supportive of TMA; thrombocytopenia, normocytic anemia, elevated LDH and bilirubin, low haptoglobin and schistocytes on blood smear. He initially required transfusion with two units of platelets and one unit of RBC for bleeding from dialysis catheter. TMA accompanied by renal failure and low ADAMTS-13 activity (65 %) raised the suspicion of HUS/TTP and need for plasmapheresis was debated. However, with conservative treatment TMA resolved, hemoglobin and platelet count improved (200 s) the control of BP. He was discharged home with 10 days of hospital stay
DISCUSSION: - TMA(thrombotic microangiopathy) represents a final common pathway of multiorgan microvascular thrombosis; in this case report the patient developed severe hypertension and had evidence of hemolysis (MAHA) and thrombocytopenia, the overall clinical picture was supportive of TMA secondary to malignant hypertension, the robust response to platelet transfusion and BP control assisted in confirming the diagnosis. - ADAMTS-13 (von Willebrand Factor (vWF)-cleaving protease) is an enzyme responsible for degrading vWF multimeres. Severe deficiency or inhibition of this enzyme can be associated with congenital thrombotic thrombocytopenic purpura (TTP) and acquired TTP respectively. A recent study showed an association between reduced ADAMTS-13 activity and malignant hypertension, future studies should be directed toward functional characterization of this molecule and its role in TTP.

DIZZINESS IN THE ELDERLY…NOT JUST ORTHOSTASIS Abigail Gass; Anne Drabkin Schade; Tara Rickard. Medical University of South Carolina, Charleston, SC. (Tracking ID #1632484)

LEARNING OBJECTIVE 1: Presentation and diagnosis of atlantoaxial subluxation.

LEARNING OBJECTIVE 2: Differential diagnosis of dizziness in the elderly.
CASE: 73 year old AAM with PMH notable for RA, HTN, ESRD secondary to urate nephropathy and moonshine presented with a 2 month history of dizziness when standing. He was admitted to the hospital approximately 2 month prior with similar symptoms and treated for malnutrition and electrolyte abnormalities. His dialysis had been decreased by 1 kg without improvement. He reported being able to walk only a few steps before feeling like he was going to pass out. When he laid flat his symptoms resolved, but returned with sitting or standing. PE was notable for positive orthostatic hypotension, severe ulnar deviation of fingers and toes, chronic swan necking and boutonniere deformites with subluxation, chronic large tophaceous deposits on the elbows, and resorption of left 5th finger. Neuro exam was notable for normal sensorium, CN II-XII grossly intact, strength 4/5 bilateral lower extremities and 5/5 bilateral upper extremities, normal muscle tone, decreased muscle bulk in calves, 1+ reflexes throughout, normal sensation. Initial DDX included volume depletion, autonomic dysfunction, drug side effect, or structural heart abnormality. Given history of decreased oral intake and positive orthostasis, the patient was gently hydrated without significant improvement in his symptoms. CT head was performed, with subsequent MRI, indicating basilar invagination of the dens through the foramen magnum compressing the brainstem and basilar artery. There was noted to be at least 7 mm of invagination.
DISCUSSION: Atlantoaxial instability is characterized by excessive movement at the junction between the atlas (C1) and axis (C2) as a result of either bony or ligamentous abnormalities. AAI is defined as an atlantodens interval of greater than 3 mm in adults. Symptomatic AAI occurs when subluxation or dislocation causes the odontoid process or posterior arch of the atlas to impinge on the spinal cord and cause neurologic manifestations. Because it is a disease that affects synovial-lined joint, RA can manifest itself in the upper cervical spine. The rheumatoid pannus and associated inflammation can weaken the transverse ligaments, alar ligaments, and facet capsules. Neurologic manifestations include clumsiness, lack of coordination, abnormal gait, difficulty walking, easy fatigability, neck pain, limited neck mobility, upper motor neuron signs, paraplegia, and occipital headache. The earliest and most common symptom of cervical subluxation is pain radiation superiorly towards the occiput. In addition, vertebral artery insufficiency has been reported as a result of the tortuous path of the artery at the atlantoaxial articulation. Most abnormalities of C1–C2 articulation can be identified by radiography. Occult instability can be identified on flexion-extension view on standard plan film. CT and MRI can provide additional information regarding the stability of the atlantoaxial joint. Patients with cervical subluxation are treated medically and/or surgically based largely on the presence or absence of signs of spinal cord compression. Severe injury and death can result from a variety of insults including minor falls, whiplash, and intubation. Stiff cervical collars may be prescribed for stability or halo traction followed by surgery. Collars that are not rigid, and therefore more comfortable for the patient, provide little structural support and should not be used.

DOC! "I SEE MONSTERS WHEN I TRY TO SLEEP." Dhara J. Chaudhari; David Ginn. East Tennessee State University, Johnson City, TN. (Tracking ID #1642255)

LEARNING OBJECTIVE 1: To emphasis an importance of dose adjustment in patients with chronic kidney disease and on dialysis
LEARNING OBJECTIVE 2: To assess and treat valacyclovir induced neurotoxicity.
CASE: 66 year old male presented with complain of hallucination, insomnia and photosensitivity of 2 days before admission. He mentioned of insomnia secondary to "monsters coming at me" every time he closes eyes. He denied headache, fever, tingling, numbness, seizure, loss of consciousness, suicidal-homicidal ideation, interruption in dialysis regimen. Patient's spouse mentioned of patient with decrease concentration for 2–3 days. Medical history includes buerger's disease with failed renal transplant 3 years ago and was undergoing peritoneal dialysis, coronary artery disease, atrial fibrillation, Diabetes mellitus. Four days before presentation, he was seen by ophthalmologist for right eye lesion and diagnosed with herpes zoster ophthalmicus for which oral valacyclovir 1000 mg daily for 7 days with Trifluridine drops was prescribed. He is non-smoker, non-alcoholic. Besides antiviral agents, his medications were simvastatin, metoprolol, sevelamer, furosemide, glimeperide. Physical exam: Temp 98.3 F, BP 110–79, RR 20, HR 68. His pulmonary, cardiac and neurologic exam was non focal. Initial laboratory data reveal glucose 153, K 3.7, Na 138, BUN 44, Creatinine 8.0 (baseline 6.0–7.0), normal CBC. EKG: irregular rhythm with rate 68. Chest Xray: No acute abnormality. CT head without contrast: age related atrophic changes. CT head with contrast: no areas of enhancement. Wide differential diagnosis was considered including; stroke (no focal neurologic deficits, normal CT head), herpes encephalitis (afebrile, WBC normal, no enhancement on contrast CT head), Uremia (renal functions-abnormal from baseline), medication changes (added valacyclovir), mental disorder (sudden onset). Considering valacyclovir to be underlying reason, it was stopped. Valacyclovir level was ordered which was 22.20 ug/l. After 3 days of observation, hydration and regular regimen of peritoneal dialysis, his symptoms improved. Considering recommended schedule of 500 mg every other day for 7 doses in renal failure, he was deemed adequately treated.
DISCUSSION: Valacyclovir, a prodrug of acyclovir, has largely replaced acyclovir because of ease of administration and efficacy. It is metabolized in liver and excreted in urine. Although considered relatively safe, it is associated with adverse neurotoxicity. Valacyclovir associated toxicity (VAN) appears within 48–72 h of treatment. Conversion of valacyclovir to acyclovir lead to renal dysfunction secondary to interstitial nephritis or precipitation in tubular lumen. New onset or exacerbation of renal failure leads to neurotoxicity. Patients with renal failure, on peritoneal or hemodialysis, are at high risk. Symptoms of VAN are confusion, hallucination, dysarthria, disturbed consciousness with hallucination being second common presentation. Clinical dilemma appears while distinguishing VAN from organic diseases such as encephalitis, cerebral vascular event, uremic encephalopathy, mental disorder. In our case, other etiologies were ruled out, had elevated blood valacyclovir level to confirm our suspicion. VAN has been associated with higher than recommended doses. The proposed dose for patients with renal disease or on dialysis is 500 mg every other day or after dialysis; however, close monitoring of renal function and adequate hydration is a key component of management.

DON'T BE SUPRISED ! JUST NEED TO CONTROL RISK FACTORS ! Thandar Aung. St. Franscis Hospital, Evanston, IL. (Tracking ID #1600515)

LEARNING OBJECTIVE 1: Ischemic strokes in young patients (18–45 years) is relatively rare and cardiovascular risk factors are generally thought to be less important in younger patients than in older one. Dyslipidemia and elevated lipoprotein A are associated with higher incidence of ischemic stroke risk in a number of epidemiological studies.
CASE: 25 y.o male presented with right extremities weakness, right facial droop and slurring of speech. Forty hours before the admission he noticed his right leg was weak just after he woke from sleep. During the course,he also noticed his right arm was weak and he had a tendency to fall to right.He thought he was too tired from work and ignored it. Four hours before the admission, he had sudden onset of right facial droop and slurring of speech. He was diagnosed with mild hypertension and dyslipidaemia when he was 18 and was on low dose of HCTZ and statin. He was non compliance. No significant family history of hypercholesteremia. Vitals were stable. On examination, he was found to have NIHSS stroke scale of 5. Language was fluent with dysarthria and right upper seventh cranial nerve palsy. Pupils and extraocular movement and visual field were normal. Tongue was deviated to the right side. 3/5 motor strength and 4+ reflex in the right side of the body with positive right pronator drift. No sensory loss. Rt extensor plantar response. No cerebellar signs. CT head showed no acute ischemic change nor hemorrhage. MRI and MRA Brain showed acute ischemic changes in left anteromedial pons(Paramedian Basilar Infarct) and left perforator branches of basilar artery were smaller, suggestive of microvascular disease. Transesophageal echocardiogram was

negative for signs of chronic hypertension, PFO and valvular anomalies. Hypercoagulable work up, urine toxicology and HbA1c were unremarkable. Total cholesterol - 435 mg/dl, LDL - 406 mg/dl, HDL-29 mg/dl, TAG-70 mg/dl. Lipoprotein (a) - 114 mg/dl (elevated) Patient was started on ASA, statin and antihypertensive.
DISCUSSION: In young healthy adults, paramedian pontine strokes from atherosclerosis are uncommon. Embolism, arterial dissection and specific conditions of hypercoagulation rather than large or small atherosclerotic arteriopathies are thought to be the most common cause of stroke in young adults. Jukka Putaala had reported that the most frequent risk factors associated with stroke in young adults(15–49) were dyslipidemia (60 %), smoking (44 %), and hypertension (39 %). The unexpectedly high frequencies of modifiable risk factors indicate a need for aggressive management. Patients with unilateral pontine stroke can present with contralateral tongue deviation which has been shown to be associated with supranuclear CN7th Palsy,and contralateral CN lesions and hemiplegia which may pose a particular challenge on diagnosis of stroke subtype. Role of statin in primary prevention of stroke is unclear but recently Jukka Putaala reported that young patients with a first ischemic stroke of undetermined etiology who used statin poststroke had lower rates of new vascular events in long-term followup.

DOUBLY UNCOMMON Ben Ravaee. Medical College of Wisconsin, Brookfield, WI. (Tracking ID #1642758)

LEARNING OBJECTIVE 1: Recognize a rare causative agent of infective endocarditis, and review complications frequently associated with this organism.
LEARNING OBJECTIVE 2: Identify the limitations of current testing in diagnosis of endocarditis.
CASE: A 71-year-old woman with a remote history of Raynaud's syndrome presented to walk-in clinic with a one-week history of right index finger pain. She also complained of fevers, malaise, and poor appetite. At the walk-in clinic, she was noted to have a fever of 102.3 °F. Physical exam was significant for cyanosis and tenderness of the right distal phalanx and a III/VI systolic murmur that was never documented previously. She was subsequently admitted, and 3 sets of blood cultures were drawn. The patient was empirically started on vancomycin with synergistic dosing of gentamicin for concern of endocarditis. Transthoracic echocardiography did not identify any masses or vegetations, but a transesophageal echocardiogram revealed a small, serpiginous echodensity in the left atrium in continuity with the posterior leaflet. Forty-eight hours after admission, one blood culture returned positive for Fusobacterium nucleatum. With this result, the patient met Duke's criteria for endocarditis, and her antibiotic regimen was switched to ertapenem for a four-week course. At subsequent follow-up, she had improvement in her right index finger pain and resolution of her murmur.
DISCUSSION: F. nucleatum is an anaerobic Gram-negative bacillus best known for its role in causing periodontal disease. Recently, much attention has been given to a possible association between F. nucleatum and colon cancer. Out of all the oral bacteria related with periodontal disease, it is the most common organism causing infections in other body sites, particularly the chest and abdomen. Despite this, documented cases of F. nucleatum causing endocarditis are quite rare. However, many of the features of this patient's case are consistent with prior known cases. Thromboembolic phenomena, the presenting feature in this patient, have been frequently associated with F. nucleatum, with several instances of cerebral or pulmonary emboli reported. Additionally, this patient had no underlying valvular disease, which was also the case in a high proportion of previously documented cases of F. nucleatum endocarditis. As in this case, presentation of F. nucleatum bacteremia is often insidious. However, it can be fatal, especially in those patients who present in shock, lack a fever at presentation, or have underlying diseases, with overall mortality rate of F. nucleatum bacteremia quoted as high as 40.7 % in one study. Diagnosis of infective endocarditis relies heavily on the use of blood cultures and echocardiography. In this patient, a new onset murmur was the most useful tool in establishing the diagnosis, and resolution of her murmur was arguably the most specific in confirming the correct diagnosis. This case should serve as a reminder that while blood cultures and echocardiography are important, over-utilization of these tools should not serve as a substitute for a thorough history and physical examination.

DRUG RASH WITH EOSINOPHILIA AND SYSTEMIC SYMPTOMS (DRESS SYNDROME) FROM TELAPREVIR USE John Szymusiak; Reed Van Deusen. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1624104)

LEARNING OBJECTIVE 1: Diagnose DRESS Syndrome.
LEARNING OBJECTIVE 2: Recognize common causes of DRESS syndrome .
CASE: The patient is a 53 year old gentleman with a past history of cirrhosis secondary to Hepatitis C Virus (HCV) and alcohol presenting with a rash. The patient had recently started treatment for HCV with interferon, ribavarin, and telaprevir. Six weeks after initiating treatment, he began to notice a red, painful rash over his right eyebrow. The rash continued to spread down his neck, trunk, abdomen and groin. The rash began as an erythematous, itchy area which then blistered, erupted, and crusted over. The day of admission the patient became dizzy and was found to be hypotensive. His examination was significant for a diffuse, papulosquamous rash with scattered vesicles and some crusting which covered approximately 30 % of his total body surface area (TBSA). His mucous membranes were spared. Lab work revealed acute renal failure, normal liver function enzymes, and a normal WBC with 6 % eosinophils on admission. The patient's blood pressure improved with hydration; however his acute renal failure continued to worsen despite adequate fluid resuscitation. His rash continued to spread eventually covering approximately 60 % of his TBSA including his palms and genitals. He also developed fevers. His eosinophil count rose, peaking at 18 % of his total white cells on hospital day three. A punch skin biopsy showed marked spongiosis, acanthosis, and papillary dermal edema accompanied by a perivascular and interstitial infiltrate composed of lymphocytes, histiocytes, and eosinophils. This is consistent with a drug reaction/DRESS syndrome. The patient was started on oral prednisone with rapid improvement of his rash, and his creatinine began to trend back down towards his baseline. The patient was ultimately discharged on a slow prednisone taper and instructed to hold his telaprevir, which was the presumed culprit of his DRESS syndrome
DISCUSSION: Drug Rash with Eosinophilia and Systemic Symptoms (DRESS syndrome) is a severe drug reaction, which usually presents 2–6 weeks after initiation of an offending medication. Although exact diagnostic criteria are lacking, it most commonly presents clinically as an extensive rash, fever, lymphadenopathy, hematologic abnormalities with eospinophilia, and evidence of solid organ failure. The rash can vary widely. It may present as urticarial-like lesions, a maculopapular rash, vesicles, or bullae. The most common solid organ affected is the liver; however the kidneys, lungs, and heart all can be involved. Common inciting drugs include antiepileptics, allopurinol, minocycline, and antivirals (most commonly abacavir). The patient in our case presents with many of the classic features of DRESS syndrome including rash, fever, eosinophilia, and acute renal failure about 6 weeks after being started on an antiviral medication. There have been several other case reports of telaprevir associated DRESS syndrome. The syndrome can be life threatening if untreated and illustrates the importance of being aware of DRESS syndrome in patients presenting with rash on these classes of drugs.

DRUGS SMARTER THAN THE BUGS: MIRTAZAPINE AND MEFLOQUINE THERAPY FOR NON-AIDS RELATED PROGRESSIVE MULTIFOCAL LEUKOENCEPHALOPATHY Narendranath Epperla; Steven H. Yale. Marshfield Clinic, Marshfield, WI. (Tracking ID #1643151)

LEARNING OBJECTIVE 1: 1. To report on the investigational off-labeled use of mirtazapine and mefloquine for treatment of non-AIDS related Progressive Multifocal Leukoencophalopathy (PML) 2. To review the pathophysiologic mechanisms that may account for drug effectiveness.
CASE: A 77 year-old male with chronic lymphocytic leukemia (CLL) and hypogammaglobulinemia was hospitalized for generalized seizures. Three weeks prior to admission he was found to have progressive psychomotor

slowing and decline in cognitive function. Head CT scan revealed an area of low attenuation involving the frontal lobe with effacement of the cortical sulci and anterior horn of the lateral ventricle and vasogenic edema. MRI demonstrated an abnormal signal in the left frontal lesion with edema and feathered enhancement pattern identified on post-contrast imaging. He was started on Fosphenytoin for seizures and Dexamethasone for vasogenic edema. Histopathologic evaluation of tissue biopsy from left frontal lobe lesion showed prominent reactive gliosis and frequent bizarre astrocytes. There was florid perivascular lymphocytic infiltrates spreading into the brain parenchyma. The lymphocytes were mostly small sized along with many large macrophages in the adjacent brain tissue. Immunohistochemical stains confirmed this is to be exclusively a T-cell lymphocytic infiltrate around vessels and within the parenchyma. Very few B-cells were present. John Cunningham (JC) virus in-situ hybridization study was positive. HIV was non-reactive. The patient was treated with mirtazapine 30 mg daily and mefloquine 250 mg daily for 3 days followed by 250 mg once weekly. Follow-up 13 months later showed some improvement in cognitive function. MRI of the head showed the diffusion abnormality, scant posterior contrast enhancement, and mass effect were significantly resolved.

DISCUSSION: PML invades oligodendrocytes in the central nervous system white matter causing demyelination and neurologic deficits. PML affects patients with lymphoreticular malignancy (e.g. CLL or non-Hodgkin's lymphoma), AIDS, organ transplantation and immunosuppression associated with rheumatoid arthritis, sarcoidosis, and SLE. To date, there are no satisfactory treatments for PML. Although spontaneous partial recovery and prolonged survival have been reported, the disease is invariably progressive with 80 % mortality within 9 months. Reduction or withdrawal of immunosuppressants in patients with non-AIDS PML and the use of HAART in AIDS-related PML is the only known interventions that may allow immune reconstitution and control of pathological viral activity. The 5-HT2A serotonin receptor has been found to act as a receptor for JCV in glial cells. The use of serotonin receptor blockers that are selective for the 5-HT2A receptor, such as mirtazapine and risperidone, is physiologically plausible. The anti-malarial drug mefloquine has recently been recognized to have anti-JCV activity at non-toxic concentrations within vitro culture, and passes the blood–brain barrier to achieve concentrations in the brain above the level inhibiting JCV replications in vitro The recent trial of mefloquine in 21 patients with AIDS and 3 without AIDS failed to show a reduction JC viral DNA levels in the CSF. The positive clinical response seen in our patient after the initiation of combination therapy (Mirtazapine and Mefloquine) suggest that further studies in the form of randomized controlled trials in non AIDS PML using this combination therapy is warranted.

DUAL TRAGEDY AS A LONG TERM CONSEQUENCE OF BHOPAL GAS TRAGEDY Jonathan Duong; Harris Naina. UT Southwestern, Dallas, TX. (Tracking ID #1641995)

LEARNING OBJECTIVE 1: Report development of AML and mesothelioma following Bhopal Gas Tragedy

CASE: A 67 year old Indian female presented with 1 month duration of diffuse itching. She had no other pertinent symptoms, was a non-smoker, and was otherwise in good health. She had recently moved from Indian to live here with her daughter. Her exam was largely unremarkable. On routine CBC, she was found to have 11 K WBC with 95 % peripheral blasts. Bone marrow biopsy and cytogenetics confirmed acute myeloid leukemia (AML) with del(9q). She underwent induction chemotherapy, complicated by prolonged neutropenic fever, which prompted a chest CT. On imaging, there were incidental findings of multiple subpleural nodules and a calcified breast nodule. As there was concern for a second primary, CT guided biopsy of a right upper lung mass was performed and results confirmed mesothelioma. She denies asbestos exposure and we discovered she was a survivor of the Bhopal Gas Tragedy. She was successfully induced and is planned for consolidation therapy.

DISCUSSION: The Bhopal Gas Tragedy (Dec. 3, 1984) is considered the world's most devastating industrial accident, where methyl isocyanate (MIC) gas, an intermediate to developing pesticides, was released into the air around Bhopal, India. Over the last 28 years, there have been theories of an increased risk of chromosomal abnormalities and carcinogenesis in this population, especially regarding oral, oropharynx and lung cancers. MIC is known to cause inflammation, extensive DNA damage and genomic instability in cultured IMR-90 human lung fibroblasts, but long term effects have not been defined in any study. This case presents a patient with two unrelated primaries, with the possibility of a third, which strongly suggests a direct link between MIC and cancer development. An analysis of an Indian registry compiling the types of cancers that developed in MIC exposed Bhopal residents from 2006 to 2011 found roughly 1200 separate, newly diagnosed cancers. Every organ system was found to be involved in this registry, with breast and lung cancers having the highest incidence during that time period. Of the 1200, there were only 6 new AML and no reported mesotheliomas. This report is unique in that it presents the only occurrence of mesothelioma in a MIC exposed survivor. While her lack of asbestos exposure is unverifiable, there may be a long latency period of 30 years after exposure to MIC for developing mesothelioma (comparable to asbestos). The literature has also been unable to prove that consistent genetic abnormalities develop from MIC exposure. A small study conducted 2008–2011 compared mitotic metaphases of peripheral lymphocytes in MIC exposed and non-exposed individuals and found that there was a statistically significant increase in chromosomal aberrations in the exposed group. This suggests that MIC causes chromosomal instability that persists as a long term effect, which in the later future, can cause random gene rearrangements. Unfortunately, it is unclear whether AML with del(9q), as presented here, is present across all MIC exposed AML patients. The main limitation to this case is that we cannot prove causality of MIC increasing cancer incidence or a relationship between MIC exposure leading to AML or mesothelioma. However, the development of two primary cancers, with the possibility of a third, is strongly suggestive of such and this report should promote awareness of a potential increase in incidence of mesothelioma in the coming years.

DYSARTHRIA AND RIGHT-SIDED HEMIPARESIS: METASTATIC STREPTOCOCCAL INFECTION MASQUERADING AS PONTINE STROKE Daphne T. Lo; Brandon Combs. University of Colorado School of Medicine, Denver, CO. (Tracking ID #1642307)

LEARNING OBJECTIVE 1: Question inconsistent diagnoses

LEARNING OBJECTIVE 2: Diagnose and treat Streptococcus intermedius infection

CASE: 72 yo male with a history of type 2 Diabetes Mellitus, remote tobacco use, and recent TIA presented with several days' history of progressively slurred speech and subtle right-sided weakness. Exam on admission was notable for good dentition, mild dysarthria, right-sided weakness, low-grade fever, and mild leukocytosis of 13×10^9/L. Head CT showed no acute intracranial abnormality. MRI showed an acute infarct in the left pons with a central cystic component extending superiorly and inferiorly. The patient was admitted for acute ischemic stroke and given tissue plasminogen activator. The patient's neurologic status continued to decline with progressive right sided weakness and dysarthria, new abdominal pain, and leukocytosis to 26×10^9/L with new anemia (hemoglobin 9 g/dL). A CT of his chest and abdomen showed multiple ring-enhancing low-density lesions suspicious for abscess or malignancy in his liver and posterior spleen with prominent hepatogastric and portocaval lymph nodes. Repeat MRI showed a new, ring-like enhancing lesion in the pons just left of midline with extension into the L cerebral peduncle. Blood cultures became positive for Streptococcus intermedius. Ceftriaxone 2 g IV twice daily and metronidazole 500 mg PO three times daily were initiated. Aspiration and drainage of hepatic and pontine lesions grew S. anginosus/milleri group. The patient's neurological status improved markedly after aspiration of his pontine lesion. An upper endoscopy performed to evaluate for a source for his bacteremia revealed a 3 cm ulcerated distal esophageal mass consistent with adenocarcinoma.

DISCUSSION: The patient's presenting symptoms suggestive of ischemic stroke and non-specific cranial imaging misled the diagnosis. Symptom progression despite treatment of ischemic stroke, evolving lesions on imaging, and fever prompted further investigation leading to the discovery of systemic S. intermedius infection. Streptococcus intermedius is a species of the group S. anginosus (also known as S. milleri, a subgroup of viridians streptococcus), known for causing invasive pyogenic infections. Species of the S. anginosus group are commonly found in the oropharyngeal, gastrointestinal, and urogenital tracts. Abdominal, thoracic, and central nervous system infections are commonly seen in infections by the S. anginosus group. Bacteremia is often associated with an abscess, especially in the gastrointestinal tract, and often precedes CNS infection. Treatment of S. intermedius infections can be complicated due to the natural competency of S. anginosus species leading to risk of antibiotic resistance. Studies report variable susceptibility to penicillins and cephalosporins with penicillin resistance more common in S. intermedius. Overall, S. anginosus infections respond well to penicillin G and cephalosporins, especially cefepime, cefotaxine, and ceftriaxone. Drainage of abscesses is necessary for resolution of abscesses. Once the patient's abscesses were drained and antibiotic treatment initiated with ceftriaxone and metronidazole, the patient's neurologic status improved markedly. Focusing on the common sources of S. intermedius infection indentified the source as erosive esophageal adenocarcinoma in this previous smoker.

DYSPNEA IN POLYMYOSITIS- ANTISYNTHETASE ANTIBODY IS THE CLUE Ravi Shahukhal[1]; Yagna R. Bhattrai[3]; Nirva Dube1; Madan R. Aryal[2]. [1]Queens Hospital Center, Queens, NY; [2]The Reading Health System, West Reading, PA; [3]Mercy Catholic Medical Center, Philadelphia, PA. (Tracking ID #1621951)

LEARNING OBJECTIVE 1: Recognize pulmonary involvement in patients with polymyositis
LEARNING OBJECTIVE 2: Discuss the clinical features and treatment of antisynthetase syndrome
CASE: 38 year old female with no past medical history, presented with progressive shortness of breath, dry cough and fever for 1 month. She also complained of polyarthralgia along with symmetrical weakness of her proximal muscles and Raynaud's phenomenon of fingers. On examination, her respiratory rate was 32/min and saturation was 89 % on room air. Chest examination revealed crackles at bilateral lung bases. Proximal interphalengeal, wrist and ankle joints were swollen with mild tenderness. Pertinent laboratory data included white cell count of 7600/microL, hemoglobin 8.5 gm%, platelets- 363,000/micro L, and erythrocyte sedimentation rate of 104 mm/h. Serum creatine kinase was 3257/micro L, aldolase level was 20 U/L. Thyroid function tests was normal. Chest X ray showed bibasilar opacity and patchy reticular opacity in middle lung field. She was treated for suspected atypical pneumonia, however she failed to improve. CT chest obtained was negative for pulmonary embolism and showed bilateral air space disease with interstitial prominence. Further immunological workup was carried out which were negative for antinuclear, lupus anticoagulant, antiphospholipid, anti ds DNA, Anti Ro, anti CCP and anti C- ANCA antibodies. Anti jo-1 antibody was positive in very high titer (>8, normal<1). Rheumatoid factor was 41.3 (normal 0–20). Level of C3 and C4 were normal. Echocardiogram showed ejection fraction of 65 %. Electromyography indicated findings suggestive of myopathy. Pulmonary function test showed restrictive pattern with decreased DLCO. Bronchoscopy guided biopsy of lung tissue revealed pulmonary capillaritis. Broncho alveolar sample was negative for fungal and mycobacterial infection. She was treated with high dose of methylprednisone with significant improvement in breathing, muscle strength and creatinine kinase level. She continued to improve with long term steroid treatment.
DISCUSSION: Interstitial lung disease (ILD) is a major cause of morbidity and mortality in patients with polymyositis. Anti Jo-1 antibody is positive in around 38 % in patients with ILD in polymyositis. Anti Jo 1 antibody are strongly associated with ILD, Raynaud's phenonmenon, interstitial lung disease, arthralgia, mechanics hands and constitutional symptoms like fever which are collectively known as antisynthetase syndrome. Polymyositis in our case was diagnosed with 3 out of four Bohan and Peter criterias (symmetrical proximal muscle weakness, EMG findings and elevated muscle enzymes). This in the setting of positive anti Jo antibody was suggestive of antisynthetase syndrome. Among histologial subtypes of Interstitial lung disease, non specific interstitial pneumonia (NSIP), cryptogenic organizing pneumonia (BOOP) and usual interstitial pneumonia are common. However pulmonary capillaritis, which is seen in systemic vasculitis and stemic lupus erythematosus, is very rare in polymyositis. In our case, negative C- ANCA and negative ANA further support to exclude concomitant connective tissue disease as a cause of capillaritis. Treatment is usually with high dose pulse steroid and cyclophosphamide.

DYSPNEA: DON'T SUPPRESS THE DIFFERENTIAL DIAGNOSIS Monica A. Gomberg; Harish Jasti. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1638272)

LEARNING OBJECTIVE 1: Identify sirolimus-associated toxicity in an immunosuppressed patient.
LEARNING OBJECTIVE 2: Recognize the importance of medications as potential culprits of disease processes.
CASE: A 65 year-old Caucasian male with a history of liver transplant and chronic kidney disease (CKD) presented with a 2-month history of dyspnea on exertion. He initially experienced difficulty breathing while walking uphill, which then progressed to a sensation of shortness of breath (SOB) after walking a few meters. He denied any SOB at rest, orthopnea, wheezing, chest pain or palpitations. The patient also endorsed a non-productive cough with exertion only. He was in contact with his son-in-law and grandchild, both of whom were recently treated for pneumonia. He admitted to poor oral intake over the past 2 months, leading to a 25 lb weight loss. His medications included primidone, sirolimus and propranolol. Physical exam revealed a well-appearing male in no acute distress. Vital signs were stable, with an oxygen saturation of 94 % on room air. Cardiovascular exam was unremarkable, including absence of lower extremity edema and jugular venous distention. Pulmonary exam was clear to auscultation. Laboratory work was significant for anemia of chronic disease and CKD, both of which were at his baseline. An electrocardiogram was also normal. Regadenosine single-photon emission computed tomography (SPECT) demonstrated no perfusion defects, with an ejection fraction (EF) of 40 % with diffuse hypokinesis. A transthoracic echo showed an EF of 40–45 %, mildly decreased systolic function, diastolic dysfunction, and inferior and posterior wall hypokinesis. A chest CT scan from 3 years ago revealed multiple calcified granulomas. A repeat CT scan, performed during the hospitalization, also showed the calcified granulomatous nodules, in addition to new multifocal ground-glass opacities. Pulmonary function testing revealed a moderate restrictive pattern without significant bronchodilator response, and a severely decreased diffusion capacity. His sirolimus therapy was subsequently discontinued, leading to complete resolution of his symptoms. A repeat CT scan, performed 3 months after discharge, no longer demonstrated any ground-glass opacities.
DISCUSSION: Sirolimus is a medication commonly used in patients with solid organ transplantation, particularly for its renal-sparing effects. Side effects include myelosuppression, hypertension, hyperlipidemia, glucose intolerance and infection. Pulmonary toxicity in patients on sirolimus has an incidence ranging from 2 % to 10 %. Initial symptoms include cough, fatigue, fever, and dyspnea, and can lead to conditions such as organizing pneumonia, interstitial pneumonitis, pulmonary alveolar proteinosis, focal fibrosis or alveolar hemorrhage. CT findings include reticular and ground-glass opacities and lobar consolidation. Case reports have noted that symptoms are not directly related to dosage. Once identified, most patients recover completely within 6 months after discontinuation of the medication. Given the significance of these outcomes, and the necessary cessation for resolution, it is important for the physician to consider sirolimus in their differential diagnosis in a patient presenting with pulmonary symptoms. This case also highlights the importance of doing a thorough medication review upon admission of a patient into the hospital. In our patient, identifying and discontinuing sirolimus was critical in his recovery.

EOSINOPHILIA: MORE THAN JUST ALLERGIES AND WORMS
Morgan J. Katz; Matthew N. Peters; Ardalan Minokadeh. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640375)

LEARNING OBJECTIVE 1: Recognize the diagnostic criteria for hypereosinophilic syndrome.
LEARNING OBJECTIVE 2: Understand the importance of early initiation of steroid treatment in hypereosinophilic syndrome to prevent irreversible end organ damage.
CASE: A 58 year-old woman with a history of type 2 diabetes presented with crushing sub-sternal chest pain. Review of systems was negative for pulmonary symptoms, rash, and recent changes in medications. Initial ECG revealed T-wave inversions inferiorly and laterally and initial troponin was 12.6 g/dL. Coronary arteriography demonstrated 95 % stenosis in the right coronary artery which was treated with a drug-eluting stent. Transthoracic echocardiogram revealed restrictive cardiomyopathy with a left ventricular ejection fraction of 15 %, grade 3 diastolic dysfunction, pulmonary arterial pressure of 46 mmHg and the absence of regional wall motion abnormalities. Other basic laboratory tests were within normal limits aside from a serum eosinophil count which was markedly elevated at 9400/μL (62 %). Nine months earlier her eosinophil count was also elevated at 4600/μL (34 %). Eosinophilia was confirmed with a peripheral smear, which showed numerous structurally normal eosinophils and an absence of atypical lymphocytes or blasts. The serum IgE was elevated at 802 u/mL. Her serum antinuclear antibodies and anti-neutrophil cytoplasmic antibodies were negative. She had negative stool ova and parasites, absence of BCR/ABL mutation on serum PCR, and an unremarkable travel history. The patient was diagnosed with hypereosinophilic syndrome (HS) and was treated with daily prednisone at a dose of 15 mg/kg. Three months following the initiation of therapy, the patient's eosinophil count improved to less than 1000/μL with no additional signs of end organ damage.
DISCUSSION: Hypereosinophilic syndrome is a disease that every internist should be aware. First described in 1968, HS is defined by sustained blood eosinophilia >1500/μL for at least 6 months, absence of other eosinophilia etiologies, and signs and symptoms of end organ involvement. While all organs may be affected, cardiac involvement is most common. Cardiac involvement typically begins with an early necrotic stage at 5–6 weeks, progression to a thrombotic stage, involving formation of thrombi along damaged ventricular endocardium at approximately 10 months, and finally a fibrotic stage with restrictive cardiomyopathy secondary to progressive scarring at about 2 years. Cardiac damage is caused by release of the eosinophil granule protein, major basic protein (MBP) which creates scarring and fibrosis of the endocardium via direct toxicity. An additional adverse effect of circulation of excess MBP stems from its ability to activate platelets and inhibit thrombomodulin (a cofactor in the anticoagulation pathway), predisposing to hypercoagulability and thrombus formation in the cardiac chambers and coronary arteries. Early recognition and treatment is imperative to decrease the circulation of excess eosinophils and minimize their toxic effects. Elevation of eosinophil count should not be treated as an incidental finding and patients with eosinophilia should undergo an extensive diagnostic work-up. Treatment of HS with corticosteroids is highly successful, especially in patients with elevated IgE levels, and minimizes potentially irreversible and fatal complications.

EMERGENCE OF A NEW CLASS OF RECREATIONAL DRUGS - A CASE FOR CAUTION
Vikas Khullar; Ankur Jain; Maryam Sattari. University of Florida - Shands Hospital, Gainesville, FL. (Tracking ID #1642264)

LEARNING OBJECTIVE 1: Recognize that "Bath Salts" have become an increasingly common substance of abuse.
LEARNING OBJECTIVE 2: Diagnose and manage "bath salt" ingestion appropriately.
CASE: A 20 year old Hispanic male was found running around the university campus by the police and brought to the Emergency Department for altered mental status. Police reported that he appeared to be having hallucinations with rapid speech and threatened to use a knife to harm his girlfriend. No history could be obtained from the patient at the time of admission due to his extreme agitation. On examination, the patient was afebrile, tachycardic in 120's, and mildly hypertensive at 146/99. He kept moving on and off the bed and was inattentive to questioning. Aside from shivering, the rest of the physical exam was unremarkable. Creatine Phosphokinase (CPK) level was elevated at 1151 U/L (reference range 30–170 U/L). Serum toxicology screening was negative for ethanol, acetaminophen, and salicylate. Urine drug screening was only positive for cannabinoids The rest of laboratory investigation, including complete blood count, basic metabolic panel, liver function tests, and TSH, were normal. Patient was aggressively rehydrated. Lorazepam and haloperidol were administered as needed for agitation. Over the next 24 h, CPK levels started to trend downwards. Patient became more alert, oriented, and less agitated. While he admitted to distant amphetamine use, patient only endorsed the recent use of marijuana and "bath salts". Over the next day, he was treated with both oral and intravenous hydration and was discharged to a psychiatric rehabilitation facility based on psychiatry evaluation. Of note, patient had had a similar prior presentation to our hospital. Elevated CPK at the time was attributed to cocaine use although urine and serum toxicology screenings were entirely negative.
DISCUSSION: "Bath salts" are becoming an increasingly popular form of recreational drug abuse especially amongst young adults, with many presenting to the emergency department in states of intoxication. Due to their increased abuse potential, the drug enforcement agency recently reclassified these stimulants as schedule I drugs. The primary ingredients in these novel synthetic stimulants, 3,4-methylenedioxypyrovalerone (MDPV) and 4-methylmethcathinone (mephedrone), produce a cocaine- or methamphetamine-like high. "Bath salts" can be ingested orally, intranasally, intravenously or rectally and have been associated with altered mental status (hallucinations, paranoid delusions, anxiety, violent behavior, and bizarre suicides and homicides), cardiovascular complications (tachycardia, hypertension, and chest pain), hyperthermia, rhabdomyolysis, renal failure, seizures and even deaths. Treatment is mainly supportive, focusing on hydration, sedation and symptom management. Since bath salts are not detected by conventional drug screening, clinicians should be familiar with these substances and maintain a high level of suspicion in patients who present with mental status changes, predominant sympathomimetic features, and negative toxicology screening.

EMPYEMA AS COMPLICATION OF SILENT ASPIRATIONS
Annie Chen. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1621786)

LEARNING OBJECTIVE 1: Recognize less common complications of gastroesophageal reflux disease (GERD) and hiatal hernias.
LEARNING OBJECTIVE 2: Consider age-appropriate differential diagnoses of new-onset pleural effusions.
CASE: The patient is a 75 year old man with past medical history significant only for GERD and hiatal hernia who presented to the hospital for an acute onset of intense chest pain. The pain started about 2 days before admission and was thought to be musculoskeletal pain. Despite NSAIDs, the left-sided chest pain became more intense and pleuritic in nature. He denied having any antecedent illness, weight loss, fevers, night sweats, chills, or any prolonged periods of immobility. He denied having pneumonias or aspirations. He did not have any family history of cancers, lung pathology, heart disease or autoimmune diseases. Upon presentation to the hospital, the patient was afebrile. He was hypertensive with normal heart rate. His oxygen saturation was abnormal at 92 % on room air. His exam was notable for poor inspiratory effort with short shallow breaths, crackles in the lower left lung base. His cardiac exam was normal. Initial laboratory data did not show leukocytosis. He did have elevated D-dimer and C-reactive protein levels. CT scan of the chest ruled out a pulmonary embolism but did show small left pleural effusion and questionable chronic lung changes at the bases. It also showed a moderate size hiatal hernia. Within 3 days of presentation, patient developed new onset atrial fibrillation with rapid ventricular rate and was transferred to the intensive care unit for rate control. He had also developed a new oxygen requirement. A repeat chest CT scan

found that the left loculated effusion had dramatically increased in size, necessitating surgical thoracentesis, which revealed purulent material. Over the next few days, he clinically improved with the drainage of his infection. The patient had decreased pain, decreased episodes of atrial fibrillation, and decreased oxygen requirement. Interestingly, Microaerophilic Streptococcus and Peptostreptococcus species were recovered from patient's pleural fluid.
DISCUSSION: Initially, we considered a broad differential for the patient's pleural effusion, which was later found to be an empyema. Given the acute nature and the intensity of the pain, a highly inflammatory process was at the top of the differential. More insidious causes like malignancy were considered due to his age, though much less likely due to his benign history. The most likely mechanism of patient's empyema was related to his history of moderately-sized hiatal hernia. Although patient's reflux was symptomatically well-controlled on proton pump inhibitors, he likely still had silent aspirations. He has never had a swallow study as he had no clinically important recurrent aspirations. We proposed that the oral flora caused an insidious pneumonia that eroded through the pleural space and caused the formation of the empyema. This, then, caused severe pain and irritation of the pericardial space, leading to new-onset atrial fibrillation. No other such cases have been reported; however, GERD has been associated with aspirations. As shown by this vignette, empyemas caused by silent aspirations should be considered in the differential of sudden onset of pleuritic chest pain without any other clear cause especially if patients have known GERD or a known hiatal hernia.

ENDOCARDITIS RELATED PLATYPNEA ORTHODEOXIA AND REVERSE LUTEMBACHER SYNDROME David Anwar; Nada E. Elmagboul. Penn State Hershey Medical Center, Hershey, PA. (Tracking ID #1641595)

LEARNING OBJECTIVE 1: To recognize platypnea orthodeoxia (PO) as a rare condition characterized by hypoxia in the upright position that resolves when recumbent.
LEARNING OBJECTIVE 2: To recognize the reverse Lutembacher syndrome triad of tricuspid valve (TV) stenosis elevated right atrial (RA) pressure, and right-to-left shunting.
CASE: A 35-year- old male presented with a 1 week history of fever, chills and occasional shortness of breath. Dyspnea notably worsened while standing and improved while lying flat. Patient had a past history significant for intravenous drug use associated infective endocarditis, complicated by paradoxical septic emboli to the brain with residual deficits, requiring bioprosthetic tricuspid valve replacement. On presentation, patient was septic with WBC count of 29.8, fever of 39.3 °C, blood pressure of 98/62 and sinus tachycardia of 154. While upright, patient had cyanosis, mottling and hypoxia with O2 saturation in the 80 s. These symptoms resolved within 30–60 min of laying supine. Cardiovascular exam revealed diastolic and systolic murmurs radiating throughout the pericardium. Echocardiogram showed a 3.3×2.7 cm tricuspid vegetation obstructing the tricuspid valve causing severe stenosis, severe regurgitation, and elevated right arterial pressure of 20 mmHg (normal 2–6). CT scan of Chest revealed evidence of old and new small septic emboli to the lungs. Blood cultures were positive for Streptococcus viridians. Panorex CT showed multiple dental abscesses that were subsequently extracted. Tricuspid valve replacement was performed resulting in resolution of patient's hypoxia. A repeat post-operative echocardiogram showed normal valvular function and normalization of RA pressure to a value of 3 mmHg.
DISCUSSION: Platypnea orthodeoxia (PO) is a rare condition characterized by hypoxia in the upright position that resolves when recumbent. The proposed mechanisms are intra-cardiac shunting, intra-pulmonary shunting or ventilation-perfusion (V/Q) mismatch. In addition, a physiologic driving force in the upright position must be present, as was caused by obstruction of the TV by the large vegetation in this patient's case. This condition is classically seen in hepatopulmonary syndrome, chronic lung disease or recurrent pulmonary embolism. This case also demonstrated the reverse Lutembacher syndrome as the triad of TV stenosis, elevated RA pressure, and right-to-left shunting. Although a bubble study was not performed during the echocardiogram, it was presumed that patient had a patent foramen ovale, from his previous history of paradoxical emboli. To our knowledge this is the first reported case of reverse Lutembacher syndrome due to TV stenosis from infectious endocarditis. Clinical evaluation of PO should focus on the identification of possible intra cardiac shunting, intra pulmonary shunting or V/Q mismatch. Work up includes tilt table two dimensional echo with bubble study, lung imaging and liver function test.

ENDOMETRIAL TUBERCULOSIS PRESENTING AS PRIMARY INFERTILITY: AN INTERESTING CASE Swati Choudhary; Harsha Ramchandani; David Steinberger; Randall Sternberg; Jaya Edukulla; Vijayashree Mekala. St. Mary Mercy Hospital, Farmington Hills, MI. (Tracking ID #1639416)

LEARNING OBJECTIVE 1: To illustrate an uncommon cause of infertility Tuberculosis usually involves the lungs and lymph nodes but can rarely involve genitourinary system. In males it can cause tuberculous epididymo-orchitis and in females, it can cause tuberculous endometeritis (infection of the uterus) and salpingitis (infection of the fallopian tubes).
LEARNING OBJECTIVE 2: To increase awareness among physicians of endometrial tuberculosis especially with the increasing immigration from developing countries Genital tuberculosis is a bacterial infection still frequent in less developed countries. It is becoming more common in developed nations secondary to increased immigration. The Incidence in the United States has been estimated to be less than 1 %.
CASE: We present a case of endometrial tuberculosis as a cause of infertility which was not diagnosed despite 4 years of workup; most likely due to decreased awareness. So far this is the second case ever reported in United States literature, the first case was of an African refugee. Our patient is a 30 year old healthy female with no other medical conditions. She migrated from India in 2007. According to the patient she never had any exposure to tuberculosis. Secondary to inability to conceive she started following with an infertility clinic in 2008. She and her husband went through a battery of tests, including blood tests, semen analysis, US of pelvis, and even laparoscopy. This was followed by 3 unsuccessful attempts of in-vitro fertilization. She travelled to India in 2012 where she decided to see another obstetrician for second opinion. Blood work-up came back negative again for hormonal deficiency. Finally an endometrial biopsy was done followed by histology. Although PCR of endometrial specimen came back negative, histology and culture was positive for mycobacterium tuberculosis. When we saw her in our clinic, she denied cough, low grade fever, weight loss, and any menstrual cycle disturbances. PPD test done in the clinic was negative. Chest X-ray showed no signs of active tuberculosis. As per the infectious disease specialist she will be started on anti-tuberculous treatment for the next 6 months with close monitoring.
DISCUSSION: Tuberculosis is an infectious disease caused by an acid fast bacilli, mycobacterium tuberculosis. It can affect women of any age. Women in reproductive age can present with infertility as their initial symptom. Post-menopausal women present with menorrhagia as their initial symptom. The Gold standard for diagnosis is endometrial biopsy followed by histology. Infertile women without tubal or endometrial damage given early anti-tuberculosis treatment have an excellent chance of early spontaneous conception. The recommended treatment involves 6 months of antituberculous therapy. Surgical intervention is usually only performed on women who are postmenopausal as surgery requires total abdominal hysterectomy. If not treated early, complications include development of adhesions and blocked fallopian tubes leading to permanent disability and ectopic pregnancy. Even after treatment many patients may still suffer from infertility secondary to intra-uterine scarring. For these patients the only available option could be in-vitro fertilization. Thus, in conclusion Tuberculosis should be considered in the differential diagnosis of infertility especially in patients who have migrated from developing countries.

ENIGMATIC PLEURAL EFFUSION Emily Kocurek[1,2]; Sujata Bhushan[2,1]. [1]UT Southwestern Medical Center, Dallas, TX; [2]Dallas VA Medical Center, Dallas,, TX. (Tracking ID #1642816)

LEARNING OBJECTIVE 1: Diagnose and manage an enigmatic pleural effusion. Occasionally fluid studies and cytology are unrevealing and

further measures must be taken for definitive diagnosis. Diagnosis of malignant and paramalignant effusions contributes important prognostic information. These effusions can be challenging to manage.

LEARNING OBJECTIVE 2: Recognize atypical manifestations of prostatic metastasis. Pleural effusions are rare and are often accompanied by supradiaphragmatic lymphadenopathy with extensive disease. Understand the role of lymphatic invasion in the pathophysiology of a paramalignant pleural effusion, with no direct involvement of pleura by the tumor.

CASE: 68 year old Caucasian male with past medical history of prostate cancer, treated with external beam radiation therapy and subsequent chemotherapy for biochemical recurrences and diffuse osseous metastases, was admitted with 2 week history of exertional dyspnea, associated with cough productive of whitish sputum. Chest x-ray showed a large opacity in the right lung fields. Right lateral decubitus film exhibited layering dependent fluid. He underwent large volume thoracentesis,with straw colored fluid, exudative by Light's criteria. Cultures and cytology were negative. Fluid reaccumulation prompted repeat thoracenteses. All subsequent studies were negative, including mucicarmine special stain and PSA and PAP immunohistochemical stains. Total 3480 mL of fluid was submitted for cytology, negative for malignancy. Subsequently, he underwent right video assisted thoracic surgery with full decortication, right pleural biopsy, right upper lobe wedge resection, and placement of PleurX catheter. Intraoperative bronchoscopy showed no pathologic lesions. Pleural biopsy showed organizing pleuritis but no tumor. Right upper lobe wedge resection showed metastatic poorly differentiated prostatic adenocarcinoma with extensive lymphovascular invasion.

DISCUSSION: Two types of pleural effusions are associated with malignancy, termed malignant and paramalignant. Malignant effusions are defined by the presence of tumor cells in the pleural fluid/ on pleural biopsy. If there is no evidence of tumor involvement on pleural fluid cytology or biopsy and no other cause of the effusion can be elucidated, it is termed paramalignant. Commonest mechanism for development of paramalignant pleural effusion is compromise of lymphatic drainage. Malignant effusions are mainly exudative. If cytology or percutaneous pleural biopsy are unrevealing, more invasive diagnostic procedures may be undertaken. Bronchoscopy may have low diagnostic yield and yield of CT is somewhat unclear. Therapeutic options include serial thoracentesis, chemical pleurodesis, thoracoscopy, VATS, pleural catheter, and pleuroperitoneal shunt, the choice of intervention being dependent on patient's expected survival time. The usual metastatic pattern of prostate cancer involves local lymph nodes and the axial skeleton. More atypical metastatic sites include atypical lymphadenopathy (outside the abdomen/pelvis) and metastasis to the orbit/skull, lungs, liver, and intracranial sites. Lungs and pleura are the most frequent site of atypical metastasis. Pleuroparenchymal involvement can include parenchymal nodules, pleural nodules, and more rarely lymphangtic carcinomatosis. Most pleuroparenchymal involvements have concurrent supradiaphragmatic lymphadenopathy. Our patient had a paramalignant effusion without any adenopathy, making the diagnosis difficult.

EOSINOPHILIC CARDIOMYOPATHY WITH ENDOMYOCARDIAL FIBROSIS Jason Sayanlar. [1]Georgetown University Hospital, Washington, DC; [2]National Institutes of Health, Bethesda, MD. (Tracking ID #1623491)

LEARNING OBJECTIVE 1: Recognize the clinical features of hypereosinophilic syndromes presenting with restrictive cardiomyopathy.

CASE: A 70 year-old Korean female with no significant past medical history presented to the hospital after 3 months of generalized weakness and progressively worsening lower extremity edema. She denied any shortness of breath, chest pain, fevers, chills, rashes, arthralgias, orthopnea, paroxysmal nocturnal dyspnea, syncope, or any other constitutional symptoms. She initially presented to her primary care physician 1 month prior to admission, and was started on a diuretic for her lower extremity edema. A CBC was checked, which showed a WBC of 20,000/mm3 with an absolute eosinophil count (AEC) of 19,000/mm3. At this point she was transferred to the National Institutes of Health for further evaluation of her hypereosinophilia. A peripheral smear revealed the presence of dysplastic, hypogranular eosinophils. ProBNP was elevated at 2204 (normally 0–353 pg/ml). Troponin-I peaked at 0.024. An EKG showed a prolonged QTc of 480 milliseconds. A test for the FIP1-PDGFRa mutation came back negative. Physical examination revealed a jugular venous pressure of 12, decreased breath sounds and 2+ lower extremity edema to her knees, bilaterally. On cardiac exam, she was found to have a normal rate and regular rhythm, with a 3/6 holosystolic murmur at the apex, radiating to the axilla. A transthoracic echocardiogram was done, which showed an ejection fraction of 65 %, moderate tricuspid regurgitation, severe mitral regurgitation, severe right ventricular (RV) dilatation with decreased RV function, as well as septal flattening consistent with RV overload. Her RV apex was described as thick and echodense. A cardiac MRI was also done, which noted left ventricular (LV) apical thickening (in addition to RV thickening), suggesting bilateral apical thrombi vs. endomyocardial fibrosis, thought to be secondary to eosinophilic cardiomyopathy. Treatment consisted of initiating imatinib and corticosteroids for her hypereosinophilic syndrome. Her diuretics were increased and she was started on anticoagulation for her apical thrombi, as well as an ACE-inhibitor for cardiomyopathy. One month after discharge, the patient began to report increased energy and a significant reduction in her edema. Follow-up labs also showed resolution of her eosinophilia, with a WBC of 3,650/mm3 and an AEC of 1,380/mm3.

DISCUSSION: This case illustrates eosinophilic cardiomyopathy as a rare, but clinically important, cause of restrictive heart failure. Eosinophil-mediated heart damage is characterized by three stages- 1) an acute necrotic stage, significant for direct endomyocardial infiltration and damage, 2) an intermediate phase, in which thrombi form along damaged endocardium and 3) a fibrotic stage, characterized by endomyocardial fibrosis, resulting in a restrictive cardiomyopathy. Clinicians must pay close attention to the cardiac physical examination for signs of heart failure and valvular disease, which is caused by fibrotic entrapment of chordae tendineae. Other organ systems are also frequently involved, including the skin, lungs and gastrointestinal tract, which are all characterized by eosinophilic infiltration.

EOSINOPHILIC PLEURAL EFFUSION: A WORM BY ANOTHER NAME? Jessica R. Howard-Anderson[1]; Timothy Canan[2]; Michael D. Roth[2,3]; Edward Ha[2,4]. [1]David Geffen School of Medicine at the University of California, Los Angeles, Los Angeles, CA; [2]University of California, Los Angeles, Los Angeles, CA; [3]University of California, Los Angeles, Los Angeles, CA; [4]University of California, Los Angeles, Los Angeles, CA. (Tracking ID #1642814)

LEARNING OBJECTIVE 1: Recognize the different causes of eosinophilic pleural effusions

LEARNING OBJECTIVE 2: Recognize the pulmonary manifestations of Strongyloides stercoralis infection and the dangers of misdiagnosis

CASE: A 91 year old Korean man with history of hepatitis C and recurrent pneumonias presented with 2 days of fever, productive cough and hemoptysis. In the preceding year, he had two hospital admissions for bacterial pneumonia with a persistent left loculated pleural effusion of unclear etiology. On arrival, he had a temperature of 37.9 °C, with a normal respiratory rate and oxygen saturation. He had decreased breath sounds in the left middle and lower lung fields. WBC count was 6,390 per μL with 21 % eosinophils. His IgE level was 6103 IU/mL (normal<20 IU/mL). Mycobacterium tuberculosis (MTB) quantiferon gold ELISA test was positive. A single stool ova and parasite (O&P) test was negative. A chest CT identified a complex loculated left pleural effusion with ground-glass opacities in the right upper and middle lobes. A noncalcified granuloma was noted in the right apex. Bronchoalveolar lavage was performed, and acid fast culture, MTB PCR, and O&P testing were negative. A diagnostic thoracentesis yielded 44 WBCs per mL with 24 % eosinophils, and an adenosine deaminase of 6.0 units per liter (consistent with transudative fluid). Wet prep of the pleural fluid was negative for ova and parasites. No malignant cells were identified. On the day of discharge, a second stool O&P test was obtained and eventually identified Strongyloides stercoralis larvae. Serum testing for strongyloides antibody also returned positive. He received ivermectin and had significant improvement in his symptoms and eosinophilia.

DISCUSSION: Eosinophilic pleural effusions are commonly encountered by general internists. While the most common etiologies are malignancy, idiopathic, and parapneumonic effusions, other causes including tuberculosis (TB), collagen-vascular diseases, and parasitic infections—namely Strongyloides stercoralis—must be considered in the appropriate demographics. In this case, our suspicion for active TB was high. Without acquiring a repeat O&P stool sample, more invasive diagnostic procedures for TB may have been performed. This highlights the importance of testing numerous stool samples, as the sensitivity does not approach 100 % until obtaining 7 samples. The pulmonary manifestations of Strongyloides stercoralis can include eosinophilic pleural effusions, asthma and acute respiratory failure. If undiagnosed, hyper-infection can occur, with high worm burden and disseminated disease. Specific to pulmonary disease, there have been at least three documented fatalities in patients with undiagnosed strongyloides who received corticosteroids for presumed asthma. Considering stronglyoides infection is therefore critical in patients with eosinophilic pleural effusions.

EOSINOPHILIC PNEUMONIA, RARE BUT FATAL SIDE EFFECT OF DAPTOMYCIN: A CASE REPORT Jaya Edukulla; Swati Choudhary; Alexander Glick; Derek DeSouza. St. Mary Mercy Hospital, Livonia, MI. (Tracking ID #1642282)

LEARNING OBJECTIVE 1: To increase awareness about a rare but fatal side effect of Daptomycin
LEARNING OBJECTIVE 2: To emphasize the need for early identification of eosinophilic pneumonia as a side effect of Daptomycin
CASE: 72 year old Caucasian male with history of Diabetes Mellitus type II, Hypertension, Hyperlipidemia and peripheral vascular disease was admitted for diabetic foot infection. Patient was started on vancomycin and ceftriaxone. Patient underwent angioplasty with atherectomy of left popliteal artery to promote healing. Podiatry performed cross-hatching of the wound and cultures showed gram-positive cocci. MRI Left foot was consistent with early osteomyelitis of great toe. Patient was discharged on vancomycin and ceftriaxone for 6 weeks. Vancomycin was switched to daptomycin due to worsening renal function. Fifteen days later patient was readmitted to intensive care unit secondary to hypoxic respiratory failure. Physical exam revealed bilateral diffuse crackles. Patient was started on supplemental oxygen. Chest x-ray showed patchy bilateral infiltrates. Daptomycin was discontinued because of the suspicion of EP. BAL was done which revealed numerous eosinophils, moderate neutrophils and all bacterial, viral and fungal cultures were negative. High dose corticosteroid was started, 5 days later hypoxia resolved. Shortly after the steroid taper was completed, he developed recurrent dyspnea and pulmonary infiltrates. He was restarted on steroids and autoimmune conditions were ruled out. HRCT showed extensive bilateral parenchymal abnormalities with patchy ground glass opacities as well as reticulation. Repeat BAL was negative for eosinophilia. Patient's EP improved but patient expired secondary to heart failure.
DISCUSSION: Daptomycin is a cyclic lipopeptide antibiotic active against Gram-positive bacteria including Methicillin resistant Staphylococcus aureus (MRSA) and Vancomycin resistant Enterococci (VRE). Recent case reports have shown that Daptomycin can cause serious respiratory complications including Eosinophilic pneumonia (EP). EP is characterized by pulmonary infiltrates and increased numbers of eosinophils in lung tissue or broncho-alveolar lavage (BAL) fluid, with or without increased level of eosinophils in the peripheral blood. EP is an uncommon entity most commonly associated with use of antibiotics and non-steroidal anti-inflammatory drugs. Pathophysiology involves triggering of immune response due to an offending agent, leading to eosinophilic chemotaxis and localization into the lung. EP should be considered in individuals who receive Daptomycin and develop new pulmonary infiltrates. Significant morbidity and mortality can occur if this condition remains unrecognized and not properly treated in a timely fashion. Daptomycin toxicity mechanism remains uncertain and further studies are necessary.

EVANS SYNDROME IN CHRONIC LYMPHOCYTIC LEUKEMIA Ajaykumar Kaja; Vimalkumar Veerappan Kandasamy; Khaled M. Abouelezz; Mary Tadros. Creighton University Medical Center, Omaha, NE. (Tracking ID #1642084)

LEARNING OBJECTIVE 1: Recognize the association of Evans Syndrome with Chronic Lymphocytic Leukemia.
LEARNING OBJECTIVE 2: Identify clinical manifestations,diagnostic workup and available treatments for Evans Syndrome.
CASE: 84 year old caucasian male presented with complaints of progressive fatigue,unintentional weight loss of 5 lb over 6 months and one episode of melena. Past medical history was significant for hypertension, duodenal ulcer 30 year ago, iron deficiency anemia and CLL in remission. Vital signs were unremarkable. Physical examination was negative for bruises, icterus, hepatosplenomegaly or generalized lymphadenopathy. Laboratory data showed hemoglobin of 5.9 gm/dl, platelets of 41 k/ul, white blood cell count of 10 k/ul with an absolute neutropenia. His baseline Hgb and platelet count were 11 gm/dl and 200 k/ul respectively. Other significant laboratory data include positive FOBT, indirect bilirubin of 2.3 mg/dl, reticulocyte count of 0.15 M/ul and an LDH of 600 IU/L. Peripheral smear showed smudge cells, ovalocytes and was negative for schistocytes or fragmented RBC. The patient was admitted to the ICU and received 2 units of packed red blood cells. Upper Endoscopy and Colonoscopy were negative for enteral bleed. Further workup was negative for IgM parvovirus and CMV antibodies. Direct coombs test was positive. Bone marrow biopsy was done, which showed marrow hypercellularity with erythroid and megakaryocytic hyperplasia.In light of concern of immune mediated peripheral sequestration and cellular destruction the diagnosis of Evans syndrome was made.He was then started on IV methylprednisolone. Hemoglobin and Platelet counts improved over the next 24 h.
DISCUSSION: Evans syndrome,first described in 1951, refers to a combination (either simultaneously or sequentially) of coombs positive warm AIHA, Immune thrombocytopenic purpura and less commonly autoimmune neutropenia. Only 1 % of cases present simultaneously with AIHA and ITP. Although Evans Syndrome has been considered as an "idiopathic" condition, about 50 % of cases are associated with other diseases such as SLE,lymphoproliferative disorders or primary immunodeficiencies. Immune dysregulation, decreased T4:T8 cell ratio and increased constitutive production of interleukin-10 and Interferon gamma causing activation of autoreactive antibody-producing B cells were proposed for autoantibody production. The antibodies that cause hemolysis are different from those that cause platelet destruction. Those causing RBC destruction are directed against a base protein portion of the Rh blood group, while those destroy platelets are directed against platelet GPIIb/IIIa. Clinical presentation includes features of hemolytic anemia and thrombocytopenia. Diagnostic workup for adults with newly diagnosed Evans Syndrome includes peripheral smear, serum protein and immuno electrophoresis, measurement of serum immunoglobulin concentrations and immunophenotyping of circulating B lymphocytes. Also indicated is testing for anti-dsDNA antibodies, anticardiolipin antibodies, HIV, HCV,HBV, bone marrow biopsy in diagnosing associated diseases of Evans syndrome. First line treatment is glucocorticoids and intravenous immunoglobulin. Second line treatment includes immunosuppressive agents,danazol and rituximab. Refractory cases are treated with splenectomy and stem cell transplantation. The magnitude of hemolysis and response to treatment can be serially monitored by LDH, haptoglobin, indirect bilirubin and Coombs testing.

EXERTIONAL DYSPNEA: A SYMPTOM OF INFRARENAL AORTIC OCCLUSIVE DISEASE Stacey Schott[1]; Fernanda Porto Carreiro[1]; James R. Harkness[1]; Mahmoud Malas[2]; Stephen M. Sozio[1]; Sammy Zakaria[1]. [1]Johns Hopkins University School of Medicine, Johns Hopkins Bayview Medical Center, Baltimore, MD; [2]Johns Hopkins University School of Medicine, Baltimore, MD. (Tracking ID #1641736)

LEARNING OBJECTIVE 1: Infrarenal aortic stenosis should be considered a plausible cause of dyspnea on exertion.

LEARNING OBJECTIVE 2: Treatment of occlusive disease of the aorta may be indicated in cases where no other causes for dyspnea are found.
CASE: A 77 year old woman with a history of hypertension, hyperlipidemia and diabetes presented with 2 months of progressive exertional dyspnea and bilateral calf and buttock pain that began to interfere with performing light housework and walking farther than the length of her home. Her initial vital signs included a blood pressure of 171/71 mmHg, a pulse rate of 71 beats/min and an oxygen saturation of 99 %. Her physical examination was notable for mild sternal chest discomfort with palpation, occasional ectopic beats with cardiac auscultation and faint pulses in her bilateral femoral, dorsalis pedis and posterior tibial arteries. Her laboratory studies were within normal limits, except for elevated total cholesterol of 242 mg/dL and LDL of 152 mg/dL. An initial electrocardiogram showed normal sinus rhythm with occasional premature ventricular beats and no evidence of left ventricular hypertrophy or myocardial ischemia. She underwent a VQ scan which returned low probability for pulmonary embolism. A CT angiogram revealed diffuse coronary and aortic atherosclerosis, without evidence of pulmonary embolus or parenchymal lung disease. While hospitalized she continued to have dyspnea and fatigue with minimal ambulation. Exercise on a modified Bruce protocol treadmill stress test was limited to 7 min (4 METS) due to progressive dyspnea but otherwise showed no evidence of ischemia. An echocardiogram revealed normal left ventricular function with no diastolic dysfunction or significant valvular disease. Pulmonary function testing showed no obstruction or restriction. Coronary CTA revealed only mild luminal irregularities. MRA of the chest, abdomen, and lower extremities revealed a high-grade stenosis of the abdominal aorta 3 cm distal to the renal arteries. An abdominal CT angiogram confirmed infrarenal aortic stenosis which reduced the luminal diameter to 2 mm. Consequently, vascular surgery performed a diagnostic angiogram which revealed greater than 80 % stenosis of the infrarenal aorta. The aortic lesion was treated with angioplasty and placement of a balloon expandable stent which increased the aortic diameter to 8 mm. One day after intervention the patient's claudication symptoms completely resolved and she had noted improvement in her exertional dyspnea. Within 1 month her exertional dyspnea fully resolved and she returned to daily exercise, including 30 min bike rides, weight lifting, and frequent bowling sessions. A modified Bruce protocol stress test repeated 4 months later demonstrated a 4-minute improvement in walking time (7 METS), without reoccurrence of previous symptoms. Twelve months after intervention she remained completely asymptomatic.
DISCUSSION: Despite extensive medical testing and observation, typical causes of exertional dyspnea were not found. We postulated that aortic occlusion and renal artery stenosis could have created severe hypertension, flash pulmonary edema and shortness of breath. Another less likely explanation included dyspnea incited by metabolic acidosis. Given the distinct and lasting elimination of dyspnea following angioplasty and stenting of a near occlusive infrarenal aortic lesion we hypothesized that infrarenal aortic stenosis may be a treatable cause of exertional dyspnea.

EXUDATIVE PLEURAL EFFUSION IN A HAITIAN MAN Traci Fraser; Jordan B. Strom; Lee Park. Massachusetts General Hospital, Boston, MA. (Tracking ID #1620415)

LEARNING OBJECTIVE 1: Diagnose tuberculous pleural effusion when all cultures are negative.
LEARNING OBJECTIVE 2: Recognize the features of a tuberculous pleural effusion.
CASE: A 46-year-old previously healthy male presented with 2 weeks of subjective fevers, pleuritic chest pain, and worsened nonproductive cough with chills and night sweats. He denied hemoptysis, significant weight loss, or sick contacts. There was no significant past medical history or medications. He traveled to Haiti 6 weeks prior to presentation and reported having a purified protein derivative (PPD) 5 years prior to presentation but did not recall the results. On exam, he had firm, fixed left axillary lymphadenopathy and dullness to percussion with decreased breath sounds in the right lung base. Chest computed tomography showed new bilateral pleural effusions and mediastinal lymphadenopathy. PPD had 10 mm of induration. Pleural fluid studies revealed an exudative effusion based on a total protein 6.8 g/dL (serum total protein 8.1 g/dL) and LDH 482 IU/L (serum upper limit of normal 210 IU/L). Other pleural fluid studies included total nucleated cell count of 34,300 cells/mm3 with 41 % neutrophils and 33 % lymphocytes, pH 7.4, glucose 105 mg/dL, albumin 3.4 g/dL, and adenosine deaminase 65.2 U/L with cytology negative for malignancy. Pleural acid fast bacilli (AFB) stain and culture were negative. Sputum AFB stain and culture were negative on three repeat examinations. PET-CT showed diffuse lymphadenopathy. HIV testing was negative. Left axillary lymph node biopsy revealed reactive lymphadenopathy. Pleural biopsy could not be obtained.
DISCUSSION: Pleural effusions are commonly seen by the general internist with a wide differential. It is worthwhile for the general internist to be familiar with the features of tuberculous pleural effusion as it is the second most common manifestation of extrapulmonary tuberculosis and may be the first or only manifestation of tuberculosis in some individuals. Effusions are typically unilateral and located on the same side as the parenchymal disease. Pleural fluid is typically exudative with a protein concentration > 3.0 g/dL and LDH often greater than 500 IU/L, containing 1000 to 6000 cells/mm3 with a lymphocytic predominance. Pleural fluid cultures are positive in approximately 20 % of cases, but pleural biopsy may increase the culture yield to 90 %. An adenosine deaminase level greater than 45 U/L in pleural fluid has a 100 % sensitivity and 80–97 % specificity for the diagnosis of tuberculous pleural effusion. Neither PPD nor interferon gamma release assays are sensitive for the diagnosis of tuberculous effusion. Some features of our patient's presentation were initially suggestive of malignancy, however, once this was excluded, though AFB and culture data were negative, tuberculous pleural effusion was the most likely diagnosis and empiric therapy was started with improvement in the patient's symptoms. This case illustrates the utility of pleural fluid adenosine deaminase levels in establishing the diagnosis of tuberculous pleural effusion without positive AFB or culture data.

FACE TO FACE: UTILIZING TECHNOLOGY TO SUPPORT HOSPITALIZED PATIENTS Jane M. Shen; Rachel Kruzan. Johns Hopkins Bayview Medical Center, Baltimore, MD. (Tracking ID #1642981)

LEARNING OBJECTIVE 1: Recognize the importance of social support for hospitalized patients
LEARNING OBJECTIVE 2: Discover technological tools available to connect patients and fsupport system in meaningful way
CASE: A 51 year-old woman with granulomatous uveitis presented with 4 months of intermittent fevers, weight loss, anorexia, tachycardia, and diarrhea. She had been admitted four times prior to the current hospital admission for evaluation of fever of unknown origin. She had undergone extensive rheumatologic, oncological, and infectious work-up, including multiple CT scans, tagged WBC scan, endoscopy, colonoscopy, echocardiogram, bone marrow biopsy, skin biopsy, and PET scan, which were unrevealing. She continued to have persistent fevers and tachycardia. Labs showed hemolytic anemia requiring blood transfusions and elevated inflammatory markers. Per nuclear medicine, a gallium scan was recommended, which revealed focal intense uptake in the anterior mediastinum. She was diagnosed with diffuse large B cell lymphoma post-biopsy. Throughout the hospitalization, she became increasingly demoralized and withdrawn with minimal oral intake. However, her mood and energy improved when her family would visit, especially her daughter. Therefore, she was devastated to learn that her daughter would be unable to visit her bedside for 12 days due to the radioactivity of the gallium injection she received, as her daughter was pregnant. To continue to enable her daughter's support, we set up FaceTime sessions with our iPads, which allowed face-to-face communication between the patient and daughter. She was also able to participate in her daughter's baby shower through FaceTime.
DISCUSSION: Hospitalizations can cause significant stress for patients and their families. They may encounter fears and concerns regarding their

illness, an unfamiliar environment with little patient control, and limitations to communication with family and friends. Support systems play an important role in patient-centered care, yet there are often barriers to patients staying connected while hospitalized. These barriers include geographical distance, work constraints, functional status, and financial situation. In our case, there was a unique barrier with gadolinium precluding visits by her pregnant daughter. FaceTime allowed the patient and daughter to have face-to-face communication and stay connected. With FaceTime, her daughter would ask insightful questions about the patient's appearance or provide frequent encouragement, which left the patient with increased energy and participation in her own care. Brecher et al. in the Journal of Palliative Care found that Skype, a similar online face-to-face communication application, provided a tool for palliative care patients to communicate with family and friends, especially under circumstances in which functional status or geographic limitations precluded in-person communication. According to a literature search, this technology has also been utilized in pediatric ICUs and for intrepretation to improve quality of care. FaceTime and Skype are free applications easily accessible on computers and cell phones. Through this experience, we found that these technologies can be used with our general medicine patients to enhance patients' quality of life in the hospital, provide support through relationships, and improve patient-centered care.

FATAL INTRACRANIAL HEMORRHAGE IN SETTING OF REFRACTORY HYPERCOAGULABLE STATE: A CASE OF ATYPICAL HYPERCOAGULATION Robert L. Fogerty; Christopher Sankey. Yale School of Medicine, New Haven, CT. (Tracking ID #1612880)

LEARNING OBJECTIVE 1: Recognize intracranial hemorrhage as a fatal consequence of therapeutic anticoagulation
LEARNING OBJECTIVE 2: Recognize atypical causes of hypercoagulable states
CASE: A 56 year- old woman, recently diagnosed with heparin induced thrombocytopenia, presented with 2 weeks of worsening lower extremity pain and swelling while on anticoagulation. She denied trauma, reported complete medication adherence, took neither contraceptives nor hormones, and recently emigrated from Jamaica. On readmission, she had right leg edema from hip to toe, platelet count of 45,000, INR of 2.2, and an ultrasound demonstrating multiple thrombi, worsened from prior. Extensive cancer and hypercoagulability workup was normal. Hematology was consulted, bivalirudin was initiated, and the patient improved. The initial diagnosis was ongoing HIT. A midline intravenous catheter was placed, but she developed bleeding at the puncture site and bivalirudin was stopped. Within hours, she developed a new catheter associated clot. The midline was removed and fondaparinux restarted. She continued to improve symptomatically. Inpatient bridge to goal INR was planned. On the expected day of discharge she developed "the worst headache of my life." A computed tomography scan revealed a large left intraparenchymal and subarachnoid hemorrhage and midline shift. She clinically declined, was intubated, and transferred to Neurosurgery, where she subsequently died the next day. Autopsy was suggestive of Bush Tea Syndrome, a dietary related hypercoaguable state similar to Veno-occlusive disease.
DISCUSSION: Hypercoagulable states are commonly seen by General Internists and carry a high risk treatment, therapeutic anticoagulation, resulting in death in this case. Common causes of hypercoaguable states include malignancy, inherited disorders, and drug related etiologies. Foods can also lead to hypercoaguable states and should be considered when initial evaluation is unremarkable. The causative agent of Bush Tea Syndrome, pyrrolizidine alkaloids, are found in some concentration in 3 % of the world's flowering plants, some of which are used as traditional dietary seasonings, typically in Jamaica and South Africa. It is likely that the patient suffered from unidentified chemical ingestion via diet, resulting in a hypercoagulable state similar to Bush Tea Syndrome. Returning to our patient's history, her husband was known to frequently visit our patient, bringing traditional Jamaican foods that he prepared as a means of comfort for his wife. CONCLUSION: The morbidity and mortality associated with therapeutic anticoagulation make it incumbent upon us as medical providers to consider alternative diagnoses in cases of atypical thrombophilia. While Bush Tea Syndrome is a rare disorder, it is possible that a thorough dietary history may have changed this patient's eventual outcome by ameliorating the need for therapeutic anticoagulation.

FATIGUE AND SECOND DEGREE AV BLOCK IN A YOUNG HEALTHY MALE Ryan Nall; Paige Comstock. BIDMC, Boston, MA. (Tracking ID #1641865)

LEARNING OBJECTIVE 1: Recognize cardiac complications of lyme disease
LEARNING OBJECTIVE 2: Describe the treatment of lyme carditis
CASE: A healthy 28 y/o male presented to his PCP with a 1 month history of intermittent fevers, chills, generalized aches, dyspnea on exertion, and fatigue. The patient lives in a wooded area in Massachusetts with recent travel to North Carolina and Maine. He reports past tick exposure, however none recently. He denied rash, lymphadenopthy, chest pain, and GI symptoms. On exam, the patient was normotensive with a pulse of 45. He appeared fatigued and had a regular but bradycardic heart rhythm. He had no jaundice or rash. An EKG was obtained which showed second degree AV Type 1 heart block. The patient was started on IV ceftriaxone 2 g q24 h to emprically cover lyme carditis. Lyme serologies returned positive and western blot test was positive for IgG and IgM. The patient was continued on IV ceftriaxone and oscillated between 1st and 2nd degree hear block during hospitalization. He was also found to have anemia and transaminitis and after discharge anaplasma serology returned positive. He was then started on doxycycline. In follow up his EKG showed sinus rhythm without AV block and PR interval had returned to normal at 186 ms. Ceftriaxone was discontinued and patient completed a course of doxycycline.
DISCUSSION: Lyme disease can affect multiple systems and is caused by Borrelia burgdorferi. In the US the prevalence of carditis among patients with Lyme disease ranges from 4 % to 10 %. The most common cardiac manifestation is atrioventricular conduction block as seen in this patient. Additional reported cardiac complications include: pericarditis, myocarditis, endocarditis, myocardial infarction, pericardial effusion, coronary artery aneurysm, QT prolongation, arrhythmias, and heart failure. Cardiac manifestations usually occur about 1 month after the initial exposure. Patients with AV block can rapidly fluctuate between first, second degree and complete heart block. A PR interval greater than 300 ms places patients at higher risk for developing high degree heart block. A patient can present with conduction abnormalities as their initial presentation of lyme disease. Often patients are asymptomatic, however may have typical cardiac symptoms including chest pain, syncope, palpitaitons, dyspnea, or dizziness. Patients with higher degree heart block or with PR interval greater than 300 ms should be hospitalized for telemetry, IV antibiotics, and evaluation for temporary pacemaker. The antibiotic of choice is IV ceftriaxone. Treatment with IV antibiotics should be continued until high degree heart block has resolved and the PR interval has normalized. The patient then can be transitioned to an oral antibiotic to complete a 21–28 day course. Despite these recommendations no recent trials exist to establish the best antibiotic therapy and whether IV antibiotics are necessary. One trial in 1997 by Dattwyler et al. showed no difference between IV ceftriaxone and PO doxycycline in the treatment of early disseminated Lyme disease. In this case the patient was found to be coinfected with anaplasma, which can explain his anemia and transaminitis. A study by Steere et al. reported Anaplasma coinfection to be present in 2 % of patients infected with borrelia burgdorferi.

FEVER IN THE RETURNING TRAVELER: WHAT MAKES TYPHOID FEVER DIFFERENT Lucas Heller; Harish Jasti. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1637637)

LEARNING OBJECTIVE 1: Recognize the unique signs and symptoms of typhoid fever.

LEARNING OBJECTIVE 2: Convey post-treatment public health risks.
CASE: A 21 year-old, otherwise healthy male, returned after a 1 week trip to Nigeria with fever, chills, diarrhea, vomiting, myalgias, headache, and drenching night sweats. He presented on day 7 of his illness, at the onset of diarrhea. He had not taken any pre-travel vaccinations or chemoprophylaxis. He slept indoors, drank bottled water only, and did not eat any undercooked meat, nor did he recall any mosquito bites. His brother, who had remained in Nigeria at the time of presentation, contracted malaria and had undergone treatment. Vital signs were temperature 38.6 Celsius, heart rate of 78, blood pressure of 110/60, and respiratory rate of 16. On examination, there was no scleral icterus, rash, or hepatosplenomegaly. Mild upper quadrant abdominal tenderness was elicited with palpation. Laboratory testing for the following infectious processes was negative: malaria, dengue fever, Yellow fever, hepatitis A and West Nile virus. Subsequent blood cultures were positive for group C Salmonella paratyphi. He was placed on a 10-day course of ciprofloxacin. He then had full resolution of his symptoms.
DISCUSSION: Typhoid fever is typically caused by S. enterica serotype Typhi (formerly S. typhi). The organism enters the GI tract via contaminated food or water in endemic areas and proliferates in the small bowel, causing diarrhea. Classically, the presentation begins with fevers in the first week, followed by rose spots, abdominal pain and diarrhea. During week 3 of the illness, the patient may exhibit hepatosplenomegaly or even intestinal perforation. Our patient also exhibited Faget's sign: the classic pulse temperature dissociation seen in intracellular infections such as yellow fever and typhoid fever. Lacking in his presentation was the characteristic "rose spot" rash on his trunk. Though pre-travel immunization is recommended for all going to endemic areas, it has not been shown to be effective against paratyphoid species. Treatment is three-fold: (1) Supportive measures for hemodynamic stability following volume depletion; (2) Antimicrobials based on culture results; (3) Avoidance of contact sports for several weeks. In spite of adequate treatment, 6 % of patients may become chronic carriers. Carriage poses no overt risk to any individual but can be an infectious risk to others, especially in the setting of food preparation. This has been described in the classic case of Typhoid Mary, an Irish-American cook in early 20th century New York, who inadvertently infected over 50 people, before being quarantined by public health authorities. Our case highlights the importance of recognizing characteristic signs and symptoms of disease processes to help narrow down the differential diagnosis. For typhoid fever, these include a pulse-temperature dissociation, onset of diarrhea during the second week of illness, and rose spots, in the setting of travel to an endemic area.

FEVERS AND INTERMITTENT JAUNDICE - NOT YOUR TYPICAL GI PROBLEM Sweetheart Ador-Dionisio[1]; Stacey E. Jolly[2]; J. H. Isaacson[2]. [1]Cleveland Clinic, Cleveland, OH; [2]Cleveland Clinic, Cleveland, OH. (Tracking ID #1637101)

LEARNING OBJECTIVE 1: To recognize the clinical manifestations of disseminated histoplasmosis.
CASE: A 64 year old female with rheumatoid arthritis on methotrexate and infliximab was admitted to an outside hospital with a 1 week history of fevers, anorexia, and generalized weakness after not improving with an outpatient antibiotics course. On admission, she was jaundiced, had right upper quadrant abdominal tenderness, clear lungs, and abnormal liver function tests (LFTs). She was started on piperacillin/tazobactam and a CT of the chest, abdomen, and pelvis showed diffuse gallbladder wall thickening; hepatobiliary scan revealed no cystic duct obstruction or cholecystitis. Despite improvement in labs, she continued to have fevers, chills, and RUQ pain. A magnetic resonance cholangiopancreatography (MRCP) showed probable primary sclerosing or ascending cholangitis. She was transferred on day 6 for endoscopic retrograde cholangiopancreatography (ERCP), but she was noted to be hypoxic, requiring 6 L oxygen by nasal cannula so ERCP was aborted. Repeat MRCP showed no intra- or extra-hepatic biliary dilation. CT chest revealed moderate centrilobular emphysema, small bilateral pleural effusions, and lower lobe predominate nodules. On day 8, azithromycin and liposomal amphotericin were added to piperacillin/tazobactam; nevertheless, her condition acutely worsened and she was transferred to ICU. Antibiotic coverage was broadened to meropenem, vancomycin and pentamidine. Despite high oxygen requirements, she did not require intubation. Blood and urine cultures were negative and rest of infectious workup was unrevealing until day 15 when Histoplasma urine antigen came back positive; antibacterials were stopped. On day 19, liposomal amphotericin was switched to itraconazole due to acute kidney injury. After 21 days, oxygen was weaned off, renal function returned to baseline, and patient was discharged home; LFTs normalized after 2 months.
DISCUSSION: Histoplasmosis is the most prevalent endemic mycosis in North America. Symptoms are usually self-limited, but about 1 in 2000 patients with acute infection develops progressive disseminated histoplasmosis (PDH). PDH typically occurs in immunocompromised individuals such as those with HIV/AIDS, primary immunodeficiency, or on immunosuppressive medications such as glucocorticoids, anti-rejection therapies, and tumor necrosis factor-alpha inhibitors. Histoplasmosis primarily affects the lungs but has various extra-pulmonary manifestations including involvement of gastrointestinal (GI) tract, skin, adrenals, central nervous system, and rarely pericarditis and endocarditis. GI involvement occurs in 70–90 % of patients but is often underdiagnosed since symptoms are typically nonspecific. GI symptoms include abdominal pain, dysphagia, gastrointestinal bleed, abnormal LFTs, and cholestatic jaundice. Given the growing number of patients taking immunosuppressant medications, it is necessary to have a heightened level of suspicion for fungal infections. Consider a disseminated fungal infection such as histoplasmosis in an immunocompromised patient with initial presentation of fevers and jaundice, if patient fails to respond to empiric antibiotic therapy and clinical picture, especially respiratory status, acutely changes.

FEVERS, RASH AND JOINT PAIN, STILL? Catherine Trimbur; Mayce Mansour. Montefiore Medical Center, Bronx, NY. (Tracking ID #1637928)

LEARNING OBJECTIVE 1: Recognize the clinical presentation of Adult-Onset Still's Disease (AOSD)
LEARNING OBJECTIVE 2: Understand the diagnostic criteria for AOSD.
CASE: A 32 year-old woman presents with 2 weeks of intermittent fever, nonpruritic rash, and migratory polyarthritis with effusions. She initially presented with a fever of 103 F, myalgias, and erythematous, blanching rash on bilateral thighs, arms, and dorsum of feet and hands. Review of systems was positive for rhinorrhea, sore throat, hyperalgesia and migratory polyarthritis of knees, wrists and ankles. She denied insect bites or sick contacts. Initial exam was nonfocal, notably without fever, lymphadenopathy, rashes or hepatosplenomegaly. During hospitalization, she had quotidian fevers often accompanied with macular rash and migratory large-joint effusions. Laboratory workup was notable for leukocytosis of 11.3, alkaline phosphatase of 153, AST of 49, ALT of 60 (previous lab results had normal LFTs), ESR of 92 and CRP of 12.9, but negative for viral and bacterial illnesses. Imaging was negative for malignancy. Initial ferritin level was 450, but was repeated on hospital day four and found to be 991. A diagnosis of Adult-Onset Still's Disease was made and the patient was started on prednisone with resolution of fever, rash and joint pain. As an outpatient, she was tapered off of steroids due to side effects and has remained symptom free 3 months after diagnosis, with normal ferritin levels.
DISCUSSION: Adult-Onset Still's Disease (AOSD) is an inflammatory condition characterized by intermittent fevers, rash and polyarthritis. First described in 1897 by George Stills as systemic onset juvenile idiopathic arthritis, AOSD was recognized in adults that do not fit the criteria for rheumatoid arthritis but have similar clinical presentations accompanied with fever. Though pathophysiology is unclear, it has been suggested that alterations in cytokine production (particularly Th1 cytokines) play an important role in the development of AOSD, and may be triggered by various infectious agents and stress. While no specific laboratory, imaging or clinical criteria confirm the diagnosis, the Yamaguchi criteria are most widely used, with a sensitivity of 93.5 % when five features (at least two major criteria) are present. Major criteria include fever >102.2 for >1 week, arthralgias/arthritis >2 weeks, non-pruritic macular, salmon-colored rash (usually during fever), leukocytosis >10,000 (>80 % granulocytes). Minor criteria are sore throat, lymphadenopathy, hepatomegaly or splenomegaly, abnormal LFTs, negative ANA and RF. Elevated ESR and CRP are present in almost all cases, and elevated ferritin (>1000) is seen in up to 70 % of

patients. Total ferritin and glycosylated fraction can be useful in ruling out other rheumatological processes. Normally, 50–80 % of ferritin is glycosylated. In AOSD, the fraction decreases due to a saturation of glycosylation mechanisms and a glycosylated ferritin fraction <20 % has specificity of 93 % for AOSD. The clinical course of AOSD generally follows three patterns: monophasic (with complete resolution of symptoms within 1 year), intermittent (with episodic flares), and chronic (with persistently active disease often associated with destructive arthritis). Similar to other inflammatory arthritides, treatment for AOSD includes NSAIDS, glucocorticoids (required in most patients), and antirheumatic agents. DMARDS are often utilized in refractory cases, despite lack of controlled-trials demonstrating efficacy.

FINDING CONN'S, AND LIFE AFTER Irene Rahman. Boston University, Boston, MA. (Tracking ID #1642006)

LEARNING OBJECTIVE 1: Confirm a diagnosis of Conn's syndrome in the case of initial borderline workup with saline suppression test, CT imaging and adrenal vein sampling.
LEARNING OBJECTIVE 2: Recognize that despite treatment for secondary hypertension, patients may still have underlying essential hypertension.
CASE: The patient is a 62 year old man with a history of long-standing hypertension and diabetes noted to have persistent hypokalemia despite supplementation. His anti-hypertensive regimen at presentation included lisinopril 40 mg daily, labetalol 300 mg daily and amlodipine 10 mg daily, with ambulatory systolic blood pressure readings in 140–160 range. The patient reported getting leg cramps often, but otherwise ROS negative. Physical exam did not reveal any stigmata of secondary causes of hypertension. Metabolic panel showed potassium of 3.4 while on 40 mEq of supplement daily. Plasma aldosterone concentration (PAC) and plasma renin activity (PRA) were 19 and 0.17 respectively, with a ratio of 112. Saline suppression test was performed, in which the patient's aldosterone level suppressed to 6 ng/dL after 4 h of saline infusion. CT imaging revealed two 8–9 mm nodules in the left adrenal gland. Adrenal vein sampling showed aldosterone to cortisol ratio of 4.66 when comparing left side to right side. Patient was referred to surgery, and underwent a left adrenalectomy. Post-operatively, patient had systolic blood pressure in 140 range, for which amlodipine was continued.
DISCUSSION: In this patient with persistent hypokalemia and hypertension, work up for primary hyperaldosteronisim was indicated. The initial approach was to determine the plasma aldosterone concentration (PAC) and plasma renin activity (PRA). In a population with a prevalence of the disease of 20 %, the combination of PAC>20 ng/dL and PAC/PRA>30 has sensitivity and specificity of 90 % for detecting aldosterone producing adenoma, but our patient displayed only the latter feature. When the results of the initial hormone levels are ambiguous, inappropriate aldosterone secretion should be confirmed by a saline suppression test, with aldosterone level suppressed to <5 for normal patients and >10 for patients with primary hyperaldosteronism, which put our patient in the gray zone again. CT imaging was performed to visually detect and distinguish between bilateral hyperplasia (~60 % of cases) and unilateral adenomas (~35 % of cases), the most common causes of primary hyperaldosteronism. We finally pursued adrenal vein sampling for two reasons: (1) to prove biochemically that the unilateral nodules on imaging represent functional adenomas causing primary hyperaldosteronism, also known as Conn's syndrome; (2) to justify pursuing unilateral adrenalectomy of the culprit gland. Despite confirming that the patient's left adrenal was the culprit gland, he continued to have elevated blood pressures post-adrenalectomy, although requiring less anti-hypertensive treatment. It has been shown that hypokalemia is curable but residual hypertension persists in 43.8 % of patients, which likely indicates underlying essential hypertension in addition to primary hyperaldosteronism. The pathogenesis of essential hypertension is poorly understood, but many risk factors have been identified. Those present in this patient include older age, family history, and increased sodium intake. Thus, patients with an identified cause of secondary hypertension should be followed post-treatment to monitor for essential hypertension, and treated accordingly per guidelines.

FIRST DO NO HARM: CORTICOSTEROIDS AND RECURRENT PERICARDITIS Yogita Segon; Ankur Segon. Medical College of Wisconsin, Milwaukee, WI. (Tracking ID #1619484)

LEARNING OBJECTIVE 1: Appreciate the relationship between administration of corticosteroids and development of recurrent pericarditis
LEARNING OBJECTIVE 2: Reinforce the grave consequences of inappropriate administration of oral corticosteroids
CASE: 43 y old male without any past medical history presented to urgent care clinic with cough, subjective fever and wheezing. He was diagnosed with acute bronchitis and given tapering dose of prednisone 60 mg for a week and doxycycline. He presented to another clinic about 2 weeks later with c/o substernal chest pain, fever of 100.2 F, tachypnea, tachycardia and pulsus paradoxus of 40 mmHg. His D-dimer was markedly elevated. Computed tomography scan (pulmonary embolism protocol) was ordered which suggested significant left pleural effusion, right lower atelectasis versus infiltrate and large circumferential pericardial effusion. A diagnosis of symptomatic pleura-pericarditis with effusions was made and he was started on NSAIDS, colchicine and moxifloxacin. Transthorasic echocardiogram confirmed large pericardial effusion. Thoracentesis of the left pleural effusion was performed for therapeutic and diagnostic purposes. Pleural fluid studies were consistent with a transudate. Repeat ECHO showed improvement in pericardial effusion and patient was discharged home on ibuprofen, colchicine and azithromycin. He presented to emergency room 1 week later with worsening shortness of breath. Chest x-ray showed recurrent pleural effusion and echocardiogram confirmed re-accumulation of pericardial effusion. Repeat thoracentesis was done and pigtail drain was placed in his pleural space with removal of over 1 l of fluid. He felt much better, and his respiratory status improved. At this point, corticosteroids were introduced to treat his recurrent pericardial effusion. We continued him on colchicine and ibuprofen. Autoimmune testing was equivocal (positive antinuclear antibody and anti-RNP antibody, all other antibodies negative). Hepatitis C serology was positive with normal LFTs. He was discharged on colchicine for total of 6 months. Other discharge medications included tapering doses of ibuprofen for 3 months and prednisone for 1 month.
DISCUSSION: Recurrent pericarditis is a troublesome complication of the acute pericarditis and occurs in from 15 % to 50 % of cases. Serious complications such as constrictive pericarditis and tamponade are rare sequelae of recurrent pericarditis. However, morbidity related to symptoms of pericarditis is significant. While corticosteroids have been traditionally been used to treat acute pericarditis, it is now believed that treatment with corticosteroids during the index attack is an independent risk factor for development of recurrent disease. Routine administration of corticosteroids during a first episode of acute viral pericarditis should be avoided. Other causes of recurrence include underlying autoimmune disorders and recurrent infection. Since viral pericarditis can present in conjunction with a viral bronchitis, diagnosis might not be apparent unless an echocardiogram is performed. Our case highlights the importance of not using corticosteroids for treatment of acute bronchitis which is a predominantly viral illness, especially since the patient might have associated pericarditis that might become recurrent due to corticosteroid therapy. However, corticosteroid therapy can be useful in patients with autoimmune hepatitis and uremic pericarditis. It can also be used for treatment of recurrent and refractory pericarditis.

FLESH-EATING DISEASE OF THE BREAST Marc Cerruti; Ramesh K. Gadam; Gowri Radhakrishnan; Susan Knowles. University of Nevada School of Medicine, Las Vegas, NV. (Tracking ID #1637860)

LEARNING OBJECTIVE 1: Recognize the rare disease necrotizing fasciitis of the breast.
LEARNING OBJECTIVE 2: Treat necrotizing fasciitis of the breast emergently with broad-spectrum antibiotics and early surgical debridement
CASE: Necrotizing fasciitis is a soft tissue infection that is challenging to diagnose and treat due to its rapidly progressing systemic consequences. In this case, we report the rare finding of necrotizing fasciitis involving the breast, caused by Peptostreptococcus bacteria. A 46 year old female patient with a past medical history of obesity, hypertension, and type II diabetes

mellitus presented to the emergency room with right breast pain. She was previously diagnosed with a breast abscess, for which she was treated unsuccessfully with oral antibiotics. The patient had intermittent expression of foul-smelling, purulent, and occasionally bloody discharge from her right nipple. On admission, she was afebrile, normotensive, and hemodynamically stable. On physical exam, the right breast was erythematous, swollen, warm, and exhibited peau d'orange texture. Her breast was diffusely tender to palpation, but no axillary lymph node enlargement was appreciated. The patient's laboratory data showed the following: white blood cell count 28.3×103/mm3 (78 % neutrophils), sodium 129 mmol, chloride 90 mmol, bicarbonate 19 mmol, BUN 49 mg/dL, creatinine 4.2 mg/dL, and anion gap 20. Breast ultrasound showed a soft tissue lesion with no well-defined fluid collection or mass. Computed tomography showed right breast tissue edema, fat stranding with skin thickening, and large collections of subcutaneous gas. Given the patient's clinical picture and evidence of acute kidney injury, immediate surgical debridement was performed. Pathologic examination showed inflamed and foul-smelling necrotic breast tissue with numerous white blood cells. Anaerobic wound cultures confirmed a Peptostreptococcus species bacterial infection, which was treated with tigecycline initially, and later clindamycin. After further examination, two additional surgical debridements were performed. Postoperatively, we provided local wound care every day. Our patient's renal function improved and signs of active infection resolved. She was discharged on hospital day 21 with a wound vac in place, and she was advised to return for wound closure.

DISCUSSION: This case illustrates the importance of ruling out necrotizing fasciitis when faced with a subcutaneous infection. Although seemingly stable, patients affected by necrotizing fasciitis may have potentially lethal complications, such as metabolic derangement. Necrotizing fasciitis of breast is a very rare disease with only 8 published case reports worldwide. Other than our case report, only one prior case of necrotizing fasciitis of breast has been reported to present as an abscess. While the management of this disease has been debated, here we present the successful use of both early debridement and early broad-spectrum antibiotics in treating necrotizing fasciitis of the breast.

FORGOTTEN DEMENTIA: A CASE OF WERNICKE'S ENCEPHALOPATHY Joelle Rhayem; Anthony Donato; Jessica Capasso. Reading Health System, Reading, PA. (Tracking ID #1623874)

LEARNING OBJECTIVE 1: Recognize clinical features of Wernicke's encephalopathy

LEARNING OBJECTIVE 2: Recognize Wernickes encephaloapathy as a likely etiology for altered mental status and the treatment involved.

CASE: 51-year old female with a history of long-standing alcohol abuse was brought to emergency care after being found down at home. On presentation she was noted to have a delayed response to questions, and amnesia to recent events. Physical exam by the admitting team demonstrated horizontal nystagmus, encephalopathy, and difficulty with lower extremity coordination. Polysubstance overdose was initially suspected, but urine toxic screens, osmolar gap and blood alcohol levels were negative., Thiamine therapy was initiated. Non-contrast CT and lumbar puncture results were unrevealing. An MRI was ordered which demonstrated symmetrical T2 hyperintensity in the bilateral thalami and subtle T2 hyperintensity in the gray matter around the aqueduct, third ventricle and mammillary bodies supporting the diagnosis of Wernicke's encephalopathy. She made a slow recovery over the course of 2 months, recovering all language and executive function but persisting with a profound short-term memory deficit.

DISCUSSION: Although the classic triad of Wernicke's encephalopathy, (ophthalmoplegia, ataxia, and altered mental status) is well known to most physicians, the prevalence at autopsy is much greater than the estimated clinical incidence, suggesting that the diagnosis is often overlooked. Wernicke's encephalopathy is a clinical diagnosis that requires a high degree of clinical suspicion. Presentation is often subtle, with only 10 % of patients demonstrating all components of the triad. Clinicians should have a low threshold for use of thiamine in all patients with altered mental status, given the minimal risk to this intervention and the potential harm of misdiagnosis.

FROZEN VALVE? … LYTIC THERAPY!A CASE OF PROSTHETIC VALVE THROMBOSIS Mamatha Siricilla. UAB Internal medicine, Montgomery, AL. (Tracking ID #1642544)

LEARNING OBJECTIVE 1: To recognize Complications of Prosthetic value

LEARNING OBJECTIVE 2: Learn to use appropriate diagnostic tools and treatment options to improve outcomes

CASE: 73 year old Caucasian female with PMH of Rheumatic fever, Mitral and aortic valve replacement (with St. Jude Prostheses 21 years ago) presented with sudden onset shortness of breath and Paroxysmal nocturnal dyspnea of 2 week duration. Patient denied any chest pain. Patient was hemodynamically stable. Physical examination revealed sharp S1 and S2 and faint 1–2 systolic ejection murmur at upper right and left sternal borders. Transthoracic echocardiogram (TTE) revealed mitral valve area 0.5 cm2. Transesophageal echocardiogram (TEE) showed 1 leaflet of mitral valve "frozen" in the closed position with increased transvalvular gradient. Occlusion was thought to be due to acute thrombus of the mitral valve. International Normalized Ratio (INR) was subtherapeutic at 1.20. Decision was made to proceed with thrombolytic therapy. Tenecteplase (tissue plasminogen activator) was given. Patient tolerated well with no complications. Following day TEE was repeated which showed movement of both leaflets of the prosthetic valve and decrease in transvalvular gradient. Her Coumadin dose was increased and lovenox was given for few more days. Patient had improvement in her symptoms.

DISCUSSION: Prosthetic valve thrombosis (PVT) has an incidence between 0.1 % and 6 % per patient-year of left sided valves. PVT is an infrequent but serious complication with high mortality and morbidity risk. PVT occurrence depends on the valve type and position and presence of atrial fibrillation and Left ventricular dysfunction. The most common cause is an inadequate anticoagulation therapy. Clinical Presentation is variable based on the type of PVT Obstructive (Progressive heart failure, cardiogenic shock and systemic embolism) or Non-obstructive (Stroke, Peripheral embolism, 50 % cases can be asymptomatic). Patients with thrombus formation have shorter duration of symptoms and more often inadequate anticoagulation while pannus formation is unaffected by anticoagulation. Physical examination is frequently insufficient it can reveal decreased prosthetic valve sounds, a new murmur or change in previously detected murmur. Diagnosis of PVT is established by TTE, TEE or Fluoroscopy. Doppler echocardiography is the most accurate method for detecting and quantifying the degree of transvalvular gradient increase and is useful in the follow up of patients during thrombolysis. TEE is helpful to assess thrombus size and location and aid in treatment decisions as well as differentiating Thrombus from Pannus formation and Vegetation. Management depends on the thrombus size and location, risk of surgery versus thrombolysis and patient functional status. Traditional therapy of left sided PVT is emergent surgery (Valve replacement/thrombectomy) but more recently thrombolysis has been recommended as first line treatment. Surgical treatment carries high risk of mortality and New York Heart Association (NYHA) functional class at presentation is the strongest predictor of mortality. Thrombolytic therapy has lower mortality rate but carries risk of systemic embolism, bleeding and recurrence of thrombosis. PVT can be an emergency condition with hemodynamic deterioration and high mortality. TEE plays an important role in diagnosis and guiding the optimal treatment strategy. Thrombolysis is recommended as a first line treatment unless contraindicated.

GO ASK ALICE Farah Kaiksow; Michelle M. Guidry. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640314)

LEARNING OBJECTIVE 1: Recognize methadone and other opioids as ototoxic drugs.

LEARNING OBJECTIVE 2: Appreciate the importance of obtaining an accurate medication history. Appreciate the value of "doing nothing" when faced with rare clinical findings.

CASE: A 54 year-old man presented with acute-onset bilateral hearing loss and altered mental status. He was last seen symptom-free 36 h prior to

presentation. He was able to report a history of hypertension and gout, for which he had a prescription bottle of allopurinol. He was alert and oriented to person, place, situation, and year. He was completely deaf on initial presentation; Weber and Rinne tests were not performed as he had limited ability to follow directions. He responded to simple written questions, and simple cranial nerve and neurological exams were completed through mimicry. Other than the hearing loss, his physical exam was otherwise normal. There was no evidence of acute intracranial hemorrhage or ischemia on a non-contrast CT of the head. His EKG was normal, as was his serum bicarbonate level. He had a white blood cell count of 28,000/μL, a creatinine kinase of 3, 379 units/L, a potassium of 5.5 mmol/L, an AST and ALT of 111 and 75, respectively, a blood urea nitrogen of 43 mg/dL, and creatinine of 3.4 mg/dL. His serum was negative for salicylates, acetaminophen, and alcohol, and an HIV test was negative. His serum was positive for tricyclic antidepressants and opiates. After these results were available, nursing staff examined the contents of the patient's allopurinol bottle and discovered multiple pills, one identified as amitriptyline and another as methadone. With fluid resuscitation as the only treatment, the patient's hearing, mental status, and lab values returned to normal within 36 h.

DISCUSSION: The list of common ototoxic medications that an internist should be aware of is short. Aminoglycoside antibiotics, salicylates, and diuretics are the most commonly prescribed medications causing hearing impairment. When deafness occurs suddenly, is bilateral, or is associated with changes in mental status, other less common medications should be considered. Methadone and other opioids are drugs that, when used in excess, can cause hearing impairment. Additionally, in rare cases when the symptoms are unusual and cannot be easily explained pathophysiologically, it is essential to obtain a thorough medical history. It may not be enough to ask the patient what he is taking or even to look at the prescription bottles themselves; in cases where overdose is possible, it may be beneficial to actually identify the pills themselves, as was done in this case by the emergency room nursing staff. Finally, this case reinforces the possible benefits of "watchful waiting" or "the art of doing nothing," particularly when faced with a high degree of uncertainty. Of course, we should not wait to treat an obvious and easily fixed abnormality, such as this patient's acute kidney injury; but in cases where no obvious solution or diagnosis presents itself and the patient is clinically stable, we should not hesitate to act.

GABAPENTIN RELATED NEUROTOXICITY IN HEMODIALYSIS PATIENT Shyam Patel; Rakesh Malhotra. UMDNJ-New Jersey Medical School, Newark, NJ. (Tracking ID #1643210)

LEARNING OBJECTIVE 1: Gabapentin should be renally-dosed in chronic kidney disease and/or end stage renal disease patients.

LEARNING OBJECTIVE 2: Plasma gabapentin levels should be monitored in hemodialysis patients.

CASE: We report a case of a 61-year-old hemodialysis-dependent female patient who was admitted for a seizure attack during one of her regular hemodialysis sessions. She had a history of hypertension, congestive heart failure, diabetes mellitus, end-stage renal disease, and breast cancer status-post mastectomy. Patient was reported to have jerking movement of both arms and legs during and after the hemodialysis session. On Examination, she was somnolent and unable to follow simple commands. Blood Pressure was 140/83 and heart rate was 62 beats per minute. Physical examination findings were otherwise unremarkable. Laboratory work was significant for BUN of 77 mg/dL. Chest X-ray showed signs of fluid overload. The differential diagnosis included dialysis-disequilibrium syndrome, seizure, and sepsis. Patient was admitted to Medical Intensive Care Unit for work-up of her seizure and was given IV Ativan. There was no significant improvement in mental status. Neurology was consulted and she was started on dilantin for seizure control. Review of medications revealed that patient was recently started on high doses of gabapentin. Gabapentine toxicity was considered and the medication was discontinued. Video EEG showed periodic lateralized epileptiform discharges (PLEDs), associated with gabapentin toxicity. She had improvement in mental status over next 72 h with no further seizure activity. The patient's hospital course was complicated with diabetic ketoacidosis. She was treated with an insulin drip and discharged in stable condition.

DISCUSSION: Gabapentin increases the risk of seizure and neurotoxicity in end stage renal disease patients. Common side effects of gabapentin include somnolence, tremors, ataxia, infections, acute renal failure, and, in rare cases, diabetic ketoacidosis. Gabapentin should be renally dosed based on creatinine clearance to prevent accumulation and toxicity that could potentially lead to life threatening side effects. Plasma gabapentin levels may also be frequently monitored in elderly hemodialysis or renally-impaired patients to prevent neurotoxicity.

GASTRIC MALIGNANCY IN A PATIENT WITH COMMON VARIABLE IMMUNODEFICIENCY Kah Poh Loh[1]; John P. Hunt[2]; Vaibhav Mehendiratta[3]. [1]Baystate Medical Center/Tufts University, Springfield, MA; [2]Baystate Medical Center/Tufts University, Springfield, MA; [3]Baystate Medical Center/Tufts University, Springfield, MA. (Tracking ID #1641759)

LEARNING OBJECTIVE 1: Recognize that patients with common variable immunodeficiency have higher risk of developing gastrointestinal malignancies.

LEARNING OBJECTIVE 2: Assess patients presenting with chronic gastrointestinal symptoms using the current available modalities

CASE: The patient is a 58 year old woman who presented with chronic, intermittent diarrhea and abdominal bloating. She denied any weight loss, hematochezia, hematemesis, abdominal pain, vomiting, fever or chills. The patient's past medical history was significant for common variable immune deficiency (CVID), treated with intravenous immunoglobulin (IVIg) every 3 weeks. Laboratory studies including CRP, ESR, and free T4 were normal. Colonoscopy and upper GI-small bowel follow-through were normal. A decision was made to proceed with esophagogastroduodenoscopy (EGD) to assess for celiac disease. Findings included a broad-based, multilobulated mass measuring 4 cm in the mid-gastric body. Biopsies of the mass and prepyloric antrum both exhibited high grade dysplasia. Endoscopic ultrasound showed that the mass represented a T1 N0 tumor. The patient underwent mucosal resection of the mass and mapping biopsies were performed. The endoscopic resection confirmed the diagnosis of adenocarcinoma, which invaded the submucosa (pT1). There was focal high grade dysplasia and intramucosal carcinoma at the pylorus, an endoscopically unremarkable area. Other biopsies showed chronic and focally active gastritis. Immunohistochemical studies for H. pylori were negative. A CT of the abdomen, pelvis and chest revealed thickening of the distal gastric wall, but showed no evidence of metastatic disease. The patient ultimately underwent total gastrectomy with Roux-en-Y esophagojejunostomy without complications.

DISCUSSION: This case is interesting in that it underscores the up to 47-fold increase in risk for gastric carcinoma in patients with CVID as reported in European populations. Gastric lesions are usually detected incidentally during endoscopy for non-specific dyspeptic symptoms and have been reported in patients as young as 11 years of age. To date, there are no definitive society guidelines for screening for gastric malignancy in patients with CVID. Given the high incidence of dysplasia and increased risk of gastric malignancy in these patients, physicians should have a low threshold for diagnostic endoscopy, especially if gastrointestinal symptoms persist despite therapy.

GASTRIC PNEUMATOSIS: AN UNCOMMON CAUSE OF EPIGASTRIC PAIN WITH A WIDE PROGNOSTIC AND MANAGEMENT SPECTRUM Leyda Callejas; Manuel O. Gonzalez. New York Methodist Hospital, Brooklyn, NY. (Tracking ID #1641795)

LEARNING OBJECTIVE 1: Recognize the clinical spectrum of gastric pneumatosis and tailor management accordingly

CASE: A 60 year old female presented with intermittent abdominal pain for approximately 8 months which worsened in the past 2–3 days. The pain was burning and intermittent, but not associated with food intake, nausea or vomiting. She denied trauma, alcohol ingestion or nonsteroidal anti-inflammatory medication use. Her only other complaint was loose stools.

She had been admitted 7 months ago with similar complaints, and peptic ulcer disease was diagnosed on endoscopy. Since then she has taken a proton pump inhibitor continuously. Upon examination she was afebrile and had tenderness in the epigastrium and upper quadrants. A CT scan showed a distended stomach with irregular air collections within the gastric wall; there was no evidence of bowel obstruction. Intravenous hydration and bowel rest were begun. Blood tests did not reveal leukocytosis or metabolic abnormality. As she was clinically and hemodynamically stable, conservative management was instituted. An endoscopy demonstrated moderately severe erosive gastritis within the antrum and body of the stomach. The pathology showed reactive gastropathy with no evidence of H. pylori infection. Her stool demonstrated Clostridium difficile; she was started on antibiotics and later discharged. At a follow-up visit 2 weeks later, she reported improvement of her pain.

DISCUSSION: Gastrointestinal pneumatosis is characterized by the presence of gas within the bowel wall. It is uncommon in the upper gastrointestinal tract especially in the stomach which represents about 5 % of cases. Gastric pneumatosis is a radiographic finding with a wide range of causes and outcomes. Our patient illustrates gastric pneumatosis that had a benign clinical course. There was no laboratory or imaging data that suggested bowel obstruction or ischemia. Endoscopy showed gastritis as the most likely cause of the radiographic findings. It is important to differentiate between its clinical presentations, as gastric pneumatosis can be potentially life threatening. Its mortality has been reported from less than 30 % up to 60–80 %. The condition has also been differentiated as either primary or secondary. The former is considered idiopathic, an incidental radiologic finding in an asymptomatic patient. The latter is attributed to mechanical disruption in the mucosa of the stomach secondary to trauma, instrumentation, peptic ulcer disease, distal obstruction or ischemia. In the most severe cases it can represent infection by gas-forming bacteria. The initial clinical presentation and the patient's medical history can provide us clues to its etiology. The workup must determine if there is leukocytosis, metabolic acidosis, or an elevated lactate, as these usually portend a worse outcome. Imaging, such as x-rays or CT scans, can determine the presence of pneumoperitoneum or portal gas. Other procedures such as endoscopy can be helpful in evaluating possible causes. The management can range from observation, as in our patient, to an urgent surgical intervention. Most patients are managed conservatively unless there is evidence of sepsis, perforation or peritonitis.

GIGANTIC LIPOSARCOMA MISDIAGNOSED AS IRRITABLE BOWEL SYNDROME Katherine H. Saunders; Erica Phillips. NewYork-Presbyterian Hospital, New York, NY. (Tracking ID #1626462)

LEARNING OBJECTIVE 1: To apply a cost-effective approach to differentiate between the symptoms of irritable bowel syndrome (IBS) and other conditions with similar clinical presentations

LEARNING OBJECTIVE 2: To learn about the diagnosis and treatment of liposarcomas

CASE: A 67-year-old female with hypertension, hyperlipidemia, impaired glucose tolerance, depression and a presumptive diagnosis of IBS presented to a primary care clinic for 2 months of bloating and increased abdominal girth in the setting of 2 years of intermittent constipation and gas. She had been diagnosed with IBS 1 year prior based on many months of nonspecific abdominal symptoms despite a normal transabdominal/transvaginal ultrasound, colonoscopy and routine laboratory studies. Her abdominal exam was within normal limits besides stable axillary and groin lymphadenopathy, which was first noticed 1 year prior. An outpatient abdominal ultrasound revealed "echo poor body tail junction" of the pancreas without evidence of focal mass. The radiologist noted that this finding was of uncertain clinical significance and recommended a CT or MR for further evaluation. A CT abdomen/pelvis illustrated no abnormality within the pancreas, but a 22.7 cm retroperitoneal fat density lesion containing central more solid components involving the entire right hemiabdomen and pelvis, suspicious for well-differentiated liposarcoma. The patient subsequently underwent an exploratory laparotomy during which a 2480 g, 37.2×24.3×3.1 cm retroperitoneal mass was resected. On cut section, the mass was uniformly fatty and homogenous, with small focal fibrous areas. The procedure and post-operative course were uncomplicated. The patient did not require adjuvant chemotherapy or radiation given the favorable characteristics of the tumor. Instead, she is undergoing active surveillance to evaluate for local recurrence. Her most recent CT scan revealed a 5 cm poorly defined fatty mass with scant soft tissue elements in the subcutaneous tissues of the right flank. As this mass had been visualized on previous scans, it was thought to be a stable lipoma. The patient will continue to undergo routine CT scans every three to 6 months depending on evolution of radiological findings and her symptoms.

DISCUSSION: This case illustrates the need for a thorough evaluation before making the diagnosis of IBS. Although patients may fulfill the Rome III criteria, it is important to exclude other causes of their symptoms. Abdominal ultrasound is a reasonable first step, but CT should be considered if there are more concerning findings such as lymphadenopathy, increased abdominal girth or weight loss. Liposarcomas are rare retroperitoneal soft tissue sarcomas that usually produce few symptoms until they are large enough to compress or invade surrounding structures. They are most commonly diagnosed incidentally. The preferred diagnostic test is CT scan of the abdomen and pelvis. Well differentiated (low grade) liposarcomas are the most common type of liposarcoma. These tumors have no potential to metastasize, but local recurrence is possible. The incidence of recurrence is unknown. Complete resection is the only potentially curative treatment; however, positive resection margins are not unexpected because of the anatomic complexity of the retroperitoneum.

GRANULOMATOSIS WITH POLYANGITIS: EARLY RECOGNITION AND TREATMENT KEY TO PATIENT OUTCOMES Laura Nichols; Peter-Trung Phan. Medical College of Wisconsin, Milwaukee, WI. (Tracking ID #1643155)

LEARNING OBJECTIVE 1: Recognize the signs and symptoms of granulomatosis with polyangitis (GPA) early in the course of treatment to affect outcome

LEARNING OBJECTIVE 2: Treat GPA with cyclophosphamide versus rituximab

CASE: A 59 year-old female with a history of arthritis presented to the ED with a chief complaint of non-bloody emesis, dry cough, fatigue, and 15 lb weight loss over 3 weeks. She had been seen in urgent care twice for these symptoms and was treated for a presumed pneumonia with amoxicillin and doxycycline, which did not improve her symptoms. On review of systems the patient also noted dark urine as well as sinus congestion with occasional epistaxis. Over the 2 years prior to admission, the patient had experienced pain in her hands, which she attributed to arthritis. Physical exam revealed trace edema to the mid-lower leg and was otherwise unremarkable. On admission the patient was noted to have an elevated creatinine of 3.23 mg/dL. Urinalysis was positive for 3+ blood and 2+ protein. Leukocytosis was present with a WBC count of 15,600 cells/dL and a predominance of neutrophils. Chest radiography revealed a non-specific, mild, diffuse interstitial thickening. Renal ultrasound was unremarkable. Esophagogastroduodenoscopy was performed given the patient's recurrent emesis, which was also unremarkable. Urine microscopy revealed muddy brown casts and morphologically normal RBCs. As the patient's renal function failed to improve, renal biopsy was performed on hospital day 3 and demonstrated diffuse necrotizing and focal crescentic glomerulonephritis without detection of immunocomplex-type electron dense deposits, consistent with pauci-immue disease. Subsequent serology testing was positive for C-ANCA titer of 1:640 and proteinase 3 antibody. Anti-GBM testing was negative as were the remainder of serologies. The patient was diagnosed with granulomatosis with polyangitis and started on cyclophosphamide pulse infusion therapy. Currently she remains in remission on mycophenolate therapy.

DISCUSSION: Granulmatosis with polyangitis (GPA) is a vasculitic illness characterized clinically by a broad range of systemic symptoms and is associated with a particularly high morbidity and mortality. Prior to the introduction of cyclophosphamide, untreated patients had a mortality of

90 % at 2 years. In spite of the vast improvement with cyclophosphamide therapy, GPA is an illness that continues to cause significant morbidity and mortality both from disease and treatment, underscoring the importance of early diagnosis and the continued development of new therapies. The variety of non-specific presenting signs and symptoms in GPA can make it difficult to diagnose. Only after several urgent care visits was the patient in this case prompted to present to the emergency department, which led to her admission and subsequent diagnosis. Furthermore, as treatment with cyclophosphamide carries a high morbidity, it will be necessary to continue to search for new effective therapies with fewer side effects. Rituximab has been shown recently to be non-inferior to cyclophosphamide for inducing remission and to be superior therapy for relapse. The patient in this case was treated with traditional cyclophosphamide therapy; however, her case lends itself to a discussion of use of rituximab if relapse should occur.

GRANULOMATOUS HEPATITIS IN A PATIENT WITH CYSTIC FIBROSIS Felix H. Lui[1]; Edward W. Holt[2]; Shelley M. Gordon[1]. [1]California Pacific Medical Center, San Francisco, CA; [2]California Pacific Medical Center, San Francisco, CA. (Tracking ID #1626011)

LEARNING OBJECTIVE 1: Review the differential diagnosis and work up of granulomatous hepatitis (GH)
LEARNING OBJECTIVE 2: Evaluate the appropriate diagnostic and treatment algorithms for GH in cystic fibrosis
CASE: A 31 year-old Caucasian male with cystic fibrosis (CF) was admitted for sepsis secondary to dental and deltoid abscesses. Blood cultures grew vancomycin-resistant enterococcus, and he was treated with debridement, tooth extraction and antibiotics. On hospital day 24 he again became febrile, and blood cultures were positive for Candida glabrata, for which he was treated with caspofungin. Shortly thereafter, his alkaline phosphatase began to rise in association with elevated GGT and normal AST and ALT. Right upper quadrant ultrasound revealed only mild intrahepatic biliary ductal dilatation without evidence of cholecystitis. During this time, alkaline phosphatase reached a maximal level of 1,940 U/L, associated with daily fever spikes. Laboratory tests included a normal SPEP and UPEP, negative ANA and anti-mitochondrial antibody. His 1,25-hydroxy vitamin D was elevated, and his ACE level was elevated at 190 U/L. His HIV antibody, serologies for viral hepatitis, PPD, serum cryptococcal and histoplasma antibodies were negative. Fungitell (beta 1,3 D-glucan) was negative. MRCP showed only hepatosplenomegaly and cholethiasis. A transjugular liver biopsy revealed numerous portal-based and lobular granulomas, negative acid-fast and fungal stains and no evidence of malignancy. With no response to antifungal therapy and a negative evaluation for granulomatous diseases, a diagnosis of "idiopathic" granulomatous hepatitis was made. He completed a course of prednisone in the hospital and was discharged on a prednisone taper. On discharge, his alkaline phosphatase was 981. Two weeks later at outpatient follow up it was 481 U/L.
DISCUSSION: Granulomatous hepatitis is uncommon in patients with cystic fibrosis (CF), which made this a diagnostic challenge. In the United States, 75 % of granulomatous hepatitis is a result of sarcoidosis, mycobacterial infection, primary biliary cirrhosis, and drug-induced liver injury. Patients with sarcoidosis usually have signs and symptoms of chronic pulmonary disease, although our patient never had evidence of hilar adenopathy. Treatment of hepatic sarcoidosis is generally not recommended, though a short course of corticosteroids can be considered. Many infectious diseases are often the etiology of granulomatous hepatitis. For fungal infections, histoplasmosis and coccidioidomycosis are among the more common causes in the US. Candida glabrata hepatitis is a rare cause of granulomatous hepatitis. After an exhaustive work up, idiopathic granulomatous hepatitis is a diagnosis of exclusion and may be treated with an empiric course of corticosteroids. However, in CF patients with pancreatic insufficiency and diabetes, there is a risk of hyperglycemia secondary to glucocorticoid use. Understanding the differential diagnosis of GH in a patient with CF will allow for better diagnostic and treatment decisions. We cannot say for certain that our patient's granulomatous hepatitis was related to CF. It defied extensive diagnostic evaluation, and did not respond to a variety of anti-bacterials and anti-fungals. As the CF population lives longer, we remain alert to the possibility that we may identify additional cases similar to this one.

GRAVES DISEASE AS A DELAYED MANIFESTATION OF IMMUNE RECONSTITUTION INFLAMMATORY SYNDROME IN A HIV PATIENT Kalpana Nagarkar; Salman Azim; Anasse Souidi; Akshay Manohar; Daniel Goldsmith. Capital Health Regional Medical Center, Trenton, NJ. (Tracking ID #1643120)

LEARNING OBJECTIVE 1: The association of auto antibodies in HIV-infected patients to clinical autoimmune disease is yet to be established. With the upsurge of HAART, the incidence of autoimmune diseases liek Graves disease in HIV-infected patients is increasing and physicians need to be aware of this fact.
LEARNING OBJECTIVE 2: This phenomenon should be suspected in individuals who present with clinical deterioration and a presentation suggestive of hyperthyroidism despite good virological and immunological response to HAART
CASE: Combination retroviral therapy (cART) reduces morbidity and mortality in persons with human immunodeficiency virus-1 (HIV-1) infection. However, after treatment is commenced, some patients experience clinical deterioration caused by restoration of their capacity to mount an inflammatory immune response against both infectious and noninfectious antigens. This has been variously known as immune restoration disease (IRD), immune reconstitution syndrome/ immune recovery syndrome (IRS), or immune restoration inflammatory syndrome (IRIS). The pathogenic mechanisms are poorly understood, although awareness of these diseases is important from a clinical perspective. We report here a case of hyperthyroidism caused by Graves' disease (GD) that developed years after a patient commenced cART. A 57-year-old African American male patient was admitted to the hospital for shortness of breath, progressive dyspnea, and palpitations. He did not complain of any chest pain. Past medical history was pertinent for HIV infection and was taking antiviral medications, splenectomy secondary to trauma, COPD, and seizure disorder. Physical examination revealed a cachexic patient with an irregularly irregular pulse. Cardiac examination did not reveal any murmur, gallop or rub. Lungs were clear. X-ray chest was normal. A thyroid function test panel was obtained which revealed hyperthyroidism. Laboratory findings revealed a fully suppressed TSH. Antithyroid peroxidase antibodies and thyroglobulin antibodes were positive. The patient apparently had a progressively worsening hospitalization with suboptimally controlled ventricular rate. He became hemodynamically unstable, was intubated. He was found to be in thyroid storm. He was treated with beta blockers, diltiazem and antithyroid medications with PTU and started on hydrocortisone. The patient subsequently showed improvement and was extubated and later showed controlled ventricular rate.
DISCUSSION: Graves' disease has in recent times been described in the literature as a documented IRIS among HIV-infected patients. Graves's disease usually occurs after a rise in the CD4 T-cell count; however, its unique nature is typified by its late presentation, months after starting HAART. Our patient was diagnosed with HIV. He did not have any thyroid problems before starting the HAART therapy but did develop them after the treatment was started.

GRAVES' STORMS INTO UNCHARTERED TERRITORIES! Saraschandra Vallabhajosyula; Sri Harsha Tella; Ojas Bansal; Theresa Townley. Creighton University Medical Center, Omaha, NE. (Tracking ID #1636755)

LEARNING OBJECTIVE 1: Recognizing uncommon presentations of hyperthyroidism, that will aid in more focussed clinical evaluation and testing
LEARNING OBJECTIVE 2: Understanding the patho-physiology and management of pancytopenia secondary to hyperthyroidism
CASE: A 44 yo African-American male with no significant medical history presented with worsening tremors, palpitations, confusion and

diffuse abdominal pain of 1 day duration. Review of systems was significant for bulging of eyes, nyctalopia and unintentional weight loss of 30 lbs in 6 months. His examination was significant for tachycardia, altered mental status, diffuse thyroid enlargement and 1+ pre-tibial edema. No ocular signs of hyperthyroidism were found objectively. Admission laboratory parameters showed pancytopenia (WBC counts - 0.67 K/μL; hemoglobin - 10.8 mg/dL; platelet count - 110 K/μl) associated with elevated liver enzymes (Aspartate Transaminase - 89 IU/L, Alanine Transaminase - 77 IU/L). Thyroid function tests showed severe hyperthyroidism with TSH <0.02 mIU/L, free T3 12.7 ng/dL and free T4: >6 ng/dL. Extensive work up was done for pancytopenia, elevated liver enzymes and hyperthyroidism. Alternative diagnoses of primary hematologic illnesses, autoimmune diseases, occult malignancies and infectious causes of pancytopenia and elevated liver enzymes were ruled out. Wartofsky score of 65 was highly suggestive of thyroid storm. Work up of hyperthyroidism showed elevated Thyroglobulin and positive TSH-receptor antibodies. Thyroid ultrasound showed enlarged, hypo echoic and diffusely heterogeneous thyroid gland with marked increased vascularity, measuring 7.3×4.3×2.4 cm on the right and 8.1×3.4×3.1 cm on the left. Based on above findings a diagnosis of Grave's disease was made. Treatment with Potassium Iodide, Methimazole, Hydrocortisone and Propranolol lead to the improvement of symptoms and resolution of pancytopenia and liver enzyme elevation.

DISCUSSION: This patient's pancytopenia and elevated liver enzymes were likely manifestations of un-diagnosed and untreated Grave's disease. The potential patho-physiological mechanisms include - (a) in-effective hematopoiesis; (b) autoimmune process that induce anti-neutrophil / anti-platelet antibodies; (c) thyrotoxicosis-induced intracellular increase of 2/3 bis-phospho-glycerate causing right-shift of oxygen disassociation curve causing decreased oxygen affinity of hemoglobin; (d) direct toxicity of thyroid hormone to bone marrow stem cells and (e) relative hypoxemia in patients with elevated T3 and T4 causing peripheral acinar damage secondary to increased metabolism and subsequent elevation in liver enzymes. Pancytopenia and elevation of liver enzymes are uncommon manifestations of hyperthyroidism that respond well to the treatment of underlying disease. Patients with hyperthyroidism should be monitored closely for these complications of overt thyrotoxicosis.

GROANS, MOANS AND PSYCHIATRIC OVERTONES: WHEN IT IS NOT ONE OF THE USUAL SUSPECTS Rosy Priya Kodiyanplakkal[1,2]; Darlene LeFrancois[1,2]. [1]Montefiore Medical Center, Bronx, NY; [2]Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1634465)

LEARNING OBJECTIVE 1: Recognize hypercalcemia secondary to Mycobacterium Avium Intracellulare (MAI) infection as a cause of altered mental status in a patient with acquired immune deficiency syndrome (AIDS)

LEARNING OBJECTIVE 2: Explain the pathophysiology of hypercalcemia induced by granulomatous disease

CASE: A 50 year-old man with acquired immune deficiency syndrome presented with abdominal pain for 2 weeks and increasing weakness, lethargy, and hallucinations for 1 week. He was non-adherent to antiretroviral therapy and his most recent cluster of differentiation 4 count was 8. He was agitated and having visual and auditory hallucinations; talking to people not in the room. There was no fever and no neck stiffness. His abdomen was soft, but the liver was enlarged with right upper quadrant tenderness. Pertinent laboratory findings include: white blood cell count 9.8 K/ul, alkaline phosphatase 418 U/L, corrected calcium 13.6 mg/dL, intact parathyroid hormone (PTH) 1.7 pg/mL (normal>10), 25-hydroxyvitamin D (calcidiol) 16 ng/mL (normal>30), 1,25 dihydroxyvitamin D (calcitriol) 45 pg/mL (normal 20–70), angiotensin-converting enzyme-level 73 U/L (normal<50). His head computed tomography scan and subsequent lumbar puncture were entirely unremarkable. Abdominal ultrasound revealed a 22 cm liver with increased echogenicity, typical of parenchymal disease. His liver biopsy revealed nonnecrotizing granulomas mainly centered on portal tracts with numerous acid fast bacilli (AFB) seen on staining. Subsequent AFB blood cultures confirmed disseminated Mycobacterium Avium Complex infection. This patient's symptoms were thought to be a result of hypercalcemia caused by this granulomatous disease, and rapidly resolved with fluid hydration and MAI treatment.

DISCUSSION: Altered mental status in the context of AIDS is often seen by physicians, but hypercalcemia is an uncommon etiology for such presentations. Hypercalcemia can also result in lethargy, weakness, myalgias, nausea, constipation, and abdominal pain. While often caused by primary hyperparathyroidism or malignancy in general populations, hypercalcemia is also seen in association with granulomatous diseases such as sarcoidosis, fungal infections, berylliosis, Crohns' disease, tuberculosis, and other mycobacterial infections. The uncommon infectious causes of hypercalcemia are particularly important to consider in immunocompromised patients. The mechanism by which granuloma formation causes hypercalcemia is via elevated levels of calcitriol. Usually, the conversion of calcidiol to calcitriol occurs in the proximal tubules of the kidneys via a 1-alpha-hydroxylase that is regulated by PTH, phosphorus, and calcium levels. Normally, hypercalcemia suppresses the release of PTH and thereby calcitriol production. In granulomatous disease there is excessive direct production of calcitriol by macrophages from calcidiol independent of PTH. It is thought that macrophages activate extra renal 1-alpha-hydroxylase leading to calcitriol mediated, PTH independent hypercalcemia. Our patient had low PTH and calcidiol levels, but disproportionately high calcitriol levels, supporting that his hypercalcemia was a manifestation of granulomatous disease. While the definitive treatment of hypercalcemia relies on treating the underlying etiology, bisphosphonates and glucocorticoids can also play a therapeutic role.

GROUP A STREPTOCOCCUS ASSOCIATED DIGITAL ARTERIAL THROMBOSIS Michael S. Yoo; Daniel G. Heacock. Yale University School of Medicine, New Haven, CT. (Tracking ID #1635241)

LEARNING OBJECTIVE 1: Recognize the clinical features of invasive Group A Streptococcus (GAS) infections and digital arterial thrombosis.

CASE: A 41-year-old man with hypertension and hyperlipidemia presented with a painful, swollen right index finger. His symptoms progressed rapidly, extending to the forearm. He denied any injury or insect bites. He had no smoking history, diabetes, or new medications. His digit appeared necrotic, and he was subsequently transferred to our hospital. His exam was notable for fever (101.7 °F), tachycardia (100 beats per minute), and a demarcated line of necrosis on his second digit extending to the proximal interphalangeal (PIP) joint. The remainder of his exam was unremarkable. Laboratory studies revealed leukocytosis (19,800 per microliter); other tests, including creatine kinase, were normal. Empiric vancomycin, piperacillin-tazobactam, and clindamycin were started. Computerized tomographic (CT) angiography of the right upper extremity revealed arterial interruption of the second digit to the level of the PIP and metacarpophalangeal joints. Intravenous heparin was initiated. Cardioembolism was ruled out with transesophageal echocardiography. Hypercoagulability workup was negative. Surgical exploration revealed an intact flexor tendon sheath, thrombosed digital arteries, and murky subcutaneous fluid. Heparin was stopped. Intraoperative cultures grew GAS; blood cultures were negative. His cellulitis resolved completely; his necrosis did not, however, and future amputation was planned. The patient was discharged on intravenous penicillin G.

DISCUSSION: Herein we describe the first case to our knowledge of digital arterial occlusion in the setting of GAS cellulitis. The cause of our patient's thrombosis remains unclear. He had a negative workup for thromboembolic and autoimmune disease, and he reported no injury or trauma to his finger. The presence of GAS cellulitis and the absence of a clear explanation for our patient's digital occlusion raise the possibility of an association between GAS and arterial thrombus formation. We hypothesize that in light of the recent emergence and increasing virulence of invasive GAS infections, it is possible that this case may indicate evolving changes in the interactions between GAS and coagulation pathways. Future cases should be documented, and investigation into the potential association between GAS infection and thrombosis may be warranted.

GROUP G STREPTOCOCCAL ENDOCARDITIS Prashant Prasad; Sarah Moorhead; Brian Zwecker; Samir Desai. Baylor College of Medicine, Houston, TX. (Tracking ID #1634404)

LEARNING OBJECTIVE 1: Identify the most frequent sources of Group G streptococcal bacteremia
LEARNING OBJECTIVE 2: Recognize Group G streptococcus as a rare but potential cause of acute endocarditis
CASE: A 65-year-old morbidly obese male with poorly controlled diabetes mellitus and chronic venous insufficiency presented to the emergency room following a fall. At baseline, the patient was primarily bed-bound with minimal ambulation. He reported a 1 day history of chills, shortness of breath, and diffuse myalgias. On admission, the patient had a temperature of 104 °F, regular heart rate and rhythm, and no murmurs. Pitting edema in both lower extremities with several ulcerations draining purulent, foul-smelling discharge was noted. Initial lab test results included WBC 15 with neutrophilic predominance, creatine kinase 80,000, AST 688, ALT 130, BUN 24, and creatinine 2.5 (baseline 1.5). Urinalysis demonstrated the presence of large blood and granular casts. Chest x-ray revealed no significant findings. He was diagnosed with acute rhabdomyolysis and started on aggressive fluid resuscitation, as well as ceftriaxone and vancomycin for infected skin ulcers. The patient continued to have shortness of breath at rest, and repeat chest imaging showed evidence of volume overload. With diuresis and supplemental oxygen, his breathing returned to baseline over the next several days, and he was weaned off the oxygen. On hospital day 2, blood cultures drawn at admission grew Group G streptococci. A transthoracic echocardiogram revealed a focal echodense lesion on the left coronary cusp of the aortic valve, with no valvular stenosis or regurgitation. CRP and ESR were significantly elevated at 14.69 and > 100, respectively. In light of these results, the patient was continued on intravenous antibiotics, with repeat blood cultures negative after 48 h. After 2 weeks the patient was afebrile with WBC 9.5, CK 2104, ALT 53, AST 72, BUN 15, and creatinine 1.4. He was transferred to an intermediate care facility to receive 4 weeks of IV ceftriaxone and to continue physical therapy for generalized deconditioning. After 1 month, he was clinically stable with no evidence of infection.
DISCUSSION: This case describes the uncommon occurrence of Group G streptococcal bacteremia and endocarditis. In a single institutional study of 7,415 positive blood cultures over a ten-year period, Group G streptococci were isolated in 49 cases (0.66 %). In the same study, the predominant sources of infection by this organism were the skin (78 %) and pressure sores (15 %). The venous stasis ulcers on our patient's lower extremities were thought to be the site of entry in this case. Endocarditis associated with this organism is rarer yet, having only been reported in 64 cases. When it occurs, it tends to be acute in nature and quite virulent. Therefore, it is vital to identify this infection early and treat aggressively with appropriate antibiotic therapy.

GYNECOMASTIA IN AN ELDERLY MALE; IS DIGOXIN A CULPRIT? Ahmed Salman; Naba R. Mainali; Richard Alweis. Reading Health System, West Reading, PA. (Tracking ID #1621965)

LEARNING OBJECTIVE 1: To recognize gynecomastia, as a potential adverse effect of digoxin especially in elderly males.
LEARNING OBJECTIVE 2: To describe the importance of physical exam in making the diagnosis and prompt discontinuation of digoxin to reverse the condition.
CASE: Gynecomastia (GM), a benign growth of the glandular tissue of the male breast that can be unilateral as well as bilateral, is caused by an increase in the ratio of estrogen to androgen activity. Out of several causes, drug-induced GM merits deep consideration as it may account for as many as 25 % of all cases of new-onset GM in adults. Overall, approximately 4–10 % of GM is associated with the adverse effects of drugs such as spironolactone, marijuana, ketoconazole and digoxin. Even though the mechanisms through which a long list of drugs can cause GM are not fully clear, they are derived from estrogen-like activities, stimulation of testicular production of estrogens, inhibition of testosterone synthesis or blockade of androgen action. Here, we describe an interesting and relatively rare case of digoxin induced GM in an elderly male that was completely resolved after the discontinuation of digoxin. A 96-year-old male with a past medical history of coronary artery disease and atrial fibrillation was admitted in the hospital with acute decompensated systolic congestive heart failure (CHF) with diastolic dysfunction with last ejection fraction of 40 %. His chest X-ray on admission showed increased interstitial markings and pulmonary vascular congestion compatible with acute exacerbation of CHF. He was discharged on coumadin, lopressor and digoxin 0.125 mg daily for atrial fibrillation with CHF. After 4 months, he presented with complaints of chest pain and bilateral breast enlargement. He reported these complaints started shortly after discharge from the hospital 4 months earlier. After reviewing the side effects of all the medications he was taking, digoxin, being a digitalis derivative, was singled out to be most probable cause of his GM. Digoxin was discontinued and his GM resolved after 2 months.
DISCUSSION: Due to its toxicity profile and narrow therapeutic window, the use of digoxin in elderly patients is under review. In the geriatric population, digoxin has been recommended for treatment of atrial fibrillation with concurrent heart failure for rate control. The basic structure of digitalis compounds is similar to estrogen. Several studies have indicated that they show affinity to the estrogen receptor, which leads to proliferation of glandular tissue. The chronic use of digitalis derivatives therefore can lead to GM, especially in elderly men. Diagnosis is based on careful history and physical exam and is confirmed with the resolution of symptoms after discontinuation of the digoxin. Hence, the use of digoxin in elderly patients should be monitored closely and decision should be made after comparing benefits versus adverse effects.

HEYDING A DIAGNOSIS IN AORTIC STENOSIS Matthew N. Peters; Morgan J. Katz; Allison Egan; Deepa Bhatnagar. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1641469)

LEARNING OBJECTIVE 1: Recognize the association between aortic stenosis, intestinal angiodysplasia and Von Willenbrand Disease in Heyde's Syndrome
LEARNING OBJECTIVE 2: Understand the importance of push and capsule endoscopy in patients with Heyde's Syndrome and iron deficiency anemia. Recognize the role of aortic valve replacement in preventing future bleeding episodes in Heyde's Syndrome.
CASE: A 57 year-old man with a history of iron-deficiency anemia presented with a 3 week history of worsening exertional dyspnea and dizziness. The patient noted that his stools over the past few weeks had been darker than usual. Initial CBC revealed a microcytic anemia with a hemoglobin of 5.8 g/dL (previous baseline hemoglobin had been 10–12). Iron studies revealed continued iron deficiency with a serum iron of 46 μg/dL,a total iron-bidning capacity of 422 μg/dL and a serum ferritin of 18 μg/L. Upper endoscopy and colonoscopy were normal. While anemia was the suspected etiology of his exertional dyspnea and dizziness, an echo was ordered to evaluate the patient's symptoms. Trans-thoracic echocardiogram revealed critical aortic stenosis (AS) with a valve area of 0.51 cm2. Heyde Syndrome was considered and the following day the patient had a "push" endoscopy, which revealed a bleeding angioectasia in the distal duodenum. Lesion was then cauterized and injected with epinephrine. Several weeks later, the patient underwent a left heart catheterization that revealed a pressure gradient of 51 mmHg across the aortic valve, confirming severe aortic stenosis. The following month he underwent a porcine aortic valve replacement (AVR) without complication. Six months postoperatively, the patient has had no recurrence of bleeding episodes and his microcytic anemia has resolved.
DISCUSSION: Among the elderly, AS and angiodysplasia are the most common causes of acquired valvular lesions and lower gastrointestinal bleeding, respectively. First described in 1958, Heyde's Syndrome is a combination of AS, intestinal angiodysplasia, and Von Willebrand Disease (VWD). The incidence of HS is currently unknown but is likely under-recognized, due to lack of detection of AS until its later symptomatic stages and difficulty in diagnosing intestinal angiodysplasias with routine

endoscopy. Association between AS and intestinal angiodysplasia is attributed to vasodilation of intestinal vessel wall ectasia due to increased tissue hypoxia. Increased hypoxia is likely secondary to AS-associated decreased cardiac output and altered pulse waveform. VWD is caused by the degradation of Von Willebrand Factor multimers due to shear stress across a diseased aortic valve. Patients with AS and iron deficiency anemia with normal colonoscopy and upper endoscopy should be considered for either capsule or "push" endoscopy to identify angiodysplasias not seen with standard procedures. Once identified, patients with Heyde's Syndrome should undergo AVR. Patients with angiodysplasias treated surgically (including bowel resection) bleed from other sites in 95 % of cases compared to only 7 % in patients treated with AVR. Interestingly, AVR can be associated with VWD reversal as soon as 1 day postoperatively. Although VWD typically resolves following AVR, it can recur, especially in patients with prosthetic valve mismatches associated with hemodynamic turbulence. Consequently, tissue valves are recommended in Heyde's Syndrome patients to obviate the need for chronic anticoagulation (as is required with mechanical valves) in the setting of potential coagulopathy.

HIV INDUCED RHABDOMYOLYSIS Francisco Hernandez Munoz; Gregory Braden; Sarah Dreilling; Daniel Landry. Baystate Medical Center/Tufts University School of Medicine, Springfield, MA. (Tracking ID #1640847)

LEARNING OBJECTIVE 1: Recongnize Non-exertional, non-traumatic Rhabdomyolysis and its Broad Differential.
LEARNING OBJECTIVE 2: In the ICU setting Acute Kidney Injury induced by Rhabdomyolysis has an extremely high mortality rate.
CASE: 51-year-old man with past medical History of Hypothyroidism and obesity that presented with lower extremity weakness and Altered mental status in the setting of a recent viral prodrome. Patient presented to his Primary care Physician's office 2 weeks prior to admission for throat pain, subjective fevers and general malaise and was started on Bactrim. He developed an acute gastritis attributed to be a reaction to Bactrim after his first dose; Bactrim was discontinued and he was started on Amoxicillin. He finished his 10 day course of Amoxicillin with partial improvement of his symptoms. He works as a trash truck driver, no history of alcohol abuse and patient denied any illicit drug use. Three days prior to hospitalization he had severe profuse diarrhea which resolved the day before admission. He continued to feel weak and the morning of admission he was unable to stand up given lower extremity pain and stiffness. Upon evaluation his vital sings were stable; he was found to have severely contracted bilateral lower extremity muscles up to the buttocks, with severe excruciating pain to palpation and to forced ankle extension. Labwork showed Mild leukocytosis, hyperphosphatemia, hypocalcemia, severe transaminitis, negative toxic/drug screen, normal TSH, a creatinine of 13 mg/dL with a BUN of 114 mg/dL and CK that peaked at 104,000 u/L. CT scan of the Lower extremities and abdomen showed no localized site of muscle injury, no purulent abscess nor any sings of malignancy. Patient was diagnosed with non-exertional, non-traumatic rhabdomyolysis. The etiology of this was assumed to be infectious as other possibilities were ruled out. Differential diagnosis was broad and a full workup by infectious diseases team was done. Patient was found to be HIV positive with viral count of 150,00 CP/ml. Multiple other acute viral and bacterial etiologies were ruled out.
DISCUSSION: Acute Kidney Injury (AKI) secondary to Rhabdomyolysis represents about 7–10 % of all AKI cases in the US [1]. Mortality increases in patients with AKI when it is attributed as a direct complication of Rhabdomyolysis, especially in the ICU setting where mortality has been documented to be as high as 59 % [2]. Non-exertional, non-traumatic Rhabdomyolysis has broad differential including drugs, toxins, infections, electrolyte abnormalities, endocrine abnormalities, malignancy and inflammatory myopathies. Our patient had a negative lower extremity and Abdominal CT scan with a negative toxicology screen and a normal TSH. The viral like prodrome directed the differential towards an infectious etiology which included multiple microorganisms including viral etiologies like HIV. Rhabdomyolysis developed in the setting of acute HIV has been described in patients with nonspecific symptoms like myalgias and general malaise [3]. The pathophysiology mechanism of viral induced Rhabdomyolysis, even though unknown, is thought to be secondary to direct viral muscle invasion evidenced by muscle biopsies that have shown lymphocytic muscle infiltration in patients with viral induced rhabdomyolysis [4].

HORMONES AND HEARTBREAKS Ishani Pathmanathan; Varsha Somasekharan; Deepa Bhatnagar. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1641108)

LEARNING OBJECTIVE 1: Understand the cardiovascular manifestations of thyroid disease
LEARNING OBJECTIVE 2: Recognize hypothyroidism as a reversible cause of systolic heart failure. Identify relative contraindications to beta blockers in this setting.
CASE: A 58 year-old man with diabetes mellitus and a remote history of thyroid ablation presented with 2 weeks of bilateral leg and scrotal swelling. The swelling began spontaneously and was associated with dyspnea on exertion. He denied fevers, chills, recent illnesses, chest pain, palpitations, orthopnea or changes in skin, hair or temperature tolerance. He reported similar symptoms two decades ago when he was diagnosed with hyperthyroidism and heart failure that resolved after thyroid resection. On exam he had a heart rate of 61, jugular venous distention, a loud S2, and faint rales in the lung bases. He had 2+ pitting edema and a painful, edematous scrotum. Creatinine was 1.6 mg/dL, BNP 968 pg/mL, TSH 59.29 mIU/L, and free T4 less than 0.25 ng/dL. HIV and hepatitis panels were negative, as were cardiac enzymes. Transthoracic echocardiogram revealed an ejection fraction of less than 20 % and pulmonary artery pressure greater than 70 mmHg. The patient was started on levothyroxine, aspirin, lisinopril, isosorbide dinitrate, hydralazine, and spirinolactone. No beta-blocker was given because of bradycardia, and the risk of further lowering his T3 levels. Diuretics led to improved edema and kidney function and he was discharged home with close outpatient endocrine and heart failure clinic follow up and plans to schedule a cardiac catheterization when his acute kidney injury resolved.
DISCUSSION: Heart failure is an increasingly common cause of hospitalization and death. When patients present with new onset systolic failure, it's important to look for underlying causes, including ischemia, hypertension, infection, anemia and drug reactions. Thyroid abnormalities are especially important to recognize because they are one of few causes that can often be reversed. Thyroid hormones increase heart rate, cardiac contractility and overall oxygen demand. They also decrease systemic vascular resistance by dilating peripheral arterioles, causing less effective arterial filling and activation of the renin-angiotensin system. In hypothyroidism, the opposite occurs, and patients present with bradycardia, mild hypertension, narrowed pulse pressure, and increased systemic vascular resistance. Cardiac output decreases with bradycardia and decreased cardiac contractility, although it is often still adequate to meet the body's concurrently decreased metabolic needs. Also, hypothyroidism can prolong the QT interval to precipitate dangerous arrhythmias, and worsens cardiac risk by increasing serum cholesterol and atherosclerosis. Beta-blockers inhibit conversion of T4 to T3, and are therefore often contraindicated in hypothyroid cardiomyopathy even in the absence of bradycardia. Fortunately, hypothyroid-induced heart failure is frequently entirely reversible if recognized. In older patients or those with a history of angina, supplementation with thyroxine should begin at 25 % of the full replacement dose, and titrated upwards over six to eight-week intervals with close clinical follow up. TSH levels should be used to assess euthyroid status. As our patient's thyroid hormone levels normalize, it is likely that his overall cardiac contractility will improve over time, perhaps no longer necessitating evaluation for an automatic implantable cardiac defibrillator.

HEART FAILURE AFTER SINGLE DOSE OF DOXORUBICIN Swati Gulati[1]; Neha Jaswal[1]; Shweta Gupta[2]; Susan McDunn[2]. [1]John H. Stroger Jr. hospital of cook county, Chicago, IL; [2]John H. Stroger Jr. hospital of cook county, Chicago, IL. (Tracking ID #1642562)

LEARNING OBJECTIVE 1: To identify that doxorubicin can casue heart failure with a single dose.

LEARNING OBJECTIVE 2: To identify that doxorubicin cardiotoxicity can occur in young patients with no known cardiac risk factors

CASE: A 31 year old female with no significant past medical history presented with right shoulder pain and swelling, Computerized Tomography scan showed a right para-spinal and right humeral soft tissue mass with a right-sided pleural effusion. Biopsy from the para-spinal mass was consistent with spindle cell sarcoma. She was started on chemotherapy with doxorubicin and ifosfamide. Her ejection fraction prior to chemotherapy was 57 % with uniform and normal left ventricular function on a MUGA scan. She was admitted 2 weeks after chemotherapy with shortness of breath and pedal edema and developed neutropenic fever with gram-negative sepsis. She improved with medical management and her second dose of chemotherapy was postponed. She developed more shortness of breath, elevated jugular venous pressure, bilateral basal chest crackles with peripheral pitting edema of the legs up to thigh level. An echocardiogram showed Left Ventricular Ejection Fraction of 35 %, diffuse hypokinesis, a dilated right ventricle, elevated pulmonary artery pressure and moderate pericardial effusion without tamponade physiology. She improved with medical management and she received ifosfamide alone for 2 additional cycles. Two weeks after her third chemotherapy she presented with decompensated heart failure despite being compliant with beta-blockers, diuretics and ACE inhibitors. At that time she had pericardial effusion with tamponade physiology and persistent systolic dysfunction. Pericardiocentesis was done and she was referred to hospice because of progression of metastatic disease.

DISCUSSION: Adriamycin (doxorubicin) is an anti-neoplastic agent used in the management of a wide range of malignancies. The most common cardiotoxicity has been described as dilated cardiomyopathy after multiple doses of the doxorubicin. Cardiotoxicity following the infusion of doxorubicin has been described as early (1 year). Late toxicity is usually a dilated cardiomyopathy. The incidence of cardiomyopathy increases exponentially after a cumulative dose of 350–450 mg/m2. Predisposing factors are borderline cardiac compensation, cardiac risk factors and higher doses of doxorubicin. It is more common in older patients and unusual after only one dose. Early toxicities are rare and include myocarditis-pericarditis syndromes and atrial arrhythmias, which are often reversible. Cardiotoxicity of doxorubicin can usually be avoided by checking a baseline MUGA scan for cardiac function and limiting the cumulative dose to less than 350–450 mg/m2 in patients with no risk factors. Our patient is unusual because she is a very young woman with no risk factors who presented with acute dilated cardiomyopathy after a single dose of doxorubicin. Despite being rare, early doxorubicin related cardiomyopathy should be included in the differential of new heart failure occurring anytime after infusion of doxorubicin.

HEART STOPPING TICK Paras Karmacharya; Madan R. Aryal. Reading Health System, West Reading, PA. (Tracking ID #1622015)

LEARNING OBJECTIVE 1: Recognize Lyme carditis as a cause of heart block.

LEARNING OBJECTIVE 2: Discuss the importance of early treatment as it can prevent permanent pacemaker placement.

CASE: 17-year-old man presented to the Emergency Department with acute chest discomfort for 1 day. Two weeks ago, he had developed a febrile illness with headache which resolved on its own. He lives in a woody area and had a history of tick bite 5 weeks back. His physical examination was unremarkable with normal vital signs. EKG revealed sinus arrhythmia with first degree AV block with a ventricular rate of 97 beats per minute. Echocardiogram showed no evidence of structural heart disease. His complete blood count, basic metabolic panel and urine analysis were all within normal limits. Streptococcal throat swab done 2 weeks ago was normal. He was placed in observation and monitored in telemetry. In the subsequent 24 h he had first degree heart block initially followed by intermittent episodes of complete heart block with AV dissociation. EKG showed sinus tachycardia with an atrial rate in the range of 100 beats per minute with complete heart block with narrow escape beat. Empirical treatment with IV Ceftriaxone 2 g once a day was started and patient was monitored on telemetry. Further test done including peripheral smear, serology titers for ehrilichiosis, Rocky Mountain spotted fever, streptococcal throat culture, blood and urine culture were all negative. Lyme ELISA was positive. Lyme IgM through Western Blot was consistent with early infection. After 2 days he had regression of his complete heart block to first degree heart block. He was discharged on doxycycline to be taken for total of 3 weeks. He remained asymptomatic with normal EKG after 3 weeks.

DISCUSSION: Although Lyme carditis is relatively rare within 4–6 weeks of exposure, it can uncommonly present as the first sign of disseminated Lyme disease. Diagnosis requires clinical suspicion based on the history and a two step protocol with enzyme-linked immunosorbent assay (ELISA) and Western blotting has been recommended in the US. This case illustrates the importance of considering reversible causes of AV block. As in our case, the degree of heart block in Lyme disease can fluctuate rapidly from first degree to second degree to complete AV block very quickly in minutes to hours, so careful observation is prudent. Treatment with an antibiotic early in the course can revert the AV block within 48 h of therapy and can avoid the need for a permanent pacemaker insertion.

HEART OF BROKEN GLASS: A CASE OF TAKO TSUBO CARDIOMYOPATHY TRIGGERED BY SEVERE ALCOHOL WITHDRAWAL Maria G. Frank[1,2]; Jane Park[2]; Camille Ladanyi[2]; Paul Brittain[2]; Anthony Kahr[2]. [1]Denver Health Hospital Authority, Denver, CO; [2]University of Colorado, School of Medicine, Aurora, CO. (Tracking ID #1641824)

LEARNING OBJECTIVE 1: To raise awareness over association of Tako-Tsubo cardiomyopathy (TCM) and severe acute alcohol withdrawal syndrome (AAWS) through the presentation of a case.

LEARNING OBJECTIVE 2: To review the pathophysiology of both TCM and AAWS and their relationship with hyper-sympathetic states.

CASE: A 54 year-old female who was initially admitted to the medical intensive care unit was transferred to a medicine team within 12 h for further management of alcohol withdrawal syndrome, acute pancreatitis, refeeding syndrome and acute kidney injury. She had a previous history of coronary artery disease (CAD) with 3 prior stents placed to the right coronary artery (RCA), insulin-dependent diabetes mellitus, and tobacco and alcohol addiction. Exam was significant for tachycardia, tremors, and a diffusely tender abdomen. The remainder of the exam was unremarkable. Noteworthy laboratory results included hyponatremia, hypokalemia and anion gap metabolic acidosis as well as creatinine of 2.9 mg/dl. On day 4 of her hospital stay, the patient developed hallucinations and severe tremors. Later on that day, T-wave inversions and progressive QTc interval prolongation were noted on telemetry and confirmed with electrocardiogram. Trans-thoracic echocardiogram (TTE) revealed apical and anterior wall ballooning and troponins were in the indeterminate range. Cardiology was consulted and a diagnosis of TCM was made. Coronary angiography was not pursued. She was started on Metoprolol, with improvement of QT c interval, and discharged home without any evidence of heart failure.

DISCUSSION: Tako-Tsubo cardiomyopathy was first described in 1990 and named after a Japanese octopus fishing-pot. It is a transient cardiomyopathy that may mimic acute myocardial infarction (AMI). Currently, the revised Mayo criteria are used for diagnosis. It presents most often in post-menopausal women and in those individuals suffering from emotional or physical stress leading to hyper-catecholamine states. It is generally considered a reversible condition, with favorable prognosis even in patients who develop heart failure. However, fatal complications including QTc prolongation with torsade des pointes, cardiac rupture, and left-ventricular thrombus have been described. Acute alcohol withdrawal syndrome (AAWS) represents a spectrum of symptoms that may range from minor discomfort to severe disorders such as seizures, delirium tremens, halluctinations and autonomic dysfunction requiring inpatient treatment. It has been documented that sympathetic hyper-activity is responsible for the majority of these events. While studies have linked the development of TCM with hyper-catecholamine states, its association with AAWS has few citations in the literature. We present a case of presumed TCM (no angiographic confirmation) triggered by severe AAWS. Even though neither fatal arrhythmias nor acute heart failure occurred in our patient, her QTc interval prolongation reached the 600-millisecond range, exposing her to serious risk. Our case not only describes an unusual association between

TCM and AAWS, but also highlights the potential complications of a commonly treated disease-alcoholism. The clinician should be aware of this entity in patients with acute chest pain or EKG changes in the setting of severe AAWS.

HELICOBACTER PYLORI AS A POSSIBLE PRECIPITANT OF IMMUNE THROMBOCYTOPENIA PURPURA Christopher Sankey[1,2]; Carly B. Brown[2]. [1]Yale School of Medicine, New Haven, CT; [2]Yale-New Haven Hospital, New Haven, CT. (Tracking ID #1639580)

LEARNING OBJECTIVE 1: Recognize Helicobacter Pylori as a possible precipitant of immune thrombocytopenia purpura, and consider including it in the standard evaluation of individuals presenting with ITP.
CASE: A 28-year-old previously healthy Hispanic male presented for evaluation of bleeding gums and rash. Four days prior he noted mild fatigue, cough, headache, and subjective fever consistent with an upper respiratory tract infection. On presentation, vital signs were stable, and physical exam revealed petechial hemorrhages on the soft palate with bleeding gums (wet purpura), with clots visible in the oral cavity, and petechiae on his extremities, abdomen and chest. Initial labs revealed a platelet count of <1,000/μL, with other cell lines preserved and a normal chemistry panel. Peripheral blood smear was without identifiable platelets, but normal red and white blood cells. Electrocardiogram, chest radiography, and abdominal ultrasound were unremarkable. A presumptive diagnosis of immune thrombocytopenia purpura (ITP) was made, and he was started on intravenous immunoglobulin (IVIG) and prednisone. After 5 days of treatment without signs of improvement, IVIG was discontinued. Serologic testing for common ITP precipitants, including human immunodeficiency virus (HIV) and hepatitis C virus (HCV) were negative. Helicobacter pylori (H. pylori) ultimately returned positive by IgA, IgG and stool antigen. Triple therapy with pantoprazole, amoxicillin, and biaxin was initiated, after which the patient had a brisk platelet response, and was discharged 2 days later, with a platelet count of 21,000/μL. Upon outpatient follow up, after completing triple therapy, his platelet count had normalized; his repeat stool H. pylori antigen was negative.
DISCUSSION: ITP is defined as a platelet count of less than 100,000/μL with no evidence of leukopenia or anemia, recently lowered from a previous threshold of less than 150,000/μL to minimize the inclusion of otherwise healthy individuals with transient and self-limited thrombocytopenia. ITP can be divided into primary (most common) and secondary, which is related to infection resulting in molecular mimicry (often HIV, HCV, or H. pylori). These viruses contain amino acid sequences that have structural similarity to regions within platelet glycoproteins, which may allow antibodies intended for foreign pathogens to cross-react with these endogenous proteins, causing thrombocytopenia. Rates of clinical responsiveness to treatment of H. pylori vary from study to study and by clinical region, but are generally highest in Japan and Italy, and are more heterogeneous in the United States. Furthermore, the majority of patients who received triple therapy were also treated with immunosuppression, potentially confounding results, and longer follow up is needed to assess if early responsiveness persists. Given that H. pylori detection is non-invasive, relatively low cost and eradication has minimal toxicity when compared with standard ITP therapy, it should be included in the standard evaluation of individuals presenting with ITP. Eradication therapy may prove beneficial in some cases.

HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS - A ZEBRA IN THE PACK Prerna Mota[1]; Michel Bidros[3]; Hana Javaid[2]; Sara N. Dost[1]; Anat Bergner[1]; Lisa M. Chirch[2]; Trini A. Mathew[2]; Jeffrey S. Wasser[3]. [1]University Of Connecticut, Farmington, CT; [2]University Of Connecticut, Farmington, CT; [3]University Of Connecticut, Farmington, CT. (Tracking ID #1641629)

LEARNING OBJECTIVE 1: To diagnose Hemophagocytic Lymphohistiocytosis (HLH) which is a rare yet under-diagnosed and potentially fatal medical condition
LEARNING OBJECTIVE 2: To understand that pathogen-directed therapy is not sufficient to turn off the inflammatory response cascade and prevent death in EBV or CMV- related HLH.
CASE: An 18-year-old female presented with 10 days of high fever, poor oral intake, sore throat, nausea, vomiting, abdominal pain, and malaise associated with jaundice. She had travelled recently to Florida and Washington, D.C. Her past medical history included a "prolonged febrile illness" diagnosed as "cat scratch fever" at age 11. Physical exam showed an ill-appearing, tachycardic Caucasian female. She had scleral icterus with pale conjunctiva. There was no lymphadenopathy or hepatosplenomegaly. Her abdomen was mildly tender. The patient was found to have elevated liver enzymes, hyperbilirubinemia and low haptoglobin levels. Direct and indirect Coomb's tests were negative. Her blood and urine cultures remained negative. The viral serology including HIV, CMV, HSV, HHV-6 and viral hepatitis panel were negative as was the work up for babesiosis, ehrlichiosis, leptospirosis, bartonellosis, and malaria. She was found to have an acute EBV infection confirmed by serology and PCR. However, her hospital course was complicated by persistence of high-grade fevers, progressive pancytopenia and worsening liver functions. She also had hyperferritenemia and hypertriglyceridemia. A bone marrow biopsy showed extensive hemophagocytosis. Although she was started on high dose dexamethasone as per the HLH-94 protocol, administration of cytotoxic chemotherapy was delayed in preparation for fertility preservation process. At that time, her clinical condition started to improve. She was maintained on a slowly tapering dose of steroid and was seen as an outpatient. She improved, and liver enzymes as well as all other laboratory abnormalities normalized, including her anemia. Genetic testing for familial HLH was negative.
DISCUSSION: Hemophagocytic lymphohistiocytosis is an under recognized entity which can be caused by various triggers including infections, malignancies or autoimmune disorders. The clinical course is highly variable and ranges from self-limited to rapidly fatal. The diagnostic criteria include fever, splenomegaly, cytopenia involving two or more cell lines, hypertriglyceridemia or hypofibrogenemia, hemophagocytosis, hepatitis, low or absent Natural Killer cell activity, serum ferritin level > 500 ng/mL, soluble CD 25 level > 2400 unit/mL. The presence of at least 5 of the above criteria confirms the diagnosis of HLH. Our patient had 6 positive criteria (pancytopenia, splenomegaly on CT scan, increased triglycerides, hemophagocytosis on bone marrow biopsy, hepatitis and hyperferritinenemia). Still's Disease was also considered in the differential; however, the patient had a normal ANA, anti-ds-DNA, anti-Smith, anti-mitochondrial antibodies. In general, infection- triggered (non CMV or non EBV) HLH cases are usually treated with pathogen-directed therapy. Although there have been case reports of self-limited EBV or CMV- related HLH cases. Current recommendations are to begin the HLH-94 protocol as soon as the clinical picture fulfills the diagnostic criteria without delay, as mortality rate is very high. This was an unusual case of EBV-related HLH treated successfully with dexamethasone alone.

HEMOPTYSIS; AN UNUSUAL PRESENTATION OF CRYPTOGENIC ORGANIZING PNEUMONIA IN AN HIV PATIENT Yagna R. Bhattrai[1]; Madan R. Aryal[2]; Ravi Shahu[3]. [1]Mercy Catholic Medical Center, Upper Darby, PA; [2]Reading Health System, West Reading, PA; [3]Queens Hospital and Medical Center, Queens, NY. (Tracking ID #1621820)

LEARNING OBJECTIVE 1: Identify cryptogenic organizing pneumonia in the setting of unusual presentation (Hemoptysis) when usual treatment for pneumonia fails.
LEARNING OBJECTIVE 2: Discuss the work up for cryptogenic organizing pneumonia and differentiate it from chronic eosinophilic pneumonia and wegner's granulomatosis.
CASE: A 53 year old African American female with past medical history of HIV presented with cough, dyspnea, fever and hemoptysis of 1 week duration. At presentation, she was febrile and hypoxic on room air. Lung examination was remarkable for crackles in right lung bases. Chest X ray and CT revealed infiltrates concerning for pneumonia. She was treated with antibiotics twice for pneumonia within 3 months prior to this episode. Pertinent lab findings were CD4 count 532 cells/mm3, ANA screen, C-ANCA against Protineinase 3 (PR3), P-ANCA against Myeloperoxidase, anti GBM antibody were all negative. Eosinophil count was normal.

However, the infiltartes this time was migratory and this prompted us to look for further causes including crptogenic organizing penumonia. She underwent bronchoscopy which revealed blood in the trachea. Subsequently lung biopsy was considered for definite tissue diagnosis. Biopsy findings revealed non specific chronic lymphoplasmocytic inflammation, mild fibrosis and changes consistent with organizing pneumonia with recent hemorrhages. She responded very well to high dose steroid treatment. Though few cases of COP associated with HIV have been reported, hemoptysis is a rare presentation of this uncommon clinical combination. Early recognition is important as failure to do so can lead to significant morbidity and mortality.

DISCUSSION: Cryptogenic Organizing Pneumonia is an uncommon but increasingly recognized pulmonary entity that usually presents as subacute or chronic pulmonary illness that is histopathologically characterized by the presence of granulation tissue in the bronchiolar lumen, alveolar ducts and some alveoli, associated with a variable degree of interstitial and airspace inflammation. The most common features at presentation are nonproductive cough, dyspnea with exertion (2 weeks to 2 months) and weight loss of greater than 10 lb. Physical examination often reveals inspiratory crackles. Wheezing is rare and is usually present with rales, while clubbing is seen in less than 5 % of cases. Very rarely it can present with hemoptysis (as in our case), with very small quantities of blood expectorated. The clinical presentation of COP often mimics that of community-acquired pneumonia and are treated with antibiotics initially. It can also be confused with chronic eosinophilic pneumonia and interstitial pneumonitis. Hemoptysis can often complicate the clinical picture and can be difficult to differentiate from wegener's disease or lung cancer. In patients with HIV and low CD4 count, pneumocystis pneumonia should also be considered in the differentials. The definitive diagnosis is achieved by tissue biopsy. They usually respond to high dose steroids for 3 to 6 months. Our case illustrates the rare presentation of uncommon disease in association with HIV.

HEPATITIS B VIRUS AND HEPATOCELLULAR CARCINOMA: THE COMPLEXITIES OF SCREENING AND MANAGEMENT AMONG VULNERABLE PATIENTS. Madeline Sterling; Manish Patel; Sarang Kim. UMDNJ- Robert Wood Johnson Medical School, New Brunswick, NJ. (Tracking ID #1620638)

LEARNING OBJECTIVE 1: Recognize an usual presentation of Hepatocellular Carcinoma (HCC) secondary to chronic Hepatitis B Virus (HBV)

LEARNING OBJECTIVE 2: Consider the need for increased surveillance and screening for HBV among vulnerable populations.

CASE: A 38 year old male presented with a 3 week history of progressive nausea, vomiting and abdominal pain. The right upper quadrant pain was dull, without radiation and associated with emesis during meals. He reported dark urine and increasing jaundice for 1 week. He was without chest pain, dysuria, melena, hematochezia, pruritus, rashes and change in stool color. He denied weight loss, fevers and night sweats. He denied alcohol use, recent infections, previous hepatitis, blood transfusions, surgeries or use of illicit drugs. He emigrated from Mexico 6 years ago and last saw a physician in childhood. His physical was remarkable for scleral icterus and jaundice without asterixis or mental status changes. His epigastrium was diffusely tender; hepatosplenomegaly was present without shifting dullness or JVD. Lymphadenopathy, supraclavicular nodes and testicular masses were absent. Laboratory work-up revealed transaminitis and intrahepatic cholestasis with normal INR, protein and albumin. Abdominal-US was positive for a portal vein thrombosis and collaterals without ascites or biliary dilation. A Triphasic-CT revealed a nodular liver with innumerable hypo-attenuating lesions and an expansive mass invading the portal vein. An US-guided liver biopsy confirmed HCC. On serology, he was positive for HepB surface-Antigen and HepB Core-Antibody. His INR and bilirubin increased steadily and on day 7 he developed tense ascites and became markedly hypoxic. A bedside paracentesis removed 2 L of bloody fluid. He remained hypotensive despite intravenous albumin and fluid and was transfer to the ICU. He went into hemorrhagic shock, acute liver and renal failure and expired on day 9.

DISCUSSION: This case highlights the complexities of HBV disease. Unlike most end stage HCC patients, he was without cirrhosis, ascites or liver failure and maintained low HBV DNA and AFP levels. Given his unremarkable past medical history and the number of lesions found by CT, it is likely that he contracted HBV at birth and has been suffering subclinically since. The point at which the patient transitioned from being a chronic latent carrier to an active one is unknown. Hepatocellular carcinoma is the 3rd leading cause of cancer death worldwide and HBV accounts for 50 % of cases, the majority of which are transmitted perinatally. Although medical and public health interventions have decreased HBV transmission in developed nations, chronic infection persists in regions with suboptimal preventative health services. Unfortunately, epidemiological data is relatively sparse with regard to incidence and prevalence of chronic infection in non-endemic areas such as Latin America. Increased numbers of Latino patients who have had little medical care and age-appropriate screening are likely to contact the medical system as a function of healthcare reform. Clinicians must be vigilant with regard to Hepatitis screening since the identification of HBV carriers has the potential to decrease unnecessary mortality and morbidity.

HEPATITIS E VIRUS: CASE REPORT & LITERATURE REVIEW Surya N. Mulukutla; Jeffrey T. Bates. BCM, Houston, TX. (Tracking ID #1638678)

LEARNING OBJECTIVE 1: Recognize the growing clinical importance of HEV as a worldwide disease

LEARNING OBJECTIVE 2: Identify populations at risk of developing symptomatic HEV infection

CASE: A 48-year-old Caucasian male with a PMH significant for 30 years of alcohol abuse presented for alcohol detoxification. At admission, he noted 1 week of fevers and fatigue; he had no abdominal pain, hematemesis, melena, or change in stools. He had not used any medications, including over-the-counter or illegal drugs. There was no recent travel, animal exposure, or changes in diet. He was not sexually active. Physical examination revealed a pulse of 118 bpm and a fever of 38.9 °C; other vital signs were normal. He was alert and oriented to person, place, and time. He had scattered spider angiomata across his upper chest and hepatomegaly percussed at 17 cm. Initial laboratory studies revealed: AST 2410 IU/L, ALT 1419 IU/L, alkaline phosphatase 308 IU/L, total bilirubin 2.5 mg/dl, and direct bilirubin 0.7 mg/dl. Serum levels of acetaminophen and salicylates were normal. HAV IgM, HBsAg, HBc IgM, and HCV quantitative PCR were all negative. EBV IgM, CMV IgM, and an autoimmune work-up were also negative. An ultrasound did not reveal thrombi in the portal or hepatic veins. Liver biopsy confirmed cirrhosis. Eight days after admission, symptoms and LFT's had improved, and he was discharged home. One week post-discharge, hepatitis E virus (HEV) IgM and IgG antibodies returned positive. One month post-discharge, all hepatic enzyme abnormalities had resolved.

DISCUSSION: Globally, HEV infection is the most common cause of acute viral hepatitis. Though previously thought to be a problem isolated to resource-poor countries, recent data suggests an increasing number of cases in the developed world. Acute HEV infection is now more common than acute HAV infection in France, the UK, and Japan. Recent case series in both the USA and UK revealed that 3 % of patients diagnosed with drug-induced liver injury actually had HEV IgM antibody and were likely misdiagnosed. HEV subtypes 1 & 2 are found in Asia, Africa, and Latin America and typically affect men aged 15–35 years old; mortality rates range from 0.2 % to 4 % during epidemics. HEV subtypes 3 & 4 predominate in the developed world. Most infections are asymptomatic; however, non-specific symptoms can occur and extra-hepatic manifestations such as MPGN have been documented. Middle aged and elderly men who abuse alcohol are the most symptomatic; mortality rates are as high as 10 %. Seroprevalence in the USA is 21 % with an estimated annual incidence of 0.7 %. Most symptomatic infections are self-limited and last 4–6 weeks. Severe HEV infections from subtype 3 have been successfully treated with ribavirin monotherapy. Chronic HEV infection with subtype 3 has been described in solid organ transplant recipients, HIV-infected individuals, and patients undergoing chemotherapy.

HEPATOCELLULAR CARCINOMA PRESENTING WITH CERVICAL INSTABILITY Paulina Alcalan. Dallas Methodist Hospital, Dallas, TX. (Tracking ID #1641959)

LEARNING OBJECTIVE 1: Hepatocellular carcinoma may first present as cervical spine lytic lesions.
LEARNING OBJECTIVE 2: Diagnose hepatocellular carcinoma when CT is unremarkable.
CASE: A 65-year-old African American male with no past medical history except for recently diagnosed hypertension presented with neck pain and numbness in the second and third digits of the left hand. Symptoms began 1 month ago and had progressively worsened. The pain was described as constant, sharp and aggravated by neck movement. He denied trauma, loss of consciousness, spasms, gait disturbances, visual changes, seizures, weight loss, chest pain, dyspnea, abdominal pain, and dysuria. Surgical history was pertinent for an abdominal gunshot wound in 1965. He denied taking any medicines. Social history was negative for tobacco, alcohol and drug use; he had spent the last 20 years as a floor installer. Family history was negative for cancer, liver disease, diabetes and coronary artery disease. Pertinent physical exam findings included lipomas on the occipital area and posterior neck which he reported had been present for many years. He had decreased pinprick sensation in the tips of the second and third digits of the left hand. Otherwise a full exam including a neurological exam was unremarkable. CT of the neck showed a large 5 cm expansile lytic lesion involving C2 and C6. CT of the chest, abdomen and pelvis showed no evidence of malignancy, including no liver masses and no cirrhosis; but revealed an enlarged heterogeneous prostate. CBC and liver function tests were normal. Hepatitis panel revealed hepatitis C. His PSA was 5.38, CEA 5.7 and AFP 43,000. Bone scan showed no other areas of metastasis. Biopsy of the neck mass was consistent with hepatocellular carcinoma. An MRI was ordered and revealed a 1.1×1.2 cm enhancing mass in the caudate lobe of the liver that was not previously seen on CT. He was treated by neurosurgery with neck stabilization and mass resection. He was placed on Sorafenib for his advanced liver disease.
DISCUSSION: : Hepatocellular carcinoma (HCC) is the most common primary cancer of the liver. Risk factors include cirrhosis and chronic viral hepatitis B and C. Extrahepatic metastases of HCC occurs most frequently in the lungs, lymph nodes, bones, and the adrenal glands. Bone lesions comprise 6–39 % of all extrahepatic metastases and are invariably lytic. Common areas of bone metastasis include the spine, ribs, pelvis and femur. Patients with HCC usually present with hepatomegaly, right upper quadrant pain or an abdominal mass. It is rare for the initial clinical presentation to be related primarily to the presence of metastasis without overt evidence of hepatic involvement. We present a rare case in which the first clinical manifestation included neck pain and numbness to the second and third digits of the left hand with metastasis only present in the cervical spine. In reviewing the literature, only 3 other cases involving cervical metastasis have been reported. Physicians should consider hepatocellular carcinoma in the differential diagnosis when cervical osteolytic lesions are encountered.

HEPATOID ADENOCARCINOMA OF THE SMALL BOWEL - NEVER BEFORE MENTIONED MALIGNANCY IN A PATIENT WITH CROHN'S DISEASE. Tanmayee Bichile. St. Francis Hospital, Evanston, IL. (Tracking ID #1643304)

LEARNING OBJECTIVE 1: To identify hepatoid adenocarcinoma is a special type of extrahepatic alpha-fetoprotein producing adenocarcinoma, with a morphological similarity to hepatocellular carcinoma.
LEARNING OBJECTIVE 2: To recognise Chronic inflammation as a potential trigger for malignancy.
CASE: A 57 year old Caucasian female was admitted with complaints of episodic upper abdominal pain, chills, nausea, non-bloody and constipation. Her past medical history includes Crohn's disease, GERD, hypothyroidism, eczema and basal cell carcinoma excision from her face. She was discharged home recently with a diagnosis of metastatic liver disease most likely from an occult AFP producing adenocarcinoma. She received chemotherapy with FOLFOX and 5-fluorouracil. A CT scan Abdomen showed the metastatic liver disease and Crohn's colitis with microperforation. She was taken for an exploratory laparotomy with distal small bowel and cecal resection with ileoascending colostomy and wedge liver biopsy. The tissue showed findings consistent with a metastatic hepatoid adenocarcinoma. Tissue from the small bowel showed hepatoid adenocarcinoma measuring 7×4×1.2 cm, with transmural invasion into subserosal fat, perforation, serositis and adhesions with lymphovascular invasion. The same tissue showed evidence of Crohn's ileitis too. Lymph nodes were negative for tumor invasion. Additional staining tests showed this tumor to be strongly positive for Alpha fetoprotein. Genetic markers including P13K, B-RAF and K-RAS were all negative. TNM staging was done as T3N0M1 consistent with Stage IV metastatic hepatoid adenocarcinoma. The patient has however recovered well from the surgery and is currently continuing chemotherapy.
DISCUSSION: Ishikura first proposed the term 'hepatoid adenocarcinoma of the stomach' for primary gastric carcinomas characterized by both hepatoid differentiation and production of large amounts of AFP. Since then, the tumor is described in various other organs including gall bladder, lung, soft tissue, ovaries and the uterine corpus. Studies have demonstrated chronic inflammation and autoimmunity to be associated with development of malignancy. In addition immunosuppressive therapy for treatment of these diseases is an independent risk factor. The transmural chronic inflammation in patients with Crohn's disease is thought to predispose them to various malignancies. Hemminki et al. followed a Swedish cohort of nearly 22,000 patients with Crohn's disease for increased development of malignancy and higher associations were calculated for small bowel carcinoma, colon cancer and NHL. Hepatoid adenocarcinoma is an aggressive tumor with liver metastasis being the first clinical manifestation which was similar to our case. Although rare, this entity deserves clinical recognition among physicians, surgeons and pathologists to avoid potential misdiagnosis and inappropriate therapy.

HEROIN INDUCED THROMBOTIC THROMBOCYTOPENIC PURPURA Meghan Rane; Emerald Banas; Arman Khorasani-zadeh; Badal Kalamkar; Aakash Aggarwal. SUNY Upstate university hospital, Syracuse, NY. (Tracking ID #1643190)

LEARNING OBJECTIVE 1: Recognize the clinical features and laboratory findings of thrombotic thrombocytopenic purpura (TTP)
LEARNING OBJECTIVE 2: Recognize that thrombotic thrombocytopenic purpura can be heroin / drug induced
CASE: We present a 37 year old female transferred for higher level of care with opiod withdrawal, elevated troponin and platelets of 13×10^3. She complained of pain in the chest, back and abdomen. She describes the pain and stabbing in all areas, high intensity and worse on inspiration. When the foley was placed, red tinted urine was seen continuously. She stated that she was having her mensus. She was saturating well on room air, within an hour she required increased oxygen support and eventually have to be intubated and could no longer give history. As per records that arrived with her, she had recently been discharged from a drug detoxification program 1 week back and admitted to using heroin again. Two weeks prior she had been in the hospital for opiod withdrawl, there her platelets were 509×10^3. Physical Exam- vitals: temperature: 38.3C, blood pressure- 142/108 mmHg equal in both arms, pulse 139 beats per minute, respirations 26 breaths per minute and 97 % oxygen saturation on room air which eventually required 6 L oxygen then intubation. Skin- warm, moist, arms have multiple track marks, thickened sclerotic veins. Eyes: pupils dilated reactive to light, icterus present. Lungs: Clear to auscultation. Heart: tachycardic. Abdomen: soft, diffuse tenderness, no organomegaly, bowel sounds present. Genitourinary: red tinged urine without sediment. Neurological: At first was able to answer questions then became increasingly confused and agitated, had to be sedated for ventilator management. Labs- WBC-16.4×10^3 cells/ml, Hb-6.4 g/dl, platelets 13×10^3. BUN 33 mg/dl and Creatinine 1.7 mg/dl. Bicarbonate was 11. Anion Gap 25. ABG showed acidosis with low pO2 and well compensated pCO2. Cardiac enzymes were elevated. Lactic acid 7.7 meq/L. Lactic dehydrogenase >4000 IU/L. Drug screen positive for opiates only. EKG showed no ST changes. Chest x-ray- clear, no abnormalities. Patient was diagnosed with TTP secondary to heroin use and started on plasmapharesis and returned to baseline within 1 week.

DISCUSSION: The classic pentad of thrombotic thrombocytopenic purpura (TTP) include is thrombocytopenia, fever, neurologic symptoms (altered mental status, hallucinations, stroke or headache), acute kidney injury and microangiopathic hemolytic anemia (jaundice-indirect bilirubinemia, anemia, high lactate dehydrogenase). Criteria for TTP does not have to be met fully to diagnose this disorder. TTP can be drug induced, classically by classes of anti-platelet agents, immunosuppressant and chemotherapy as stated by Dlott JS and collegues; however there have been no reports which so clearly illustrate heroin induced TTP. In a patient who is unable to give history, it is possible to diagnose TTP with physical exam (fever, altered mental status) and labs (hemolytic anemia, thrombocytopenia, acute renal injury).

HMM…THAT LOOKS LIKE ARTERIAL BLOOD Neeraj Agrawal; Prathit Kulkarni; David C. Hilmers. Baylor College of Medicine, Houston, TX. (Tracking ID #1643050)

LEARNING OBJECTIVE 1: Recognize the physical signs and historical features of post-traumatic superficial temporal artery pseudoaneurysm.
LEARNING OBJECTIVE 2: Distinguish the therapeutic options for treating post-traumatic superficial temporal artery pseudoaneurysm.
CASE: A previously healthy 33-year-old Hispanic male presented with a six-week history of an enlarging, raised, painful lesion over the right temple. Approximately 8 weeks prior to presentation, the patient had suffered blunt trauma to the area when he was the victim of assault. At that time, he had a normal non-contrast computed tomographic image of the head. He did well until 2 weeks after the injury when the lesion began to develop. The pain associated with the lesion was described as constant and pulsating, with radiation down the right side of the face. The patient denied any fevers, chills, changes in hearing, otalgia, dysphagia, numbness, tingling, nausea, or vomiting. Physical examination revealed a 1.5-cm raised, mobile, tender lesion over the right temporal area. Bedside ultrasonography showed an encapsulated lesion which appeared to be a simple cyst. Aspiration was done at the bedside with the prompt return of what appeared to be arterial blood. Repeat bedside ultrasonography with Doppler analysis showed the presence of pulsatile flow, suggesting the diagnosis of superficial temporal artery (STA) pseudoaneurysm. A cerebral angiogram subsequently revealed a pseudoaneurysm of the anterior branch of the right superficial temporal artery measuring 9 mm in its largest diameter, confirming the diagnosis. There was an additional pseudoaneurysm more distal to the first that was 3 mm in its largest dimension. Both pseudoaneurysms were successfully embolized with 0.8 mL of n-butyl 2-cyanoacrylate (NBCA) using a direct puncture approach.
DISCUSSION: Post-traumatic STA pseudoaneurysm is a fairly rare diagnosis, with only a few hundred cases reported in the literature since it was first described by Thomas Bartholin in 1740. The anterior branch of the STA passes between the frontalis and temporalis muscles, above the bony ridge of the prominent superior temporal line. Trauma can lead to a contusion or transsection of the artery, creating a pseudoaneurysm. This is distinct from formation of a true aneurysm, in which all three layers of the artery wall are involved. Most patients with post-traumatic STA pseudoaneurysms are young to middle-aged males with a history of blunt trauma to the face. Patients typically present with a painless, pulsatile, compressible mass approximately 2 to 6 weeks after trauma. Diagnosis can usually be made with a careful history and physical exam. Needle aspiration of a suspicious lesion should actually be avoided because of the risk of bleeding, though it sometimes occurs because of a lack of awareness about this possible diagnosis. In the past, STA pseudoaneurysms were classically treated with surgical ligation of the afferent and efferent vessels and excision of the lesion. More recent reports have suggested a role for endovascular coil embolization; other options include endovascular embolization with NBCA, percutaneous embolization with thrombin, and ultrasound-guided compression of the lesion. NBCA is a super-glue like polymer that has been used to embolize many vascular malformations. Our case is unique because it represents one of the first reported uses of direct puncture embolization using NBCA for a case of STA pseudoaneurysm.

HOW LOW CAN YOU GO, A CASE OF ANEMIA Pooja Kumar; Raji Shameem; Robert E. Graham. Lenox Hill Hospital, New York, NY. (Tracking ID #1642387)

LEARNING OBJECTIVE 1: Anemia, viable levels of hemoglobin.
CASE: Anemia is the most common blood disorder to date. As Anemia causes decreased oxygen delivery to vital organs, the body can respond by increased cardiac output and increased tissue extraction of oxygen. The approximate normal value of Hb is defined as > 13 g/dL in men and > 12 g/dL in women, thereby lower values are defined as anemia. An 86 year old male was admitted to the MICU for lethargy and unresponsiveness. Documents from the nursing home indicated that he had a past medical history of CHF with AICD placement, CAD, Atrial Fibrillation, Dementia and that at baseline the patient was conversational. There was one episode of melena reported. Upon admission, the vitals were BP 84/51, temperature 94.6, HR 80. On physical exam, the patient was minimally responsive to sternal rub. The skin was cool with poor turgor. There was evidence of JVD, and bilateral crackles present at the lung bases. The abdomen was soft, distended and with bowel sounds. There was 3+ bilateral pitting edema present in both lower extremities. Initial CBC showed a WBC count of 17.5, Hb 1.9 g/dL, Hematocrit 6.3 %, and Platelets of seven thousand. The INR was 5.56, PT 65.7 s, and PTT 35 s. The lactic acid was 7.9. The patient was intubated, a central venous catheter was placed and over the next 7 h the patient received 5 units of pRBCs, 1 unit of platelets and 2 units of FFPs. The patient was adequately resuscitated and extubated 1 day later. The hemoglobin gradually improved to stabilize at Hb 7.5 g/dL. Further investigation revealed that the patient had a known diagnosis of myelodysplasia. One month later the patient was discharged back to the nursing home at his baseline cognitive, cardiac, and respiratory function.
DISCUSSION: There have been few reports of Hb as low as 1.9 g/dL compatible with life. In the setting of intravascular volume depletion or underlying cardiac dysfunction, studies have shown inability to maintain tissue oxygenation at Hb below 5 g/L. However, with adequate fluid resuscitation, blood product transfusions, and correction of coagulopathy, we were able to quick resuscitate this patient. Our case helps us remember that no two cases of hypovolemic shock are alike, and patients can survive Hb levels previously considered incompatible with life.

HOW TO SEE A BIG 'K' DROP! Pranathi Sundaragiri; Dhwanil Vyas; Rene H. Cuadra; Nicole S. Silverstein. University of Connecticut, Hartford, CT. (Tracking ID #1642461)

LEARNING OBJECTIVE 1: Recognize the role of hyperthyroidism in hypokalemic periodic paralysis (HPP) as management guidelines differ for familial HPP
LEARNING OBJECTIVE 2: Promote the usage of Propranolol as first-line therapy for Thyrotoxic HPP for rapid reversal of paralysis and hypokalemia
CASE: A 32-year old Hispanic male was brought to the emergency room of John Dempsey Hospital (JDH) with complaints of acute onset bilateral lower limb weakness and inability to get out of bed. While jogging, earlier that day, patient had a fall with inability to stand up. Weakness had resolved before he reached an outside hospital. Physical exam and labs at that time were unremarkable. Patient experienced similar episodes of periodic weakness off and on for the last year, which always resolved on their own. He reported no significant medical, social or family history, and no triggers or other associated symptoms. On examination at JDH, vitals were stable with isolated systolic hypertension of 146/72 mmHg. No tachycardia, lid lag, tremors of extremities, or palpable thyroid were appreciated. Neurological exam was remarkable for a 3/5 power in bilateral lower extremities. Power in bilateral upper extremities and sensory exam in all four limbs was normal. Sensorium, speech and cranial nerves were intact. No bowel or bladder incontinence was noted. Initial labs showed serum Potassium of 1.6 mEq/L and EKG showed prominent U waves. The transtubular potassium gradient was low at 2.76. Thyroid stimulating hormone was low at 0.05 uU/ml, Free T4 elevated at 5.26 ng/ml and Free T3 elevated at 12.8 pg/ml. Potassium was corrected to 4.9 mEq/L with oral and intravenous supplements and his symptoms resolved completely.

DISCUSSION: Periodic paralysis (PP) is a family of diseases manifested by episodes of painless muscle weakness. Most cases are hereditary, and acquired cases have been described in association with hyperthyroidism. Hypokalaemic PP as the first presentation of thyrotoxicosis is rare, especially in non Asian populations. The approximate incidence rate for TPP in North American population is 0.1–0.2 %, which is one tenth the rate reported for Asian populations. Exceptional cases of bulbar weakness and respiratory weakness requiring ventilatory support have been reported in TPP, as well as cases of severe, even fatal, arrhythmias (sinus arrest, second degree atrioventricular [AV] block, ventricular fibrillation, and ventricular tachycardia). Acute treatment involves potassium replacement, along with nonselective beta-blockade, the recommended initial treatment for confirmed TPP. Acetazolamide, used as prophylaxis for familial PP, a hereditary form of hypokalaemic PP without thyrotoxicosis, worsens TPP. Restoration of euthyroidism eliminates attacks of episodic weakness. Euthyroidism must be maintained for at least 6 months before a definitive treatment may be considered. Propylthiouracil bridges therapy to Iodine ablation and subtotal thyroidectomy, which are curative.

HYDROXYCHLOROQUINE INDUCED CARDIOMYOPATHY
ANITA SULTAN, MD1; SIMON P. CRASS, MD1; MATTHEW BERNSTEIN, MD2; SHERIEF N. KHALIL, MD1; VAQAR AHMED, MD1; SHAKAIB U. REHMAN, MD1 1 DEPARTMENT OF MEDICINE, MEDICAL UNIVERSITY OF SOUTH CAROLINA.2 DEPARTMENT OF PATHOLOGY, MEDICAL UNIVERSITY OF SOUTH CAROLINA
Anita Sultan[1]; Simon P. Crass[1]; Matthew Bernstein[2]; Sherief N. Khalil[1]; Vaqar Ahmed[1]; Shakaib U. Rehman[1]. [1]Medical University of South Carolina, Charleston, SC; [2]Medical University of South Carolina, Charleston, SC. (Tracking ID #1622665)

LEARNING OBJECTIVE 1: Hydroxychloroquine is commonly used to treat patients with SLE, Rheumatoid arthritis, other connective tissue diseases and malaria. Retinal toxicity is a well known complication of hydroxychloroquine; neuromyotoxicity and cardiotoxicity have also been reported in literature.
LEARNING OBJECTIVE 2: Hydroxychloroquine induced cardiomyopathy is a rare but potentially life threatening condition. Other cardiac side effects include hypotension, hypokalemia, conduction disorders, myocardial thickening, restrictive cardiomyopathy and decrease in contractility, subclinical diastolic and systolic dysfunction with chamber dilatation. The pathological findings of hydroxychloroquine induced cardiomyopathy included myocyte vacuolization with increased glycogen, lamellar lysosomal inclusion and curvilinear bodies on electron microscopy.
CASE: JD is a 32 year old African American female with past medical history significant for SLE, class III lupus nephritis (biopsy proven), tophaceous gout, and chronic kidney disease who presented with complaint of shortness of breath for 6–8 months but worsening for past few weeks. She endorses exertional dyspnea, orthopnea, lower leg swelling and chronic arthralgias. No chest pain, nausea, vomiting, sweating, palpitations or paroxysmal nocturnal dyspnea. She was recently started on diuretics for leg swelling. Lab data revealed serum creatinine of 7.7 mg/dl. Other than mild anemia, rest of her labs including LFTs, complement levels, cardiac enzymes, ds DNA antibody and urinalysis were unremarkable. Vital signs: Blood pressure 163/89, pulse 94, respiratory rate 20, temperature 97.4 and oxygen saturation 96 %. Physical examination showed a young lady with cushingoid body habitus, with multiple scars and tophi on arms, legs and abdomen. She had expiratory wheezes in the right posterior lung field. Cardiovascular examination showed regular rate and rhythm with no jugular venous distention, 3/6 systolic ejection murmur at the apex and faint S3. Patient had 2+ lower extremity edema extending to her knees. A transthoracic echocardiogram demonstrated global hypokinesis of the left ventricle and an ejection fraction of 41 %, a previous echo 4 years ago was within normal limits. There was concern for hydroxychloroquine versus lupus cardiac involvement. A right ventricular apex biopsy was performed which demonstrated mild myocyte vacuolization and few myelin figures. Based on pathology findings, the patient was diagnosed with hydroxychloroquine induced cardiomyopathy. Afterload reduction therapy with beta blocker, hydralazine, and long acting nitrate was initiated, hydroxychloroquine was discontinued, and the patient was started on azathioprine for her lupus. A repeat echocardiogram 2 months later revealed no major regional wall motion abnormalities and an ejection fraction of 70 %.
DISCUSSION: Cardiac abnormalities in SLE are not uncommon, but serious disturbances are rare. Treatment with anti malarial has shown to increase the incidence of cardiac toxicity. It is important to note that cardiac toxicity can develop in the absence of retinal toxicity. Regular eye examination has been recommended for patients on hydroxychloroquine to screen for retinal toxicity. Guidelines for the detection of cardiomyopathy in patients on chronic hydroxychloroquine therapy may be of great benefit, but none exist at this time. An annual ECG and transthoracic echocardiogram might be considered an option for the early diagnosis of hydroxychloroquine induced cardiomyopathy.

HYPERCALCEMIA OF MALIGNANCY
Andrew Mener; Sara Wikstrom. The George Washington University, Washington, DC. (Tracking ID #1641933)

LEARNING OBJECTIVE 1: Recognize the clinical features of hypercalcemia of malignancy
LEARNING OBJECTIVE 2: Manage acute hypercalcemia of malignancy
CASE: A 63 year old male with a history of coronary artery disease, peripheral artery disease, hypertension, and chronic kidney disease presented to our hospital with significant confusion and decreased oral intake of liquids and solids for a period of about 2 days. He denied dysphagia or odynophagia. He had a recent hospitalization for an exudative parapneumonic effusion that was notable for atypical cells concerning for malignancy. However, the patient did not follow-up with pulmonology after being discharged. Physical exam was significant for dry mucous membranes. On neurologic exam, the patient was oriented only to person and place. His chest x-ray revealed opacification of the right middle and right lower lobes of the lung, which was unchanged from his x-rays during his previous hospitalization. His labs were notable for a white count of 17,000, BUN of 56, Cr of 2.6, and a calcium of 15.6. The patient was admitted for altered mental status secondary to hypercalcemia and concern for a paraneoplastic syndrome. He was treated with aggressive intravenous fluid hydration. As the patient's calcium level decreased, his mental status improved. In addition to the known consolidation in the patient's lung, a CT scan of the patient's chest revealed multiple destructive appearing lucent lesions throughout multiple vertebral bodies and ribs concerning for multiple myeloma versus metastatic disease of unknown primary. A subsequent biopsy of the L2 vertebrae and a right pleural biopsy suggested primary metastatic lung adenocarcinoma. The patient was evaluated by oncology but ultimately decided to pursue hospice care.
DISCUSSION: This case emphasized the importance of recognizing the clinical features of hypercalcemia, which classically include bone pains, nephrolithiasis, abdominal pains, and altered mental status. The case also emphasized the need to maintain a high suspicion for malignancy in patients with symptomatic hypercalcemia since approximately 20 to 30 % of patients with cancer develop hypercalcemia. Patients with asymptomatic hypercalcemia or only mild symptoms often do not require immediate intervention, especially if the condition is chronic or has developed gradually over time. However, patients with calcium levels greater than 14 or those accompanied by significant symptoms, require immediate treatment. Elevated calcium levels decrease the kidney's ability to concentrate urine. When this renal defect is combined with the abdominal pains and anorexia associated with hypercalcemia, patients can become profoundly dehydrated, further reducing calcium excretion. Treatment with intravenous normal saline at a rate of 200 to 500 ml per hour is recommended to increase renal calcium excretion. Additional therapies to treat hypercalcemia include intravenous bisphosphonates (to further reduce calcium by inhibiting osteoclastic bone resorption) and dialysis. However, as with all emergent treatments for hypercalcemia, longterm treatments must be focused at the underlying malignancy. 1. New England Journal of Medicine 2005, "Hypercalcemia Associated with Cancer." Vol 352, p374-

7. 2. Annals of Internal Medicine, "Cancer-Associated Hypercalcemia: Morbidity and Mortality." 112 (7): 499–504; Apr 1, 1990. 3. Annals of Internal Medicine, "Narrative Review: Furosemide for Hypercalcemia: An Unproven yet Common Practice." 149(4):259–263; Aug 19, 2008.

HYPEREOSINOPHILIA AS A PARANEOPLASTIC SYNDROME
Mimi C. Tan; Lee Lu. Baylor College of Medicine, Houston, TX. (Tracking ID #1624111)

LEARNING OBJECTIVE 1: Recognize that hypereosinophilia could be a manifestation of metastatic colon cancer.
LEARNING OBJECTIVE 2: Review hypereosinophilia as a paraneoplastic syndrome of colorectal cancer.
CASE: A 74-year-old man presented with weight loss and anorexia. He had a documented 35-pound weight loss within 8 months. He was eating one meal per day due to decreased appetite and early satiety. He denied abdominal pain, diarrhea, and blood in stool. There was no history of allergies or parasitic infections. Physical exam was consistent with a soft, non-tender abdomen without hepatosplenomegaly. The rectal exam showed brown stool, although the fecal occult blood test was positive. Laboratory abnormalities consisted of leukocytosis (WBC 27,700/uL) with hypereosinophilia (absolute eosinophil count 9,100/uL) and anemia (Hgb 10 g/dL, previously 12 g/dL), consistent with iron deficiency anemia. Peripheral blood smear revealed absolute eosinophilia without dysplastic changes or blasts along with microcytic, hypochromic erythrocytes. Stool ova and parasite exam was negative. Cortisol level was normal. With the symptoms of early satiety and weight loss, an esophagogastroduodenoscopy was performed, which was normal. The abdominal and pelvic computed tomography (CT) scan, which was pursued due to the weight loss, revealed a large colonic mass and two liver hypodensitities. Serum carcinoembryonic antigen was normal at 0.61 ng/mL. Colonoscopy revealed two large, ulcerated masses in the ascending and sigmoid colon. Pathology for ascending colon mass showed poorly differentiated adenocarcinoma; sigmoid colon mass revealed moderately differentiated adenocarcinoma. The positron emission tomography (PET) scan demonstrated the liver lesions to avidly uptake fludeoxyglucose (FDG), likely representing metastatic disease. His hypereosinophilia was thought to be a paraneoplastic syndrome associated with colon cancer. He is currently undergoing neoadjuvant chemotherapy with future intent to perform subtotal hemicolectomy and portal vein embolization prior to liver resection.
DISCUSSION: Although hypereosinophilia is usually associated with allergic reactions, helminthic infections or vasculitides, colorectal malignancy should also be recognized as a potential cause. From the literature search, two previously reported cases of hypereosinophilia from widely metastatic colon adenocarcinoma showed increased levels of cytokines, particularly IL-5. Cytokine and eosinophil counts decreased after chemotherapy and rose again when the disease relapsed. In these patients, eosinophil counts can be used to monitor cancer burden. Hypereosinophilia may be associated with a worse prognosis when it presents as a paraneoplastic condition and warrants a strong suspicion for metastatic disease. Underlying malignancy, including colon cancer, causing a paraneoplastic syndrome should be considered with unexplainable hypereosinophilia.

HYPEREOSINOPHILIC SYNDROME: FISHING FOR A DIAGNOSIS
Oliver Horne. musc, Charleston, SC. (Tracking ID #1643227)

LEARNING OBJECTIVE 1: Recognize hypereosinophilia syndrome as a cause of stroke in a young, healthy patient.
LEARNING OBJECTIVE 2: Treat hypereosinophilia syndrome in the acute setting with life-threatening Loeffler endocarditis and stroke.
CASE: A 42 yo WM presented after waking with a right-sided headache and left arm and hand numbness and clumsiness. The left arm numbness started at the shoulder and extended to the fingertips. He denied other symptoms. Medical history included an ischemic stroke 4 months prior with negative carotid ultrasound and transesophageal echocardiogram. Patient was started on aspirin and dipyridamole for the previous stroke and discontinued weeks later due to thrombocytopenia. Patient had a previous 15 pack year smoking history. Family history revealed a brother with deep venous thrombosis. Patient was not taking any medications. Patient was awake, alert, and oriented. Cardiovascular exam was regular rate and rhythm. Neurologic exam revealed dysmetria of the left hand and decreased sensation to pin prick from the left shoulder to fingertips. CBC revealed 19 % eosinophils. MRI brain demonstrated multiple infarcts within the bilateral middle cerebral and left posterior cerebral artery distributions. Transthoracic echocardiogram revealed biventricular endomyocardial fibrosis, thrombus, and myocarditis consistent with Loeffler endocarditis. Cardiac MRI confirmed these findings. Patient was started on anticoagulation and 1 mg/kg oral prednisone. Molecular analysis was positive revealing 69 % of cells with FIP1L1/PDGFRalpha fusion gene. Eosinophil count did not respond to high dose prednisone so imatinib was initiated. Peripheral eosinophilia normalized within 4–5 days. Patient was discharged on imatinib, warfarin, and oral prednisone taper.
DISCUSSION: The definition of hypereosinophilic syndrome is characterized as eosinophilia ≥1500/mL present for more than 6 months, no other cause of eosinophilia such as parasitic, allergic, or other known causes of eosinophilia, and signs and/or symptoms of end-organ dysfunction such as heart failure, pulmonary fibrosis, fever, weight loss, anemia, or central nervous system abnormalities. Loeffler was first to report the associations among eosinophilia, active carditis, and multiorgan involvement in 1936. It is characterized as eosinophilic myocarditis, endomyocardial fibrosis, and clinical manifestations of thromboembolism and acute heart failure. Although eosinophilic endocardial disease is well known, myocardial and vascular involvement is rarely diagnosed during life due to its rapid fatal course. Hypereosinophilic syndrome is rare. Estimated prevalence is presumed to be 0.36–6.3 per 100,000 people. Only 10–14 % of these have associated FIP1L1/PDGFRalpha tyrosine kinase fusion protein. Testing for this mutation with FISH is now routine practice as its presence indicates response to imatinib. In patients presenting with life threatening complications, prompt empiric treatment with high dose steroids should be initiated. Imatinib is the treatment of choice for FIP1L1/PDGFRalpha positive disease and should be initiated as soon as diagnosis is made. In patients unresponsive to high-dose steroids, imatinib should be initiated early, even before FISH analysis is complete. Most patients with FIP1L1/PDGFRalpha positive disease improve clinically and hematologically within 2–4 weeks and achieve remission within 3–6 months. However, there has been no reported cure of FIP1L1/PDGFRalpha positive disease from imatinib to date.

HYPERTROPHIC CARDIOMYOPATHY AND INFECTIVE ENDOCARDITIS: RECOGNIZING THE AT-RISK PATIENT.
Sarah W. DeParis; Patrick Hart. Reading Health System, West Reading, PA. (Tracking ID #1610842)

LEARNING OBJECTIVE 1: Identify the incidence of infective endocarditis in hypertrophic cardiomyopathy (HCM).
LEARNING OBJECTIVE 2: Recognize the specific risk factors for infective endocarditis among HCM patients.
CASE: A 68-year-old woman with a history of hypertrophic cardiomyopathy presented to the emergency department complaining of intermittent fever for 1 month and severe low back pain for 2 days. Previous echocardiogram 12 years prior showed HCM with significant outflow obstruction and left atrial dilation. She denied any history of intravenous drug use. At presentation, she was afebrile and normotensive with a normal white count. Physical examination revealed tenderness to palpation over the L3 and L4 vertebrae and no focal neurologic findings. Loud systolic and diastolic murmurs were audible throughout the precordium. In addition, a 5 mm round macule was visible on the left hand, consistent with a Janeway lesion. Blood cultures were positive for Streptococcus mitis (viridans). Transthoracic echocardiogram revealed a large vegetation of the mitral valve and no evidence of heart failure. MRI of the lumbar spine increased T2 signal at L3-L4 suggestive of early osteomyelitis. She was treated with intravenous ceftriaxone to complete full six-week course, and had rapid improvement of her clinical symptoms.

DISCUSSION: Approximately three-fourths of patients with infective endocarditis have a history of underlying structural cardiac disease. Even so, infective endocarditis is a relatively rare complication of hypertrophic cardiomyopathy (HCM), with less than 40 cases reported in the literature, and an estimated incidence of only about 4 per 1000 person-years. However, HCM patients with significant outflow obstruction and left atrial dilation are at nearly two-fold greater risk for endocarditis than those with non-obstructive HCM. Antibiotic prophylaxis is no longer recommended for any HCM patients prior to dental procedures, but in patients with outflow obstruction presenting with febrile illness, a high index of suspicion for endocarditis is necessary to prevent delay in diagnosis.

HYPOKALEMIA WITH PERIODIC PARALYSIS: A CASE OF DISTAL RENAL TUBULAR ACIDOSIS Kamesh Sivagnanam[1,2]; Nili Parekh[1,2]; Hirenkumar Patel[1,2]; Terence O'Neil[2]. 1East Tennessee State University, Johnson City, TN; [2]Mountain Home Veterans Affairs Medical Center, Johnson CIty, TN. (Tracking ID #1642032)

LEARNING OBJECTIVE 1: Something as common as hypokalemia can be associated with devastating consequences and may require extensive systematic work-up.
LEARNING OBJECTIVE 2: Not all patients with hypokalemic periodic paralysis have the familial or the thyrotoxic variety. Secondary causes of hypokalemic paralysis can also be periodic.
CASE: A 41 year old veteran with past medical history of dyslipidemia, hypertension and diabetes presented with a history of recent diarrhea, vomiting, tingling sensation and weakness. His medications included metformin, glipizide, lisinorpil, bupropion and simvastatin. He had no history of substance abuse. His initial vitals were normal and examination was negative except for generalized weakness. Initial labs were only significant for potassium of 3.1 meq/dl (normal 3.5–5 meq/dl). CT scan of the head was negative. His weakness continued to progress over a few hours, eventually involving the respiratory muscles and he had to be intubated. At the time of intubation, potassium was 1.2 meq/dl, arterial blood gases showed metabolic acidosis and his diarrhea had resolved. Potassium was aggressively replaced (320 meq/22 h) with constant monitoring. With replacement, he improved to his baseline and was discharged. During the next 2 years, he had 15 more admissions involving 6 intubations with the same presentation. Negative workup for differentials during this time included a lumbar puncture (Gillian Barre syndrome), serotonin, somatostatin, gastrin, urine 5-HIAA, vasoactive intestinal polypeptide, urine anion gap (gastrointestinal loss), thyroid stimulating harmone (thyrotoxic periodic paralysis), urine diuretics panel (surreptious use), renin-aldosterone ratio, testosterone, insulin, c-peptide, epinephrine, nor-epinephrine, dopamine (transcellular shunts), heavy metal screen, urine drug screen (toxic) and a genetic test done for hypokalemic familial periodic paralysis(FPP). Bicarbonates were significantly reduced during episodes. Urine Potassium levels, urine potassium/creatinine ratio and transtubular gradients during the 2 years of monitoring ranged between 40 and 150 meq/l (>30 meq/l=renal loss), 45–120 (>1.5–2.5=renal loss), 10–50 (>3=renal loss) respectively. Several causes of renal loss were ruled out including diuretics (panel negative, not prescribed), hyperaldosteronism, hypomagnesemia and alkalosis (ruling out Bartter, Gitelman and Liddle syndromes). Urine pH was consistently greater than 5.5 ruling out a proximal renal tubular acidosis (RTA). Patient had normal anion gap metabolic acidosis, normal serum potassium in spite of high urinary losses between episodes, positive urine anion gap and an elevated urine Ph confirming the presence of a distal RTA.
DISCUSSION: Distal RTA can occur in the absence of background rheumatological conditions and can cause hypokalemia induced periodic paralysis. Periodic paralysis occurs in several settings and the diagnosis may require an extensive search for the underlying etiology since the treatment varies according to the cause. Treatment with alkali worsens FPP, but is beneficial in RTA making the distinction pivotal. Not all periodic paralysis is familial and a specific cause must be isolated to ensure appropriate treatment.

HYPONATREMIA: A COMPLICATION OF INTRA-ARTICULAR CORTICOSTEROID INJECTION Andrew J. Zane; Jingbo Huang; Shankar Bettadahalli; Sreelatha Chalasani. Marshfield Clinic/Ministry Saint Joseph's Hospital, Marshfield, WI. (Tracking ID #1642516)

LEARNING OBJECTIVE 1: Recognize adrenal insufficiency as a rare complication of intra-articular steroid injection.
LEARNING OBJECTIVE 2: Evaluation and treatment of hyponatremia in the setting of adrenal insufficiency.
CASE: A 69-year-old female presented to our facility with complaints of weakness and fatigue, progressively worsening over a 3 week duration. She denied fevers, chest pain, or dyspnea, but reported a 10 lb weight loss with occasional lightheadedness. The patient was able to ambulate without difficulty at baseline; for 4 days prior to admission, she was using a walker she had acquired from a past pelvic fracture. Two weeks prior to admission, she had seen her primary care physician and was treated for acute on chronic sinusitis and oral thrush. She was 3 days from completing a 7 day course of doxycycline and fluconazole. Her past medical history was significant for severe osteoarthritis of her knees and shoulder, hypertension, and coronary artery disease with diastolic dysfunction. The patient had received intra-articular steroid injections (100 mg of triamcinolone) to bilateral knees on 4 occasions over the past 2 years and her most recent injection was 1 month prior to presentation. Her vital signs were notable for T of 98.4 °F, HR of 66 bpm, BP of 130/67 mm Hg, and RR of 17 with oxygen saturation of 94 % on room air. Physical examination revealed a lethargic-appearing female who was alert and oriented to person, place and time. Her mucous membranes were dry and conjunctivae pale. Her heart was regular, lungs clear, and abdomen soft and non-tender. Her musculoskeletal strength was 4/5 throughout and was without any focal neurological deficits. Laboratory studies revealed sodium of 127 mmol/L, potassium 4.3 mmol/L, chloride 98 mmol/L, BUN 22 g/dL, Cr 0.8 units/L, blood osmolality 271 mOsm/L, urine osmolality 583 mOsm/kg, urine sodium 98 mmol/L, and TSH of 1.52 ng/ml. A baseline cortisol was 0.6 μg/dl. A 60-minute ACTH stimulation test revealed a cortisol of 5.1 μg/dl. Baseline ACTH was 7 pmol/L. FSH, LH, and IGF-1 were within normal limits. The patient was diagnosed with hyponatremia as a result of adrenal insufficiency secondary to intra-articular steroid injection. She was treated with hydrocortisone 100 mg IV every 8 h. Repeat serum sodium levels began to rise. Her weakness and fatigue improved. She was discharged in baseline condition and was provided a course of oral hydrocortisone and instructions for follow up.
DISCUSSION: Intra-articular steroid injections are a valuable adjunct therapy for the treatment of severe osteoarthritis. The most commonly used steroid is triamcinolone acetonide at standard dose of approximately 40 mg for larger joints, 30 mg for medium-sized joints, and 10 mg for smaller joints. Adrenal insufficiency is a recognized, but rare, complication of intra-articular corticosteroid injection secondary to hypothalamic pituitary adrenal axis suppression. Decreased cortisol levels can occur after even a single, low-dose, intra-articular corticosteroid injection. Hyponatremia in adrenal insufficiency is mediated by increased production of antidiuretic hormone, which causes water retention. Cortisol inhibits corticotrophin releasing hormone and therefore ADH. This important inhibitory effect is absent in adrenal insufficiency. Treatment of hyponatremia in adrenal insufficiency involves cortisol and volume resuscitation. Physicians should be mindful that the rise in sodium as rapid correction can cause osmotic demyelination syndrome.

HYPOTHENAR HAMMER SYNDROME EXACERBATED BY CREST SYNDROME Dereje F. Moti; Kassi S. Montgomery; Brian Weis; Mashrafi Ahmed. Texas Tech Univ Health Sciences Center, Amarillo, TX. (Tracking ID #1639769)

LEARNING OBJECTIVE 1: Diagnose the Hypothenar Hammer Syndrome
LEARNING OBJECTIVE 2: Recognize that rare rheumatological disorders like Hypothenar Hammer Syndrome may present and exacerbate together with common rheumatological diseases.

CASE: A 35 year old female presented with pain and black discoloration of left third distal finger for 1 month. The patient noticed transient discoloration in both hands, most notable in the winter months, but denied any numbness. She did not have any history of DVT, pulmonary embolism, pregnancy loss or contraceptive use. She works at a dairy farm filling bottles with milk, and a detailed occupational history revealed a 2 year history of 60 h per week of high pressured palmar compression involving only the left hand. Physical examination revealed atrophy of the hypothenar eminence of the left hand, ulceration of the third digit, and a positive Allen's test on the corresponding hand. Her Anti Centromere antibody came back positive. Digital subtraction angiogram showed occlusions of the distal radial and ulnar arteries with collateral flow to the palmar arches predominately from the distal radial collateral, and occlusion of many of the digital arteries of the hand in particular the mid to distal portion of the digital arteries of the middle finger. The patient is currently being managed for the hypothenar hammer syndrome exacerbated by CREST variant of scleroderma.
DISCUSSION: Hypothenar hammer syndrome (HHS) is a rare cause of upper-extremity ischemia. The diagnosis is often delayed due to the absence of a thorough occupational and recreational history. Importantly, it is a reversible cause of hand ischemia that, if missed, can lead to significant morbidity and even amputation. The term 'hypothenar hammer syndrome' (HHS) was suggested by Conn et al. in 1970. It is described as being the result of trauma to the ulnar artery as it courses around the hook of the hamate bone in the wrist. Such trauma leads to stenosis or occlusion of the ulnar artery, thereby affecting the blood supply to the superficial palmar arch. Ferris et al. reported the largest series (21 cases) of HHS and found that all their cases had repetitive palmar trauma. However, they also found a high incidence of bilateral abnormalities on arteriography, even in patients with unilateral symptoms. Specific jobs causing repeated trauma to the palm of the hand including mining, automobile repair, sawmill work, carpentry, butchery are the main causes. Angiography is the gold standard test to diagnose it. Treatment options are conservative or reconstructive, with exclusion of the emboligenous area. Conservative measures including intravenous heparin and prostaglandin E1 may be useful, with control of risk factors by smoking cessation, low-lipid diet and repeated venesection to reduce polycythaemia. This case reminds us that a rare clinical entity like hypothenar hammer syndrome can present along with more common rheumatological disorder like CREST syndrome and high degree of suspicion is needed to reach a proper diagnosis.

I GOT DYSPHAGIA FROM DRINKING COLD WATER! OXALIPLATIN INDUCED LARYNGOPHARYNGEAL DYSETHESIA-A RARE SIDE EFFECT Niket Sonpal; Raji Shameem; Antonio Mendoza-Ladd; Ian Yudelman. Lenox Hill Hospital, Hauppauge, NY. (Tracking ID #1624316)

LEARNING OBJECTIVE 1: The occurrence of Laryngopharyngeal Dysethesia secondary to Oxaliplatin can masquerade as an acute stroke; however a good history and physical can prevent unnecessary testing.
LEARNING OBJECTIVE 2: Patient and physician education is essential to the prevention of Laryngopharyngeal Dysethesia.
CASE: Oxaliplatin is a platinum based chemotherapeutic agent that contains diaminocyclohexane. Laryngopharyngeal dysethesia (LPD) has been seen in patients receiving oxaliplatin. This is an under recognized complication of oxaliplatin use. LPD usually occurs shortly after infusion of the drug. It is believed that LPD is induced by or exacerbated by expose to cold substances, such as cold liquids. We present a case of patient on oxaliplatin with multiple infusions who subsequently developed a sudden onset of dysphagia after drinking a glass of cold water. A 79 year old female with past medical history of colon cancer on chemotherapy presented with the complaint of weakness, difficulty swallowing, inability to speak and some blurry vision. The patient states this feeling began suddenly and was shortly have going to the bathroom. On exam the patient was found to dysarthria and difficulty handling her saliva and decreased muscle strength. A CT scan of head showed no acute infarction or or intracranial hemorrhage. An echocardiogram showed a normal left ventricle without clot or wall motion abnormalities and a carotid duplex was also within normal limits. A subsequent barium swallow demonstrated a mildly dilated mid and lower thoracic esophagus with birds beaking consistent with achalasia. The patient's condition improved after several days and she returned to her baseline. The patient had an ENG It was then discovered after lengthy discussion that the patient had before the incident ingested a cold beverage and given her oxaliplatin based regiment it was concluded that her symptoms were secondary to a rare side effect from the chemotherapeutic agent. This information combined with her rapid improvement and normal imaging studies confirmed the diagnosis.
DISCUSSION: When it comes to the management of oxaliplatin induced LPD, patient and physician education is essential. Prior to infusion one should tell the patient to be aware of the possible onset of dysphagia and to alert the physician immediately if it occurs. It is important to stop the infusion immediately and to reassure the patient. In most instances the dysphagia resolves and the patient will do well, however primary care physicians should keep this rare but importance occurrence in mind. Taking a good history is paramount as exposure to platin based chemotherapy will aid the clinician and prevent unnecessary testing.

I HAVE A DANCING HAND: A RARE PRESENTATION OF POST HERPETIC MYOCLONUS Miles Raizada; Robert B. Werner; Razi Rashid; Mashrafi Ahmed. Texas Tech University Health Sciences Center, Houston, TX. (Tracking ID #1640784)

LEARNING OBJECTIVE 1: Recognize that shingles can cause nerve damage and irritation to such an extend that it can cause myoclonus
LEARNING OBJECTIVE 2: Treat post-herpetic myoclonus with a new modality by Injecting botulinum toxin
CASE: A 70-year-old male presented to the hospital with abnormal jerking movement of the right hand 2 weeks after initially developing dermatomal pain and while still experiencing the classic dermatomal rash along the C5 dermatome. Patient was treated with acyclovir and prednisone at the time of initial presentation, but self-discontinued the medications after the pain had largely resolved. Three days after he discontinued therapy, he presented with violent myoclonic jerks of his right arm involving muscles supplied by the C5 motor nerve root. Initially the movement was constant and continuous. He was unable to rest and presented with elevation in myoglobin and creatinine kinase related to muscle breakdown from constant activation. The clinical picture of the C5 rash occurring concurrently with the myoclonus of C5 innervated muscles strongly suggests that the patient had developed a peripheral myoclonus caused by the varicella zoster reactivation. Therapy for peripheral myoclonus was initiated with benzodiazepines and Depakote without immediate success. The Patient suffered 48 h of sleep deprivation secondary to the constant, violent myoclonic jerks. We initiated neuro-chemical denervation with botox for some clinical relief. He responded to this intervention with significant resolution of the motor activity, as we continued to titrate up his oral medications.
DISCUSSION: Latent Varicella-Zoster infections can give rise to classic unilateral dermatomal shingles. It results from reactivation of endogenous latent Varicella-zoster virus infection within the sensory ganglia. Although pain due to post herpetic neuralgia is not uncommon, Herpes zoster induced myoclonic jerk is very rare presentation. Myoclonus is a brief, shock-like, involuntary movements caused by muscular contractions or inhibitions. Though the central nervous system myoclonus is more common, the peripheral myoclonus may also occur as a consequence of a peripheral nervous system lesion producing hyperactive motor discharges to its muscle. Ogata et al. presented a case of myoclonic jerk of abdominal muscles in a patient with high varicella-zoster virus (VZV) titers. Bhatia et al. also presented right upper limb segmental myoclonus following uncomplicated chicken pox without evidence of encephalitis or the opsoclonus-myoclonus syndrome. Sometimes, myoclonus may precede the skin manifestation as well. Koppel et al. encountered a patient with arm and shoulder myoclonus preceded herpes zoster involving the same segments contralaterally on two occasions. In all these cases, anticonvulsants or benzodiazepines were administered. Our patient initially failed to respond to benzodiazepine and anti-epileptic therapy and was chemically denervated with botox as a therapeutic bridge. This is the first case in the literature in which post-herpetic peripheral nerve damage has led directly to myoclonus.

IDIOPATHIC TRANSVERSE MYELITIS PRESENTING AS ACUTE QUADRIPLEGIA AND RESPIRATORY FAILURE Brielle Spataro; Farhan Zaidi; Bryan Mcverry. UPMC, Pittsburgh, PA. (Tracking ID #1630092)

LEARNING OBJECTIVE 1: Recognize the clinical features of Idiopathic Transverse Myelitis.
LEARNING OBJECTIVE 2: Treatment of Idiopathic Transverse Myelitis.
CASE: We present a case of a19 year old female who presented with acute onset respiratory failure and acute onset quadriplegia. She was in her usual state of health 2 days prior to admission. She awoke the morning of admission with neck pain and right arm paresthesias which evolved into numbness and weakness over the course of a half hour. The numbness and weakness progressed to involve her right leg and subsequently leading to quadriplegia. Her respiratory rate decreased and she was intubated for worsening respiratory status. She was then transferred to our University Hospital. On exam her extremities were flaccid and she had no rectal tone. Deep tendon reflexes were absent in the right upper extremity. The lower extremities were hyper-reflexive bilaterally, and her Babinski reflexes were normal. Sensation was absent with the exception of the face and left cervical region. Lumbar puncture revealed normal CSF. MRI of the cervical spine was markedly abnormal with cord enhancement and T2 hyper intense signal from C2 to C7. An extensive laboratory work up was negative. She was treated with parenteral corticosteroids and plasmapheresis with minimal improvement. She was subsequently treated with cyclophosphamide and 12 days later improved strength in her upper extremity and increased sensation. Her final diagnosis is Idiopathic Transverse Myelitis.
DISCUSSION: Our patient presented with acute onset quadriplegia with MRI findings consistent with Transverse Myelitis (TM) with no identifiable cause. TM is uncommon, with an approximate incidence of between 1 and 5 cases per million population annually. TM typically presents with varying degrees of weakness, sensory alterations, and autonomic dysfunction Respiratory failure is a rare presentation of TM. The diagnostic criteria for idiopathic acute TM require the development of clinical dysfunction attributable to the spinal cord with defined sensory signs in an acute period, in the absence of extra axial compressive etiology and signs of inflammation. Moreover other etiologies must be ruled out. The exact pathophysiology remains unclear but is thought to be due to an intraparenchymal or perivascular cellular influx into the spinal cord, resulting in the breakdown of the blood brain barrier and variable demyelination and neuronal injury. While patients are often treated with parenteral corticosteroid therapy, limited evidence supports that this approach alters outcomes. In one uncontrolled, retrospective study of 122 patients with idiopathic TM the greatest improvement in neurological deficits was observed in patients treated with steroids plus cyclophosphamide and plasmapheresis compared to those treated with corticosteroids alone or corticosteroids plus cyclophosphamide. Most patients with idiopathic TM have at least a partial recovery, which usually begins within 1 to 3 months. However, some degree of persistent disability is common, occurring in about 40 %. Our case demonstrates that TM should be a diagnostic consideration in anyone presenting with acute onset of quadriplegia, that TM may rarely present as acute respiratory failure, and that despite intensive therapies patients may experience minimal improvement. Further investigation is necessary to identify novel therapeutic targets for this devastating disease.

INFECTIVE ENDOCARDITIS COMPLICATED BY SEPTIC PULMONARY EMBOLI IN A CHRONIC INTRAVENOUS DRUG USER David B. Zagha; Avni S. Shah; Natalie K. Levy. NYU School of Medicine, New York City, NY. (Tracking ID #1638611)

LEARNING OBJECTIVE 1: Diagnose methicillin-resistant Staphylococcus aureus endocarditis in a chronic intravenous drug user.
LEARNING OBJECTIVE 2: Recognize pulmonary septic emboli as a complication of infectious endocarditis.
CASE: A 33-year-old man was admitted to the hospital with worsening shortness of breath over the past 2 weeks. His symptoms were associated with profuse intermittent sweating, fevers, and cough productive of pink sputum. He reported an extensive history of poly-substance abuse, including cigarettes, alcohol, crack-cocaine, and 30–40 bags of heroin injected daily. Physical exam revealed an obese, obtunded, and diaphoretic male, using accessory muscles for respiration with temperature 100.8 °F, blood pressure 110/68, pulse 118, respiratory rate 24, and oxygen saturation 85 % on room air. Exam also showed constricted pupils, tachycardia without any evident murmurs, diffuse inspiratory crackles and expiratory wheezes, and bilateral pitting edema distal to the knees. Labs were significant for a WBC of 23,900/uL with 91 % neutrophils and 6 % bands, Hb 10.1 g/dL, and platelets 56,000/uL. K was 6.6 mmol/L, BUN 206 mg/dL, and Cr 9.3 mg/dL. Two separate blood cultures grew methicillin-resistant Staphylococcus aureus (MRSA). Transthoracic echocardiogram showed a 2.4×1.7 cm vegetation on the septal tricuspid leaflet with severe tricuspid insufficiency. Chest CT revealed multiple air and fluid-filled cavitary masses, air bronchograms, and partially loculated bilateral pleural effusions.
DISCUSSION: By the Duke Criteria, our patient satisfies two major clinical criteria for definite diagnosis of endocarditis: two separate blood cultures positive for Staphylococcus aureus and echocardiographic evidence of endocarditis. The association between intravenous (IV) drug use and right-sided endocarditis is well established; studies have shown right-sided endocarditis to be responsible for up to 86 % of infective endocarditis cases seen in IV drug users. With IV drug injection, both particulate matter and common skin flora are released into circulation. The former leads to repetitive valvular endothelial damage, in particular affecting the right sided tricuspid valve, which can then be more susceptible to bacterial and fungal seeding. Staphylococcus aureus, a common skin flora, is isolated 51 % of the time in IV drug users with endocarditis as compared to 13 % of non-IV drug users with endocarditis. Septic emboli are a well known complication of infective endocarditis and are more likely to occur if the patient is an intravenous drug user (53 % vs. 35 %). Septic pulmonary emboli cause infarction of tissue distal to the occluded pulmonary vessel, thus establishing a focus for abscess formation within lung parenchyma. Given the combination of increased incidence of right-sided endocarditis and rate of embolic events in IV drug users, it is reasonable to expect preferential involvement within the pulmonary arterial system among this subgroup. Indeed, septic pulmonary emboli are found to be responsible for 38 % of embolic events in IV drug users as opposed to only 10 % in non-IV drug users. Common presenting symptoms of septic pulmonary emboli, as seen in our patient, include fever (93 %), dyspnea (36 %), cough (14 %), and hemoptysis (7 %). Common radiologic features seen on chest CT include multiple peripheral nodules (83 %), a "feeding vessel sign," described as a vessel coursing directly into a nodule (67 %), cavitary lesions (50 %), and air bronchograms within nodules (28 %).

INTRAHEPATIC PORTAL VEIN THROMBOSIS: IS GASTRIC SURGERY A RISK FACTOR? Naba R. Mainali; Madan R. Aryal; Madan Badal; Richard Alweis. Reading Health System, West Reading, PA. (Tracking ID #1621784)

LEARNING OBJECTIVE 1: Recognize the clinical features and diagnosis of Intrahepatic Portal Vein Thrombosis.
LEARNING OBJECTIVE 2: Describe the treatment and prognosis of Intrahepatic Portal Vein Thrombosis.
CASE: Portal Vein thrombosis is frequently being diagnosed these days, with life time risk of 1 % in the general population. Intrahepatic portal vein thrombosis, however, is a less common entity than extrahepatic portal vein thrombosis. Usually, intrahepatic portal vein thrombosis is associated with hepatocellular carcinoma. In adults, approximately 25 % of patients with extrahepatic portal vein thrombosis have underlying cirrhosis that might extend into intrahepatic portal veins. Other common causes of intrahepatic portal vein thrombosis include prothrombotic disorder and abdominal inflammation. It might be complicated with splenomegaly, esophageal or gastric varices, portal hypertensive gastropathy or ascites. A 38-year-old

morbidly obese female, with recent laparoscopic sleeve gastrectomy for weight control presented in the emergency department with severe abdominal pain for 2 days. Initially, the pain was crampy in nature and associated with burning sensations in the epigastric area. It was also associated with nausea and vomiting. She was passing flatus with normal bowel movements. There was no history of melena, hematochezia, hematemesis or dysuria. She denied fever, chills, chest pain and shortness of breath. In the meantime, she was being treated for left lower lobe pneumonia. Physical exam revealed mild tenderness in the mid-epigastric area but no obvious hepatosplenomegaly. Laboratory investigations revealed hemoglobin 12.1 gm/dL, WBC 7800/μL, platelets 232000/μL and normal abdominal X-ray and serum electrolytes. D-Dimer was elevated at 1000 mg/dL. Abdominal CT scan showed intrahepatic portal vein thrombosis in the left lobe of the liver. Protein C, protein S, antithrombin III were all normal and factor V Leiden, anti-cardiolipin antibodies and lupus anticoagulant antibodies were found to be negative. Anticoagulation with heparin and warfarin was initiated and she was discharged on warfarin for 6 months. On follow up exam after 6 months, she was asymptomatic without any evidence of thrombosis on the abdominal CT scan.

DISCUSSION: The patient presented with several risk factors, including recent surgery. Some studies suggest the possibility that the CO2 used for pneumoperitoneum may increase risk, but tissue damage from the surgery itself is a well-recognized risk factor for thrombophilia. Tissue damage from gastric surgery may lead to release of procoagulant products in the portal venous system eliciting portal vein thrombosis. Additionally, infection like pneumonia and obesity itself are risk factors for thrombosis. Since her pneumonia was almost resolved with treatment, negative prothrombotic work-up, recent surgery was the most likely explanation of her condition. Treatment consists of anticoagulation for at least 6 months. It is prudent to repeat the abdominal CT scan after 6 months to confirm the resolution of thrombus. It is unclear whether a follow-up D-dimer is useful in the decision to discontinue anticoagulation. Despite this increasingly common condition, there remains a paucity of studies to guide clinicians.

INTRAVASCULAR CATHETER-RELATED INFECTION WITH ACINETOBACTER BAUMANNII LEADING TO NATIVE VALVE ENDOCARDITIS Rossana Rosa; Kathreen Kraus; Rosario Colombo; Cesia M. Gallegos. Jackson Memorial Hospital-University of Miami Miller School of Medicine, Miami, FL. (Tracking ID #1642524)

LEARNING OBJECTIVE 1: Recognize the importance of Acinetobacter baumannii as an infectious agent.

LEARNING OBJECTIVE 2: Manage intravascular catheter-related infections due to Acinetobacter baumannii.

CASE: A 39-year-old female with HIV-related end-stage renal disease receiving dialysis for the past 3 months via a permanent catheter in her right subclavian vein was referred to the hospital from her dialysis center for 3 days of fever and chills. The initial physical examination had unremarkable vital signs. There was tenderness to palpation surrounding the catheter insertion site with skin blistering, but no purulent drainage or erythema. No audible murmur on cardiac auscultation. No evidence of systemic embolization. Laboratory data showed white blood cell count of 11,900/uL, hemoglobin of 7.8 g/dL, platelets 224,000/uL, BUN 39 mg/dL and creatinine 9.4 mg/dL. A chest x-ray was unremarkable. Blood cultures showed growth of Acinetobacter baumannii (2/2 bottles) and Enterococcus faecalis (2/2 bottles), both sensitive to conventional antibiotics. The dialysis catheter was removed and the tip culture showed Acinetobacter baumannii with the same sensitivity profile. A transthoracic echocardiogram showed thickened mitral valve leaflets and mild mitral regurgitation. A tunneled dialysis catheter was placed via the right internal jugular (IJ) vein. She was discharged home with a 4 week regimen of IV vancomycin and levofloxacin. Four months later the patient returned with fever, chills, nausea, and vomiting. Blood cultures showed growth of Acinetobacter baumannii (2/2 bottles) with the same sensitivity profile. A transesophageal echocardiogram (TEE) revealed moderate-sized vegetations on the anterior leaflet of the mitral valve and also attached to the tip of the dialysis catheter. The catheter was guide-wire exchanged and the patient was discharged on IV cefepime to complete 6 weeks of treatment. Two weeks later, she returned with fever, chills, nausea and vomiting. Blood cultures remained negative, but a repeat TEE re-demonstrated mitral valve vegetation. Cefepime was continued and tobramycin was added. The right IJ catheter was completely removed and the tip of the catheter, upon culture, showed growth of Acinetobacter baumannii sensitive to Colistin only. Since the patient had clinically improved, therapy with Cefepime and Tobramycin was continued for a total of 6 weeks. She has since been followed by Nephrology, and no further episodes of fever or bacteremia have been reported. Three months later a new AV fistula was created from which she is now receiving routine hemodialysis.

DISCUSSION: Acinetobacter baumannii is a gram-negative cocobacillus, of importance as an infectious agent in hospitals worldwide, and due to its ability to easily develop resistance to many classes of antibiotics. Acinetobacter baumannii leading to native valve infective endocarditis is rare, with less than 20 cases reported to date. Amongst the risk factors for infection with Acinetobacter baumannii are the use of dialysis machines, indwelling central venous catheterization and the presence of comorbidities, such as immunosuppression. The guidelines for the management of intravascular catheter-related infections recommend that the presence of gram-negative bacilli should prompt removal of catheter. Currently there is lack of data based on randomized controlled trials regarding the best antibiotic choice for infections with Acinetobacter baumannii; treatment selection is guided by in vitro sensitivity.

INVASIVE ASPERGILLOSIS: CLOSING THE TIME GAP IN ANTIFUNGAL THERAPY Anar Patel; Harish Jasti. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1643055)

LEARNING OBJECTIVE 1: Illustrate the importance of early diagnosis in the prognosis of invasive aspergillosis

LEARNING OBJECTIVE 2: Discuss the utility of galactomannan detection in the diagnosis of invasive aspergillosis

CASE: A 55 year-old male with alpha-1 antitrypsin deficiency status-post double lung transplant (7/2010), HTN, and chronic kidney disease was admitted for new-onset fatigue and dry cough. He denied nausea, vomiting, headaches, hemoptysis, abdominal pain, or rashes. He was on tacrolimus and mycophenolate mofetil for immunosuppression and azithromycin, dapsone, and acyclovir for infectious prophylaxis. Social history was significant for remote cocaine and tobacco use, and no recent travel history. Physical exam revealed a well-developed male in no acute distress. He was afebrile with an oxygen saturation of 95 % on room air. Pulmonary exam was remarkable for rhonchi in the left lower lung field. He had dry mucous membranes and tachycardia (90 bpm). Abdominal and neurologic exams were unremarkable. A CT scan of the chest revealed mild right basilar consolidation with ground-glass opacities consistent with rejection, which was unchanged from a previous scan. In addition, there was a new consolidation within the left lung base with a central area of cavitation, and consolidative nodules in the lingula and superior segment of the right lower lobe. The patient was initiated on vancomycin and piperacillin/tazobactam for community acquired pneumonia and empiric oseltamivir for influenza. After 2 days of continued fevers, levofloxacin and voriconazole were added for expanded coverage of Legionella and Aspergillus, respectively. Subsequent bronchoscopy, along with bronchoalveolar lavage (BAL), was positive for galactomannan in the fluid. A culture of the bronchial washings was positive for Aspergillus fumigatus. Treatment was started for invasive aspergillus with voriconazole and inhaled amphotericin.

DISCUSSION: Diagnosis of fungal pneumonia in immunosuppressed and critically ill patients is challenging because of a non-specific clinical presentation, lack of specificity of radiologic imaging, and delayed yield of cultures. Definitive diagnosis relies on histopathology or culture results which are often difficult to obtain. Survival can be improved if therapy is initiated prior to microbiological confirmation of the disease. Since a delayed diagnosis of invasive aspergillosis can lead to significant morbidity and mortality, early detection is critical for patient management. In addition to clinical presentation and imaging studies, a serum enzyme immunoassay that detects Aspergillus cell wall galactomannan (expressed as galactomannan index or GMI) is a useful clinical tool to help guide

antifungal therapy. Systematic reviews have shown that GMI has a sensitivity and specificity of 66 % and 90 %, respectively. The sensitivity of a serum sample is increased in patients with neutropenia, especially in those with hematologic malignancies. In non-neutropenic patients, the sensitivity of the test is higher in BAL fluid samples. False positive results can be seen with concomitant fungal infections and certain antibiotics, such as beta-lactams. False negative results may occur in patients who have received prior antifungal therapy. As our case demonstrates, galactomannan testing in serum and BAL fluid can be a valuable complement to other diagnostic tests for early detection and treatment of invasive aspergillosis.

IS SCIC MAKING THE PATIENT SICK? Kavitha Bagavathy; Hamid Habibi. University of Connecticut Health Center, Farmington, CT. (Tracking ID #1638635)

LEARNING OBJECTIVE 1: Recognize the presentation of Sickle cell intrahepatic cholestasis—a rare but potentially life threatening complication in sickle cell anemia patients.
LEARNING OBJECTIVE 2: Treat sickle cell intrahepatic cholestasis—early intervention is life saving.
CASE: We report a case of a 36 year old male with Hemoglobin SC(HbSC) disease who presented from the Department of Corrections with lower extremity pain for 1 day that responded poorly to acetaminophen. His pain began in the knees and later progressed to involve the entire extremity.He denied any abdominal pain. Past medical history was significant for avascular necrosis of the hip. Physical exam on presentation was unremarkable except for scleral icterus. Labs revealed a WBC count of 15.2, mild transaminitis,a direct bilirubin of 3.2 with no evidence of hemolysis on his peripheral blood smear.He was given intravenous hydromorphone for pain. The next day he had a temperature of 102 F,was tachycardic despite adequate pain control and his leukocytosis worsened to 22,000. His CXR, blood and urine cultures were unremarkable. Over the course of the next 5 days, he continued to spike fevers with worsening direct hyperbilirubinemia with total bilirubin of 44.9 and direct bilirubin of 27.0 and transaminitis with ALT of 145, AST 125. His alkaline phosphatase and GGT levels were elevated at 1261 and 613 respectively. MRCP showed hepatomegaly with patent biliary and pancreatic ducts. Eventually a liver biopsy was done and it showed perivenular, centrilobular fibrosis and intrahepatic cholestasis.He was hemodynamically stable and received intravenous fluids and 2 units of PRBCs to correct his borderline anemia as he was occasionally short of breath. There was a gradual but significant improvement in lab parameters and resolution of fever over the next few days prior to his discharge.
DISCUSSION: Sickle cell intrahepatic cholestasis(SCIC) is a rare but well recognized, potentially fatal complication specific to patients with sickle cell disease. The most comprehensive literature review to date reports 44 cases, including both the pediatric and adult population. Diagnosis is purely clinical and criteria include a total bilirubin greater than 13 mg/dL without evidence of extrahepatic obstruction,viral hepatitis,severe acute hemolysis or anemia.It is hypothesized that the obstruction of the hepatic sinusoids by sickled cells and the consequent hypoxia causes hepatocyte swelling resulting in intracanalicular cholestasis. The clinical course varies from a mild, self- limited form to a potentially fatal one. It can present with fever, leukocytosis and renal failure making the diagnosis challenging especially in the setting of multiple causes that can account for hyperbilirubinemia in sickle cell anemia patients. However,exchange transfusion has proven to reduce mortality in patients with severe symptoms. This patient probably had a milder course due to his HbSC disease instead of Hemoglobin SS and it is not entirely clear if the blood transfusion partially helped to avert a grim outcome by increasing the oxygen carrying capacity of the blood and decreasing blood viscosity thereby suppressing endogenous sickling. Since SCIC is essentially a cilinical diagnosis where early initiation of therapy can be life saving,it is important to consider the diagnosis in a sickle cell anemia patient presenting with hyperbilirubinemia,fever and renal failure in the absence of an infectious etiology.

IS THIS CANCER ? THINK ABOUT AUTOIMMUNE ! Thandar Aung. St. Franscis Hospital, Evanston, IL. (Tracking ID #1600504)

LEARNING OBJECTIVE 1: IgG4 related systemic disease(IgG4-RD) is increasingly recognized fibro-inflammatory condition with findings consistent with both an autoimmune disorder and allergic disorder. IgG4 related pancreatitis (autoimmune pancreatitis) is the prototypical form of IgG4-RD. IgG4 related cholangitis is the most frequent extrapancreatic manifestation.
CASE: 72 y/o chinese male with PMH of Hepatitis A, Hypertension, H.pylori gastritis and dyslipidemia presented with allergic rhinitis, abdominal discomfort, for 1 month duration associated with anorexia and 20 lb weight loss in 5 weeks, and yellowish coloration of eyes for last 4 days. He recently came back from Taiwan 2 months ago and had normal medical check up. He had strong family history of cancers. He was found to have mild icterus over conjunctiva and mild discomfort over epigastric area. His lab showed elevated total bilirubin (7 mg/dl) with direct bilirubin (4 mg/dl), elevated alkaline phosphatase (192 IU/L), AST (300 IU/L), ALT (350 IU/L), Amylase (280 IU/L), lipase (1200 IU/L) and normal wbc (4.5) with elevated eosinophil (13.4 %). MRCP showed CBD was mildly distended with no intrahepatic biliary dilatation and relatively abrupt tapering of the distal common bile duct. 1.6*1.4*2 cm peripancreatic head mass in sausage morphology. ERCP showed normal ampulla with diffusely narrowed pancreatic duct with unable to enter CBD. EUS showed entire pancreatic parenchymal abnormalities with hyperechoic strands with foci and lobularity with no lymph node enlargement. Biopsy of the ampulla showed increased IgG4 positive cells in lamina propria. Serum IgG4 was > 2 times upper limit of normal. Prednisone was started. Three months later all of his symptoms and lab findings were resolved and steroid was tapered out and stopped. Five months after completion of steroid, patient another flare of epigastric pain with lipase of 1245 IU/L .
DISCUSSION: Autoimmune pancreatitis(AIP) is an idiopathic inflammatory disease that produces pancreatic masses and ductal strictures and a benign disease which resembles pancreatic carcinoma both clinically and radiographically. Hallmarks are lymphoplasmacytic tissue infiltration with predominance of IgG4 positive plasma cells and T lymphocytes, usually accompanied by fibrosis, obliterative phlebitis and elevated levels of IgG4. Patients present with abdominal discomfort with or without frequent attacks of pancreatitis (30 %), obstructive jaundice (63 %) and diffuse enlargement of the pancreas on imaging(85 %) mimicking pancreatic cancer. Diagnostic HISORt criteria includes Histology, Imaging suggested of AIP, Serology with IgG4>2 times the upper limit of normal,Other organ involvement and Response to steroid treatment. Multiple organs can be affected simultaneously or metachronously with striking histopathologic similarities. There are conditions such as Kuttner's tumor and Mikulicz's disease are now fall within the spectrum of IgG4-RD. Relapse rate is high. Peripheral eosinophilia and allergic disorder are consistent with autoimmune mechanisms. An important part is distinguishing AIP from pancreatic cancer. Corticosteroids is mainstay of treatment.

IS YOUR ABDOMEN REALLY BENIGN? A RARE CASE OF ACUTE PANCREATITIS FROM METASTATIC BREAST CANCER! Javeria Haque; Harvey Friedman. Saint Francis Hospital, Evasnton, IL. (Tracking ID #1638627)

LEARNING OBJECTIVE 1: Acute pancreatitis from solitary metastases to the pancreas is very rare. This should be in the differential with any patient with prior neoplasm, especially breast cancer, presenting with pancreatitis.
LEARNING OBJECTIVE 2: Treatment is mainly directed towards symptom relief with goals towards cancer treatment.
CASE: A 50 year old female presented with 2 days of epigastric pain with radiation to her back. The pain was severe and sharp. It came in episodes that lasted for a couple of hours. She had some nausea but no vomiting. She did not have diarrhea. She denied having similar pain before. She had a past medical history of hypothyroidism and breast cancer. In 2008, on routine screening, a 1.5 cm speculated density was found on mammogram

in her right breast. Needle biopsy showed it was grade III infiltrative ductal carcinoma. She underwent lumpectomy and axillary dissection. Her tumor was Estrogen, Progesterone and HER 2 receptor negative. BRCA 1, 2 and other gene mutations were negative. She underwent chemotherapy followed by radiation. In 2009, another 4 cm mass was palpated in the same breast. She underwent bilateral mastectomies. She received more sessions of chemotherapy and was declared free of disease. On exam her vitals were within normal range. She had extreme epigastric tenderness with abdominal guarding but no rigidity. There was no hepatosplenomegaly. Bowel Sounds were hypoactive. Labs were essentially normal except for an elevated serum lipase (17, normal <6.0) and serum amylase. CT of the abdomen showed the pancreas was prominent in size with induration and fluid around the head. The pancreatic duct was dilated. An area of low attenuation was seen just below the pancreas. Hospital course: The patient was treated for pancreatitis with pain medications and intravenous fluids. An MRI of her abdomen showed resolution of the inflammation around the pancreas but identified a 3.4 cm mass closely related to the body of the pancreas extending anteriorly and superiorly to the stomach, with marked gastric wall thickening. The patient underwent emergent endoscopy, which revealed mucosal involvement of the stomach wall. Biopsies showed poorly differentiated ductal cell carcinoma. Bone scan and CT chest did not reveal more metastases.

DISCUSSION: Acute pancreatitis in the setting of metastases to the pancreas is fairly rare and almost unheard of in a patient with breast cancer. Our patient had elevated lipase and CT evidence of pancreatic inflammation on presentation. She had resolution of inflammation on a later MRI correlating with resolution of symptoms and normalization of serum lipase. Isolated pancreatic involvement in breast cancer is uncommon, although there are a few published series. In one study, breast cancer metastases were found to be only 8 % in all cases of isolated metastases to the pancreas, while another study showed that although isolated metastases to the pancreas are uncommon, the pancreas may be frequently involved in widely metastatic breast cancer. Breast cancer patients with pancreatic involvement usually present with jaundice, weight loss, and abdominal pain. Acute Pancreatitis is a very rare presentation in such patients.

IS ADENOSINE REALLY TO BLAME? Jerson Munoz-Mendoza[1]; Veronica A. Pinto Miranda[1]; Henry C. Quevedo[2]; Rafael F. Sequeira[3]. [1]University of Miami - Jackson Memorial Hospital, Miami, FL; [2]Tulane Heart and Vascular Institute, New Orleans, LA; [3]University of Miami, Miami, FL. (Tracking ID #1636463)

LEARNING OBJECTIVE 1: Recognize adenosine as a potential cause of coronary vasospasm during supraventricular tachyarrhythmia termination

LEARNING OBJECTIVE 2: Recognize the pathophysiology of coronary vasospasm secondary to medication

CASE: A 38-year-old male, otherwise healthy, presented to the emergency room with palpitations for 2 days and a three-hour pressure-like epigastric discomfort with radiation to the right upper quadrant. Upon arrival, he was tachycardic with a heart rate of 220 beats per minute. An electrocardiogram (ECG) showed narrow complex tachycardia. Vagal maneuvers were unsuccessful. Adenosine was then administered in two successive bolus injections of 6 and 12 mg dosages respectively with successful conversion to sinus rhythm. Right after administration of second bolus of adenosine, the patient complained of epigastric discomfort and significant ST segment elevation (STE) in the inferior leads and reciprocal changes as well as right bundle branch block were appreciated. He was emergently transported to the catheterization laboratory and shortly the STE had resolved with marked relief of his symptoms. Coronary angiography documented non-obstructive coronary disease without wall motion abnormalities. Cardiac biomarkers were elevated with a peak troponin I of 0.32. A provocation test for coronary artery spasm was not safe in these circumstances. Once clinically stable, an electrophysiological study was performed revealing a concealed left accessory pathway and he underwent successful radiofrequency ablation of the slow pathway of the atrioventricular nodal reentrant tachycardia. ECG post procedure showed normal sinus rhythm with nonspecific ST-T wave changes. He did not have recurrence of chest pain, ECG changes or arrhythmias.

DISCUSSION: Adenosine usually has a vasodilator effect in the coronary microcirculation; however this case demonstrated an unusual complication of intravenous administration of adenosine, coronary vasospasm (CV). The term CV refers to a sudden, intense vasoconstriction of an epicardial coronary artery that causes vessel occlusion or near occlusion, that could occur at the site of a stenosis or in angiographically normal coronary arteries, causing transient STE. It results from the interaction of 2 components: (1) a usually localized, but sometimes diffuse, abnormality of a coronary artery that makes it hyperreactive to vasoconstrictor stimuli, and (2) a vasoconstrictor stimulus able to induce the spasm at the level of the hyperreactive coronary segment. Adenosine is a frequently used pharmacologic stress agent in myocardial perfusion imaging and supraventricular tachyarrhythmia (SVT) termination. Its safety profile is well established, and most of its side effects are mild and transient. Cases of coronary vasospasm has been reported during or after adenosine stress test, but only one case of coronary artery vasospasm provoked by intravenous administration of adenosine for SVT has been reported. Our patient would constitute the second reported case worldwide. Adenosine usually features a safe pharmacological profile but possible mutations in the downstream signaling pathway could potentially lead to coronary artery vasospasm in a small amount of predisposed individuals.

IS IT STROKE OR HERPES VIRUS ENCEPHALITIS? Rakesh Malhotra; Shyam Patel; Amar V. Patel. UMDNJ-New Jersey Medical School, Newark, NJ. (Tracking ID #1643186)

LEARNING OBJECTIVE 1: Herpes simplex encephalitis is associated with high morbidity and mortality. The clinical presentations of herpes simplex encephalitis are varied and may be misdiagnosed for stroke, seizures, and/or non-specific delirium. Physicians should begin acyclovir therapy early on the basis of clinical suspicion.

LEARNING OBJECTIVE 2: Delay in start of treatment with acyclovir can lead to permanent neuropsychological impairment and even death in Herpes simplex encephalitis patients.

CASE: We report a case of 70-year-old female who presented with a two-week history of diffuse abdominal pain and fever. She also complained of nausea, vomiting and intermittent diarrhea. She had a history of colitis, myocardial infarction, hypertension, diabetes mellitus, and transient ischemic attack. Three weeks prior to admission, the patient received permanent pacemaker and was started on clindamycin. Physical examination revealed temperature of 100.5 °F and a pulse 74 beats/min. The initial systemic examination revealed no source of infection. Clindamycin was discontinued and patient was started on flagyl for suspected clostridium difficile. During the fifth day of hospitalization, the patient was noted to have a change in her mental status: she started making strange comments. She also had an episode of uncontrolled movements of both extremities and frothing from the mouth, requiring ativan and cerebyx. CT scans of the head showed no acute intracranial abnormality. Laboratory work was significant for chronic hyponatremia (serum sodium of 125 mEq/L). Video EEG showed right temporal sharp waves. Patient was continued on keppra and cerebyx and her hyponatremia was treated with tolvaptan. On day 9 of her illness, the patient was found to be in respiratory distress. She was given IV lasix and further intubated. The patient's seizures continued to be intractable. A repeat CT scan showed loss of the gray-white matter differentiation along the right insular cortex of the right cerebral hemisphere, as well as the occiptotemporal gyrus and mid-temporal lobe, in a vascular distribution that would reflect a right middle cerebral artery territory infarction. Patient was started on Acyclovir for possible viral encephalitis. Lumbar puncture was done with cerebrospinal fluid (CSF) analysis showing high WBC (240), 89 % lymphocyte, and a glucose of 43 mg/dL. CSF tests were negative for varicella, west nile virus, syphilis, cytomegalovirus, enterovirus, and cryptococcus. CSF serology finally revealed positive polymerase chain reaction (PCR) for Herpes simplex virus type 1 (HSV-1) (titer: 13,100). CT scan showed temporal lobe necrosis, typical of herpes virus meningoencephalitis. Video EEG also showed both right and left sided periodic lateralized epileptiform discharges (PLEDs), thus ruling out the possibility of a stroke. Patient was continued on Acyclovir therapy with no significant neurological recovery.

DISCUSSION: Herpes simplex encephalitis is associated with high morbidity and mortality. The clinical presentations of herpes simplex encephalitis are varied and may be misdiagnosed for stroke, seizures, and/or non-specific delirium. Physicians should begin acyclovir therapy early on the basis of clinical suspicion. Delay in start of treatment with acyclovir can lead to permanent neuropsychological impairment and even death.

IS THIS TRUE STEMI? Samian sulaiman; Muhammed Sherid; Husein Husein; Hani Snounou; Salih Samo; Addis Asfaw; Ana Inashvili; Alpa Vora; Nadia El Hangouche; Mehrnaz Salehidobakhshari; Shahriar Dadkhah. St. Francis Hospital. Evanston, evanston, IL. (Tracking ID #1623928)

LEARNING OBJECTIVE 1: 1- To recognize that an aVR ST elevation is a valuable indicator of the acute LMCA obstruction or proximal LAD obstruction 2- To recognize classic T waves of Wellen's syndrome which reliably suggest a high-grade stenosis of the proximal left anterior descending (LAD) coronary artery. 3- To recognize STEMI in the presence of incomplete LBBB.
CASE: A 63 year/old male presented with sudden onset, sharp, non-radiating, and retrosternal chest pain that started 1 h prior to arrival. He also was complaining of mild shortness of breath, sweating and palpitation. He reported having intermittent chest pain over the last week, but this episode was more severe and constant. Aspirin was given En route to the hospital. His Past medical history was significant for hypertension, hyperlipidemia, sleep apnea and restless leg syndrome. His medications included aspirin, simvastatin, enalapril and metoprolol. On physical examination, his BP was 214/126 mm Hg; the rest of physical examination was unremarkable. EKG showed ST elevation in leads (aVR, V1, V2) with incomplete LBBB. Chest X-ray showed a wide mediastinum. Initial labs were unremarkable. Due to the presence of incomplete LBBB and discordant ST elevation in addition to absence of an old EKG, ST elevation was considered nonspecific. First two sets of cardiac markers were negative. CT angiography of the chest did not show aortic dissection or dilatation. His chest pain was relieved temporarily with sublingual nitroglycerin. Two doses of IV metoprolol were given and Nitroglycerin drip was started. After ruling out aortic dissection a 300 mg of Plavix was given. He was admitted to the CICU for close monitoring. Two days later, a nuclear medicine stress test showed a large fixed perfusion defect in the anterior, septal and inferior walls. Patient had recurrent chest pain and an EKG at that time showed deep, inverted T waves in the precordial leads (V2-V3). On the 4th day, the patient underwent Coronary angiography, which showed 99 % ostial occlusion of the LAD. Due to the proximity of the lesion to LMCA, balloon was not inflated in order to avoid LMCA damage. Later on, the patient had off-Pump CABG with LIMA attached to LAD. Looking retrospectively, the ST elevation in leads aVR, V1, and V2 on admission was a true STEMI, and the incomplete LBBB was over-diagnosed. Two sets of cardiac markers were drawn within the first 2 h of presentation which can be falsely normal.
DISCUSSION: An aVR lead gives significant information about the right outflow tract and the basal part of septum. The latter is supplied by the first septal branch of LAD. The aVR ST elevation is a valuable indicator of the acute LMCA obstruction or proximal LAD obstruction involving the first septal branch. The classic Wellen's T-waves are described as either deeply inverted (> 2 mm) or biphasic T waves in V2-V3. Discovering Wellens' syndrome is imperative as 75 % of patients will develop acute anterior wall myocardial infarctions (MIs) within 1 week unless intervention is undertaken urgently. To diagnose STEMI in patients with incomplete LBBB, ST elevation should be in the same direction (concordant) as the QRS.

ISOLATED LEGIONELLA PERICARDITIS COMPLICATED BY LARGE PERICARDIAL EFFUSION. Mahmoud Abdelghany; Nervana Mahmoud; Saba Waseem; KM Anwar Hussain. Conemaugh Memorial Medical Center, Temple University, Johnstown, PA. (Tracking ID #1636095)

LEARNING OBJECTIVE 1: Pericarditis or pericardial effusion might be the only presentation of legionella infection.

CASE: Introduction: Since the organism was first recognized in 1976 during an outbreak at an American Legion Convention in Philadelphia, legionella has been identified as a relatively common cause of both community-acquired and hospital-acquired pneumonia. Isolated extrapulmonary disease from legionella is extremely rare; yet the most common extrapulmonary site is the heart. Few reports of pericarditis, myocarditis and even prosthetic valve endocarditis have been published. The severity of illness at presentation varies from mild, nonspecific findings to profound respiratory or multi-organ failure. Here we present an extremely rare case of a 73-year-old male patient with isolated legionella pericarditis resulting in large pericardial effusion. Case Report: The patient presented to the hospital with pleuritic type chest pain. EKG showed signs of acute pericarditis. On admission the patient had 1.2 cm pericardial effusion. He was discharged on colchicine after pain subsided. Nine days later the patient was readmitted with diarrhea and similar chest pain. More detailed history revealed recent travel with an extended stay in an air-conditioned hotel room. Repeated Echocardiography showed increased pericardial effusion to 3.2 cm with no signs of tamponade, as well as a left sided pleural effusion. Legionella infection complicated by acute pericarditis was diagnosed by urinary legionella antigen. The patient's clinical condition improved dramatically after treatment with levaquin and prednisone. Repeated Echocardiography showed decreased pericardial effusion to 2 cm following medical treatment for 2 days.
DISCUSSION: Although legionella infection usually presents with pulmonary manifestations, pericarditis or pericardial effusion might be the only presentation of legionella infection as in our case. Legionella pericarditis should be considered in the differential diagnosis of any pericarditis or pericardial effusion of uncertain origin. Urinary legionella antigen is a fast and an accurate test for legionella infection, with a high sensitivity and specificity. For our knowledge, no reported publications determined the amount of time the urinary legionella antigen needs to convert from positive to negative.

ISOLATED OSTIAL STENOSIS OF THE LEFT MAIN CORONARY ARTERY EIGHT YEARS AFTER RADIATION THERAPY Osama ALSARA; Heather Laird-Fick. Michigan State University, LANSING, MI. (Tracking ID #1642571)

LEARNING OBJECTIVE 1: Recognize the risk of coronary artery disease (CAD) with radiation therapy
LEARNING OBJECTIVE 2: Identify challenges in treatment of radiation-induced CAD, and the role of participatory decision making in management
CASE: A 60 year-old woman with a history of lung cancer currently in remission was admitted with complaints of chest pain. She has had recurrent substernal chest pain, increasing in severity, without radiation or associated symptoms during the preceding week. It usually occurs at rest and sometimes with exertion. Her pain was relieved with nitroglycerin administration. Past medical history was significant for hypertension, and stage IIIA non-small cell lung carcinoma diagnosed 8 years ago, treated with mass resection followed by chemotherapy and radiotherapy. A year later she developed a malignant pericardial effusion, treated with pericardial window, and recurrent pleural effusions, drained with pleural catheters. During the next 6 years, she was in full remission as confirmed by annual chest computed tomography (CT). Her medications included aspirin, metoprolol, iron, vitamin B12, and gefitinib. She was a nonsmoker but drinks socially. At presentation, her physical exam was benign. Cardiac biomarkers (creatine kinase, troponin) and fasting lipid panel were normal. The electrocardiogram (ECG) was also normal. Chest radiograph showed left perihilar parenchymal scars, surgical clips and postoperative changes in the chest. Other laboratory studies, including two more sets of cardiac biomarkers and fasting lipid panel were normal. She underwent an exercise nuclear stress test, which demonstrated indeterminate ECG changes with a small anteroseptal wall defect which appeared to be artifactual. Following the stress test, she developed chest pain. Repeat serum troponin level was elevated at 0.42 ug/L, and her ECG showed a new Q wave in lead III. Coronary angiography was performed and demonstrated 90 % stenosis of

the left main coronary artery ostium, without any evidence of atherosclerotic disease in other coronary arteries. Patient underwent surgical revascularization the next day. Intraoperatively she was noted to have dense adhesions surrounding the heart. She developed severe bleeding and died during surgery.
DISCUSSION: Thoracic irradiation can result in a number of cardiac complications including pericarditis, pericardial effusions, conduction disorders, pancarditis, functional valvular defects, and CAD. Histology of coronary artery tissues obtained from affected patients have demonstrated intimal thickening with minimal extracellular lipid deposits. Although ostial stenosis is typical of Radiation induced CAD, isolated ostial stenosis of the left main coronary artery following radiation therapy has been reported in only eight other cases in the literature. To our knowledge this is the first case to be reported of isolated left main CAD after radiation therapy for advanced non-small cell lung cancer. Treatment of Radiation induced CAD follows the same guidelines in management of other atherosclerotic CAD, but CABG may be more challenging due to pericardial thickening and retrosternal fibrosis. So, a multidisciplinary team approach and participatory decision making are important in such cases

ISOTRETINOIN RECHALLENGE IN A PATIENT WITH INFLAMMATORY BOWEL DISEASE Niket Sonpal; Anish Mammen; Raji Shameem; David Robbins. Lenox Hill Hospital, Hauppauge, NY. (Tracking ID #1624321)

LEARNING OBJECTIVE 1: Patients should be informed of the risk of developing inflammatory bowel disease and advised to stop the medication if abdominal symptoms occur.
LEARNING OBJECTIVE 2: Primary care physicians should be aware of this potential side effect and counsel their patients prior to the initiation of therapy.
CASE: Inflammatory bowel disease (IBD), Crohn's disease and ulcerative colitis, is a common condition affecting 70–150 cases per 100,000 individuals. It is usually diagnosed in young adults between the ages of 15 and 30 years but can present at any age. Acne vulgaris is a common skin condition affecting up to 80 % of adolescents. Isotretinoin is a medication commonly used for the treatment of acne with gastrointestinal side effects that includes colitis and ileitis. We present the convincing case of a patient who developed bloody diarrhea, fever and abdominal pain within several days after starting isotretinoin on two separate occasions. A 24-year-old male presented to our institution with bloody diarrhea, fever, and abdominal pain for the second time in approximately 18 months. The patient history was peculiar in that he had been diagnosed with ulcerative colitis a few weeks after starting isotretinoin 18 months ago. He reported no family history of IBD and no similar symptoms prior to starting isotretinoin. The medication was stopped at that time and his symptoms improved on mesalamine. However, his acne worsened so the decision was made between the patient and his dermatologist to restart the acne medication 18 months later under the close supervision of his gastroenterologist. Within 4 days of starting the acne medication for the second time, he redeveloped bloody diarrhea. The patient was passing up to 15 bloody bowel movements per day associated with moderate, crampy abdominal pain. His mesalamine was immediately increased and hydrocortisone enemas were prescribed without relief. A colonoscopy was performed that showed moderate proctosigmoiditis which did not respond to oral prednisone. His symptoms worsened with the addition of fevers so the patient was admitted. After several days of inpatient treatment with IV steroids, he improved and was discharged home and instructed to never take isotretinoin again.
DISCUSSION: Patients with pre-existing IBD should not ideally be prescribed isotretinoin. Retinoic acid affects intestinal epithelial growth, hinders cell repair and apoptosis. Retinoids also can decrease neutrophil chemotaxis. Patients should be informed of the risk of developing inflammatory bowel disease and advised to stop the medication if abdominal symptoms occur unless the acne is so severe, the risk is warranted. We now include regularly the history of acne and its treatment in all patients with IBD.

IT'S NOT REEFER MADNESS! Supreeti Behuria; Alfred Burger. Beth Israel Medical Center, New York, NY. (Tracking ID #1639680)

LEARNING OBJECTIVE 1: Distinguish between altered mental status caused by illicit drug use versus true organic causes
LEARNING OBJECTIVE 2: Understand the use of antiribosomal P protein antibody in the diagnosis of Lupus Cerebritis
CASE: A 25-year-old man, diagnosed with Systemic Lupus Erythematous (SLE) 6 months prior, and undergoing a workup for lupus nephritis, was brought to the emergency department by his family for weakness, and altered mental status, for 1 day. Per the family, the patient complained of generalized body weakness on the morning of admission. Subsequently, he stopped talking. Six days before admission he had a seizure and was started on Keppra. The family said the patient smoked marijuana daily but had no other toxic habits. On physical exam, he was afebrile, BP 189/96, HR 120, RR 18. He was awake and alert but did not respond verbally to questions or follow commands. He moved all his limbs spontaneously. He had an erythematous facial rash in the malar distribution with mild scaling. Labs showed WBC 1.5 K/UL, Platelets 109 K/UL, AST 374 U/L, ALT 231 U/L, Alkaline phosphatase 139 U/L. A CT scan of the head was negative for any infarction or intracranial hemorrhage. The patient was seen by his rheumatologist and serologies were sent. He was evaluated by neurology and had a MRI and EEG, which were negative for acute intracranial pathology or seizure-like activity. A presumptive diagnosis that the patient was experiencing the after effects of using marijuana laced with psychoactive chemicals was made, based on the negative data. On hospital day 3, the results of his rheumatological workup came back and he had an elevated antiribosomal P protein antibody of >8 AI (normal <1 AI). Based on this positive lab result, he was started on 1 g of Solumedrol IV daily for Lupus Cerebritis and after a 3 day course, his altered mental status and catatonia improved. He was discharged home soon after, doing well.
DISCUSSION: We present this case as an example of why we must avoid premature diagnostic closure in cases of altered mental status in the setting of illicit drug use, particularly if the patient concerned has a significant past medical history that could present with neuropsychiatric manifestations. In patients with SLE in the United States, nervous system involvement occurs 24–50 % of the time at some point during the course of their illness. Initially, our patient's symptoms were attributed to the use of marijuana, based on negative studies for alternative diagnoses with a normal MRI and EEG. For neuropsychiatric lupus, up to 67 % of patients will have abnormal MRI scans and EEG abnormalities are seen in 50–90 % of patients. However this leaves up to 33 % of affected patients with a negative MRI and between 10 % and 50 % with normal EEGs. Antiribosomal P protein antibody is a specific diagnostic test for Lupus Cerebritis, with specificity reported up to 80 % in some studies, and it is positive in 60 % of patients with the disease. Because the diagnosis of Lupus Cerebritis was thought about on admission, this test was sent and the result enabled the patient to be diagnosed and treated appropriately. Thus, it is important to distinguish between altered mental status caused by illicit drug use versus true organic causes in the setting of SLE. Physicians should be aware of vital diagnostic tools such as the antiribosomal P protein antibody that are available to aid in diagnosis.

JUST STICK TO BEER - A CASE OF METHANOL POISONING Anne Drabkin Schade; Abigail Gass. Medical University of South Carolina, Charleston, SC. (Tracking ID #1637135)

LEARNING OBJECTIVE 1: Diagnosing methanol toxicity
LEARNING OBJECTIVE 2: Learning how to treat methanol toxicity
CASE: Mr. S. is a 41 year-old African American male with history of schizophrenia, hypertension, diabetes and alcohol use who presented to the emergency department with confusion, agitation, blurry vision and respiratory distress. He had been off his psychiatric medication (Olanzapine) for many months prior to his admission and had been exhibiting violent behavior at home. The patient drinks 3–4 alcoholic beverages daily, smokes cigarettes and marijuana. On physical exam, the patient was hypertense (171/109 mmHg) and demonstrated disorganized

and bizarre behavior. A CT brain was within normal limits. His labs on admission showed a serum bicarbonate of 6 mmol/L, ABG was 7.24/10/134, anion gap was 24 and osmolar gap was 30. A volatile alcohol study revealed a serum methanol level of 87 mg/dl and the patient admitted to drinking windshield wiper fluid because he was unable to afford beer. No additional ingestions were seen, however his urinary drug screen was positive for cannabis. The patient was admitted to the Medical Intensive Care Unit and started immediately on fomepizole, a competitive alcohol dehydrogenase inhibitor and dialyzed for a goal methanol level <20 mg/dl and pH>7.25. For his schizophrenia, he was later started on Thorazine and transferred to the inpatient psychiatric unit.

DISCUSSION: Common causes of anion gap metabolic acidosis with an osmolar gap include methanol and ethylene glycol ingestion. Methanol ingestion is common in alcoholics as it tastes and smells more like alcohol compared to ethylene glycol, which is sweet and is practically odorless. Methanol can be found in antifreeze, windshield wiper fluid, glass cleaners, copy paints, varnishes and wood stains. Methanol breaks down via alcohol dehydrogenase to formic acid, which can cause retinal and optic-nerve toxicity, blindness and basal ganglia injury. Advanced stages of methanol toxicity can cause severe metabolic acidosis, multisystem organ failure and irreversible CNS damage. Using an alcohol dehydrogenase inhibitor such as ethanol and fomepizole allows methanol to be cleared in its nontoxic form via pulmonary and renal routes and delays its half-life. Fomepizole has fewer side effects (sedation, hypoglycemia) and a longer duration of action than ethanol. Alcohol dehydrogenase inhibitors can be used in conjunction with dialysis in the setting of methanol and elthylene glycol intoxication. Methanol toxicity has a high morbidity and mortality rate if treatment administration is delayed. In some patients with more mild intoxication, administering fompeizole can supplement the use of dialysis completely. Kruse, J. Crit Care Clin 28 (2012): 661–711 Brent, J. N Engl J Med 2009:;360: 2216–23

LACTIC ACIDOSIS DURING AN ASTHMA EXACERBATION Meghan M. Lyman. Emory, Atlanta, GA. (Tracking ID #1643065)

LEARNING OBJECTIVE 1: Identify less common causes of lactic acidosis in the setting of respiratory distress.

LEARNING OBJECTIVE 2: Recognize albuterol as a potention cause of metabolic acidosis.

CASE: 46 year old male with asthma sine he was a child and recent PFTs showing moderate obstructive defect (FEV1=55 %) presented to the ER with 2 days of worsening dyspnea and wheezing refractory to frequent inhaler use. On exam, he was tachycardic HR=130, Temp=98.8 F, BP=110/60, RR=24, pulse ox=94 % on 4 l nasal cannula. He had diffuse inspiratory and expiratory wheezing with limited air movement but no crackles. Electrolytes were normal except an anion gap of 17. Arterial blood gas on room air showed pH=7.2, pCo2=59 and pO2=47. Chest xray showed no acute process. He was treated in the ER for an asthma exacerbation with IV solumedrol, IV magnesium sulfate, and numerous albuterol nebulizer treatments. The patient was then initiated on Non-invasive Positive Pressure Ventilation (BIPAP). Repeat arterial blood gas showed that his pH had improved only minimally to 7.25 but he had significant improvement in hypercarbia and hypoxia (pCO2=44 and pO2=95). These results, including the elevated anion gap, indicated that there was an additional metabolic etiology for his acidosis separate from his respiratory issues. A serum lactic acid level was drawn and was elevated at 7.1. There was no evidence of hypoperfusion or organ ischemia at the time, therefore, his medications were reviewed to identify albuterol as a possible cause. Albuterol was withheld and he received further nebulizer therapy with only ipratropium and, after 2 h, his pH had improved to 7.36 with no associated change in pCO2 or pO2. Within 24 h, his serum lactic acid level normalized and his anion gap resolved. Even more concerning, his lactic acidosis may have worsened his respiratory status as he tried to compensate for the acidosis by further increasing his respiratory rate and increasing his risk of respiratory fatigue.

DISCUSSION: Serum Lactic acid levels are used as a marker in potentially life threatening conditions such as septic shock as well as being elevated in conditions related to metformin use, malignancy, and alcoholism. yet clinicians should be aware of other less common causes of lactic acidosis. Albuterol-induced lactic acidosis has been attributed to lactate production by overworked or inadequately oxygenated respiratory muscles and studies have shown that lactic acid levels increase within hours of inhaled beta-agonist therapy and often occur with higher doses of inhaled beta-agonists. This case illustrates the danger of using lactic acid as a diagnostic indicator of circulatory shock out of clinical context. Many patients present in respiratory distress when the etiology, infection vs reactive airway disease, is not straightforward. Lactic acid levels should be used in clinical context, along with other blood gas parameters that assess oxygenation and ventilation, to correctly determine the cause of the acidosis. Albuterol should always be considered as a possible etiology for acidosis in this setting and the medication can simply be withheld to help correct the acidosis and avoid further respiratory fatigue as the patient tries to compensate for the metabolic acidosis.

LEFT ATRIAL MYXOMA: A RARE CAUSE OF COMMON PRESENTATION Waleed Quwatli; Sarah Suliman; Joan Thomas; Deerajnath Lingutla. Unity health system, Rochester, NY. (Tracking ID #1642962)

LEARNING OBJECTIVE 1: Recognize uncommon cause of a common presentation of chest pain and shortness of breath—Left atrial myxoma

CASE: A 58 year old female with past medical history of hypertension, hyperlipidemia and meningioma who had normal coronary angiogram 2 years ago as a part of chest pain work up was presented to the emergency department with 2 weeks history of progressive dyspnea on exertion,diaphoresis and intermittent atypical left sided chest pain. On physical examination vital signs were normal. Positive findings on further systemic examination include fine bibasilar crackles on chest auscultation. Cardiovascular exam showed normal S1S2 with no murmurs or gallop, regular rhythm. Lab work up was normal except mildly elevated BNP of 163. Troponins were negative. EKG showed normal sinus rhythm withnon-specific ST-T changes in the anterior leads. Chest x-ray showed diffuse interstitial prominence suggestive of congestive heart failure. Because of the atypical features of chest pain she underwent CT angio of the chest, which was negative for pulmonary embolism, but it did show mass lesion within the left atrium measuring 4.8×3.2 cm suggestive of either a myxoma or thrombus. Subsequent echocardiogram showed normal left ventricular size with EF 55–60 %, large left atrial tissue density 5×3 cm most consistent with myxoma causing partial obstruction of the mitral flow. This mass was attached to intraatrial septum. It was mobile and crossing the mitral valve during diastole. Hence a diagnosis of left atrial myxoma was made and the case was referred to another hospital for surgical intervention. She underwent resection of the left atrium myxoma and left atrial wall with pericardial reconstruction. She recovered well from surgery with out any complications.

DISCUSSION: Cardiac myxomas are the most common primary cardiac neoplasm. More than 50 % of benign cardiac tumors are myxomas. 80 % of the myxomas originate in the left atrium and most of the remainder is found in the right atrium. Histologically, these tumors are composed of scattered cells within a mucopolysaccharide stroma. Myxomas produce vascular endothelial growth factor (VEGF), which probably contributes to the induction of angiogenesis and the early stages of tumor growth. Tumors vary widely in size, ranging from 1 to 15 cm in diameter. Symptoms range from non-specific and constitutional to sudden cardiac death. As per a published series 20 % are asymptomatic, cardiovascular symptoms are present in 67 % of the cases, mostly secondary to left sided heart failure or mitral valve damage, dizziness and syncope are present in 20 %, systemic embolization in 29 %, constitutional symptoms in 50 % which could be related to increased IL6 production, chest pain is infrequent and it could be due to coronary embolization. Once a presumptive diagnosis of myxoma has been made, prompt resection is required because of the risk of embolization or cardiovascular complications, including sudden death. The results of surgical resection are generally very good, with most series reporting an operative mortality rate under 5 %. Postoperative recovery is generally rapid. However, atrial arrhythmias or atrioventricular conduction abnormalities were present postoperatively in 26 % of patients in one series. Patients are at risk for recurrence of the myxoma suggesting the need for close follow-up. Development of a second primary myxoma may be more common in patients with a family history of myxoma.

LEGIONELLA PNEUMONIA COMPLICATED BY TRANSIENT LEFT VENTRICULAR DYSFUNCTION AND TORSADES DE POINTES Saqib Gowani1; Anupam Kumar[1]; Sabeena Arora[2]; Bimalin Lahiri[3]. [1]University Of Connecticut, Farmington, CT; [2]St. Francis Hospital, Hartford, CT; [3]St. Francis Hospital, Hartford, CT. (Tracking ID #1642293)

LEARNING OBJECTIVE 1: To consider legionella in the differential diagnosis when patients present with pneumonia with myocardial involvement
LEARNING OBJECTIVE 2: To consider torsades de pointes as a possible complication of legionella myocarditis
CASE: A 41 year old Caucasian male with no significant past medical history presented to the ED with 5 days of flu-like symptoms including non productive cough, fever and general malaise. On Examination, the patient was hypotensive with systolic in 80's, febrile and hypoxic on room air. Physical examination was significant for bronchial breath sounds in the right lower zone. Chest x-ray showed a right lower lobe pneumonia. ECG revealed sinus tachycardia with no ST-T segment changes. The patient was in septic shock and recieved fluid resuscitation without significant improvement. Cardiac enzymes at this time revealed CK of 2378 and troponin of 5.14. TTE demonstrated normal left ventricular cavity size and markedly reduced left ventricular ejection fraction of 10–20 % with global hypokinesia. The patient was treated with ceftriaxone and Azithromycin initially. All cultures were negative. The urine legionella antigen turned positive for L pneumophilia, serogroup1. During the ICU stay, the patient developed episodes of non-sustained torsades de pointes, culminating in an episode of sustained polymorphic ventricular tachycardia that deteriorated to ventricular fibrillation. The ECG obtained thereafter showed sinus bradycardia with marked QT prolongation, with a QTc of 607 ms.He was also started on isoproterenol and lidocaine for his arrythmia. His antibiotics were switched to doxycycline. The patient was extubated and continued to do well on doxycycline. A repeated echocardiographic evaluation 3 days later showed significantly improved left ventricular function with Ef of 50–55 %. His QTc at discharge was 520 ms and he was discharged on Magnesium Oxide.
DISCUSSION: Community acquired pneumonia diagnosed as legionellosis account for 12–15 % of cases in adults that require hospitalization. The most common extrapulmonary site is the heart, with numerous reports of myocarditis, pericarditis, postcardiotomy syndrome, and prosthetic-valve endocarditis. The prognosis of Legionella carditis seems to correlate with the severity of systemic involvement and patient comorbidities. Patients with extrapulmonary manifestation do well when the condition is recognized early and treated promptly with appropriate antibiotic agents. Few reports suggesting Legionella pneumonia predisposing to cardiac dysrhthmias have also been proposed. However, the patient responded well to the standard treatment protocol of torsades and no recurrences were observed once he started responding to the antibiotics. The Legionella urinary antigen is a rapid and inexpensive test that detects antigens of L. pneumophila serogroup 1 in urine. We strongly believe that Legionella should be considered in differential diagnosis and workup for patients who present with pneumonia and myocardial involvement. EKG changes and elevated troponin levels on presentation should affirm our clinical suspicion, especially if they have multiple risk factors for legionellosis. Early recognition is crucial to ensure full recovery from this form of reversible carditis, because the treatment is different from that for other forms of carditis and can be quite effective with early initiation of appropriate antibiotic medication.

LESSONS FROM THE HEART: THE ROLE OF ECHOCARDIOGRAPHY AND THROMBOLYSIS IN THE DIAGNOSIS AND TREATMENT OF PULMONARY EMBOLISM Mendel Goldfinger; Abigail Chua; Darlene LeFrancois. Montefiore Medical Center, Bronx, NY. (Tracking ID #1642528)

LEARNING OBJECTIVE 1: Recognize the role of echocardiography in diagnosis of pulmonary embolism
LEARNING OBJECTIVE 2: Identify utility of thrombolysis as treatment for atrial thrombi.
CASE: The patient is a 74 yo female, who presented with decreased exercise tolerance and new resting shortness of breath, cough, and pleuritic chest pain of 2 weeks duration. The patient, who had recent bilateral cataract surgery, also reported that she had been suffering from increased lower extremity swelling and orthopnea of 6 months duration. The patient had no personal or known familial history of coagulopathy. Vital signs were; BP 108/76, P 82, RR 20, 98 % on RA, cardiac exam was benign except for a laterally displaced PMI, lungs were clear to auscultation bilaterally. Her EKG and CXR were within normal limits, and her cardiac markers were negative. Her laboratory tests were significant for an elevated brain natriuretic peptide (BNP) 4935 and a D-Dimer of 11.70 ug/ml. CT angiogram revealed multiple bilateral extensive pulmonary emboli involving distal main pulmonary arteries, lobar pulmonary arteries and multiple segmental and subsegmental arteries. In light of her elevated BNP with no previous history of heart failure, the patient was sent for transthoracic echo which revealed multiple mobile masses with independent mobility in the right atrium, normal left ventricular wall motion and ejection fraction, moderate right ventricular hypokinesis, and moderate pulmonary hypertension. Patient was transferred to the intensive care unit and treated with tissue plasminogen activator for thrombolysis of clot, with immediate and complete resolution of symptoms. Repeat echocardiogram post thrombolysis revealed resolution of all cardiac masses.
DISCUSSION: Chest pain and dyspnea are common causes for hospital admission. Pulmonary embolism is part of the differential diagnosis for all patients with new or worsening dyspnea, chest pain, or sustained hypotension. Right atrial thrombi are a rare phenomenon. The incidence of right atrial thrombi in PE is approximately 7 %, and 18 % in those with massive pulmonary embolism. Mobile thrombi, which represent pulmonary emboli in transit, carry a risk of mortality of approximately 50 %. Multiple cases of successful IV fibrinolysis of right atrial thrombi without major complications have been documented, but fibrinolysis does pose a risk of sudden death. The management of patients with thrombi in transit includes therapeutic anticoagulation, thrombolysis, or surgical embolectomy. There is currently ongoing research assessing the utility and benefit of intravenous thrombolysis vs traditional anticoagulation in hemodynamically stable patients with right ventricular dysfunction, of which patients with thrombi in transit are a subset. Transthoracic echo is a non-invasive, portable, inexpensive and readily available diagnostic tool. Some registries have reported that only half the patients with new diagnosis of PE had echocardiography done. Although ECHO is mainly used in diagnosing PE in hemodynamically unstable patients, the case we present raises the question if it should be done in every patient with a new diagnosis of PE, as it has the potential to alter management and outcome. A prospective study is necessary to assess the optimal utility of ECHO for patients with PE who are hemodynamically stable.

LETHAL ACUTE LIVER FAILURE CASED BY MYSTERIOUS TUMOR Michinori Mayama. TOYOTA Memorial Hospital, Toyota, Japan. (Tracking ID #1639415)

LEARNING OBJECTIVE 1: Early identification of cause is indispensable in the treatment of acute liver failure
LEARNING OBJECTIVE 2: Malignancy infiltration should be considered as a cause of acute liver failure when other common causes are excluded
CASE: A 31-year-old man presented to the emergency department with nausea and vomiting. He was in his usual state of health until 1 month before admission when weakness and pain in both legs had started to develop. The weakness and the pain had worsened over time and 5 days before admission, he had difficulty walking. At this time, he had also noticed abdominal fullness. Through the course he had progressive fatigue and loss of appetite and he could not eat anything due to nausea and vomiting on the day of admission. His past medical history was unremarkable. He took Etodolac and Meloxicam for the bilateral legs pain. He smoked 10 cigarettes per day and drank alcohol occasionally. He was alert and oriented, but he looked pale. He was afebrile and his vital signs were within normal limits. The sclerae were icteric. Hepatosplenomegaly and non-tender mass in the right upper quadrant

were noted on abdominal examination. Complete blood count was significant for elevated white blood cell count of 16,900/mcL and low platelet count of 81,000/mcL. Other significant lab values were AST 6,336 IU/L, ALT 4,941 IU/L, LDH 4,546 IU/L, ALP 810 IU/L, total bilirubin 7.7 mg/dL, direct bilirubin 3.4 mg/dL, creatinine 2.0 mg/dL, and PT INR 8.73. Plain computed tomography showed moderate accumulation of ascites, hepatosplenomegaly, abdominal lymphadenopathy, and large solid tumors in the right kidney and in the pelvis. He was admitted to the hospital because of severe liver dysfunction and renal failure. Serologies for hepatitis A, B, and C, cytomegalovirus, Epstein-Barr virus, and HIV were all negative as well as autoantibody titers. Diffuse liver infiltration by malignant cells was suspected as the cause of acute liver failure since other common causes were excluded. Liver biopsy, however, could not be performed due to severe coagulation abnormalities. On day 3, his conscious level rapidly deteriorated to stage II hepatic encephalopathy and to stage IV the following day. On day 3, he met diagnostic criteria of acute liver failure, thus plasma exchange and continuous hemodiafiltration were conducted. On day 9, hemodialysis had to be discontinued due to hemodynamic instabilities. The patient died the following day. Permission for autopsy could not be obtained. Ascites, pleural effusion, percutaneous samples of the liver and the kidney were collected. Pathological examination revealed diffuse infiltration of atypical malignant lymphoma. It was positive for both T and B cell markers.

DISCUSSION: The rapid development of severe liver dysfunction and encephalopathy are characteristics of acute liver failure (ALF). Most cases are related to viral hepatitis and drugs such as acetaminophen. Infiltration by malignant cells is a rare cause of ALF and carries poor prognosis compared to other causes of ALF. ALF is usually an end-stage presentation of malignancy and the mortality rate is more than 80 %. Although liver transplantation may be considered as a treatment option for severe ALF, it is contraindicated in cases with ALF caused by malignant cell infiltration. Early diagnosis and appropriate chemotherapy is the sole way to improve such patients' outcomes. Malignancy infiltration should be considered as a cause of acute liver failure when common causes are excluded.

LEUKOCYTOCLASTIC VASCULITIS ASSOCIATED WITH COCAINE ABUSE WITH POSSIBLE LEVAMISOLE CONTAMINATION Christopher Sankey[1,3]; Lauren Wiznia[2]. [1]Yale School of Medicine, New Haven, CT; [2]Yale School of Medicine, New Haven, CT; [3]Yale-New Haven Hospital, New Haven, CT. (Tracking ID #1637289)

LEARNING OBJECTIVE 1: Recognize the entity of leukocytoclastic vasculitis associated with cocaine abuse and the possible contribution of levamisole

CASE: A 38-year-old woman with active polysubstance abuse presented with a chief complaint of diffuse joint pains of 4 days duration in the setting of a recent cocaine binge. She reported a rash over her elbows and on her lower back. She reported a fever at home to 102.9 °F, chills, rigors, nausea, and vomiting. She denied a family history of autoimmune or rheumatologic disease. Admission physical exam was most notable for 18–20 pink papules on her lower back ranging in size from 5 to 9 mm, some with pinpoint hemorrhagic crust. Similar papules were present over the bilateral extensor surfaces of her elbows. Exam of her extremities revealed tenosynovitis over elbows, hands, and wrists bilaterally. Laboratory studies were remarkable for an elevated CRP of 225. Urine toxicology was positive for cocaine, opiates, benzodiazepenes, oxycodone, and methadone. Serologic testing was negative for cryoglobulins and rheumatoid factor was <20. ANA screen was positive with a titer of 1:80 and homogenous pattern, but clinically she was felt unlikely to have a connective tissue disease. Multiple tests for various infections were negative, including gonorrhea, hepatitis B and C, HIV, EBV, and enterovirus. Skin biopsies from her left elbow and left thigh demonstrated leukocytoclastic vasculitis.

DISCUSSION: The medical complications related to cocaine use are known to most clinicians, and those associated with contaminants such as levamisole are being increasingly described. Levamisole is a veterinary antihelminthic agent with known immunomodulatory properties first reported as a contaminant in cocaine in 2001, with a steady increase in its use over time. Recent estimates of levamisole contamination of cocaine consumed in the United States is nearly 70 %. Its prevalence is likely a result of its amphetamine-like and hallucinogenic effects thought to increase those of cocaine. Cases of agranulocytosis and cutaneous vasculitis, among other toxicities, have been reported in association with levamisole. The above papular exanthem represents a presentation distinct from the purpuric retiform pattern with necrosis that has been classically associated with levamisole. Given the patient's presentation, recent history of a cocaine binge, unrevealing infectious work-up, and biopsy findings of leukocytoclastic vasculitis, we feel that her presentation was due to small vessel vasculitis secondary to cocaine, likely levamisole-contaminated. Unfortunately, testing to confirm the presence of levamisole in the urine was not available. Even in patients without the typical dermatologic presentation of vasculitis secondary to levamisole-contaminated cocaine, levamisole ought to be considered in the differential diagnosis for patients with a fitting history and presentation.

LEVITIRACETAM INDUCED PERICARDIAL EFFUSION, NOT YOUR COMMON CAUSE OF PERICARDIAL EFFUSION Madan R. Aryal; Madan Badal; Anthony Donato. The Reading Hospital and Medical Center, West Reading, PA. (Tracking ID #1619258)

LEARNING OBJECTIVE 1: Discuss the causes and work up of pericardial effusion

LEARNING OBJECTIVE 2: Recognize drug (levitiracetam) induced pericardial effuion in the absence of usual causes

CASE: 61 year old male with history of generalized seizure disorder started on levitiracetam 9 months prior to this admission presented to emergency department with increasing dyspnea and chest discomfort. His past medical history was negative for ischemic heart disease, cardiac trauma, recent surgeries and radiation treatment. His vital signs were normal. His cardiac auscultation revealed distant heart sounds, with S1, S2, and presence of S3 gallop. Compete blood count, Liver function test, renal function test, thyroid function test and cardiac enzymes were normal. Chest radiograph revealed cardiomegaly. Blood levitiracetam level was 48 mcg/mL (therapeutic range, 12 to 46 mcg/mL), and ECG demonstrated sinus tachycardia and low voltages. An echocardiogram done showed pericardial effusion without tamponade physiology. Therapeutic pericardiocentesis removed 500 mL of bloody fluid with pH 7.28; RBC count, 6,215 cells/mL; WBC count, 3,030 cells/mL (neutrophils 25 %, lymphocytes 72 %),with all bacterial, mycobacterial, viral, fungal, and cytologic studies indicated no evidence of infection or malignancy. Work up also included neagtive antinuclear antibodies, anti-double-stranded DNA, antihistone antibodies, anti-Smith autoantibody, RA factor, Anti CCP antibody, SSA and SSB and ANCA, as well as normal complement and PPD testing. Work up done to exclude other causes of pericardial effusions- viral (coxackie, echovirus, adenovirus, EBV, VZV, Influenza and HIV), lyme were all negative. Complement levels of C3, C4, CH50, and CEA level were all within normal limits. At this point, levetiracetam induced pericardial effusion was taken into consideration. He was switched to lamotrigene with no further episodes of pericardial effusion on follow up echocardiogram 3 months later.

DISCUSSION: Levitiracetam is commonly used drug for seizure; it can uncommonly cause pericardial effusion, with the reported incidence of 0.17 % in patients taking levitiracetam. Here we report a case of pericardial effusion due to levitiracetam. Although the development of cardiac tamponade is a rare complication of levitiracetam, it is reasonable to include this in the differential in the appropriate clinical setting and when other causes have been excluded. Its recognition and stopping the drug can be lifesaving in preventing future episodes.

LIFE THREATENING GASTROINTESTINAL BLEEDING IN AN AIDS PATIENT. DON'T FORGET ABOUT KAPOSI'S SARCOMA! Raji Shameem; Niket Sonpal; Pooja Kumar; Ladan Ahmadi. Lenox Hill Hospital, New York, NY. (Tracking ID #1624105)

LEARNING OBJECTIVE 1: Identify the causes of gastrointestinal bleeding in AIDS patients.

LEARNING OBJECTIVE 2: Recognize Kaposi's Sarcoma as a cause of severe gastrointestinal bleeding in AIDS patients.
CASE: A 38-year-old African American male presented to the hospital with a history of bright red bleeding per rectum. He was recently diagnosed with HIV 2 weeks prior for a hospital admission for Pneumocystis jiroveci pneumonia. HIV viral load was elevated at >200,000 and the CD4 count was 13. On admission the patient's hemoglobin was 6.2. Platelet count and coagulation tests were within normal limits. In the emergency department the patient was given 4 units of packed red blood cells and admitted to the hospital. Endoscopy and colonoscopy was performed. On colonoscopy, ulcerations were visible and biopsy of the ulcerations was positive for CMV. Subsequently, the patient was started on gancyclovir therapy. However, no active sites of bleeding were noted. Nuclear medicine imaging was negative. Mesenteric angiography revealed "blushes" in the small intestine. Due to persistent severe bleeding requiring multiple transfusions and hemodynamic instability the patient was taken for emergent exploratory laparotomy which revealed multiple reddish lesions along the wall of the small intestine with mesenteric lymphadenopathy. Ileal resection was performed. Biopsy results were consistent with Kaposi's sarcoma (KS). The patient was started on anti-retroviral therapy. After initiation of anti-retroviral therapy the patient did not have any further episodes of rectal bleeding.
DISCUSSION: Kaposi's Sarcoma is a vascular tumor caused by the human herpes virus type eight (HHV-8). One specific group of patients that are known to be susceptible to this tumor is AIDS patients. Skins lesions are the most common presentation of KS. However, there may be systemic manifestations involving the respiratory tract and the gastrointestinal tract as seen in this patient. Gastrointestinal involvement is not uncommon in Kaposi's. At times it can be the only presentation of the tumor as seen in this patient. However, it is uncommon for KS to present with such severe gastrointestinal bleeding. With endoscopy KS lesions are usually seen easily. In this case multiple imaging modalities failed to diagnose KS. Also with gastrointestinal involvement chemotherapy is usually added to the treatment regimen. In this case, the patient's symptoms improved solely with the initiation of anti-retroviral therapy.

LUCKILY IT IS NOT THE WORST CASE SCENARIO: DISSEMINATED HISTOPLASMOSIS PRESENTING AS A WASTING SYNDROME WITH HYPERCALCEMIA Monalee Patel-Chheda[1]; Miles Raizada[1]; Subhan Ahmed[2,1]; Ruba A. Halloush[3]; Faisal Khasawneh[1]. [1]Texas Tech University HSC-Amarillo, Amarillo, TX; [2]University of Oklahoma-Tulsa, Tulsa, OK; [3]Amarillo Pathology Group, Amarillo, TX. (Tracking ID #1628816)

LEARNING OBJECTIVE 1: Recognize that granulomatous diseases like sarcoidosis, tuberculosis, and disseminated fungal infections can cause severe hypercalcemia.
CASE: A 65 year-old diabetic male presented with 2-month history of constipation, polyuria and unintentional weight loss. On examination, he was cachectic without rash, lymphadenopathy or organomegaly. Labs showed hemoglobin of 10.6 g/dl, creatinine of 3.23 mg/dl and serum calcium of 12.4 mg/dl. Liver function tests, parathyroid hormone level and serum protein electrophoresis were within normal limits. Body computed tomography showed 3 brain lesions, bilateral adrenal enlargement and a lesion at the base of the tongue. Biopsies of the tongue lesion and the left adrenal gland were identical and showed non-caseating granulomas and budding yeast forms consistent with histoplasmosis. After intravenous fluid hydration and improvement in his renal function, he was started on a four-week course of liposomal amphotericin B followed by a long course of itraconazole with gradual improvement.
DISCUSSION: Histoplasmosis is the most common endemic mycosis in the country. Infection is acquired after inhaling H. capsulatum microconidia. Most infections are asymptomatic or manifest as a mild self-limiting flu-like illness. Symptomatic disease has multiple manifestations including a chronic progressive disseminated infection. In this entity, the patient is classically a middle-aged or elderly man without a known immunocompromising illness. It usually presents like a wasting syndrome suspicious for an underlying metastatic malignancy. Hypercalcemia is a very rare presentation of this infection and results from increased vitamin D production in the infectious granulomas. Diagnosis hinges on isolating the fungus on cultures, identifying its characteristic yeast forms on histopathological exam, detecting histoplasma antigen in urine or serum which carries a sensitivity of 90 % in disseminated infections or documenting a positive serology. The role of molecular methods in the diagnosis of histoplasmosis is still evolving. This infection is fatal if not treated. Cases that are mild to moderate in severity can be treated with itraconazole alone, whereas, more severe infections require an initial course of amphotericin B followed by a lengthy course of itraconazole. This case reminds Internists to consider disseminated granulomatous diseases including histoplasmosis in the differential of patients with hypercalcemia.

LUNG MASS AND PLEURAL EFFUSION - PLANNING FOR A BIOPSY? LET US TEST THE URINE BEFORE THAT! Sathish kumar Krishnan; Malav Parikh; Venu K. Ganipisetti. St. Francis Hospital, Evanston, IL. (Tracking ID #1642087)

LEARNING OBJECTIVE 1: Recognize that urine antigen testing has high sensitivity and acceptable specificity to diagnose blastomycosis.
LEARNING OBJECTIVE 2: Recognize that blastomycosis can present with large pleural effusion.
CASE: A 30 years old female presented with non-productive cough, shortness of breath on exertion, left-sided pleuritic chest pain, and an episode of hemoptysis progressively worsening for 14 days. About 10 days prior to admission, she presented to the ER with fever, non-productive cough and left-sided pleuritic chest pain. Her chest X-ray then, showed a rounded opacity in the left parahilar region and a small left pleural effusion. A CT of chest then, showed a 5.4×3.3 cm pleural-based consolidation or mass along the anterior aspect of the left upper lobe at the level of the left hilum and scattered smaller nodular opacities in the left upper lobe. She was discharged with levofloxacin, but she did not improve. Her past medical history included asthma. She emigrated from Guyana 15 years back. She had never smoked. She was a nurse. She had no family history of cancer, connective tissue disease or immunologic disease. Her vitals were stable. Her physical exam revealed decreased breath sounds in the left middle and lower lung fields. Her CXR showed a large left side pleural effusion. Thoracentesis yielded 1500 ml of clear yellow fluid. Pleural fluid analysis: LDH-127 IU/L, Glucose-103 mg/dL, protein-5.3 g/dL and WBCs-100 cu mm. Pleural fluid analysis was consistent with an exudate. Quantiferon TB gold, urine legionella and streptococcus antigens were negative. Blood culture, pleural fluid gram stain, AFB stain, KOH preparation and culture were negative. A CT-guided biopsy of the lung mass was contemplated. But, before obtaining the biopsy, urine was tested for blastomyces antigen and it was positive. The patient was treated with itraconazole. She improved clinically and a follow-up CXR in 6 weeks showed complete resolution of the mass.
DISCUSSION: Blastomycosis is a systemic pyogranulomatous infection that arises after inhalation of the conidia of the fungus, Blastomyces dermatitidis. Although it can involve any organ, lung is the most common site of infection. Pulmonary blastomycosis can cause alveolar infiltrates, fibronodular opacities and mass lesions. Although small pleural effusions are frequent, large pleural effusions are uncommon. Our patient is unique that she had a large pleural effusion. Due to the variability of the presentation and its rarity, it is important to maintain a high index of suspicion in patients with non-resolving pneumonia. Definitive diagnosis requires growth of the organism from a clinical specimen, but urine antigen detection has a sensitivity of 90 % and a specificity of 80 % and has proven useful. Urine antigen levels can be used to monitor the response to treatment. Urine antigen detection should be done before biopsy in all suspected cases, as it can preclude the need for biopsy and therefore the risk of complication, discomfort and expense associated with an invasive investigation.

LYMPHOMA PRESENTING AS COLD AGGLUTININ DISEASE Archana Satyal Chaudhary; Richard Alweis. The Reading Hospital and Medical Center, West Reading, PA. (Tracking ID #1642344)

LEARNING OBJECTIVE 1: Cold agglutinin disease (CAD) is an uncommon form of autoimmune hemolytic anemia (AIHA) accounting for

less than 15 % of AIHA. It is caused by destruction of erythrocytes by IgM autoantibodies that are directed against membrane antigens of the patients' red blood cells (RBC) and exhibit maximal reactivity at 4 °C. CAD can be idiopathic or secondary to some viral or mycoplasma infection. More commonly it is associated with lymphoproliferative malignancy.
CASE: A 85-year-old lady on chronic warfarin therapy for atrial fibrillation presented with chronic fatigue and few days of melena. She appeared pale and weak. She had few prominent firm left inguinal lymph nodes measuring 4 cm without hepatosplenomegaly. Her hemoglobin was 7.5 g/dl, lower than her baseline of 9 g/dl with normal leukocyte and platelet counts. She had hemolytic anemia with elevated reticulocytes, lactate dehydrogenase and bilirubin with undetectable haptoglobin. Peripheral blood smear revealed RBC clumps. Direct antibody test (Coombs) was positive. Blood bank had difficulty cross-matching blood due to the presence of a very strong cold agglutinin. Flow cytometry of the peripheral blood did not reveal any phenotypically abnormal cells. Her medical course was complicated by an acute arterial thrombus in the right lower extremity and was emergently taken for revascularization. An intraoperative excisional biopsy of the left groin lymph node confirmed diagnosis of an aggressive type of diffuse large B cell lymphoma. She later succumbed to the complications of acute ischemic limb.
DISCUSSION: Literature review suggests 76 % of patients with chronic CAD to have underlying lymphoma with most cases being lymphoplasmacytic lymphoma, marginal zone lymphoma and small lymphocytic lymphoma/chronic lymphocytic leukemia. It is also less commonly associated with diffuse large B cell lymphoma and suggests extra nodal disease. Hence one should strongly consider the possibility of lymphoproliferative malignancy in the presence of cold agglutinin disease and initiate appropriate work-up.

LYMPHOMA PRESENTING AS ABDOMINAL ACCESS Abhishek Singla[1,2]; Jayanth Adusumalli[1,2]; Mahmoud A. Abu Hazeem[1,2]; Nithan C. Birch[2]. [1]Creighton University Medical Center, Omaha, NE; [2]Veterans affair, Omaha, NE. (Tracking ID #1642463)

LEARNING OBJECTIVE 1: To recognize that lymphomas can present as abscess if they undergo necrosis.
LEARNING OBJECTIVE 2: To recognize that some aggressive B-cell lymphomas called "Grey Zone Lymphomas" can have features overlapping between two different types of lymphomas.
CASE: A 68 year old Caucasian male with past medical history of hypertension, paroxysmal atrial fibrillation, diabetes mellitus type 2; presented with a month history of fatigue, left upper quadrant pain, early satiety and weight loss. He reported no nausea or vomiting. Physical examination revealed tenderness in left upper quadrant and was limited by obesity. Admission labs were significant for a normocytic anemia with hemoglobin of 8.0 mg/dl. A comprehensive metabolic panel was normal. Computed tomography (CT) scan images demonstrated a large left upper quadrant abdominal mass, a 3 cm hepatic hypodense lesion in liver and diffuse abdominal lymphadenopathy. Percutanous needle Biopsy of the mass resulted in necrotic debris, which failed to demonostrate growth on bacterial, mycobecterial and fungal cultures. A biopsy of liver nodule and groin lymph node were significant for a clonal expansion of B cell lymphocytes which on immunohistochemistry stained positive for BCL2, BCL6, Mum-1, and Ki67 (100 %), which is consistent with "grey zone" lymphoma. This type of lymphoma had features that overlap between those of a diffuse large B cell and a Burkitts lymphoma. Positron Emission Tomography (PET scan) showed widely metastatic disease and bone marrow was normal. A complete remission was achieved after 8 cycles of chemotherapy with rituximab, etoposide, vincristine, doxorubicin, cyclophosphamide, and prednisone (R-EPOCH).
DISCUSSION: Rapidly proliferating lymphomas can undergo spontaneous coagulative necrosis, thereby mimicking an abscess. The diagnosis is best made based by morphology and immunophenotyping on excisional tissue biopsy, most commonly a lymph node. Some B-cell lymphoma, can have features intermediate between DLBCL and Burkitt's lymphoma lymphomas and currently designated as "Gray Zone Lymphoma"

MAGIC SYNDROME WITH VISION THREATENING KERATITIS Anil Kumar Reddy Anumandla; Lingling Du; Gaurav Kistangari. Clevaland Clinic, Cleveland, OH. (Tracking ID #1642646)

LEARNING OBJECTIVE 1: Recognize clinical features of MAGIC syndrome, an overlap of relapsing polychondritis and behcet's disease.
LEARNING OBJECTIVE 2: Manage ocular complications in MAGIC syndrome.
CASE: A 24-year-old Caucasian male presented to our hospital with ulcerative skin lesions and scleritis. He had a complex history of relapsing polychondritis diagnosed 3 years earlier, treated with various immunosuppressive regimens, well controlled for the past year with azathioprine 175 mg and prednisone 2.5 mg daily. One month prior to his current admission he developed a flare of left eye scleritis and several mucocutaneous lesions. At that time he was admitted to an outside hospital and was treated with intravenous steroids and methotrexate. During the hospital course his skin lesions worsened particularly in the areas of i.v. access sites, suggestive of pathergy. Endoscopy revealed ulcers over the left tonsil and tonsillar wall. After failure to respond, he was transferred to our hospital for further management. Upon arrival to our hospital his vital signs were: temp 36.3, BP 136/81, HR 68/min, RR 18/min. Physical examination was significant for L eye conjuctival injection and multiple diffuse ulcerated lesions over upper extremities, chest, back, buttocks and thighs. WBC was 26,000, and CRP and ESR were elevated at 13.2 and 52 respectively. Ophthalmologic evaluation revealed severe nodular scleritis and peripheral ulcerative keratitis of the left eye. Investigation for bacterial, viral, and fungal cultures was negative. Given the compelling clinical picture for new-onset of Behcet's disease, he was treated with 3 days of methylprednisolone 1 g per day with improvement of his skin lesions. After completing the pulse-dose steroids, however, he again had rapid deterioration of his keratitis with a worsening epithelial defect with a concern of corneal melt. Given the vision-threatening nature of the keratitis, the patient was started on cyclophosphamide 150 mg daily, with subsequent fluctuation in his ocular status. He proved to be sensitive not only to the dosage of steroids but also to the frequency of administration. Inflammation of the sclera and cornea finally responded to prednisone 40 mg TID and cyclophosphamide 175 mg daily. His skin lesions healed well without development of any new lesions or pathergy to phlebotomy.
DISCUSSION: MAGIC (mouth and genital ulcers with inflamed cartilage) syndrome is a rare rheumatic disease that features the concurrence of relapsing polychondritis and Behcet's disease first described by Firestein et al. in 1985, with a total of 22 cases in the world literature. We describe a patient with MAGIC syndrome and severe vision-threatening peripheral ulcerative keratitis refractory to methotrexate and azathioprine, ultimately improving with cyclophosphamide and high dose steroids. The presence of ulcerative keratitis and skin lesions in cases of relapsing polychondritis should prompt consideration of a diagnosis of MAGIC syndrome. Institution of high dose steroids in conjunction with cyclophosphamide is an effective treatment approach.

MALINGERING WITH A SECRET HELD CLOSE TO THE HEART Matthew N. Peters; Morgan J. Katz; Chad S. Miller. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1641451)

LEARNING OBJECTIVE 1: Recognize human-anti-mouse antibodies as a cause of falsely elevated troponin.
LEARNING OBJECTIVE 2: Identify medications that can create human-anti-mouse antibodies. Learn techniques to assess elevated troponin values in the presence of human-anti-mouse antibodies.
CASE: A 58 year-old man with a self-described history of coronary artery disease presented with 10/10, crushing, substernal chest pain. Initial ECG was normal and showed normal sinus rhythm at 72 beats/min. Troponin I (TnI) was found to be elevated at 27.8 g/dL. He underwent immediate coronary arteriography, which revealed only mild luminal irregularities in the left anterior descending and right coronary arteries. After the procedure, he continued to complain of chest pain and subsequent TnI measurements remained >20 g/dL. Upon further questioning, the patient stated he had been looking for a place to live for the past 2 years but had been limited by

his recurrent chest pain and multiple hospitalizations. Outside hospital records were obtained, which revealed similar coronary artery and TnI findings. A previous discharge summary revealed a remote history of Non-Hodgkins Lymphoma (NHL) which had been treated with rituximab. The discharge summary also stated that they believed that he was aware of having an "abnormal lab value that was associated with chest pain" and was malingering. Due to the potential of persistent human anti-mouse antibodies (HAMA) produced by rituximab, the TnI assay was repeated using a heterophilic antibody blocking reagent and revealed a TnI of 0.38 g/dL. The patient was informed of the results and became extremely agitated and combative before leaving against medical advice. The patient has not returned to our facility since.

DISCUSSION: In the evaluation of acute coronary syndrome, TnI has emerged as the gold standard. While elevated TnI suggests the presence of myocardial ischemia, TnI elevation can also be produced by conditions causing an increase in myocardial oxygen demand, such as severe hypertension, sepsis or a tachyarrhythmia. Other common causes include renal failure (due to decreased renal clearance) and skeletal muscle injury. A less familiar cause of falsely elevated TnI is human-anti-mouse antibody (HAMA), an immunoglobulin G (IgG), which has the ability to recognize epitopes on the Fc portion of a foreign immunoglobulin. Consequently, HAMAs can mimic circulating cardiac troponin by cross-linking detection antibodies in the troponin immunoassay and produce a falsely elevated TnI as high as 100 g/dL, which can persist for as long as 10 years following exposure. Chimeric (part mouse, part human) antibodies commonly used in clinical practice include infliximab (rheumatoid arthritis, Crohn's disease), basiliximab (renal transplant rejection prevention), rituximab (NHL) and abciximab (coagulation prevention in percutaneous coronary intervention). If HAMAs are suspected as a cause for a falsely elevated TnI, the test can be repeated using a different assay,for example, using a heterophilic antibody blocking reagent or using serial dilutions of the specimen, from which the decrease of TnI will be out of proportion to the dilution. The general internist should be alerted to medications that may cause false elevations in TnI secondary to HAMAs and understand the importance of obtaining old hospital records whenever possible.

MRI TERMINATION: THE DANGER OF DEVICE RETENTION DURING CAPSULE ENDOSCOPY Bradley Anderson; Jackson Liang; Ramona S. DeJesus. Mayo Clinic, Rochester, MN. (Tracking ID #1628068)

LEARNING OBJECTIVE 1: Recognize device retention as a potential complication during capsule endoscopy and identify common predisposing factors.

LEARNING OBJECTIVE 2: Recognize the contraindication of magnetic resonance imaging (MRI) in the setting of retained capsule endoscopy devices.

CASE: A 55 year old gentleman with a past medical history significant for primary progressive multiple sclerosis and chronic anticoagulation for a history of pulmonary embolism was hospitalized for neurologic and infectious work-up after presenting with a two-day history of hallucinations and productive cough. Following 6 days of hospitalization, the patient experienced the onset of dark stools which was accompanied by an acute drop in hemoglobin (from 9.0 to 7.4 g/dL) and positive HemoQuant (>15.6 Hb/g). The patient was subsequently transfused with one unit of packed red blood cells and an EGD was performed under sedation which detailed a normal-appearing stomach, esophagus, and duodenum without an identifiable source of bleed. CT enterography was subsequently performed which noted three subcentimeter enhancing ileal lesions which were radiographically suspicious for carcinoid. Following these findings, a colonoscopy was completed which visualized no bleeding source up to 15 cm from the ileocecal valve. To further examine the ileum for the lesions noted on CT enterography, capsule endoscopy was pursued. Three days after swallowing the capsule, the patient reported that despite passing several stools, he had not passed the capsule. An anteroposterior abdominal radiograph was completed which described a retained capsule adjacent to the proximal descending and distal transverse colon, likely contained within a colonic diverticulum. The following day, the patient developed acute right-sided lumbar radiculopathy associated with severe pain. An emergent MRI lumbar spine was performed. During performance of the MRI localizing sequence, a focal susceptibility effect was noted in the region of the pelvis. A prompt investigation was completed by the radiology staff who discovered the prior report of a retained capsule enteroscopy device. The procedure was immediately terminated without harm to the patient. A patient care assistant noted passage of the capsule two days later.

DISCUSSION: Device retention is a complication unique to capsule endoscopy. Recent studies have reported the rate of retention to be between 1.0 % and 1.7 % of patients undergoing the diagnostic procedure. Common factors which predispose individuals to device retention include Crohn's disease, neoplastic lesions, NSAID-induced enteropathy, stenosis, and adhesions. We were unable to identify a prior case report that described patient injury in the setting of retained capsules during MRI, but retained devices are considered a danger and contraindication to MRI. While this case represents a near-miss of such an event, it highlights the need for enhanced provider awareness as well as institutional safeguards against ordering MRI studies prior to the confirmed passage of an endoscopic capsule. Confirmation of device passage is quickly achieved through abdominal radiographic imaging and should be employed in circumstances where suspicion remains for retention. While emergency situations can be challenging, adequate history taking as well as education regarding this contraindication can prevent the occurrence of future events.

MAKE NO BONES ABOUT IT Hawkins Gay; Jason Higdon. Emory University School of Medicine, Atlanta, GA. (Tracking ID #1624595)

LEARNING OBJECTIVE 1: Recognize the features of hypercalcemia.

LEARNING OBJECTIVE 2: Identify the etiology of symptomatic hypercalcemia using a step-wise approach.

CASE: A 63-year-old African American man with no past medical history presented to the emergency department complaining of generalized weakness and back pain. Over the past month he had become so weak that he needed to use a walker to perform his activities of daily living. On the morning of presentation he was unable to rise from a seated position without assistance. He also described low back pain that radiated into his right leg, was worse while standing or walking, and was a 7/10 in intensity. Additional complaints included decreased appetite, constipation, nausea, increased urination and thirst, and 30 lb weight loss over this same time period. He denied any fevers, chills, diarrhea, shortness of breath, or night sweats. Physical exam was significant for bi-temporal wasting, dry mucous membranes, and a distended, tender abdomen, but was otherwise within normal limits. Initial laboratory analysis revealed a BUN of 31 mg/dl, creatinine of 1.6 mg/dl, calcium of 13.9 mg/dl, albumin of 4.4 g/dl, total protein of 13.3 g/dl, alkaline phosphatase of 82 u/l, and hemoglobin of 13.0 g/dl. Urinalysis revealed 1+ protein. An x-ray of the lumbosacral spine showed a compression abnormality of the L5 vertebra and an irregularity of the right pedicle concerning for a lytic process. Secondary labs revealed a serum ionized calcium of 13.9 g/dl, low parathyroid hormone (PTH) of 16.1 pg/ml and phosphorus of 3.3 mg/dl. A serum protein electrophoresis (SPEP) showed atypical bands in the gamma zone and immunofixation indicated monoclonal IgG. A presumptive diagnosis of multiple myeloma (MM) was made, at which time the patient was placed on normal saline and pamidronate for management of hypercalcemia. The diagnosis of MM was later confirmed by bone marrow biopsy.

DISCUSSION: Symptomatic hypercalcemia is commonly encountered and should be considered in any elderly patient presenting with symptoms of constipation, nausea, vomiting, lethargy, flank pain (kidney stones), polyuria and polydipsia, or altered mental status. The two most common causes are primary hyperparathyroidism and hypercalcemia of malignancy. The first step in approaching hypercalcemia is to confirm a truly elevated level. Roughly 45 % of calcium is bound to albumin so a rise in the serum albumin can lead to pseudohypercalcemia. Correct levels are confirmed by ordering serum ionized calcium. When elevated, the initial workup should focus on differentiating between hyperparathyroidism and malignancy. History and physical exam can determine if there are any symptoms or

findings that may be due to an underlying malignancy. Initial laboratory testing should begin with a PTH level. Normal to elevated levels would indicate primary hyperparathyroidism. If PTH levels are low (<20 pg/ml), a parathyroid hormone related peptide (PTHrP), SPEP and urine protein electrophoresis (UPEP), and/or calcitriol levels should be ordered based on clinical judgment. Therapy for mild hypercalcemia consists primarily of IV normal saline. In more severe cases or those caused by malignancy, intravenous bisphosphonates can be used to inhibit bone resorption. These may require 2-4 days before showing an effect. When more immediate treatment is needed, calcitonin may be effective in as little as 12 h.

MAKING A LIST AND CHECKING IT TWICE: THE IMPORTANCE OF ACCURATE MEDICATION RECONCILIATION IN ESTABLISHING A LIFE-THREATENING DIAGNOSIS. Thomas Radomski; Harish Jasti. University of Pittsburgh, Pittsburgh, PA. (Tracking ID #1639658)

LEARNING OBJECTIVE 1: Identify the presentation of statin-induced rhabdomyolysis.
LEARNING OBJECTIVE 2: Illustrate the importance of accurate medication reconciliation.
CASE: A 64 year-old man with a history of coronary artery disease and myocardial infarction, diabetes mellitus II, and hypothyroidism presented from an outside hospital complaining of progressive bilateral upper and lower extremity weakness. By the day of presentation, he had increasing trouble combing his hair and arising from a chair. He denied any muscle pain or stiffness, nor did he report any focal weakness, numbness or paresthesias. He did endorse chronic neck pain. The patient was unsure of his medications, and a medication list upon transfer listed aspirin, carvedilol, insulin glargine and aspart, lisinopril, metformin, and levothyroxine. The physical exam revealed a middle-aged appearing man in no distress. He was afebrile with stable vital signs. He had 4/5 strength on abduction of his upper extremities with 5/5 strength throughout the remainder of his arms. Muscle bulk was decreased bilaterally in his proximal lower extremities. Hip flexion was 3/5 bilaterally, with 4/5 strength throughout the remainder of his lower extremities. His neurologic exam was otherwise intact. He denied any tenderness to palpation throughout his muscles. Cardiac, pulmonary, and abdominal exams were otherwise unremarkable. Lab work on admission revealed a CPK of 4917 IU/L with an ESR of 52 mm/hr. Urinalysis showed 1+ blood with 1 RBC. TSH was normal and a hemoglobin A1C was 11.8 %. The patient's CPK continued to rise, peaking at 132,587 IU/L on hospital day 5. His serum creatinine rose as well, peaking at 5.8 mg/dL on hospital day 8. ANA, rheumatoid factor, and a comprehensive myositis antibody panel were negative. An EMG was performed, suggesting a toxic versus statin-induced myopathy. A muscle biopsy of the right deltoid muscle showed necrotic myofibers, major histocompatibility complex 1 up-regulation, and membrane attack complex deposition in the capillaries. All of these findings were suggestive of an autoimmune statin-induced rhabdomyolysis. Upon further review, the patient recalled he may have been on a "medication for his cholesterol." Subsequent discussion with his pharmacist revealed that he had been taking simvastatin 80 mg daily.
DISCUSSION: Statin-induced rhabdomyolysis is a relatively rare but serious complication of statin use, characterized by muscle weakness, a CPK 10 times the upper limit of normal, myopathic EMG findings, and muscle necrosis on biopsy. While 2–11 % of patients on statins may experience myalgias, only 0.5 % develop myositis or rhabdomyolysis. Multiple mechanisms of insult have been described, including increased myocyte membrane excitability, impairment of mitochondrial function and CoQ10 depletion, impaired calcium homeostasis, and induction of apoptosis. Another mechanism, whereby statins cause a necrotizing myopathy via autoantibodies directed against HMG-CoA reductase, has more recently been characterized. This was felt to be the cause in this patient given his biopsy findings. This case also illustrates the importance of a thorough medication reconciliation process, as the patient was unaware of his medications. His use of simvastatin was overlooked on multiple instances. This had major implications on arriving at an accurate diagnosis and counseling the patient to discontinue his simvastatin upon discharge.

MALIGNANT EPITHELIOID SOLITARY FIBROUS TUMOR OF THE LUNG PLEURA (SFTP) - A CASE REPORT Dania Khoulani; Zahrae Sandouk; Krishna Thavarajah. Henry Ford Health System, Detroit, MI. (Tracking ID #1625948)

LEARNING OBJECTIVE 1: Malignant SFTP are rare, with subtle presentations.
LEARNING OBJECTIVE 2: Natural history and management of malignant SFTP.
CASE: 74 yo healthy female with HTN and no history of substance use saw her PCP for left chest discomfort initially attributed to early shingles. She had work-related asbestos exposure. After 3 weeks, her discomfort had spread to her left arm without a rash. Chest X ray showed a large left upper lung mass. Further workup including percutaneous biopsies showed epithelioid variant malignant SFTP staining positive for CD34 and negative for all other biomarkers. After seeing oncology and surgery, her tumor was deemed inoperable as it was extensive and encasing major blood vessels. She underwent radiation therapy (RT) with persistently enlarging tumor, reaching the size of 12.5×10×8.5 cm. It extended towards the right, compressing her trachea and esophagus, causing worsening stridor and dysphagia. She had a tracheal stent placed. EGD revealed mechanical compression, a narrowing 2/3 the way down her esophagus with distal radiation esophagitis and a tracheo-esophageal fistula. She also developed extensive bilateral upper extremity DVT due to compression of the major thoracic veins by the tumor, treated with Lovenox. She was readmitted within a week for worsening shortness of breath and repeat CT thorax showed her tumor to be 12×9.3×9 cm. Repeat bronchoscopy revealed impinging tumor with left stent compression and a mucous mass. She was enrolled in hospice due to quickly progressing symptoms with unsuccessful RT.
DISCUSSION: SFTP is a rare mesenchymal overgrowth which was historically thought to be a form of mesothelioma. It's not related to asbestos exposure. SFTP is typically benign and surgical removal is curative; however, it is malignant in 12 % of cases. It affects both females and males in their 6th and 7th decade. Clinical presentation is typically associated with large tumor size and includes chest pain, cough or dyspnea. Patients may also develop paraneoplastic syndromes, mostly with hypoglycemia due to IGF-II production (11 % of malignant tumors, 3 % of benign tumors) and hypertrophic pulmonary osteoarthropathy due to hyaluronic acid production (20 % of tumors). Thoracic imaging typically reveals a homogenous large intrathoracic tumor, but when intra-tumor necrosis or hemorrhage is present, it appears heterogenous. Pathology reveals uniform elongated spindle cells, fibroblasts and connective tissue arranged in a pattern-less or storiform manner. Unlike mesothelioma which stains negative for CD34, vimentin, CD99 and BCL-2, SFTP stain positive for these biomarkers. SFTP staging is as follows: stage 0–1 are benign with 0 being pedunculated and 1 being sessile/inverted; stage 2–4 are malignant, with 2 being pedunculated, 3 being sessile/inverted and 4 being multiple synchronous metastatic. Complete surgical resection with large >1–2 cm tumor-free margins is the most important prognostic indicator of malignant SFTP. Even with complete surgical resection, recurrence rate can be high; however, metastatic disease typically occurs very late in the disease course. Adjuvant and neoadjuvant chemotherapy has not been effectively studied due to the rarity of the disease. There have been cases reported with postoperative RT success in possibly preventing the development of tumor recurrence, but preoperative RT has not been assessed. In our patient, it was found that preoperative RT did not help debulk a large malignant tumor in order to allow for surgical resection.

MALIGNANT TRANSFORMATION OF INTRAPULMONARY SCHWANNOMA INTO CARCINOSARCOMA IN NEUROFIBROMATOSIS-1: A CASE REPORT Sagar Mallikethi Lepakshi Reddy; Ekta Lakhani; Arshad Javed; Satish J. Bankuru; Diane L. Levine. Wayne State University/DMC, Detroit, MI. (Tracking ID #1622162)

LEARNING OBJECTIVE 1: Recognize a rare case of malignant transformation of lung schwannoma in a patient with NF-1
LEARNING OBJECTIVE 2: Recognize the possible need for screening guidelines for neoplasms in adult NF-1 patients

CASE: A 37 year-old male patient with NF-1 was found to have an incidental mass in right lung on chest X-ray. Subsequent CT-Thorax showed 6.5×5.5×3.5 cm rounded mass in right upper lung fields. A diagnosis of benign intrapulmonary schwannoma was made based on CT guided biopsy showed characteristic spindle cells, positive S-100 stain and low Ki-67 staining. Patient remained asymptomatic and was lost to follow-up. He was admitted this time 4 years after initial presentation due to worsening dyspnea, anorexia and unintentional weight loss of 20 lb over 8 weeks duration. CT-Thorax showed 12×11×7 cm mass with scattered areas of central necrosis in right upper lung and large right pleural effusion. Thoracentesis revealed hemorrhagic effusion with negative cytology. VATS-assisted biopsy of the mass was pursued. Immunohistochemical staining was positive for carcinoma markers such as CAM 5.2, AE1/AE3, CK7, and sarcoma markers such as vimentin, CD99 and actin. Nuclear atypia, high mitotic index and characteristic staining pattern, was diagnostic of lung carcinosarcoma. Patient had stage IV lung cancer and was deemed a poor surgical candidate. Currently, palliative radiotherapy is being pursued on this patient. We hypothesize that benign intrapulmonary schwannoma transformed into malignant carcinosarcoma of lung, which unfortunately carries a dismal prognosis.

DISCUSSION: Neurofibromatosis-1 (NF-1) is an inherited autosomal dominant neurocutaneous disorder with a prevalence of 1 in 2000–5000 people. As compared to general population, NF-1 patients are at 2.5 to 4-fourfold higher risk for various types of benign and malignant neoplasms. Common neoplasms in this patient population are benign neurofibromas, gliomas, malignant peripheral nerve sheath tumors, benign or malignant schwannoma, neurofibrosarcoma, rhabdomyosarcoma, pheochromocytoma, juvenile myelomonocytic leukemia, gastrointestinal stromal tumors. However, primary pulmonary malignancies have been reported rarely in these patients. Intrapulmonary schwannomas are rare and constitutes 0.2 % of all lung cancers. Malignant transformation of schwannoma is highly uncommon. Recently, a case of carcinosarcoma (a rare type of non-small cell lung cancer) was reported in NF-1. The report represents a rare case of intrapulmonary schwannoma that underwent malignant transformation into carcinosarcoma of lung in NF-1 patient. Lifetime risk of neoplasms associated with NF-1 has been reported to be 20 % by age 50. Malignancies are a major cause of morbidity, mortality in these patients. Screening guidelines are relatively well established in pediatric NF-1 population. Despite the increasing reports of various tumors and high lifetime risk for cancers, there are no established screening guidelines in adult patient population. If further studies support high lifetime risk of neoplasms, screening in such high-risk population may significantly decrease morbidity, mortality and associated healthcare costs.

MAN, MIND AND MADNESS! Kalpana Nagarkar; Akshay Manohar; Michael S. Beede; Daniel Goldsmith. Capital Health Regional Medical Center, Trenton, NJ. (Tracking ID #1628443)

LEARNING OBJECTIVE 1: Neurosyphilis must be considered in the differential diagnosis of psychiatric conditions, even in the absence of medical or other neurological findings.

LEARNING OBJECTIVE 2: This case report illustrates the usefulness of RPR testing for patients admitted to inpatient or outpatient with psychiatric symptoms.

CASE: Incidence of syphilis is once again increasing throughout the world. The disease is known as the great mimicker because of its wide range of clinical presentations. Symptomatic neurosyphilis can develop at any stage of the disease. Herein reported is a case of a 51-year-old man who initially presented with symptoms of mania mimicking schizophrenia, but was subsequently diagnosed with general paresis of the insane. A 51 year old African American man presented with acute psychosis to the emergency department. His medical history was significant only for long standing mental illness diagnosed as paranoid schizophrenia. Family history was unremarkable. During examination he was withdrawn answering only in monosyllables. Vital signs were stable. He was found to have Argyll Robertson pupils which responded to accommodation but not to light. He also had an abnormal Romberg's test. He scored a 23/30 on the MMSE scale suggestive of mild to moderate cognitive impairment. Imaging studies which included MRI of the brain and spine were negative. Initial laboratory studies were remarkable for his RPR being positive in 1:8 dilution and FTA-ABS was reactive. His treponema pallidum AB particle agglutination test was also reactive. A lumbar puncture revealed CSF that was reactive to VDRL in a 1:1 ratio. HIV testing was negative. The patient was admitted and treated with IV penicillin.

DISCUSSION: The patient described here presented with multitude of psychiatric signs and symptoms. Patients with neurosyphilis can also present with many different physical or neurologic symptoms that lead to admission or follow-up at a medical or neurology unit. What was interesting about this case was that the patient showed exclusively psychiatric manifestations, leading to direct admission to a psychiatric unit rather than a medical or neurology unit with psychiatric consultation. Clinicians—including internists and neurologists, and especially psychiatrists—need to have a high index of suspicion for neurosyphilis, which may have an exclusively psychiatric presentation and because of the increasing incidence of syphilis in recent years

MANAGEMENT DILEMMA: PROGRESSIVE THROMBOSIS IN A PATIENT WITH SARCOIDOSIS, CIRRHOSIS AND A HISTORY OF BLEEDING ESOPHAGEAL VARICES Lu Pan; Ogu Iheanyichukwu; David Desilets; Linda J. Canty. Baystate Medical Center, Springfield, MA. (Tracking ID #1619728)

LEARNING OBJECTIVE 1: Recognize the common causes of portal vein thrombosis in the setting of liver cirrhosis.

LEARNING OBJECTIVE 2: Understand the risks and benefits of anticoagulation vs. conservative management in patients with chronic portal vein thrombosis secondary to liver cirrhosis.

CASE: A 60 year old female with past medical history significant for liver cirrhosis secondary to sarcoidosis, upper GI bleeding due to esophageal varices which were subsequently banded, iron-deficiency anemia, portal vein thrombosis (PVT) and superior mesenteric vein thrombosis that was diagnosed seven months prior presented with subacute worsening of abdominal pain. The abdominal pain was severe and localized to the mid-epigastric region associated with nausea without vomiting, BRBPR or melena. On physical examination, patient had stable vital signs. Her abdomen was soft, nontender and nondistended with active bowel sounds. CT scan revealed a greater degree of thrombosis in the superior mesenteric vein and portal vein (PV) with tortuous mesenteric vessels presumably collaterals. Hypercoagulable workup revealed a mildly elevated antidcardiolipin (aCL) IgM of 19 MPL/ml, while the remainder of the antiphospholipid panel was negative. Factor V Leiden, Factor II Prothrombin, Protein S deficiency and JAK-2 mutation (screening for myeloproliferative disorder) were negative. Protein C was low at 49 % (normal range 74–151). The patient was managed conservatively with IV fluids and pain control. Her abdominal pain improved during the hospital stay.

DISCUSSION: Anticoagulation therapy was contemplated for several reasons. Anticoagulation in patients with PVT could lead to recanalization of the PV and prevent progression of PVT. The worsening thrombosis, reduced level of protein C and elevated aCL IgM were concerning for a possible underlying prothrombotic disorder contributing to the PVT. However, the lowered protein C could have been an acquired condition due to the patient's liver cirrhosis. In addition, aCL IgM has been found in 18.8 % of patients with chronic liver disease unrelated to thrombosis and was considered an epiphenomenon of chronic liver damage. Even among patients with systemic lupus erythematosus, aCL antibodies were not an independent risk factor for thrombosis-related event. Furthermore, portal vein recanalization is more likely to be achieved if anticoagulation was initiated within 6 months of diagnosis. Our patient was diagnosed with PVT seven months prior. Finally, the clinical benefits of PV recanalization in this particular patient are uncertain. Mortality benefits have only been demonstrated in individuals with PVT on the waiting list for liver transplant. Even though patients with PVT treated with anticoagulation did not have significant esophageal variceal bleeding, the risk of bleeding was taken into consideration given this patient's known prior bleeding. Finally, the PVT is likely due to reduced flow in the portal system. After careful deliberation, the decision was made not to anticoagulate. As of nine months of follow-up, no further complications have developed.

MEDICAL ERROR AND HARM AS A REAL TIME TEACHABLE MOMENT: A 52 YEAR OLD WOMAN WITH DIABETES Robert L. Fogerty. [1]Yale School of Medicine, New Haven, CT; [2]Yale-New Haven Hospital, New Haven, CT. (Tracking ID #1610294)

LEARNING OBJECTIVE 1: Recognize systems breakdowns that can occur and result in patient harm.
LEARNING OBJECTIVE 2: Recognize the importance of near miss reviews as part of teaching systems-based practices to housestaff.
CASE: A 52 year old female with a medical history notable for Type II Diabetes Mellitus, presented to our Emergency Department following a fall. She was found to have Hyperglycemic Hyperosmolar Syndrome (HHS) and was admitted. The patient arrived on the medical floor with insulin present on her IV pole, but no active order for insulin. The physician to physician report and the physician charting both described an ongoing insulin infusion. The insulin infusion was re-ordered by the medical team based on these records. The Emergency Department nursing assessment (a paper record) noted a symptomatic hypoglycemic event resulting in abrupt discontinuation of the insulin infusion. This was the only location where these events were noted. Only a careful review of the paper nursing records, outside of our Electronic Medical Record and not standard practice, resulted in the discovery of this error. The patient arrived on the medical floor without reliable intravenous access. A central venous catheter (CVC) was placed. A single view chest x-ray was desired for CVC placement confirmation. Due to confusion amongst the team members, a lateral chest x-ray was performed and suggested azygous placement of the CVC. The covering house officer believed immediate repositioning was necessary, deactivated the bed alarm and attempted repositioning. While awaiting repeat chest radiography, the patient got out of bed and fell, pulling out the CVC. The patient did not suffer any significant harm from this event, but it was identified by all involved as a 'near miss'. She recovered from her illness and was discharged home.
DISCUSSION: This case is of interest to General Internists and Physician Educators because of the growing recognition of patient safety as an important education topic. This patient's hospital course was notable for three near misses in the first 24 h of her hospital stay, each of which could have resulted in harm. Most of these were not related to clinical errors but systems-based errors. First: Poor communication between the Emergency Department and the Medical Service, an error in knowledge transfer, resulted in the ordering of a potentially dangerous drug. Second: Azygous line placement was inappropriately noted as an emergency, a knowledge deficit. Third: Deactivation of the bed alarm, a defeated defense, resulting in a fall. Further complicating the situation was the ordering of an undesired medical test, the lateral chest x-ray, a result of both a knowledge deficit and poor handoff by the medical team. The medical team subsequently dedicated an entire teaching session to these systems-based errors, including a root cause analysis that discovered the deactivation of the bed alarm. The importance of attention to non-clinical patient care issues was emphasized. Conclusions: The safe practice of medicine requires adequate medical knowledge and strong clinical skills. Non-medical knowledge and systems-based practices, such as safe patient transfer and fall prevention, also contribute to safe medical care. Real-time Root Cause Analysis can be used as a teaching tool for systems-based practices with housestaff. In this case, poor systems-based practices posed a danger to the patient and provided a teaching opportunity.

MOLLARET'S MENINGITIS IN A PATIENT WITHOUT MONONUCLEAR PREDOMINANCE SALIM HAMADEH, HARSHA RAMCHANDANI, JAMES KRUER ST MARY MERCY HOSPITAL, LIVONIA, MICHIGAN Salim Hamadeh; Harsha Ramchandani; James Kruer. St Mary Mercy Hospital, Livonia, MI. (Tracking ID #1635770)

LEARNING OBJECTIVE 1: To illustrate an uncommon yet interesting case
LEARNING OBJECTIVE 2: To learn how to approach a case of meningitis To describe CSF findings in Mollaret's meningitis
CASE: Introduction: Mollaret's Meningitis is a rare disease of benign nature. First described by French neurologist, Pierre Mollaret, in 1944, it is characterized by sudden, repeated episodes of headache, photophobia, and fever that resolve within one to seven days. The diagnosis of Mollaret's meningitis is one of exclusion and is associated with marked pleocytosis on spinal fluid analysis including mainly lymphocytes, and large mononuclear cells. Case Description: This is a 32-year-old Caucasian male with a PMH of anxiety and migraine who presented with severe headache, fever, photophobia and myalgias for 1 week duration. On admission he was afebrile and hemodynamically stable. Physical examination showed photophobia. However, there was no nuchal rigidity, no skin rash and Kernig's and brudzinski's signs were negative. Laboratory studies showed no peripheral leucocytosis. Cerebrospinal Fluid (CSF) analysis showed elevated WBC with neutrophilic predominance, high protein count, and normal glucose. CSF cultures, VDRL and comprehensive viral panel (herpes Simplex virus type 1 and 2, EBV, CMV, West Nile, HIV), streptococcal pneumonia antigen, cryptococcus antigen were negative. CT scan and MRI of the head were normal. During the hospital admission, he received IV antibiotics, corticosteroids, and acyclovir. Once CSF culture and viral PCR came negative, antibiotic and acyclovir was stopped. His symptoms improved with symptomatic treatment. The patient had a similar presentation 6 months prior, which improved after supportive treatment. CSF studies at that time also showed elevated white blood cell count with neutophil predominance, high protein count, and normal glucose. Comprehensive viral cultures and CSF culture were negative. Patient symptoms resolved within 48 h and the patient was discharged home.
DISCUSSION: Mollaret's meningitis is a rare form of recurrent, benign, aseptic meningitis and is usually associated with lymphocyte predominance on CSF, with large mononuclear cells, which disappear after the first 24 h. Chan et al. report monocytes comprising 60–70 % of CSF cells on presentation. Mollaret's Meningitis may be associated with HSV predominantly Type 2. Transient neurologic deficits such as seizures may occur in up to 50 % of patients. In our patient, CSF antibodies for Herpes Simplex Virus were negative and the patient had a low monocyte count on both episodes of meningitis. This is likely due to delay in lumbar puncture. According to the Clinical Infectious Disease Oxford journal, acyclovir is the mainstays of therapy when the cause is HSV. Indomethacin, steroids, and colchicine have also been studied. Indomethacin has been shown to reduce the duration of illness and increase the symptom free interval. It is important to consider Mollaret's meningitis in the differential diagnosis of recurrent aseptic meningitis with negative viral studies and even without lymphocytic or monocytic predominance. Timely diagnosis of this disorder may prevent repetition of extensive and costly diagnostic investigations.

MONO CAN BE YELLOW: AN UNUSUAL CAUSE OF ACUTE HEPATITIS AUTHORS: AWASTHI D, GUHA B DEPARTMENT OF INTERNAL MEDICINE, QUILLEN COLLEGE OF MEDICINE, EAST TENNESSEE STATE UNIVERSITY Disha Awasthi; Bhuvana Guha. East Tennessee State University, Johnson City, TN. (Tracking ID #1642133)

LEARNING OBJECTIVE 1: EBV hepatitis is rare cause of acute hepatitis. Early recognition of EBV as a differential in patients presenting with hepatitis, especially in the setting of fever, lymphocytosis will allow physicians to diagnose and prevent fatal fulminant hepatitis.
CASE: 37-year old female patient was admitted with complaints of fever, chills and nonproductive cough. Past medical history included history of mental retardation secondary to premature birth, epilepsy and hypothyroidism. Patient goes to an adult day care and according to her mother she had lately been weak and lethargic. On admission vitals were normal except for temperature of 101.5 F. Physical examination was normal except decreased breath sounds on the right chest and tender hepatosplenomegaly. Labs showed-WBC-5 K/ul, Hb-13.2 g/dl, Platelet-106 K/ul. Chest Xray showed a right sided infilterate. Patient was started on Rocephin and Azithromycin for possible community acquired pneumonia. She continued to have high grade fever, max-105.1 F during hospitalization. Patient developed hypotension for which she was transferred to the Intensive care unit. CT Chest showed mediastinal, hilar lymphadenopathy, hepatosplenomegaly and multiple lymph nodes along the pancreatic head. Blood, urine and sputum cultures were negative. At Day 5 Patient became icteric. Follow-up labs showed WBC-7.1 K/ul with significant

lymphocytosis, Platelet-61 K/ul, AST-271 IU/L,ALT-61 IU/L,ALK-261 IU/L,Bilirubin-3 mg/dl, PT-15.2,INR-1.2,PTT-36,D-Dimer-2090 ng/mL,LDH-326 IU/L,Ferritin-2722 ng/mL,CRP-106 mg/L. USG abdomen showed Hepatosplenomegaly, contracted gall bladder with normal bile duct. Further workup was negative except EBV IGM was positive, EBV PCR showed 900 copies. Hepatitis panel and CMV were negative. Patient continued to be febrile and lethargic. Peripheral smear showed atypical lymphocytosis and thrombocytopenia. Hemolytic anemia was ruled out. Bone marrow biopsy was done to rule out Hemophagocytic Lymphohistiocytosis, since the patient satisfied all the clinical and laboratory criteria including fever, cytopenia, splenomegaly, Hypertriglyceridemia, lymphadenopathy and elevated Ferritin. Bone marrow biopsy showed moderate hypercellular marrow with moderate megakaryocytic, erythroid hyperplasia and reactive lymphocytosis. There was no evidence of hemophagocytosis. The patient was managed supportively and her condition slowly improved. Patient was afebrile after 11th day of admission. Lymphocytosis and LFTs continued to improve. Repeat LDH and Ferritin was normal. She was discharged in a stable condition. Repeat EBV copies after 2 months were normal.

DISCUSSION: Fever, sore throat, and adenopathy are the most common clinical features of acute EBV infection, also known as Infectious Mononucleosis. We present a case of EBV induced acute hepatitis involving moderate transaminitis, jaundice and hepatosplenomegaly. EBV hepatitis generally causes a mild, self- limiting hepatitis. Symptoms of EBV hepatitis are nonspecific like anorexia, weight loss, abdominal pain, and flu- like symptoms. The diagnosis is suggested by the combination of lymphocytosis, transaminitis and splenomegaly. Clinical jaundice occurs in <5 % cases. Treatment of EBV is usually supportive and most cases of hepatitis resolve spontaneously. Fulminant hepatic failure is the main cause of death in patients with fatal EBV hepatitis.

MORE THAN SKIN DEEP: PACEMAKER ASSOCIATED ENDOCARDITIS CAUSED BY STAPHYLOCOCCUS LUGDUNENSIS Felix H. Lui; Sara L. Swenson; Shelley M. Gordon. California Pacific Medical Center, San Francisco, CA. (Tracking ID #1628925)

LEARNING OBJECTIVE 1: Highlight the clinical presentation of a rare, but aggressive, coagulase-negative staphylococcus species, Staphylococcus lugdenensis

LEARNING OBJECTIVE 2: Discuss the diagnosis and treatment of device-related endocarditis

CASE: A 25 year-old Caucasian female with a history of severe cardiomyopathy due to viral myocarditis presented with fevers and increasing dyspnea on exertion for two months. The patient underwent a pacemaker implantation in 2007 and a left ventricular epicardial lead implantation in 2008. Eight months before admission, she received a biventricular ICD. At that time her generator pocket was suspicious for infection, and coagulase negative staphylococci was cultured. This was initially dismissed as contaminant, but subsequently speciated as Staphylococcus lugdunensis. Four months before admission, another revision occurred without incident. She had felt unwell since that time. On presentation in May 2012, she was hypotensive and febrile. Cardiovascular exam revealed a normal rhythm and S1/S2 heart sounds and a 2/6 holosystolic murmur at the left sternal border. A transthoracic echocardiogram revealed a left ventricular ejection fraction of 20 % and a mobile mass on the tricuspid valve. She was started on gentamicin, rifampin, and vancomycin for endocarditis sepsis. She was transferred to our hospital two days later. Transesophageal echocardiogram revealed a dense mass on the right atrial lead. Blood cultures grew S. lugdunensis with the same antibiotic sensitivities. On hospital day 8, the pacemaker generator and 2 transvenous leads were removed. She received milrione for advanced heart failure. Due to concerns about infection of the remaining epicardial lead, she continued suppressive antibiotics until her heart transplant several months later. On transplantation, culture of the explanted lead grew S. lugdunensis.

DISCUSSION: We report a case of pacemaker-associated endocarditis caused by an interesting etiologic entity: S. lugdunensis. Coagulase-negative staphylococci (CoNS) are a major component of human skin flora. As in our patient, they are often considered contaminants when isolated, which can lead to treatment delays and adverse patient outcomes. CoNS staphylococci account for 1–5 % of cases of native valve endocarditis. Intracardiac devices represent a significant risk factor for CoNS native valve endocarditis. Thus, we should have a low threshold for obtaining blood cultures in patients with intracardiac devices, even those who present with non-specific symptoms. Treatment of pacemaker endocarditis includes appropriate antibiotic therapy and removal of the entire pacer system. Our patient's persistent infection despite extended antibiotic therapy emphasizes the need for complete hardware removal once pacemaker endocarditis is identified. Unlike other CoNS, S. lugdunensis is an aggressive pathogen which behaves similarly to S. aureus. In addition to endocarditis, it can cause osteomyelitis, skin infections, and acute, post-operative endophthalmitis. In S. lugdunensis endocarditis, valve destruction with abscess formation develops rapidly in 50 % of cases. Seventy percent of patients develop complications that necessitate surgical intervention, including systemic embolization and heart failure. With incomplete treatment, mortality rates approach 70 %, rivaling those of S. aureus endocarditis. In our patient, infection was never suspected, leading to the development of pacemaker endocarditis and delaying appropriate treatment.

MORTALITY DUE TO REACTIVATION HEPATITIS B IN AN HIV POSITIVE PATIENT Meredith Niess. University of Colorado, Aurora, CO. (Tracking ID #1629018)

LEARNING OBJECTIVE 1: Cite strengths and weaknesses of various antiviral treatments for HBV/HIV co-infected patients.

LEARNING OBJECTIVE 2: Identify high-risk patients for HBV reactivation with antiviral regimen adjustment and the utility of viral sensitivity testing to prevent this.

CASE: A 52-year-old man with chronic Hepatitis B (HBV), Fanconi Syndrome, and HIV presents to his infectious disease physician complaining of decreased energy, general malaise, and nausea for 1–2 weeks. Ill-appearing, with hypotension and scleral icterus, he is admitted. His HBV and HIV were diagnosed in 1986. His HIV and HBV viral loads have been undetectable for more than 5 years due to treatment with lopinavir/ritonavir, tenofovir, and lamivudine. Eight months prior to presentation, raltegravir replaced tenofovir in his regimen due to acute on chronic renal failure. Six months prior to presentation, his HBV and HIV viral loads remained undetectable; 4 months prior, his transaminases and bilirubin were completely normal. Labs on presentation include an undetectable HIV viral load, a CD4 count of 316 (stable), AST of 598, ALT of 736, total bilirubin of 3.3, and an HBV viral load of 784 million. Liver biopsy demonstrates hepatocyte necrosis and organizing fibrosis. Given these results, entecavir is started 48 h into his hospitalization as salvage therapy for reactivated HBV. Despite this treatment, his AST and ALT rise to 1374 and 1190, respectively and total bilirubin climbs to 18.9. Tenofovir is reinitiated, and he is transferred for transplant evaluation and continued supportive care. HBV sensitivity testing confirms resistance to lamivudine, sensitivity to tenofovir, and intermediate sensitivity to entecavir. Entecavir and tenofovir are continued, and lamivudine is stopped. Despite this optimized regimen and mild virologic response, his liver failure is fulminant. In the third week of his hospitalization, ruptured gastric varices result in transfer to the MICU and ultimately, the patient's demise.

DISCUSSION: As of 2007, nearly 10 % of HIV infected patients had concurrent HBV infection. This case illustrates the complex nature of multidrug antiviral regimens for co-infected patients. Common HBV treatments include interferon, lamivudine, adefovir, entecavir, telbivudine, and tenofovir. This patient was successfully maintained on tenofovir and lamivudine, an extremely common regimen in HIV/HBV coinfected patients. Tenofovir is a potent antiviral, effective against wild-type and lamivudine-resistant HBV, in addition to HIV. It is the staple treatment for HIV/HBV co-infected patients, and is often combined with lamivudine. Lamivudine resistance develops very easily, with mutations providing cross-resistance to entecavir and other antivirals. According to recent studies, lamivudine is a poor candidate for monotherapy. In consideration of the rising problems of multidrug resistant HBV and the associated problem of rescue therapies, monotherapy in general for HBV is increasingly discouraged. While worsening renal failure is an appropriate indication to

discontinue tenofovir, the stakes are high in the immune-compromised HIV/HBV population. Replacement of the tenofovir with another potent antiviral may have changed this patient's course. This case also raises the question of when HBV antiviral changes without HBV sensitivities first are safe practice. Indeed, in the present case, sensitivity testing may have prevented HBV reactivation, fulminant hepatic failure, and death.

MOYAMOYA DISEASE AS POTENTIAL CONTRIBUTOR TO RECURRENT STROKE IN A 57-YEAR-OLD MAN. Erin Liu[2]; Thomas Deleon[2]; Kuo-Chiang Lian[1,2]. [1]The Queen's Medical Center, Honolulu, HI; [2]John A. Burns School of Medicine at the University of Hawai'i, Honolulu, HI. (Tracking ID #1626992)

LEARNING OBJECTIVE 1: Moyamoya disease is a rare cerebrovascular disease characterized by stenosis or occlusion of the arteries around the circle of Willis with arterial collateral circulation.
LEARNING OBJECTIVE 2: Patients with Moyamoya have significant risk for brain hemorrhage. Recognition of this disease in the patient with recurrent stroke requires a high degree of clinical suspicion.
CASE: A 57-year-old man with a past history ofdiabetes, hyperlipidemia and hypertension presented to the emergency department with right-sided weakness and aphasia. A head CT on admission without contrast showed a small left frontal gyrus stroke with no acute hemorrhage and he was managed medically. Laboratory testing on admission was remarkable for elevated hemoglobin A1c and LDL cholesterol. The patient's neurologic symptoms improved initially, however on Day 3 of hospitalization, the patient developed worsening of his symptoms. Physical examination was notable for a right-sided facial droop, hemiparesis in his right upper extremity, decreased strength in lower right extremity and mixed aphasia. Repeat head CT without contrast revealed a large left middle cerebral artery infarction and CTA of the neck showed multiple intracranial stenoses, specifically occlusion of the left M1 artery and moderate stenosis of the right M1 artery. Multiple collateral vessels reconstituting M2 segments were also noted, which were suspicious for Moyamoya disease. His proximal right upper extremity weakness improved mildly, but on Day 4 the patient again developed worsening right-sided weakness and a repeat head CT showed an evolving left middle cerebral artery infarction. Other stroke workup including transthoracic echocardiogram and carotid duplex ultrasound were unremarkable. He was medically managed with aspirin, atorvastatin, lisinopril, and insulin. He continued to receive speech, occupational and physical therapy throughout his hospital stay and was transferred to an inpatient rehabilitation facility for further care after stabilization of his neurologic symptoms.
DISCUSSION: This case illustrates the clinical presentation of recurrent strokes, which is common in the context of Moyamoya disease. The diagnosis ofMoyamoya disease is made with MRA or CTA which shows significant stenosis or occlusion of the cerebral arteries with a prominent collateral circulation. It is important to consider this disease in a patient with recurrent strokes because of the progressive nature of the disease and increased risk for cerebral hemorrhage.

MULTIPLE MYELOMA MASQUERADE Kristen Dalton. Denver Health Medical Center, Denver, CO. (Tracking ID #1637496)

LEARNING OBJECTIVE 1: To expand providers' differential for hypercalcemia.
LEARNING OBJECTIVE 2: To recognize the complications of a parathyroid adenoma.
CASE: A forty-eight year female with no past medical history presented with several months of progressive fatigue, constipation, and bone pain. Initial evaluation revealed significant hypercalcemia (15.3 mg/dL), acute renal failure, and iron deficiency anemia concerning for multiple myeloma. A skeletal survey demonstrated multiple small paravertebral lesions of the skull and bone loss in left humerus and radius. SPEP revealed a mild gammaglobulinemia. A bone marrow biopsy was considered, however the patient's parathyroid hormone level was found to be significantly elevated (1815 pg/mL). A subsequent neck ultrasound demonstrated an ovoid hypoechoic and hypervascular structure in the thyroid isthmus suspicious for parathyroid adenoma versus carcinoma. The patient received acute treatment for hypercalcemia and underwent an uncomplicated parathyroidectomy. The pathology was consistent with a parathyroid adenoma.
DISCUSSION: Hypercalcemia is encountered frequently in hospital medicine. Malignancy is usually the culprit in the inpatient setting, whereas primary hyperparathyroidism is the most common etiology in outpatients. Severe primary hyperparathyroidism (PHPT) may mimic multiple myeloma with bony lesions, anemia, renal failure, and monoclonal gammopathy. The rare bony lesions are Brown tumors due to increased osteoclast activity in underlying hyperparathyroidism. These "tumors" are not true neoplasms, but can mimic them. The mechanism of anemia is uncertain and typically occurs only in severe disease. It resolved in similar cases after parathyroidectomy. Several investigators have demonstrated an association between gammopathy and PHPT. Thus, the presence of both hypercalcemia and gammopathy does not necessarily indicate malignancy. Rather, it should prompt an investigation for hyperparathyroidism. This case had many interesting diagnostic twists and turns. Initially, myeloma was thought to be the most likely etiology of her hypercalcemia, but the subsequent findings of a highly elevated parathyroid hormone and a thyroid mass were suspicious for a carcinoma. Predictors of malignancy include disease occurrence in the fourth and fifth decade of life (an average of ten years earlier than an adenoma). One would expect calcium levels to be more elevated in carcinoma (usually greater than 14 mg/dL). In addition, malignant masses are often ill-defined, highly vascular, and embedded into surrounding structures. The surgeons in this case described a well-circumscribed, noninvasive mass most consistent with adenoma. Pathology ultimately confirmed parathyroid adenoma as the culprit. The patient's hypercalcemia, bone pain, and constipation have since resolved. Her parathyroid levels dropped intraoperatively from 3420 pg/mL to 1040 pg/mL and expect further reduction over several months. Her diffuse bone loss should improve with calcium supplementation. The lesson learned in this case is that the true etiology of hypercalcemia can be unmasked if one keeps a broad differential.

NEUROSYPHILIS Matthew L. Law. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640505)

LEARNING OBJECTIVE 1: Recognize new-onset seizures as a presentation for neurosyphilis.
LEARNING OBJECTIVE 2: Recognize the barriers to diagnosing neurosyphilis. Identify the initial changing presentation of neurosyphilis.
CASE: A 41 year-old man with no past medical history and three months of altered mental status by acting strange according to his family presented with a generalized tonic clonic seizure. His pupils were equal, round, reactive to light and accommodation. Patient had no sensory or proprioception defects, or skin lesions. CT scan of the brain discovered no acute intracranial process. EEG showed diffuse slowing. Aseptic meningitis was revealed by initial lumbar tap. HIV test was negative. Later RPR of the blood and VRDL of the cerebrospinal fluid (CSF) returned positive results. On further questioning, patient admitted to multiple sexual partners over the past ten years, with inconsistent protection.
DISCUSSION: A general internist commonly encounters new-onset seizures. In conjunction with a thorough history and physical exam, an internist must consider an infectious etiology, with neurosyphilis as a possibility. The incidence of acute symptomatic seizures occurring in neurosyphilis is between 14 % and 60 %. Neurosyphilis can occur during any of the stages of syphilis, as the spirochete Treponema pallidum invades the CNS early in the course of syphilis. The diagnosis of neurosyphilis relies on many tests with the confirmatory test being a positive VRDL of the CSF. However, the VRDL of the CSF is reported as having a 25–40 % false negative rate, and this becomes one of the major barriers to diagnosing neurosyphilis. In non-HIV infected individuals where there is a suspicion of neurosyphilis a CSF lymphocyte count >5 cells/μL or a protein concentration >45 mg/dL in consistent with the diagnosis. Additionally, tabes dorsalis, a classic symptom of neurosyphilis, is one of the most affected by antibiotic therapy, and therefore is generally absent upon presentation. As a result, neurosyphilis today presents with subtle clinical signs and weakly positive serology, which can often cause a

physician to overlook neurosyphilis as a possible diagnosis in new onset seizures. Additionally, while the incidence of syphilis decreased in the latter part of the 20th century and may have lulled physicians into forgetting about this disease, syphilis is on the rise again, especially among HIV positive patients. With syphilis on the rise, physicians should investigate neurosyphilis in patients with changes in mental status, especially with new-onset seizures.

NATIVE MITRAL VALVE ENDOCARDITIS CAUSED BY STAPHYLOCOCCUS CAPITIS Rommel Del Rosario; Mohammed Bahaa Aldeen; Mashrafi Ahmed. Texas Tech University Health Sciences Center, Amarillo, TX. (Tracking ID #1639724)

LEARNING OBJECTIVE 1: Recognize that blood culture growth of skin commensal organisms should be evaluted carefully with clinical findings
LEARNING OBJECTIVE 2: Recognize that treating Staphylococcus capitis endocarditis wtih a combined medical and surgical approach may have a better outcome
CASE: A 63-year-old nursing home resident was admitted for suspected health care associated pneumonia. She has no history of IV drug use and no chronic indwelling intravenous lines. The physical examination revealed tachycardia, tachypnea, decreased breath sound and crackles on the right base of the lung and a systolic murmur heard best on the left parasternal border with radiation to left axilla. Chest x-ray showed consolidation on the right base of the lung. Blood cultures were sent and she was started on recommended triple antibiotic therapy for suspected health care associated pneumonia. Despite antibiotic treatment, she had persistent leukocytosis with fever. When her blood culture came back positive for Staphylococcus capitis on multiple sets, suspecting an infective endocarditis, a transthoracic echocardiogram was done. It showed large vegetation on the anterior mitral valve leaflet measuring about 2.5 cm in the largest diameter with severe mitral regurgitation. Antibiotic therapy was changed to vancomycin and oral rifampicin. Surgery was planned considering bulky vegetation but patient refused any surgery despite repeated counseling. She continued to deteriorate and developed acute hypoxic respiratory failure due to pulmonary edema. She adopted hospice care and died in 2 weeks.
DISCUSSION: Coagulase-negative staphylococcus is considered as normal flora on the skin. Most of the isolates reported from blood cultures are contaminants. It is rare to see this on blood cultures especially on patients with native valves, and on those with no history of IV drug use or long-term indwelling intravenous catheter. In this report, we present a case of native valve endocarditis by Staphylococcus capitis and reviewed all the published reports of similar occurrence. We found 21 case reports of Staphylococcus capitis endocarditis in Pubmed search and reviewed all of them. The age ranges from 29 to 80 years, mean - 62.5 years. Male and female were equally affected. Native valve is involved in 60 % cases. In case of prosthetic valve, bioprosthetic valve is more frequently involved than metallic one (62 % vs 12 %). Nearly in 58 % cases, vegetation and valve dehiscence with regurgitation were found and 41 % cases developed peri-valvular abscess. 55 % of cases were treated with antibiotic alone and rests were treated with antibiotic with surgical intervention. Mortality rate is 15 % and 10 % respectively among these two therapeutic groups. When antibiotic is used alone, single agent was used in 41 % cases with mortality of 20 % and combination therapy was used in 59 % cases with mortality of 42 %. Our case reminds internist to be alert for infective endocarditis when skin commensals are grown in multiple blood cultures with significant clinical and laboratorial finding.

NEURO-BEHçET'S DISEASE: AN UNUSUAL CAUSE OF HEADACHE Eric Fountain; Anjali Dhurandhar. University of Colorado School of Medicine, Denver, CO. (Tracking ID #1594886)

LEARNING OBJECTIVE 1: Identify the causes of headache in Behçet's disease and recognize when neuroimaging is appropriate
LEARNING OBJECTIVE 2: Identify the manifestations of Neuro-Behçet's disease
CASE: This is a 50 year-old woman with a 20-year history of Behçet's disease (BD) who presented to clinic with headache. The patient had awakened with the headache that morning. She had 8/10 pain located around her eyes and on top of her head and mild nausea, but no visual disturbances or focal neurological symptoms. The headache responded to ibuprofen. The patient was currently taking prednisone for painful genital ulcers. Examination was normal, except for a small oral ulcer, two large genital ulcers and tenderness over the temporal regions. Two days later, the patient was seen in the ED for persistent frontal headache of 9/10 severity for 4 days. Physical examination and non-contrast CT head were both unremarkable. The patient was sent home. Four days after her initial presentation, the patient returned to clinic with persistent headache and a new complaint of unsteady gait. Headache worsened with positional changes. She had discontinued prednisone due to her concerns of a possible infection. Physical exam noted sitting BP 138/80, then standing BP 118/78, oral ulcer and abnormalities on neurologic exam including altered mental status, left-sided dysmetria, slowed rapid alternating hand movements, and difficulty with tandem gait. The patient had intact cranial nerves, normal motor strength and deep tendon reflexes. STAT MRI/MRA/MRV were ordered. MRA and MRV were normal, but MRI demonstrated diffuse enlargement of the pons, concerning for a brainstem glioma. After discussing the patient's presentation with the neuroradiologist, the MRI was felt to be compatible with Neuro-Behçet's disease. The patient was treated with high dose corticosteroids with prompt resolution of her neurological symptoms.
DISCUSSION: Headache is one of the most common pain complaints. Differentiating primary headache from secondary headache can be challenging, particularly in patients with systemic diseases. We failed to recognize Neuro-Behçet's disease (NBD) due to our lack of awareness of this manifestation. Behçet's disease (BD) is a chronic, idiopathic vasculitis characterized by recurrent oral and genital ulcers, uveitis, and pathergy. NBD is one of the most serious sequelae. Neurological involvement in NBD often manifests as either subacute meningoencephalitis or venous sinus thrombosis. Severe headache in BD presents a diagnostic challenge as it may herald the onset of NBD, yet the decision to obtain neuroimaging for Behçet's patients presenting with isolated headache remains unclear. The prevalence of any type of headache in BD is about 70 %. Most are migraine and tension headaches. 10 % are due to non-structural headache of Behçet's that concurs with BD flares and improves with corticosteroids. Only 10 % of headaches in BD are due to NBD. While a majority of all patients with NBD present with headache, most of these patients have other findings such as focal neurological deficits or papilledema that would justify neuroimaging. The preferred diagnostic modality for NBD is T2 MRI with MRV also recommended if venous thrombosis is suspected. While imaging would not have been appropriate initially for our BD patient, greater awareness of the role of headache as a prognostic marker for NBD may have aided in diagnosis. The correct diagnosis was confirmed through rapid improvement with systemic corticosteroids.

NEW ONSET GOUT PRESENTING AS PSEUDOSEPSIS Kathyrn Veazey[1]; Mary Maher[2]. [1]University of Colorado Health Sciences Center, Denver, CO; [2]Kaiser Permanente Medical Group, Denver, CO. (Tracking ID #1640342)

LEARNING OBJECTIVE 1: Recognize that polyarticular gout can present as pseudosepsis
LEARNING OBJECTIVE 2: Recall that polyarticular gout pseudosepsis is often misdiagnosed as sepsis and treatment is with corticosteriods
CASE: A 39 year old male with a past medical history of alcohol abuse presented with alcohol withdrawal after having a seizure at home. He was initially admitted to the intensive care unit for intravenous benzodiazepines. On day 3 of hospitalization, he developed left knee pain and a fever to 39.2 with notable tachycardia and hypotension. Complete blood count showed a mild anemia with a leukocytosis of 12,800. He was worked up for infectious etiologies and treated with intravenous fluids and broad-spectrum antibiotics. Blood cultures, urine culture, chest radiography, and CT scan of the abdomen were unremarkable. Over the next few days, he

developed swelling over the left great toe, right hand, right elbow, and bilateral ankles. A radiograph of the right ankle showed soft tissue swelling and one of the left knee showed a large effusion. An arthrocentesis was performed of the left knee and the synovial fluid revealed uric acid crystals and a white blood cell count of 28,031 with 97 % neutrophils. Synovial gram stain and culture were negative. Urine chlamydia and gonorrhea as well as serum rheumatoid factor were negative. Rheumatology was consulted and felt that the presentation was consistent with pseudosepsis due to an acute polyarticular gout attack. The patient was treated with high dose corticosteroids resulting in normalization of his vital signs and a complete resolution of his symptoms

DISCUSSION: Polyarticular gout manifests as an initial gout presentation in less than 20 % of patients and an initial presentation as pseudosepsis is even more rare. Polyarticular gout flares can result in a systemic inflammatory response that mimics septic shock known as pseudosepsis. Pseudosepsis often presents with fever, leukocytosis with left shift, and hypotension. Like sepsis, it can be life threatening if not recognized early. Swan-Ganz catheters show a systemic vasodilatory response similar to sepsis. Polyarticular gout with pseudosepsis is often not considered in a differential diagnosis of the febrile and hypotensive patient. Failure to consider pseudosepsis as a diagnosis leads to unnecessary use of antibiotics and delayed diagnosis of the underlying etiology. Treatment of pseudosepsis from polyarticular gout requires hemodynamic support and use of systemic corticosteroids. This case of polyarticular gout is unique in that the patient did not have a known history of gout and his initial attack presented as a systemic inflammatory response syndrome consistent with pseudosepsis. It is important for internists to recognize that polyarticular gout can present as pseudosepsis, even in patients without known history of gout.

NON CONVULSIVE STATUS EPILEPTICUS, AN UNDER DIAGNOSED NEUROLOGICAL EMERGENCY. SUBHADRA MANDADI MD, LAKSHMI GOWDA HANUMAIAH MD, FAISAL AHMAD MD, MYRIAM EDWARDS MD, GHASSAN BACHUWA MD HURLEY MEDICAL CENTER Lakshmi Gowda Hanumaiah. Hurley Medical Center, Flint, MI. (Tracking ID #1609177)

LEARNING OBJECTIVE 1: Non convulsive status epilepticus is defined as continuous or near continuous ictal discharges on EEG with non convulsive symptoms.It is a common yet underdiagnosed cause of delirium in the elderly with underlying cerebral structural changes. It is a challenging diagnosis because of its non specific clinical presentation.

CASE: A 79 y/o Caucasian female with a history of chronic stable subdural hygroma and TIA was admitted with increasing frequency of falls. She had no significant physical findings on examination. Subsequently, she developed delirium .At that time, laboratory studies were within normal limits with no evidence of infection. The delirium could not be attributed to any secondary cause. CT head without contrast was significant for a stable left subdural hygroma with subacute bleed. Due to the worsening delirium of unclear etiology, patient was transferred to ICU. Occasional twitching of both upper extremities and face was noticed and hence EEG was ordered. EEG reported 9 seizures of left temporal onset without clinical manifestation. Parenteral ant seizure medications were initiated with an impression of aphasia/neglect syndrome secondary to partial seizures arising from the effect of subdural hygroma. A repeat EEG to monitor the response reported right Periodic Lateralized Epileptiform Discharges with low voltage delta activity, midazolam drip was added to control her ongoing seizure. Twenty-four hours video recording EEG was done considering her deteriorating mental status and it suggested bihemispheric cerebral suppression with intermittent non convulsive seizures. Patient did not show improvement despite aggressive anti epileptic medications and pressor support. Patient was transferred to another tertiary facility where she deceased after a few days.

DISCUSSION: Always suspect NCSE in an elderly patient with delirium of unknown cause. Continuous EEG monitoring is the diagnostic modality with questionable cost effectiveness. This case illustrates atypical symptomatology of NCSE with history of probable epileptic drop attacks manifested as falls, aphasia, neglect syndrome, and the importance of early diagnosis of NCSE with its significant impact on treatment and outcome. Previous history of TIA/Stroke can lead to delay in diagnosis. Aggressive management can even contribute to mortality in these cases.

NON-COMPACTION CARDIOMYOPATHY; ONE MORE DIFFERENTIAL DIAGNOSIS. Benyam G. Alemu[1]; Itzhak Kronzon[2,1]. [1]Lenox Hill Hospital, New york, NY; [2]Lenox Hill hospital, New york, NY. (Tracking ID #1623971)

LEARNING OBJECTIVE 1: Non-compaction Cardiomyopathy (NCCM) is a rare disorder that is classified as a primary-genetic Cardiomyopathy by American heart association. The purpose of this case report is to promote awareness about this rare, albeit serious disorder.

LEARNING OBJECTIVE 2: Recognize the clinical features and complications of non-compaction Cardiomyopathy

CASE: A 56 year old male patient came to our hospital with a chief complaint of recurrent syncope for the last 2 years. Patient reported palpitations and severe weakness preceding the syncopal episodes, followed by a brief loss of consciousness and rapid recovery. He denied any chest pain during those episodes. His past medical history included Hypertension, Diabetes type II and pulmonary fibrosis. His father died of 'heart attack' at the age of 66. On physical exam patient was comfortable and had no signs of respiratory distress. He had fine crackles heard on chest exam otherwise the rest of his physical was unremarkable. His initial lab work was unremarkable and EKG revealed a non-specific intra-ventricular conduction defect. Patient underwent an Electrophysiologic study and had a pacemaker placed for possible disease of bundle of His. Three days later, patient presented to the ER with another syncopal episode. Interrogation of his pacemaker revealed a sustained monomorphic ventricular tachycardia that lasted for 10 min. He was started on Amiodarone infusion and underwent coronary angiography which was normal. Echocardiography showed ejection fraction of 45 % and trabeculation around the apex of the left ventricle suggestive of isolated left ventricular non-compaction. The possibility of NCCM was strongly considered. Patient underwent pace maker explantation for a Cardiac MRI and results demonstrated mild global hypokinesis of the left ventricle and prominent left ventricular trabeculations. The diagnosis of non compaction cardiomyopathy was confirmed and patient was discharged after an automated internal cardiac defibrillator (AICD) implantation.

DISCUSSION: The incidence of NCCM has been estimated to be 0.05 % to 0.25 % per year in the general population. This disorder is caused by genetically determined disturbance of the myocardial compaction process during fetal endomyocardial morphogenesis. Both familial and non-familial cases have been described. Heart failure, ventricular tachycardia and thromboembolism are common complications of this disorder. One large cohort reported the incidence of ventricular tachycardia to be as high as 63 %. The mechanism of such arrhythmias is not completely understood but cardiac arrest and sudden death have been reported. Diagnosis is made by specific Echocardiographic criteria and Cardiac MRI can also be used for confirmation. Management involves treatment and prevention of complications such as anticoagulation and heart failure. ICD is indicated only for secondary prevention or in high risk patients. Non-compaction Cardiomyopathy is a rare disorder associated with a high incidence of cardiovascular complications. Diagnosis needs high index of suspicion and clinicians should be aware of this disorder and consider it in differential diagnosis.

NONRESOLVING RHABDOMYOLYSIS REVEALING AN OCCULT CULPRIT - A CASE REPORT OF PARASPINAL COMPARTMENT SYNDROME Taraka Vijay Gadiraju; Dhivya Sundaramurthy; Christopher R. Lachance. Baystate Medical Center/Tufts University School of Medicine, Springfield, MA. (Tracking ID #1642612)

LEARNING OBJECTIVE 1: Diagnose compartment syndrome promptly with a simple bedside investigation.

LEARNING OBJECTIVE 2: Recognize the importance of early intervention of compartment syndrome with fasciotomy to salvage muscle.

CASE: A 33-year-old man, a body builder by profession presented to our satellite location hospital with lower back pain and cola colored urine, eight hours after his rigorous weightlifting maneuvers and aerobic exercise in a Cross fit competition. He had a remote history of stable asthma, depression, uses amphetamine/dextroamphetamines for ADD and no history of back pain. Had no recent infections or antibiotic use. Denied active smoking, alcohol or drug abuse and his family history was significant for Huntington's disease. His vitals were stable and on exam, he had right loin firmness and tenderness, but no erythema, swelling, or signs of trauma. Had full ranges of motion and sensations were intact. Labs were significant for WBC18.9×100/L; creatinine 1.4 mg/dL; creatinine kinase (CK) >100,000 U/L. CT scan of the abdomen was normal and no muscle swelling. The patient was admitted for rhabdomyolysis and acute kidney injury. He was treated with bicarbonate drip and adequate hydration with intravenous saline overnight. Despite these measures, his CK remained high at >100,000 U/L and the patient was transferred to our tertiary care center. He continued to have mild right flank pain despite being on opioid analgesia. He developed mild swelling over the right paraspinal muscles with reduced sensation, without edema or erythema. With the question of persistent rhabdomyolysis and of concerns if high dose analgesia is masking the underlying pain, we had a high suspicion of an occult compartment syndrome. A Stryker instrument was passed in right paraspinal region that measured high pressure of 38-40 mmhg consistent with PCS. Patient underwent emergent surgical decompression by fasciotomy, where the paraspinal muscles appeared grayish, edematous and were bulging out on release by the incision. His other muscle groups looked viable and were salvaged from the timely intervention. This was followed by wound vac and delayed primary closure of the wound. Subsequenty his pain markedly improved, creatinine normalized, CK trended down to <2000 U/L by the time of discharge. He was able to resume his usual activities and was able to exercise again.
DISCUSSION: Paraspinal compartment syndrome (PCS) is a rare condition defined as increased pressure within a closed fibro-osseous space, resulting in reduced blood flow and tissue perfusion, causing ischemic pain and irreversible damage to the tissues, if unrecognized or left untreated. So far only 10 cases of Paraspinal Compartment syndrome have been reported in literature. Strenuous exertion was the cause in most of these cases as in our patient. Timely recognition and surgical decompression with fasciotomy is the key to salvage muscle and prevent contractures, permanent sensory deficits, infection and sepsis, worsening rhabdomyolysis, myoglobinuria and kidney injury requiring dialysis. Rhabdomyolysis can present in the absence of late complications such as neurological and vascular compromise. Physician should be vigilant in considering PCS as a possible cause of back pain in the setting of rhabdomyolysis. High dose analgesia may mask the severity of the underlying condition and simple bedside procedure, measurement of compartment pressure with a Stryker instrument could be of great help when in doubt.

NORMAL DOES NOT ALWAYS MEAN NEGATIVE! Gloria W. Li[1]; Anna Kolpakchi[2]; Lee Lu[1]. [1]Baylor College of Medicine, Houston, TX; [2]Michael E. DeBakey VA Medical Center, Houston, TX. (Tracking ID #1642509)

LEARNING OBJECTIVE 1: Review the hepatocellular carcinoma (HCC) screening guidelines for patients with chronic hepatitis C (HCV).
LEARNING OBJECTIVE 2: Recognize the limitation of the screening tools.
CASE: A 62-year-old man with HCV liver cirrhosis presented with one week history of pleuritic chest pain, shortness of breath and dyspnea on exertion. He also reported a 60 lb weight loss in the past year. He received routine HCC screening, and his last screening 6 months prior revealed a negative liver ultrasound and AFP of 5.6 ng/mL (0–9). On admission, he was tachycardia; O2 saturation was 80 % with exertion. Abdomen was mildly distended with splenomegaly. Laboratory studies were significant for platelet 70, INR 1.65, ALT/AST 53/232, total bilirubin 5.8 and albumin 2.7. AFP was 5725 ng/mL. V/Q scan showed bilateral segmental and subsegmental pulmonary emboli. Lower extremity dopplers were negative for DVT. Abdominal ultrasound showed a non-occlusive portal vein thrombosis, but no focal liver lesions. CT of the body revealed innumerable bilateral pulmonary nodules, non-occlusive main portal and occluded proximal right portal vein thrombi, and mesenteric and retroperitoneal lymphadenopathy. MRI showed a hypodense right lobe of the liver concerning for infiltrating HCC. Because of his coagulopathy and poor prognosis, liver biopsy was not performed. Given the elevated AFP, portal vein thrombosis, abdominal lymphadenopathy and hypodense lesion in the liver, the presumptive diagnosis made by oncology was metastatic infiltrative HCC. The patient wanted hospice care and expired shortly after discharge.
DISCUSSION: HCC is the fifth most common cancer in men. HCC is attributed to chronic viral (Hepatitis B or C) infection. The most common risk factor is cirrhosis; 79–90 % of HCC is diagnosed in patients with liver cirrhosis. Incidence of HCC secondary to chronic hepatitis C infection and liver cirrhosis is 2–8 %. Early detection has been shown to improve survival. Infiltrative HCC accounts for 13 % of all HCC, but it is one of the most difficult to detect on early surveillance imaging. The current guidelines for HCC screening include AFP and abdominal ultrasound every 6 months. Serum AFP has the sensitivity 40–65 % and specificity of 76–96 %. AFP elevations can be seen in non-HCC patients, especially in the presence of viral hepatitis, liver cirrhosis, and even portal vein thrombosis. The sensitivity of abdominal US for HCC screening increases from 70 % for lesions 1 cm in diameter to 90 % for those > 5 cm. The specificity varies from 48 % to 94 %. It is even less sensitive and specific in identifying infiltrating HCC, as demonstrated in our patient. The use of CT and MRI leads to more accurate HCC diagnosis with sensitivity 89 % and specificity 99 %, but exposure to radiation, cost, and the lack of evidence on survival benefits limit the utility of these tests as initial screening tools. Thus, physicians must recognize the limitation of recommended screening tools for HCC and be extremely vigilant in the evaluation of surveillance imaging in order to detect infiltrative HCC as early as possible.

NOT ALL CEREBRAL SPINAL FLUID TITERS ARE MADE EQUAL Daniel Har[1]; Mili Shum[2]; Cindy Sadikot[1]. [1]Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY; [2]Weill Medical College of Cornell University, New York, NY. (Tracking ID #1622412)

LEARNING OBJECTIVE 1: Recognize when to evaluate cerebrospinal fluid (CSF) in human immunodeficiency virus (HIV) patients co-infected with syphilis
LEARNING OBJECTIVE 2: Recognize the sensitivity of CSF Venereal Disease Research Laboratory (VDRL) and the importance of clinical context for treatment
CASE: A 35 year-old man with HIV, diagnosed in 2011, with an undetectable viral load, CD4 count greater than 400, adherent with antiretroviral therapy, presented with one year of progressively worsening neurological symptoms. Following his diagnosis of HIV, the patient was diagnosed with latent syphilis, which was refractory to several courses of intramuscular (IM) penicillin and doxycycline. For the past year, he reported back pain, leg numbness, and weakness which progressed to bowel and bladder incontinence a few weeks before presentation. During this time, he also had frequent headaches, accompanied by neck pain and vomiting. The patient had a stiff neck, decreased sensitivity below T7, loss of proprioception in his toes, and a positive Romberg sign. He had a maculopapular rash on his palms and soles. His pupils accommodated, but did not constrict to light. Labs showed RPR titers of 1:16; his last set of titers changed from 1:32 to 1:8 following treatment. CT head, MRI thoracolumbar spine, and MRI brain were unremarkable. He was started empirically on intravenous (IV) penicillin for suspected neurosyphilis while lumbar puncture results were pending. By hospital day 3, the CSF VDRL returned nonreactive. Treatment was continued because his symptoms were resolving. After completing 10 days of antibiotics, he had complete resolution of his symptoms and his CSF fluorescent treponemal antibody-absorption (FTA-ABS) returned reactive.
DISCUSSION: HIV-infected patients with early syphilis are at an increased risk of developing neurosyphilis, an infection of the central nervous system by Treponema pallidum. This is critical as the incidence of

syphilis has increased 33 % from 2000 to 2004. The most common symptoms include sensory impairment (48 %), pupillary changes (43 %), and cranial nerve palsies (36 %). Early neurosyphilis affects the meninges, resulting in meningitis symptoms. Late neurosyphilis typically affects the brain parenchyma and spinal cord, causing general paresis and tabes dorsalis. In the 2010 Center for Disease Control treatment guidelines, CSF should be analyzed in all patients with serological evidence of syphilis and neurological symptoms. This is even more concerning in HIV-infected patients as they have a more rapid course and a higher risk of treatment failure, leading to permanent disability or death. Although studies have shown that HIV-infected patients with CD4 counts <350 cells/microliter have an increased risk of neurosyphilis, this case demonstrates that this diagnosis should be considered in any HIV patient with positive syphilis titers. The diagnosis of neurosyphilis requires several tests, of which the most specific is a reactive CSF-VDRL. However, CSF-VDRL has a low sensitivity of 50 % whereas the sensitivity of CSF-FTA-ABS is close to 100 %. Therefore, a nonreactive CSF-VDRL does not rule out neurosyphilis, which is why our patient's symptoms resolved. In summary, clinicians should consider prompt CSF examination in any HIV-infected patient, regardless of CD4 count, who has positive RPR titers and symptoms of neurosyphilis. In addition, it is paramount to continue neurosyphilis treatment based on clinical symptoms, and not solely on CSF-VDRL, as treatment can be life-saving.

NOT JUST ANOTHER CAUSE OF CONFUSION- A CASE OF STEROID RESPONSIVE ENCEPHALOPATHY Madan R. Aryal[1]; Ravi Shahukhal[2]; Yagna R. Bhattrai[3]; Naba R. Mainali[1]. [1]The Reading Hospital and Medical Center, Wyomissing, PA; [2]Queens Hosptial Center, Queens, NY; [3]Mercy Catholic Medical Center, Philadelphia, PA. (Tracking ID #1622026)

LEARNING OBJECTIVE 1: Recognize Hashimoto's Encephalopathy in a patient with Hashimoto's thyroiditis
LEARNING OBJECTIVE 2: Discuss the treatment of Hashimoto's Encephalopathy
CASE: 76 year old Caucasian male with past medical history of Hashimoto's thyroidits, atrial fibrillation, coronary artery disease and hypertension, presented to the emergency department with clouding of consciousness for one day. His vital signs were stable. Chest and cardiovascular examination was normal. He was admitted for further workup which revealed CBC and electrolytes to be normal normal. Urine drug screen was negative. Septic work up was negative. His ABG was normal. Serum Cortisol was normal. TSH and anti TPO antibody were elevated at 11.4 UIU/ML, and 128 IU/ML respectively. CT of the chest and MRI of the head were negative. EKG and cardiac enzymes were normal. EEG revealed continuous slow and generalized pattern. Even after 2 days he continued to be encephalopathic. Based upon history of Hashimoto's thyroiditis, raised TSH and Anti TPO antibodies and EEG findings, he was started on steroid for presumed Hashimoto's encephalopathy. He showed significant improvement. He was discharged on steroid. This case well demonstrates that early recognition of Hashimoto's encephalitis is crucial and significant improvement with steroid therapy can be achieved.
DISCUSSION: Hashimoto's encephalopathy (HE) is a rare, under recognized disorder, more common in women which presents with sub-acute onset of confusion, cognitive deterioration, psychiatric symptoms, and seizures. It can present with myoclonus, ataxia and personality changes. The precise etiology and pathophysiologic mechanisms are not known although autoimmune phenomenon has been postulated. MRI, EEG, CSF analysis are essential to exclude other causes of encephalopathy. There is no gold standard diagnostic test and serological marker for the disease. The finding of elevated anti TPO Ab or antithyroglobulin antibody in patients with compatible clinical presentation is required for the diagnosis of HE. Improvement in cognitive impairment with steroid is suggestive of diagnosis. Neurologic investigation shows diffusely abnormal nonspecific slowing of background EEG, high CSF protein level without pleocytosis and normal brain CT. The long term prognosis is favorable with steroid treatment. Immunosuppressive therapy can be useful in patients who fail to improve with steroid therapy.

NOT SO SWEET - DRUG-INDUCED HYPERSENSITIVITY REACTION PRESENTING AS ACUTE FEBRILE NEUTROPHILIC DERMATOSIS Hazem Abugrara[1]; Daniel Jenkins[2]; Faisal Khasawneh[1]. [1]Texas Tech Univ Health Sciences Center, Amarillo, TX; [2]Baptist St. Anthony's Health System, Amarillo, TX. (Tracking ID #1594190)

LEARNING OBJECTIVE 1: 1- Diagnose a rare drug-induced hypersensitivity reaction presenting with pustular rash.
LEARNING OBJECTIVE 2: 2- Remind physicians of the broad and nonspecific manifestations of hypersensitivity reactions.
CASE: A 75-year-old white male with a past medial history significant for Crohn's disease admitted with acute onset confusional state and a sepsis picture. Two weeks prior, the patient was started on azathioprine (AZA) to treat his longstanding Crohn's disease. Initially, broad-spectrum antibiotics were prescribed while infection was being ruled out. On admission, he had a maculopapular rash that involved the arms and legs. In the subsequent 2 days the rash became pustular and progressed to involve the trunk, palms and soles. Cultures were negative and a skin biopsy was done. The clinical presentation and the skin biopsy findings were consistent with azathioprine-induced hypersensitivity reaction presenting with acute febrile neutrophilic dermatosis (Sweet's syndrome). AZA was stopped and there was quick, complete resolution of the rash.
DISCUSSION: AZA hypersensitivity syndrome is a rare adverse side effect presenting with fever, variable cutaneous eruption, neutrophilic dermatosis being the most common, and inflammation of one or more internal organ including the liver, kidneys, lungs and/or heart. This syndrome is a dose independent reaction that tends to occur during the first 4 weeks of therapy. It is thought to represent a type III or IV hypersensitivity response. Most cases resolve within 2–3 days after withdrawal of the medication and may not need corticosteroids use. Re-challenge with AZA is not recommended.

NOT JUST PNEUMONIA: A "SHOCKING" TURN OF EVENTS Katarzyna Mastalerz; Mary Maher. Denver Health, Denver, CO. (Tracking ID #1640101)

LEARNING OBJECTIVE 1: Recognize myocarditis as a cause of acute-onset shock in young healthy patients
CASE: A 34-year-old previously healthy woman presented with three days of dyspnea and left sided chest pain. She was tachycardic and had left lower lung-field crackles. An ECG showed sinus tachycardia with low voltage and nonspecific T wave changes. Her chest radiograph showed a left lower lobe infiltrate and borderline cardiomegaly. Basic laboratory studies were normal, except for a positive D-dimer. A CT scan of the thorax revealed no pulmonary embolic disease. She was treated with intravenous fluids and antibiotics targeted at community-acquired pneumonia. Within hours, her tachycardia worsened and she developed bilateral pulmonary crackles, and an S3 gallop. She then became diaphoretic, tachypneic, and collapsed due to a pulseless arrest. Cardiopulmonary resuscitation was initiated, with several restorations of circulation, but was ultimately unsuccessful despite maximal efforts. The autopsy revealed severe acute myocarditis and viral pneumonia. This pathology combined with a rapidly deteriorating clinical course is consistent with fulminant viral myocarditis.
DISCUSSION: Myocarditis is found in 22 % of autopsies of young healthy adults with sudden cardiac death. Most patients present with a progressive dilated cardiomyopathy. Fulminant myocarditis is a rare subtype (estimated incidence of one case per year in the US) that presents as acute cardiogenic shock. It is typically preceded by a viral prodrome. The most common etiology is infectious (predominantly viral), but toxic and immunologic causes have been reported. Echocardiography, cardiac biomarkers, and cardiac MRI are often included as part of the evaluation, but endomyocardial biopsy is the gold standard for diagnosis. Most cases temporarily require inotropic support, intraaortic balloon pumps, or ventricular assist devices. Surprisingly, cardiac transplantation is not recommended for fulminant cases because patients who survive the initial shock recover cardiac function completely. Physicians should recognize myocarditis as a cause of acute-onset shock in young healthy patients,

particularly in those with preceding viral syndromes. Rapid recognition of this condition and referral to a heart failure center are essential as patients who are supported through the initial shock have an excellent prognosis.

OLANZAPINE INDUCED CUTANEOUS LEUKOCYTOCLASTIC VASCULITIS Paras Karmacharya; Madan R. Aryal; Anthony A. Donato. Reading Health System, West Reading, PA. (Tracking ID #1645260)

LEARNING OBJECTIVE 1: Recognize olanzapine as a cause of cutaneous leukocytoclastic vasculitis.
LEARNING OBJECTIVE 2: Discuss the management of drug induced leukocytoclastic vascultitis.
CASE: A 58-year-old female with multiple psychiatric issues including bipolar disorder presented with altered mental status and a diffuse rash. The patient was very lethargic but was able to respond to questions when aroused and was oriented to time, place and person. She had been started on olanzapine 7 days back. On exam, the patient was hemodynamically stable. A diffuse erythematous rash over the patient's trunk and proximal arms was noted. The rash was non-blanching and contained many macules. A darker erythematous petechial rash was noted over the lower extremities distal to the knees. The patient was treated with supportive management and in the absence of another explanation, olanzapine was held and her rash got significantly better. She was found to be positive for ANCA against Myeloperoxidase. However, ANCA Proteinase 3 antibody was negative and other work ups for her rash including C3/ C4 complement and cryoglobulin levels were within normal limits. She also tested negative for hepatitis B, C and HIV.
DISCUSSION: Patients with hypersensitivity vasculitis exhibit at least three of the following features: age >16, use of a possible offending drug, palpable purpura, maculopapular rash, and biopsy of a skin lesion showing neutrophils around an arteriole or venule(4 out of 5 present in our case). Cutaneous Leukocytoclastic Vasculitis only involves the skin and spares internal organs. It may be idiopathic, drug induced, or occur in association with a known disorder, such as infection eg. hepatitis C. Cutaneous leukocytoclastic vasculitis is an infrequently reported adverse drug reaction associated with olanzapine. Its pathogenic mechanism is not known exactly, but both cell-mediated and humoral immunity appear to be involved. A high index of suspicion is necessary to make a diagnosis as both idiopathic and drug induced are identical both clinically and serologically. Removal of the inciting drug usually leads to resolution of the symptoms within a period of days to a few weeks. In patients with more severe or persistent cutaneous disease, drugs such as colchicine, antihistamines, and dapsone, may be helpful. Immunosuppressive therapy with glucocorticoids or cytotoxic agents should be reserved for fulminant or progressive disease.

OPIATE ENDOCRINOPATHY: FOOD FOR THOUGHT Pratik K. Dalal; Divyashree Varma. SUNY-Upstate Medical University Hospital, Syracuse, NY. (Tracking ID #1642301)

LEARNING OBJECTIVE 1: Recognize endocrine side effects of Opiate therapy
LEARNING OBJECTIVE 2: Diagnosis and management of Opioid induced endocrine dysfunction
CASE: 44 year old female presented with syncopal events and was found to be orthostatic in the absence of a history of dehydration.A low cortisol level was discovered at 1.9 mcg/dl. Low dose ACTH stimulation test resulted in an increase to 13.6 mcg/dl suggesting adrenal insufficiency. She was started on hydrocortisone. Labs showed a low ACTH level at <5 pg/ml, normal prolactin level at 4.1 ng/ml, high FSH at 22.8 mU/ml and estradiol at 25.8 pg/ml. She was found to have oxycodone in her possession and admitted to long term abuse. Incidentally she had been evaluated 2 years ago for hyperadrenalism and suspected Cushing's syndrome when her cortisol level was noted to be 19.5 mcg/dl. Did she over treat herself with narcotics to now result in adrenal insufficiency?
DISCUSSION: Methadone related endocrine dysfunction was recognized in the 1980s. Sexual dysfunction has long been known in heroin addicts. Opiate endocrinopathy continues to be the least diagnosed consequence of chronic narcotic therapy. These effects have been attributed to μ-receptor agonism in the hypothalamus and considered a class effect for these agents. Side effects of long term opioid therapy include decreased libido, decreased muscle mass, erectile dysfunction, anemia, depression, fatigue, menstrual irregularities, osteoporosis. These stem from sex hormone deficiency and adrenal suppression secondary to Hypothalamic-Pituitary-Adrenal Axis (HPA) and Hypothalamic-Pituitary-Gonadal-Axis (HPG) suppression. Low testosterone levels have been reported in men on chronic narcotic therapy. In women alteration of the pulsatile luteinizing hormone secretion causes menstrual problems. Decreased stress cortisol response has also been shown in animal experiments. Single dose of morphine can abruptly blunt cortisol secretion. Intrathecal opioids have shown to cause hypogonadotrophic hypogonadism It should be considered in patients receiving opiates equivalent of 100 mg of morphine. Δ and κ receptors seem to be involved in ACTH control while gonadotropin secretion seems to be modulated by ε receptors. Diagnosis begins with knowledge and vigilance for symptoms and signs. In men with hypogonadism, testosterone levels should be obtained. In women, Dihydroepiandrosterone sulphate (DHEAS) may prove to be a good marker of adrenal activity. Low cortisol levels with an inappropriate rise with ACTH stimulation test may also be seen suggesting adrenal insufficiency. Testosterone remains the mainstay of therapy in men with hypogonadism. Adrenal insufficiency requires hormone supplementation. Opioid rotation with different agents may prove helpful too.

OSLER-WEBER-RENDU SYNDROME:- THE DRIPPING TRUTH! Aakash Aggarwal; Badal Kalamkar; Arman Khorasani-zadeh; Meghan Rane; Emerald Banas. SUNY Upstate Medical University, Syracuse, NY. (Tracking ID #1637581)

LEARNING OBJECTIVE 1: Review the incidence, clinical features, diagnosis and management of HHT.
LEARNING OBJECTIVE 2: Emphasize the importance of comprehensive history taking and physical examination to pick up 'zebra' diagnoses from the horses
CASE: 61 year old Caucasian male presented to the emergency room with sudden onset nausea and severe cramping abdominal pain. CT Abdomen revealed a superior mesenteric vein thrombus. The patient was started on anticoagulation with bridging with Heparin drip and then LMW Heparin and discharged to home with eventual transition to warfarin and close follow up with the anticoagulation clinic. The patient started to have significant episodes of epistaxis upto 7-10 episodes a week, and had several episodes of bleeding from the tongue as well. At this time, ENT referral was made and several vascular ectasias in his nasal cavity were found. Due to trouble with anticoagulation, a repeat CT scan of the abdomen was done which showed resolution of the superior mesenteric vein thrombus but also revealed small nodules at the base of the lung. Anticoagulation was held and a CT chest was done. CT chest showed several bilateral pulmonary nodules with vessels entering and exiting, and distinctly rounded appearance consistent with arterio-venous malformations (AVM's). CTA Head was negative for cerebral AVM's. Detailed history taking revealed that since childhood the patient had had episodes of mild epistaxis 1-2 times a month, and other family members also had similar symptoms. In fact the patient's father had been told that he was hemophiliac and the patient himself had been tested and deemed negative for hemophilia. Also the patient had been diagnosed with iron deficiency anemia, was on iron supplementation after a normal GI endoscopy and colonoscopy. Careful physical examination revealed several mucocutaneous telengectasias on the lips and tongue and several AVM's on the ear lobes. Given all of the above history and clinical symptoms a diagnosis of Hereditary hemorrhagic telengectasias(HHT) was made and patient was referred to Interventional Radiology for coil embolization of pulmonary AVM's to prevent pulmonary hemorrhage, paradoxical emboli, strokes and cerebral abcesses.
DISCUSSION: HHT or Osler-Weber syndrome, first recognized in the 19th century is an autosomal dominant vascular disorder with abnormal vascular

structures causing bleeding from the nose and GI tract. Prevalance is between 1:5000 and 1:8000 with much higher rates in certain geographical populations like Afro-Caribbean residents of Curacao and Bonaire. Epistaxis is usually the earliest sign of disease and pulmonary AVM's generally become apparent after puberty. By the age of 16 years approximately 70 % individuals will have developed some clinical sign of HHT. International consensus diagnostic criteria (Curacao criteria) are as follows- 1) Spontaneous and recurrent epistaxis 2) Multiple mucocutaneous telengectasias 3) Visceral involvement (GI,pulmonary,hepatic or cerebral AVM's) 4) 1st degree relative with HHT. These criteria define 'definite', 'suspected', and unlikely HHT when three or four, two, or zero to one of these criteria are present respectively. Management of HHT involves management of the GI bleed or epistaxis etc. similar to management as in a patient without HHT. Guidelines also recommend treating pulmonary AVM's to prevent stroke, medical management or liver transplantation for hepatic AVM's but screening for cerebral AVM's remains controversial.

POSSIBILITIES WITH VASCULITDITIES: PLEURAL EFFUSION AS THE PRESENTATION OF MICROSCOPIC POLYANGIITIS
Cady Blackey; Logan Davies. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1639852)

LEARNING OBJECTIVE 1: Review how to diagnose ANCA-positive vasculidities.
LEARNING OBJECTIVE 2: Recognize an unusual pulmonary manifestation of MPA. Identify causes of lymphocytic predominate pleural effusion.
CASE: A forty-one year-old gentleman with a history of delusional disorder and gastro-esophageal reflux disease presented to the hospital with non-bilious, non-bloody emesis for 2 weeks. He denied change in bowel habits, early satiety or abdominal pain but did report fevers and a 40-pound weight loss over 4 months. He denied sick contacts or travel. Review of systems revealed fatigue and worsening dyspnea on exertion; however, he denied chest pain, cough or palpitations. Family history was negative for malignancy or rheumatologic disease. Physical exam revealed a comfortable man with a BMI of 23. He was tachycardic, with absent breath sounds and dullness to percussion in the left posterior lung field. His abdomen was normal. He had no cyanosis, clubbing or edema. Neurologic, HEENT, skin and musculoskeletal exams were benign. Laboratory studies revealed a microcytic anemia, no leukocytosis, creatinine of 6.2, and normal LFTs. Urinanalysis revealed proteinuria and hematuria but the patient was non-oliguric. Chest x-ray illustrated a left-sided pleural effusion. Subsequent thoracentesis demonstrated a lymphocytic predominate exudate. Over the next few days, he developed hemoptysis and a new opacity on chest x-ray, consistent with diffuse alveolar hemorrhage. Further work-up revealed an atypical p-ANCA titer of 1:320 and MPO ANCA of 52. Renal biopsy showed ¬¬¬¬¬pauci-immune crescentic glomerulonephritis with focal glomerular collapse. IV cyclophosphamide was started with swift improvement in his renal and pulmonary function.
DISCUSSION: Vasculidities can overlap in their clinical presentation, often causing skin, kidney and/or lung injury. An internist often orders studies to confirm a suspicion of vasculitis. Usually, elevated p-anca is seen in MPA, though normal ANCA does not rule out the disease. If elevated, MPO-ANCA is more specific to MPA, while elevated PR3-ANCA is associated with Wegener's. Normal ANA, c-ANCA, PR3-ANCA and negative Anti-AGBM help rule out other vasculidities that present similarly. In this case, the combination of positive serology, the pleural effusion, and the renal biopsy confirm microscopic polyangiitis. MPA is a small vessel, ANCA-associated vasculitis that causes pulmonary capillariitis and glomerulonephritis. There is renal involvement in 80–100 % of MPA cases, which is confirmed by focal segmental glomerulonephritis on biopsy up to 100 % of the time. Pulmonary involvement occurs in only 25–55 % of patients with MPA, usually as hemoptysis or diffuse alveolar hemorrhage. However, a wide variety of lung disease can be seen in MPA and include the following: pleural effusion, pulmonary edema, pleuritis or interstitial fibrosis. Though a pleural effusion is a rare manifestation of MPA, pleural effusions are commonly encountered by internists. The differential for a lymphocytic predominant effusion includes only a few diseases: TB, lymphoma, sarcoidosis, chylothorax and autoimmune diseases. Vasculidities are less often seen. But clinicians should be wary of unusual presentations as significant morbidity, including dialysis and permanent lung injury, can be avoided with prompt treatment.

PTHRP INDUCED REFRACTORY MALIGNANT HYPERCALCEMIA IN A PATIENT WITH CHRONIC LYMPHOCYTIC LEUKEMIA
Ameen Salahudeen[1]; Pramod Pinnamaneni[1]; Madhuri Vusirikala[1,2]; Rob Cowan[3]; Chi Yin G. Kwong[1,2]; Harris Naina[1,2]. [1]UT Southwestern Medical Center, Dallas, TX; [2]UT Southwestern Harold C. Simmons Comprehensive Cancer Center, Dallas, TX; [3]McMaster University, Hamilton, ON, Canada. (Tracking ID #1642914)

LEARNING OBJECTIVE 1: Recognize that malignant hypercalcemia in leukemia and lymphoma can be mediated by PTHrP
LEARNING OBJECTIVE 2: Manage PTHrP induced hypercalcemia refractory to first line therapy
CASE: A 35 year old male was diagnosed with Chronic Lymphocytic Leukemia (CLL) after workup of a neck mass. He then completed 6 cycles of fludarabine, cyclophosphamide and rituximab (FCR) with complete response when he was restaged six months later. However after two months the patient's disease recurred after he presented with right hip pain and was found to have destructive bone lesions. He was also found to have malignant hypercalcemia and was effectively treated with hydration and zolendronate. Additional chemotherapy with FCR or bendamustine with rituximab did not affect the bony lesions but radiation therapy proved efficacious. A bone marrow biopsy demonstrated persistent CLL. The patient then underwent rituximab, ifosfamide, carboplatin, and etoposide (RICE) salvage therapy and was discharged. A month later, the patient was readmitted for neutropenic fever and his calcium had increased to 13 mg/dL. Antibiotics, IV fluids, calcitonin, and zolendronate were administered. The patient's calcium normalized and laboratory studies revealed Parathyroid Hormone related Protein (PTHrP) elevated at 7.1 pmol/L (normal<2 pmol/L), low PTH, and low vitamin D. A repeat bone marrow biopsy showed 90 % CLL that was positive for PTHrP on immunohistochemistry. He was initiated on alemtuzumab for refractory CLL and antibiotics were continued. Shortly thereafter the patient's hypercalcemia recurred and was treated with gallium nitrate for five days. Calcium levels improved to 10.8 mg/dL after treatment but after several days suddenly increased to 21.3 mg/dL prompting emergent dialysis. The patient also received the anti-RANK ligand agent denosumab and achieved a sustained resolution of his hypercalcemia. PTHrP at that time improved to 2.5 pmol/L. The patient was discharged to hospice after a negative infectious workup.
DISCUSSION: Malignant hypercalcemia is a common paraneoplastic process seen in solid tumors and to a lesser degree in hematological malignancies. For example, only a tenth of patients with non-Hodgkin's lymphomas develop hypercalcemia. For CLL, only a few cases have been reported. Malignant hypercalcemia occurs via bone destruction from metastatic lesions or humoral factors that increase calcium through osteoclast activation. One important signaling pathway in osteoclast activation involves the receptor activator of nuclear factor kappa-B (RANK) membrane receptors. RANK is upregulated by RANK-ligand, a cytokine secreted by stromal cells that is in turn up regulated by factors such as PTH or PTHrP. PTHrP is a peptide that plays physiological roles in tissues including smooth muscle and the pancreas. In malignancy, PTHrP is believed to promote tumor growth by inducing bone resorption around cancer cells. Management of malignant hypercalcemia consists of treating the underlying disease, hydration, anti-bone resorption agents including calcitonin and bisphosphonates. Here, a patient with a rare PTHrP secreting CLL developed remarkable hypercalcemia requiring dialysis and the anti-RANK ligand agent denosumab. Interestingly, the patient's hypercalcemia had a rapid and sustained response to denosumab that also correlated with a decrease in PTHrP levels. In CLL and other hematological malignancies with malignant hypercalcemia, PTHrP should be evaluated and denosumab may be considered for refractory cases.

PURPURA FROM PENIA, ALL PENDING PLATELET POWER Rachel Sandler. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1641565)

LEARNING OBJECTIVE 1: Recognizing the clinical presentation of Immune Thrombocytopenic Purpura
LEARNING OBJECTIVE 2: Recognizing the relationship between Antiphospholipid Antibodies and Immune Thrombocytopenic Purpura
CASE: A 46-year-old woman presented with of intermittent easy bruising. She denied any epistaxis, gingival bleeding, melena, hematochezia, hematemesis, or menorrhagia. She noted heavy vaginal bleeding after her first pregnancy, which resolved on its own with two subsequent uncomplicated pregnancies. She had no history of alcohol, drug or tobacco abuse and was originally from El Salvador. She had no family history of cancers, bleeding or clotting disorders. Her home medications included lisinopril and hydrochlorothiazide. Her physical exam revealed a pleasant woman in no distress. Her gums were without evidence of bleeding and her palate was without petechiae. Her cardiac and lung examination were within normal limits. Abdominal exam revealed mild epigastric tenderness without rebound or guarding and no hepatosplenomegaly. Extremities showed diffuse petechiae in the bilateral legs and scant bruising on the right upper thigh. Her platelet count was found to be 14×103/uL and she was mildly anemic with hemoglobin of 11.9 g/dL. White blood cell count was within normal limits. Her partial thromboplastin time was elevated at 49.9 s and was not effected with a mixing study. Her prothrombin time and INR were within normal limits. Dilute Russell viper venom and anti phospholipid antibodies were elevated with high lupus anticoagulant I. ANA, HIV, and Hepatitis Panel were negative. Peripheral blood smear showed no evidence of blast cells with few large platelets. She was treated with prednisone at 1 mg/kg with improvement in her platelet count with a gradual taper over the 2 months after hospital discharge.
DISCUSSION: Immune Thrombocytopenia Purpura (ITP) is a common hematologic disorder associated with isolated thrombocytopenia in the absence of other secondary explanations, such as HIV, antiphospholipid syndrome, or systemic lupus erythematosus that can be readily identified by the general internist. In women ages 40 to 59 to the incidence is over twice that of men, but is found equally among the genders as they age. As the name suggests, purpura are common along with petechiae and easy bruising; however, frank gastrointestinal bleeding and hematemesis are uncommon. In this case, the initial complete blood count concerning for ITP, especially in the context of negative evaluation for associated secondary causes with normal peripheral smear, negative ANA, and negative HIV. However, her isolated elevation in partial thromboplastin time merited further evaluation and lack of correction with mixing study suggested an inhibitor. Antiphospholipid antibodies, particularly anti-beta 2 glycoprotein, anticardiolipin, and antiphosphatidylserine, have been associated with exacerbations of ITP and have been found in up to 70 % of patients with ITP. In addition, the identification of antiphosholipid antibodies, particularly lupus anticoagulant, in patients with ITP may lead to increased risk of thrombosis and development of antiphospholipid syndrome. Recognition of the risk for antiphosholipid syndrome in patients with ITP who are lupus anticoagulant positive can help identify patients at risk of developing antiphospholipid syndrome.

PUTTING THE "EYE" IN SYPHILIS Sancia Ferguson; Jeff Percak. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640249)

LEARNING OBJECTIVE 1: Recognize the ocular presentations of syphilis
LEARNING OBJECTIVE 2: Understand the relationship between ocular syphilis and neurosyphilis. Interpret the different laboratory studies for diagnosing syphilis.
CASE: A 28-year old woman presented with one week of a deep aching pain in her right eye with radiation to the back of her head. The pain was exacerbated with eye movements. She also described blurred vision in the right eye over the same time period. She had a history of migraine headaches, traumatic C4 fracture three years ago and hypertension. Physical examination demonstrated visual acuity of 20/100 in the right and 20/20 in the left eye. Extra-ocular movements were intact but painful. Slit lamp examination revealed mild periorbital edema and 2+ conjunctiva and scleral injection on the right. Dilated fundus exam noted mild blurring of the disk margin nasally. Initial laboratory studies noted normal electrolytes, a negative rapid HIV, and a normal uric acid level. B scan ultrasonography was notable for posterior scleral thickening, lateral greater than medial, which was confirmed by CT scan of the orbits. She was sent home with a one-week course of prednisone and ibuprofen with a presumptive diagnosis of scleritis. Further serologies were pending. Initially, she had relief from pain and improved vision while treated with prednisone and ibuprofen. However, two weeks later these symptoms had returned. Her RPR was 1:16; treponomal pallidum partial agglutination was reactive. Her ANA was 1:80 with a speckled pattern. She was admitted for lumbar puncture and treatment of neurosyphilis with Penicillin G Benzathine. CSF revealed VDRL was non-reactive and a lymphocytic pleocytosis was noted on the cell count.
DISCUSSION: Despite a minor decrease in syphilis rates in the United States, syphilis continues to be a disease encountered by the general internist. Recognizing the uncommon manifestations of syphilis not only improves the diagnosis and treatment of syphilis, but also other sexually transmitted infections. Syphilitic-related eye disease can occur at any stage and presents in a variety of ways. Ocular manifestations include chancres of the eyelid and conjunctiva, blepharitis, scleritis, episcleritis, conjunctivitis, Argyll Robinson pupil, madarosis, neuroretinitis, and uveitis. Though data is limited, uveitis may be the most common ocular presentation in patients infected with HIV. In patients with HIV, the presentation is often bilateral, more severe, and frequently involves the posterior segment of the eye. There does not appear to be a correlation between CD4 count and the presence of ocular involvement. Ocular syphilis is treated as neurosyphilis and therefore must be treated with intravenous penicillin G. A diagnosis of ocular syphilis is made with non-treponemal tests such as an RPR or VRDL, measuring IgM and IgG to anticardiolipin cholesterol lecithin antigens. This is confirmed with a direct treponemal test such as the fluorescent treponemal antibody test (FTABS) or the microhemagglutination assay that measures antibodies to treponemal cellular components. A positive CSF VDRL or a lymphocytic pleocytosis in CSF fluid is also confirmatory. The need for CSF analysis is debated as treatment does not change, but should probably be done, especially in patients with HIV.

PALSIES AS HARBINGER: DIAGNOSIS OF ACUTE HIV IN A PATIENT WITH POLYCRANIAL NERVE PALSIES Stella Safo. Montefiore Medical Center, New york, NY. (Tracking ID #1641124)

LEARNING OBJECTIVE 1: To recognize polycranial palsy as a rare manifestation of acute HIV infection.
LEARNING OBJECTIVE 2: To review the differential diagnosis of polycranial palsy.
CASE: A 44 year-old woman presented with lymphadenopathy, fevers, decreased right-sided sensation, abnormal right-sided facial movement, and decreased hearing on right. One week prior to admission, she noted right-sided facial numbness and difficulty closing her right eye along with asymmetric smile. She reported intermittent fevers and palpable auricular nodes that increased in size over a month period. The patient reported no history of trauma and denied recent travel or camping; no insects bite. She had a negative HIV test done 5 months ago but reported recent unprotected sexual intercourse with one male partner. Her exam revealed decreased sensation in trigeminal V1-V3 distribution, decreased hearing on right and complete seventh nerve palsy on the right. She had tender lymphadenopathy in the occipital and posterior-auricular distribution. Ear exam was unremarkable. No skin rashes or tick bites were noted. No other focal neurologic deficits. An MRI brain with gadolinium was unremarkable. Lyme titers were negative. ACE level was within normal limits. Subsequent HIV testing revealed an HIV viral load of 163,774 and CD4 of 332. She was started on antiretroviral therapy along with empiric steroid treatment and had partial recovery of her neurological symptoms.

DISCUSSION: While acute HIV infection has been known to produce a viral-like syndrome with neurologic involvement potentially ranging from neuropathy to encephalopathy, polycranial nerve (CN) palsy remains a fairly rare manifestation of acute seroconversion. A review of literature offers mainly case reports of this phenomenon. One case report identified a newly infected man who presented with bilateral seventh CN palsy; workup for other infectious causes was negative and his condition was ascribed to acute HIV infection. A 2007 review of literature to identify CN palsies caused by HIV seroconversion produced 10 cases. All cases presented with facial palsies, had onset of neurologic symptoms occurring within 15 days of HIV seroconversion; many were associated with concomitant aseptic meningitis. All but one of these cases had spontaneous resolution of CN palsies. The differential diagnosis for polycranial nerve palsy includes but is not limited to sarcoidosis, bacterial infection of middle ear, cholesteatomas (tumor of middle ear), multiple sclerosis, and lyme disease. In this patient, the lack of other sarcoid features and negative ACE level makes sarcoidosis unlikely; the lack of acute ear pain and normal ear exam disqualifies bacterial ear infection; and the lack of lesions or masses on imaging made cholesteatomas and MS unlikely. The patient's lyme titers were negative, as were her lyme risk factors. In conclusion, while the literature remains scarce, it is wise to consider HIV seroconversion as a potential cause of polycranial nerve palsy in order to ensure that a thorough diagnostic work-up is undertaken from the outset.

PANCREATIC NEUROENDOCRINE TUMOR AS PRESENTATION OF MEN I SYNDROME John Szymusiak; Reed Van Deusen. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1624108)

LEARNING OBJECTIVE 1: Recognize the need to evaluate for Multiple Endocrine Neoplasia Type 1 (MEN I) in patients with Zollinger-Ellison Syndrome (ZES).
LEARNING OBJECTIVE 2: Manage the special needs of patients with known MEN I.
CASE: The patient is a 22 year old female with no past medical history who presented to the hospital with several months of weight gain and fatigue. She was found to be Cushingoid in appearance with moon facies, a buffalo hump, and abdominal striae. She had elevated urinary cortisol levels, as well as elevated adrenocorticotropic hormone (ACTH) levels which did not suppress with either low or high dose dexamethasone. A CT scan showed a liver mass and no source of her elevated ACTH. During the course of her evaluation, she developed coffee ground emesis, melena, and anemia. An EGD showed numerous duodenal ulcers concerning for ZES and the patient was found to have elevated gastrin and Chromogranin A levels. Given the concern for a neuroendocrine tumor, an endoscopic ultrasound was performed and showed a pancreatic mass. Subsequent octreotide scan and whole body PET/CT confirmed the masses in both the pancreas and liver, and biopsies of both were obtained. The pancreatic mass was found to have rare ACTH secreting cells and about 20–40 % gastrin secreting cells. It was believed that the tumor was a primary pancreatic neuroendorcine tumor which metastasized to the liver. The patient was tested for the MEN I gene mutation, which was found to be present in both her and her mother. The patient had no evidence of hyperparathyroidism as her calcium levels were within normal limits throughout her hospitalization. MRI of the head did show minimal heterogeneity of the anterior pituitary, which could represent a microtumor, but no evidence of a macroadenoma.
DISCUSSION: MEN I is an autosomal dominant genetic syndrome characterized by a predisposition to parathyroid gland, anterior pituitary, and pancreatic neuroendocrine tumors. Adenomas of the parathyroid gland are the most common tumors in this syndrome, appearing in nearly 100 % of patients by 40–50 years of age. As such, hypercalcemia is the most common presenting symptom of MEN I. However, 60–70 % of MEN I patients eventually exhibit signs of a pancreatic neuroendocrine tumor, of which ZES is the most common manifestation. It is estimated that 60 % of MEN I patients have either ZES or elevated gastrin levels, and that anywhere from 20 % to 60 % of patients with ZES will be found to have MEN I syndrome. Therefore, it is important that patients who present with ZES be tested for MEN I syndrome, as they may be at risk for further neoplasms. Patients with known MEN I should have annual calcium levels checked to screen for parathyroid adenomas. Clear consensus regarding monitoring for biochemical signs of pituitary adenomas is lacking, but patients should certainly be monitored for clinical signs of these tumors including amenorrhea, galactorrhea, and erectile dysfunction.

PANTOPRAZOLE: A REAL CAUSE OF ACUTE RENAL FAILURE Divyashree Varma; Pratik K. Dalal. SUNY-Upstate Medical University Hospital, Syracuse, NY. (Tracking ID #1642355)

LEARNING OBJECTIVE 1: Recognize Pantoprazole as a potential cause of acute interstitial nephritis
LEARNING OBJECTIVE 2: Diagnosis and treatment of acute interstitial nephritis
CASE: Patient is a 48 year old Caucasian male with the past medical history of anaplastic large T-cell lymphoma who received 3 cycles of CHOP treatment in May of 2012, but because of splenic necrosis warranted substitution of CHOP for carboplatin, ifosfamide, and etoposide (ICE) in August 2012 The patient had episodes of AKI during this time, all presumed secondary to pre-renal azotemia owing to symptomatology and improvement in renal function with isotonic volume expansion. Well after chemotherapy had ended, however, renal function began to slowly deteriorate reaching a creatinine of 6.1 mg/dL by September, 2012. Initially felt to be ATN secondary to chemotherapy, a fresh set of Nephrology "eyes" recognized the institution of pantoprazole therapy at some point during the summer of 2012. The pantoprazole was discontinued, and a renal biopsy was performed revealing an acute lymphocytic infiltrate with additional staining revealing no evidence of malignancy of infectious etiology. Owing to patient's urgent need for a hematopoietic cell transplant and the need for reasonable renal function to undergo the transplant, oral steroid therapy was added in the hope of accelerating renal recovery. Three weeks after pantoprazole cessation and two weeks after steroid initiation, the creatinine had dropped to 3.6 mg/dL.
DISCUSSION: Acute interstitial nephritis (AIN) is characterized by the presence of an inflammatory cell infiltrate in the interstitum of the kidney. It may be present in up to 15 % cases of acute renal failure. Causes of AIN include: drug hypersensitivity, infections, autoimmune, idiopathic, and glomerular disease. Malaise, nausea, vomiting, and oliguria are the commonest presenting symptoms. The gold standard for diagnosis is renal biopsy. A lesser known, but potentially important cause of AIN is pantoprazole based on its ubiquitous use, especially in the critically ill who may have pre-existing renal compromise. We present a case of a 48 year old male patient with worsening renal function that is thought to be secondary to pantoprazole wherein renal function improved following withdrawl of pantoprazole and institution of steroids. The incidence of pantoprazole induced AIN in the USA is not currently known likely due to concurrent confounding medications that may co-administered. Commonly used for stress ulcer prophylaxis in the hospital setting, it is prudent that we ensure that worsening renal failure is not secondary to drug induced AIN. Steroids are most beneficial in the acute phase of AIN. Once fibrosis has set in, stopping the offending agent is the only option. Our patient was diagnosed with pantoprazole induced AIN given the temporal correlation between the initiation of the drug and renal dysfunction. The absence of fibrosis on renal biopsy voted against chemotherapy induced AIN given the time relation again. Therefore, given AIN with active inflammatory infiltrate it was assessed that the renal injury was secondary to pantoprazole which improved with cessation and prednisone. In the end, it was a fresh set of "eyes" that may have saved the kidneys.

PEARLS IN BREAST CARE FOR THE GENERAL INTERNIST Dietlind L. Wahner-Roedler. Mayo Clinic, Rochester, MN. (Tracking ID #1632604)

LEARNING OBJECTIVE 1: To recognize that molecular breast imaging may be used as an adjunct to mammography in screening women with dense breasts.

LEARNING OBJECTIVE 2: To reinforce that atypical ductal hyperplasia on core needle biopsy requires surgical excision.
CASE: A 48 year old woman presented to the Breast Clinic for her annual breast examination and mammogram. Breast examination was normal; mammogram showed dense breasts (D4) and was read as negative. Based on her mammographic breast density the patient was invited to participate in our Molecular Breast Imaging (MBI) study. MBI showed a focal area of moderate radiotracer uptake in the 12 o'clock position of the left breast (3.2×2×2 cm). Focused ultrasound examination of this area showed an indeterminate hypoechoic focal area with posterior shadowing (1.4×0.9×0.9 cm). Ultrasound-guided core needle biopsy was performed revealing atypical ductal hyperplasia (ADH). This was followed by an excisional biopsy which showed sclerosing adenosis with scattered ductal carcinoma in situ (DCIS) over an extent of 5 cm, margins were negative. After postoperative discussion the patient requested a mastectomy. Pathology revealed an additional area of DCIS (0.7×0.6×0.5 cm).
DISCUSSION: This case illustrates 2 important breast issues: 1. MBI may serve as a valuable complementary screening imaging technique for women with mammographically dense breasts. The sensitivity of mammography to detect small lesions decreases with increased breast density. Estimates of mammographic sensitivity in women with extremely dense breasts range from 30 % to 63 %. Addition of MBI to mammography has been shown to increase the detection of node negative breast cancer in dense breasts by 7.5 per 1000 women screened. MBI, a nuclear medicine technique utilizes small semiconductor-based gamma-cameras in a mammographic configuration and provides high-resolution functional images of the breasts independent of breast density. Imaging is done after IV injection of Tc-99 m sestamibi (currently 20 mCi) with the breast lightly compressed between two detectors. Images of each breast are acquired in the craniocaudal and mediolateral oblique projections facilitating comparison with mammography. In a screening study including women with high breast density performed at Mayo Clinic the sensitivity for mammography was 27 %, and the specificity 91 %, and for MBI 82 %, and 93 % respectively. The main disadvantage of MBI is the radiation dose associated with the injection of 20 mCi Tc-99 m sestamibi: 6.5 mSv compared to 0.7–1.0 mSv for a screening mammogram. With the implementation of radiation dose reduction techniques to less than 4 mCi yielding comparable radiation exposure as screening mammography, MBI may offer an effective supplement imaging technique to the subgroup of women with dense breasts. A low dose MBI study is presently being done at the Mayo Clinic. 2. ADH noted on core needle biopsy requires surgical excision. Since ADH can coexist with a breast malignancy patients with ADH on core needle biopsy require an excisional biopsy to rule out ductal carcinoma in situ or invasive cancer. The rate of carcinoma found in subsequent excisions has been reported to range between 11 % and 62 % in different series.

PERICARDIAL FAT NECROSIS: A RARE CAUSE OF ACUTE CHEST PAIN Sarah Hess; Satya Bhupathi; Sreelatha Chalasani. Marshfield Clinic, Marshfield, WI. (Tracking ID #1642826)

LEARNING OBJECTIVE 1: Pericardial fat necrosis is a rare, yet important, cause of acute chest pain.
LEARNING OBJECTIVE 2: Pericardial fat necrosis can be diagnosed by CT scan or MRI and managed as a self-limited disease treated with NSAID therapy.
CASE: A 51-year-old obese male with a history of obstructive sleep apnea presented in the emergency room complaining of severe precordial chest pain with radiation to his neck and left arm for the past 4 days. The pain was squeezing in nature and was worse with inspiration and physical activity. Physical examination was normal. The patient had a normal complete blood count, basic metabolic panel, d-dimer, and lipid panel. He did have an elevated ESR and CRP but cardiac enzymes were negative. A pericarditis and myocarditis panel was negative. EKG showed normal sinus rhythm with T wave inversion in lead 3 and AVF. Echocardiogram showed normal left ventricular systolic function with estimated left ventricular ejection fraction greater than 65 % and no obvious regional wall motion abnormalities. Given the typical presentation of chest pain and negative cardiac enzymes, the patient underwent a regadenoson myocardial perfusion scan, which did not show any inducible ischemia. The patient continued to have severe chest pain, so a chest CT scan was ordered to further evaluate other causes. The CT scan showed the presence of prominent pericardial fat. On the left side, increased radiodensity involving the superior aspect of the left pericardial fat pad was noted and raised concerns of fat necrosis. A cardiac MRI was performed for further evaluation of the fat necrosis. A 1.6×1.5 cm focus of uncertain etiology was noted along the superior aspect of the left pericardial fat pad. The focus observed did not have a significantly increased T2 signal. Discussion with the radiologist and cardiologist determined that subacute or old pericardial fat necrosis could not be excluded. The patient was treated with NSAID therapy and responded well with cessation of chest pain.
DISCUSSION: Pericardial fat necrosis is a rare, self-limited, and benign cause of acute chest pain. Pericardial fat necrosis as a cause of acute chest pain was first reported in 1957, since that time only 26 cases have been reported in the literature. Pathogenesis is unclear, but obesity is considered a predisposing risk factor. Before the advent of CT scan, diagnosis was based on abnormal chest radiograph and surgery. Current imaging technologies allow for diagnosis by CT scan and/or MRI. MRI findings of fat necrosis may be variable depending on the pathological stage of fat necrosis. Pericardial fat necrosis is a self-limited disease and treated with NSAID therapy.

PERITONEAL MESOTHELIOMA WITH PERSENTATION OF DERMATOMYOSITIS Manivel Eswaran[1,2]; Muhammad Ansar[1]. [1]Geisinger Medical Center, Danville, PA; [2]Temple University, Philadelphia, PA. (Tracking ID #1641739)

LEARNING OBJECTIVE 1: Dermatomyositis can present with peritoneal mesothelioma
LEARNING OBJECTIVE 2: Peritoneal mesothelioma can present without significant exposure to asbestos
CASE: 64 year old woman with past medical history of hypertension presented to the clinic with rash in her chest which was spread in classic shawl like pattern. She had associated weight loss and loss of appetite. Initially it was suspected to be allergic phenomenon and was treated conservatively. It did not get better and given her associated symptoms dermatomyositis was diagnosed and underlying malignancy was suspected. This was followed with a CT abdomen given her symptoms of abdominal discomfort. CT showed mass in abdomen and it was suggestive of ovarian cancer. She was supposed to be seen by Gynecology oncology and planned for debulking surgery. Her CA 125 was elevated. In the meantime she developed symptoms of dysphagia and her symptoms got worse to the point she was not able to tolerate anything orally including liquids. Due to her inability to eat or drink she was hospitalized for hydration. She got upper gastrointestinal endoscopy and it was a normal study. Her symptoms were suspected to be from dermatomyositis and was started on high dose steroids. Also chest xray was done it was reported normal. Later on due to progression of her symptoms she was taken to operating room and got her debulking surgery with suspicion of ovarian cancer. She was planned to be started on chemotherapy for suspected ovarian cancer. Biopsy results came back soon with diagnosis of peritoneal mesothelioma. Discussions were held with her about palliative chemotherapy but she refused therapy and opted for palliative care. She was discharged home on palliative measures.
DISCUSSION: Peritoneal mesothelioma is a aggressive tumor which has poor prognosis. Only 50 % of the patients with peritoneal mesothelioma have exposure to asbestos. Due to its vague symptoms it is usually diagnosed in later stages. Paraneoplastic syndromes with peritoneal mesothelioma is rare. Description of dermatomyositis in association with peritoneal mesothelioma was limited in literature with few cases. This is one of the case with the unique presentation of dermatomyositis and dysphagia with underlying peritoneal mesothelioma. CA125 can be elevated in peritoneal mesothelioma but it is non specific. Treatment for dermatomyositis related to cancer is to treat the underlying cause. In this situation resection of tumor will offer benefit. Radical resection with intraperitoneal hyperthermic perfusion is considered the standard treatment for resectable tumor at time of diagnosis. Palliatve shemotherpay can be offered in non resectable tumors. Overall

prognosis is poor since tumor is usually diagnosed at later stages due to atypical symptoms. Our patient after the surgery chose palliative care.

PERNICIOUS ANEMIA: AN UNCOMMON CAUSE OF ERYTHEMA NODOSUM Raji Shameem; Arvind Randhawa; Niket Sonpal; Dana Shani. Lenox Hill Hospital, New York, NY. (Tracking ID #1624112)

LEARNING OBJECTIVE 1: Diagnose erythema nodosum and recognize common underlying causes.
LEARNING OBJECTIVE 2: Recognize pernicious anemia as a rare cause of erythema nodosum, which can be treated with vitamin B12 intramuscular injections.
CASE: A 34-year old female presented to the clinic with a rash over her legs of one-week duration. The onset of the skin lesion was sudden, and she denied similar lesions in the past. The rash was associated with severe pain over the affected regions. No exacerbating or relieving factors noted. The patient denied any family history of inflammatory bowel disease. She had no complaints of diarrhea, constipation, rectal bleeding, or weight loss. The patient denied the use of any home medications including oral contraceptives. On examination, 10 cm indurated nodules were noted over the anterior lower legs. There was bilateral symmetrical involvement. Nodules were deep red and violaceous in color. Lesions were warm and tender with palpation. With examination findings consistent with erythema nodosum there was investigation for an underlying cause. Workup was negative except for positive anti-parietal antibodies and anti-intrinsic factor antibodies. Also serum B12 levels were decreased. These findings were consistent with pernicious anemia. The patient was started on corticosteroids, which mildly improved the erythema nodosum lesions. She also was treated for B12 deficiency with daily B12 intramuscular injections. B12 therapy significantly improved her lesions.
DISCUSSION: Erythema Nodosum is a common type of panniculitis, with a peak incidence of 20–30 years of age. It is six times more common in females. The differential diagnosis of erythema nodosum is vast. Multiple etiologies can be culprits. They include tuberculosis, oral contraceptives, malignancies, sarcoidosis, and inflammatory bowel disease. In this patient, all of these potential causes were ruled out with appropriate testing. The only positive findings were decreased B12 levels and antibodies against intrinsic factor and parietal cells. From our research we had found only one previous case report that described an association between B12 deficiency and Erythema Nodosum. Erythema Nodosum can be treated symptomatically. However, in this case, the patient's lesions responded remarkably to B12 injection administration. A new diagnosis of pernicious anemia was made and a rare association with Erythema Nodosum was discovered.

PHEOCHROMOCYTOMA - INDEED A "GREAT MASQUERADER" Harjinder Kumar; Julia Cheringal. Walter Reed Natioinal Military Medical Center, Bethesda, MD. (Tracking ID #1624531)

LEARNING OBJECTIVE 1: Recognize an atypical presentation of advancing paraganglioma in elderly patient.
LEARNING OBJECTIVE 2: Diagnose secondary hypertension related to pheochromocytoma in late age.
CASE: Mr. S is a 77 years old male referred to the Geriatric clinic for weight loss, recurrent falls (2–3 falls daily), and persistent dizziness. He has history of smoking, hypertension, coronary artery disease with angioplasty. His health records revealed a hospitalization within the previous year due to hypertensive emergency with a recorded blood pressure of 200/140 mmHg and symptoms of dry heaves, chest pain, pounding in the chest and intermittent headache. A CT scan was performed revealing a 2.6×3.1 cm retroperitoneal abdominal mass. At that time due to overwhelming social circumstances the patient decided not to pursue further work up. Mr. S continued to lose weight, 24 lbs in one year representing 20 % loss from his baseline and returned to clinic with symptoms of intermittent palpitations, sweating and weight loss. He had an elevated blood pressure of 213/116 mmHg and complaint of intermittent sweating, continued falls and persistent lethargy with dizziness. A CT of the abdomen and pelvis during hospitalization revealed an increase in the size of the retroperitoneal mass. His plasma and urine metanephrines were profoundly elevated. Nephrectomy and resection of mass were executed. At follow up after successful rehabilitation three months later, his blood pressure was normal and he gained 24 lbs and had stopped falling. Post operative plasma and urine metanephrines were normal.
DISCUSSION: Pheochromocytoma causes excess secretion of the catecholamines, epinephrine (metanephrine) and norepinephrine (normetanephrine). Pheochrmocytomas are rare, accounting for less than 0.1 % of the hypertensive population and presents in 3rd and 4th decades. Due to its variable clinical presentation, pheochromoctoma has been termed as "the great masquerader". Some paragangliomas have grown considerable in size before symptoms develop. Retrospective studies have shown that of people with pheochromocytoma at time of autopsy, 61 % has a history of hypertension and 91 of these patients had typical symptoms which are the classic triad of headache, palpitations and sweating. Sustained or paroxysmal hypertension is present in 80–100 % of these patients. In the elderly, however, presentation can be atypical, with symptoms such as weight loss, weakness, functional decline, and recurrent falls in addition to hypertensive episodes. There are case reports of elderly patients with symptoms other than classical symptoms of pheochromocytoma. In one case report an elderly 85 years old female presented with a 6 month history of back pain, and a retroperitoneal mass incidentally discovered on a spine radiograph. A large adrenal tumor (2.3 kg) was removed found to be a pheochromocytoma. In another case report, a 67 years old male presented in heart failure, subsequently had an adrenalectomy with a 300 g tumor found. Pheochromocytoma in late age is rare and when it does occur patient can have atypical symptoms such as presented in this case report. This case illustrated that pheochromocytoma (paraganglioma) may cause not only metabolic hyperactivity and hypertensive crisis but also the rapid development of frailty and a Geriatric Syndrome (falls) if treatment is delayed. Moreover, this case illustrates that frailty can be reversed with timely treatment of pheochromocytoma/paraganglioma which is a rare occurrence in elderly.

PLESIOMONAS SHIGELLOIDES - AN UNUSUAL CAUSE OF BACTEREMIA LAKSHMI GOWDA HANUMAIAH MD, MYRIAM EDWARDS MD, GHASSAN BACHUWA MD, ELIZABETH HALE MD HURLEY MEDICAL CENTER Lakshmi Gowda Hanumaiah. Hurley Medical Center, Flint, MI. (Tracking ID #1626281)

LEARNING OBJECTIVE 1: Plesiomonas shigelloides is an anerobic gram negative bacillus found in fresh water and soil. It is known to cause intestinal and extra-intestinal diseases in humans. Intestinal manifestations can be in the form of secretory diarrhea or invasive dysenteric illness. Extraintestinal infections are frequently seen in immunocompromised hosts and include include cellulitis, bacteremia, peritonitis, meningoencephalitis, eye infections, pneumonia and abscesses.
CASE: A 91 year old African American female with a past medical history of hypertension, chronic kidney disease stage 3 and cholecystectomy presented to the ED with sharp epigastric pain present for few hours and an episode of vomiting. She denied diarrhea, constipation, subjective fever, sick contacts, cough. Her initial examination revealed fever and epigastric tenderness. Workup was normal except for elevated liver enzymes. She was started on moxifloxacin for possible pneumonia. Patient continued to have low grade fever and elevated liver enzymes. Subsequently,blood culture was positive for Gram negative rods. Hence antibiotic was changed to piperacillin-tazobactam. The organism was later identified as Plesiomonas Shigelloides and ampicillin-sulbactam was started. Plesiomonas Shigelloides infection is common in subjects with underlying hepatobiliary disease and hence she was offered further workup to look for under lying biliary tract disease. She declined it as she started feeling better and her LFT had improved.
DISCUSSION: Plesiomonas Shigelloides has been implicated in gastrointestinal infections and rarely have been recovered from extraintestinal sites. Very few cases of Plesiomonas Shigelloides with extraintestinal manifestations have been reported in the literature. Host susceptibility plays an important role in influencing the risk of

infection. Data supporting the use of antimicrobial agents is limited but more severe cases benefit from antimicrobial therapy, particularly among immunocompromised hosts, the elderly, or young children.

PNEUMOCOCCAL ENDOCARDITIS MASQUERADING AS GASTROENTERITIS Rahana Sunesara; Lee Lu. Baylor College of Medicine, Sugar Land, TX. (Tracking ID #1629543)

LEARNING OBJECTIVE 1: Recognize that Streptococcus pneumoniae endocarditis may present with a myriad of symptoms, including gastrointestinal complaints.
LEARNING OBJECTIVE 2: Realize the aggressive nature of Streptococcus pneumoniae endocarditis associated with high mortality and a combined medical-surgical approach improves outcome.
CASE: A 41-year-old healthy male presented with 11 days of generalized myalgia, fatigue, anorexia, and non-bloody diarrhea and vomiting. Patient was treated seven days earlier for similar symptoms with metronidazole and ciprofloxacin for a presumptive gastroenteritis. Three weeks prior, he had a dental procedure for a broken tooth. He was a cocaine user but denied IV drug use or alcohol abuse. On admission, he was afebrile but was tachycardic and tachypneic with rigors; a systolic ejection murmur was heard at the apex. Abdominal exam was unremarkable. WBC was 14.9 with neutrophil predominance. CXR was normal. Blood cultures grew S. pneumoniae with intermediate susceptibility to penicillin but susceptible to ceftriaxone. On hospital day 2, patient became hypoxic; repeat CXR showed pulmonary edema. An echocardiogram revealed large vegetation on the mitral valve and perforation of anterior leaflet with resultant severe mitral regurgitation. Subsequently, he developed acute left leg coldness and numbness, and a thrombus was identified in the left femoral artery. Thrombectomy was performed emergently. Due to the rapid progression of patient's heart failure and thromboembolic event, patient underwent successful mitral valve replacement. Intraoperatively, it was noted that all mitral valve leaflets were destroyed with extension into the myocardium. He was treated with intravenous ceftriaxone for four weeks and discharged in stable condition.
DISCUSSION: Prior to the discovery of penicillin, the triad of pneumococcal endocarditis, pneumonia and meningitis, also known as Osler's triad, was well recognized with high mortality. S. pneumoniae is an infrequent cause of bacterial endocarditis and now attributed to <3 % of all endocarditis cases since discovery of penicillin. A review of 197 cases in the penicillin era was studied and the predisposing risk factors were alcoholism (28.1 %) and valvular disease (13.3 %). The portal of entry was identified mainly from lungs (47 %), sinus (4.7 %), and oral cavity (<1 %). Our patient did not have a known predisposing risk factor but did have a dental procedure three weeks prior to admission. Unlike other bacterial endocarditides, pneumococcal endocarditis is very aggressive and can cause valve destruction, especially mitral and aortic valves. The most common complications are congestive heart failure and embolization. Even with availability of penicillin, mortality rates range from 28 % to 60 %, with higher mortality associated with CHF due to valve destruction and perforation. In the cases for which outcomes were available, 37 patients were managed with medical-surgical approach with the resultant mortality rate of 32 % as compared to 62 % in 91 patients who were managed with antibiotics alone. Multiple case studies over the decades have shown that a two-pronged approach, which includes surgery and antibiotics, improves mortality. Thus, S. pneumoniae endocarditis, although rare, needs to be diagnosed promptly and treated aggressively to improve outcome.

PNEUMONIA IN AN IMMUNOSUPPRESSED PATIENT WITHOUT HIV: INITIAL CONSIDERATIONS AND PROPHYLAXIS Michael J. Plakke; Leena Jalota; Benjamin Lloyd. Reading Health System, West Reading, PA. (Tracking ID #1642361)

LEARNING OBJECTIVE 1: Develop a broad differential diagnosis for respiratory infections in patients on chronic immunosuppressive therapy.
LEARNING OBJECTIVE 2: Identify patients who should be considered for Pneumocystis jirovecii pneumonia (PCP) prophylaxis.
CASE: A 56-year-old male presented with fever and dyspnea. He had a history of membranoproliferative glomerulonephritis, which was treated with 60 mg of prednisone and mycophenolate mofetil daily for several months. His immunosuppressive regimen was stopped one week prior to admission with a plan to initiate hemodialysis soon. He was HIV-negative. His temperature was 39.3 °C; pulse 94; respiratory rate 24; BP 179/95; and SpO2 96 % on room air. He appeared ill but not in respiratory distress. He had fine bilateral crackles on pulmonary exam. There was an infiltrate noted on chest radiography; therefore, he was admitted for sepsis due to pneumonia and started on empiric antibiotics. Despite extension to broad-spectrum antibiotics, he did not improve. He had daily fever spikes, no new lung findings on chest radiography, and cultures remained negative. High-resolution CT scan of his chest showed diffuse ground-glass opacifications. On day six of hospital admission, his respiratory status rapidly declined; arterial partial pressure of oxygen was low at 57 mmHg (75–90 mmHg). After minimal improvement using bi-level positive airway pressure, he was intubated and transferred to the intensive care unit (ICU) for acute hypoxemic respiratory failure. While in the ICU, bronchoalveolar lavage (BAL) confirmed the presence of Pneumocystis jirovecii. The patient was initially started on high-dose intravenous trimethoprim-sulfamethoxazole (TMP-SMX) and intravenous corticosteroids. Five days later, he was successfully weaned off mechanical ventilation and converted to oral medications. He was discharged after his respiratory status returned to baseline with the recommendation to continue TMP-SMX for 21 days. He has had no complications to date.
DISCUSSION: Patients on chronic immunosuppressive therapy, especially those taking high doses of corticosteroids in combination with another T-cell modulating agent, should be managed differently than those with community-acquired pneumonia. Corticosteroids decrease the number of CD4+ lymphocytes and leave these patients susceptible to opportunistic respiratory pathogens such as Mycobacteria, Nocardia, cytomegalovirus, and herpes virus. Fungal organisms such as Aspergillus and Cryptococcus and the parasites Strongyloides, Ascaris, and Toxoplasma should also be considered. Pneumocystis jirovecii has traditionally been thought of as an AIDS-defining illness, but the incidence of PCP in patients without HIV is increasing, mostly due to iatrogenic immune system defects related to chronic immunosuppressive therapy. Surprisingly, compared to HIV-positive patients, HIV-negative patients with PCP have significantly worse outcomes. This includes higher rates of hospitalization, respiratory failure, ICU admission, and mechanical ventilation. Recent recommendations state that HIV-negative patients taking 20 mg or more of prednisone for one month or more should be considered for PCP prophylaxis, especially if they are taking other cytotoxic drugs. In hindsight, our patient would have benefitted from this suggestion. Due to significant risk of morbidity, non-HIV patients on chronic immunosuppressive therapy should be identified early and treated properly to avoid the need for intensive care and prolonged hospitalization.

POLYOMA BK VIRUS, AN ONCOGENIC VIRUS Ayad Alkhatib; Ibrahim Abdullah; Qasim L. Shakeel; Syed Hassan; Waqas Qureshi. Henry Ford Hospital, Detroit, MI. (Tracking ID #1629663)

LEARNING OBJECTIVE 1: Recognize the potential of latent viral infection to reactivate post kidney transplant
LEARNING OBJECTIVE 2: Recognize the potential of a latent viral infection to contribute to a malignancy especially in immunocompromised patients
CASE: A 65 year old African American gentleman with a history of hypertension, schizophrenia, and end stage renal disease secondary to hypertensive nephropathy and lithium toxicity received a deceased donor kidney transplant eleven years ago. He immediately regained his renal function with adequate urine output. He was put on tacrolimus, steroids and mycophenolate and followed up in the transplant clinic every month for the first year. Six months later, he was found to have elevated BUN and serum Cr., also his blood tested positive for BK

viremia with a constant elevated viral load on two occasions four weeks apart. His immunosuppression was immediately reduced; his serum creatinine and PCR test for BK viral DNA was closely monitored. Inspite of best efforts four years later, the transplanted kidney failed secondary to BK virus nephropathy. It was confirmed by histopathology and immunohistochemical staining. The patient was then put back on hemodialysis and transplant list. He was followed by his primary care physician every six months for his other chronic medical conditions. During one of his visits, he complained of hematuria at the beginning of micturition. Originally thought to be due to ongoing chronic rejection, and was started on low dose steroids. A UA was significant for RBC's. Ultrasound of the kidney ruled out any hydronephrosis or inflammation of the transplanted kidney. Following which a retrograde pyelography revealed a medium, sessile tumour on the posterior wall of the bladder and a transurethral resection of the tumour was performed. Histopathology confirmed a high grade, adenocarcinoma in-situ of the bladder which was not invading into the muscularis propria. CT scan of the abdomen and pelvis ruled out any metastasis. Esophagogastroduodenoscopy and colonoscopy ruled out GIST (gastrointestinal stromal tumour). He had a 6 months follow up with urology and a repeat cystoscopy with retrograde pyelography showed no residual tumour. Biopsy of the bladder wall showed normal urothelium. The patient continues to follow up with urology every year and is waiting for another kidney transplant

DISCUSSION: BK virus is a member of polyomavirus family which is found ubiquitous in the human body. However clinically relevant and life threatening infections are limited to immunocompromised host as seen in transplant recipients. BK virus is incriminated in several case studies for causing bladder and prostrate carcinoma, Kaposi sarcoma, bone and brain tumours. Bladder carcinoma was also reported in a patient who underwent simultaneous kidney and pancreas transplant. The oncogenic potential is mediated through its ability to bind p53 tumour suppressor gene disrupting the cell cycle and hindering repair of damaged DNA. In our case, bladder carcinoma was found in an immunocompromised host, who was noted to have high levels of BK viremia in blood. This is similar to other cases reported in literature were high levels of BK viral DNA were expressed both in the primary and the metastatic tumors. However, BK virus role in development of human malignancies is still controversial. Indeed one needs to have high index of suspicion for a potential bladder malignancy in light of hematuria in immunocompromised host who has positive BK viremia.

POSITIONAL HYPOTENSION AND ACUTE LIMB ISCHEMIA DUE TO MITRAL VALVE FIBROELASTOMA: A DIAGNOSTIC DILEMMA NABA RAJ MAINALI, MD; MADAN BADAL, MD; MADAN RAJ ARYAL, MD; RICHARD ALWEIS, MD READING HEALTH SYSTEM, WEST READING, PA 19611 Naba R. Mainali; Madan Badal; Madan R. Aryal; Richard Alweis. Reading Health System, West Reading, PA. (Tracking ID #1618113)

LEARNING OBJECTIVE 1: To recognize the clinical presentation and acute complications of fibroelastoma of the heart.
LEARNING OBJECTIVE 2: To describe the diagnosis and management of fibroelastoma of the heart.
CASE: Papillary fibroelastoma are histologically benign neoplasm of the heart that can develop either on valve or endothelial surface of the heart. Although it is a rare tumor, it stands as second most common tumor of the heart after atrial myxoma. It has multiple papillary fronds resembling sea anemones and is extremely fragile in nature. It usually presents with emobolic complications including myocardial infarction, stroke, pulmonary embolism, acute limb ischemia. Fragile papillary fronds or fibrin aggregations on the tumor is a main cause for systemic embolization. Here, we report an unusual presentation of mitral valve fibroelastoma presenting with acute limb ischemia secondary to embolization and positional hypotension, posing diagnostic dilemma with atrial myxoma. A 68-year-old woman with recent history of acute embolic right lower extremity ischemia status post right above knee amputation after failure of multiple trials of endovascular revascularization with local rTPA thrombolysis, was referred by her primary care physician for hypotension with systolic blood pressure consistently variable between 80 and 100 mm of Hg. She was symptomatic with dizziness at most of the time. Physical exam revealed normal findings except variable systolic blood pressure. She underwent various tests, including cosyntropin stimulation test to rule out addison's disease, which were negative. A suspicion of autonomic instability was then made and treatment with TED stockings and midodrine were started without significant improvement. Careful examination revealed variation of 20 mm of Hg between supine and left lateral position indicating some obstructing lesion on the left atrium. Transthoracic echocardiogram showed mild to moderate enlargement of left atrium close to the posterior mitral valve annulus, consistent with fibroelastoma without the evidence of mitral valve obstruction but slightly impaired filling of the left ventricle in left lateral position. This was confirmed with transoesophageal echocardiography and the patient underwent surgery for the resection of the mass on the anterior leaflet of mitral valve. Histology of the resected mass confirmed papillary fibroelastoma on left atrial surface. After surgery, her blood pressure readings were consistently similar on supine and left lateral position. At three months follow up visit, her blood pressure recordings were found to be consistently normal without variability with the position.
DISCUSSION: Echocardiography remains the gold standard of diagnosis for papillary fibroelastoma, trans- esophageal echocardiography being superior in differentiating it from the vegetation, atrial myxoma or thrombus. Many of them remain undiagnosed until autopsy report after Sudden Cardiac Death. Due to potential embolization, it is recommended that such fibroelastomas be excised, even if the patient is asymptomatic. Though it is not entirely clear, positional hypotension in our case was probably secondary to the location and size of the tumor causing drop in cardiac output leading to hypotension and dizziness. The optimal treatment modality includes valve sparing resection with thorough inspection of all areas during primary surgeries. Prophylactic anticoagulation therapy should be initiated in order to guard against thrombi while awaiting surgery.

POSITIONAL HYPOXEMIA SECONDARY TO A PATENT FORAMEN OVALE Jane Njeru; Murali Duggirala. Mayo Clinic, Rochester, Rochester, MN. (Tracking ID #1636164)

LEARNING OBJECTIVE 1: Recognize secondary erythrocytosis
LEARNING OBJECTIVE 2: Diagnose patent foramen ovale as a cause of secondary erythrocytosis
CASE: A 79 year old woman, non-smoker, was seen in the General Internal Medicine Clinic for chronic musculoskeletal back pain. History was significant for osteoporosis. Her medications included Ibandronate, calcium and vitamin D, tramadol and acetaminophen for back pain. Review of systems was notable for some decline in exercise tolerance over the previous year. She had no known cardiac disease, but had some positional snoring. Her BP was 120/69 mmHg, heart rate 72/min, and oxygen saturation 93 % seated, on room air. BMI was 30. General condition was good, with no mucosal pallor, cyanosis, digital clubbing or peripheral edema. Cardiopulmonary examination revealed normal jugular venous pressure, and normal auscultation. Abdominal examination was normal. Hemoglobin was 17.1 g/dL (normal range 12.0 to 15.5); erythrocyte count - 6.01×1012 /L (3.9 to 5.03), hematocrit - 51.7 % (34.9 to 44.5). Peripheral smear was normal. Serum erythropoietin level was unremarkable at 6.1 mIU/mL (2.6 to 18.5). Peripheral blood JAK2 V617F mutation analysis was negative, ruling out Polycythemia Vera. There was no evidence of sleep disordered breathing on polysomnography, but she had position dependent hypoxemia, without hypoventilation. A trans-esophageal echocardiogram revealed a patent foramen ovale (PFO), 5–6 mm in size, with large, spontaneous atrial level right-to-left shunt. She then underwent right heart catheterization, which also revealed a significant right-to-left shunt through the PFO. Supplemental oxygen did not improve her oxygenation. Interestingly, she had normal right and left sided cardiac filling pressures, pulmonary pressures and cardiac output. It was thus concluded that the hypoxia was secondary to the PFO. She underwent

successful PFO closure with Amplatzer device, with improvement in her oxygenation and exercise tolerance.
DISCUSSION: Our patient presented with declining exercise tolerance over a year, and progressive erythrocytosis. The echocardiogram and right heart catheterization helped identify and confirm the diagnosis. Patent foramen ovale is a common condition, affecting 25 to 30 % of all adults. However, only a small percentage of affected persons present with symptoms, the most common being cryptogenic stroke, migraine headaches, decompression sickness and the rare platypnea-orthodeoxia syndrome. Our patient did not describe typical position dependent symptoms as are noted in platypnea-orthodeoxia syndrome, but during her sleep study and cardiac catheterization, she clearly had position dependent hypoxemia. Her hypoxemia occurred when she was recumbent, in contrast to the platypnea-orthodeoxia syndrome, where right-to-left shunting across a defect at the atrial level occurs in the upright posture and resolves in the recumbent position. The reasons for these phenomena are unclear, but may be related to the fact that our patient lacked a functional cardiac abnormality that would result in increased right atrial pressures promoting right-to-left shunting, a phenomenon that is crucial for the platypnea-orthodeoxia syndrome. Although she had normal cardiac pressures on catheterization, she had a significant right-to-left shunt, associated with hypoxemia. Correction of this defect resulted in resolution of her symptoms. This case outlines the work up of erythrocytosis, and the patho-physiologic correlates in this patient with a PFO.

POSTPARTUM REVERSIBLE VASOCONSTRICTION SYNDROME Harith Baharith; Amy Zarrin. New York Methodist Hospital, Brooklyn, NY. (Tracking ID #1617975)

LEARNING OBJECTIVE 1: Postpartum cerebral vasoconstriction is one of the rare, reversible cerebral vasoconstriction syndromes (RCVS). We report a patient with headache and focal neurological deficits that occurred one week after delivery, with segmental narrowing of cerebral arteries on angiography.
CASE: A 35 year old woman (gravida 10, para 11) presented with throbbing headache beginning five days after Caesarean section. Ten days after delivery, she developed decreased right sided sensation, tingling and weakness, with right facial droop, tongue heaviness and difficulty speaking. The patient denied past medical problems, but had a long history of chewing khat (methcathinone, a methyl derivative of cathinone, an ephedrine amphetamine-like stimulant) and a 5-year smoking history (tobacco). During the Caesarean section, she received 4 units of packed red blood cells. Physical examination showed right lower facial droop, and diminished power (2/5) of the right arm and (3/5) leg. Her brain computerized tomography (CT) scan showed acute left middle cerebral artery infarction. On day 2, magnetic resonance angiography (MRA) showed vasoconstriction of the middle and anterior cerebral arteries. On day 3, head CT angiography showed diffuse vasoconstriction of medium and small vessels. The blood count, chemistry panel, sedimentation rate, C-reactive protein, autoimmune studies, hypercoaguability testing, electroencephalogram and echocardiogram were all unremarkable. Hepatitis B, hepatitis C and syphilis antibodies were negative. She received verapamil for relieving vasoconstriction and levetiracetam for seizure prophylaxis. Head MRA on day 6 showed significant resolution of her vasoconstriction. Follow up revealed clinical resolution.
DISCUSSION: Strokes in pregnant and postpartum women are generally caused by: cerebral venous thrombosis, preeclampsia/eclampsia or RCVS. Postpartum strokes incidence ranges from 4.3 to 210 per 100,000 deliveries with unknown RCVS incidence. Most strokes occur in the third trimester and postpartum period, when physiological changes affect cerebrovascular tone. Postpartum cerebral vasoconstriction is often underdiagnosed, but recently disease recognition is increasing. This disorder has various precipitating factors such as vasoactive substances, blood transfusion or can occur spontaneously postpartum. The disorder may last for a short period of time or may become persistent with poor outcome if severe vasoconstriction leads to brain ischemia or hemorrhage. The clinical presentation includes thunderclap headache, focal neurological deficits and seizures which are usually reversible within a 3 month period. Angiography usually shows segmental narrowing of cerebral arteries that resolves completely or near-completely within 3 months. Our patient developed initial symptoms within the first week after delivery and recovered completely. She had a history of two possible precipitating factors: chewing khat and blood transfusion. Her repeat head MRA showed significant resolution of cerebral vasoconstriction 2 weeks after her initial symptomatic presentation. Treatment consists of eliminating any precipitating agents, verapamil and levetiracetam. Most patients recover completely with few having residual deficits.

PRE-OPERATIVE CHEST RADIOGRAPHY: OLD HABITS DIE HARD Meredith Niess. University of Colorado, Aurora, CO. (Tracking ID #1621961)

LEARNING OBJECTIVE 1: Outline and criticize existing research on pre-operative chest x-ray use.
LEARNING OBJECTIVE 2: Identify the negative ramifications of pre-operative chest x-ray overuse.
CASE: A 54-year-old veteran with mild intermittent asthma, anxiety, and depression presents to his general surgeon for pre-op evaluation. His umbilical hernia has become more painful in the past 3 months. After documenting a normal cardiopulmonary exam and labs, the surgeon orders a chest radiograph (CXR) with the indication as "pre-operative work-up, over 55, history of asthma". The CXR reveals a 7 mm left parahilar lung nodule, for which "CT of the chest for further evaluation" is recommended. Surgery is delayed. Four weeks later, the patient arrives in my clinic to review the results of his CT: "1. No pulmonary nodule. 2. Circumscribed homogenous right adrenal nodule." An adrenal CT is ordered; three weeks later, benign adrenal adenoma is confirmed. Finally, the patient undergoes uneventful ventral hernia repair.
DISCUSSION: In the 1980s, researchers began examining the utility of pre-op CXRs, attempting to create algorithms and categories to curb overtesting. (1–8) More recently, the Choosing Wisely campaign identified preoperative CXR as a priority area to raise patient awareness of rampant overtesting.(9) Assessing the utility of this screening method requires estimating what fraction of the total number of CXRs ordered have unexpected results that prove useful in management. Our best estimates of these numbers do not support screening CXR: In a meta-analysis by Archer et al., only 10 % of 14,390 subjects had abnormalities. 1.3 % of those screened had an unexpected abnormality, and 0.1 % (0 to 0.6 %) had CXRs that changed management.(10) This same analysis calculated that every "useful" CXR came at a cost of $23,000, taking into account only the cost of the CXR itself (in 1993) and no follow-up tests. CXR results change management when they delay or cancel surgery or result in a change in anesthesia management. There are no randomized controlled studies on anesthesia management changes, and reviews of the topic consistently cite the same few non-blinded, non-randomized—and often retrospective—studies. Silvestri et al. conducted the largest multi-center study to date (n=6111). Results showed that pre-op CXR changed anesthesia management anywhere from 0 % to 44 % of the time depending on the anesthesiologist questioned,(11) illustrating the subjectivity of this outcome. Given the non-blinded retrospective format of the survey, this may be a true measure of change in management, or may simply reflect evaluator bias. Importantly, no studies address whether these changes, much less surgical cancellation or delay, affect patient outcomes. In 2001 the American Society of Anesthesiologists (ASA) recommendations on pre-operative CXR stated, "[the ASA] does not believe that extremes of age, smoking, stable COPD, stable cardiac disease, or resolved recent upper respiratory infection should be considered unequivocal indications for chest radiography;"(12) This is a poignant recommendation in the context of this case. The veteran experienced continued pain due to his delayed surgery, unnecessary costs and radiation exposure, and anxiety over multiple false positive findings. The present case is familiar to nearly all clinicians: an image ordered for unclear reasons leading to a cascade of time-consuming, anxiety-provoking and expensive follow-up tests with no measurable benefit.

PRESENTATION OF ZINC DEFICIENCY AS A PERIANAL ULCERATIVE RASH IN AN ALCOHOLIC MAN. Yasmin Raza[1]; Yelena Averbukh[2]. [1]Albert Einstein College of Medicine, Bronx, NY; [2]Montefiore Medical Center, Bronx, NY. (Tracking ID #1638498)

LEARNING OBJECTIVE 1: To consider zinc deficiency as a cause of perianal rash in adults.
LEARNING OBJECTIVE 2: To recognize pathognomonic signs, symptoms and associated laboratory findings in zinc deficiency syndromes for timely diagnosis and treatment.
CASE: A 54-year-old alcoholic homeless man was brought to the hospital by EMS after being found intoxicated on the street. Of interest, the patient used adult diapers in lieu of underwear while homeless. His past medical history was significant for TB treated 1 year prior to admission and he adhered to a multidrug regimen for 6 months. On exam he was thin, disheveled and smelled strongly of alcohol. His skin was notable for confluent patches of an erythematous, ulcerative rash covering the buttocks and perineum. Laboratory studies were remarkable for chronically low to low normal alkaline phosphatase of 51–58 U/L and hemoglobin of 8.4–10.4 g/dL. Due to the unusual distribution of the rash, a zinc level was checked and came back to be 36 μg/dL (normal range 60–130 μg/dL), altogether leading to a diagnosis of zinc deficiency. Treatment with zinc supplements was initiated with great improvement of the patient's rash over several weeks.
DISCUSSION: : Zinc deficiency is a global health issue affecting up to 2 billion people. Acrodermatitis enteropathica is a rare autosomal recessive disorder characterized by an impairment of zinc absorption. Acquired zinc deficiency may be due to decreased absorption of zinc in conditions such as inflammatory bowel disease, cystic fibrosis, and malabsorption syndromes; increased renal excretion as in nephrotic syndrome or alcoholism; inadequate dietary intake as seen in anorexia nervosa and total parenteral nutrition; or in increased demand states such as pregnancy and lactation. Cutaneous presentation ranges from annular and psoriasiform plaques or lichenoid lesions in mild deficiency to scald-like erythema, fissuring and eczematous lesions with bullae in severe cases. The lesions develop acutely around orifices and on dependent areas. Plasma zinc levels may not correlate with zinc status; however, given the lack of other biomarkers, low plasma levels remain the gold standard for detecting zinc deficiency. Additionally, serum levels of alkaline phosphatase, a zinc-dependent enzyme, can be measured as they correspond to zinc status. Treatment is with zinc by enteral or parenteral replacement depending on the cause of the deficiency, leading to rapid clinical improvement. Conclusions: Zinc deficiency has been recognized as an important nutritional deficiency for decades, yet much of the focus was on the pediatric population due to its association with diarrhea, dermatitis and overall childhood morbidity and mortality. Zinc deficiency in adults has a similar presentation and should not be overlooked. This case demonstrates zinc deficiency should be included in the differential for adult patients presenting with an ulcerative rash in the diaper distribution area, especially in the context of active alcoholism, recent treatment with isoniazid associated with atrophic gastritis or the presence of other malabsorptive states.

PREVENTING HARM: SUICIDE PREVENTION IN A NONPATIENT FAMILY MEMBER: A CLINICAL ETHICS VIGNETTE Nora Segar; Julie R. Rosenbaum. Yale University School of Medicine, New Haven, CT. (Tracking ID #1643184)

LEARNING OBJECTIVE 1: Describe ethical considerations when a non-patient family member threatens suicide.
LEARNING OBJECTIVE 2: Effectively weigh autonomy, nonmaleficence, confidentiality, and the importance of maintaining relationships during clinical care.
CASE: Mr. V, a 68-year-old man with history of end-stage Huntington's disease, presented to our hospital with shortness of breath and was diagnosed with an empyema. His course was complicated by bilateral pulmonary embolism, gastrointestinal bleed, and hypoxic respiratory failure. His wife, who had uncontrolled diabetes and hypertension, did not take her medications, shower, or leave the hospital for 41 days. As Mr. V declined, Mrs. V became increasingly distraught, eventually disclosing her intention for suicide to the house-staff. She threatened to take a bottle of lorazepam when Mr. V died, requesting that we not tell anyone. We ultimately disclosed her threat to the attending physician, her primary physician, and the hospital ethics committee. They met with Mrs. V, but they did not mention her previous threats, and she did not reveal the extent of her psychological distress. Two days later, Mr. V declined further and we admitted him to the Intensive Care Unit. While Mr. V was in the ICU, Mrs. V sustained a myocardial infarction and ischemic stroke at his bedside. She was admitted to the hospital under our care, receiving treatment for depression in addition to her other medical conditions.
DISCUSSION: We feel this case illustrates a variety of ethical challenges pertinent to the general internist. First, although this situation may be periodically encountered, the existing medical ethics literature has not extensively explored the physician's obligation when patient's family member threatens suicide. If a patient threatens harm against herself, there is a nonmaleficence-based ethical justification for action and possible disclosure to others to prevent harm that potentially outweighs confidentiality. However, if a family member or non-patient makes a suicide threat, this obligation is less well-established. We exercised our "Samaritan-benefit claim" in an effort to minimize harm for Mrs. V, but it was only when she transitioned from family member to patient that she received psychiatric care. In hindsight, her refusal to engage in self-care may have been a form of passive suicidality, but without the obligations of the patient-physician relationship, we could not formally intervene and treat her against her will. Second, we also questioned whether Mrs. V. could act as her husband's power of attorney given her need for medical and psychiatric attention. Our team and the ethics committee determined that her depression did not cloud her capacity sufficiently to remove her from this role. She remained the primary decision maker for her husband until his death. Finally, though we were not bound by patient-doctor confidentiality prior to her admission, we did weigh her confidentiality against our obligation to prevent harm. Perhaps her myocardial infarction and stroke could have been prevented, but we felt that her autonomy and the preservation of our relationship outweighed the need for acute intervention for her threat. As a result, she was able to stay at her husband's bedside, her relationship with her doctors remained intact, and she eventually received the psychiatric attention she required.

PROCEED WITH CAUTION! David Burkland[1]; Lee Lu[1]; Anna Kolpakchi[2]; Ikedieze Chukwu[2]. [1]Baylor College of Medicine, Houston, TX; [2]Michael E. DeBakey VAMC Houston, Houston, TX. (Tracking ID #1635394)

LEARNING OBJECTIVE 1: Recognize that intra-articular corticosteroid injection (IACI) can alter glucose metabolism.
LEARNING OBJECTIVE 2: Realize that IACI can cause diabetic ketoacidosis (DKA).
CASE: A 74-year-old man with history of diet-controlled diabetes mellitus with last hgbA1c 6.6 %, HTN, chronic kidney disease, and osteoarthritis of bilateral shoulders presented with complaints of sudden onset of fatigue, malaise, polyuria, polydipsia, and blurry vision for 4 days. One day prior to onset of symptoms, patient underwent IACI with triamcinolone acetonide (TA, Kenalog) 40 mg in each shoulder. Patient denied fever, chills, cough, nausea, vomiting, abdominal pain and dysuria. His medications included amlodipine and nortriptyline. On admission, patient was afebrile, BP 155/92, and P 79. Physical exam was unremarkable except for dry mucous membranes. Abnormal laboratory studies revealed serum glucose 839 mg/dL, bicarbonate 21, with anion gap 14, creatinine 2.2 (baseline 1.8), BUN 55 (baseline 30), negative serume and urine ketones, and B-hydroxybutyrate (BOHB) 8.3 (0.0–3.0). Despite negative ketones, patient was diagnosed with DKA due to the elevated BOHB, which is the predominant ketone present in severe DKA and cannot be detected by a conventional ketone laboratory measurement. He was treated with intravenous fluids and insulin drip with rapid correction of hyperglycemia and closure of anion gap. Evaluations for cardiac ischemia and infection

were all negative. Patient was discharged on detemir 20 units twice daily and 10 units premeal aspart. Several days after discharge, patient developed symptomatic hypoglycemia with blood sugars down to 50 mg/dL and self discontinued insulin. His fasting blood glucose has remained less than 130 mg/dL off insulin.

DISCUSSION: Intra-articular corticosteroid injection (IACI) is a very popular therapeutic modality for local treatment of painful joints. While the effects of oral and intravenous corticosteroids are well known, an understanding of systemic manifestations of IACI is still actively developing. What has been clearly demonstrated in the literature is a significant proportion of injected corticosteroids will be absorbed resulting in significant measurable serum corticosteroid levels varying based on the formulation, quantity, and number of joints injected. Clinical effects include but are not limited to a significant decrease in inflammatory markers, suppression of hypothalamic-pituitary-adrenal axis with maximal effect at 24–48 h with full recovery after 1–4 weeks, and Cushing syndrome in some cases of repetitive injections. But only recently have studies demonstrated a clear transient increase in blood glucose levels in response to IACI. On comprehensive literature review, there has only been one case of hyperglycemic hyperosmolar non-ketotic state caused by IACI; however, the case is confounded by the concurrent use of ritonavir, which dramatically decreases clearance of corticosteroids. We did not find another case report of hyperglycemic crisis resulting from IACI in the literature. Most likely, injections of bilateral large joints, large dose of steroids and older age contributed to an exaggerated systemic response in our patient. Thus, hyperglycemia should be listed as one the side effects of IACI, and diabetic patients should be advised to monitor their blood sugar closely after IACI.

PROLONGED EVOLVING SYMPTOMATOLOGY IN A PATIENT WITH DAPSONE HYPERSENSITIVITY Noa Schwartz[1,2]; Darlene LeFrancois[1,2]. [1]Montefiore Medical Center, Bronx, NY; [2]Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1641944)

LEARNING OBJECTIVE 1: Describe the clinical presentation of the Dapsone Hypersensitivity Syndrome (DHS), its similarity to the presentation of Pneumocystis Carinii Pneumonia (PCP), and its life-threatening potential

LEARNING OBJECTIVE 2: Identify that DHS can continue to evolve even weeks after the triggering drug is discontinued

CASE: A 61 year-old man with AIDS presented with 3 weeks of weight loss, fever, and productive cough. His recent CD4 count was 42, and he was not on anti-retroviral therapy. His symptoms began after dapsone was initiated for PCP prophylaxis, due to a history of trimethoprim/sulfamethoxazole allergy. The patient developed a pruritic rash on his chest, progressively worsening cough productive of white sputum, malaise and fever, as well as numbness on the bottom of his feet. He stopped taking the dapsone after 2 weeks, but as his symptoms did not subside, he came to the emergency room. On arrival, he was febrile to 103, with desaturation on exertion from 96 % to 86 % in room air. His exam was notable for mild bibasilar crackles, and a fine maculopapular rash on his chest. Laboratory values were significant for eosinophilia of 18 %, and elevated AST and ALT (227 and 129, respectively). An infectious work up, including blood and respiratory cultures, acid-fast bacilli stains, and PCP smears, was negative. Chest X-ray did not reveal any focal infiltrates, CT scan and bronchoscopy were nonspecific. The patient was empirically treated for PCP and community-acquired pneumonia, but continued spiking fevers. On hospital day 6 he seemed clinically improved, afebrile and with resolution of pulmonary symptoms. Although his liver function tests and eosinophils remained elevated, he was discharged to outpatient follow up on hospital day 10. Within 4 days he developed a dusky, desquamating rash involving his oropharynx, trunk, and genitalia. He was started on Prednisone 100 mg, but a day later was re-admitted. Punch biopsy of his skin lesion was consistent with erythema multiforme, and he was diagnosed with toxic epidermal necrolysis (TEN). He healed over the next few weeks with supportive treatment, without apparent sequelae.

DISCUSSION: Cutaneous drug reactions are thought to be prevalent in the HIV patient population. As the use of dapsone is common in this population, it is important to recognize the Dapsone Hypersensitivity Syndrome (DHS). DHS is thought to be a severe form of the drug reaction with eosinophilia and systemic symptoms, or DRESS syndrome. It is characterized by the onset of fever, skin eruption and internal organ involvement. It commonly presents with prominent hepato-pulmonary manifestations, including interstitial pneumonitis that can mimic the presentation of PCP. The skin manifestations can in severe cases progress to Stevens-Johnson Syndrome/TEN. DHS may also present with hematologic, renal, and neurologic manifestations, ranging from hemolytic anemia to peripheral neuropathy. The incidence of DHS is estimated to be 0.01–3 %; it is idiosyncratic, and usually occurs within 8 weeks of starting the drug. It is thought that the syndrome is triggered by antibody formation to dapsone metabolites, which can linger in the patient's serum for up to 35 days. The persistence of the toxic metabolites can explain our case, in which the syndrome continued to evolve weeks after the withdrawal of the offending drug. The mortality from severe DHS is 12–23 %, thus requiring careful monitoring of all patients on dapsone therapy for symptoms and signs suggesting the complication.

PULMONARY MUCORMYCOSIS AND ACUTE LYMPHOBLASTIC LEUKEMIA-SIBLINGS BEFORE CHEMOTHERAPY Nikhil Kapila[1]; Poojita Shivamurthy[1]; Prerna Mota[1]; Saqib Gowani[1]; Michael Lawlor[2]. [1]University of Connecticut Health Center, Farmington, CT; [2]Hartford Hospital, Hartford, CT. (Tracking ID #1642436)

LEARNING OBJECTIVE 1: To have a high index of suspicion for hematological malignancies in patients presenting with pulmonary mucormycosis

LEARNING OBJECTIVE 2: Less invasive methods, with increased sensitivity, are needed to diagnose mucormycosis in order to expedite antifungal therapy

CASE: A 30 year old male presented with a 4 week history of fevers,chills,generalized fatigue, and progressive dyspnea on exertion. Past medical history and family history were non-contributory.On examination,he had a temperature of 101.4 F,sinus tachycardia,a BP of 120/76 mmHg,respiratory rate of 24–28,and saturating 96 % on room air.He had dry mucous membranes,grade 2/6 systolic ejection murmur at the left upper sternal border,and decreased breath sounds in the left upper and left lower lung fields with crackles.No lymphadenopathy was appreciated. His laboratory data showed a WBC count of 0.5 with 92 % lymphocytes, 5.8 % neutrophils,ANC of 0.3,hematocrit of 20,and platelets of 246,000. Additional laboratory data revealed a transaminitis,ferritin of 3668,and LDH of 251. Peripheral smear showed polymorphous lymphocytes and tear drop cells. HIV by ELISA was negative.CT scan of the chest showed multiple bilateral lung nodules,the largest being 2.7 cm in diameter.It also showed an ill defined infiltrative soft tissue mass in the anterior mediastinum, as well as hilar,subcarinal,and axillary lymphadenopathy. Pleural fluid analysis showed numerous monomorphic lymphocytes. Biopsy from the dominant pulmonary nodule showed broad aseptate hyphae in the background of necrosis,and Gomori's methenamine silver stain was positive for rhizomucor. Flow cytometry showed blasts with T-lineage differentiation,and bone marrow biopsy confirmed acute lymphoblastic leukemia of a mixed phenotype. Our patient presented with pulmonary mucormycosis concomitantly with acute lymphoblastic leukemia.He was treated with liposomal amphotericin B and posaconazole. Considering the extensive multilobar nature of his infection,he was a poor surgical candidate. Chemotherapy was held because of the potential for developing further neutropenia and worsening the infection.

DISCUSSION: Although mucormycosis is the most common mold in patients with hematological malignancies,it is uncommon as the initial presentation in leukemic patients. Studies demonstrate the prevalence of mucormycosis to be less than 1 % in those with hematological malignancies. Leukemic patients are most susceptible to pulmonary mucormycosis in the aplastic post chemotherapy period or while receiving high dose steroids post bone marrow transplantation. Pulmonary

mucormycosis is associated with poor outcomes and some studies suggest a mortality rate as high as 87 %.In addition, the diagnosis of pulmonary mucormycosis is challenging due to the poor sensitivity of diagnostic imaging. However,even BAL and sputum samples are unreliable diagnostic modalities. These points reinforce the need for physicians to maintain a high degree of suspicion when treating neutropenic patients in the setting of hematological malignancies. Since our patient was not a surgical candidate,he was immediately initiated on liposomal amphotericin B and posaconazole. Newer modalities of treatment include amphotericin B and capsofungin but more randomized controlled trials are required prior to their implementation. Considering that early initiation of therapy is associated with markedly better outcomes,it is essential to develop a sensitive,yet cost-effective means to diagnose mucormycosis in a timely fashion.

PURULENT BACTERIAL PERICARDITIS IN A PATIENT WITH PNEUMOCOCCAL PNEUMONIA Emily Horvath; Amanda M. O'Connor; John D. Rogers. University of Illinois College of Medicine at Peoria, Peoria, IL. (Tracking ID #1624106)

LEARNING OBJECTIVE 1: Recognize that purulent pericarditis is an infrequent complication of pneumococcal pneumonia which must be identified early to avoid significant morbidity and mortality.
CASE: Purulent bacterial pericarditis is an increasingly rare cause of pericardial inflammation that is associated with significant morbidity and mortality. Pneumococcus is a particularly infrequent inciting pathogen of purulent pericarditis in this post-antibiotic era, making a high index of suspicion critical to making the diagnosis. A 55 year old African-American male presented to the Emergency Department with complaints of cough, progressive dyspnea, and extreme fatigue for over 1 week. He endorsed no chest pain or abdominal symptoms, but was noted to have had periods of altered mental status prior to presentation. Past medical history was significant for heavy daily alcohol use but no other known medical problems. On physical examination the patient was afebrile, tachycardic, and tachypneic. He was lethargic and in mild respiratory distress. He had decreased breath sounds in the right lower and mid lung fields, markedly decreased heart sounds, but no evidence of jugular venous distension or pericardial friction rub. A 12 lead electrocardiogram revealed diffuse ST segment elevation. Laboratory data revealed a leukocyte count of $57\times103/\mu l$. CXR revealed right middle lobe consolidation and collapse with an enlarged cardiac silhouette, and subsequent chest CT delineated the presence of a moderate pericardial effusion. Further clinical examination revealed a pulsus paradoxus with drop in blood pressure of 20 mmHg upon inspiration. Echocardiogram demonstrated a moderate pericardial effusion without RV collapse but with respiratory variation of cardiac inflow consistent with early tamponade physiology. The patient's respiratory status and hemodynamics quickly deteriorated and he required vasopressor support, intubation, and transfer to the intensive care unit. He underwent bronchoscopy which did not reveal any obstructing endobronchial lesion. A pericardiocentesis was performed which produced distinctly purulent fluid. A pericardial drain was then placed and over the next 24 h his hemodynamics improved. Gram stains of bronchoalveolar lavage, blood, and pericardial fluid demonstrated the presence of gram positive cocci which was subsequently cultured and identified as Streptococcus pneumoniae. The patient was started on IV penicillin therapy and his pericardial drain was removed after 7 days. He ultimately required a pericardial window but did well and was discharged after a 4 week hospital course.
DISCUSSION: This case presents an increasingly uncommon cause of acute pericarditis and illustrates the challenge of diagnosing and treating purulent pericarditis, in part due to the absence of typical clinical features. Without aggressive treatment including pericardial drainage and selective antibiotic therapy, the mortality rate of purulent pericarditis nears 100 %. Maintaining a heightened awareness of this rare entity is critical in the timely initiation of appropriate treatment and subsequent minimization of patient morbidity.

PUS, THROMBOSIS AND FUSOBACTERIUM NECROPHORUM INFECTION: A RECURRENT THEME. Zahrae Sandouk; Dora Montezuma; Abdul Kareem Uduman; Allison Weinmann. Henry Ford Hospital, Detroit, MI. (Tracking ID #1617893)

LEARNING OBJECTIVE 1: Recognize Fusobacterium necrophorum infection as a possible etiology for portal vein thrombosis.
LEARNING OBJECTIVE 2: Manage Fusobacterium necrophorum infection and its complications: thromboembolic events, abscess and sepsis.
CASE: A 56 years old man with history of heavy alcohol use, presented to the hospital with complaints of weight loss, right upper quadrant pain and night sweats for 1 month. His laboratory findings were normal except for normocytic anemia. Hepatitis panel, HIV, blood and urine cultures were negative. Tuberculosis was ruled out. Ultrasound of the abdomen revealed right portal vein thrombosis without liver or gallbladder abnormalities. Anticoagulation was started and malignancy work up was performed, including CT chest, abdomen and pelvis, endoscopy and colonoscopy. No suspicious masses or lymph nodes were detected. Thrombotic work up was negative. The patient did not have any recorded fever while in the hospital, was stable and discharged with warfarin. He returns a month later with the same complaints. Work up included blood, urine and fungal cultures (fungitell, galactoman, and urine for histoplasma) all of which were negative. A repeat CT abdomen reveals interval development of an abscess within the right hepatic lobe measuring 8.8×6.8 cm. He was started on empiric ceftriaxone and metronidazole. One hundred milliliters of white purulent fluid was aspirated. Gram stain of the fluid was negative as were aerobic cultures, but the anaerobic culture grew Fusobacterium necrophorum. Hospital course was complicated by septic shock and development of right sided empyema attributed to contiguous spread of infection from the liver, requiring video assisted thoracoscopy with decortication. Due to the size of the hepatic abscess complete drainage was not feasible, it was decided to treat with oral metronidazole for several weeks, with planned reevaluation by CT as outpatient.
DISCUSSION: Fusobacterium necrophorum is an anaerobic gram-negative bacillus that belongs to the normal oropharyngeal flora. It is associated with septic venous thrombosis, Lemierre's disease, in which thrombosis of the internal jugular vein is precipitated by an upper respiratory infection. Primary foci of F. necrophorum infection in sites other than the head are uncommon, but can occur in the urogenital or gastrointestinal tracts. Clinical features include fever, dyspnea, malaise, and night sweats. The infection is most often recognized with isolation of the bacteria from a sterile body site (blood or abscesses). Compared with Lemierre's syndrome, illness due to primary foci caudal to the head carries a higher mortality rate. Complications include abscesses and septicemia. Metronidazole has been found to be the drug of choice, with duration of treatment from 3 to 6 weeks. Response to antibiotics is slow because of the endovascular nature of the infection. Our patient is responding slower than expected with planned longer duration of antimicrobials in the setting of an undrainable abscess. Therapeutic anticoagulation to prevent thromboembolic complications is controversial. It is used most frequently for patients with an underlying thrombophilia, a cerebral infarct, cavernous sinus thrombosis, and refractory disease. The most beneficial role of surgery is associated with drainage of the abscess within the neck, lung or liver. Finally, it is important to exclude underlying malignancy with non-head primary foci as up to 69 % of patients have underlying malignancies of the affected system.

PYOGENIC LIVER ABSCESS: IMAGING OF THE ABDOMEN IN A PATIENT WITH PNEUMONIA LIKE SYMPTOMS Tatiana McKenna; Dhruti Patel; Ronnie Mantilla; Anasse Souidi. Capital Helath Regional Medical Center, Hopewell, NJ. (Tracking ID #1641790)

LEARNING OBJECTIVE 1: Pyogenic liver abscess can be easily mistaken as another more common diagnosis, and requires a high index of suspicion to identify.

CASE: A 62 year old African American male with past medical history of gastroesophageal reflux disease, gastric ulcer, and benign prostatic hypertrophy presented to emergency room with right sided pleuritic chest pain, dyspnea, fever, cough with greenish sputum, and night sweats. He also reported symptoms of dysuria, with frequency and urgency for a few days. For the past 3 months, patient reported several trips to two different hospitals for recurrent fever, generalized malaise, constipation, early satiety and unintentional weight loss of 30 lbs. During one of these visits, he was hospitalized for 2 weeks, where he was diagnosed with a gastric ulcer, treated and discharged. On physical examination, patient had right sided lower chest wall tenderness, right upper quadrant tenderness, severely distended abdomen, and costovertebral angle tenderness on the right side. He was afebrile, but had leukocytosis of 17.4×10^9/L, creatinine of 3.88 mg/dL, blood urea nitrogen of 57 mg/dL, and glomerular filtration rate of 20. Chest radiograph showed significant elevation of right sided hemidiaphragm and cardiomegaly, but no infiltrates or consolidation. Patient was started on intravenous ceftriaxone for empirical treatment of possible pneumonia. Ultrasound of the abdomen revealed normal kidneys, and identified multiple liver masses. For further work up of these liver lesions, CT abdomen with contrast showed three hypodense masses (measuring approximately 6.6 cm, 5 cm, and 9.1 cm) within the right lobe of the liver. CT guided biopsy was performed and one abscess was drained. The patient's condition significantly improved after this procedure. Wound and blood cultures were positive for Streptococcus Intermedius. Patient underwent 4 weeks of intensive therapy with intravenous antibiotics (ceftriaxone and metronidazole) and was discharged home. Follow up CT abdomen showed radiological improvement of liver lesions.
DISCUSSION: Identification of PLA is especially challenging, since it has subtle onset and there are no specific symptoms. Symptoms and findings may mimic other more common diagnoses such as pneumonia, and patients may have more than one diagnosis, as in this case with a proven gastric ulcer. For single abscess with a diameter ≤5 cm, either percutaneous catheter drainage or needle aspiration is acceptable. For percutaneous management of single abscesses with diameter > 5 cm, catheter drainage is preferred over needle aspiration. Surgical drainage is warranted in multiple or loculated abscesses, when viscous contents obstruct the drainage catheter, and when there is inadequate response to percutaneous drainage within 7 days.

PYOGENIC LIVER ABSCESSES: MANIFESTATIONS AND MANAGEMENT OF AN EVOLVING PATHOGEN Atena Lodhi; Diana Purushotham; Michael A. Kron; Sumanta Chaudhuri. MCWAH, Wauwatosa, WI. (Tracking ID #1643046)

LEARNING OBJECTIVE 1: 1. Increasing awareness of an evolving pathogen in which early diagnosis and management is critical
LEARNING OBJECTIVE 2: 2. Discuss management goals in the hyperviscous variants of Klebsiella pneumonia, which is often not amenable to percutaneous drainage and inhibits penetration of appropriate antibiotics.
CASE: A 60-year-old male with no significant past medical history was admitted with a 5 day history of right upper quadrant pain and fevers. The patient recently came to the US from northern China. He reported a sharp, non-radiating 8 of out 10 right upper quadrant pain associated with mild nausea. The patient was not on any medications and denied melena, hematochezia, or changes in stool. He worked as a crane operator, and had no family history of colon cancer but had never had a colonoscopy. Admission laboratory studies showed no leukocytosis and a normal complete metabolic panel. Right upper quadrant ultrasound and an abdominal CT revealed multiple hypodense liver lesions suspicious for hepatic abscesses versus metastatic disease. Blood cultures obtained in the emergency room showed no growth over 3 weeks. Serologies for hepatitis B and C; stool ova and parasite; E. Histolytica antibody; Ameobiasis Ag stool test; and cultures for enteric pathogens were all negative. He was empirically started on piperacillin/tazobactam but continued to have intermittent fevers up to 103 °F so Vancomycin was added. Ultrasound guided percutaneous drainage of the suspected liver abscess/tumor was attempted multiple times without apparent success since gram stain and cytology of the scanty material obtained demonstrated no leukocytes. Culture of that material nonetheless grew 1+ pansensitive hypermucoid Klebsiella pneumonia. Despite 14 days of antibiotic treatment MRI revealed that the abscesses were increasing in size. Therefore laparoscopic drainage of the multiloculated abscess cavities was performed. Intraoperative cultures of the copious mucoid material grew 3+ pansensitive K. pneumonia. Postoperatively the patient did very well, and completed a four-week course of IV ertapenem with complete resolution of his liver abscesses.
DISCUSSION: The hyperviscous subtype of Klebsiella pneumonia in Asia emerged in the 1980s and has since expanded to the US. The capsular K1 serotype of K. pneumonia, has virulence genes magA, rmpA, and aerobactin, conferring resistance to neutrophil phagocytosis and serum complement killing. Primary liver abscesses can be further complicated with metastatic infection developing in 10–12 % of patients, with metastasis primarily involving the ocular or central nervous system. The surgical literature recommends percutaneous drainage and antibiotics in small (<3 cm) or unilocular abscesses. However, in the case of liver abscesses with mucoid K. pneumonia medical management often fails. Identification of hypermucoid K. pneumonia abscess should be a strong indicator for early surgical intervention.

RAISING AWARENESS FOR CHRONIC MESENTERIC ISCHEMIA: AN OFT-HIDDEN DIAGNOSIS Kristen M. Meier; Doyun Park; Geeta Laud. Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1635137)

LEARNING OBJECTIVE 1: Diagnose CMI based on clinical presentation
LEARNING OBJECTIVE 2: Understand the morbidity and mortality associated with late diagnosis of disease
CASE: An 86-year-old female with a history of HTN, T2DM, and CKD presented with a 6 month history of intermittent post-prandial abdominal pain, nonbloody diarrhea and weight loss. She had been hospitalized five times with the same complaint and treated with multiple courses of antibiotics. She underwent an EGD, colonoscopy, and EUS, with inconclusive results. An outpatient CT scan performed 1 week prior revealed mild ascending and transverse colits for which she was being treated with ciprofloxacin and metronidazole. Vital signs were stable and physical exam was notable for hyperactive bowel sounds and tenderness in the right and left upper quadrants. Laboratory studies showed hypokalemia, hypomagnesemia and leukocytosis of 21. She was empirically started on treatment with oral vancomycin for presumed C difficile colitis as well as ciprofloxacin and metronidazole. Workup for C difficile was negative and vancomycin was discontinued. Despite improvement in leukocytosis, patient continued to have intractable diarrhea, abdominal pain and electrolyte abnormalities prompting CTA of her abdomen, which revealed atherosclerotic changes in the abdominal aorta and its branches, the most notable being significant atherosclerotic disease of the celiac artery and SMA. Patient was evaluated by the vascular team for possible intervention, but was discharged to follow-up as an outpatient without a plan due to the need for operative risk assessment.
DISCUSSION: CMI is an indolent condition, often going underdiagnosed as patients usually present with nonspecific abdominal symptoms. CMI generally presents in patients older than 60 years and is three times more frequent in women. It is not as devastating as it acute counterpart, but it has debilitating consequences such as

recurrent postprandial abdominal pain, anorexia and weight loss averaging 25 lb. Major risk factors include CAD, HLD, smoking history and T2DM. Due to its insidious progression, collateral formation usually occurs between the three major arteries-celiac, SMA, IMA. Thus, symptomatic disease reflects significant blockage in two or more of the arteries. Less commonly, CMI can result from venous thrombosis secondary to hereditary thrombophilias, portal hypertension, inflammatory bowel disease and malignancies. The gold standard of diagnosis is intravascular arteriography as it allows for simultaneous therapeutic intervention. However, several noninvasive imaging modalities are readily available. Duplex sonography can detect turbulence of flow in arteries whereas CTA and MRA offer excellent sensitivity and specificity and combine 3D imaging to identify multivessel stenoses. Elective surgery-either vascular bypass or endarterectomy-is the standard of therapy for CMI but may not be a viable option for those with high postoperative risks. Percutaneous angioplasty and endovascular stenting have reduced morbidity but stents have been associated with higher recurrence of restenosis. For CMI due to venous thrombosis, anticoagulation or antiplatelet therapy should be considered. While working up a patient with recurrent postprandial pain, diarrhea, and nonspecific GI symptoms, it may be worthwhile to pursue CTA or MRA early on, especially in elderly patients with multiple risk factors for atherosclerosis and in those with active malignancy and inflammatory bowel disease.

RARE COMPLICATIONS OF SINUSITIS WITH NEW DIAGNOSIS OF HIV Emily Privette; Nirali Desai. Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA. (Tracking ID #1643134)

LEARNING OBJECTIVE 1: Assess the possible complications of severe sinusitis
LEARNING OBJECTIVE 2: Diagnose and treat cavernous sinus thrombosis
CASE: A 51 year-old male with no significant medical history presented to the ED with complaints of congestion, fever, and left-sided headache. On initial exam, he had nuchal rigidity and left-sided ptosis. CT scan of the head and neck showed complete opacification of the left sphenoid, maxillary, frontal sinuses, and ethmoid air cells. LP showed elevated protein and 58 white blood cells with a PMN predominance, but normal glucose and no organisms. Blood cultures from the day of admission grew out Strep constellatus, but CSF cultures were negative. Blood cultures cleared on day two of vancomycin and ceftriaxone, but the patient remained febrile. MRI of the brain obtained on day four showed enhancement of the Clivus, suspicious for osteomyelitis, as well as inflammation of deep cervical muscles on the right side. The patient remained febrile and Flagyl was added to vancomycin and ceftriaxone to cover a poly-microbial sinus infection. He defervesced on this combination of antibiotics. Flagyl was stopped, and the patient continued IV vancomycin and ceftriaxone for a six-week course. The MRI also raised concern for cavernous sinus thrombosis, and this was confirmed on CT scan. Thus, the patient was started on Heparin for therapeutic anticoagulation and discharged on Coumadin for 3 months. Prior to discharge, the patient was taken to the OR for sinus drainage and washout. Given the multitude of sinus complications, the patient was tested for HIV antibodies and found to be positive; confirmed by Western blot, with a CD4 count of 497
DISCUSSION: Cavernous sinus thrombosis, osteomyelitis, Horner's syndrome, and bacteremia are rare complications of sinusitis. Though the rarity of these complications create a diagnostic challenge, it is critical to suspect and begin treating these conditions early. This case illustrates multiple complications of sinusitis and underscores that diagnosis of cavernous sinus thrombosis is aided by recognizing clinical features attributable to sepsis and involvement of cranial nerves within the cavernous sinus. Furthermore, this case illustrates that an underlying immunodeficiency, such as HIV, can play a role in exacerbating common infections like sinusitis. Additionally, HIV may manifest as a state of hypercoagulability, which increases the risk of developing cavernous sinus thrombosis.

RECOGNITION & INITIAL WORK-UP OF INTERSTITIAL LUNG DISEASE IN THE PRIMARY CARE SETTING Russell G. Buhr[1]; John Charalambopoulos[2]; Katherine B. Komis[1]; Christopher B. Walsh[2]. [1]MedStar Georgetown University Hospital, Washington, DC; [2]Virginia Hospital Center, Arlington, VA. (Tracking ID #1638014)

LEARNING OBJECTIVE 1: Recognize interstitial lung disease as a cause of chronic cough
LEARNING OBJECTIVE 2: Execute initial work-up of interstitial lung disease
CASE: A 71-year-old Caucasian man presented with non-productive cough for 6 months and exertional dyspnea. His coronary artery disease, hypertension, and CKD-3 were well-controlled with aspirin, atenolol, HCTZ, lisinopril, atorvastatin & fenofibrate. Neither stopping lisinopril nor a trial of omeprazole improved the cough. He was a 20 pack-year smoker who quit 15 years ago. He denied atopy, asthma, COPD, or occupational exposures. He previously visited the ED and was diagnosed with pneumonia after chest x-ray showed interstitial & alveolar infiltrates. He took levofloxacin without improvement. He saw a pulmonologist, where spirometry showed moderate restrictive disease and was given an ipratroprium-albuterol MDI without change. An echocardiogram showed normal LVEF of 55 %, diastolic dysfunction, and no significant valvular disease. When he returned with unresolved cough, examination was significant for bibasilar inspiratory crackles and clubbing and was negative for hypoxia or signs of connective tissue disease. A CXR demonstrated increased interstitial markings, suggesting ILD. We ordered full pulmonary function tests that showed moderate restrictive & diffusion defects. A high-resolution chest CT showed advanced ILD with pattern suggestive of idiopathic pulmonary fibrosis (IPF). Connective tissue serologies were sent and are pending. He was referred back to pulmonology for further management.
DISCUSSION: ILD encompasses a group of over 160 distinct entities with varying etiologies & clinical courses. In this case, CT appearance and epidemiology favor IPF. The American Thoracic Society 2011 guidelines outline criteria for diagnosis including ruling out other known causes of ILD (e.g., occupational and drug exposures), typical CT appearance, and optional open lung biopsy. Serologies may elucidate a specific etiology due to connective tissue disease or hypersensitivity. We opted against biopsy due to patient preference and because his underlying CAD and advanced age would preclude transplant. Some ILD etiologies are steroid-responsive. Without clear-cut evidence of IPF, there is support for a defined trial of steroids to assess for improvement. More advanced therapies including steroid-sparing agents, should only be undertaken under expert consultation, and Pneumocystis prophylaxis should be considered in patients receiving more than 20 mg prednisone/day. Notably, the ongoing PANTHER-IPF trial has indicated against the use of azathioprine, prednisone, and n-acetylcysteine (NAC) triple therapy in IPF due to increased mortality, while the NAC monotherapy arm is in progress. Early recognition of ILD is key to diagnose & treat any reversible inflammatory processes prior to progression to incurable fibrosis. Internists may expedite work-up by ordering simple connective tissue screening serologies, PFTs, and a high-resolution CT if suspicion is high and CXR suggests interstitial disease. Quality of life is frequently improved by enrollment in pulmonary rehabilitation, as well. Advanced directive counseling is crucial in progressive disease. In summary, the evaluation of ILD requires a multimodal approach, but can easily be started in the primary care clinic with a thorough history and physical examination, basic studies, and early referral for expert opinion and possible enrollment in clinical trials, which are ongoing for novel therapies.

RECOGNIZING LESS COMMON PRESENTATIONS OF CELIAC DISEASE Maryam Mahmood; Benjamin Lloyd. Reading Health System, Reading, PA. (Tracking ID #1624145)

LEARNING OBJECTIVE 1: Recognize extraintestinal manifestations of celiac disease

CASE: Celiac disease (CD) is associated with many extraintestinal manifestations. These can involve almost any system including liver, kidney, blood, endocrine, nervous, skin, skeletal and muscular. Older patients in particular tend to present with extraintestinal rather than gastrointestinal complaints. We present a case of an older woman with celiac disease who presented with bone pain, hypocalcemia, liver involvement and nephrotic range proteinuria. A 72-year-old woman with a background of celiac disease diagnosed 10 years ago presented with bilateral lower extremity bone pain, abdominal distension and a 10 lb weight loss over 2 months. She had not been adherent to a low gluten diet. Investigations noted significant hypocalcemia (ionized calcium 0.93 mmol/L), elevated serum alkaline phosphatase (368 IU/L) and low serum total vitamin D (<7 ng/mL). Additionally elevated transaminases (AST 72 IU/L, ALT 62 IU/L), elevated INR of 1.9 and low serum albumin (2.7 g/d) were noted. The urine TP/Cr ratio was 4.8 with normal creatinine (0.43) and anti-gliadin IgA was elevated (>142 EU/ml). In the hospital, her calcium and vitamin D were repleted and INR corrected with one dose of vitamin K. Her bone pain resolved and she was discharged after counseling on the importance of low gluten diet adherence.

DISCUSSION: Calcium and vitamin D malabsorption in CD can manifest with hypocalcemia, hypophosphatemia, secondary hyperparathyroidism, bone pain, tetany and osteopenia. Additionally magnesium and zinc deficiencies, as well as chronic intestinal inflammation have been linked with reduced bone mineral density. The most common hepatic complication of CD is a mild chronic transaminitis, reported in about 40 % of patients with untreated CD. In some cases it is the only clinical sign of CD. The underlying cause is poorly understood; increased intestinal permeability in CD may facilitate the entry of toxins, inflammatory cytokines, and antigens into the portal circulation contributing to hepatic involvement. The presence of tissue transglutaminase antibodies in the liver also raises the possibility of humoral-mediated liver injury. Additionally CD is linked with primary sclerosing cholangitis, primary biliary cirrhosis and autoimmune hepatitis. CD is linked with an increase of renal diseases; the most common is IgA nephropathy which occurs in 3 % of CD patients It is thought that there is shared autoimmune pathogenesis with these disease processes as 22–77 % of patients with IgA nephropathy have circulating IgA anti-tissue transglutaminase antibodies, and 3–4 % of these have CD. Awareness of the potential extraintestinal manifestations and complications of CD is important in management of CD patients. Strict adherence of a low gluten diet has been demonstrated to resolve abnormalities of calcium and vitamin D, transaminitis, and proteinuria.

RECOGNIZING THE HOOF BEATS OF A ZEBRA Jessica H. Voit[2]; Daniel R. Zeve[2]; Blake R. Barker[1]. [1]UT Southwestern Medical Center at Dallas, Dallas, TX; [2]UT Southwestern Medical School, Dallas, TX. (Tracking ID #1643248)

LEARNING OBJECTIVE 1: Recognize the risk of anchoring errors in medical decision-making

LEARNING OBJECTIVE 2: Recognize pheochromocytoma as a cause of chest pain

CASE: A 54 year-old male with a past medical history of poorly-controlled hypertension, diabetes, hyperlipidemia and CHF (diagnosed at an outside hospital) presented with 9 months of intermittent left-sided chest pain of increasing frequency. The pain lasted 10 min, worsened with exertion and diminished with rest. It was associated with palpitations, dyspnea, diaphoresis and nausea. He denied any abdominal pain, weight change or new neurologic or psychiatric symptoms. Home medications included atenolol, Tribenzor (olmesartan-amlodipine-hydrochlorothiazide), metformin. On admission, he was afebrile with a blood pressure of 140/89. His lungs were clear to auscultation bilaterally. His cardiac examination was notable for a regular rate and rhythm with no murmurs or gallops, normal jugular venous pulsations, and no peripheral edema. Neurological exam was within normal limits. During the hospitalization, he experienced intermittent hypertension and tachycardia. His work-up was notable for normal serial cardiac enzymes, normal echocardiography and a vasodilator myocardial perfusion study with no evidence of ischemia. Therefore, CT angiography was performed to assess for pulmonary emboli (PE). There was no evidence of PE, but it revealed an incompletely visualized 5 cm mass either in the pancreatic tail or left adrenal gland. Subsequent abdominal CT confirmed a left adrenal mass. Plasma metanephrines and 24-hour urine metanephrines were elevated, consistent with pheochromocytoma (pheo). He was initiated on pheoxybenzamine and metoprolol until a left adrenalectomy could be performed several months later. Pathology confirmed pheo. Post-operatively, 2 sets of metanephrine and normetanephine levels were normal, confirming cure.

DISCUSSION: Pheochromocytoma is a catecholamine-producing tumor derived from chromaffin cells, typically from the adrenal medulla. The periodic release of hormones leads to a variety of clinical manifestations including episodes of tachycardia, palpitations, chest pain and hypertension. These symptoms mimic more common conditions, including acute coronary syndrome (ACS). Diagnosis is often delayed or missed by anchoring error as clinicians cling to an initial impression despite the accumulation of conflicting data. On admission, we began evaluating for ACS because of his multiple risk factors, a reported history of CHF, and the common nature of ACS. However, as the labs and imaging indicated normal cardiac function and perfusion, we broadened our differential and ordered a CT angiography to evaluate for PE. This led to the incidental discovery of the abdominal mass that, in the setting of his symptoms, was suspicious for a pheo and ultimately confirmed by elevated plasma metanephrines and 24-hour urine. This case illustrates that when presented with the constellation of episodic tachycardia, dyspnea, hypertension, and chest pain, clinicians must first evaluate for common etiologies, especially those that require immediate intervention. But to avoid the trap of anchoring error, one must reconsider the initial impression and consider other less common etiologies, such as a pheochromocytoma. When hearing hoof beats, think horses; just don't forget the possibility of zebras.

RECURRENT ASPIRATION PNEUMONIA IN A PATIENT WITH GASTRIC BANDING Vikram Sengupta; Cristina M. Gonzalez; Manuela Calvo. Albert Einstein College of Medicine/Montefiore Medical Center, Bronx, NY, NY. (Tracking ID #1643139)

LEARNING OBJECTIVE 1: Recognize recurrent aspiration pneumonia as a complication of laparoscopic adjustable gastric banding (LAGB).

LEARNING OBJECTIVE 2: Identify alarm symptoms of LAGB complications.

CASE: A 48 year-old man presented with 5 months of worsening productive cough and subjective fever. His symptoms had failed outpatient therapy for upper respiratory tract infection and he had subsequently been admitted, diagnosed with multi-lobar pneumonia and discharged on a course of antibiotics. Despite completing the course of antibiotics, his cough recurred which prompted re-admission. His past medical history was significant for diabetes mellitus and morbid obesity treated with laparoscopic adjustable gastric band placement in 2005. Physical examination revealed a temperature of 102.8, a pulse of 130, a respiratory rate of 36 and an oxygen

saturation of 80 % on room air. There were diffuse rhonchi and crackles in the right lung field. Blood tests revealed a white cell count of 10,600 cells/uL. Arterial blood gas was significant for pH 7.38, pCO2 48.8 and pO2 42.2. During intubation, copious gastric secretions were noted in his oropharynx. Chest computed tomography ruled out pulmonary embolus but revealed opacities in the right lung field and a dilated esophagus, which caused concern for pseudoachalasia as a consequence of laparoscopic gastric band hyperinflation. This finding prompted minimally invasive surgery to completely deflate the laparoscopic band. The patient's cough subsequently resolved. He was discharged and has been asymptomatic since that time.

DISCUSSION: Obesity and its co-morbid disorders are an increasingly common challenge to the general internist in the United States. Laparoscopic adjustable gastric banding procedures have become the leading surgical intervention for the treatment of morbid obesity worldwide. These interventions, however, are associated with significant morbidity and mortality, which often occurs months to years after surgery. The most common complication of LAGB is aspiration pneumonia, which occurs as a consequence of partial or complete esophageal obstruction. Often the patient will report recent tightening of the gastric band. Band slippage may also restrict the lower esophageal sphincter. Esophageal obstruction leading to aspiration underlies all other pulmonary complications, which include hemoptysis, abscess, bronchiectasis and interstitial lung disease. Common alarm symptoms are cough, dyspepsia, dysphagia and regurgitation after meals. These symptoms place patients at risk for aspiration and will be reported to the general internist long after surgery. In this case, the patient's first alarm symptom began 7 years after surgery. He complained of cough for 6 months, was hospitalized twice with aspiration pneumonia and went into respiratory failure before the diagnosis was made. On further questioning, he recalled having dyspepsia, dysphagia and regurgitation in the same time period but had not associated them with his cough. In summary, the general internist must identify symptoms and intervene early to prevent aspiration pneumonia in patients with LAGB. These patients should be asked about reflux, cough, fever and other alarm symptoms during every follow-up visit. Recent tightening of the gastric band or respiratory cultures suggestive of aspiration pneumonia should also arouse suspicion. Total deflation of the ring is recommended if recurrent aspiration pneumonia is suspected.

RED FLAGS OF ACUTE LOW BACK PAIN SIGNAL INFECTIOUS COMPLICATIONS OF BACILLUS CALMETTE-GUERIN (BCG) THERAPY David R. Linz; Harish Jasti. University of Pittsburgh School of Medicine, Pittsburgh, PA. (Tracking ID #1638669)

LEARNING OBJECTIVE 1: To recognize back pain caused by infectious complications of Bacillus Calmette-Guerin therapy

LEARNING OBJECTIVE 2: To identify red flags of acute low back pain in order to guide higher quality and more cost effective care

CASE: An 85 year-old gentleman presented to his primary care physician with 2 months of severe, progressive low back pain associated with malaise, functional impairment, and a 15 lb weight loss. His symptoms had worsened despite physical therapy, steroid joint injections, and analgesia with narcotics and neurotransmitter modulators. He denied any fevers, chills, sweats, or exposure to tuberculosis. His medical history included diet controlled type 2 diabetes, chronic low back pain secondary to spinal stenosis at L5-S1 diagnosed 8 months prior by MRI, and superficial bladder cancer treated with transurethral resection of the bladder and adjuvant intravesicular Bacillus Calmette-Guerin (BCG) therapy. Examination was notable for spinal tenderness over the lumbar spine, marked weakness of the lower extremities, and bilateral radiculopathy. Laboratory analysis showed normocytic anemia, normal WBC, elevated ESR (74 mm/hr; nl<23), and elevated high sensitivity CRP (4.1 mg/dL; nl<0.7). A repeat MRI of the thoracic and lumbar spine revealed T12-L1 discitis-osteomyelitis and bilateral psoas abscesses. A needle biopsy sample was positive for Mycobacterium bovis.

DISCUSSION: Bladder cancer is the sixth most common human malignancy in the United States and immunotherapy with intravesical BCG, a live attenuated strain of Mycobacterium bovis, is a common adjunctive therapy. Although BCG therapy is well tolerated, it has been associated with localized and systemic complications, such as hematuria, urinary frequency, cystitis, sepsis, and osteomyelitis. Infection involving the spine may present with back pain, motor weakness, and elevated inflammatory markers as it did with this patient. Risk factors for systemic infection include age ≥70, pelvic radiation, immunosuppresion, and disruption of the bladder, prostate, or urethra. Diagnosis can be made radiographically and confirmed by biopsy. Recognition of the complications of BCG therapy is important for physicians who must carefully weigh the benefits and harms of routine imaging for low back pain. Red flags of serious underlying conditions, such as infection, cancer, cauda equina syndrome or symptomatic spinal stenosis, should be identified in order to practice high quality care and conscientious use of finite clinical resources. This patient presented with 5 of the 10 red flags outlined by the American College of Radiology's appropriateness criteria for acute low back pain: unexplained weight loss, history of cancer, age >70, disabling symptoms, and duration >6 weeks. Additional red flags include recent trauma, unexplained fever, immunosuppresion, IV drug use, and prolonged corticosteroid use/osteoporosis. According to one of the top 5 recommendations from the Promoting Good Stewardship in Clinical Practice initiative of the National Physicians Alliance, abstaining from imaging for low back pain within the first 6 weeks unless red flags are present will improve care, reduce harm, and decrease overall medical costs.

RED HERRING SYNCOPE AND A BIT OF EXTRA STORAGE: A NOVEL ALLELIC FORM OF GAUCHER DISEASE David M. Levine; Andrew A. Chang. New York University Medical Center, New York, NY. (Tracking ID #1635562)

LEARNING OBJECTIVE 1: Formulate a differential diagnosis for splenomegaly and thrombocytopenia

LEARNING OBJECTIVE 2: Recognize and diagnose Gaucher Disease

CASE: A 46 year-old incarcerated man with history of hypertension and hip replacement was admitted for two unwitnessed episodes of syncope. During both episodes, the patient described lying in his intensely hot cell when he began to experience weakness and dyspnea, until he lost consciousness for an unknown period of time. He denied preceding palpitations or post-episode confusion, focal deficits, or loss of bowel/bladder function. Upon waking, he noted sharp non-radiating substernal pleuritic chest pain. CXR, ECG, troponins, TTE, and stress test were unremarkable. Unexpectedly, laboratory analysis revealed thrombocytopenia (41) and transaminitis (AST 45, ALT 44). Abdominal ultrasound demonstrated hepatosplenomegaly with poorly marginated echogenic splenic masses. CT found multiple low attenuation splenic lesions with likely reactive porta hepatic lymph nodes. Subsequent MRI demonstrated T1 and T2 hypointense enhancing splenic lesions, less likely hemangioma or lymphoma. FNA of an enlarged submandibular lymph node was negative for malignancy. Delayed collateral from the patient's mother cited a childhood diagnosis of "bone disease." The patient refused bone marrow biopsy. Further testing demonstrated highly elevated ACE and ferritin levels and heterozygosity for the N370S Gaucher Disease (GD) mutation. Upon DNA analysis, a novel mutation in the second disease allele: R48W (exon 3) in cis with R120W was discovered. Given our patient's comorbidities, he was offered enzyme replacement therapy with recombinant glucocerebrosidases.

DISCUSSION: Our case highlights the pivotal role an in-depth history can possess in shaping workup and emphasizes the importance of formulating a broad differential for splenomegaly and thrombocytopenia. After workup of syncope and chest pain, we ruled out the major causes of splenomegaly: congestion (cirrhosis, portal/hepatic/splenic thrombosis, heart failure), malignancy (lymphoma, leukemia), infection (HIV, EBV, CMV, viral hepatitis, TB, MAC, endocarditis, malaria), inflammation (lupus, sarcoid), and hypersplenism (hemolytic anemias, use of G-CSF). The remaining cause involved infiltration: lysosomal

storage disease ([LSD]; GD, Niemann Pick Type B, cholesterol ester storage disease), amyloidosis, and others. Given the initial ACE and ferritin levels, youthful hip replacement, and childhood "bone disease," further glucocerebrosidase activity and DNA analysis was warranted. The most common LSD, GD is an autosomal recessive disorder caused by mutations in glucocerebrosidase, which dysregulate cellular glycolipid recycling and cause accumulation of lipid-laden macrophages in the spleen and elsewhere. Type 1, 2, and 3 GD are characterized by their degree of neuronopathic involvement: absent, acute, and chronic, respectively. Type 1 GD (GD1) is characterized by anemia, thrombocytopenia, hepatosplenomegaly, marrow infiltration, lung disease, and bone abnormalities. Its course is extremely variable, with some patients remaining asymptomatic throughout life. The N370S allele is pathognomonic for GD1. Both of our patient's alleles have been previously reported, but never on one chromosome. In retrospect, the patient's syncope was likely a function of a blistering prison cell. The constellation of findings that initially appeared disconnected, ultimately proved entirely unifying for the diagnosis of a novel allelic form of GD1.

RENAL FAILURE HERALDING A DEEPER ABNORMALITY Paavani Komanduri; Harish Jasti. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1641893)

LEARNING OBJECTIVE 1: Describe the diagnostic evaluation for renal failure
LEARNING OBJECTIVE 2: Discuss the treatment options for amyloidosis
CASE: A 42 year-old woman, with a history of hypertension, presented with severe abdominal pain which started 2 months prior to presentation and was initially alleviated with ibuprofen. It progressively worsened and she developed dyspnea on exertion. On review of systems, she endorsed polyuria and a 15-lb weight gain. She denied any associated fevers, chest pain, orthopnea, nausea, vomiting, or dysuria. Her medications included lisinopril and hydrochlorothiazide (HCTZ). Physical exam revealed a well-appearing female in mild distress. She was afebrile with a blood pressure of 185/95. Her cardiac and pulmonary exams were unremarkable. Abdominal exam was significant for epigastric tenderness without rebound. She had 2+ pitting edema up to her knees. Initial labs were remarkable for a Cr of 6.4, BUN of 47, and hemoglobin of 10. Baseline Cr 6 months prior was 1.3. Subsequent evaluation revealed a fractional excretion of urea of 74, suggestive of acute tubular necrosis (ATN) secondary to the use of ibuprofen, lisinopril and HCTZ. Renal ultrasound demonstrated no hydronephrosis or renal artery stenosis. A 24-hour urine collection revealed 14 g/day of protein. Additional testing for ANA, ANCA, hepatitis B and C, and complement levels, were all negative. Due to progression of her renal failure, she underwent a renal biopsy which showed ibuprofen induced ATN, along with prominent Congo-red staining, indicating a diagnosis of renal amyloidosis. Subsequent bone marrow biopsy revealed 8 % plasma cells, which was consistent with a diagnosis of amyloid light-chain (AL) amyloidosis.
DISCUSSION: Amyloidosis constitutes a spectrum of diseases characterized by deposition of insoluble beta pleated sheets into tissue, causing organ dysfunction. AL amyloidosis is the most common systemic form of amyloidosis in the United States. It is associated with amyloid production due to plasma cell dyscrasia and included under the classification of multiple myeloma. Since amyloidosis is a systemic disease, any organ system can be affected, with the liver, kidney and heart being the most common. Cardiac amyloid manifests as a restrictive cardiomyopathy, along with arrhythmias and complete heart block due to infiltration of the conduction system. Treatment is targeted at preventing progression of disease since amyloid proteins cannot be removed after deposition. With respect to AL amyloidosis associated with multiple myeloma, definitive treatment is autologous stem cell transplant (SCT). This results in 25–67 % of patients achieving complete remission. Successful transplantation can also lead to improvement in renal function, including a 50 % reduction in proteinuria and >25 % increase in GFR. It is especially effective in patients without persistent plasma cell dyscrasia (71 % vs. 11 %). In patients unable to tolerate chemotherapy, systemic bortezemib with dexamethasone can be used as an alternative therapy, with a hematologic response rate of 44 %. In cases of cardiac involvement, pre-SCT heart transplantation may be required depending upon the degree of cardiac involvement. Survival is typically 12 months (6 months with cardiac involvement) vs. 4.5 years with treatment. Our case demonstrates that it is important to consider AL amyloidosis in the differential diagnosis of patients who present with nephrotic-range proteinuria, unexplained nonischemic cardiomyopathy, or atypical multiple myeloma.

RENAL TAMPONADE SYNDROME WITH BILATERAL KIDNEYS: A CASE OF SUB-CAPSULAR HEMATOMA INDUCED ACUTE KIDNEY INJURY Vaidehi S. Patel[1]; Kamesh Sivagnanam[1]; Martin Q. Tran[2]. [1]ETSU, Jonesborough, TN; [2]JCMC, Johnson City, TN. (Tracking ID #1642111)

LEARNING OBJECTIVE 1: Conclusion: Renal tamponade syndrome must be considered as a differential by hospitalists for patients who present with AKI after biopsy. The presence of two kidneys does not exclude the condition.
CASE: Case report: A 46 year old lady with hypertension, diabetes, chronic kidney disease (baseline creatinine 1.3 mg/dl) and tobacco abuse, with a recent history of renal biopsy, presented with non-specific complaints including generalized body aches, weakness and nausea for 3–4 days. Medications included furosemide, lisinopril and insulin. Examination was significant for tachycardia and diffuse abdominal and extremity tenderness. Initial labs showed leukocytosis(11.2*10^3/ml), hyperkalemia(7.2 meq/dl), elevated creatinine(7.7 mg/dl) and acidosis(co2-12 meq/dl,ABG-metabolic acidosis). An EKG and CXR were normal. CT scan of the abdomen and pelvis showed a circumferential hematoma of the left kidney (1.5 cm largest thickness). The right kidney had trace hydronephrosis and dilated ureters but no definite stones. Patient was admitted to intensive care and hyperkalemia was corrected with bicarbonates, insulin, D5normal saline and sodium polystyrene. Furosemide and lisinopril were stopped. Patient was started on fluids and received empirical antibiotics. With the above treatment, hyperkalemia resolved, but her acidosis required a continuous bicarbonate infusion for management. On day3, all electrolyte abnormalities resolved and the patient was moved to the floor, but her creatinine was still above baseline. Patient was doing well except for nausea that was managed symptomatically. Her biopsy came back at this time and was suggestive of diabetic nephropathy. Patient was discharged home with stable symptoms and improving renal function.
DISCUSSION: Introduction: Approximately 47 % of renal biopsies result in subcapsular hematomas. 8.7–10 % of these hematomas are large (>1 cm thickness) and can cause pressure effect(tamponade) induced acute kidney injury(AKI). This is mostly described in patients with solitary kidneys as they don't have an additional Kidney to compensate for the loss of function. We present a patient with bilateral kidneys who developed acute on chronic renal failure secondary to biopsy related renal tamponade.
DISCUSSION: Renal tamponade syndrome should be considered in patients with subcapsular hematomas and AKI. Patients with bilateral kidneys who undergo renal biopsy may still manifest the syndrome in the setting of functional compromise of the contralateral kidney. In the patient described, while renal tamponade affected one kidney, the function of the contralateral kidney was possibly affected secondary to the underlying diabetic nephropathy and ischemia induced activation of the renin-angiotensin system. Of note, the population that is most likely to get a renal biopsy is the same group that is likely to have functional impairment of the contralateral kidney. Like cardiac tamponade, the hematoma's size as well as the time taken for it to develop are important factors affecting severity. Therefore, a small tamponade must not be dismissed as clinically irrelevant. Management is usually conservative. Surgical intervention is for large hematomas or persistent symptoms.

REPEATED EPISODES OF NEUROLOGICAL SYMPTOMS AND SEVERE HYPOCALCEMIA, THINKING BEYOND THE USUAL CAUSES Madan R. Aryal[1]; Naba R. Mainali[1]; Ravi Shahukhal[3]; Yagna R. Bhattrai[2]. [1]Reading Health System, West Reading, PA; [2]Mercy Catholic Medical Center, Philadelphia, PA; [3]Queens Hospital Center, Queens, NY. (Tracking ID #1622107)

LEARNING OBJECTIVE 1: Although uncommon to be presenting in the elderly population, recognize Di George Syndrome in the setting of repeated neurological symptoms and hypocalcemia.
LEARNING OBJECTIVE 2: Discuss the management of Di George Syndrome
CASE: A 61 year old Caucasian male with history hypoparathyroidism, recently diagonosed VSD, right aortic arch, Atrial fibrillation, Personality disorder and seizure due to hypocalcemia presented to us with confusion, irritability and lethargy. He denied any focal neurological deficit, tingling and numbness, speech abnormality or drooping of face. His symptoms were initially confused with stroke, however his brain MRI was negative. When he was first diagnosed with seizure due to hypocalcemia 6 years ago he was started on calcium and has been on it since then. Formal evaluation for his low calcium was also done in the past which revealed low PTH. Vitamin D and magnesium were normal. He denied parathyroid surgery, symptoms of malabsorption, family history of calcium disorder and diuretic intake. On further lab testing it was found that calcium was 6.5 mg/dl, magnesium 1.9 mg/dl, phosphorous 5.7 mg/dl, albumin 3.2 g/dl, ionized calcium 0.90 mg/dl and corrected calcium of 7.3 mg/dl. MRI brain was normal. His cardiac anomaly, low calcium and low PTH level prompted us to do genetic analysis for Di George syndrome which was positive. Immunological test showed CD3+ T cells of 454/mm3. Our patient had multiple admissions with neurological complaints which were attributed to low calcium level. He also had atrial fibrillation that was not well controlled most likely due to hypocalcemia.
DISCUSSION: Diagnosis of DGS requires reduced number of CD3+ T cells, along with either demonstrated deletion in the chromosome 22q11.2 or typical clinical findings. Management of DGS requires multidisciplinary approach. Sinopulmonary infections are common and aggressive antibiotic therapy is instituted early. Hypocalcemia is treated with calcium supplementation after the measurement of serum calcium and PTH level. Involvement of psychiatrist is required for the proper treatment of schizophrenia and major depression.

REVERSE BROKEN HEART SYNDROME. IS THE BETA-2 AGONIST A CULPRIT? Raji Shameem; Niket Sonpal; Zakaria Majeed; Robert E. Graham. Lenox Hill Hospital, New York, NY. (Tracking ID #1624109)

LEARNING OBJECTIVE 1: Diagnose reverse takotsubo cardiomyopathy as an uncommon variant of the well documented stress induced phenomenon.
LEARNING OBJECTIVE 2: Recognize Beta-2 agonist therapy as a potential cause of reverse takotsubo cardiomyopathy.
CASE: 59-year-old female with a past history of well-controlled asthma without the need for rescue therapy presented to the hospital with shortness of breath for a duration of 1 week. The patient had no previous history of cardiac disease The patient went to a local urgent care center the previous day where she was diagnosed with an asthma exacerbation and prescribed an albuterol inhaler. The patient reported administering frequent treatments of the albuterol inhaler with the use of a spacer and estimated to have taken 70–80 puffs of her inhaler between the times she started using the inhaler and the time she presented to the Emergency Department. In the emergency department the patient was found to be in respiratory distress. On examination she was found to have poor air entry with diffuse wheezing on expiration. The patient was immediately started on nebulizer treatments with albuterol and given high dose glucocorticoids intravenously. Given her worsening respiratory status after nebulizer treatments with albuterol, the decision was made to intubate the patient and admit to the ICU. Of interest, the patients EKG just prior to intubation revealed ST depression in the inferior leads (II, III, avF) and lateral leads (V4,V5,V6). Labs drawn upon arrival to the ED and post intubation revealed elevated Troponin at 0.179 and 0.424 respectively. Echocardiographic imaging obtained while the patient was intubated revealed basal inferior wall akinesis and hyper-dynamic apical segments. Left ventricle ejection fraction was estimated to be 35 %. A diagnosis of reverse takotsubo cardiomyopathy was made.
DISCUSSION: Reverse takotsubo cardiomyopathy is characterized to be a transient impairment in cardiac systolic function. Unlike the typical variant, there is basal wall akinesis and a hyper-dynamic apex. The pathophysiology of this condition is thought to be caused by stress induced catecholamine surge that leads to supraphysiologic activation of beta adrenoreceptors in human myocardium, for this reason it is also referred to as stress induced cardiomyopathy. Studies have further postulated the particular roles of B1 and B2 adrenoreceptors in stress cardiomyopathy. At normal physiologic levels, epinephrine binds Beta-adrenoreceptors and activates G-stimulatory protein resulting in increased cardiac inotropic effects. At supra physiologic levels, epinephrine binding to the Beta-adrenoreceptors is thought to have a negative inotropic effect on myocardium via activation of G-inhibitory protein instead of its normal physiologic activation of G-stimulatory protein, a process referred to a signal trafficking. It is, therefore, not difficult to postulate how a catecholamine surge lead by epinephrine could result in stunning and aknesis of myocardium densely populated with B2-adrenoreceptors. In this case, it was likely the excessive B2 stimulation by albuterol therapy that precipitated the transient cardiomyopathy.

RIGHT ATRIAL THROMBUS ASSOCIATED WITH INDWELLING DIALYSIS CATHETERS Jasmine K. Ahuja. Capital heatlh regional medical center, Trenton, NJ. (Tracking ID #1642424)

LEARNING OBJECTIVE 1: Right atrial thrombus (RAT) associated with indwelling dialysis catheters may be successfully managed conservatively.
CASE: Case 1: A 43 year old African American male with ESRD secondary to interstitial nephritis and diabetic nephropathy presented with fever, chills, and generalized malaise. Blood cultures were positive for Staphylococcus epidermidis and Streptococcus agalactaciae. The source of bacteremia was identified as the right internal jugular dialysis catheter placed 5 months earlier. Transthoracic echocardiogram showed a large mass within the right atrium. The CT chest confirmed a low density mass within the right atrium adjacent to the catheter tip measuring 2.5×1.0×2.0 cm. Intravenous heparin was bridged to warfarin, the catheter was exchanged, and repeat transthoracic echocardiogram 2 months later showed no mass in the right atrium. Antibiotics were continued for 6 weeks. Case 2: A 73 year old African American female with ESRD secondary to diabetic and hypertensive nephropathy presented with rapid atrial fibrillation and sepsis. Blood cultures grew Staphylococcus epidermidis and Staphylococcus capitis. Transthoracic echocardiogram showed dilated right and left atria with a large mobile echogenic density in the right atrium measuring 1.9×1.6 cm. Transesophageal echocardiogram showed a multi-lobed mass within the right atrium attached to the inferior vena cava and the right atrial wall with a catheter in the right atrium. The patient refused surgical thrombectomy and the catheter was not exchanged due to conern for thromboembolism. Intravenous heparin was bridged to warfarin, and repeat transthoracic echocardiogram 2 months later showed no right atrial mass and patient now has a functional AV fistula used for HD. Antibiotics were continued for 6 weeks.
DISCUSSION: The optimal management of dialysis catheter-associated RAT is unclear. Thrombectomy has been reported to be associated with a lower mortality compared with conservative management with anticoagulation and antibiotics. However, some patients may refuse or are poor candidates for surgery. All ESRD patients require stable dialysis access which complicates the decision process. Literature has advocated conservative approach to clots less than 2 cm, and thrombectomy for larger clots, however our experience suggests larger clots may be successfully managed conservatively.

RIGHT ATRIAL THROMBUS: A HANGING QUESTION Sarah Apgar[1]; Christopher Hoimes[2]. [1]Yale-New Haven Hospital, New Haven, CT; [2]Yale School of Medicine, New Haven, CT. (Tracking ID #1640445)

LEARNING OBJECTIVE 1: Recognize the clinical features of right heart thromboemboli, a rare and potentially life-threatening form of venous thromboembolic disease.
LEARNING OBJECTIVE 2: Emphasize the controversial management options for right heart thromboemboli and the need for a multidisciplinary approach to tailor therapy to a specific patient.
CASE: A 34 year-old woman with a stage IV infiltrative ductal breast carcinoma being treated with capecitabine and goserelin was admitted for management of a right atrial thrombus incidentally found on restaging contrast enhanced computerized tomography (CT) 4 days prior to admission. Results revealed a possible defect in the inferior vena cava (IVC) concerning for thrombus without evidence of pulmonary emboli (PE). On the day of admission, the patient underwent an echocardiogram which confirmed a mobile echodensity in the right atrium which appeared to originate from the IVC. The echodensity was noted to move to and fro across the tricuspid valve. Right ventricular function was normal. Upon evaluation, she denied any chest pain, shortness of breath, leg pain or swelling. Her blood pressure was 129/83 mm Hg and pulse was 73 beats per minute. She was obese (BMI 46 kg/m2) and breathing comfortably. Cardiac examination demonstrated a regular rhythm with no murmurs, gallops, or plops. There was no lower extremity swelling or calf tenderness. She had no indwelling lines. Blood work revealed a troponin of <0.01 ng/mL and pro-B-type natriuretic peptide of 17 pg/mL. There was no right heart strain on electrocardiogram. Bilateral lower extremity ultrasound examination was without thrombus. A heparin infusion was begun for treatment. Repeat echocardiogram 2 days later showed no change in the echodensity. On hospital day 4, the patient complained of a brief episode of left sided pleuritic chest pain that resolved spontaneously. Her vitals remained stable. On hospital day 7, a repeat echocardiogram showed no evidence of thrombus. A PE protocol CT chest prior to discharge confirmed a pulmonary embolus in the distal left pulmonary artery and posterior basal right lower lobe. The patient was discharged in stable condition on low molecular weight heparin.
DISCUSSION: Right heart thromboemboli (RHTE), often referred to as "thrombi-in-transit", represent a rare form of venous thromboembolic disease (VTE). Presentation can vary from hemodynamic instability to an insidious onset as was the case with this patient. RHTE are most often discovered by echocardiogram done during the evaluation of PE. Management options include anticoagulation alone, thrombolysis, interventional percutaneous thrombus retrieval or surgical thrombectomy. As this is a rare clinical event, no prospective randomized trials are available and there is no consensus on the ideal treatment option. Case series have shown conflicting results with significant mortality between 20 % and 60 % regardless of the treatment chosen. In this case, a multidisciplinary approach was employed with consultants from hematology, thoracic surgery, interventional radiology and pulmonology. As the patient was stable with good cardiopulmonary reserve, anticoagulation alone was chosen with a low threshold to provide thrombolytics if clinical deterioration occurred. Ultimately she developed a pulmonary embolism, but it was well tolerated.

RING-ENHANCING BRAIN LESION IN A YOUNG ADULT: WORK YOUR MAGIC, DOCTOR Michael J. Plakke; Sarah H. Van Tassel; Khan K. Chaichana; Benjamin Lloyd. Reading Health System, West Reading, PA. (Tracking ID #1642464)

LEARNING OBJECTIVE 1: Develop a broad differential diagnosis for a ring-enhancing brain lesion in a young adult
LEARNING OBJECTIVE 2: Manage a young adult presenting with a ring-enhancing brain lesion
CASE: An 18-year-old previously healthy female presented to the emergency department for the second time in 1 month complaining of possible seizure-like activity, unrelenting headache, and dizziness upon standing. Upon questioning, she described multiple episodes of nystagmoid eye movements unaccompanied by loss of consciousness or neurologic deficit. Her headache was constant and only relieved by massaging the back of her head, neck, and shoulders. She denied fever, visual disturbances, cognitive impairment, nausea, and vomiting. She had no history of recent travel or exposure to animals. Her mother has multiple sclerosis. Her vital signs were stable, and physical exam revealed no abnormalities. Laboratory workup, including complete blood count and chemistry studies, was unremarkable. Magnetic resonance imaging (MRI) with contrast showed a 1.0-cm ring-enhancing lesion in the left occipital lobe. Further investigations, including lumbar puncture and electroencephalogram were negative. She was discharged from the hospital on levetiracetam for seizure prophylaxis and instructed to obtain a follow-up MRI in 3 months. Her follow-up MRI showed a stable ring-enhancing lesion. Due to continued symptoms and the favorable location of the mass for surgical intervention, craniotomy with wedge resection was performed. Pathology confirmed the diagnosis of a low-grade oligodendroglioma. She did not receive any postoperative chemotherapy or adjuvant radiation. At a recent 1-month follow-up appointment, she was symptom-free.
DISCUSSION: The differential diagnosis for a ring-enhancing brain lesion includes metastasis, abscess, glioma, infarct, contusion, demyelination, and radiation scarring. A helpful mnemonic for recalling this differential diagnosis is "MAGIC DR." Lymphoma and toxoplasmosis are additional diagnoses to consider in immunocompromised patients. In young adults without known risk factors for central nervous system (CNS) infection or history of malignancy, primary neoplasms and demyelinating processes should top the list of possible diagnoses. In our 18-year-old patient, our differential focused on glioma and multiple sclerosis (MS). We strongly favored glioma, since MS very rarely presents with headache or seizure, but it was important to rule out demyelination given her nystagmus and positive family history. Initial management of a ring-enhancing lesion in these patients depends on clinical manifestations and location of the mass. If headache or seizure predominates, it is reasonable to treat conservatively (with seizure prophylaxis if indicated) and obtain follow-up imaging in 3–4 months. For patients with focal deficits or mass effect, biopsy or resection should be immediately considered. Most primary brain tumors in young adults are low-grade gliomas; the two most common types are astrocytomas and oligodendrogliomas. If biopsy suggests a low-grade glioma, total resection is favored if possible, as removal may be curative. Tumors that recur or progress may require radiation or chemotherapy. Fortunately our patient has done well thus far, but she will require careful monitoring and lifelong follow-up.

ROCKY MOUNTAIN "SPOTLESS" FEVER Moise Jean. Emory University School of Medicine, Atlanta, GA. (Tracking ID #1637810)

LEARNING OBJECTIVE 1: Recognize the clinical presentation of Rocky Mountain Spotted Fever.
LEARNING OBJECTIVE 2: Appreciate the importance of history taking and high clinical suspicion for Rocky Mountain Spotted Fever, in febrile patient without rash.
CASE: A 68 year old male presents with 3 days of persistent fevers to 1030. The patient reported a 2 week history of malaise, athralgias, myalgias, frontal headache, chills and fevers. Past medical history was unremarkable. He had no sick contacts of recent travel. He was pine wood farmer in South Georgia. One month prior, while working outside he did notice a tick on his skin which he quickly removed with his fingers. On presentation he was febrile with a temperature of 38.60. He had no skin rashes, nuchal rigidity, joint effusions, and no signs of local infection on exam. Laboratories revealed leukopenia with white blood cells count of 1700/mcL, with 13 % monocytes, and thrombocytopenia with platelet count of 59000/mcL. Alanine aminotransferase, and Aspartate amintransferase were within normal limits. He was empirically treated for sepsis with Vancomycin and Levoquin. Doxycycline was added for tick borne illness given his exposure. On hospital day 2, he defervesced and vancomycin and levoquin were discontinued. Leukopenia and thrombocytopenia resolved. He was continued on doxycycline with a presumptive diagnosis of tick-borne illness. Several weeks later serology was positive for Rocky

Mountain Spotted Fever. Lyme and Ehrlichia serologies were negative.
DISCUSSION: Rocky Mountain spotted fever is a tick borne illness caused by Rickettsia rickettsii, spread to humans by Dermacentor ticks. Cases of RMSF are most common during spring and summer months in the southeastern regions of the United States but can be seen in other months from Mexico to Canada. Clues such as risk factors for tick exposure or a report of a tick bite should raise suspicion for tick-borne illness. Typically, RMSF presents with the triad of fever, rash and headache. The classic rash begins as blanching erythematous macules around the wrists and ankles that then spread centripetally and become petechial. Less commonly, RMSF without dermatologic manfestations, or "spotless RMSF" can occur. 15 % of patients with RMSF have no rash on presentation and 10 % of patients never develop a rash during their illness. Unfortunately, the absence of the rash presents a diagnostic challenge because of the nonspecific nature of the presentation. Spotless RMSF may be misdiagnosed as Erlichiosis and some patients may be dually infected with R. rickettssii and erlichia. However, treatment with doxycycline is the same. Serological testing is the mainstay modality in confirmation of diagnosis of RMSF, however the results may take days to weeks. The Weil-Felix test has fallen out of favor as it lacks sufficient sensitivity and specificity. "Spotless" RMSF often leads to delay in diagnosis and proper treatment. Treatment must be initiated as soon as infection is suspected, as the mortality rate increases from 6.5 % to more than 20 % when treatment is initiated more than 5 days after onset. Given this, physicians should consider the possibility of RMSF in patients with nonspecific febrile illnesses even without the classic rash. As in this case, the absence of a rash does preclude the diagnosis of RMSF. Physicians need to be aware of both the likelihood of "spotless RMSF" and the potential risk of failing to recognize this condition.

ROUTINE COLONOSCOPY, NOT SO ROUTINE AFTER ALL: SERRATED POLYPOSIS SYNDROME (SPS) Dhruti Patel; Daniel Goldsmith; Joseph DeAntonio; Joshua Cantor; Jyoti Bhatia; Armen Simonian; Akshay Manohar. Capital Health Regional Medical Center, Trenton, NJ. (Tracking ID #1641999)

LEARNING OBJECTIVE 1: Recognize new developments in Colorectal Cancer Screening in relation to SPS
CASE: Case 1: A 66-year-old Caucasian female underwent a routine colonoscopy. She had no symptoms such as bleeding, weight loss, change in bowel habits or abdominal pain. She did have mild anemia with hemoglobin 11.7 g/dL and MCV of 90.5 fl. Pertinent past medical history included Grade I Astrocytoma (well differentiated), obstructive sleep apnea, hypertension, transient ischemic attack, and dyslipedemia. She occasionally used alcohol, but not tobacco or drugs. She denied family history of malignancy. The colonoscopy demonstrated 30 polyps varying from 0.5 cm to 2–3 cm throughout the colon. Biopsies revealed "sessile serrated" adenomas, characterized by prominent histological serrations, distorted and dilated bases of crypts with aberrant branching, without dysplasia. The results met criteria for diagnosis of SPS. The patient elected for surveillance colonoscopy at 1 year instead of surgical intervention. Case 2: A 47-year-old female underwent a colonoscopy due to family history of adenomatous polyps in her mother. She had no prior colonoscopies or symptoms. Her hemoglobin was 13.3 g/dL, with an MCV of 103 fl. Her medical history was significant for hypertension and polysubstance abuse, mainly alcohol and cocaine. Family history was significant for adenomatous polyps in her mother at age 75. Colonoscopy demonstrated several polyps ranging from 5 mm to 1.5 cm with similar histopathological findings as in Case 1. Due to poor preparation, colonoscopy will be repeated in 6 months. Case 3: A 47-year-old female with a history of colon polyps underwent a follow up colonoscopy. The patient complained of no symptoms. Pertinent past medical history include coronary artery bypass graft, pyloric stenosis at birth, Hodgkin's lymphoma at age 3, gall bladder polyp, chronic hepatitis C without cirrhosis, inflammatory bowel syndrome, hypertension and asthma. Two prior colonoscopies were performed. The first was performed due to history of iron deficiency anemia without any symptoms and a normal EGD. Benign hyperplastic polyps were found incidentally. The second follow up colonoscopy, performed 8 years later, showed several serrated adenomas. The third repeat colonoscopy showed even more sessile serrated adenomas. Currently, future management, whether it includes surveillance colonoscopy or surgery, is under discussion with the patient.
DISCUSSION: Traditionally colorectal adenoma is considered the main precursor lesion to colorectal cancer; however, over the past decade, "serrated" polyps are being recognized as premalignant lesions and markers for synchronous and metachronous colorectal neoplasia. They are associated with an increased risk of colorectal cancer by 25 to 40 %, and an increased risk for developing colorectal cancer between otherwise normal screening intervals. SPS is defined by one of the following criteria: 1) At least 5 serrated polyps proximal to sigmoid, with 2 or more ≥ 10 mm 2) Any serrated polyps proximal to sigmoid with family history of SPS 3) > 20 serrated polyps of any size throughout the colon.

SUGAR AND SPICE: NOT SO NICE Morgan J. Katz; Matthew N. Peters; John Wysocki; Chayan Chakraborti. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640487)

LEARNING OBJECTIVE 1: Understand the importance of taking a detailed history of ingestion of over the counter herbal supplements.
LEARNING OBJECTIVE 2: Recognize the association between acute hepatitis and ingestion of over the counter cinnamon supplement.
CASE: A 42 year-old man with history of diabetes mellitus presented with a 2-day history of 9/10 throbbing abdominal pain, nausea and diarrhea. The pain was initially localized to the peri-umbilical region but later migrated to the right upper quadrant. He denied prior diagnosis of hepatitis, intravenous drug or acetaminophen use, but acknowledged occasional alcohol intake. His only medication was 1000 mg of twice daily metformin and he had no family history of autoimmune disease. Upon further questioning, he reported a two-week consumption of the over the counter herbal cinnamon pills "to help" with his diabetes. He had right upper quadrant tenderness with a palpable liver edge 5 cm below the right costal margin. Abnormal admission labs included an AST of 969 U/L, an ALT of 724 U/L, an alkaline phosphatase (ALP) of 155 U/L and a total bilirubin of 1.3 mg/dL. Other laboratory values including amylase, lipase, antinuclear antibodies and INR were within normal limits and an acute viral hepatitis panel and HIV test were negative. Abdominal ultrasound revealed hepatomegaly with fatty infiltration. He was advised to discontinue the herbal cinnamon supplements and by hospital day 4 his abdominal pain had resolved with AST/ALT and ALP levels decreasing to 319, 447 and 99 U/L, respectively. Three weeks later, liver enzymes returned to normal (AST 40, ALT 40, ALP 65 U/L) and a repeat hepatitis panel was non-reactive. A repeat abdominal ultrasound showed diminished hepatomegaly with resolution of the fatty infiltrates.
DISCUSSION: The general internist should be aware that the use of over the counter herbal supplements has rapidly grown in popularity during recent years. Use of cinnamon, in particular, has risen amid recent reports of its ability to decrease blood glucose, serum triglyceride and low-density lipoprotein levels. While the benefit of cinnamon supplementation may be real, unfortunately many herbal supplements are not composed of pure cinnamon. Rather they contain cassia cinnamon, which is known to have substantially larger quantities of a potentially toxic substance, coumarin. Whereas regular cinnamon contains low levels of coumarin (0.5 % and under), cassia cinnamon can contain up to 5 % coumarin. Approximately 20 cases of coumarin-induced hepatitis have been documented in the past 20 years, with occurrence following both long term (>2 years) and short term (<3 weeks) ingestion. Resolution of hepatitis with a return to normal transaminase levels has been reported to occur within 4–8 weeks following discontinuation of cinnamon supplementation. As herbal

supplements and other "organic" substances become increasingly popular, the importance of obtaining a detailed history of over-the counter medication use cannot be overstated. It is important to keep in mind that "natural" does not necessarily mean "harmless."

SAME OLD PNEUMONIA OR IS IT? Rajan Garg; Mher Onanyan; Syed Asghar. CAPITAL HEALTH REGIONAL MEDICAL CENTER, Trenton, NJ. (Tracking ID #1641868)

LEARNING OBJECTIVE 1: Early consideration of Idiopathic Interstitial Pneumonias in differential diagosis of patients presenting with signs and symptoms of lower respiratory tract infections
LEARNING OBJECTIVE 2: Diagnostic studies including Procalcitonin level, HRCT, and BAL with possible trans-bronchial biopsy and high dose steroid therapy should be considered early in patients with suspected Idiopathic Interstitial Pneumonia.
CASE: Patient is a 63 year old white male with history of DM, Hypertension, and Atrial Fibrillation who presented to the ED with 2–3 days history of productive cough, chills, generalized weakness, and a choking spell while eating recently. Patient is a lifetime non-smoker and reported no chemical exposure. Patient had no fever, acute respiratory distress, but had bilateral coarse breath sounds on examination. Initial chest x-ray showed bilateral lower lobe infiltrates and patient had mild leukocytosis. Patient was admitted for possible community acquired/aspiration pneumonia and started on appropriate antibiotics. Patient continued to deteriorate over next 2 weeks despite aggressive empirical antibiotics, IV steroids, and supportive care with non-invasive positive pressure ventilation. Bilateral lung infiltrates worsened and HRCT obtained showed extensive bilateral ground glass opacities with interstitial fibrosis, without bronchiectasis. Echocardiogram done showed normal cardiac function. All lab studies including blood, sputum cultures and autoimmune antibodies were reported negative. Due to worsening condition, patient was electively intubated for scheduled lung biopsy for further diagnosis but he became unstable during procedure and it was aborted. Due to patient's worsening medical condition and poor overall prognosis, patient was terminally extubated as per his wishes and patient passed away the same day. Limited lung autopsy obtained as per family's wishes reported diffuse alveolar damage with foamy macrophages consistent with idiopathic interstitial pneumonia.
DISCUSSION: Pneumonia is a common condition that we, as physicians, encounter on a regular basis. Although most of the pneumonias are infectious in origin, suspicion for Idiopathic Interstitial Pneumonias including Acute Interstitial, Cryptogenic Organizing Pneumonia, Lymphoid, Desquamative types, to name a few, should be high if patient doesn't show signs of recovery with antibiotic therapy. Diagnostic studies including Procalcitonin level, HRCT, and BAL with possible trans-bronchial biopsy should be considered early in appropriate patient population for further diagnosis. High dose steroids and Macrolide antibiotics are the only therapeutic measures shown to improve survival in patients with suspected idiopathic interstitial pneumonias.

SATISFYING AN ITCH FROM THE INSIDE OUT Matthew N. Peters; Morgan J. Katz; Allison Egan; Deepa Bhatnagar. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1641319)

LEARNING OBJECTIVE 1: Review the diagnoses associated with chronic urticaria.
LEARNING OBJECTIVE 2: Recognize the association between Helicobacter pylori infection and chronic urticaria and the potential for improved patient comfort with Helicobacter pylori eradication.
CASE: A 34 year-old woman with a 4 year history of intermittent chronic hives and gastroesopheal reflux disease (GERD) presented with a 4 day history of worsening urticaria. She had undergone multiple non-revealing skin and allergen tests, and described a typical outbreak as a sudden appearance of itchy and burning red marks across her chest, abdomen and bilateral thighs and buttocks. The outbreaks occurred several times a month. She was unable to identify exacerbating factors and had tried multiple over the counter topical creams and ointments without relief. She also had a 3 year history of acid reflux and abdominal discomfort. Home medications included hydroxyzine and esomeprazole. Family history was notable for systemic lupus erythematosus (SLE) in her mother. Despite persistent itching and burning, physical exam failed to detect any skin lesions. She had pictures of an outbreak from the previous day, revealing multiple round, circumscribed, raised erythematous plaques across her abdomen and thighs. Baseline laboratory testing was unremarkable and an extensive panel of autoiummune tests was negative; skin biopsy was not performed due to lack of visible lesions. Helicobacter pylori (H. pylori) IgG and IgM serology were both positive. Subsequent upper endoscopy showed multiple superficial erosions in the gastric body and antrum. Biopsy of these erosions revealed the presence of H. pylori. Patient was started on twice daily 600 mg Clarithromycin and 1 g Amoxicillin in addition to twice daily 20 mg omeprazole for 14 days. Three months following completion of therapy the patient has noted complete resolution of urticarial symptoms; her longest symptom-free interval since her initial onset 4 years ago.
DISCUSSION: Affecting up to 1 % of the population, chronic urticaria (CU) is a common and frustrating condition for patients and physicians. Despite being typically managed by dermatologists, general internists are confronted with the task of identifying potential exogenous causes of CU. While finding an underlying cause of CU is daunting (successful in 20 % of cases), unmasking an underlying systemic disease may improve CU-associated symptoms and prevent future morbidity and mortality. Common associated conditions include H. pylori, Sjogrens syndrome, SLE, rheumatoid arthritis, cryoglobulinemia and hypothyroidism. Due to the ubiquitous occurrence of H. Pylori, (25 % of the population in industrialized countries and higher in developing areas), the link between H. pylori and CU is of particular interest. Due to a lack of large clinical trials, the association between CU and H. pylori is still controversial. H. pylori has been found to occur 2–3 times more frequently in patients with CU and subsequent eradication has demonstrated a 2-fold increase in remission, compared to untreated H. pylori positive patients. The most commonly speculated mechanism of H. pylori-associated CU is chronic infection leading to increased gastric acid and pepsin release; this prompts recruitment of inflammatory cells (mainly lymphocytes and neutrophils), subsequently inducing mast cell degranulation and histamine release. Recognition of H.pylori-associated urticaria may lead to improved urticarial symptoms and earlier identification and eradication of H.pylori.

SAVE ME FROM MYSELF: EBV-ASSOCIATED HEMOPHAGOCYTOSIS IN AN ADULT Jacqueline Pflaum; Sean Drake; Gregory Buran. Henry Ford Hospital, Detroit, MI. (Tracking ID #1623737)

LEARNING OBJECTIVE 1: Diagnose HLH using published criteria and recognize early diagnosis as key in initiating therapy and lowering risk of mortality
LEARNING OBJECTIVE 2: Identify this recovery without initiation of HLH 94 protocol as unique
CASE: A 27 year-old female was transferred to our teaching institution from an outside hospital with a fever of unknown etiology, lymphadenopathy, hepatosplenomegaly, jaundice and a maculopapular rash. Two weeks prior she had been seen at an urgent care clinic for subjective fevers and cough, and was discharged under the diagnosis of viral illness. The following week, she continued to have fevers with malaise and presented to an outside ED. At that time, she was presumed to have pneumonia and treated with amoxicillin/clavulanate and discharged home. Two days after initiation of the antibiotic, the patient presented to her PCP's office with jaundice and was switched to cefuroxime; she then developed a maculopapular rash and was

admitted to the hospital. At the outside hospital she was discovered to have elevated liver enzymes, thrombocytopenia, anemia, leukocytopenia and hepatomegaly with EBV positive IgM and IgG. CMV and viral hepatitis panels were negative. The patient was transferred to our hospital for evaluation of acute liver failure. Upon arrival, she was jaundiced with a maculopapular rash and a rapid rise in AST/ALT levels. Due to a suspicion for Hemophagocytic Lymphohistiocytosis (HLH), triglyceride and ferritin levels were drawn and came back extremely elevated, peaking at 723 mg/dL and 36,151 respectively. She remained febrile and was transferred to the ICU for more intensive monitoring; there she received IV dexamethasone and several platelet and PRBC transfusions. Bone biopsy was performed with inconclusive, but highly suspicious results, showing an increase in phagocytic macrophages and a granulocytic shift with marked toxic changes. At that time, liver enzymes were improving and fever had resolved, and HLH-94 treatment protocol was held due to clinical improvement with steroids alone. She was discharged on day #16 after liver enzymes normalized and coagulopathy, rash, jaundice and thrombocytopenia resolved.

DISCUSSION: There are two forms of HLH: inherited, which typically occurs in the pediatric population, and sporadic, which is most frequently associated with EBV but has been associated with other viruses. Due to higher prevalence of these viruses in Asia, most virus-associated case studies come out of that area. Very few cases of adult EBV-associated HLH have been reported in the US. The diagnosis can be elusive, and is typically defined via the following set of criteria: fever >38.5 for 7 or more days, splenomegaly >3 cm, cytopenia involving two or more cell lines, hypertriglyceridemia or hyperfibrinogenemia, and hemophagocytosis on bone marrow biopsy. The exact mechanism of disease is not clearly understood, but it is believed to be uncontrolled proliferation of cytotoxic T-cells and malfunctioning NK cells. Successful treatment usually involves initiation of the HLH-94 protocol (etopiside, dexamethasone and cyclosporine A followed by a stem cell transplant) within 2 weeks of diagnosis; however, the drugs can have long-term neurotoxic and cytotoxic side effects, making the decision to treat difficult but crucial.

SCEDO-SEIZURES Priti Dangayach; Himabindu Kadiyala. Baylor College of Medicine, Houston, TX. (Tracking ID #1638096)

LEARNING OBJECTIVE 1: Recognize scedosporium apiospermum as a rare fungal organism that affects the immunocompromised

LEARNING OBJECTIVE 2: Recognize the importance of culture to distinguish between aspergillis and scedosporium

CASE: A 64-year-old man with an orthotopic liver transplantation on chronic immunosuppressive medication presented with diarrhea of 3 weeks duration. The patient had a history of hepatitis C and alcoholic cirrhosis; he subsequently developed hepatocellular carcinoma. On presentation, he reported non-bloody, watery bowel movements, five to six times daily for 3 weeks. He complained of midepigastric cramping, anorexia, 10 lb of weight loss, intermittent fevers to Tmax 102 F, but no nausea or vomiting. On examination, he was afebrile. He was non-toxic appearing, anicteric, with dry mucous membranes. His abdomen was soft, nontender, and nondistended with bowel sounds. No abdominal masses were palpated. A rectal fissure was noted. During his hospitalization, he remained NPO, given fluids, and started empirically on vancomycin and piperacillin/tazobactam. His blood, stool, and urine cultures all remained negative. His diarrhea did not improve with cessation of eating or with loperamide. Home medications including magnesium oxide, ursodiol, tacrolimus, and mycophenolate mofetil were all held given persistence of diarrhea and acute renal failure. EGD and flexible sigmoidoscopy was performed and showed multiple large, shallow ulcerations throughout the colon. He was then started empirically on IV ganciclovir for possible CMV colitis, again without improvement. Repeat colonoscopy showed persistent multiple ulcerations throughout the colon and biopsies revealed acute inflammation without evidence of malignancy and immune-histochemical stains and PCR were negative for HSV or CMV. Despite continued treatment with IV ganciclovir, 2 weeks into his hospitalization, his diarrhea had not improved. He then developed new generalized tonic clonic seizures. A head MRI revealed a ring-enhancing left frontal lobe mass. Brain biopsy showed necrosis and acute inflammation with septate branching fungal hyphae, confirmed by silver stain. He was started on IV voriconazole with concern for neuroinvasive aspergillosis. His repeat MRI after 1 week showed worsening of the brain abscess cavity, and he underwent left frontal lobectomy. Biopsy revealed fungal organisms on H&E and PAS stains. Culture identified these as Scedosporium apiospermum, which appears morphologically similar to aspergillis. PAS stains were performed on his colonic biopsies, which revealed fungal hyphae, and he was diagnosed with disseminated disease with scedosporium. After several weeks on voriconazole, his repeat colonoscopy showed healing of the ulcers and his symptoms improved.

DISCUSSION: This case highlights the importance of suspecting opportunistic fungal pathogens such as Scedosporium apiospermum in immunocompromised patients. Scedosporium species is found ubiquitously in the environment. Both scedosporium and aspergillis are septate, non-pigmented hyphae, branching at 45° angle. They are distinguished by culture. Based on case reports, treatment with voriconazole, alone or in combination with another antifungal agent is favored given ability to cross the blood–brain barrier. It is important to distinguish between these two pathogens as scedosporium is resistant to amphotericin B, most azoles, and echinocandins. Overall, there is an extremely poor prognosis.

SEASONAL RECURRENT MYOPERICARDITIS Laura Divoky; Rex Wilford. Summa Health System, Akron, OH. (Tracking ID #1642291)

LEARNING OBJECTIVE 1: Recognize the clinical features of recurrent myopericarditis

LEARNING OBJECTIVE 2: Manage cases of recurrent myopericarditis

CASE: Myopericarditis occurs in up to 15 % of patient with pericarditis. Recurrent myopericarditis occurs in 15–30 % of patients after partial or complete recovery from acute myopericarditis. Relapse occurs most often within 1 month of initial episode. We present a case of seasonal recurrent myopericarditis. An African American male presented to the emergency department with chest pain in November 2010, 2011 and 2012. The first occurrence was November 2010 when at age 32 he presented with a 3 day history of a dull, aching left sided chest pain that was exacerbated when laying supine. The chest pain radiated to the center of his chest and down his right arm. His past medical history was herpes labialis and chronic hepatitis B. Past surgical history and family medical history were noncontributory. Medication was acyclovir for herpes labialis suppression. He had no know drug allergies, a 13-pack year smoking history, drank alcohol socially and smoked 3 marijuana cigarettes per day. Vitals were significant for a temperature of 101.3 and heart rate 110. Physical exam was only significant for anterior chest wall tenderness and heart was tachycardic, but no friction rub was heard. Significant lab work included a mildly elevated monocyte count, ESR of 33 mm/hr and CRP of 17.20 mg/dL. Troponin was elevated at 10.99 ng/mL, with no change at repeat checks. Hepatitis B surface antigen was positive, other viral testing including HIV screen was negative. Autoimmune work-up was negative. EKG had subtle upward sloping T-wave in anterior precordial leads and subtle PR depression in the inferior leads. A left cardiac catheterization showed no evidence of significant coronary artery disease and an ejection fraction of 55 %. Echocardiogram had mild concentric left ventricular hypertrophy with normal left ventricular function. He was treated with high dose NSAIDS and colchicine and discharged home on NSAIDs as he was unable to afford colchicine. He presented in November 2011 and in November 2012 with very similar clinical courses and symptoms which responded to NSAIDs.

DISCUSSION: The etiology of myopericarditis is divided into: infectious, non-infectious, and immune-mediated. Hepatitis B is a reported cause of myopericarditis. This could be a component of his recurrent myopericarditis, although it is interesting at the three-year seasonal recurrence in November. The standard of care is initial treatment with non-steroidal anti-inflammatory drugs for duration of 10–14 days. Colchicine for 3 to 6 months can be administered for resistant chest pain due to myopericarditis. Extensive review of the literature shows no other case reports of seasonal recurrent myopericarditis. The question posed in an individual with apparent seasonal myopericarditis 3 years in a row in November: is there a role for seasonal prophylactic treatment? Given the severe chest pain requiring hospitalization it may prove beneficial in individuals with seasonal recurrent myopericarditis to start NSAIDS or colchicine prior to symptom occurrence.

SEPTIC THROMBOPHLEBITIS AND OSTEOMYELITIS IN A PATIENT WITH MYCOSIS FUNGOIDES Jeffrey J. Hsu. University of California, San Francisco, San Francisco, CA. (Tracking ID #1642117)

LEARNING OBJECTIVE 1: Recognize bacteremia as one of the major complications of mycosis fungoides
CASE: The patient is a 64-year-old man with a history of mycosis fungoides (MF) who presented with a chief complaint of debilitating back pain for the previous 10 days. Six years prior, he developed bouts of pruritic rashes on his limbs and torso. Initial biopsies suggested a spongiotic dermatitis, and he was treated with topical and systemic corticosteroids. His symptoms progressively worsened over the ensuing years, and a subsequent biopsy revealed MF. He underwent a chemotherapy regimen of cyclophosphamide, doxorubicin, vincristine and prednisone (CHOP) through a Port-a-cath in his left chest. CHOP was discontinued after two cycles due to erythroderma, and he was started on methotrexate 9 months prior to his presentation. On examination, he was afebrile, normotensive and tachycardic. His cardiac, pulmonary and neurological exams were otherwise normal. He had a diffusely tender, erythematous and flaky skin rash, worse over his upper extremities and chest, and his left arm was markedly edematous. An ultrasound of his left arm revealed a deep venous thrombosis of his left internal jugular and subclavian veins, and his Port-a-cath was subsequently removed. An MRI of his neck revealed inflammation around his left internal jugular vein, suggesting septic thrombophlebitis. An MRI of his spine suggested osteomyelitis of his T8 vertebral body with extensive phlegmonous changes in the prevertebral space extending from the cervical to thoracic spine. A CT angiogram of his chest did not reveal any pulmonary emboli, and a transthoracic echocardiogram did not show any valvular abnormalities. Peripheral blood cultures drawn on admission, as well as a culture of the catheter tip, grew methicillin-sensitive Staphylococcus aureus (MSSA). Repeat blood cultures were also positive for MSSA. He was treated with enoxaparin anticoagulation and a planned six-week course of intravenous nafcillin, and his blood cultures did not clear until hospital day 6. Topical steroids were applied to his skin rash with slight improvement. He was discharged home on hospital day 15 with scheduled follow-up with Oncology and Dermatology.
DISCUSSION: Cutaneous T cell lymphoma (CTCL) is the most common primary lymphoma of the skin and has an annual incidence of 6.4 per million persons in the United States. The most common variant of CTCL is MF, which presents cutaneously as patches, infiltrated plaques, tumors or generalized erythroderma. These lesions are commonly initially diagnosed as a benign dermatitis, leading to a delay in the diagnosis of MF; the median time from symptom onset to the diagnosis of MF is 3–4 years. Because of their disrupted protective skin barrier and the potential immunosuppression that can occur from systemic lymphoma, patients with CTCL are at increased risk of bacterial infection, which is the major cause of morbidity and mortality in this population. In one retrospective study, bacteremia had an incidence of 2.1 per 100 patient-years, with S. aureus as the predominant pathogen, and was a major cause of death in these patients. In the case above, the indwelling catheter itself clearly increased the patient's risk of septic thrombophlebitis. Yet his risk was likely compounded by his MF and its tendency to predispose patients to bacteremia. Thus, in patients with MF, it is especially crucial to be vigilant in monitoring for infection and minimizing the presence of intravascular lines.

SEVERE MITRAL STENOSIS IN THE SETTING OF MULTIVESSEL CORONARY ARTERY DISEASE, PULMONARY HYPERTENSION, AND TRICUSPID REGURGITATION Vu Hoang; Don Pham; Anita Deswal. Baylor College of Medicine, Houston, TX. (Tracking ID #1642230)

LEARNING OBJECTIVE 1: Diagnose mitral stenosis when echocardiographic data is unclear or conflicting
LEARNING OBJECTIVE 2: Evaluate and manage mitral stenosis in the setting of atrial fibrillation, pulmonary hypertension, multivessel coronary artery disease, and multivalvular disorder
CASE: This is a 64 year old man with history of coronary artery disease with previous coronary artery bypass graft surgery, atrial fibrillation on anticoagulation therapy, moderate calcific mitral stenosis, left ventricular dysfunction, and pulmonary hypertension who presented with progressive shortness of breath, cough, and fatigue. Six months ago, patient was able to walk about 1 block before getting short of breath, however now just moving around in his bed caused him to be short of breath. Vital signs were significant for blood pressure of 105/57, heart rate of 99, and pulse oximetry of 95 % on 2 l of oxygen. Physical examination was noted elevated jugular venous distention to mid-neck, irregularly irregular rhythm, bilateral rales, and 1+ bilateral lower extremity edema. He was treated with warfarin, metoprolol, digoxin, valsartan, amlodipine, and intravenous bumetanide. Due to persistent symptoms despite maximum medical therapy, patient was referred for further imaging evaluation. Transthoracic echocardiogram demonstrated left ventricular ejection fraction between 55 % and 60 %, flattened septum, and severe left atrial enlargement. Furthermore, there was severe mitral annular calcification, extending to the base of the posterior mitral valve leaflet. There was severe tricuspid regurgitation and pulmonary artery pressure was between 69 and 74 mmHg. Left heart catheterization findings showed native vessels with three-vessel disease, 100 % complete total occlusion of the distal LAD, 90 % stenosis of the distal circumflex and 100 % complete total occlusion of the proximal RCA. Bypass grafts findings had 50 % stenosis of SVG and atretic LIMA. Right heart catheterization showed right atrial pressure of 22 mmHg, pulmonary artery pressure of 66/37 mmHg, and mean of 46 with heart rate of 80. Pulmonary wedge pressure was 37 mmHg. Mitral valve study showed mean gradient of 10.53 mmHg, valve area of 1.4 cm2 with severe stenosis.
DISCUSSION: Mitral annular calcification (MAC) is usually not a common cause of severe mitral stenosis. However when it occurs in the presence of severe coronary artery disease, pulmonary hypertension and multi-valvular disease, there can be a dilemma in management. There is no strong evidence regarding the timing of surgical intervention for mitral stenosis. It is reasonable to intervene once symptoms are more than mild and ideally before pulmonary hypertension develop. However, in the presence of multi-vessel disease, patient would need to be optimized first. Aortic regurgitation and tricuspid regurgitation both frequently accompany mitral stenosis. Double and triple valve replacement significantly increases risk of mortality. However, if mitral stenosis is deemed the only correctable pathology, then mortality rate should not be prohibitive. Pulmonary hypertension is usually reversible after mitral stenosis is relieved.

SEVERING YOUR LIFELINE Jerson Munoz-Mendoza[1]; Veronica A. Pinto Miranda[1]; Amit Badiye[2]; Sandra V. Chaparro[2]. [1]University of Miami - Jackson Memorial Medical Center, Miami, FL; [2]University of Miami, Miami, FL. (Tracking ID #1636506)

LEARNING OBJECTIVE 1: Recognize the importance of regular psychological monitoring and support before and after LVAD implantation
LEARNING OBJECTIVE 2: Recognize unrecognized/untreated psychiatric disease as potential cause of failure of the therapy
CASE: A 47-year-old female with end-stage non-ischemic dilated cardiomyopathy underwent HeartMate-II LVAD implant 3 years ago at outside hospital. She had chronic infection of the driveline exit site post-operatively and suffered a left middle cerebral artery ischemic stroke with residual right sided paralysis and mild Broca's aphasia. Subsequently she became more bipolar, non-compliant and started smoking again. She presented to the ER requesting for dressing change. On exam the driveline was found to be cut and was protruding from abdomen with erythema and foul smelling pus. On further interview, patient said she intentionally cut it a week ago as "she was fed up of it and knew she didn't need it". She had stable vital signs despite the non-functioning LVAD. TEE revealed no flow in the inflow and outflow conduit. Ejection fraction was severely reduced to 15 %. Her noncompliance may have led to the clotting of entire conduit. This proved advantageous when she cut her driveline preventing significant backflow. Psychosocial evaluation revealed lack of decision making capacity and psychosis. She was treated conservatively and subsequently suffered multi-organ failure at another hospital.
DISCUSSION: Left ventricular Assist Devices (LVADs) are an effective form of therapy in patients with end-stage heart failure, according to the results of the landmark REMATCH trial. We present a unique case of an adverse outcome, where psychosocial problems dominated the post-implant care and lead to a grave decision by the patient. This is the first reported case where a patient, who developed psychosis 3 years after LVAD implantation, cut the LVAD driveline or "life line", threatening her life, fortunately the entire LVAD conduit was clotted already at the time when the driveline was cut. This case highlights the need of in-depth psychosocial evaluation of these patients who require complex decision making by a multi-disciplinary team not only regarding candidacy for LVAD, but the need for regular and long term psychological support after LVAD implantation, as psychological or psychiatric conditions may worsen or occur de novo in this unique patient population. Failure to address these variables is associated with increase morbidity and mortality post LVADs implantation.

SEXUALLY TRANSMITTED PROCTITIS Elena Lebduska. Montefiore Medical Center, Bronx, NY. (Tracking ID #1642560)

LEARNING OBJECTIVE 1: Identify the differential diagnosis of acute proctitis in men who have sex with men
LEARNING OBJECTIVE 2: Recognize the clinical presentations of proctitis caused by different chlamydial serovars
CASE: A 49 year-old male with HIV (on anti-retrovirals, undetectable viral load) presented with 1 week of rectal pain. He noted some white drainage from his rectum occasionally streaked with blood, constipation, and pain with defecation. On examination he had no external rectal or genital lesions, but he did have pain with digital rectal examination, and inguinal lymphadenopathy was noted. He reported being treated for syphilis in the past, but denied a history of any other sexually transmitted diseases. He endorsed being sexually active with men only. Radiography of his pelvis revealed marked mural thickening of the rectum with perirectal lymphadenopathy. On subsequent sigmoidoscopy multiple rectal ulcers with white exudates were seen, consistent with a diagnosis of proctitis. Pathologic examination of the biopsied ulcers reveled colonic mucosa with ulceration, while immunostains for cytomegalovirus and herpes simplex virus were negative. Pcr probe of rectal discharge was positive for chlamydia, but negative for gonorrhea. The patient was started on doxycycline with improvement in his symptoms by day 4.
DISCUSSION: Acute proctitis in men who have sex with men is usually sexually acquired. The most common sexually transmitted infections causing proctitis are: N. gonorrhoeae, C. trachomatis, T. pallidum, and herpes simplex virus. The majority of chlamydial infections in men are asymptomatic. Symptomatic infections usually cause urethritis and epidemitis. Chlamydial proctitis is relatively uncommon and occurs almost exclusively in men who have sex with men. The clinical presentations of this illness depends on the infecting chlamydial serovars. Serovars D-K are usually asymptomatic but may cause a mild proctitis. Alternatively, chlamydial serovars L1, L2, and L3 cause the disease known as lymphogranuloma venereum. In contrast to mild proctitis, rectal inoculation with these serovars can cause significant rectal pain, tenesmus, bleeding, and constipation. Anocsopy usually reveals internal friable lesions, ulcers, and exudates. Untreated these strains can cause rectal fistulas and strictures, and can even be mistaken for inflammatory bowl disease. Outbreaks of lymphogranuloma venereum among men who have sex with men occurred in North America and Europe in the mid 2000s. Concern for rapid identification and treatment of this disease among high risk populations is of importance for the generalist, since the rectal lesions associated with infection increase the likelihood of HIV transmission. Serovar testing is not widely available, and high clinical suspicion should prompt early treatment and monitoring for clinical improvement. Doxycycline 100 mg twice a day for 3 weeks is the current standard of care.

SHORT OF BREATH? CALL THE NEUROSURGEON. Rupel Dedhia; Daniela Uebelhart. Rush University Med Center, Chicago, IL. (Tracking ID #1619837)

LEARNING OBJECTIVE 1: Review the main causes of unilateral diaphragmatic paralysis
LEARNING OBJECTIVE 2: Discuss current treatment options for patients with unilateral diaphragmatic paralysis
CASE: 75 year-old female with history of COPD, right lung nodule, obesity, HTN, CAD, cervical spine osteoarthritis who presented with a two-month history of worsening shortness of breath with associated productive cough. She denied fever, chills, chest pain, orthopnea, or lower extremity edema. Patient had received two courses of steroid therapy for possible COPD exacerbations without symptomatic improvement. Pulmonary exam revealed decreased breath sounds in the left lung base without rales or wheezing. Chest x-ray revealed new elevation of the left hemidiaphragm. An Ultrasound Sniff test revealed minimal downward movement of the left hemidiaphragm, suggesting left diaphragm paralysis. Chest CT showed stable right lung base nodule and new left base atelectasis with left hemidiaphragm elevation. Patient had known moderate spinal canal stenosis in C3–C4 and bilateral foraminal stenosis at C4–C5 possibly contributing to this patient's UDP. Patient has been evaluated by Neurosurgery; however, surgery has been deferred at this time due to her medical co-morbidities. Patient has been medically optimized on her therapy for COPD and is closely followed in the General Medicine and Pulmonary Clinic.
DISCUSSION: The diaphragm is the chief muscle of inspiration. It is innervated by the phrenic nerve, which arises from the nerve roots C3–C5. The differential diagnosis of diaphragm paralysis (DP) is therefore broad and includes compressive, traumatic, neurogenic, myopathic, and inflammatory conditions. UDP is more common than bilateral diaphragm paralysis (BDP). While asymptomatic in healthy individuals, UDP can cause significant compromise in patients with underlying lung disease. The most prevalent symptoms include dyspnea and diminished exercise tolerance. Diagnosis of UDP is

strongly suggested by the presence of an elevated hemidiaphragm on chest radiograph. A sniff test, wherein diaphragmatic motion is recorded by fluoroscopy, is frequently used for confirmation. Ultrasonography has been recently described as a method of diagnosis, through evaluation of diaphragm thickness. Once UDP is confirmed, it is important to exclude major intra-thoracic pathologies such as malignancies or infections. Observation is recommended for asymptomatic patients with a negative workup. In symptomatic patients, surgical plication of the diaphragm is the most common treatment. When cervical spondylosis is the causative mechanism, reports suggest that laminectomy may be effective. Diaphragmatic pacemakers can be used to stimulate contraction in patients with an intact phrenic nerve and has mainly been used in ventilator dependent patients. Repair of the phrenic nerve has been reported and its benefits are yet to be elucidated.

SHOSHIN BERIBERI IN A YOUNG MAN LIVING ON JAPANESE RICE BALLS Chiaki Murase; Naomi Otowa; Jintetsu Minami; Yoshitomo Nishikawa; Hiroshi Miyake; Hisashi Umeda; Mitsunori Iwase. TOYOTA Memorial Hospital, Toyota, Japan. (Tracking ID #1626158)

LEARNING OBJECTIVE 1: Review clinical features of wet beriberi.
LEARNING OBJECTIVE 2: Note that fatal vitamin deficiency could occur as a result of an unbalanced diet.
CASE: A 24-year-old single man was in his usual state of health until 3 days before admission when he noticed chest pain and shortness of breath. On the day of admission, he called for an ambulance for his worsening dyspnea. En route to the hospital, the patient went into cardiopulmonary arrest and resuscitation was provided. Fortunately, his pulse came back in 4 min. On arrival, the patient was disoriented and was unable to provide history. Vital signs were; BT 35.2 °C, BP 70/15 mmHg, HR 75 beats/min, RR 30 breaths/min. On physical exam, he had systemic edema, central cyanosis and hyporeflexia. Serum albumin level was 4.0 g/dL and BNP was 2,305 pg/mL. Arterial blood gas showed marked lactic acidosis with pH 6.80, pCO2 23.4 mmHg, pO2 397.0 mmHg, HCO3- 3.4 mmol/L, and lactate 26.4 mmol/L. He was intubated and catecholamines were administered. An electrocardiogram showed complete right bundle branch block and flat T-wave in the inferior leads. A chest radiograph revealed prominent pulmonary trunk and moderate cardiomegaly, although a contrast-enhanced CT of the chest was negative for pulmonary embolism. An echocardiogram showed enlarged right ventricle with intraventricular septal flattening and tricuspid regurgitation. The cardiac index was 9.8 L/min/m2, suggesting high cardiac output state, and the mixed venous oxygen saturation was 91.7 %. From these findings, thiamine deficiency was suspected as one of differential diagnosis and thiamine was administered. His hemodynamic parameters improved dramatically in only 3 h after the administration of thiamine. Within a few days, hemodynamical findings returned to normal. Systemic edema had also subsided and his BMI at this point was 17.4. His pre-treatment thiamine level was as low as 17 ng/mL (normal: 24–66 ng/mL), and the patient was diagnosed with "Shoshin" beriberi. A thorough history was obtained after he had regained consciousness. He had no significant past medical history and was not taking any medications, drank alcohol on social occasions, had never smoked tobacco or used illicit drugs. The patient lived alone and due to his financial problems, he had been subsisting on rice balls made of only polished rice for the preceding 4 years. On the 23rd day of admission, he was discharged home in excellent general condition without any residual symptoms.
DISCUSSION: A fulminant form of wet beriberi is called "Shoshin" beriberi and is characterized by hypotension, tachycardia, and lactic acidosis. If left untreated, patients may die from cardiopulmonary collapse within hours after the onset of symptoms. Due to the complexity of the clinical presentation and the lack of rapid diagnostic tests, thiamine deficiency is still being underrecognised, especially among young non-alcoholic patients. In our patient, we first suspected pulmonary embolism from the echocardiographic findings but it was ruled-out by the contrast-enhanced CT. Remarkable hypotension with a wide pulse pressure suggested decreased vascular resistance in a high-output state. It is essential that we do not miss the opportunity for early intervention and thiamine should be administered as soon as clinical suspicion for thiamine deficiency arises.

SILENT SQUEEZE: ABDOMINAL OBSTRUCTION FROM REPEATED PERICENTESIS Omar Ahmad. Capital Health Regional Medical Center, Somerset, NJ. (Tracking ID #1643217)

LEARNING OBJECTIVE 1: Improvement in the assessment and management of an atypical cause of intestinal obstruction in an End Stage Liver Disease(ESLD) patient with past history of multiple paracentesis.
CASE: A 55 year-old African American male was admitted with complaints of diffuse abdominal pain and diarrhea for 2 days. Past medical history included end stage liver disease secondary to alcohol abuse, and refractory ascites treated with multiple paracentesis and medication such as spirinolactone, propranolol and furosemide. Physical exam revealed a tender distended abdomen with ascites. A computed tomogram (CT) of the abdomen demonstrated a complex loculated cyst in the anterior abdominal wall with ascending and descending colon wall thickening. After ruling out spontaneous bacterial peritonitis, a follow up ultrasound of the abdomen demonstrated a small pocket of fluid with multiple loculations and septations in the anterior abdomen. Later, the patient developed symptoms of obstruction. Despite nasogastric tube placement for decompression, his obstructive symptoms persisted. An obstructive series and a repeat abdominal CT scan showed dilated small bowel loops, suggestive of small bowel obstruction without any prominent lymphadenopathy suggesting cancer. A decision was made for an emergent exploratory laparotomy during which small bowel loops were found encased in a thick whitish membrane. The patient became too unstable to completely dissect the fibrous tissue. Microscopy of the specimen showed a fibrocollagenous tissue consistent with encapsulating peritoneal sclerosis. The Patient did not respond to steroids while in the ICU and remained on mechanical ventilation. With no clinical improvement the patient was made comfort measures and terminally extubated.
DISCUSSION: Intestinal obstruction normally is a result of adhesions from prior surgery, past intrabdominal or pelvic trauma or an encroaching neoplastic mass. In an ESLD patient that presented with abdominal pain and obstruction, infection and neoplasm first comes to mind. It has been hypothesized that repeated paracentesis can alter the peritoneal membrane structure in a similar manner as peritoneal dialysis which can result in gross interstitial thickening of the membrane with fibrotic changes and loss of mesothelial cells due to repeated irritating stimuli. This fibrous change of the serous membrane of the peritoneum resulting in diffuse adhesions can lead to obstruction. This condition is known as encapsulating peritoneal sclerosis (EPS) or cocoon syndrome. Patients with ESLD with a history of multiple paracentesis presenting with abdominal obstruction after ruling out more common causes should be evaluated for EPS. Patients at risk of this condition are already in a fragile state. Successful treatment depends on recognizing key past historical events with clinical symptoms and imaging. Early surgical intervention and the use of tamoxifen with corticosteroids have been postulated to improve outcome.

SIXTH CRANIAL NERVE PALSY AS AN UNUSUAL PRESENTING SYMPTOM OF IPILIMUMAB-INDUCED HYPOPHYSITIS David Burgess; Kah Poh Loh; Shin Yin Lee; Syed Ali. Baystate Medical Center, Springfield, MA. (Tracking ID #1645144)

LEARNING OBJECTIVE 1: Recognize ipilimumab as a recently approved drug for the treatment of metastatic melanoma
LEARNING OBJECTIVE 2: Recognize hypophysitis as a common immunological side-effect of ipilimumab
CASE: A 72-year-old man presented with progressively worsening diplopia, associated with headache and fatigue. He denied any associated focal neurological weakness, parasthesias, facial droop, aphasia, fever, neck stiffness, nausea, or vomiting. Physical examination revealed medial deviation of his right eye. The rest of his neurological exam was unremarkable. No orbital swelling or erythema was noted. His medical history was notable for stage IIB malignant melanoma which was resected with sentinel lymph node biopsy. Due to high risk of recurrence, he was enrolled in the ECOG 1609 trial and was randomized to ipilimumab therapy. He had completed 3 cycles of therapy prior to admission. On admission his vitals were within normal limits. Laboratory investigations revealed evidence of hypopituitarism; he had significant hyponatremia, subclinical hypothyroidism, hypoprolactinemia, and low ACTH, LH and cortisol. MRI of the brain showed an asymmetrically enlarged pituitary gland without any evidence of extraocular pathology, suggesting cranial nerve compression as the cause of his diplopia. The patient was subsequently given IV corticosteroids, with rapid improvement of his diplopia, headache and hyponatremia.
DISCUSSION: Until recently, dacarbazine and high-dose interleukin-2 were the only therapies approved by the US Food and Drug Administration (FDA) for metastatic melanoma. However, in March of 2011, ipilimumab became the newest agent for this indication and is the only drug that has shown a clear survival benefit in clinical trials. This case is interesting in that it underscores the atypical presentation of ipilimumab-induced hypophysitis. Ipilimumab is a human monoclonal antibody directed against the cytotoxic T-lymphocyte antigen-4 receptor, thus enhancing T-cell activation and amplifying T-cell-mediated immunity. The most common side effects are autoimmune and include hypophysitis, dermatitis and colitis. Hypophysitis usually manifests as headache and/or symptoms of pituitary hormone deficiency. Ocular side effects are much less common, although there have been reports of extraocular muscle deficits associated with ipilimumab due to orbital myositis. In our patient, there was no evidence of extraocular myositis. His unusual presentation with diplopia was caused by compression of his sixth cranial nerve as it ran laterally to the enlarged pituitary gland; a direct result of ipilimumab-induced hypophysitis.

SLOW POISON Tanvir Haque. University of North Carolina, Chapel Hill, NC. (Tracking ID #1637278)

LEARNING OBJECTIVE 1: Identify risk factors for lead poisoning
LEARNING OBJECTIVE 2: Distinguish indications for treatment of lead toxicity
CASE: A 49 year old woman presented with a 1 month history of abdominal pain, bloating and fatigue. She reported no melena or hematochezia, while the pain was described as crampy. She had conjunctival pallor as well as bluish-grey discoloration of her lower gingival border. She had mild tenderness in the right upper quadrant without any peritoneal signs. She also had normal strength, reflexes and sensation. Basic laboratory data showed a hemoglobin of 6.8 g/dL with mean corpuscular volume of 104, aspartate aminotransferase of 185 U/L, alanine aminotransferase of 36 U/L, total bilirubin of 1.0 mg/dL. Anemia studies showed a folate of 2.0 ng/mL. Blood smear was significant only for hypersegmented neutrophils and macrocytosis. Ultrasound revealed a liver measuring 22 cm, cholelithiasis, but no biliary distention or choleducolithiasis. The patient did admit to significant use of moonshine, consuming 3–5 cups a day for the last year, and was supplied by an independent distiller. Given her history of heavy moonshine use, a lead level was checked, and was found to be elevated at 25 μg/dL. The use of chelation therapy was ultimately decided against given her mild symptoms and lead level less than 50 μg/dL.
DISCUSSION: This case is an example of the association of lead toxicity with the regular use of moonshine. While the majority of cases of lead poisoning in the United States stems from occupational exposures, namely manufacturing, construction and mining sectors, nonoccupational sources, such as contaminated food and liquids, still contribute a significant proportion of elevated blood lead levels in the US. The incorporation of lead into the alcohol stems from the distillation process, as often times car radiators or lead-soldered vessels are used for makeshift condensers. The contamination of moonshine with lead is particularly common in illicitly produced moonshine. In 2004, The US Bureau of Alcohol, Tobacco, and Firearms studied 115 samples of illicitly produced moonshine in the Eastern United States, and found that the median lead level was 44.0 μg/dL, with 28.7 % of samples containing lead levels >300 μg/dL, the limit defined as potentially hazardous by the Food and Drug Administration. Diagnosis is often pursued by clinical suspicion; in this case, the presence of lead lines in conjunction with her moonshine use and nonspecific symptoms of fatigue and abdominal pain influenced her testing. Treatment centers on elimination of the environmental source of lead, in this case, abstinence from further moonshine use. Regarding chelation therapy, it is generally recommended that therapy begin at lead levels of >50 μg/dL in symptomatic patients, and >80 μg/dL in asymptomatic individuals. As this case illustrates, screening for lead toxicity in patients who abuse moonshine is warranted, especially since symptoms can be very subtle and nonspecific. If left ignored, chronic lead exposure can often times lead to hypertension, anemia, chronic kidney disease, neuropathy, and neurobehavioral impairments.

SO BASIC! Harman S. Kular. Baylor college of medicine, Houston, TX. (Tracking ID #1642407)

LEARNING OBJECTIVE 1: Understand that Bulimia Nervosa can lead to severe electrolyte defencies and ultimately cardiac arrest.
LEARNING OBJECTIVE 2: Recognize the importance of screening tools for eating disorders in the primary care setting.
CASE: A 27-year-old woman presented with weakness, nausea, and vomiting for 4 weeks. Exam was significant for a thin female with pallor, dry mucous membranes, and erosion of her upper molars. She denied history of an eating disorder. While in the ER, she had a witnessed myoclonic seizure and was noted to have ventricular tachycardia. She was cardioverted to normal sinus rhythm and emergently intubated. A few minutes later, patient developed pulseless ventricular tachycardia; ACLS protocol was initiated. During this arrest, she had multiple arrhythmias, including torsades de pointes and ventricular bigeminy and eventually returned to a normal sinus rhythm. Initial labs revealed Na 109 mmol/L, K 2.1 mmol/L, Cl <50 mmol/L with arterial blood gas showing pH of 7.89, pCO2 32, and HCO3 61.3. Upon transfer to the ICU, she went into pulseless ventricular tachycardia again. After 16 min of resuscitation, including defibrillation a total of six times, the patient regained a pulse and was in normal sinus rhythm. A hydrochloric acid drip was started for her profound alkalosis. She also received intravenous drips of lidocaine, levophed, and hypertonic saline. A transthoracic echocardiogram showed an ejection fraction (EF) of 15 % and apical ballooning consistent with a stress cardiomyopathy. By hospital day 3, she was extubated. She later admitted to a 2 year history of bulimia and alcohol abuse. After 8 days, she recovered and was discharged in stable condition with a psychiatric follow up. A repeat echocardiogram at discharge revealed a normal EF.

DISCUSSION: Primary care physicians are well trained to screen and treat obesity; however, bulimia nervosa and eating disorders are infrequently recognized until patients present with severe complications. The estimated prevalence of bulimia nervosa is 3 % to 10 % of adolescent and college age women in the United States. Complications include electrolyte imbalances (e.g. hyponatremia, hypokalemia, and hypochloremic metabolic alkalosis), arrhythmias, and increased incidence of drug and alcohol abuse. From our literature review, this is the first case report of severe alkalosis with a pH 7.89 caused by bulimia. In severe alkalosis, intravenous infusion of dilute hydrochloric acid is indicated. In a recent meta-analysis of 12 studies, the mortality rate of bulimia is estimated to be 1.74 per 1,000 person-years, meaning 0.17 % patients die. Early recognition and intervention may prevent this fatality. The SCOFF questionnaire as a screening tool has been shown to have 100 % sensitivity and 87.5 % specificity. Currently, there is no standard guideline for screening, and it is essential for primary care physicians to screen high risk patients.

SPIRALING FUTILITY: A CASE OF EUCALCEMIC HYPERVITAMINOSIS D Charles D. Magee. Uniformed Services University of the Health Sciences, Bethesda, MD. (Tracking ID #1642741)

LEARNING OBJECTIVE 1: Diagnose Hypervitaminosis D
LEARNING OBJECTIVE 2: Recognize that surreptitious use of over-the-counter (OTC) supplements poses risk for toxicity
CASE: CC: 74 year old male with fatigue, malaise and headache for several weeks HPI: The patient reports slight fatigue and malaise and occasional headaches for approximately 3 weeks. The fatigue was progressive, and non-exertional. The malaise led to a reduction in performing pleasurable activities. He also endorsed mild, self-remitting non-focal headaches most days of the past week. Review of systems was negative for fevers, weight changes, cough, dyspnea or chest pain, gastrointestinal pain or change in diet or normal bowel habits, new urinary complaints, hematuria or flank pain. He denied new muscle weakness or joint pain and reported no depressive or suicidal thoughts. PMH: Atrial flutter, hypertension, hyperlipidemia, obstructive sleep apnea, benign prostatic hypertrophy, chronic sinusitis and gastroesophageal reflux, osteoarthritis, and spinal stenosis. SHx: He is a non-smoker, non-drinker, physically-active retired officer from the Public Health Service. FHx: non-contributory. Medications: losartan 50 mg, rosuvastatin 20 mg, aspirin 81 mg, alfuzosin 10 mg, guiafenesin 600 mg twice daily, esomeprazole 40 mg, and celecoxib 200 mg. Supplements: Eucalyptus/peppermint emollient cream, stannous fluoride 0.4 % dental gel, Co-enzyme Q10 300 mg, testosterone powder, SAMe, Hyaluronic acid, DMSO, and saw palmetto. Vitals: HR 62 (sinus) BP 131/68 (left arm, seated) RR 16T 97.8oF Ht 73″ BMI 32 Physical Exam: The patient was obese, alert and oriented with appropriate affect. He had normal cardiopulmonary auscultation and a soft, nontender abdomen without organomegaly or reduced bowel sounds. Extremities were without edema, clubbing or cyanosis and no dermatologic lesions identified. Neuro exam was without focal sensory or motor deficits and demonstrated normal deep tendon reflexes. Cranial nerve examination was unremarkable. Diagnostic Studies: Initial labs identified a normal CBC, TSH and Liver associated enzymes. The 25-OH D3 level was >150 ng/mL (<10 deficiency; 10–30 insufficiency; 30–100 sufficient; >100 toxicity) and last baseline from September 2007 was 42.30 ng/mL. -During follow up the patient disclosed surreptitious OTC vitamin D supplement use for > 6 months, taking 10,000 IU of vitamin D3 daily, with upward titration to 40,000 IU for several weeks. Patient stopped vitamin D supplement and performed confirmatory testing 10 days later: Additional Studies: labs 10 days later confirmed normal serum calcium and creatinine. Repeat 25-OH D3 remained >150 ng/mL. Additionally, PTH was 9.0 pg/mL (15–65), 1,25OH D3 43 pg/mL (18–72) and 1,25OH D2 <8 pg/mL (16–55.6).
DISCUSSION: This is a unique case of eucalcemic hypervitaminosis D following surreptitious use of an OTC vitamin D supplement. Vitamin D intoxication (VDI), defined as serum 25OH D3 levels >150 ng/mL, remains rare in adults, yet case reports are increasing worldwide due to increases in supplement use. Though hypercalcemia is the most common sequelae of hypervitaminosis D in reported cases, it is not requisite for diagnosis. Vitamin D recommended daily intake (RDI) for adults is between 600 and 800 IU. Five cases have been linked to improper labeling of supplements in recent years. Mislabeling and lack of regulatory oversight of OTC supplements generates unnecessary risk for toxicity to patients. References available by request.

SPONTANEOUS IDIOPATHIC PNEUMOPERITONEUM: A CASE REPORT Ayesha Godil; Aslam Godil; Jeffrey Frost. Sierra Nevada Gastroenterology Medical Associates, Inc., Grass Valley, CA. (Tracking ID #1642851)

LEARNING OBJECTIVE 1: Recognize different causes of spontaneous pneumoperitoneum and importance of conservative management in the treatment of spontaneous idiopathic pneumoperitoneum.
CASE: An 86-yr old Caucasian male has presented with recurrent chronic abdominal bloating and dyspepsia since the late 1990s. He had a non-diagnostic colonoscopy and endoscopy in June 2001 for his evaluation. The patient underwent a CT scan of the Abd/pelvis in August 2001. Free air was noted in the splenic flexure region. Although patient had no abdominal pain, he was advised to report to the emergency room as a caution. Plain abdominal films confirmed air under the diaphragm. The patient's abdominal exam was completely benign; he was afebrile with a normal white blood cell count. His past medical history was unremarkable. The patient was admitted for observation on the surgical floor. The next day the patient remained asymptomatic, tolerated his meal and was discharged for home. The patient remained fairly stable for the next several years and it was not until August 2006 when he was reevaluated for recurrent gas and bloating. Another CT Abd/pelvis was done which again showed intraperitoneal free air. He was sent to the emergency room for evaluation. His ER workup was again negative, including barium small bowel follow through. A repeat CT scan was performed in October 2006 to follow up on the pneumoperitoneum. This time, there was no evidence of the condition. In June 2007 patient was evaluated again for gas and bloating. A lactose-free diet was instituted, to which patient showed some improvement. During his September 2008 visit, he was significantly better. The patient presented again to his primary care physician's office with abdominal bloating and distention in October 2011. Another CT Abd/pelvis was performed which revealed massive pneumoperitoneum. This was patient's third abdominal CT that had shown pneumoperitoneum over the course of a 10 year period. Around this time, patient was also dealing with a progressively advancing dementia. After discussing with the family, a decision was made to avoid further testing. To date, the patient is still living comfortably in an assisted living as he deals with his progressive dementia.
DISCUSSION: Over 90 % of cases of pneumoperitoneum are the result of perforation of an intra-abdominal viscus. In 5–10 % of cases, the condition does not reflect perforation and results from another source that does not require emergency surgery. Causes of spontaneous pneumoperitoneum include postoperative, thoracic, abdominal, gynecologic, and idiopathic. This case is unique in that no etiology could be identified. This patient has been followed for over a twelve-year period with no clinical consequences. Conservative treatment should always be considered as the preferred treatment in patients with spontaneous idiopathic pneumoperitoneum.

SPONTANEOUS INTRACRANIAL HYPOTENSION: AN UNUSUAL CAUSE OF HEADACHE Riddhi Shah[1]; Beth Ryan1; Ekta Kapoor[2]. [1]Mayo Clinic, Rochester, MN; [2]Mayo Clinic, Rochester, MN. (Tracking ID #1613029)

LEARNING OBJECTIVE 1: 1. Identify spontaneous intracranial hypotension as an important cause of orthostatic headache

CASE: A 48-year-old Caucasian female presented to her local emergency department with acute onset of severe bifrontal headache associated with severe nausea and retching. The headache was exacerbated on standing up and completely resolved on lying flat. A CT scan of her head was unremarkable, and she was discharged home on analgesics. She continued to have daily severe headaches, and presented to our hospital. Her past medical history was significant for multiple previous shoulder dislocations and hyperflexible joints. On physical examination, her vital signs were normal. She did not have any nuchal rigidity, and Kernig's sign was negative. Her neurological examination including cranial nerve exam was unremarkable. Her acute spontaneous orthostatic headache, coupled with her history of possible connective tissue disorder, was most likely consistent with spontaneous dural tear resulting in intracranial hypotension. Magnetic resonance imaging (MRI) of her spine showed extensive extrathecal fluid consistent with cerebrospinal fluid (CSF) leak beginning in the cervical spine, extending throughout the thoracic spine, and up to the L2 level. She was treated with caffeine tablets, intravenous fluids and strict bed rest. After 4 days, a high volume (50 ml) autologous blood patch was placed which led to complete resolution of symptoms. At a follow-up visit 1 month later, the patient was doing very well.

DISCUSSION: Spontaneous intracranial hypotension (SIH), also known as Schaltenbrand syndrome or spontaneous aliquorrhea, was initially described in 1935 and is characterized by the spontaneous onset of orthostatic headache. Typically, the headache worsens on assuming an upright posture, is relieved with recumbency, and is not preceded by a lumbar puncture. The precise etiology of spontaneous spinal leaks is not entirely known. However, an underlying structural weakness of the meninges is generally implicated. Indeed, a number of connective tissue disorders including Marfan syndrome, Ehlers-Danlos syndrome and isolated joint hypermobility, among others, have been described in patients with SIH. The key MRI findings in patients with SIH include meningeal enhancement, subdural fluid collections, engorgement of the venous structures, pituitary hyperemia, and sagging of the brain. Conservative measures such as bed rest, adequate oral hydration and abdominal binder generally lead to resolution of symptoms. Other interventions such as administration of intravenous caffeine, steroids or theophylline have all been tried with varying degrees of success. Placement of an autologous blood epidural patch remains the most important and effective method of treatment in patients who fail to respond to conservative measures. About 10 to 20 ml of blood is generally sufficient; however in some patients, a large-volume patch (up to 100 ml) may be necessary to effectively act as a dural tamponade. Surgical treatment is reserved for patients who do not respond to high-volume blood patch, or those who have a focal CSF leak identified. The vast majority of patients experience spontaneous improvement in their neuroimaging findings within days to weeks. Our case report underscores the importance of considering spontaneous intracranial hypotension as a cause of orthostatic headache. Prompt recognition and timely intervention could lead to improved outcomes for these patients.

SPONTANEOUS HEALING OF A SEVERE (F-TYPE) CORONARY ARTERY DISSECTION Waseem Chaudhry. New York Methodist Hospital, Brooklyn, NY. (Tracking ID #1645358)

LEARNING OBJECTIVE 1: Feasibility of spontaneous healing of severe coronary artery dissection managed conservatively when CABG and PCI are not an option

CASE: Iatrogenic severe coronary artery dissection is a rare complication of percutaneous transluminal coronary angioplasty (<1 %), and spontaneous healing is rare. We report a patient whose catheter-induced dissection caused acute vessel closure and myocardial infarction (MI) that healed completely after conservative management. Case Presentation: A 70-year-old man with 2-vessel coronary artery disease (CAD), hypertension, diastolic heart failure and chronic obstructive pulmonary disease presented with leg edema and dyspnea on exertion. Acute decompensated congestive heart failure was diagnosed clinically and medical therapy was begun. His Pro-BNP was 4505 pg/ml, and an echocardiogram revealed left ventricular ejection fraction (LVEF) of 60 %, without wall motion abnormality, dilated right ventricle (RV) with markedly reduced systolic function and a peak pressure of 70 mm Hg. His heart failure symptoms did not improve and he was evaluated for revascularization. Left heart catheterization revealed 2-vessel CAD, 80 % stenosis of mid left-anterior-descending artery proximal to the previous stent, and 80 % calcified stenosis of the proximal right coronary artery (RCA). After the RCA lesion was crossed with the wire during balloon angioplasty, a 100 % residual stenosis became evident and attempts at re-wiring the lumen were unsuccessful. The patient remained hemodynamically stable after transfer to the coronary care unit. Cardiac magnetic resonance imaging revealed an LVEF of 45 % with significant RV dysfunction with transmural infarct in the anteroseptum and apical septum. Because of severe RV dysfunction and pulmonary hypertension, he was treated medically for the MI and discharged. An angiogram repeated 4 months later revealed complete resolution of the RCA dissection.

DISCUSSION: Discussion: According to the National Heart Lung and Blood Institute classification, coronary dissections are graded A-F based on their angiographic appearance and occlusion characteristics. Type-F dissections lead to total luminal occlusion without distal antegrade flow. In the pre-stent era, such closure affected 11 % of cases but the rate is now <1 %. Studies antedating the stenting era defined the important relationship between the dissection class and clinical outcome. Several studies reported spontaneous healing of mild to moderate dissection (Type-A-D) in 63–95 % of cases. It is recommended that Type-A-B dissections should be managed conservatively with adjunctive glycoprotein IIb/IIIa inhibitor use. Type-C-F are managed with stenting or coronary-artery bypass graft (CABG) depending on ability to wire the true lumen and patient's clinical status. The strategy consisting of primary attempt to stent with back-up CABG when needed has resulted in an overall survival rate of 94.4 %. The spontaneous healing of our patient's type F dissection with periprocedural MI establishes the feasibility of conservative management of a severe coronary dissection when stenting and CABG are not an option.

STEROID REFRACTORY DRUG REACTION: TIME TO READDRESS Lena K. Makaroun; Yunwen Chiu; Bliss Temple; Anna Haemel; Phuoc Le. University of California, San Francisco, San Francisco, CA. (Tracking ID #1633441)

LEARNING OBJECTIVE 1: Recognize the potential for direct organ toxicity such as neprhitis, pneumonitis and myocarditis resulting from marked eosinophilia in DRESS syndrome.

LEARNING OBJECTIVE 2: Consider initiaitng second line immunosuppressives in critically ill patients with drug reactions when eosinophilia does not respond to steroids alone.

CASE: A 58 year-old African American male presented to our hospital with confusion, diffuse morbiliform rash, facial edema, fever to 41.1 C, leukocytosis with eosinophilia, acute kidney injury, transaminitis and elevated creatinine kinase. Extensive evaluation for possible infection, including urine, blood and CSF cultures, was negative. Six weeks prior to admission the patient had been started on phenytoin at a skilled nursing facility. Dermatology was consulted for high clinical suspicion of drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome. The patient was given a 3 day pulse of methylprednisolone 1 g daily. His eosinophil count continued to rise, peaking at 17,000 (total WBC count 47,000) on hospital day 6. On this day he also became hypoxemic. Chest CT showed bilateral upper lobe pulmonary infiltrates thought to represent eosinophilic pneumonia. Transthoracic echo to assess for eosinophilic mycocarditis was normal. Skin biopsy showed a dermo-epidermal interface process with lymphocytic and eosinophilic infiltrate consistent with a drug reaction. Testing for viral reactivation, including HHV6/7, EBV, CMV, and HIV

was unrevealing. Ultimately, DRESS refractory to steroids continued as the presumed diagnosis, and cyclosporine 5 mg/kg divided BID was started in addition to a second pulse of methylprednisolone. After cyclosporine initiation the eosinophil count began to drop within 24 h and eventually normalized. The patient's overall clinical picture concurrently improved with stabilization of hemodynamics, resolution of renal failure and improvement in respiratory status. Three months after discharge, cyclosporine was tapered to off, and the patient continued to do well on a slow taper of prednisone. Four months after discharge, the patient's prednisone was tapered down to 10 mg/d and his eosinophilia then recurred, peaking at 800. He was placed back on 80 mg of prednisone with good control, and hydroxyurea was added as a steroid sparing agent.
DISCUSSION: Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) syndrome is a distinct severe adverse drug reaction characterized by skin rash, fever and internal organ involvement. The marked eosinophilia that accompanies the disease can lead to life-threatening organ toxicity such as interstitial nephritis, pneumonitis and myocarditis. The cornerstones of treatment are removal of the offending agent as well as prompt initiation of steroids. However, as seen in this case the decline in eosinophils can lag behind the initiation of appropriate treatment. Furthermore, there are a small subset of cases of DRESS syndrome that appear to be refractory to steroids alone. When the patient's clinical condition continues to deteriorate despite appropriate treatment with steroids, additional immunomodulators should be considered.

STILL'S DISEASE PRESENTING WITH MYOPERICARDITIS Jonathan S. Kurman. Froedtert & The Medical College of Wisconsin, Milwaukee, WI. (Tracking ID #1638423)

LEARNING OBJECTIVE 1: Recognize that adult-onset Still's disease may present with myopericarditis.
LEARNING OBJECTIVE 2: Review the diagnostic criteria for adult-onset Still's disease.
CASE: A 35-year-old male with a past medical history of juvenile idiopathic arthritis presented with 2 days of sharp, positional, substernal chest pain preceded by 3 days of pharyngitis, fever, and myalgia. Physical examination was remarkable for tachycardia, tachypnea, and proximal muscle weakness. Initial diagnostic studies showed a leukocytosis of 13,000/uL, elevated aminotransferase levels, an elevated troponin level, and diffuse ST segment elevation along with PR segment depression in the inferior leads on electrocardiogram. A transthoracic echocardiogram demonstrated preserved left and right ventricular function, no significant valvular disease, and minimal pericardial effusion. Colchicine and aspirin were initiated for suspected myopericarditis, which was subsequently confirmed by cardiac magnetic resonance imaging showing subepicardial delayed enhancement in the basal inferolateral wall of the left ventricle. Over the next few days, the chest pain dissipated. Multiple urine, respiratory, and blood cultures were persistently negative. An extensive infectious disease evaluation, including tests for human immunodeficiency virus, parvovirus B19, coxsackie A and B viruses, cytomegalovirus, and hepatitis A and B, was completely negative. The leukocytosis persisted, and he continued to spike high fevers each night even after resolution of the chest pain. Given the persistent nocturnal high fevers, leukocytosis, and otherwise negative comprehensive evaluation, the patient was diagnosed with adult-onset Still's disease.
DISCUSSION: Adult-onset Still's disease (ASD) is an inflammatory disorder typically characterized by high daily fevers, arthralgia, and an evanescent rash. It is a rare condition, occurring in less than 1 per 100,000 people with a bimodal age distribution peaking between ages 15–25 and ages 36–46. Although an infectious origin is suspected, the etiology remains unproven. There is no definitive test or laboratory value to diagnose ASD. Several sets of criteria have been established to aid in the diagnosis, the most sensitive of which is the Yamaguchi criteria. The four major criteria include persistent high fever, leukocytosis, arthritis or arthralgia, and a skin rash that is usually present during the febrile episodes. The minor criteria include a sore throat, organomegaly, elevated liver function tests, lymphadenopathy, and normal antinuclear antibody and rheumatoid factor. In order to make the diagnosis, five of these features must be present, including two of the major criteria. Several treatment options are available, including nonsteroidal anti-inflammatory drugs, glucocorticoids, disease-modifying antirheumatic drugs, and biologic immunomodulatory agents. The disease can follow a variable time course, and the prognosis is generally favorable with only a small subset of patients suffering long-term complications. In conclusion, adult-onset Still's disease is an uncommon condition that in rare cases can present with myopericarditis.

STREPTOCOCCUS CONSTELLATUS BACTEREMIA ASSOCIATED WITH COMPLEX PULMONARY AND HEPATIC INFECTIONS FOLLOWING PERFORATED APPENDICITIS IN A PATIENT TAKING ADALIMUMAB Anita Bhagavath; Malka Krupka; Rebecca Calabrese. Beth Israel Medical Center, New York, NY. (Tracking ID #1641811)

LEARNING OBJECTIVE 1: Recognize the infectious complications of adalimumab therapy
LEARNING OBJECTIVE 2: Diagnose and manage Streptococcus Constellatus bacteremia
CASE: A 41-year-old male with a history of chronic plaque psoriasis and an appendectomy 3 months prior presented to our hospital with malaise, dyspnea, fever and a productive cough for 1 week. On arrival, the patient was hypotensive and in respiratory distress, with a multifocal pneumonia on chest x-ray. He was admitted to the medical ICU for severe sepsis with hypoxic respiratory failure and was started on Azithromycin, Ceftriaxone and Vancomycin. On hospital day 3, the patient spiked a fever of 102 F. Further questioning into his past medical history revealed that he had received adalimumab injections for 6 months due to chronic plaque psoriasis. His last injection was 3 months prior, shortly before he was admitted to a hospital in London with ruptured appendicitis, complicated by peritonitis, requiring 3 weeks of antibiotic therapy. Despite initial improvement, he noted that after discharge he experienced intermittent subjective fevers, poor PO intake and night sweats, culminating in his presentation to our hospital. Blood cultures from this admission grew Streptococcus Constellatus in 1 of 4 bottles. HIV testing was negative. Repeat chest x-ray revealed a pleural effusion, which was too small to drain. A chest CT was performed and incidentally demonstrated a hypogenicity in the liver. A right upper quadrant ultrasound confirmed the presence of a small liver abscess, unable to be drained. Metronidazole was added for anaerobic coverage. The patient began to improve clinically, and repeat blood cultures were negative. He was successfully discharged from the hospital on a four-week course of Ceftriaxone and Metronidazole.
DISCUSSION: S. constellatus is part of the S. Milleri group, a subgroup of viridans streptococci. It is part of the normal flora of the oral cavity and GI tract. It is important to properly interpret positive blood cultures for these organisms because, unlike other viridans strep, they are rarely contaminants. Local infection with this organism is relatively common and well defined in clinical practice. However, bacteremia is less frequent. Systemic infections, including appendicitis, brain and liver abscesses, and sepsis have been demonstrated in children, cystic fibrosis patients, diabetics, organ transplant recipients and cancer patients. In our case, we suspect that this patient's adalimumab use left him immunocompromised and susceptible to S. Constellatus bacteremia. In our case, a young man with a history of adalimumab use presented 3 months after prompt medical therapy for perforated appendicitis with sepsis due to S. Constellatus, with a multifocal pneumonia and a liver abscess. The progression and spread of S. Constellatus infection despite medical therapy and discontinuation of the immunosuppressant should serve as caution to providers treating the infectious complications of adalimumab therapy.

SUBACUTE BACTERIAL ENDOCARDITIS MASQUERADING AS AN AUTOIMMUNE VASCULITIS Arshia Ali. University of Cincinnati, Cincinnati, OH. (Tracking ID #1641911)

LEARNING OBJECTIVE 1: Recognize the different causes of anti-neutrophil cytoplasmic antibodies.
LEARNING OBJECTIVE 2: Distinguish between autoimmune and infectious etiologies of endocarditis.

CASE: A 26 year old female presented with 6 months of malaise, thirty pound weight loss, night sweats, pleuritic chest pain and dyspnea. Past medical history included chronic sinusitis. Social history was significant for heroin use. On exam, she was ill-appearing, afebrile, tachycardic at 120 bpm, with hepatomegaly, bilateral pitting ankle edema with few petechiae. Notable laboratory findings were a platelet count of 17,000, ESR of 56 (mm/hr), CRP of 40.4 (mg/dL), and numerous RBCs on urinalysis. Chest CT showed multiple bilateral and predominantly apical pulmonary nodules with cavitary lesions as well as pulmonary emboli. A vasculitic disorder was suspected and a rheumatologic panel was positive for cANCA (>1:640) and PR3 (8.5 U/mL). Later the patient became febrile to 102.7 °F. A transthoracic echocardiogram showed a large (22×29 mm), heterogeneous, multilobulated, mobile vegetation on the tricuspid valve and blood cultures grew Pseudomonas aeruginosa. The patient was treated with antibiotics and was anticoagulated. Her edema, dyspnea, and thrombocytopenia resolved. She is doing well on outpatient follow up with rheumatology.
DISCUSSION: A positive cANCA is commonly seen in Wegener's granulomatosis and several other vasculitic disorders such as Churg-Strauss syndrome and microscopic polyangiitis. Other autoimmune diseases may also have a positive ANCA such as autoimmune hepatitis, rheumatoid arthritis and systemic lupus erythematosus. Several prescription medications as well as cocaine and heroin can cause a positive ANCA. Interestingly, as in our case, a positive ANCA can also be seen with infectious diseases including malaria, acute parvovirus B19, acute mononucleosis and subacute bacterial endocarditis (SBE). A comprehensive literature search revealed less than two dozen cases of SBE with cANCA positivity. The culprit organisms were primarily Streptococcus with rare reports of E. coli and indolent bacteria (Propionibacterium, Gemella, and Bartonella). Our case seems to be the first reported Pseudomonal SBE with cANCA and PR3 positivity. This also appears to be the first case in which the right heart was involved resulting in septic pulmonary emboli and a chest CT that was indistinguishable from pulmonary vasculitis. The clinical picture of SBE and Wegener's granulomatosis can present very similarly. Furthermore, ANCA associated vasculitis may present with non-infective endocarditis with detectable vegetations on echocardiography. Autoimmune and infectious diseases frequently co-exist in the differential diagnosis of multi-organ system disease. The clinician should be aware that a positive cANCA is not 100 % specific for autoimmune disease. The misdiagnosis of an infectious disease as an autoimmune process and the administration of immunosuppressive therapy could lead to increased morbidity and mortality.

SUCCESSFUL COMBINATION THERAPY OF CORTICOSTEROIDS, PLASMA EXCHANGE AND INTRAVENOUS IMMUNOGLOBULIN FOR SEVERE TOXIC EPIDERMAL NECROLYSIS. Takashi Watari[1]; Joel Branch[1]; Shuku Sato[1]; Haruki Uojima[2]; Daimu Tutumi[3]; Izumi Kitagawa[1]; Sumi Hidaka[4]; Takayasu Ohtake[3]; Shuzo Kobayashi[3]. [1]Shonan Kamakura General Hospital, Kamakura, Japan; [2]Shonan Kamakura General Hospital, Kamakura, Japan; [3]Shonan Kamakura General Hospital, Kamakura, Japan; [4]Shonan Kamakura General Hospital, Kamakura, Japan. (Tracking ID #1636243)

LEARNING OBJECTIVE 1: Toxic epidermal necrolysis (TEN) is a rare life-threatening disorder with a mortality rate of approximately 30 %. Although treatment is not standardised due to the unknown pathogenesis and lack of randomized clinical trials, high dose of systemic corticosteroids, immunoglobulins (IVIG) and immunosuppressive drugs such as cyclophosphamide have been used in the treatment of TEN with success. Because of increased risk of infections via exfoliated skin and GI bleeding, and the masking of sepsis, many physicians hesitate to adopt corticosteroids. We present a patients with severe TEN treated successfully with high dose corticosteroids followed by plasma exchange.
CASE: A 37-year-old, Japanese female with a high intake of over-the-counter (OTC) medications was admitted to our hospital with several days history of subacute high fever, pharyngeal pain, painful eyes, dry cough, generalized skin erythema and irregularly shaped purpuric macules. She was diagnosed with Steven-Johnsons syndrome in addition to drug-induced interstitial pneumonia. She underwent skin biopsy and was then commenced on methyl prednisolone 500 mg/day. After 3 days, there was no remarkable improvement with conventional corticosteroid treatment, with extensive epidermal exfoliation covering over 30 % of her body surface area, and worsening respiratory failure. In view of the lack of response to corticosteroid therapy, plasma exchange was commenced for 3 days for treatment of TEN, and she was intubated and ventilated. Remarkably after three plasma exchanges, exfoliation stopped and extensive reepithealization occurred by day 9. IVIG (0.3 mg/kg/day) was added for 3 days for exacerbation of respiratory failure. The patient made a full and uneventful recovery. Drug-induced lymphocyte stimulation test was undertaken at 20 days after admission and the result was positive for an OTC medicine containing wood creosote (Seirogan®).
DISCUSSION: Drug induced toxic epidermal necrolysis (TEN) is a rare but frequently lethal disease of the skin and mucous membranes of unknown etiology. Standard therapy has been established which includes meticulous wound care, fluid replacement, and nutritional support in and intensive care setting. Conversely, systemic corticosteroids and IVIG are not well established due to the unknown pathogenesis and lack of randomized clinical trials. However, there is common agreement which considers TEN as a manifestation of a deregulated immune reaction against epithelial cells. During the first stages of TEN, apoptosis mediates keratinocyte death with a pivotal role of the activated cytotoxic mediators such as Fas/FasL, granulysin and, TNF-alpha. Use of plasma exchange is a safe intervention in the more severe form of TEN, because the above inflammatory cytokines, autoantibodies, immune complexes or other unknown toxic substances cannot be removed by dialysis. Although expensive and requiring venous access, it is efficacious rapid cessation of of dermal necrolysis.

SUGAR, SUGAR, HOW'D YOU GET SO HIGH? Ishani Pathmanathan; Varsha Somasekharan. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640726)

LEARNING OBJECTIVE 1: Recognize potential side effects of second-generation antipsychotics
LEARNING OBJECTIVE 2: Understand screening for metabolic complications of second-generation antipsychotics
CASE: A 53 year-old man with a history of non-insulin dependent diabetes mellitus, hypertension and depression presented with 2 days of nausea, vomiting, polyuria and polydipsia. Previously, his diabetes had been well controlled on metformin. He denied fevers or recent illness. He had been adherent to his medication regimen. On exam, his heart rate was 113 with dry mucus membranes; he had a slightly distended but non-tender abdomen. Initial glucose was 452 and anion gap was 25. Arterial blood gas revealed a pH of 7.2. Urinalysis yielded greater than 1000 glucose and 150 ketones. He was admitted to the intensive care unit and treated with an insulin drip. After resolution of his ketoacidosis, capillary glucoses remained uncharacteristically high, requiring eventual discharge on 48 units of daily insulin. Strikingly, his hemoglobin A1C was found to be 14.2 %, although documented at 7.4 % 6 weeks earlier. Further history revealed that his quetiapine dose had been doubled from 300 to 600 mg at that time. His quetiapine was decreased to 200 mg daily, with plans to taper it off fully as an outpatient in exchange for another anti-depressant.
DISCUSSION: Second-generation antipsychotics are essential pharmacologic tools for psychiatrists and internists alike. The newer generation of drugs has fewer extrapyramidal side effects than their predecessors, but they are not without complications. Most significantly, they are linked to weight gain, insulin resistance, and lipid dysregulation. For some patients, starting or escalating therapy can precipitate acute diabetic decompensation, although the mechanism is poorly understood. Clozapine and olanzapine are most notorious for causing metabolic derangements, while aripiprazole and ziprasidone are the least frequent offenders. Risperidol and quetiapine have mixed results in the literature; both cause weight gain, but there is evidence that quetiapine may be worse at exacerbating diabetes. The FDA MedWatch Drug Surveillance System found 46 cases of quetiapine-associated hyperglycemia, of which 21 had diabetic ketoacidosis and 11 died. While second-generation antipsychotics are useful in treating psychiatric illness, their serious side effect profile

warrants concern. The American Diabetes Association consensus guidelines for weight, glucose and lipid screening are available to prescribers. It is important for internists to be mindful of the propensity of second-generation antipsychotics to exacerbate metabolic syndromes and to implement appropriate screening to detect potential side effects before they become life-threatening or irreversible.

SWISS CHEESE MRI FINDINGS IN A PATIENT WITH HYPERLEUKOCYTOSIS Saveri Bhattacharya[1]; Roy E. Smith[2]; Victor Okwiya[3]. [1]University of Pittsburgh Medical Center Shadyside, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA; [3]University of Pittsburgh Shadyside, Pittsburgh, PA. (Tracking ID #1637044)

LEARNING OBJECTIVE 1: To recognize the clinical symptoms of leukostasis and the associated radiological findings.
LEARNING OBJECTIVE 2: To recognize the high mortality associated with leukostasis and treatment options
CASE: Our patient is an 84-year-old male with history of Myelodysplastic Syndrome who presented to an outside hospital with a white blood cell count of 65,000 and severe metabolic acidosis thought to be secondary to tumor lysis syndrome. One day prior to admission, the patient received Filgrastim and his hyperleukocytosis was attributed to this medication. On day 2 of admission, his white blood cell count was 221,000 and he acutely decompensated. He was hypotensive and bradycardic and was resuscitated with CPR, epinephrine and atropine, when he developed agonal respirations and was emergently intubated and was transferred to our institution. A CT scan of the head on the day of arrest was normal. On admission to our institution, the patient's white blood cell count was 130,000 and peripheral smear showed 3 % blasts. On Day 2 after transfer, the patient was successfully extubated. He denied neurological symptoms and was mildly delirious, but comprehensible. Physical examination was unremarkable. However, on day 3 he was suddenly found obtunded and emergently intubated. His white blood cell count was 89,000 and an emergent CT of his head, obtained 5 days after his previous normal CT, revealed numerous bilateral supra- and infra-tentorial hyperdense nodules/masses. Further investigation with an MRI of the brain revealed innumerable hypodense hemorrhagic lesions in the supra- and infra-tentorial regions with surrounding edema on T2-weighted images, giving the patient's brain a "swiss cheese" like appearance. Due to innumerable hemorrhagic lesions in the brainstem, the patient had no chance for meaningful recovery. The patient's family decided that he should be made comfortable and he subsequently passed away. The family declined an autopsy.
DISCUSSION: Leukostasis is defined as hyperleukocytosis in a patient with leukemia who presents with symptoms of respiratory or neurological distress. It is considered an oncological emergency and the mortality associated with it is as high as 40 % (Percu et al., 2000). Leukostasis is a pathological diagnosis in which the white blood cells sludge the microvasculature leading to tissue hypoxia. However, it usually occurs when the white blood cell count is greater than 100,000. Common neurological symptoms include confusion, ataxia, headache, blurred vision, somnolence, delirium, and coma. Imaging of the brain usually reveals intracranial hemorrhage. Respiratory symptoms include shortness of breath and physical examination will reveal tachypnea and rales. Additionally, a chest X-ray usually reveals bilateral interstitial or alveolar infiltrates. The pathophysiology of leukostasis is not clear. In one theory, the elevated white blood cell count leads to increased blood viscosity and blasts occlude the microvasculature. However, in our case leukostasis occurred without hyperleukocytosis, suggesting that there are other factors influencing leukostasis occurrence. There is some evidence that the interaction between blasts and surface endothelial cells might lead to the aggregation of blasts in circulation (Mahjail et al., 2004). Emergent treatment is imperative. Usually treatment is initiated if the white blood cell count is greater than 100,000. Management includes cytoreduction by leukopheresis, aggressive fluid hydration and possible hydroxyurea.

SYMPTOMATIC HYPERCALCEMIA INDUCED BY DIFFUSE LARGE B-CELL LYMPHOMA Gliciria Kalathas; Anthony A. Donato. The Reading Health System, West Reading, PA. (Tracking ID #1638308)

LEARNING OBJECTIVE 1: 1. Recognize the causes of hypercalcemia of malignancy
LEARNING OBJECTIVE 2: 2. Interpret and manage laboratory tests suggestive of hypercalcemia of malignancy
CASE: Hypercalcemia is a common finding in asymptomatic patients, seen in 0.6 % of healthy adults and 1.9 % of those on thiazide diuretics. However, symptomatic hypercalcemia requiring acute hospitalization is a life-threatening problem, most often caused by disordered calcium homeostasis as the result of malignancy. We present a case with an unusual cause of this condition. An 89 year-old male was brought to emergency care with altered mental status, cachexia and ambulatory dysfunction. Hospital records noted a new diagnosis of diffuse large B-cell lymphoma identified 2 weeks prior, at which time he had a normal serum calcium (10.6 mg/dl) and renal function (0.89 mg/dl, normal: 0.50–1.50 mg/dl). On examination, he was found to have a blood pressure of 113/55 mmHg, heart rate of 61, disorientation, abulia, and signs of significant hypovolemia. Laboratory examination found a Calcium level of 13.3-mg/dl (normal 8.5–10.5 mg/dl), Phosphate 1.4 mg/dl (normal 2.5–4.6 mg/dl) and new acute renal failure with a creatinine of 2.3 mg/dl. Metabolic tests revealed low PTH (3 pg/ml, normal: 15–88 pg/ml) and elevated PTH-related peptide (PTH-rp) (2.6 pmol/L, normal: <2.0 pmol/L), confirming the diagnosis of hypercalcemia of malignancy. A course of aggressive IV hydration was pursued, as well as 60 mg IV Pamidronate, resulting in complete recovery of his mental status and renal function, and serum calcium level by his fourth day of admission. He was referred to a hematologist for outpatient chemotherapy.
DISCUSSION: PTH-rp is a peptide produced by malignant cells, most commonly lung and breast carcinoma, that results in life-threatening hypercalcemia. Calcium-induced diuresis can induce symptomatic hypovolemia, as was seen in this case. PTH-rp induced hypercalcemia in diffuse large B cell lymphoma is unusual, reported in 7.1 % of cases in which PTH-rp is seen and is associated with a poor prognosis. Early recognition and prompt management of symptomatic hypercalcemia is critical for hospital physicians.

SYNTHETIC MARIJUANA: A DIFFERENT BREED OF WEED Amitpal S. Nat; Shraddha Goyal; Amritpal S. Nat; Luke Yuhico; Arman Khorasani-zadeh; Bhargav Mudda; Amit Sharma; Amit Sharma; Michael C. Iannuzzi. SUNY Upstate, Syracuse, NY. (Tracking ID #1642927)

LEARNING OBJECTIVE 1: Recognize the severe complications of synthetic marijuana.
LEARNING OBJECTIVE 2: Distinguishing synthetic marijuana from organic marijuana.
CASE: A 45 y/o male presented with 1 week history of worsening dyspnea and right-sided pleuritic chest pain. There was no history of trauma or recent illness as per the patient. He denied fever, night sweats, weight loss, hemoptysis, cough, wheezing, orthopnea, paroxysmal nocturnal dyspnea, rash, arthralgias, tuberculosis exposure, asbestos exposure, or recent travel. He had a 20 pack year tobacco smoking history and quit cocaine use 10 years prior. He has been smoking a synthetic marijuana, called K2, for the past 1.5 years. Physical exam revealed a hemodynamically stable, well built African American male in slight distress. Respirations were shallow and restricted secondary to pain, which was appreciated upon inspiration. On lung auscultation, bilateral air entry was appreciated but decreased breath sounds at the right base. Rest of the exam was unremarkable. Ancillary testing was pertinent for eosinophilia of 7.2 % and an elevated D-dimer at 4,190 ng/mL. CBC, BMP, LFT's, BNP, PT/PTT/INR, P-anca, C-anca, rheumatoid factor, ANA and stool for ova/parasites were unremarkable. CXR and CTA revealed a large right lower lobe pleural effusion, mediastinal lymphadenopathy, two small pulmonary nodules, and was negative for pulmonary embolism. Thoracentesis revealed 550 cc of orange turbid fluid, consistent with an exudative effusion, showing 45 % eosinophils, 5,055 nucleated cells, and 10,284 RBC's. TB, fungal, and bacterial cultures, and cytology were unremarkable. Pathology showed reactive mesothelial cells and numerous eosinophils.

DISCUSSION: In 1995, Dr. John Huffman used synthetic compounds for research on neurogenic cannabinoid effects. After his publication, nationwide use increased rapidly, posing extreme cardiopulmonary risks toward users with minimal knowledge of the drug. We present a healthy male who developed respiratory compromise with eosinophilic pleural effusion secondary to synthetic marijuana. With limited public awareness about severe complications of synthetic marijuana, it's imperative that physicians educate patients and colleagues of the potential dangers of the drug. The past 3 years have demonstrated an exponential boom in cannabinoid use, exemplified by 6,955 calls received regarding harmful exposure last year, compared to just 15 in 2009. With now 17 states and D.C. having allowed legalization of medical marijuana, there is a public misconception that both the organic and its synthetic counterpart are similar and harmless. Despite some similarities in smell, synthetic marijuana however can be up to 100 times stronger and has been described to lead to life-threatening complications such as respiratory failure requiring mechanical ventilation and ecmo, myocardial infarction, status epilepticus, suicide, hypertensive crises, or in our case, respiratory compromise secondary to large eosinophilic pleural effusion. Dr. Huffman, himself, stated: "These things are dangerous—anybody who uses them is playing Russian roulette. We never intended them for human consumption." In this report, we describe yet another significant respiratory complication of the use of synthetic marijuana and the public's lack of awareness of the significant dangers of the drug.

TAKING AWAY MORE THAN YOU BARGAINED FOR Morgan J. Katz; Matthew N. Peters; John Wysocki; Chayan Chakraborti. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640473)

LEARNING OBJECTIVE 1: Identify delayed hemoperitoneum as a complication of large volume paracentesis.
LEARNING OBJECTIVE 2: Recognize renal insufficiency as a risk factor for hemorrhage
CASE: A 55 year-old man with end-stage congestive heart failure and chronic kidney disease presented with massive abdominal ascites and pitting edema of his lower extremities. Initial hemoglobin was 8.9 g/dL and platelet counts were 432/μL. He was diuresed with intravenous furosemide with minimal reduction of ascites. Ultrasound-guided paracentesis removed 5 l of straw-colored fluid with immediate symptomatic relief. Three days later, he complained of abdominal pain. Hemoglobin levels precipitously dropped to 6.9 g/dL. He was a Jehovah's Witness and refused transfusion of blood products. Hemoglobin continued to drop daily to 5.0 g/dL and then to 2.9 g/dL. Diagnostic paracentesis yielded 10 cc of blood-tinged fluid. Emergent upper endoscopy demonstrated no evidence of bleeding but revealed a bluish hue in the stomach suggestive of an intraperitoneal bleed. CT scan of the abdomen demonstrated hemoperitoneum. Inferior epigastric and gastroduodenal angiogram revealed no evidence of active bleeding. Following a discussion with him, he was discharged to hospice.
DISCUSSION: Bleeding following paracentesis is typically acute and related to puncture of abdominal wall vessels or internal organs. However, hemoperitoneum is a rare complication of paracentesis and occurs 3–7 days after procedure. Mortality from this complication is as high as 70 %. Patients with advanced liver failure and portal hypertension are at risk. A sudden drop in pressure caused by removal of >4 l of ascitic fluid can increase the pressure gradient across the wall of mesenteric varices, causing eventual rupture and hemorrhage into the abdominal cavity. Diagnosis is challenging due to slow onset and unrevealing imaging studies; however, suspicion should be high in patients with abdominal pain, decreasing hemoglobin levels and evidence of hypovolemia. Initial evaluation should include diagnostic paracentesis to detect intraperitoneal blood and serial blood counts. Further imaging studies are usually non-diagnostic and not recommended. Preventive measures against this complication include slower drainage of ascitic fluid (<4 l at a time) and concurrent albumin infusion. While low platelet counts and elevated INR typically increase bleeding risk, they have not been demonstrated to increase the risk of delayed hemoperitoneum. In contrast, patients with concurrent advanced renal disease have an increased bleeding risk (likely due to underlying platelet dysfunction), and prophylactic administration of fresh frozen plasma prior to the procedure should be considered in these groups.

TB MENINGITIS-AN UPRISING OR A FALSE ALARM? Saraschandra Vallabhajosyula[1]; Renuga Vivekanandan[1,2]; Laurel Preheim[1,2]. [1]Creighton University Medical Center, Omaha, NE; [2]Creighton University Medical Center, Omaha, NE. (Tracking ID #1641922)

LEARNING OBJECTIVE 1: Assessing laboratory parameters judiciously in a patient with no clinical features suggestive of tuberculosis
LEARNING OBJECTIVE 2: Recognizing recent spate of false-positive TB cases in the Mid-West due to laboratory contamination
CASE: 72 yo Caucasian man with type-2 diabetes mellitus, hypertension, hyperlipidemia, obesity and permanent atrial fibrillation on chronic anticoagulation presented with acute altered mental status (AMS) of 3 days duration associated with low grade fevers, inappropriate speech and disorientation. No history of recent travel/incarceration/illicit drugs. However, he did report a recent tick removal from his beard. Examination was remarkable for a combative patient in AMS with stable vitals and temperature of 103 F. Systemic and neurological examinations were otherwise unremarkable. Peripheral blood count showed leukocytosis with left shift. Cerebral spinal fluid (CSF) was clear and colorless with 12/cu.mm erythrocytes, 16/uL leucocytes (52 % neutrophils, 37 % lymphocytes), glucose 99 mg/dl and protein 65 mg/dl. CSF gram stain, Acid fast bacilli (AFB) stain and cultures were negative. Chest, cardiac and cerebral imaging was unremarkable. Extensive infectious workup for bacterial and viral etiologies of AMS was negative. Patient was empirically started on Ceftriaxone & Doxycycline for tick-borne infection. Mental status returned to baseline in 3–4 days after treatment. One month later, patient's CSF-AFB culture and TB-genoprobe become positive. Patient was completely asymptomatic with normal lab parameters. Repeat CSF was colorless with 10/cu.mm erythrocytes, 2/uL leucocytes (98 % lymphocytes), glucose 75 mg/dl and protein 44 mg/dl. Serum serology was positive for Rickettsia typhi antibodies—IgG 1:256, IgM 1:64 which may explain the finding a month prior. The patient's overall clinical picture remained inconsistent with TB meningitis 1 month later. We hypothesized that this was a false-positive culture due to laboratory contamination and did not advocate treatment for TB at this point in time.
DISCUSSION: EPTB gold-standard for diagnosis involves direct smear and culture identification which has the limitations of non-rapid diagnosis, poor sensitivity and long incubation period (4–8 weeks). Recent molecular-based methods include Polymerase Chain Reaction (PCR) assays that target hup-B gene with a 90.32 % sensitivity and 94.48 % specificity. As defined by CDC, a false-positive TB testing has the following criteria: (a) if all 3 genotyping methods show a match with the presumed source of the false-positive culture; (b) suspect isolates were processed at the same time or collected in the same location or with the same instrument; (c) no other likely explanation for findings and (d) misdiagnosed patient does not have a clinical picture consistent with TB. These parameters were true in our patient, thus validating the superiority of the clinical picture over laboratory findings and preventing our patient from being exposed to unnecessary medications. Currently, two other similar cases have been reported from the same diagnostic microbiology lab. Center for Disease Control and Prevention (CDC) confirmed that all three TB isolates had the same genotype, thus validating our hypothesis of laboratory contamination.

TB OR NOT TB Mallory Otto. New York Presbyterian-Cornell, New York, NY. (Tracking ID #1642265)

LEARNING OBJECTIVE 1: Review a diagnostic tool for ruling out TB with acid fast bacilli on culture in emergent scenarios
CASE: A 28 year old woman presented to her primary care physician with 1 month of facial swelling and a left sided neck mass. She had no fevers, night sweats, or cough. Ultrasonography of the neck mass demonstrated

necrotic lymph nodes. Further evaluation with CT demonstrated a 15 cm anterior mediastinal mass encasing the great vessels, invading and completely occluding the SVC with supraclavicular and bilateral axillary lymphadenopathy and surrounding fat stranding. The lungs were clear. A PET CT demonstrated the mediastinal mass had an SUV of 13.6. A biopsy was obtained from the L neck mass and demonstrated mostly necrotic tissue without evidence of malignancy but with rare acid-fast organisms; unfortunately a culture had not been obtained. A PPD and a quantiferon gold were negative. A neck dissection was performed to obtain a definitive diagnosis and demostrated lymph nodes positive for Reed Sternberg cells consistent with Hodgkin's lymphoma. In addition few acid-fast bacilli were visualized on the concomitant culture that were negative by nucleaic acid amplification for TB, which notably is approved for use in sputum only. The mycobacteria is undergoing sequency for further identification, and the patient tolerated her first several rounds of chemotherapy without mycobacterial treatment.

DISCUSSION: Nucleic acid amplification (NAA) has been approved by the Centers of Disease Control and Prevention (CDC) for use to detect tuberculois (TB) in respiratory specimens only. The positive predictive value (PPV) is >95 % when used in acid fast bacillus (AFB) positive respiratory specimens with high clinical suspicion. The PPV is <50 % for NAA testing in scenarios with low clinical suspicion for TB and is not recommended. In AFB negative specimens the sensitivity is lower around 50–80 % and thus a negative NAA is not sufficient to exclude TB if the clinical suspicion is high. NAA testing can be useful for early confirmation of TB however should not replace the gold standard of the traditional culture. In respiratory specimens, however, the CDC does recommend treating AFB + and NAA + respiratory sample with anti-TB treatment while awaiting definitive culture results. When an AFB smear is positive but the NAA is negative it is possible that in 3–7 % of cases sputum specimens could contain inhibitors that prevent amplification and may cause false negative results. Such inhibitors can be tested for and the CDC recommends doing so and treating for TB if inhibitors are present. Evidence is sparse on the utility of NAA testing in non-sputum specimens. Of the data that exists it appears that commercially available NAA testing such as the MTD have a relatively high specificity (~95 %) but lower sensitivity (~79 %) for non-sputum samples, and lower especially for non-liquid samples (1). While a positive result can be helpful in ruling in disease a negative one cannot be relied on to rule it out (2). Clinical suspicion remains of upmost importance in decisions regarding treatment of extrapulmonary TB. 1. Dinnes J, Deeks J, Kunst H, Gibson A, Cummins E, Waugh N, Drobniewski F, Lalvani A. A systematic review of rapid diagnostic tests for the detection of tuberculosis infection. Health Technol Assess. 2007 Jan;11(3):1–196. 2. Updated Guidelines for the Use of Nucleic Acid Amplification Tests in the Diagnosis of Tuberculosis. MMWR Weekly. January 16, 2009/58(01);7–10.

TB OR NOT TB: A CASE OF TUBERCULOSIS PYOMYOSITIS Matthew A. Joseph; Vikram Krishnasamy; Harish Jasti. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1642153)

LEARNING OBJECTIVE 1: Recognize the presentation and stages of pyomyositis

LEARNING OBJECTIVE 2: Identify the common organisms that cause pyomyositis

CASE: The patient is a 53 year old Caucasian female with a history of sarcoidosis and pulmonary fibrosis on chronic glucocorticoids, who presented to the hospital with a 6–8 month history of progressive pain, erythema, and edema on the left scapula, biceps, and groin. She also endorsed subjective fevers and chills. The symptoms were unresponsive to a course of vancomycin, meropenem, and doxycycline during a previous hospitalization. She denied any travel history, tick bites, or exposure to tuberculosis and other sick contacts. On physical exam, her vital signs were stable, afebrile, on 4 l baseline home oxygen. She was toxic appearing and in pain. On her left upper back, she had a well-defined boggy area of tissue which was mildly erythematous and tender to palpation. Within the boggy area was a 5 mm hollow circular crater, without fluctuance or expressible purulence. On her left arm, she had erythema, purpura, induration, and was painful to palpation. On her left leg, she had 2+ pitting edema and erythema extending from the groin to the foot. Labs were notable for a WBC count of 22, with 88 % polys and 10 % bands. A CT scan revealed multiple subcutaneous and intramuscular abscesses in the left shoulder, left arm, and left chest wall, along with a 12 cm intramuscular abscess in the anterior compartment of the left thigh. There were also ground glass opacities in the right upper lung and bilateral lower lungs, centrilobular nodules, a right upper lobe calcified granuloma, and prominent paratracheal lymph nodes. She was diagnosed with pyomyositis, and was started on vancomycin, ceftriaxone, and metronidazole. Aspiration and examination of the left groin fluid collection revealed acid-fast bacilli on smear, which was confirmed as mycobacterium tuberculosis on culture. Bronchoalveolar lavage of the ground-glass opacities also revealed mycobacterium tuberculosis.

DISCUSSION: Pyomyositis is an acute intramuscular infection that is the result of hematogenous spread. The pathogenesis is not clearly understood, but predisposing factors may include muscle trauma, strain or vigorous exercise. Pyomyositis occurs both in the tropics and temperate environments. In the latter setting, the patients usually have severe underlying comorbidities or are immunocompromised. The most common organisms are Staphylococcus aureus, including MRSA, and Group A streptococci. Less common organisms include non-group A streptococci, gram negative bacilli, pneumococci, and mycobacteria. The infection consists of three stages. Stage 1 is characterized by a low grade fever, muscle pain, and swelling. Abscesses may not be apparent in this stage. Stage 2 is the most common presentation and occurs 10–21 days after the beginning of the initial symptoms. It is characterized by fever, muscle tenderness, and leukocytosis. Aspiration of the affected muscle will yield purulent material. Stage 3 is the most severe and is characterized by a large amount of pus, significant fluctuance, systemic toxicity, and possible sepsis. Despite having no identifiable risk factors for TB, she presented with a case of TB pyomyositis. Consider pyomyositis in the differential diagnosis of patients with painful, deep skin lesions, and associated fevers and chills. Obtaining cultures prove vital in guiding appropriate antimicrobial therapy.

THE BEST PART OF WAKING UP Naomi Karlen; Ardalan Minokadeh; Morgan J. Katz. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640352)

LEARNING OBJECTIVE 1: Recognize that unusual practices, even if they have support from a health care source, can cause disastrous consequences.

LEARNING OBJECTIVE 2: Highlight the importance of asking about patients' social history: including personal practices.

CASE: A 39 year-old woman with no past medical history presented with acute altered mental status after alerting her roommate to call EMS. She was found drinking water directly from the bathtub faucet. She complained of loss of awareness and tunnel vision. She was alert and oriented to person, place, and time, had no abnormal physical findings and neurologic exam demonstrated no abnormalities: grossly intact cranial nerves 2 through 12, intact sensation to light tough and temperature, no cerebellar findings, and demonstrated appropriate strength and deep tendon reflexes in all extremities. Sodium was 121 mmol/L, potassium 2.5 mmol/L, chloride 91 mmol/L, phosphorus 1.6 mg/dL, and magnesium 1.4 mg/dL with urine osmolality 74 mOsm/L, urine sodium 21 mEq/L, and urine creatinine less than 10 mg/dL. CT head revealed no acute findings or cerebral edema, chest radiograph was revealed clear lungs and normal cardiac silhouette, EKG showed mild PR prolongation, occasional u waves, and mild T wave inversion. Upon further questioning, she revealed that she had recently started performing one to two coffee enemas daily for the last few weeks. In addition to her enemas that morning, her spiritual guidance led her to believe that she needed to consume large amounts of water to "cleanse" herself. She felt in control of her water intake, consuming an immeasurable amount of water from the faucet until she alerted her roommate to feeling unwell.

DISCUSSION: While practicing Shamanism, this patient's spiritual guidance had led her to undergo "body cleansing" and "detoxification procedures." Initially, that manifested in dietary changes with elimination of preservatives, gluten, and processed sugars. This eventually also included daily coffee enema(s). While seemingly unconventional, there have been multiple healthcare providers who promote the use of coffee enemas on a regular basis in treating cancer patients. One theory supports the use of coffee enemas to help the body detoxify from tumor cell metabolites. Risks of coffee enemas have a wide range of consequences including bowel injury, fluid overload, severe electrolyte deficiencies, potential septicemia, and two documented deaths. In the case of this patient, the electrolyte imbalances were additionally exacerbated by consumption of large amounts of water, which she was driven to drink under the direction of her spiritual guides. In this case, the patient suffered from a brief period of purposeful polydipsia more than psychogenic polydipsia. As exotic lifestyle preferences become increasingly popular, personal ideas regarding maintenance of health and wellness similarly expand. While it is important for health care providers to keep an open mind regarding such practices, it behooves internists to help these patients to maintain an appropriate balance between their personal beliefs and evidence based medicine in addition to taking an extensive history.

THE FINAL INSULT: A CASE OF ACUTE-ON-CHRONIC BUDD-CHIARI SYNDROME Jianhua A. Tau; John Lin; Jeffrey T. Bates. Baylor College Of Medicine, Houston, TX. (Tracking ID #1643195)

LEARNING OBJECTIVE 1: Diagnose the Budd-Chiari Syndrome in a patient with acute-onset jaundice and history of thromboembolic disease.
LEARNING OBJECTIVE 2: Recognize that the majority of cases have underlying hypercoagulable states that require anticoagulation to prevent severe complications.
CASE: A 61-year-old female was admitted with acute jaundice. She was in her usual state of health until 2 weeks prior to admission, when she developed progressive jaundice, dull right upper quadrant pain, and lower extremity edema. Her PMH included a deep venous thrombosis while taking oral contraceptives and a pulmonary embolism after a surgery. Physical examination revealed icteric sclera and jaundiced skin. She was alert, but oriented to only person and place. She had mild right upper quadrant pain with palpation; she did not have hepatomegaly or ascites. Asterixis and 2+ lower extremity edema were present. Laboratory studies showed a total bilirubin of 6.3 mg/dl, a direct bilirubin of 4.7 mg/dl, AST of 487 mg/dl, ALT of 336 mg/dl, and an INR of 1.9; other liver function tests, chemistries, and CBC were normal. Serologies for Hepatitis A, B, and C and EBV, HSV, and CMV were negative. An abdominal MRI demonstrated an atrophied left hepatic lobe; associated biliary ducts and vasculature were atretic. Hepatic venogram revealed an acute short-length right hepatic vein thrombosis partially involving the inferior vena cava, as well as chronic occlusion of all other outflow segments. Acute-on-chronic Budd-Chiari syndrome was diagnosed. A stent was placed in the right hepatic vein. Jaundice, edema, and pain improved, but her coagulopathy did not resolve. She was anticoagulated with warfarin and placed on the liver transplant waiting list.
DISCUSSION: Budd-Chiari syndrome is rare, with an estimated incidence of less than 1 case per million individuals per year. It is diagnosed when hepatic outflow obstruction occurs anywhere between the hepatic veins and the terminal IVC. An underlying hypercoagulable state is identified in 75 % of cases; primary myeloproliferative disorders are most commonly identified. Other causes include paroxysmal nocturnal hemoglobinuria, antiphospholipid antibody syndrome, oral contraceptive use, and inherited deficiencies of protein C, protein S, or antithrombin III. Clinical manifestations do not appear until at least two hepatic veins are occluded; if obstruction occurs slowly and is accompanied by extensive collateral development, the patient may remain asymptomatic. In this case, the severely atrophied left hepatic lobe suggests a slow thrombosis of the left hepatic vein, resulting in asymptomatic necrosis as collateral vessels developed. The damage was clinically undetectable until the final thrombotic insult occurred. This acute-on-chronic presentation of the Budd-Chiari syndrome carries a relatively poor prognosis.

TOO FAT TO FILTER: OBESITY-RELATED GLOMERULOPATHY Jane Andrews; Chad S. Miller. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1639697)

LEARNING OBJECTIVE 1: Recognize the clinical presentation of new acute on chronic renal failure secondary to obesity
LEARNING OBJECTIVE 2: Identify the differential of focal segmental glomerular sclerosis Understand the pathophysiology of obesity-related glomerulopathy
CASE: A 28 year-old healthy woman presented with 4 weeks of worsening nausea and vomiting. She has also noticed foul-smelling urine and generalized pruritus. She had an upper respiratory infection 2 weeks prior to presentation. Vitals signs were remarkable for a heart rate of 90 beats per minute and a blood pressure of 178/102 mmHg. Physical exam was significant for a morbidly obese woman with a body mass index (BMI) of 55. She had excessive facial hair on her chin and several 1 cm excoriations on her arms. Laboratory studies were notable for a urine specific gravity of 1.010, 5–10 WBC per high-powered field, 3+ leukocyte esterase, 3+ protein, 1+ blood. Hemoglobin was 6.1 gm/dL with a normal mean corpuscular volume. BUN was elevated at 186 mg/dL while creatinine was 31 mg/dL. Total Protein was 8.8 gm/dL and albumin was 3.2 gm/dL. Total cholesterol was 76 mg/dL, HDL was 28 mg/dL, and LDL was 38 mg/dL. Kidneys were sonographically unremarkable. Urine protein-to-creatinine ratio measured 5.8, suggestive of nephrotic-range proteinuria.
DISCUSSION: Chronic renal failure and obesity are common diagnoses for the internist, frequently co-existing in the same patient. Recent studies have described the association between severe obesity and secondary focal segmental glomerular sclerosis (FSGS), specifically obesity-related glomerulopathy. These findings are independent of the relationship between renal failure and hypertension or diabetes. Signs of obesity-related glomerulopathy include a BMI of 30 or above, nephrotic-range proteinuria and worsening renal insufficiency. Obesity-related glomerulopathy is distinct from idiopathic FSGS with less proteinuria, a milder course, and less foot process fusion seen on pathology. Obesity-related glomerulopathy begins with the increase in glomerular size that correlates closely with body mass index. This hypertrophy causes podocyte injury, which leads to glomerular scarring and renal failure. Patients with obesity-related glomerulopathy who lost significant weight were able to reduce their levels of proteinuria. Some studies have demonstrated complete reversal of obesity-related glomerulopathy by treating concurrent sleep apnea. Considering potential for reversal of kidney disease, internists should consider translating new science surrounding obesity-related glomerulopathy into aggressive counseling on body mass index.

THE ART OF DECREASING CANCER IN THE HOSPITABLE HOST Michal Gross; Julie Lorton; Marina Shcherba; Mark A. Menegus. Montefiore Medical Center, Bronx, NY. (Tracking ID #1643156)

LEARNING OBJECTIVE 1: Recognize lymphoma as part of the differential diagnosis of a cardiac tumor in AIDS.
LEARNING OBJECTIVE 2: Assess the likelihood of certain AIDS-defining malignancies based on the CD4 count.
CASE: A 35 year-old man with HIV/AIDS (CD4 158, VL >4 million) presents with 2 weeks of progressive severe shortness of breath. His shortness of breath is confined to the supine position, without a decrease in exercise tolerance. He endorses anorexia, unintentional weight loss, low-grade fevers, and fatigue. His review of systems is otherwise negative. The patient was diagnosed HIV+10 years prior, but did not opt for treatment. On admission the patient was afebrile and normotensive but tachycardic to 130 and tachypneic to 24, with oxygen saturation 97 % on room air. Bilateral upper extremity edema and bilateral basal ronchi were noted. Chest X-ray showed bilateral pleural effusions. Echocardiogram showed pericardial effusion with tamponade physiology. CT thorax showed mediastinal adenopathy and a right atrial mass extending into the superior vena cava. The pericardial effusion was drained and the mass endovascularly biopsied. Pericardial fluid cytology and biopsy were positive for non-Hodgkin's Lymphoma (NHL), specifically Large B Cell

Lymphoma. The diagnosis of Primary Effusion Lymphoma (PEL) was made based on the findings of pericardial effusion with HHV8+ immunoblastic B cell phenotype in an AIDS patient. Immediately after diagnosis, the patient began chemotherapy and has been clinically responsive thus far, with decreased shortness of breath and radiographic evidence of decreasing mass size.

DISCUSSION: AIDS-defining malignancies including Kaposi's Sarcoma, non-Hodgkin's lymphoma and invasive cervical carcinoma were commonly seen in the pre-Antiretroviral Therapy (ART) era. The incidence of these malignancies has declined since the advent of ART and the consequent rise in patients' CD4 counts, suggesting an inverse relationship between malignancy risk and CD4 count. Lymphoma subtypes found almost exclusively in AIDS are frequently associated with viruses, such as HHV8, which causes Primary Effusion Lymphoma. The reason for the high incidence of these infectious-driven cancers in HIV/immunodeficiency is thought to be the unchecked proliferation of HHV8 infected lymphocytes in the setting of T-cell deficiency. PEL is defined as an immunoblastic HHV8+ B-cell lymphoma that presents as a pleural, peritoneal or pericardial effusion, traditionally without a coexisting solid tumor. Our patient presented with HHV8+ B cell lymphoma, PEL solid variant subtype, which is a recently recognized subtype, similar to traditional PEL, but associated with a mass. This is the second reported case of PEL presenting as a cardiac tumor and is the first reported case of PEL presenting as a right atrial tumor. The differential for our patient's right atrial tumor was broad; atrial myxoma, metastasis, primary cardiac tumor, and thrombus were all considered given the location and clinical context. Although the prevalence of AIDS-defining Non-Hodgkin's lymphoma has decreased in the era of HAART, it is important to keep PEL on the differential of a cardiac tumor in an HIV + patient, particularly one with uncontrolled AIDS or HAART non-compliance. PEL generally has a poor prognosis; however the two reported cases of cardiac tumor PEL, including this case, improved rapidly with chemotherapy, rendering diagnosis very important.

THE ASSOCIATION OF PARVOVIRUS B19 AND TYPE I CRYOGLOBULINEMIA Narendranath Epperla; Steven H. Yale. Marshfield Clinic, Marshfield, WI. (Tracking ID #1643189)

LEARNING OBJECTIVE 1: 1. To recognize the association of parvovirus B 19 with Type I cryoglobulinemia. 2. To understand the appropriate treatment of Type I cryoglobulinemia associated with Parvo B 19 and low grade lymphoproliferative disorder.

CASE: A 62 year-old male with a history of exposure to his grandchild diagnosed with erythema infectiosum presented with a 1 week history of fever, peripheral polyarthralgias and myalgias. Evaluation revealed a platelet count of 68,000 and hemoglobin 15.7. Computed Tomography scan showed splenomegaly and intra-abdominal lymphadenopathy. He presented 2 day later and was hospitalized for generalized urticaria, pruritus and lightheadedness. Platelet count at that time was 17,000×103 and hemoglobin 7.2 g/dl and reticulocyte count of 18.3 % (index 0.68). Laboratory studies were negative for Lyme and Ehrlichia serology. Peripheral blood film examination showed thrombocytopenia, areas of red cell agglutination, very rare schistocytes, and LDH >900 (units). The activated partial thromboplastin time, prothrombin time, and fibrinogen levels were normal. Direct-antiglobulin test was positive for IgG only and serologic tests (enzyme-linked immunosorbent and immunofluorescence assays) for B19 were positive for IgM and IgG antibodies. Viral studies (HBV, HCV, HIV and CMV) and autoimmune panel (ANA, ANCA and anti-GBM) were normal. On hospital day five he developed acute renal failure requiring hemodialysis. Renal biopsy showed thrombotic microangiopathy and cortical necrosis and ADAMTS13 was 57 %. Flow cytometry showed CD5+ CD23+ CD20+ and FMC7+ consistent with low grade lymphoproliferative disorder [LPD]. Other significant laboratory studies included a serum protein electrophoresis with an M spike in gamma region. Immunofixation (IF) showed a monoclonal IgG Kappa with serum free light chains with high K/L ratio and low C3 and C4. On hospital day seven he developed a diffuse painful macularpapular rash involving sparing his back and intertriginous areas and oral mucosa with areas of necrosis. CG was positive (CG-3 % and IF shows Type-I cryoglobulinemia) and skin biopsy revealed findings were consistent with cryoglobulinemia. He was started on high dose IV steroids and plasmapheresis. Bone-marrow biopsy was significant for 20 % small lymphocytes and <5 % plasma cells c/w LPD. He was treated with 4 doses of rituximab with clinical resolution of symptoms.

DISCUSSION: We report an unusual case of a patient with Type I CG and Parvovirus infection with overlapping clinical and laboratory features. Immune-mediated autoimmune hemolytic anemia, thrombocytopenia and neutropenia of the IgG type as well as CG have been reported to occur in both of these conditions. In patients with PB-19 infection autoimmune antibodies may be induced due to the presence of proinflammatory cytokines or shared antigenic epitopes between viral and host cells. Type I GC is typically found in patients with lymphoproliferative disorders or multiple myeloma while Type II is typically associated with viral infections and autoimmune disorders. Patients with type I CG, as found in our patient, may rarely develop renal disease as a result of thrombotic disease. We speculate that immune stimulation and lymphoproliferation due to the Parvoviruses infection may have accounted for the pathogenic CG response.

THE CHICKEN OR THE EGG: PARVOVIRUS B19 OR ANTIPHOSPHOLIPID ANTIBODY? Kartika Reddy; Samina Sarwar; Erin Sullivan. Lenox HIll Hospital- NSLIJ, New York, NY. (Tracking ID #1624071)

LEARNING OBJECTIVE 1: To understand a common presentation of Parvovirus B19 and an uncommon association with the presentation

CASE: A 44 year-old woman with a history of three previous spontaneous abortions presented with a 3 day history of headache, neck stiffness and cervical lymphadenopathy. She developed a macular rash that involved all extremities and spread centrally. She denied fevers or recent travel. She has had three healthy children with uncomplicated pregnancies. The patient reports she had close contact with a child infected with mononucleosis and an adult with influenza 2 days prior to onset of symptoms. The patient had left posterior cervical lymphadenopathy, a confluent macular rash on her extremities and torso. Laboratory studies revealed WBC 3,200 mm3 and a platelet count 141,000 mm3. Rapid HIV testing was negative. A lumbar puncture revealed no leucocytes and gram stain was negative. The patient was discharged home but returned 2 days later with new symmetric joint pain that was tender to palpation in her knees, ankles, wrists, interphalangeal joints. No joint swelling or gross joint abnormalities were noted. Monospot, rheumatoid factor and EBV IgM were all negative. EBV IgG was positive. Double-stranded DNA, ANA, throat culture and ASO were negative. A blood smear was unrevealing. All symptoms resolved in 48 h and the patient was discharged home. Post-discharge parvovirus B19 IgM and IgG came back positive. IgM was positive with a value of 6.4 (<0.9). Her phospholipid Ab IgM was positive with a level of 100 MPL (negative <10) and her phospholipid Ab IgG was elevated at 17 GPL (negative <10).

DISCUSSION: General internists encounter patients with flu-like symptoms on a daily basis. Parvovirus B19 is a single-stranded DNA virus that can cause a wide spectrum of manifestations, including fifth disease, arthropothy, transient aplastic crisis, anemia, spontaneous abortions and hydrops fetalis in pregnant women. Parvovirus has been known to mimic or trigger autoimmune diseases. The development of antiphospholipid antibodies can be transiently increased with Parvovirus B19 infection. However, in the majority of cases, no thrombotic episodes have been reported. Thus none of the patients were reported of having clinical manifestations of antiphospholipid syndrome. Our patient had an atypical presentation of three healthy pregnancies coupled with subsequent spontaneous abortions. The acute parvovirus infection warranted further investigation revealing the underlying antiphospholipid syndrome.

THE DIAGNOSIS IN RED Angela Beckert. University of Chicago, Chicago, IL. (Tracking ID #1643153)

LEARNING OBJECTIVE 1: Describe the multiple manifestations of systemic amyloidosis and the difficulties in diagnosis.
CASE: Fifty-seven year old man presents with complaint of nausea, vomiting, weight loss, leg numbness, and dizziness/syncope for 1 year. Patient reports extensive medical work up without unifying diagnosis before being referred to tertiary care center. Soon after initial clinic visit, patient admitted to hospital for treatment of preserved EF heart failure. During hospitalization patient stabilized and work up yielded diagnoses of gastroparesis, orthostatic hypotension secondary to autonomic dysfunction, and peripheral neuropathy. Outpatient differential diagnosis focused on causes of autonomic and peripheral nervous system dysfunction. Patient had an extensive malignancy work up, MRI spine, paraneoplastic panel, heavy metal levels, HIV test, A1C, and rheumatologic work up that was unremarkable. In the following months, patient developed chronic diarrhea. Patient underwent a repeat CT abdomen and pelvis revealing significant colitis. Repeat colonoscopy was performed and biopsies revealed amyloidosis.
DISCUSSION: Amyloidosis involves the extracellular deposition of insoluble proteins with a beta-fibrillar structure. Symptoms are dependent on organ involvement with AL (primary) amyloid most commonly affecting the kidney and heart. Our patient had evidence of cardiac, GI, and nervous system involvement. Classification is based on type of precursor protein and includes AL (primary) amyloidosis composed of monoclonal immunoglobulin light chains, AA (secondary) amyloidosis, a response to chronic inflammatory process, ATTR (familial) amyloidosis, other heritable causes, senile amyloidosis, and dialysis induced amyloidosis. Primary amyloidosis accounts for the majority of cases. Prognosis is poor (avg 13.2 mo), likely related to delay in diagnosis. Diagnosis requires biopsy proven disease. Biopsies are typically done on affected organ or surrogate site such as abdominal fat pad. In our patient, three colonic biopsies were performed before diagnosis, though retrospectively a prior biopsy also revealed amyloidosis. Pathologically it is not always apparent with H&E stain and requires clinical guidance and suspicion. After tissue diagnosis, must focus on elucidating type of amyloid. First evaluate for plasma cell dyscrasia. SPEP/UPEP with immunofixation detects 90 % of monoclonal immunoglobulins or light chains. Serum free light chain analysis can increase sensitivity, and bone marrow biopsy with immunohistochemical staining may also reveal predominance of clonal plasma cells. If no evidence of plasma cell dyscrasia, genetic analysis can be performed to look for hereditary causes. In our patient, no monoclonal spike was identified though lambda light chain was elevated. Bone marrow biopsy revealed plasma cell dyscrasia. Patient underwent once cycle of bortezomib and cyclophosphamide, but passed in his sleep shortly after treatment.

THE DIFFICULTY IN DIFFERENTIATING INFECTIVE ENDOCARDITIS (IE) FROM NONBACTERIAL THROMBOTIC ENDOCARDITIS (NBTE) Ryoji Ito; Takashi Watari; Joel Branch; Izumi Kitagawa. Shonan Kamakura General Hospital, Kamakura, Japan. (Tracking ID #1636250)

LEARNING OBJECTIVE 1: Both IE and NBTE show similar physical examination findings, and echocardiography features. However, it is imperative to diagnose IE from NBTE, because the therapy of these diseases is different. In the case of IE, treatment consists of antibiotics or if severe, replacement of cardiac valves. Conversely, in cases of NBTE, identification of an underlying non-infectious cause, for example malignancy, is undertaken and treatment is by surgery, chemotherapy and anticoagulation. Such treatment for NBTE can be dangerous in IE, because chemotherapy results in immunosuppression and worsening of infection and anticoagulation may lead to dissemination of an infectious vegetation.
CASE: An otherwise fit and healthy 35-year-old woman had been undergoing fertility treatment with in vitro fertilization and hormone replacement for the preceding 2 years. One week prior to admission, she was diagnosed with a missed abortion. This was followed several days later with pain felt in her finger tips. The next day, she underwent outpatient dilatation and curettage and she was prescribed oral fosfomycin post-procedure antibiotics. On the day of admission, she developed right lower quadrant pain and she consequently visited this hospital. Blood pressure was 117/51 mmHg, heart rate was 51 beats per minute and temperature was 98.06 °F (36.7 °C). Physical examination revealed a systolic murmur at the second left sternal border radiating to the apex position in addition to splinter hemorrhages in the nail beds. Leukocyte count was 13,800/μl, D-Dimer was 17.0 μg/ml and autoimmune examinations were negative. Abdominal ultrasound scan revealed ascites and an ovarian cystoma. Brain magnetic resonance imaging (MRI) showed an asymptomatic right frontal lobe infarct. Abdominal computed tomography (CT) scanning demonstrated infarctions of the kidneys and spleen in addition to a pelvic tumor. Transthoracic echocardiography demonstrated a vegetation on the aortic valve. In view of these clinical features, infective endocarditis (IE) was highly suspected, and antimicrobial therapy was commenced with ceftriaxone, vancomycin and gentamicin. Three weeks after admission, the vegetation was visualised oscillating on the aortic valve and it had enlarged from 11×9 mm to 15×7 mm. As a result, emergent aortic valve replacement was performed successfully. Almost 2 months after admission, surgical removal of an ovary carcinoma was performed. Several days later, a repeat transthoracic echocardiogram revealed a vegetation on the mitral valve. Because of the lack of response to antimicrobial agents, negative blood cultures, the presence of a carcinoma and valve histology showing non-destructive changes with adherent thrombus, we considered the diagnosis of NBTE and the patient was subsequently anticoagulated. Despite this, she developed multiple new cerebral infarcts and,the patient eventually succumbed to multiple organ failure.
DISCUSSION: IE is more common than NBTE and clinical features are similar. The lack of risk factors for IE, negative blood cultures and the presence of a carcinoma increased the likelihood of NBTE. Treatment of NBTE is different and potentially dangerous in IE. Physicians should have a strong clinical suspicion of NBTE when there is inadequate response to therapy for IE

THE FORGOTTEN DISEASE: A CASE OF LEMIERRE'S SYNDROME Leena Jalota; Shobhit Gupta; Naba R. Mainali; Richard Alweis. Reading Health System, West Reading, PA. (Tracking ID #1635047)

LEARNING OBJECTIVE 1: Identify patients who should be considered for the diagnosis of Lemierres syndrome
LEARNING OBJECTIVE 2: Be familiar with the classic presentation, pathophysiology, complications and treatment strategy of Lemierres syndrome.
CASE: A 17-year-old previously healthy female presented to her pediatrician with cough and sore throat. She was initially diagnosed with infectious mononucleosis and treated with steroids for 3 days. Her condition did not improve and she presented to the emergency room with severe shortness of breath, left shoulder and chest pain. Examination at this time was significant for tonsillar enlargement, oropharyngeal erythema and enlarged anterior cervical lymph nodes. She was transferred to the intensive care unit for progressive respiratory distress requiring BIPAP support. Laboratory tests were significant for thrombocytopenia of 44,000/μL, a leukocytosis of 24,000/μL and a lactic acidosis of 3 mmol/L. A CT scan of the chest revealed multifocal consolidation and multiple nodules consistent with an atypical infection. A CT scan of the neck was ordered to rule out epiglottitis but instead revealed a clot within the left internal jugular vein. On day four of admission, blood cultures grew Fusobacterium necrophorum. With a constellation of symptoms including mononucleosis, internal jugular vein clot, septic pulmonary emboli and cultures consistent with Fusobacterium, a diagnosis of Lemierre's syndrome was made. She was subsequently started on ampicillin-sulbactum for a total duration of 4 weeks. Prior to discharge on day 19, her symptoms improved considerably and a follow up CT scan of the chest and neck showed significant decrease in size of consolidative changes and no progression of the prior noted internal jugular vein thrombus.

DISCUSSION: Lemierre's syndrome was once called the forgotten disease because of its rarity but increasing antibiotic resistance patterns worldwide has led to a resurgence in number of cases reported. Despite the classic pattern of sore throat, internal jugular vein thrombosis, and isolation of anerobic organisms, many cases go undiagnosed. This syndrome carries an overall mortality rate of 5 %, so prompt recognition is crucial to prevent fatal outcome. The syndrome typically manifests in healthy teenagers and young adults and spreads via a septic thrombophlebitis of the tonsillar vein and internal jugular vein. The ensuing bacteremia is complicated by septic emboli to a range of sites such as lung, joints, and bones. Although rare, there is evidence of resurgence in the condition in recent years, postulated to be due to reduced use of antibiotic therapy for sore throats and increased resistance patterns of antibiotics worldwide. Lemierre's syndrome should be suspected in the setting of antecedent pharyngitis, septic pulmonary emboli, and persistent fever despite antimicrobial therapy. Treatment consists of beta lactamase resistant beta lactam antibiotics for 4 to 6 weeks. The decision to anticoagulate is subjective as data on this issue is still controversial. Early recognition of this syndrome is essential to prevent associated morbidity and mortality and to keep a once forgotten disease at bay.

THE GREAT IMITATOR STRIKES AGAIN Joshua K. Sabari; Anna Platovsky; Matthew Shaines. Montefiore Medical Center, Bronx, NY. (Tracking ID #1631361)

LEARNING OBJECTIVE 1: Recognize the signs, symptoms, and pathophysiology of gastrointestinal sarcoidosis.
LEARNING OBJECTIVE 2: Understand testing characteristics of CA-19.9
CASE: A 53 year-old woman presented with abdominal pain and 30 pound weight loss over 3 months. Pain was dull, epigastric, with associated nausea and vomiting worse with oral intake. Cancer screening was up to date. An outpatient workup included an endoscopy, which showed mild atrophic gastritis, and a benign colonoscopy. She denied fever, dyspnea, cough, and chest pain. Vital signs were within normal limits, she appeared comfortable, and had mild diffuse epigastric tenderness. Labs revealed a hemoglobin of 10.5 G/dL, platelet count 440 K/uL, corrected calcium of 11.5 mg/dL, direct bilirubin 1.2 mg/dL, SGOT 78 U/L, SGPT 59 U/L, and alkaline phosphate of 546 U/L. Computed tomography revealed multiple bilateral pulmonary nodules, and innumerable small hypodense lesions measuring 1 cm scattered throughout the liver, pancreas, and spleen. Differential diagnosis at the time included metastatic disease, primary pancreatic malignancy, lymphoma, or inflammatory process such as sarcoidosis. Due to concern for malignancy, tumor markers were ordered and CA-19.9 was elevated at 357 U/mL (normal <35 U/mL). Ultrasound guided liver biopsy was performed. Pathology showed non-necrotizing granulomas, negative for AFB, consistent with a diagnosis of gastrointestinal sarcoidosis.
DISCUSSION: Sarcoidosis is a multi-system granulomatous disorder of unknown etiology, with the pathologic hallmark of non-caseating granulomas. The prevalence is 20 per 100,000 people per year. It is thought to arise from an exaggerated cellular immune response to self-antigens and subsequent accumulation of mononuclear inflammatory cells. Sacroid is a systemic disorder involving multiple organ systems. Ninety percent of patients have pulmonary involvement and present with cough, dyspnea, and classically have bilateral hilar adenopathy on chest xray. Common extrapulmonary manifestations include skin (erythema nodosum), eye (uveitis), and joint involvement. Gastrointestinal (GI) manifestations of sarcoid are rare and occur in only 0.5 % of patients. When there is GI involvement, the stomach is the most commonly involved organ; patients present with epigastric pain, vomiting, and weight loss. Hepatic involvement is less common and usually asymptomatic, with differing case series reporting 20–95 % incidence. Pancreatic involvement is rare and is often misidentified as pancreatic malignancy. Sarcoid, known as the "Great Imitator," is often initially misidentified as malignancy and tumor markers ordered during the initial workup are frequently falsely elevated. CA19.9, a tumor marker elevated in GI cancers (pancreatic, hepatobillary, gastric), is thought to be elevated in our patient due to chronic inflammation. CA19.9 has low sensitivity (80), specificity (85) and positive predictive value (72), and guidelines recommend against its use for cancer screening. Pancreatic sarcoidosis carries a good prognosis, with greater than 80 % improvement in symptoms either spontaneously or with steroids, compared to the dismal prognosis of pancreatic cancer which carries a 1 year survival rate of 15–20 %. This case of GI sarcoid, initially thought to be pancreatic cancer based on an elevated CA19.9 value, demonstrates that one should use caution in ordering tumor markers prior to having a tissue diagnosis.

THE MALIGNANT TRUTH ABOUT HYPERCALCEMIA
Vikas Khullar; Ankur Jain; Margaret C. Lo. University of Florida-Shands Hospital, Gainesville, FL. (Tracking ID #1614828)

LEARNING OBJECTIVE 1: Assess the role of PTHrp, skeletal scintigraphy, and targeted CT-scans in the diagnostic evaluation of hypercalcemia of malignancy, especially from cutaneous squamous cell carcinoma (cSCC).
LEARNING OBJECTIVE 2: Recognize the risk factors and poor prognostic factors associated with hypercalcemia of malignancy in the setting of chronic nonhealing skin ulcers.
CASE: A 52 year-old Black female presented with 2 days of confusion, abdominal pain, anorexia, and dehydration, after recent discharge for hypercalcemia (14.2 mg/dL) secondary to severe dehydration. At that admission, patient had a nondiagnostic hypercalcemia workup including normal PTHrp, intact PTH, SPEP/UPEP, Vitamin D 25-OH levels. Medical history included steroid-dependent Crohn's disease and chronic Stage IV sacral decubitus ulcer complicated with cSCC and osteomyelitis s/p sacrectomy and wide local excision with negative margins. Physical exam exhibited a cachectic, confused female with dry mucosa, skin tenting, diffuse abdominal tenderness but clean sacral ulcer. Lab values revealed severe hypercalcemia (17 mg/dL), mild anemia, thrombocytosis, and hypoalbuminemia. Repeat hypercalcemia workup demonstrated normal values of PTHrp, intact PTH, and Vitamin D 1,25-OH. Head CT, 2 V-CXR, and KUB were nondiagnostic. Occult malignancy was suspected, despite normal PTHrp values. A skeletal scintigraphy was negative for bony metastases, showing only specific uptake in the upper sacrum, consistent with destructive changes from chronic sacral ulcer as seen on abdominal/pelvis CT-scans 6 months ago. However, repeat full-body CT-scan revealed T4 vertebral lytic lesions, necrotic left inguinal lymphadenopathy, and metastases to the pelvis, liver, and lungs. Brain MRI showed metastases to the skull marrow space but no masses. Inguinal lymph node cytopathology confirmed the diagnosis of metastatic, moderately-differentiated cSCC. Patient responded to IV fluids, calcitonin, and zolendronate. Given poor prognosis from diffuse metastases and malnutrition, she was discharged under hospice care.
DISCUSSION: This case illustrates cSCC's obscure potential to induce hypercalcemia via bony metastases, independent of well-known PTHrp mediation. Literature cites cases of PTH-independent hypercalcemia of cSCC correlating with the susceptibility to develop metastases. The metastatic potential of cSCC arising from chronic skin ulcers (30 %) is greater than that of cSCC arising in normal skin (3 %). These rare malignant Marjolin skin ulcers develop into aggressive cSCC with higher mortality than other skin cancers. Other poor prognostic factors of hypercalcemia of malignancy include presence of liver metastases, hypoalbuminemia, and calcium >11.83 mg/dL, all present in our patient. Skeletal scintigraphy is the preferred initial imaging modality for detection of bony metastases in cancer-induced hypercalcemia; yet its diagnostic value is poor for lytic metastases (sensitivity 62–100 %, specificity 78–100 %). Experts recommend targeted CT-scans or PET/CT-scans to detect both lytic and blastic bony metastases in high risk cases. Clinicians must vigilantly assess the diagnostic dilemma from normal PTHrp and skeletal scintigraphy before excluding hypercalcemia from cSCC, especially in Marjolin skin ulcers, malnutrition, and severe hypercalcemia. Recognition of such risk factors and the need for CT imaging to detect bony metastases in cSCC-induced hypercalcemia will prevent extensive testing and patient morbidity of this aggressive disease.

THE METASTATIC HIATAL HERNIA SAC: AN UNUSUAL PRESENTATION OF RECURRENT OVARIAN CANCER Raji Shameem; Solaiman Futuri; Stephen Machnicki; Dana Shani. Lenox Hill Hospital, New York, NY. (Tracking ID #1624117)

LEARNING OBJECTIVE 1: Recognize that recurrent ovarian cancer can present with metastasis to a hiatal hernia sac.
LEARNING OBJECTIVE 2: Recognize imaging modalities that can be used to diagnose hiatal hernia sac metastasis.
CASE: An 87-year-old female presented to the clinic with non-specific symptoms of lower abdominal and back pain. Past medical history included Stage II ovarian cancer diagnosed 3 years ago and treated with systemic chemotherapy. The patient had a positive family history of a sister diagnosed with breast cancer at the age of 40. The lower abdominal and back pain had an insidious onset. The patient denied any symptoms of general malaise or weight loss. Examination, including pelvic exam was grossly unremarkable. Given the patients compelling malignancy history computerized tomography of the abdomen was performed which revealed masses within a hiatal hernia. For further evaluation, an endoscopic ultrasound was performed to obtain a sample of the hernia sac contents for biopsy. Hernia sac biopsy pathology results were consistent with ovarian cystadenocarcinoma.
DISCUSSION: Ovarian carcinoma still remains to be a prevalent malignancy with severe morbidity and mortality. In the United States it is a common gynecological malignancy and the number one cause of death in women with gynecological malignancies. The patient risk factors for ovarian cancer included breast cancer in a first-degree relative and late menopause. Other risk factors for ovarian cancer are nulliparity, early menarche, polycystic ovarian disease, and history of ovarian cancer in a first-degree relative. When ovarian cancer metastasizes it has a predilection to spread to the nearby peritoneum. However, no previous case reports have described the metastasis of ovarian cancer to a hiatal hernia sac. This unusual presentation was clearly visible on imaging and confirmed with biopsy results. In addition, there is no literature that comments on the prognosis for patients with such a unique presentation.

THE SISTER MARY JOSEPH NODULE AS PRESENTATION OF ADVANCED MALIGNANT PERITONEAL MESOTHELIOMA Christopher Sankey[2,3]; Ke Zhang[1]. [1]Yale School of Medicine, New Haven, CT; [2]Yale School of Medicine, New Haven, CT; [3]Yale-New Haven Hospital, New Haven, CT. (Tracking ID #1637233)

LEARNING OBJECTIVE 1: Understand the significance of the Sister Mary Joseph nodule in the diagnosis of new abdominal malignancy.
LEARNING OBJECTIVE 2: Explore the typical malignancies associated with Sister Mary Joseph nodules.
CASE: A 63-year-old Puerto Rican male with history of benign prostatic hyperplasia, HTN, and chronic kidney disease presented with sudden onset of difficulty urinating and high blood pressure. On the day of presentation, the patient noticed difficulty urinating associated with penile swelling and discomfort. His left leg is chronically swollen, but was noted to have increased in size in the 2–3 days prior to admission. Upon admission, the patient was afebrile and hypertensive. On exam, patient was noted to have an "irreducible umbilical hernia," firm and nodular, measuring 4.3 cm. Labs were most notable for a creatinine of 5.9, far above his baseline. Retroperitoneal ultrasound demonstrated severe hydronephrosis. Abdominal CT revealed a 10 cm mass posterior to the bladder, a 5 cm mass in the inguinal canal, a 5.2 cm mass inferior to the right hepatic lobe, and a 3.3 cm mass in the retroperitoneum. Biopsy of the umbilical nodule was consistent with malignant peritoneal mesothelioma (MPM). Chemotherapy was initiated, but the patient ultimately elected to pursue further treatments near family in Puerto Rico, and was discharged from our care.
DISCUSSION: The umbilical lesion with which the patient presented was a so-called Sister Mary Joseph (SMJ) nodule, indicative of underlying abdominal malignancy. Named for Sister Mary Joseph, the first assistant for Dr. William Mayo at the Mayo Clinic in the early 1900's, these umbilical nodules were often noted to be associated with advanced abdominal malignancies. Primary malignant nodules in the umbilical area are extremely rare. SMJ nodules are generally metastatic and are seen in 1–3 % of all intra-abdominal and pelvic malignancies; they are the first and only sign of an underlying neoplasm in up to 30 % of cases. The site of origin of malignancy remains unknown in over 30 % of cases as well. SMJ nodules are mainly adenocarcinomas, with half of the cases stemming from GI cancers such as the stomach, colon, or pancreas. An umbilical nodule from metastatic mesothelioma is exceedingly rare, and to our knowledge there are only two case reports of a primary localized malignant mesothelioma in the umbilical area. Approximately 10 % of mesotheliomas are found in the abdomen, but rarely do they involve the umbilicus. In the United States, only about 400 cases are diagnosed annually. We were not able to determine whether the umbilical nodule in our patient was the primary source, as further biopsies of his other abdominal tumors were deferred. The Sister Mary Joseph nodule is important to recognize as heralding previously undiagnosed advanced abdominal malignancy.

THE STRAW THAT BROKE THE ONCOGENIC BACK-OCCURRENCE OF LARGE B CELL LYMPHOMA AFTER HEPATITIS C TREATMENT Niket Sonpal; Raji Shameem; Ilan Weisberg. Lenox Hill Hospital, Hauppauge, NY. (Tracking ID #1624318)

LEARNING OBJECTIVE 1: Indolent lymphoma can potentially be unmasked at the onset of Hepatitis C treatment.
LEARNING OBJECTIVE 2: Clinicians need to be aware of the important association between HCV infection and NHL and this potential complication of antiviral therapy
CASE: The risk of hepatocellular carcinoma with chronic hepatitis C virus (HCV) infection is well recognized while the association between HCV and B-cell non-Hodgkin's lymphoma (NHL) is under appreciated. Lymphoma is thought to arise from chronic B-cell stimulation resulting in malignant monoclonal proliferation. Case series suggest that treatment of HCV infection may lead to regression of lymphoma in select patients. However, there is also a concern for the development of malignancy as a secondary outcome to interferon therapy. We present a patient who developed large B-Cell lymphoma shortly after initiation of HCV treatment. A 60 year-old man with treatment naïve, genotype 1b chronic HCV infection (baseline viral load 7.7 million IU) was referred to our institution for treatment. He contracted the virus in 1969 after blood transfusion for a bleeding duodenal ulcer. There were no radiographic or clinical signs of cirrhosis, portal hypertension, or decompensation. He had no lymphadenopathy on physical exam. After a 4 week lead-in with pegylated interferon alpha and ribavirin, boceprevir was added. He was interferon responsive, evidenced by a 4-log decline in viral load at treatment week 4. Shortly thereafter, he developed a sore throat and painless swelling in the left neck. On exam, a palpable 3 cm lymph node was identified. CT of the neck showed a level 2A lymph node measuring 3.6 cm with associated tracheal deviation and a smaller level 2B lymph node measuring 1.5 cm. The patient underwent ultrasound guided FNA biopsy, which confirmed a diffuse large B cell lymphoma. Due to the rapid presentation, all HCV therapy was discontinued and he was started on R-CHOP (rituximab-cyclophosphamide, doxorubicin, vincristine, and prednisone). Treatment was complicated by mild transaminitis but led to complete regression of his lymphoma. Reattempt at HCV treatment is planned.
DISCUSSION: While antiviral therapy may lead to regression of lymphoma in some patients with chronic HCV infection, the immunostimulating properties of interferon seem to have unmasked an occult lymphoma in our patient. Clinicians need to be aware of the important association between HCV infection and NHL and this potential complication of antiviral therapy.

THE GREAT RADICULAR ARTERY OF ADAMKIEWICZ Eunice Y. Chuang; Indumathy Varadarajan. Mount Auburn Hospital, Cambridge, MA. (Tracking ID #1642384)

LEARNING OBJECTIVE 1: To recognize the presentation of anterior spinal cord infarction.
LEARNING OBJECTIVE 2: To recognize the distribution of the arterial supply of the spinal cord and to clinically correlate the neurological deficit in the presence of an anterior spinal cord infarct.
CASE: 94-year-old female with hypertension, hyperlipidemia and coronary artery disease developed sudden onset of 10/10 belt like pain across

her chest and abdomen when bending forward. It lasted 15 min and was associated with nausea. This was followed by persistent weakness in her legs, hence presented to the ED. Vital signs were stable; physical examination revealed marked bilateral lower limb weakness, more so in the left leg with a power of 3/5, reflexes 1+ at the patellar tendons, Achilles reflexes were absent bilaterally, Babinski sign was present on the left side; temperature and pinprick sensation was lost bilaterally from the T4 level. Rectal sensation was preserved but the tone was decreased. CT chest/abdomen was negative for dissection, but showed a new burst fracture of the T10 vertebra with 5 mm retropulsion of a portion of the posterior vertebral body into the spinal canal. She was started on dexamethasone, advised bed rest and a foley was placed. MRI of the upper thoracic and cervical spine confirmed compression fracture of T10 with retropulsed fragment in the canal but no cord deformity or compression. However there were diffusion changes in anterior spinal cord from T2-T7 more to the left consistent with spinal cord infarct despite the absence of any compressive lesions. Steroids were discontinued. She got a brace for potentially unstable T10 fracture. Patient was discharged to rehab with some improvement of her weakness.

DISCUSSION: A single anterior and 2 posterior spinal arteries supply the spinal cord. The anterior spinal artery (ASA) supplies the anterior 2/3 of the cord. The posterior spinal arteries (PSA) primarily supply the dorsal columns. The ASA and PSA arise from the vertebral arteries in the neck and descend from the base of the skull. Various radicular arteries branch off the thoracic and abdominal aorta to provide additional blood supply to the spinal arteries. The largest and most consistently present of these radicular branches is the artery of Adamkiewicz, which supplies the ASA. This artery enters the spinal cord anywhere between T5 and L1. The PSAs are supported by a greater number of radicular arteries than the ASA, therefore the anterior spinal cord is more vulnerable to infarction in the lower thoracic region. Spinal cord infarction is a relatively rare disorder and account for 1 % of all strokes. It is characterized by sudden motor and sensory loss below the level of the spinal-cord injury. In our case, the T10 burst fracture likely compressed the artery of Adamkiewicz leading to the patient's symptoms. We have described a classical case of thoracic anterior spinal cord infarction, with upper motor neuron lesion signs including paraparesis, extensor plantar response, incontinence and loss of spinothalamic sensation with preservation of dorsal column sensation. Acute pain of spinal belt-like or radicular irradiating character typically precedes or accompanies the presentation of neurological deficit. The di¬agnosis of spinal-cord infarction depends on clinical symp¬toms and MRI findings. Treatment and prognosis depend on the level and extend of the infarction, which includes physiotherapy and psychological counseling.

THE PATH OF LEAST RESISTANCE: A LESSON IN KEEPING A BROAD DIFFERENTIAL Gretchen Snoeyenbos; Robin Klein. Emory University School of Medicine, Atlanta, GA. (Tracking ID #1641832)

LEARNING OBJECTIVE 1: Appreciate the growing incidence of HIV infection in older patients and understand the interplay of age and other confounding factors on the decision to include older patients in HIV testing at all levels of health care.

LEARNING OBJECTIVE 2: Review the broad-based HIV testing recommendations for patients 13 to 64 in all health care settings.

CASE: A 62 year old African American male with a 50+ pack year smoking history presents with progressive dyspnea, cough and cachexia. On admission, he was not hypoxic or tachypneic. Exam revealed was cachexia and glossitis. Laboratories studies revealed a sodium of 126 mEq/L and osmolarity of 254 mOsm/L. CT imaging of the chest revealed mild septal thickening. He was treated for presumptive COPD. Unfortunately, his symptoms worsened. He was no longer able to work due to dyspnea. Three months later, he came to the ED with dyspnea, productive cough, and weight loss. Chest X-Ray showed no focal infiltrate. His room air saturation was 91 %. At that visit, he was diagnosed with bronchitis, given nebulizer treatments, prescribed a course of azithromycin, and instructed to follow up in primary care. His cough worsened and his dyspnea progressed until present at rest. One week later, he returned to the hospital. He was hypoxic and tachypneic. Exam revealed marked cachexia as he has lost 30lbs. His PaO2 was 37 mmHg and A-a gradient was over 80 mmHg. CT imaging showed bilateral reticular ground glass opacities concerning for Pneumocystis pneumonia. Laboratories revealed a positive HIV test with a CD4+ count of 33.

DISCUSSION: A growing number of older people now have HIV. Those over 50 represent a quarter of all people with HIV in the US. Most commonly diagnosed in younger patients, 1,983 cases were diagnoses in patients 60 years and older in 2010. Many are unaware of their diagnosis due to a general underappreciation of HIV rates in older patients. Since 2006, the Center for Disease Control has recommended broad-based HIV testing for patients 13 to 64 in all health care settings. Efforts were made to reduce requirements for separate consent procedures and pretest counseling to facilitate testing at all levels of health care even the acute care setting. Some argue that a broad testing strategy could facilitate earlier diagnosis, expedite treatment, and reduce opportunistic infections. Rapid HIV tests are available with comparable sensitivity, specificity, and negative predictive value for screening at the HIV prevalence observed in most US testing sites. Our patient accessed health care environments on three separate occasions prior to being tested for HIV. An HIV test was performed at initial presentation would have facilitated earlier diagnosis of his underlying opportunistic infection. In retrospect, our patient displayed may of the typical signs and symptoms of pneumocystis including progressive dyspnea, weight loss, hypoxia, and bilateral ground glass opacities. His symptoms were attributed to different etiologies on different occasions. This case highlights the importance of thinking comprehensively about a patient's symptoms and the importance of a broad-based HIV testing strategy. Physicians need to recognize that new HIV diagnoses do occur in older patients and that age should not preclude these patients from inclusion in HIV testing at all levels of health care.

THE TRIAD: DIABETIC KETOACIDOSIS, SEVERE HYPERTRIGLYCERIDEMIA AND ACUTE PANCREATITIS Eunice Y. Chuang; Indumathy Varadarajan. Mount Auburn Hospital, Cambridge, MA. (Tracking ID #1642607)

LEARNING OBJECTIVE 1: To recognize the association between Diabetic ketoacidosis (DKA), severe hypertriglyceridemia (HTG) and acute pancreatitis (AP)

LEARNING OBJECTIVE 2: To manage AP in the setting of DKA and severe HTG.

CASE: A 48-year-old man with no significant past medical history presented with lethargy, nausea and abdominal pain for 2 weeks. He reported a 14 pound weight loss, polyuria, and polydipsia for 1 month. No fever, diarrhea or alcohol consumption. No family history of hyperlipidemia or diabetes type 2; but his brother has diabetes type 1. On physical exam, temperature 99.7 F, heart rate 100/min, BP 130/70 mmHg and oxygen saturation was 95 % on room air, BMI of 26; there were no skin discoloration or xanthomas. Laboratory data showed sodium 130 mmol/L, potassium 4.0 mmol/L, chloride 92 mmol/L, bicarbonate 16.0 mmol/L, anion gap 22.0, glucose 511 mg/dL, HbA1C 15 %, BUN 10, creatinine 0.8 mg/dL, triglycerides 5,940 mg/dL, hematocrit 38 %, WBC 8.29, platelets 225, lipase 12,064 U/L, Albumin 3.8 g/dL, total Bilirubin 1.1 mg/dL, Alkaline Phosphatase 171 U/L, ALT 19 U/L, AST 20 U/L. Urinalysis showed 3+ glucose, 2+ ketones. Abdominal ultrasound showed enlarged pancreas with ill defined areas of hypoechogenicity, likely secondary to pancreatitis, increased liver echogenicity consistent with hepatic steatosis. He was started on an insulin drip with IV fluids and admitted to ICU. After 24 h, Triglycerides was 969 mg/dL and anion gap was closed. The patient was started on gemfibrozil therapy for hpertriglyceridemia and transitioned to Insulin glargine and lispro. GAD 65 antibodies and islet cell antibodies were negative. Patient was discharged home on gemfibrozil and insulin.

DISCUSSION: The combination of severe HTG, DKA and AP is rare. It is not clear which entity is causative in this triad. One hypothesis is that in DKA, the deficiency of insulin activates lipolysis in adipose tissue releasing increased free fatty acid (FFA), which accelerates formation of VLDL in the liver. In addition, reduced activity of lipoprotein lipase (LPL) in peripheral tissue decreases removal of VLDL from the plasma, resulting in HTG. HTG is an

uncommon cause of acute pancreatitis accounting for 1–4 % of cases, especially when the serum TG level exceeds 1,000 mg/dL. Severe HTG can occur in deficiency of LPL in genetic disorders; or relative LPL deficiency in diabetes, hypothyroidism and medications. Treatment of pancreatitis with HTG and DKA include limiting fat intake and rapid removal of chylomicrons and TG. In the present case, HTG was controlled with insulin without lipid lowering agents. However, in severe hypertriglyceridemia not responding to insulin, the application of plasma exchange should be considered to avoid complications, such as necrotizing pancreatitis. IV heparin is a proposed treatment which is still controversial.

THE USUAL SUSPECT … DOG, OR IS HUMAN THE CULPRIT? CAPNOCYTOPHAGA ENDOCARDITIS IN A NEWLY DIAGNOSED CASE OF MULTIPLE MYELOMA Navid Mehraban; Michael Sheffield; Zakir Shaikh. Methodist Dallas Medical center, Dallas, TX. (Tracking ID #1624635)

LEARNING OBJECTIVE 1: Capnocytophaga, a facultative anaerobic gram-negative bacilli, is often times a normal inhabitant of the human mouth. It can present as an opportunistic infection in immunocompromised patients. Capnocytophaga canimorsus species is found in normal oral flora of dogs and cats and can be transmitted to humans by close contact (bite, scratch, etc.). It is a rare infection that can affect cancer patients particularly those with hematologic malignancies. Other reported risk factors include alcoholism and asplenia. We report a patient with pathologic fracture of the femur due to multiple myeloma who was diagnosed with Capnocytophaga endocarditis during her initial presentation

CASE: A 53 year old African-American female with a past medical history of bipolar disorder and hypertension was admitted to our critical care unit for altered mental status and a pathologic fracture of her left femur sustained after a fall. She was found to have severe hypercalcemia, and acute kidney injury,. and was diagnosed with multiple myeloma. She received aggressive fluid resuscitation, pamidronate, and calcitonin. Upon hospitalization, she was noted to be afebrile, with poor dentition, and normal white blood cell count. However, 1 day into her admission she developed a fever of 38.5 C. Blood cultures were sent and empiric Ceftriaxone was initiated. After 3 days her blood cultures grew Capnocytophaga species. Transesophageal echocardiogram done to evaluate a new murmur identified vegetation on her tricuspid valve. At that time, upon further questioning, she admitted to having close contact with her dogs and being exposed to their saliva. The patient successfully underwent right femur stabilization and was started on chemotherapy. She was treated with ceftriaxone for a total of 42 days and her repeat blood cultures remained negative.

DISCUSSION: Capnocytophaga is a fastidious bacterium that is found in dog saliva and can be transmitted to humans via contact with dogs. This genus can cause severe systemic infection, including sepsis, septic arthritis, meningitis, and endocarditis. Capnocytophaga species can be difficult to diagnose due to its slow-growing nature and need for special culture media. There are limited literature reports of this organism as a cause for endocarditis. Sandoe et al. described 12 cases of endocarditis with C. canimorsus reported between 1977 and 2002. Contact with dogs was noted in 66 % of those patients and 33 % had underlying cardiac risk factors. Martino et al. reported a series of 28 cancer patients with Capnocytophaga bacteremia of which two patients had multiple myeloma. Penicillin is the treatment of choice for Capnocytophaga infection but response to other antibiotics, including third generation cephalosporins, has also been reported. Our patient had poor mucosal barrier, close contact with dogs, and newly diagnosed multiple myeloma,all of which could have increased her predisposition to the Capnocytophagainfection. Question as to whether it may have originated from her own oral flora or was transmitted through her dog's saliva, likely will remain unanswered!

THIS LEAK NEEDS MORE THAN A PLUMBER Ishani Pathmanathan; Neil Shah. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1641144)

LEARNING OBJECTIVE 1: Rapidly recognize signs and symptoms of impending cardiogenic shock.

LEARNING OBJECTIVE 2: Understand complications associated with mechanical valves. Identify the need for acute surgical intervention for prosthetic valvular dehiscence.

CASE: A 58 year old woman presented to the emergency room with shortness of breath, increasing lower extremity edema, weight gain, dyspnea on exertion and disorientation. She had a history of atrial fibrillation, sick sinus syndrome status-post pacemaker, and mechanical mitral valve replacement 5 years prior. She was afebrile with an irregular heart rate in the 110's, blood pressure of 100/70, and respiratory rate of 20. She was oriented only to person and asterixis was present but appeared otherwise alert and comfortable. She had a 3/6 left sternal border systolic murmur, a 2/4 diastolic murmur and a loud mid-systolic click, as well as jugular venous distention, hepatojugular reflux, a pulsatile liver, 3+ bilateral pitting edema and cool extremities. Bicarbonate was 20, creatinine 2.2, AST 55, total bilirubin 4.9 and direct bilirubin 2.1. She had a normocytic anemia but no leukocytosis or thrombocytopenia. LDH was 976 and haptoglobin undetectable. Troponin was 0.53 with atrial fibrillation and non-specific ST-segment changes diffusely on electrocardiogram. Pro-BNP was 1,791 and lactic acid was 6.5. Chest X-ray showed an enlarged cardiac silhouette with pulmonary venous congestion. Transthoracic echocardiogram (TTE) demonstrated a paravalvular mitral valve leak, hyperdynamic left ventricle, left atrial and severe right ventricular enlargement and pulmonary hypertension. Within a few hours she deteriorated, despite intubation, ionotropic and vasopressor support. Further imaging with a trans-esophageal echocardiogram (TEE) revealed posterior suture dehiscence of the mechanical valve prosthesis. An Impella device was placed emergently for circulatory support and preparations were made for surgical intervention.

DISCUSSION: Shortness of breath is a common presenting symptom and we must recognize a declining clinical course despite initial stability. In this case we had to synthesize the many worsening symptoms and recognize prosthetic valve dehiscence as the cause of worsening cardiogenic shock. Prosthetic valve replacements are increasingly common, with serious complications in about 3 % including structural malfunctions, thromboses, bleeding, endocarditis and hemolytic anemias. Mechanical valves are at lower risk of structural failure than bioprosthetics, but when paravalvular leaks occur their clinical implications can be severe, if months or years post-operatively. Suture valve dehiscence is particularly common in mitral valves at the posterior suture line. Our patient presented with shortness of breath that quickly escalated into multi-organ failure. Prosthetic valve dehiscence caused mitral regurgitation, left atrial strain, increasing pulmonary vascular pressures, and right-sided heart failure. Resulting cardiogenic shock precipitated a rapid ventricular rate leading to poor renal, cardiac and hepatic perfusion. The combined result of pulmonary hypertension, encephalopathy and hemolytic anemia from traumatic shearing of erythrocytes contributed to the patient's hypoxia, subsequent intubation and rapid clinical deterioration. Recognition by the hospitalist of suture dehiscence as a possible complication of her prosthetic valve and precipitant of acute heart failure allowed for timely diagnosis and appropriate surgical intervention.

THREE HOLES IN THE HEAD Jerson Munoz-Mendoza[1]; Veronica A. Pinto Miranda[1]; Shivashanker Balasingham[2]; Karlo J. Lizarraga[3]; Gio J. Baracco[4]. [1]University of Miami-Jackson Memorial Medical Center, Miami, FL; [2]University of Miami-Jackson Memorial Hospital, Miami, FL; [3]University of Miami, Miami, FL; [4]Miami Veterans Affairs Healthcare System, Miami, FL. (Tracking ID #1636410)

LEARNING OBJECTIVE 1: Diagnose osteomyelitis in patients with HIV/AIDS

LEARNING OBJECTIVE 2: Recognize Salmonella enteritidis as etiology of osteomyelitis in patients with HIV/AIDS

CASE: A 64-year-old man with history of HIV/AIDS infection, whose last CD4 was 4 cell/mm3 and viral load was 47, 848 copies/ml, poorly adherent to antiretroviral therapy and to prophylaxis against opportunistic pathogens

presented to the emergency department complaining of progressively worsening headache and general malaise over the last 3 weeks. He also complained of urinary frequency and dysuria. Physical examination was normal except for low grade fever and a 5 cm by 5 cm subcutaneous fluctuant mass over the left parieto-occipital region of the cranium, which was slightly tender to palpation. The overlying skin was warm but not erythematous. Laboratory data showed a hemoglobin level of 11 g/dL, the white blood cell count was 5,800 cell/mm3, the platelet count was 217, 000/mm3. Urinalysis showed 54 leukocytes per high power field, nitrates positive. Cerebrospinal fluid analysis showed 0 cells/mm3, 25 mg/dL of protein, glucose 57 mg/dl. A CT scan of the head revealed three large osteolytic lesions in the cranial vault, two in the left frontal bone, measuring 3 cm each and one in the left parietal bone of 2.7 cm with mild intracranial extension of extraosseous soft tissue. MRI of the brain showed the parietal one had superimposed central fluid extending from the subgaleal scalp to the epidural space, without brain parenchymal invasion or edema. Needle aspiration of the large subcutaneous collection yielded purulent fluid. The isolate on the cultures plates was identified as S. enteritidis. The same organism also grew in the urine culture but neither in the blood culture nor in the cerebrospinal culture. Blood and CSF cultures were negative. Cytology of the aspirate was negative for malignancy. Therapy with ceftriaxone was begun, resulting in improvement in the patient's condition however after 2 weeks of therapy he developed a generalized itchiness and the antibiotic was switched to oral ciprofloxacin. Antiretroviral therapy was also initiated and he had two repeat aspirations of the posterior mass. Another brain MRI 1 month after therapy showed improvement of the calvarial lesions; therefore he was discharged with instructions to complete a course of ciprofloxacin for 6 weeks and would follow with infectious disease and neurosurgery as outpatient.

DISCUSSION: Non-typhoid salmonella infection is a common occurrence among HIV-infected patients. Salmonella infection in the setting of AIDS usually present as bacteremia, however localized infection, such as osteomyelitis, is very rare. We report a unique case of an HIV-infected patient with multiple foci of cranial osteomyelitis with concomitant epidural abscess and urinary tract infection caused by enteritidis. This case describes an uncommon presentation of Salmonella enteritidis infection in a patient with AIDS. This case provides also evidence to consider non-typhoid salmonella infections in the differential diagnosis of HIV patients with osteomyelitis. Clinicians caring for HIV-infected individuals should take that into account since prompt diagnosis, prolonged antibiotic therapy, and in some cases surgical drainage, will result in full recovery from infection.

THROMBOPHILIA: A RISK FACTOR FOR HEPATOPORTAL SCLEROSIS Hamid Habibi[1]; Kavitha Bagavathy[1]; Deepika Devuni[2]. [1]University of Connecticut, Farmington, CT; [2]University of Connecticut, Farmington, CT. (Tracking ID #1638520)

LEARNING OBJECTIVE 1: To explain the different causes of hepatoportal sclerosis

LEARNING OBJECTIVE 2: The explain the association of hepatoportal sclerosis with thrombophilia

CASE: A 69-year-old male presented to the gastroenterology clinic for an evaluation of abnormal liver function tests. His past medical history was significant for hypertension, coronary artery disease, Factor VIII thrombophilia and pulmonary thomboembolus. He denied any symptoms suggestive of liver disease. His risk factors for transaminitis included history of blood transfusion,statin and alcohol use (3–4 beers a day). On exam, he had scleral icterus with bilateral arcus senilis. His abdomen was soft with an enlarged liver, but no clinically evident splenomegaly or ascites. Lab tests included liver function tests were as follows: ALP: 247U/L, AST: 26U/L, ALT, 19U/L, Indirect Bilirubin 3 mg/dL, Direct Bilirubin: 4.4 mg/dL, Platelets: 127, INR 1.5. Viral hepatitis serologies were negative. An antibody panel, which included anti smooth-muscle, alpha-1antitrypsin, anti-mitochondrial,anti LKM-1, ANA screen, ceruloplasmin, cardiolipin, homocysteine, celiac markers and iron studies were all unremarkable. A factor VIII assay was elevated at 210 %. An abdominal ultrasound with doppler showed evidence of ascites, with patent portal veins, splenomegaly and cholelithiasis without biliary ductal dilatation. In the absence of a clear etiology, the patient underwent a transjugular liver biopsy, which showed marked dilatation of portal veins with sclerosis and no evidence of cirrhosis. The findings were consistent with non-cirrhotic portal hypertension and hepatoportal sclerosis (HPS).

DISCUSSION: Hepatoportal sclerosis also known by other names including Banti syndrome, tropical splenomegaly, idiopathic portal hypertension and nodular regenerative hyperplasia is a rare but known cause of noncirrhotic liver disease. The cause is unknown but manifests with an enlarged spleen and portal hypertension. Many authors have linked chronic or recurrent infections of the digestive tract, toxic exposure to arsenic, vinyl chloride or pharmacologic agents such as azathioprine,methotrexate and 6-mercaptopurine to HPS. Some studies suggest that an underlying autoimmune process, connective tissue disorder, HIV and a prothrombotic state may increase portal venule obstruction. The clinical presentation is related to symptoms and complications of portal hypertension. Although commonly misdiagnosed as cirrhosis, pathologically, the distribution of fibrosis confined to the portal tracts differentiates it from the former. Patency of the hepatic and portal veins is also needed for a correct diagnosis. Unlike cirrhosis, HPS is generally non-progressive with a better prognosis, especially if the raised portal pressure is reduced by shunt surgery or other procedures. Although a non-cirrhotic hepatopathy, in rare cases it can progress to end-stage liver disease needing liver transplantation.In our patient, his likely risk factor for HPS was his thrombotic state of Factor VIII coagulation factors. A suspicion of HPS should prompt a clinical evaluation and correlation including a thrombophilia workup.

THROMBOTIC STORM- 'WOLF AT THE DOOR'-A RARE CASE OF ARTERIOVENOUS CLOTS Madan Badal; Paras Karmacharya; Naba R. Mainali; Madan Badal. Reading Hospital, Wyomissing, PA. (Tracking ID #1609805)

LEARNING OBJECTIVE 1: Thrombotic storm presents as multiple clots in arterial and venous system in short span of time with negatve thrombophilia workup.

LEARNING OBJECTIVE 2: Early anticoagulation is the key in the management of this catasrophic phenomenon.

CASE: Thrombotic Storm presents as a serial thrombotic events that escalates rapidly involving multiple sites. Here we report a case of thrombotic storm in a young pregnant lady successfully treated with anticoagulation. 24 years old pregnant (25 week) female with history of nephrotic syndrome was admitted for diabetic ketoacidosis and pneumonia. On day 4, she delivered non-viable fetus which was followed by flash pulmonary edema due to inferior wall MI. Cardiac catheterization was suggestive of right coronary artery embolus. On day 8, she developed left upper quadrant abdominal pain and was found to have splenic infarct and bilateral iliac vein thrombi. Personal and family history of coagulation disorder was negative. She was then started on heparin infusion. During the course she developed progressive thrombocytopenia and worsening renal failure. However, liver function tests were normal. Blood, urine and sputum cultures were sterile. Lupus anticoagulant, anticardiolipin antibody, beta 2 glycoprotein, heparin induced platelet antibody, hemolytic and DIC panel were negative.CD 55/CD 59 assays, homocysteine, anti-thrombin III, protein C and protein S were non-revelaing. Prothrombin gene and factor V Leiden mutation were also negative. On day 15, her course was further complicated by multiple embolic stroke as seen on CT scan. Continued anticoagulation for 3 months lead to recovery of her symptoms with minimal residual neurological deficit.

DISCUSSION: Thrombotic storm, progresses rapidly within a short period of time with clots affecting multiple organ systems. Catastrophic anti-phospholipid syndrome, Heparin induced thrombocytopenia and Paroxysmal Nocturnal Hemoglobinuria should be excluded before making the diagnosis. Usual triggers of thrombotic storm include pregnancy, infammation, trauma, surgery, and infection. It is often lethal if not detected and treated quickly. Continued anticoagulation therapy usually controls thrombotic storm.

THYROTOXICOSIS AND ABDOMINAL SYMPTOMS—A DIAGNOSTIC CHALLENGE David Kim[1]; Sonya Gupta[2]; Supratik Rayamajhi[3]. [1]Michigan State University, East Lansing, MI; [2]Michigan State University, East Lansing, MI; [3]Michigan State University, East Lansing, MI. (Tracking ID #1643124)

LEARNING OBJECTIVE 1: Recognize uncommon presentations of hyperthyroidism
LEARNING OBJECTIVE 2: Distinguish between an acute surgical and thyrotoxic medical abdomen
CASE: JB is a healthy 46 year old Caucasian male with no prior medical history. He presented to the Emergency department for 1 week duration of persisting vomiting, subjective fevers, worsening left lower quadrant pain radiating to the left flank, and diarrhea associated with occasional hematochezia. He admitted to eating seafood at a restaurant prior to symptom onset and to drinking alcohol excessively for the last 6 months. Initial evaluation revealed that the patient was diaphoretic with low grade temperature and tachycardia. Physical exam revealed guarding of the left lower quadrant with mild rebound, left CVA tenderness, and hypoactive bowel sounds. Examination of the skin, thyroid, and eyes were unremarkable. Significant lab abnormalities were an elevated ESR of 29, mild elevations in CRP and Lipase but normal LFTs. Urine analysis was unremarkable. Initial CT scan was without contrast and negative for nephrolithiasis. Patient was admitted and worked up for possible infectious versus ischemic etiology for his symptoms. Stool studies were obtained and he was started on empiric Cipro and Flagyl. Repeat CT scan with contrast was negative for diverticulitis, colitis, or pancreatitis. Colonoscopy was negative for colitis and biopsy samples were taken which were later interpreted as unremarkable. Pt had a TSH level of <0.01 mIU/ml, obtained shortly after admission due to his symptoms of anxiousness and tachycardia, and a free T4 level of 8.2 ng/dL that confirmed thyrotoxicosis. A thyroid ultrasound was negative. Elevated levels of Thyrotropin receptor antibody levels of 40 IU/L and thyroid stimulating immunoglobulin of 4.6 confirmed Graves disease. The patient was started on methimazole and Propranolol and by hospital day number four, the patient's symptoms dramatically improved. At 2 week follow up, his abdominal pain resolved and Free T4 levels normalized. The risks and benefits of I131 therapy was discussed with the patient.
DISCUSSION: Thyrotoxicosis is a systemic syndrome caused by exposure to excessive levels of thyroid hormone. Graves disease is the most common cause of thyrotoxicosis and occurs in 2 % of the female population, with a female to male ratio of 7–8:1. Classic signs and symptoms include opthalmopathy, dermopathy, goiter, palpitations, diaphoresis, nervousness, and weight loss. However, it remains a "great masquerader" due to its unrecognized presentations. Hyperthyroidism presenting as acute abdomen, diarrhea, and vomiting have been described in the literature but are considered to be unusual and rare manifestations. On review of the literature, a retrospective study conducted on 25 patients hospitalized with acute thyrotoxicosis by Dr. Harper revealed that up to 36 % of patients complained of abdominal symptoms. The diagnosis of Graves disease was delayed in this case due to nonspecific abdominal symptoms despite the presence of some classic signs. Moreover, this case emphasizes the significance of a good history and physical exam and also the possibility of missed diagnosis, more invasive testing, and increased risk for morbidity/mortality in such presentations. Our case demonstrates the importance of keeping a broad differential diagnosis of the causes of an apparent acute abdomen.

TIGECYCLINE: CAUTIONARY TALE Dhara J. Chaudhari; Samit Bhatheja; Wael Zakaria. East Tennessee State University, Johnson City, TN. (Tracking ID #1638406)

LEARNING OBJECTIVE 1: To recognize adverse effects of Tigecycline
LEARNING OBJECTIVE 2: To heighten awareness and emphasis high index of caution with tigecycline, and vigilance with symptom monitoring.
CASE: 86 year old male presented to hospital with complains of nausea, vomiting, abdominal pain, and loose stools of 2–3 days duration. Abdominal pain was dull, non-radiating. He denied dysphagia, hemetemesis, fever, or sick contact. His medical history includes recent hospital admission for recurrent bilateral lower extremity cellulitis for which he was discharged home with Intravenous Tigecycline for total of 15 days, coronary artery disease, obstructive lung disease. He had cholecystectomy done few years ago. He was non-smoker, non-alcohol drinker. His Physical exam was significant for BP 164/92, Temp 96.4, tenderness in epigastrium, diffuse red and scaly bilateral lower extremity. Initial laboratory evaluation revealed lipase 562, amylase 81, WBC 16.2, normal chemistry panel, fasting triglyceride 302 (10 days ago 198). Patient was kept nothing by mouth, given IV fluids with bowel rest. CT Abdomen/pelvis revealed sever pancreatic inflammation with early necrosis (Balthazar score-D), no evidence of gall stone. other causes of pancreatitis such as hypertryglyeridemia, gallstones were ruled out. Only plausible medication was tigecycline. His tigecycline was stopped and He was started on IV Imipenem. Patient continued to do well over next few days and tolerated oral diet. His lipase returned to normal value. He was discharged home with change in his antibiotics.
DISCUSSION: Tigecycline, 9-t-butylglycylamido semi-synthetic derivative of minocycline, developed to overcome two mechanisms of tetracycline resistance ribosomal and efflux pump. It has in vitro activity against Gram positive, gram negative, anaerobes. It is indicated for skin and soft tissue infections, intra-abdominal infection. Acute drug induced pancreatitis is considered when pancreatitis develops during administration of culprit drug, exclusion other causes, symptom improvement with discontinuation of drug. Although exact mechanism of pancreatitis is unknown, postulated hypothesis regarding tetracycline induced pancreatitis exits in literature. Tetracycline induced block in protein synthesis lead to accumulation of defective protein with in the hepatocytes. It inhibits release of triglyceride, and causes retention of triglyceride and precipitation of pancreatitis. tetracycline and tigecycline has 4 ring structure making this hypothesis plausible for tigecycline as well. Phase 3 trails on tigecycline used in skin and soft tissue infections had documented incidence of 3.3 % as compared to control group. Acording to the published cases in literature, patient present with nausea, abdominal pain within 6–14 days of initiation of treatment. Amylase and lipase were reported to be elevated up to 2 to more than 5 times upper limit of normal with variation in recovery time. Tigecycline induced pancreatitis is a rare phenomena requiring strong emphasis on cautious use of tigecycline, monitor symptoms of abdominal pain, and evaluate with amylase-lipase if clinical presentation demands.

TIME TO BRING STEROIDS IN THE MANAGEMENT OF LEVAMISOLE INDUCED VASCULOPATHY? Arshad A. Javed1; Rohit Gupta1; Sri B. Yadlapalli1; Muhammad A. Shahzad1; Shabnam Ali1; Rajaie Namas2. 1WSU/DMC, Detroit, MI; 2WSU/DMC, Detroit, MI. (Tracking ID #1626207)

LEARNING OBJECTIVE 1: Recognize the need for high dose steroid therapy in levamisole induced vasculitis
LEARNING OBJECTIVE 2: Diagnose case of levamisole vasculitis in cocaine abusers
CASE: A 45 year old woman was admitted to the MICU with mental status changes, hypotension, fever, renal failure, acidosis and intubated for respiratory failure. She had history of heavy alcohol, cocaine and tobacco use. She was hypotensive, tachycardic, febrile and in severe pain, crying when awake but otherwise, delirious. There was violaceous discoloration on all extremities with bullae especially on lower extremities, arms and hands along with impending gangrene of the fingertips and bilateral necrotic patches on cheeks with necrotic eroded nasal cartilage. Urine showed cocaine and levamisole. ANCA was positive. Skin biopsy showed superficial and mid dermal angiocenteric infiltrates of mixed inflammatory associated with multiple fibrin thrombi in the lumen of vessels. Another 42 year old woman presented with joint pain, fatigue and painful skin rash mostly on the right upper and lower extremities that was attributed to her lupus history. There was diffuse macular ecchymotic rash most prominent on the patient's buttock and thighs but also extending down to the legs and on the arms; large ecchymotic lesions of approximately 10 cm diameter on legs that

appeared to be nonblanching but exquisitely tender. She denied drug abuse but urine was positive for cocaine. ANCA was positive. Skin biopsy showed multiple intraluminal thrombi in small vessels of superficial and deep dermis without vasculitis. Both the patients were started on treatment with high dose intravenous methylprednisone ('pulsed'), showed dramatic improvement in symptoms and later on it was switched to oral steroids.
DISCUSSION: Now that cocaine-levamisole has been associated with a severe vasculitis and described in medical literature repeatedly, there is a need to treat the condition in a better way. Conservative approach (wound care and antibiotics) with or without corticosteroids and surgical modalities either with skin grafting or with amputation have been the cornerstones of management so far. There have been questions regarding the efficacy of corticosteroids. Another question is whether the response to steroids depends on the pathological findings which range from vasculitic to thrombotic to a mixed picture. Both of our patients responded very well to high dose IV steroids. We hope that results like this will encourage further research to reach the best management option.

TITLE: AN UNUSUAL CAUSE OF PARALYSIS Patrick Quinlan. Reading Hospital, Wyomissing, PA. (Tracking ID #1621532)

LEARNING OBJECTIVE 1: To recognize severe hypokalemia as a potential side effect of tenofovir therapy.
LEARNING OBJECTIVE 2: To understand the mechanism involved in tenofovir induced hypokalemia.
CASE: A 51 year old female with a long standing history of HIV on tenofovir therapy for about 1 year presented with profound weakness of the upper and lower extremities. On initial presentation, serum potassium was measured to be 1.1 mEq/L, serum phosphate was found to be 1.2 mg/dl, and a non-anion gap metabolic acidosis was also present. A complete neurological workup, including MRI of the brain, MRA of the head and neck, CT scan of the head and neck, EMG and nerve conduction studies were performed and found to be unrevealing. The patient's profound weakness was attributed to severe hypokalemia and hypophosphatemia. After excluding other potential causes of hypokalemia (absence of GI symptoms, normal thyroid functions studies, absence of other medication causes), her low potassium, low phosphorus, and metabolic acidosis were attributed to her longstanding treatment with tenofovir. After aggressive IV and PO potassium and phosphorous replacement, the patient recovered her former strength and walked out of the hospital.
DISCUSSION: Although rarely resulting in profound hypokalemia, proximal renal tubular dysfunction is a known complication of tenofovir therapy. There are only several case reports of tenofovir induced hypokalemia resulting in profound weakness or paralysis. The mechanism is thought to be due to nephrotoxicity affecting the proximal tubular cells of the nephron which results in Fanconi Syndrome and potassium wasting, which manifests as hypokalemia, hypophosphatemia, proteinuria, glucosuria, and non-gapped metabolic acidosis. Rarely, tenofovir can cause profound hypokalemia. Periodic (every 6 months) measurement of renal function and potassium levels should be performed in patients on tenofovir therapy. Therefore, beware of the potential for severe hypokalemia and non-anion gap metabolic acidosis in patients on tenofovir therapy.

TITLE: CONGENITAL INFERIOR VENA CAVA MALFORMATION AS A RISK FACTOR FOR DEEP VENOUS THROMBOSIS INTRODUCTION: ANOMALIES OF THE INFERIOR VENA CAVA HAVE BEEN RECOGNIZED AS A POSSIBLE RISK FACTOR FOR PROXIMAL DVT. WITH RESPECT TO THE PATHOPHYSIOLOGY OF DEEP VEIN THROMBOSIS IN INDIVIDUALS WITH AN ANOMALY OF THE INFERIOR VENA CAVA, BLOOD RETURN MAY BE INADEQUATE DESPITE OF PROMINENT COLLATERALS. THIS INADEQUATE BLOOD RETURN MAY INCREASE THE BLOOD PRESSURE IN THE VEINS OF THE LOWER EXTREMITIES, WITH ENSUING VENOUS STASIS AND SUBSEQUENT DEEP VEIN THROMBOSIS, WHICH IS BILATERAL IN MORE THAN 50 % OF SUCH PATIENTS Foroozan Famoori; Saba A. Hasan. CAPITAL HEALTH REGIONAL MEDICAL CENTER, Trenton, NJ. (Tracking ID #1641830)

LEARNING OBJECTIVE 1: 1- Anomaly of the inferior vena cava should be considered in young patients who present with deep vein thrombosis especially proximal and bilateral. 2- Consider lifetime anticoagulation for IVC vasculature anomalies in patients who cannot have reconstructive vascular surgery. 3- Physicians should investigate underlying causes of DVT before stopping anti-coagulants for patients with unusual presentations of DVT.
CASE: The patient was a 26-year-old male without significant past medical history who was admitted with back pain. The back pain progressed, and he began having leg pain and swelling. Venous duplex showed lower extremity DVT. Further evaluation showed an extensive IVC thrombus which was completely occluded. CT scan showed a retroperitoneal fusiform soft tissue swelling at the level of kidneys as well as bilateral renal vein thrombus. The contrast-enhanced CT Scan revealed anomalous vasculature with an incomplete and hypoplastic IVC. There was no direct connection between the IVC and the right atrium. He underwent systemic thrombolysis and thrombectomy, and was placed on warfarin at discharge. Warfarin was stopped after 3 years of therapy. Six months after stopping warfarin, the patient came back to the hospital with left leg discomfort. Doppler ultrasound again showed bilateral common femoral vein thrombosis. The patient underwent lower extremity venography and thrombolysis, and thrombectomy of the IVC. Venacavagraphy of common iliac veins revealed stasis of flow within the inferior vena cava at the level of the L2 vertebral body. Pt was started again on warfarin this time for lifetime, and patient was advised to wear elastic stockings.
DISCUSSION: Sonography is usually the first imaging modality in the evaluation of patients with deep vein thrombosis, but anomalies of the inferior vena cava may be missed on sonography. Therefore physicians must consider contrast enhanced CT scan and venogram in spontaneous unprovoked bilateral deep vein thrombosis in a young patient without any past medical history.

TITLE: SYSTEMIC MASTOCYTOSIS- AN INTRODUCTION TO A RARE HEMATOLOGICAL DISORDER REQUIRING CAREFUL DIAGNOSTIC PLANNING Misako Nagasaka; Hirokazu Ban; Masayuki Nigo; Efat Azizi; Alfred Burger; Ilan Shapira. Beth Israel Medical Center, New York, NY. (Tracking ID #1644733)

LEARNING OBJECTIVE 1: Recognize systemic mastocytosis (SM) as a rare yet morbid differential which may mimic the presentation of leukemia/lymphoma.
LEARNING OBJECTIVE 2: Diagnose SM while safely managing the potential sequelae of life-threatening mediator-related events.
CASE: A 66 year-old man without any past medical history presented with fatigue, weight loss and generalized abdominal pain for 3 months. Physical exam was positive for splenomegaly. The patient's labs revealed an hemoglobin of 8.0 g/dl and platelets of 79 K/ul. CAT scan of the abdomen showed splenomegaly and diffuse lymph node (LN) enlargement. An endoscopic biopsy of the porta hepatis LN was performed. A few hours after endoscopy, the patient complained of sudden rigor, became unresponsive and a medical code was called. Monitor showed ventricular fibrillation. The patient was successfully resuscitated after four defibrillations. As the prior LN biopsy was inconclusive, a bone marrow (BM) biopsy was performed. This revealed mastocytes infiltration; peritrabecular spindle cell infiltrates positive for CD117, weakly positive for CD45 and CD43 which was consistent with systemic mastocytosis (SM). Serum tryptase, a marker for mastocytosis activity, was elevated to 835 ng/ml (nl 5–10 ng/ml). This decreased to 457 ng/ml after treatment with imatinib mesylate. One month after the diagnosis, the patient developed abdominal distension and his hemoglobin acutely declined. A repeat abdominal CAT scan showed new splenic hemorrhage with massive ascites. Splenic embolization was performed. Paracentesis was positive for hemorrhagic ascites, and spontaneous bacterial peritonitis. Broad spectrum antibiotics were administered. Despite treatment, the patient continued to deteriorate and expired approximately 2 months after the diagnosis of SM.
DISCUSSION: Mastocytosis is a rare hematologic disorder with an unknown incidence. There are two types, cutaneous and systemic.

Systemic mastocytosis (SM) is where neoplastic mastocytes accumulate in multiple organs such as the skin, spleen, BM and LN, whereas cutaneous mastocytosis presents with skin findings as urticaria. As in our case, patients with SM present with generalized symptoms from organ impairment due to mastocyte infiltration. Clinical presentation may mimic those of lymphoma/leukemia. The World Health Organization SM diagnostic criteria require one major-criterion and one minor-criterion or at least three minor-criteria. The major-criterion is the multifocal infiltrates of mastocytes in the BM and/or other organs based on biopsy results. Minor-criteria include; more than 25 % of mastocytes having spindle-shaped or atypical morphology, point mutation at codon816(KIT), mastocytes expressing CD2 and/or CD25 with normal mastocyte markers and serum tryptase exceeding 20 ng/mL. The danger in SM is that during biopsy, mediator-related events may occur. Mediator release may be triggered by any physical/emotional stress or drugs; general anesthesia is of particularly high risk. This can also be precipitated by insect bites or snake venoms. Close communication between the primary medical team, anesthesiologists and surgeons is essential. Obtaining tryptase prior to procedures while considering telemetry monitoring of tryptase positive patients peri/post-diagnostic procedures with bedside preparation of epinephrine, H1/H2 blockers and steroids may also be advised. This case highlights the need for careful diagnostic planning to prevent the sequelae of life-threatening mediator-related events.

TO BE OR NOT TO BE-THAT IS THE QUESTION-ATRIAL MYXOMA OR COUMADIN RIDGE? Aiman Shokr; Christopher Gully; Hazem Abugrara; Mashrafi Ahmed. Texas Tech Univ Health Sciences Center, AMARILLO, TX. (Tracking ID #1639870)

LEARNING OBJECTIVE 1: Diagnose atrial myxoma as a rare cause of ischemic stroke
LEARNING OBJECTIVE 2: Recognize that rare anatomical variants in heart like coumadin ridge may mimic a myxoma or thrombus and add to the diagnostic dilemma
CASE: Left atrial myxoma can cause ischemic stroke due to embolism. Occasionally, rare variants of cardiac anatomical structure like Coumadin ridge can mimic left atrial myxoma or thrombi and warrants unnecessary procedures and treatment. In this report, we present two cases of ischemic stroke with similar clinical picture with one having left atrial myxoma and the other with Coumadin ridge. In the first case, a 40 year-old female presented with right sided weakness and global aphasia. She had no past medical illness other than occasional right arm pain. CT scan and MRI of the brain confirmed Lt Internal carotid artery and Lt middle cerebral artery (MCA) thrombosis with Lt MCA territory stroke. Transthoracic echocardiogram showed a globular structure attached just below anterior leaflet of mitral valve and later a transesophageal echocardiogram confirmed it as a myxoma. The 3×2 cm myxoma was excised successfully. In the second case, a 56 year-old male presented to the hospital with slurred speech and right-sided weakness. A CT scan of the brain showed infarction at the left paramedian aspect of the pons and the MRI reconfirmed that. Transthoracic echocardiogramshowed a mass in the left atrium. Considering a thrombi or myxoma, the patient was started on heparin drip and cardiothoracic surgeon was consulted but a transesophageal echocardiogram designated it as a Coumadin ridge.
DISCUSSION: Atrial myxoma is the most common benign cardiac tumor. It can be a source of emboli to the central nervous system and elsewhere in the vascular tree. It is found more commonly in young adults with stroke or TIA. The annual incidence is 0.5 per million with 75 % of cases occurring in the left atrium. There is a 2:1 female preponderance and the age of onset is usually between 30 and 60 years. Although atrial myxoma is mostly sporadic, at least 7 % of cases are familial. Strokes are often recurrent. The presentation ranges from progressive multi-infarct dementia to massive embolic stroke causing death. Because tumor fragments or adherent thrombus may embolise, anticoagulation may not be protective. On the other hand, the Coumadin ridge has been described from echocardiographic studies as a ridge of atrial tissue separating the left atrial appendage from the left upper pulmonary vein. It can present as a linear structure or even sometimes as a nodular mass that protrudes into the left atrium. This 'mass' can undulate with cardiac motion and appears similar to a thrombus or atrial myxoma. In the past, this structure was often mistaken for thrombus and resulted in patient being prescribed anticoagulation therapy with warfarin (Coumadin) and it is from here that it derives its name. Transesophageal echocardiogram and Cardiac MRI are more helpful to differentiate it from myxoma or thrombus.

TO BLEED AND NOT TO BLEED: ACUTE HEMATOMA AND ACUTE VENOUS THROMBOSIS ON WARFARIN THERAPY Akshay Manohar; Nadereh Nasserhelali; Emily Chen; Dhruti Patel. Capital Health Regional Medical Center, Trenton, NJ. (Tracking ID #1642241)

LEARNING OBJECTIVE 1: A therapeutic or supratherapeutic INR may not prevent venous thrombosis in the setting of significant pro-coagulant factors.
CASE: A 60-year-old Caucasian male came to the emergency room with bilateral knee swelling and pain that worsened with exertion. Apart from hypertension, Insulin dependent Type-2 Diabetes and a history of esophageal ulcers, he had a long history of multiple hospitalizations for deep vein thrombosis (DVT) treated with an inferior vena caval (IVC) filter and warfarin. The patient's records indicated that he had often been noncompliant with medication. However on this occasion, his International Normalized Ratio (INR) was 6.9. His INR 9 days prior was 3.3 and 2 weeks before that was 1.8. The patient said he had been taking his medicine recently, and the above INRs seem to validate this. His liver function tests were normal and a fecal occult blood test was initially negative. A venous doppler of his lower extremities showed chronic scarring and despite his supratherapeutic INR, demonstrated acute thrombosis in both femoral veins, left popliteal vein and the origin of the left profunda vein. After clotting through his supratherapeutic INR, the patient developed a large hematoma and gastrointestinal bleeding the next day. He was given Vitamin K and fresh frozen plasma to lower his INR to around 2. A planned thrombectomy by interventional radiology was cancelled as the patient's creatinine was elevated. He was intended to be started on enoxaparin, however, because of financial reasons, he was restarted on warfarin with closer monitoring.
DISCUSSION: An elevated INR usually indicates relative anti-coagulation and bleeding risk, however some clinical scenarios can result in clotting despite therapeutic or even supratherapeutic INR. The physiologic process of coagulation is maintained by over 50 pro- and anticoagulants that constantly counter each other to maintain balance. While there are many causes for thrombogenesis, the three primary influences are endothelial injury, abnormal blood flow and hypercoagulability. Of the three, endothelial injury and abnormal flow can enhance each other's effects contributing to thrombosis. In our patient, we can hypothesize that abnormal flow of blood in his chronically scarred deep veins have provoked and worsened his multiple DVT's. Also, the (Prevention du Risque d'Embolie Pulmonaire par Interruption Cave (PREPIC) Study which followed up patients with permanent IVC filters showed that IVC filters, while decreasing the risk of pulmonary embolism, did increase the risk of DVT. The patient's IVC filter may have also played a role in his venous thrombosis.

TOO MANY CYSTS IN THE LUNG WITH AN UNCOMMON CULPRIT Veronica A. Pinto Miranda[1]; Jerson Munoz-Mendoza[1]; Jodi Renner-Carmona[2]. [1]University of Miami-Jackson Memorial Hospital, Miami, FL; [2]University of Miami-Jackson Memorial Hospital, Miami, FL. (Tracking ID #1636359)

LEARNING OBJECTIVE 1: Recognize metastatic lung disease as cause of diffuse cystic lung disease.
LEARNING OBJECTIVE 2: Assess diffuse cystic lung disease with a thorough diagnostic workup
CASE: A 22-year-old man with multiple sclerosis and no history of tobacco use presented with 2 days of a non-productive cough and fever. He also endorsed a 20-pound weight loss over 6 months. His physical exam revealed a thin man in no acute distress with normal vital signs and lungs clear to auscultation. On his

upper back, he had an 8×5 cm rubbery, erythematous and mildly tender mobile mass that had been present for weeks but seemed to be increasing in size. Initial laboratory testing was normal except mildly elevated ESR. His chest x-ray, which was normal 18 months prior, was significant for diffuse bilateral cysts and a reticulonodular pattern. A noncontrast chest CT showed cysts, cavities, and nodules too numerous to count involving all lobes of the lung. Additional tests including HIV, alfa-1-antitrypsin, ANA, ANCA, C3/C4, AFB sputum smear were all normal. Pulmonary function test showed mixed obstructive/restrictive changes and severely reduced diffusion capacity. The patient had a bronchoscopy that revealed no endobronchial lesions, and video-assisted thoracoscopic surgery wedge resection of the right upper and middle lobes. Pathology showed monomorphic, spindle cells, arranged in storiform/herringbone pattern, positive for CD34 and CD99, negative for keratin, consistent with metastatic dermatofibrosarcoma protuberans. Upon further questioning, the patient stated he had his back lesion debrided 2 years prior, but did not follow-up with his care. His past medical records were obtained and revealed that the back lesion was dermatofibrosarcoma protuberans. He was referred to oncology for follow-up of his metastatic sarcoma.

DISCUSSION: This case shows an uncommon cause of diffuse cystic lung disease. Diffuse cystic lung disease is present in a limited number of pulmonary conditions which include Langerhans histiocytosis, lymphangioleiomyomatosis, honeycomb lung, advanced sarcoidosis, and rarely, metastatic disease. Typically, metastatic lesions to the lung present as focal nodules that may later cavitate. The primary tumor, dermatofibrosarcoma protuberans is a rare cutaneous tumor of low malignant grade that metastasizes in less than 5 % of cases, but has a high propensity to metastasize to the lungs. This case highlights the importance of considering metastatic disease as the etiology of diffuse cystic lung disease when other causes after a thorough diagnostic workup have been ruled out.

TOPICAL STEROIDS: NOT SO QUICK WITH THAT PRESCRIPTION PAD. IT CAN BE TOO MUCH OF A GOOD THING Kehinde Odedosu. UTSW, Dallas, TX. (Tracking ID #1635727)

LEARNING OBJECTIVE 1: Clinicians must recognize the dangers of prescribing topical steroids particularly highly potent steroids.

LEARNING OBJECTIVE 2: Recognize when to re-evaluate a previous diagnosis and treatment plan if treatment is not effective

CASE: A 48 year old male with a 1 year history of generalized pruritic rash presented with lethargy. Temperature 99° Fahrenheit, pulse 80, blood pressure 141/99. Exam revealed a regular heart beat, clear lung exam and a benign abdominal exam. His exam was also notable for dry skin with scattered erythematous maculopapular rash on face, chest, abdomen, upper and lower extremities. The rash spared mucosal membranes, palms and soles. Laboratory data was notable for sodium of 113. Evaluation for the cause of his hyponatremia revealed a low morning cortisol level (<1 mcg/dL). On further questioning, patient revealed he was given a diagnosis of severe eczema a year ago. He saw multiple physicians in the last year about his underlying skin condition and was prescribed Clobetasol 0.05 % ointment. Patient admitted to applying Clobetasol three to four times a day to his entire body for the last 6 months as it provided relief for his severe pruritis however the rash never fully resolved. He stated he ran out of Clobetasol a few weeks prior to admission. A diagnosis of Adrenal Insufficiency secondary to topical steroids was made.

DISCUSSION: Adrenal insufficiency is caused by decrease production of glucocorticoids. The most likely cause of this patient's adrenal insufficiency is the use of topical steroids three to four times a day over a large surface area of his body and the abrupt withdrawal. He was initiated on hypertonic saline solution for his symptomatic hyponatremia and his sodium and his mental status improved over the next few days. He was initiated on oral hydrocortisone for adrenal insufficiency and an outpatient dermatology referral was placed. Topical steroids are a rare but plausible cause of adrenal insufficiency. It is important that clinicians are aware of this when they prescribe topical steroids particularly highly potent steroids as Clobetasol (Class 1). If this patient had only one provider, his misuse of Clobetasol would have been discovered earlier and possibly prevent the development of adrenal insufficiency. I am guilty in my clinical practice of refilling a topical steroid prescription, although not as potent as Clobetasol, at the request of my patients for "my eczema flaring up" without thinking twice about it. This case illustrates the possible danger of that practice. In this patient, a discussion of how he was applying the steroids might have prevented the development of adrenal insufficiency and a sooner referral to a dermatologist to discuss 1) re-evaluation of his diagnosis of eczema 2) discussion of steroid-sparing agents.

TRAUMA LEADING TO THE DISCOVERY OF DIFFUSE LYMPHADENOPATHY AND A COLONIC MASS Hillary Dunlevy; Joshua Metlay. University of Pennsylvania, Philadelphia, PA. (Tracking ID #1641895)

LEARNING OBJECTIVE 1: Establish the etiology of diffuse lymphadenopathy in a presentation of advanced HIV

LEARNING OBJECTIVE 2: Recognize the possible presentation of multiple malignancies in advanced HIV

CASE: A 55 year old male without significant past medical history was evaluated in the emergency department after his son assaulted him. During the trauma evaluation, physical examination revealed a thin male with diffuse lymphadenopathy. Though there was no sign of excessive acute bleeding, he was found to be anemic, hemoglobin of 6.3 g/dL, later confirmed as iron deficiency anemia. Computed Tomography of the chest, abdomen and pelvis demonstrated diffuse lymphadenopathy, notably in the inguinal, axillary and mesenteric nodes. Additionally, the CT revealed a transverse colonic thickening, suspicious for malignancy. Further questioning exposed a 6 month history of epigastric abdominal pain, fatigue, early satiety and weight loss of ten pounds. Given this history, an HIV test was sent and later returned positive with a CD4 of 77 per μL and HIV RNA of 179,858 copies/mL. His reported risk factors included sex with multiple partners of both genders, though he reported consistent barrier protection. Endoscopy revealed a dysplastic gastric polyp, which was removed, and a near obstructive colonic mass. The colonic mass biopsies demonstrated neoplastic epithelial cells, likely invasive adenocarcinoma. Given the colonic malignancy and the diagnosis of AIDS, an axillary lymph node fine needle aspirate was performed to distinguish metastatic disease from a separate HIV associated process. The lymph node biopsy demonstrated a population of surface immunoglobulin-negative CD10+ B-cells with a monoclonal immunoglobulin heavy chain mutation, concerning but not diagnostic for lymphoma. The patient was referred for excisional lymph node biopsy as an outpatient to further clarify the diagnosis. Additionally, he was scheduled for follow-up with colorectal surgery for excision of the colonic mass as well as oncology, infectious diseases and primary care.

DISCUSSION: This patient presented with advanced HIV and had several possible etiologies for his diffuse lymphadenopathy. The fine needle aspirate showed nothing to support the initial concerns for metastatic colon cancer. Other possibilities for adenopathy in the setting of AIDS are lymphoma, mycobacteria or hyperplasia. The results of the flow cytometry and immunoglobulin heavy chain mutation testing raised concerns for lymphoma or a more benign diagnosis of follicular hyperplasia. The fine needle aspirate identified atypical cells, though not the architecture of the lymph node, which will be necessary for final diagnosis with excisional biopsy. Importantly, though the initially identified colonic mass could have explained the patient's presenting symptoms, he had multiple diagnoses found on further investigation, including HIV/AIDS. While there is some conflicting evidence regarding the risk of adenocarcinoma of the colon in HIV, a prospective cohort study using sigmoidoscopy showed higher odds of colonic neoplasms in the HIV population. The same study suggested increased odds in patients with lower CD4 count and longer duration of HIV infection, such as this patient. Additionally, his epigastric pain with early satiety prompted an EGD, revealing a dysplastic gastric polyp. Finally, further investigation including excisional biopsy will have to be performed to evaluate for lymphoma, due to his higher risk of lymphoma with HIV.

TREATING HYPONATREMIA-NO WIN SITUATION Vishal Goyal. Allegheny General Hospital, Pittsburgh, PA. (Tracking ID #1644939)

LEARNING OBJECTIVE 1: Alcoholics, malnourished patients with low sodium at presentation and chronic hyponatremic patients are at high risk of developing CPM even if their sodium is corrected slowly.

CASE: Forty-eight year old male with past medical history of COPD, GERD and hypertension was admitted to hospital with chief complaint of nausea, vomiting and an episode of syncope on day of admission. His medications include Lisinopril, Hydrocholrothiazide and bronchodilators. He has been drinking vodka mixed with orange juice for past several years. BMP showed sodium of 110 mmol/l. He received one liter of normal saline and sodium decreased to 107 mmol/l. Serum osmolality was 234 mosm/kg. Urine osmolality was 222 mosm/kg and urine sodium was 22 mmmol/l. It was determined that hypernatremia was due to poor salt intake in presence of excess water intake. He also had a state of increased ADH secretion due to continuous vomiting. Therefore, he was put on fluid restriction as we improved his dietary intake. His sodium never corrected more than 7 mmol/l in 24 h period. His symptoms improved and sodium corrected to 135 mmol/l in 7 days. He was discharged home. Patient presented to ED 5 days after discharge with tremors and ataxia. MRI of brain showed central pontine myelinolysis(CPM)

DISCUSSION: The osmotic demyelination syndrome is a complication of treatment of patients with profound, life threatening hyponatraemia. It occurs as a consequence of a rapid rise in serum tonicity in individuals with chronic severe hyponatraemia who have made intracellular adaptations to the prevailing hypotonicity. Elevation in serum sodium is the overwhelming contributor to the rise in tonicity, but potassium elevation may contribute. The prognosis of the osmotic demyelination syndrome has long been regarded as bleak, primarily because before CT/MRI this was a postmortem diagnosis. The most recent recommendation for rate of correction of sodium is not in excess of 8 mmol/l/day. Some suggest stabilising the patient in a mild hyponatraemic state after the initial correction. Laureno and Karp suggest that "it may be impossible to define a level of correction that is always completely free of risk". This problem is compounded as the treating physician has only indirect control over the rate of Na + rise which may correct faster despite their best intentions. This case illustrates that alcoholics, malnourished, patients with low sodium at presentation and chronic hyponatremic patients are at high risk of developing CPM even if their sodium is corrected slowly. It is also important to consider not only the rate of correction but amount of correction of sodium. It also raises the question that if we should correct sodium to normal level in patients with chronic hyponatremia or not?

TRICUSPID REGURGITATION: VALVULAR DYSFUNCTION ON THE RISE Atena Lodhi; Sherrill Gutierrez; Michael Curley. MCWAH, Wauwatosa, WI. (Tracking ID #1643039)

LEARNING OBJECTIVE 1: Recognize valvular complications related to pacemakers and implantable defibrillators.

LEARNING OBJECTIVE 2: Describe the diagnosis and treatment of lead-related tricuspid regurgitation.

CASE: A 75-year-old male with a history of hypertension, hyperlipidemia, diabetes mellitus, coronary artery disease, congestive heart failure and second-degree atrioventricular heart block treated with pacemaker placement presented from an outside hospital with a chief complaint of progressive weight gain and abdominal girth. The patient stated that he had been gaining weight over the last year and more acutely over the last 2 weeks with increasing abdominal girth. He denied shortness of breath, alcohol use, drug use and recent travels. At the outside hospital, liver function tests showed a mildly elevated AST, ALT, and alkaline phosphate with a normal bilirubin, INR and albumin. The patient was also noted to have acute kidney injury and thrombocytopenia. The remainder of the complete blood count and a complete metabolic panel were normal. Abdominal ultrasound revealed findings consistent with cirrhosis with portal hypertension, including a small to moderate amount of ascites and bidirectional flow within the portal vein. On admission to our hospital, viral serologies for hepatitis were negative. His pacemaker was interrogated and revealed evidence of newly developed atrial fibrillation. A repeat echocardiogram showed a left ventricular ejection fraction of 45–50 %, normal right ventricular function, severe biatrial dilation and pinning of the posterior leaflet of the tricuspid valve by the pacemaker lead with wide-open tricuspid regurgitation. The pulmonary artery systolic pressure was normal. Patient was aggressively diuresed and amiodarone was started for his atrial fibrillation. On day three he was cardioverted with restoration of sinus rhythm. Patient diuresed greater than 20 l with significant reduction in his ascites and peripheral edema. In addition, his acute kidney injury and thrombocytopenia improved. The plan at that time was to continue diuresis, with outpatient follow-up with cardiology for a repeat echocardiogram to reevaluate his tricuspid regurgitation.

DISCUSSION: Pacemakers and implantable cardioverter-defibrillators (ICDs) are important medical devices used in the treatment of a variety of cardiac diseases. With the aging population and an increase in life expectancy, the utilization of these devices is expected to continue to rise. As such, it is important that general internists appreciate not only the indications for these devices, but also the complications that can occur secondary to them. Tricuspid regurgitation is one such known but under-appreciated complication. While heart failure and fluid overload have a host of potential etiologies, in a patient with a right ventricular pacemaker or defibrillator lead, tricuspid valve dysfunction must be included in the differential. Limited data on the frequency of tricuspid regurgitation related to endocardial lead implantation is conflicting, but the importance and clinical impact is not. Severe tricuspid regurgitation is known to be associated with right heart failure and increased mortality. Early diagnosis of and intervention for lead-related tricuspid regurgitation is critical for addressing an iatrogenic cause of valvular dysfunction.

TRIMETHOPRIM-SULFAMETHOXAZOLE INDUCED HEPATOTOXICITY Tajdeep Dhindsa[1]; Carina Jackman[2]; Andrew Wuenstel[3]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]Wheaton Franciscon Healthcare-St Joseph Program, Milwaukee, WI; [3]Medical College of Wisconsin, Milwaukee, WI. (Tracking ID #1638434)

LEARNING OBJECTIVE 1: Present a case of Trimethoprim-Sulfamethoxazole induced hepatotoxicity

LEARNING OBJECTIVE 2: Consider a wide differential for etiology of hepatotoxicity

CASE: A 66 year-old male presented with malaise, insomnia, nausea, reduced appetite, and abdominal pain for 5 days. Two weeks prior to presentation, he was treated for a presumed urinary tract infection with amoxicillin. Five days prior to admission, his antibiotic was switched to trimethoprim/sulfamethoxazole when his symptoms of dysuria did not improve and his initial urine cultures grew amoxicillin resistant Escherischia coli. His past medical history included atrial fibrillation, MV replacement and prostate cancer and his current medications included digoxin, amiodarone, and warfarin. Upon admission he was noted to be febrile with a temperature of 102.2 F, but otherwise hemodynamically stable. On exam, he had scleral icterus and diffuse jaundice. Initial lab studies were remarkable for an INR of 10, total bilirubin 9.6, direct bilirubin 6.4,normal white blood count with 13 % bands, platelet count 87,000, AST 137, ALT 173, and alkaline phosphatase 180. Other infectious etiologies, including HIV and viral hepatitis, were excluded. Imaging included a normal abdominal US and chest x ray. Abdominal CT showed a renal calculus and perinephric stranding concerning for pyelonephritis. He was initially treated with ceftriaxone, but urine culture showed no growth, and the patient denied urinary symptoms. With the complete picture of elevated hepatic enzymes, coagulopathy, and thrombocytopenia, he was diagnosed with drug- induced liver injury due to trimethoprim/sulfamethoxazole. All antibiotics were discontinued, supportive care provided and lab values normalized. He was discharged on oral course of cephalexin because of slight increase in his white count, although no overt signs or symptoms of an infection.

DISCUSSION: Drug-induced liver injury (DILI) is a serious, although rare adverse effect of trimethoprim/sulfamethoxazole. It is usually an idiosyncratic reaction; it is dose-independent with an unpredictable course that occurs after a latent period. Severity ranges from benign elevation in aminotransferases to fulminant liver failure with multi-organ dysfunction. Risk factors include alcoholism, obesity, liver disease, malnutrition and certain medications. DILI can manifest as a hypersensitivity reaction consisting of fevers, eosinophilia, rash and abdominal pain. Most commonly there is a cholestatic injury pattern manifesting with jaundice

and pruritis. Drug classes that are known to cause DILI include antibiotics, various dietary supplements, NSAIDS and anti-epileptics. Among antibiotics, amoxicillin-clavulanate is most commonly associated with DILI. The most effective treatment strategy is withdrawal of the agent and supportive care. Prednisone may be helpful when a hypersensitivity reaction with features such as fever, rash or arthralgias is predominant.

TUBERCULOUS EFFUSION: A COMMON ENTITY WITH A COMPLEX DIAGNOSIS Shira Eytan; Sarah B. Fleisig; Robert E. Graham. Lenox Hill Hospital, new york, NY. (Tracking ID #1622227)

LEARNING OBJECTIVE 1: To recognize the difficulty in diagnosing tuberculous effusion.
LEARNING OBJECTIVE 2: To recognize the importance in treating TB if clinical suspicion is high, even if cultures are not yet positive.
CASE: A 61-year-old female hospital employee with infrequent health care presented with dry cough, chest discomfort, fatigue, and unintended 20-lb. weight loss. PPD performed due to risk of occupational TB exposure was positive and the patient was placed on airborne isolation precautions. CT abdomen/pelvis performed in the Emergency Department revealed a large loculated pleural effusion. Thoracentesis yielded exudative fluid negative for AFB and malignant cells. VATS performed for the loculated effusion yielded bronchial washings, pleural fluid, and pleural biopsy; however, all specimens obtained by hospital day 7—three pleural fluid aspirates, two intrapleural cultures, six bronchial washings, and several sputum cultures—were AFB negative by stain and culture. Pleural biopsy was negative for granulomatous change. The patient had cough and intermittent fevers throughout hospitalization. Due to positive PPD and symptoms suggestive of active TB, quadruple-agent therapy [rifampin, isoniazid, pyrazinamide, and ethambutol (RIPE)] with pyridoxine. For confirmatory evidence, further bronchial washings and pleural biopsies were obtained via bronchoscopy. Pathology, revealing necrotizing granulomatous inflammation of the recently-biopsied pleura, first confirmed the tuberculous effusion on hospital day 19. Over the next week, acid-fast bacilli grew in bronchial washings that were collected over hospital days 7–14. After 2 weeks of treatment, isolation precautions were lifted by the New York State Department of Health and the patient was discharged for 6 months of outpatient therapy.
DISCUSSION: Tuberculous effusion is the second most common form of extrapulmonary tuberculosis (TB) after tuberculous lymphadenitis. Despite its frequency, tuberculous effusion can be a diagnostic challenge given the low sensitivity of available tests. The effusion, an immune-mediated process, is typically exudative and lymphocyte-predominant. Cultures for acid-fast bacilli (AFB), therefore, are positive in only 20–30 % of pleural fluid samples and in 50–80 % of pleural biopsies. Here we present a case of tuberculous effusion as the first manifestation of active TB infection in an immunocompetent host. Diagnosis of tuberculous effusion may be missed if treatment is held for positive culture; therefore, physicians must suspect TB in patients with lymphocytic effusions and initiate treatment based on clinical suspicion.

TYPE B INSULIN RESISTANCE SYNDROME: A RARE TYPE OF DIABETES MELLITUS Glynda Caga-anan[1,2]; Iris De Castro[1,2]; Jeffrey T. Bates[2]; Morali Sharma[1]. [1]Baylor College of Medicine, Houston, TX; [2]Michael E. DeBakey VA Medical Center, Houston, TX. (Tracking ID #1642465)

LEARNING OBJECTIVE 1: Recognize the clinical and diagnostic features of Type B Insulin Resistance.
LEARNING OBJECTIVE 2: Manage Type B Insulin resistance with immunosuppressive therapy.
CASE: The patient is a 27-year-old Asian male, with recent diagnoses or SLE and a mixed connective tissue disorder, who presented to his primary care physician complaining of a 2 month history of polydipsia, polyuria, a 20-pound weight loss, and darkening of the skin on his posterior neck, back, and axilla. There was no family history of diabetes. He was diagnosed with type II diabetes mellitus and treated with maximum doses of metformin, pioglitazone and glipizide with no improvement of his HgbA1c. Eight months after his diagnosis, he was seen by an endocrinologist who noted the severe acanthosis nigricans and started the patient on insulin, again with no improvement in his glycemic control. Laboratory studies revealed HgbA1c of 9.7 %, fasting glucose >300 mg/dl, WBC 2.6 K/ml, insulin level of 187 uIU/mL (normal <17), and insulin antibody level of 4 U/ml (normal<0.5). Anti-GAD and anti-IA2 antibodies were negative. The patient's serum was sent to the University of Cambridge and confirmed to have a strongly positive antibody against the insulin receptor, and he was subsequently diagnosed with type B insulin resistance. Over the next 9 months, the patient was treated with rituximab, cyclophosphamide, and pulse dose steroids per a National Institutes of Health (NIH) protocol. Repeat laboratory studies showed HgbA1c 6.8 %, fasting glucose of 64 mg/dl, and resolution of his leukopenia. Six months after the end of immunosuppressive therapy, he was no longer taking any medications, his HgA1c was 5.4 %, his insulin level had normalized to 4 uIU/mL, he had regained all his weight, and his acanthosis nigricans had nearly resolved.
DISCUSSION: In contrast to the usual mechanism of type II diabetes mellitus, which results from a complex interaction among many genes and environmental factors, type B insulin resistance syndrome results from autoantibodies formed against the insulin receptor. Although its exact prevalence is unknown, its diagnosis remains rare. Our patient presented with typical features of this syndrome: extreme insulin resistance (insulin level >200 uU/ml), hyperglycemia refractory to massive doses of insulin (average dose 5100units/day), dramatic weight loss (average 43±26 pounds), severe hyperandrogenism, and unusually widespread acanthosis nigricans. The disorder commonly occurs in the background of a rheumatologic illness or other autoimmune disorders. The presence of autoantibodies is confirmed by immunoprecipitation of recombinant human insulin receptors. Recognition of this syndrome remains important, as it affects both treatment and prognosis. Treatment of the syndrome is aimed not only at correcting the metabolic derangements but also controlling the production of autoantibodies. The National Institutes of Health published a treatment protocol in 2010, consisting of rituximab, cyclophosphamide, and steroids; azathioprine or cyclosporine can be utilized for maintenance once the patient is in remission. The mortality rate in this syndrome is high, but it appears to be largely determined by the severity of the other underlying systemic diseases. Our patient responded well to the immunosuppressive regimen, with recovery to euglycemia without any anti-diabetic medications and resolution of severe insulin resistance and its metabolic consequences.

TYPICAL PRESENTATION OF AN UNCOMMON CAUSE OF BACK PAIN Gurkaran Garcha; Priti Dangayach; Himabindu Kadiyala. Baylor College of Medicine, Houston, TX. (Tracking ID #1631227)

LEARNING OBJECTIVE 1: Recognize the clinical features of a psoas abscess
LEARNING OBJECTIVE 2: Review the appropriate diagnostic and therapeutic measures for management of a psoas abscess.
CASE: A 57 year old male presented to the Emergency Room with gradual onset right sided back/flank pain and fevers. It started as a dull ache and progressed to 10/10 pain that was achy and relentless. The pain was worse with movement especially getting out of bed and was controlled when he lay still. There was no history of trauma, dysuria, diarrhea, or constipation. No history of intravenous drug use. No changes in bowel or bladder function. The physical exam was significant for a Temperature of 1020 F, right costovertebral angle tenderness, and worsening pain with active hip flexion and passive hip extension. A CT scan of the abdomen and pelvis without contrast was normal. Blood cultures were positive for methicillin susceptible S.aureus. A Subsequent MRI of the Lumbar spine showed ill-defined focal edema with enhancement present in the right psoas muscle anteriorly at the level of L-3 measuring 4×1.5×1.5 cm in size, no drainable fluid was present. A TEE was negative for vegetations. The patient was

treated with 6 weeks of intravenous nafcillin. Subsequent blood cultures were negative. The patient made a full recovery after this treatment course and repeat MRI 8 weeks after treatment showed resolution of the psoas abscess.

DISCUSSION: Psoas abscess is a relatively rare pathology with some large tertiary care centers reporting 5–12 cases per year. A primary psoas abscess occurs as a result of hematogenous or lymphatic seeding from a distant site whereas a secondary psoas abscess occurs as a result of direct spread of infection to the psoas muscle from an adjacent structure. Intravenous drug use is the most commonly reported risk factor for a primary abscess. Recent abdominal or retroperitoneal surgery and inflammatory bowel disease are the most common risk factors for secondary abscesses in the U.S. S. aureus is widely reported to be the most common pathogen recovered in primary psoas abscesses. S.aureus is also a frequent cause of vertebral osteomyelitis leading to secondary psoas abscesses. Secondary abscesses are generally considered to be caused by enteric organisms. The treatment is centered around drainage of the abscess and parenteral antibiotics. Traditionally, extra-peritoneal surgical drainage was considered to be the treatment of choice. However, more recently CT guided percutaneous catheter drainage is has reported>95 % success rate in several case series and is now thought to be the first line treatment. Surgical drainage is still considered first line treatment by some authors when the cause is inflammatory bowel disease. There is also limited retrospective data showing successful treatment of abscesses<2 cm with antibiotics alone, however, this practice is not routine. Our patient presented with the classic clinical signs of expected with a psoas abscess. This case also highlights that repeat imaging may be necessary to confirm the diagnosis of this evolving pathology, especially when the initial results are inconsistent with the overall clinical picture.

UNEXPANDABLE LUNG SECONDARY TO SPONTANEOUS BACTERIAL PLEURITIS WITH RESOLUTION AFTER LIVER TRANSPLANTATION Zahrae Sandouk; Dania Khoulani; Ghassan Bandak; Alan Betensley. Henry Ford Hospital, Detroit, MI. (Tracking ID #1617890)

LEARNING OBJECTIVE 1: Diagnose spontaneous bacterial pleuritis in the setting of liver disease.

LEARNING OBJECTIVE 2: Recognize unexpandable lung as a complication of spontaneous bacterial pleuritis

CASE: 60 years old man with ulcerative colitis and end stage liver disease secondary to primary sclerosing cholangitis, a candidate on the transplant list, was admitted to the hospital with acute renal failure and spontaneous bacterial peritonitis diagnosed after one of his weekly sessions of paracentesis. He had been complaining of weakness, loss of appetite, reduced urine output and significant shortness of breath 2 weeks prior. His labs revealed elevated white blood count, creatinine and potassium. He was started on dialysis for uncontrolled hyperkalemia and ceftriaxone for his peritonitis. His chest X ray on admission revealed complete opacification of the left hemithorax. Multiple thoracocenteses were performed removing a total of 5.6 l of cloudy non bloody fluid until no more fluid could be aspirated. Pleural fluid analysis revealed a transudative pattern with elevated ANC of 554 cells/mm, negative culture, gram stain and cytology. He was continued on ceftriaxone. The patient's shortness of breath improved significantly, however repeat chest X-rays continued to show unchanged left sided opacification. Despite the large volume removed, his lung did not fully expand. On day 9 of hospitalization, he underwent liver transplant successfully. He was followed for two more weeks prior to discharge. Surveillance chest Xrays were performed every day and he had full re-expansion of his left lung prior to discharge, without further thoracocentesis following his surgery.

DISCUSSION: Patients with end stage liver disease often develop lung pathologies. Pleural effusions, also called hepatic hydrothorax, are reported in 5–6 % of patients with end stage liver disease. They are mainly right sided or bilateral and less commonly left sided. Spontaneous bacterial pleuritis is uncommon complication. There is limited data defining pleural fluid analysis, echocardiographic characteristics, or CT imaging in patients with spontaneous bacterial pleuritis. It is usually diagnosed clinically after excluding primary pulmonary or cardiac causes. Patients may be asymptomatic or may present with dyspnea, cough, or hypoxemia. They are prone to recurrent bouts of spontaneous bacterial pleuritis with or without concurrent spontaneous bacterial peritonitis. Pleural fluid analysis have a transudative pattern in 63 % of cases with spontaneous bacterial pleuritis, and positive gram stain and cultures only in 29–33 % of cases. Most importantly a pleural absolute neutrophil count above >500 cells/mL is the earliest and most reliable marker for spontaneous bacterial pleuritis. This infection can cause inflammation of the pleural space resulting in unexpandable lung. The common feature is the presence of a visceral pleural peel. The pleural peel does not allow the lung to achieve its characteristic shape, completely filling the chest cavity, after attempted evacuation of the pleural space. Other etiologies for unexpandable lung include malignancy or non-specific inflammation such as cardiac surgery, uremic and rheumatoid effusions. Treatment includes managing the underlying condition, and most unexpandable lungs resolve on their own. Our patient had full left lung re-expansion 2 weeks after his liver transplant with resolution of his ascites and hepatic hydrothorax without any further interventions.

UNUSUAL CAUSE FOR IRON DEFICIENCY ANEMIA Yaser Alkhatib[1]; Philip Kuriakose[2]; Tameem Al-aqtash[1]. [1]Henry Ford Hospital, Detroit, MI; [2]Henry Ford Hospital, Detroit, MI. (Tracking ID #1624077)

LEARNING OBJECTIVE 1: Negative colonoscopy in a clinical settings suggestive of GI bleed like a positive stool for occult blood should prompt the physician to pursue further testing to rule out bleeding from the remaining of the GI tract

LEARNING OBJECTIVE 2: Intestinal melanoma can present with iron deficiency anemia

CASE: A 69 year-old Caucasian male presented to his primary care physician with a new onset dizziness and recurrent episodes of near syncope for 1 month prior to presentation. His past medical history was significant for a cough variant asthma and tubular adenoma, and he was only on albuterol inhaler as needed. He was non smoker, didn't drink alcohol or use any drugs. Physical examination was remarkable for conjunctival pallor. Complete blood count showed microcytic anemia. Stool was positive for occult blood and Iron studies confirmed the presence of iron deficiency anemia. Colonoscopy was negative for masses, polyps or diverticulosis. Esophagogastroduodenoscopy was unremarkable. Subsequently, a capsule endoscopy was performed, which showed a moderate-sized, frond-like, semi-circumferential mass in the jejunum with areas of ulceration and mild active oozing of fresh blood. CT scan of the abdomen and pelvis revealed a small bowel mass in the distal jejunum with adjacent enlarged lymph nodes suspicious for metastatic disease. Exploratory laparotomy was done with resection of the mass in the jejunum. The biopsy was consistent with malignant melanoma, with a histopathology positive for BRAF V600K gene mutation but three negative nodes for metastasis. Patient was evaluated by Dermatology with no dysplastic nevi on full skin evaluation. Ophthalmologic evaluation didn't find any evidence for ocular melanoma. MRI of brain showed only chronic ischemic white matter changes with no radiological finding of metastasis. Post surgical PET-CT was suggestive of hypermetabolism in small bowel at the surgical site, representing normal evolution of postsurgical changes. There was no evidence of residual or recurrent disease.

DISCUSSION: Iron deficiency anemia is the most common cause of anemia. While there are a variety of etiologies for iron deficiency anemia, chronic blood loss should always be on top of the differential diagnosis list. Gastrointestinal tract as a source for blood loss should be always considered, and the need to rule out colorectal cancer is a priority, especially in the appropriate age group. In highly suspicious clinical settings like with a positive stool occult blood, a negative colonoscopy should prompt the physician to pursue further testing to rule out bleeding from the remaining of the GI tract. Mucosal melanoma can originate from the melanocytes of mucosal epithelium of respiratory, gastrointestinal, or genitourinary tracts, unrelated to skin involvement. Isolated intestinal

melanoma is a rare type of melanoma that has different presentations. Herein we present a patient in whom an iron deficiency anemia led to a diagnosis of primary intestinal melanoma.

UNUSUAL PRESENTATION OF MULTIPLE MYELOMA AS VERTEBRAL ARTERY DISSECTION Pahul Singh; Navneet Kaur. SUNY Upstate Medical University, Syracuse, NY. (Tracking ID #1627916)

LEARNING OBJECTIVE 1: Recognize unusual presentation of Multiple Myeloma.
LEARNING OBJECTIVE 2: Treat vertebral artery dissection in an early and prompt manner.
CASE: A 50-year-old female was admitted to our institution for sudden onset of headache, vertigo and left sided neck pain for 2 h duration. Examination revealed normal vital signs, tenderness over the neck posteriorly and horizontal nystagmus to right in both eyes .CT head was unremarkable. CTA head and neck revealed multiple lytic lesions causing acute pathological fracture of C1 cervical vertebra and vertebral artery dissection at that level. MRI brain showed acute cerebellar infarct. Laboratory values showed normocytic normochromic anaemia on complete blood count, total protein of 11.6 (g/dL) and elevated erythrocyte sedimentation rate. Serum protein electrophoresis showed monoclonal band in gamma region. Bone marrow biopsy showed 34 % plasma cells consistent with multiple myeloma. Patient was started on warfarin for anticoagulation and vincristine, doxorubicin and dexamethasone and she has been doing well in last 1 year of follow up.
DISCUSSION: Multiple Myeloma is characterized by malignant clonal proliferation of immunoglobulin secreting differentiated B-lymphocytes and plasma cells. Pathological fracture of cervical spine due to multiple myeloma is rare. Vertebral artery is susceptible to injury or occlusion at the level of C5 and C6 cervical vertebra, atlanto-axial joint and atlanto-occipital joint secondary to stretching or tearing of intima or compression of the artery following cervical fracture or dislocation. Intimal tear can trigger platelet aggregation and clot formation which can lead to embolic stroke. MRI and MRA are non-invasive diagnostic techniques that can be used to evaluate vertebral artery dissection. Angiography is reserved for cases in which MRA is not diagnostic. Treatment with anticoagulation is recommended for 6 months in patients who have neurological symptoms caused by extracranial dissection. For patients with recurrent ischemic events despite adequate antithrombotic therapy, stent placement or surgical treatment may be considered. In summary, vertebral artery dissection is a potentially morbid complication which needs prompt diagnosis to initiate therapy in a timely fashion.

UNUSUAL ASSOCIATION OF IDIOPATHIC THROMBOCYTOPENIC PURPURA AND SARCOIDOSIS- A CASE REPORT Leena Jalota; Shashank Jain. The Reading Heath System, West Reading, PA. (Tracking ID #1642430)

LEARNING OBJECTIVE 1: Recognize that thrombocytopenia can be associated with Sarcoidosis
LEARNING OBJECTIVE 2: Recognize the underlying mechanisms and treatment options for ITP associated with sarcoidosis
CASE: A 39 year old dairy farmer with past medical history of sarcoidosis-currently under no treatment, presented with purpura. On examination there was a significant finding of wet purpura in the oral mucosa and petechiae present all over his body with no evidence of splenomegaly. Platelets on admission were 5,000. Hematology was consulted and the patient was initiated on treatment with standard IVIG and steroids. In addition he was given platelet transfusions in an attempt to increase his platelet count to prevent spontaneous hemorrhage. Over the next 48 h, despite the above lined treatment, his platelet count dropped to a 0. Rituximab was then added to the treatment regimen with no beneficial response. Given the patient's refractory thrombocytopenia, a decision of giving Romiplostim (Nplate) was made to which he thankfully responded. At the time of discharge his platelet count had increased to 81,000 and he was discharged on a tapering dose of dexamethasone and outpatient Romiplostim with an appropriate hematology follow up.
DISCUSSION: Sarcoidosis is a systemic disease of unknown cause characterized by the formation of granulomatous lesions in various organs with a predilection for the lower respiratory tract. Sarcoidosis mostly presents with thoracic involvement. Common extra-thoracic presentations include skin, liver, lymphatics, ocular, upper respiratory, spleen, calcium regulation as well as renal disease. Severe refractory thrombocytopenia associated with sarcoidosis has been infrequently reported in literature. When reported this has been noted to be severe, symptomatic and associated with increased morbidity. It has also been found to be very difficult to treat, with frequent use of 2nd and 3rd line treatment options. Thrombocytopenia can stem from 3 main mechanisms during sarcoidosis: hypersplenism, bone marrow infiltration, and immune thrombocytopenia (ITP), with this later mechanism accounting for majority of cases. In our case our patient's thrombocytopenia was thought to be secondary to ITP. His successful treatment entailed use of Romiplostim, which to our knowledge is being reported for the first time in this setting. It's imperative that clinicians anticipate this rare complication of sarcoidosis, its underlying mechanisms, and be ready to treat it aggressively if need be.

UNUSUAL PRESENTATION OF A RARE DISORDER Yogita Segon; Ankur Segon. Medical College of Wisconsin, Milwaukee, WI. (Tracking ID #1609464)

LEARNING OBJECTIVE 1: Review an unusal presentation of rapidly progressive glomerulonephritis due to anti-glomerular basement membrane disease
LEARNING OBJECTIVE 2: Know the differential diagnosis and management of pauci-immune glomerulonephritis
CASE: Forty-four year old African-American male with presented with 3 weeks of persistent nausea, vomiting and decreased urine output. He was found to be anemic with hemoglobin of 7.6 gm/dL and serum creatinine of 5.76 mg/dL. Urine-analysis showed proteinuria with marked microscopic hematuria. Kidney biopsy showed rapidly progressive glomerulonephritis with crescent formation in 65 % of all glomeruli. Immunofluorescence was negative for IgA, IgG or IgM. There was no clinical or radiographic evidence of pulmonary involvement. He was started on pulse dose steroids and cyclophosphamide for pauci-immune crescentic glomerulonephritis. His renal function continued to decline and he was treated with 7 sessions of plasma exchange. ANA, ANCA and complement level returned negative. Anti-glomerular basement membrane (anti-GBM) antibody eventually returned strongly positive (152 units, normal 0–20 units). His creatinine peaked at 7.69 mg/dl and then down-trended to 3.95 mg/dl. Dialysis was not required. He was discharged on cyclophosphamide and steroid taper. His kidney function returned to normal after 7 months of treatment while his anti-GBM antibody level declined to 5 units after 4 months of treatment.
DISCUSSION: Patients who develop auto-antibodies directed against glomerular basement antigens frequently develop a glomerulonephritis termed anti-glomerular basement membrane (anti-GBM) disease. When they present with lung hemorrhage and glomerulonephritis, they have a pulmonary-renal syndrome called Goodpasture's syndrome. The performance of an urgent kidney biopsy is important in suspected to confirm the diagnosis and assess prognosis. Anti-glomerular basement disease is a rare disorder that affects 1 in one million patients. Caucasians are the most frequently affected racial group. Peak incidence is seen in the third, sixth and seventh decades. Lung involvement is seen in two-third of patients. Immunofluorescence shows pathognomonic IgG linear deposition along glomerular capillaries. Patients with more than 30 % crescents on renal biopsy, an initial creatinine greater than 3 mg/dL and need for dialysis within 72 h of presentation are more likely to require long term dialysis and renal transplantation. Our patient with anti-GBM disease had several atypical features. While anti-GBM disease can present at any age and in all racial groups, presentation in an African American male in the fourth decade is less common. Pauci-immune crescentic glomerulonephritis is typically secondary to ANCA-associated vasculitis. Absence of immunoglob-

ulins on immunoflorescence in anti-GBM disease is virtually unknown. Finally, our patient had a good response to plasma exchange and immunosuppression inspite of having 65 % crescents on renal biopsy and an initial creatinine of 5.7 mg/dl.

UNUSUAL PROGRESSION OF WEST NILE VIRUS POLIOMYELITIS Arvind Kalyan Sundaram[1]; Vibha Inamdar[2]; Patrick L. Gordan[1]; Greg Lipshutz[1]. [1]Mount Auburn Hospital, Cambridge, MA; [2]Boston VA healthcare, West Roxbury, MA. (Tracking ID #1642819)

LEARNING OBJECTIVE 1: Recognize the presentation and progression in a patient with West Nile Virus poliomyelitis
LEARNING OBJECTIVE 2: Prognosis of WNV poliomyelitis does not always correlate with MRI findings.
CASE: Seventy Year old Caucasian woman with past medical history significant for ITP, Hypothyroidism, Hypertension and Hyperlipidemia presented after a fall while getting out of bed following days of rapidly progressing bilateral lower extremity weakness preceded by rash and fever a week before presentation. The rash was described as generalized, non-pruritic, red papules more on the arms and legs compared to the torso. The fever was intermittent with peak temperature of up to 102 ° F associated with vomiting and loose stools. She was initially treated as a viral syndrome with supportive care. Over several days, her rash markedly improved but she developed significant weakness in her lower extremities, which gradually involved the upper extremities. Physical exam was remarkable for bilateral 2/5 strength in Iliopsoas, 2/5 in the quadriceps, dorsiflexors and plantar flexors, 4/5 strength in upper extremity, diminished vibratory sense in MTP joint and absent reflexes in the lower extremity. Lumbar puncture showed CSF pleocytosis with WBC 210, RBC 3 and protein 88. Her serology study came back positive for West Nile virus. A spinal MRI showed abnormal T2 signal in C3-C6 level preferentially involving the grey matter of the cervical ventral horns. She was monitored with serial neurological checks and NIF's for her respiratory function status. She was initially started empirically with Ceftriaxone, Doxycycline and Acyclovir but later discontinued based on her serological and clinical findings. After 2 days, patient showed rapid improvement in her symptoms and was later referred to a rehabilitation center for regaining her baseline physical status.
DISCUSSION: WNV is the most common cause for viral encephalitis in the United States. Neuroinvasive disease caused by WNV involves only around 1 % of the affected population. Among the various presentations, acute WNV poliomyelitis is extremely rare. Our patient uniquely recovered from the flaccid paresis within days while patients with typical neuroinvasive diease usually tend to have a prolonged recovery period taking months. Another interesting finding in our case was the MRI imaging in which according to known literature increased T2WI signal intensity involving the spinal cord indicates poorer prognosis while our patient had successively regained her strength in days. In summary, our patient is an atypical case of WNV presenting as flaccid paresis with rapid recovery of strength spontaneously and contradicts the correlation with the MRI findings.

UPPER EXTREMITY VENOUS THROMBOSIS-CALM BEFORE THE STORM Ankit Madan; Pooja Sethi; Kavita Tripathi. University of Alabama Birmingham Montgomery, Montgomery, AL. (Tracking ID #1642865)

LEARNING OBJECTIVE 1: Recognize that idiopathic upper extremity vein thrombosis is rare but can occur secondary to an underlying malignancy.
LEARNING OBJECTIVE 2: Initiate appropriate investigations promptly once malignancy is suspected in the absence of underlying head and neck pathology or a hematological disorder.
CASE: 23 year old Caucasian female presented with of swelling of left upper extremity for 3 days. She denied pain, fever, chills, night sweats, trauma, insect bite, weight loss, smoking or medication use. No significant past medical or family history. On examination, she was a well-built female with stable vital signs. There was swelling and tenderness of left side of neck and left arm. There was no palpable cervical, axillary, supraclavicular or inguinal lymphadenopathy. Rest of the examination was normal. All her initial lab work was normal except D-dimer which was 6.14 mg/L (high). Protein C, protein S and anti-thrombin level were normal. Chest x-ray was normal. Doppler ultrasonography of left upper extremity revealed left internal jugular vein thrombosis. CT angiogram of left upper extremity revealed thrombosis and non-visualization of left subclavian vein. CT angiogram of chest revealed anterior mediastinal mass measuring 3.7 and 7.4 cm in dimensions. Subsequent biopsy of the mediastinal mass revealed large B cell lymphoma with strong expression of CD 20 and CD 45 on immunohistochemical staining. Patient was discharged on low molecular weight heparin for anticoagulation and right internal jugular vein infusion port was placed for chemotherapy to be received as an outpatient.
DISCUSSION: There is 3 to 19-fold increase in idiopathic venous thromboembolic events in presence of an underlying malignancy. This is due to tumor cells activation of coagulation cascade by directly stimulating thrombin formation or induction of mononuclear cells to synthesize procoagulants like tissue factors, prothrombin and factor 5 activators. Internal jugular vein thrombosis can also occur as part of superior vena cava syndrome which mostly occurs secondary to malignancy. Other causes of upper extremity vein thrombosis include central venous catheters, thrombophilic states, congestive heart failure, renal failure, intravenous drug abuse, deep neck infections and use of contraceptives. The cause in our case is either underlying hypercoagulability or compression of the vein by the mass causing blood stasis and ensuing thrombosis. It presents as pain and swelling in the neck and can lead to complications like pulmonary embolism, septic emboli, facial swelling, increased intracranial pressure and even loss of vision. Doppler ultrasonography is an excellent way of diagnosing venous thrombosis with a sensitivity of 97 %. Computed tomography and magnetic resonance imaging can be used to delineate an overlying mass or an underlying malignancy. Internal jugular vein thrombosis can propagate in the absence of anticoagulation and cause pulmonary embolism. Treatment must be individualized. It includes anticoagulation with low-molecular weight heparin and warfarin or rivaroxaban. Superior vena cava filters are used rarely in patients with contraindications to anticoagulation or at increased risk of bleeding. Definite treatment and prognosis depends on the underlying cause.

VITAMIN E N-E-U-R-O-P-A-T-H-Y Dana Ellis; Neal Viradia; Deepa Bhatnagar. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640197)

LEARNING OBJECTIVE 1: Identify the differential diagnosis of neurological symptoms in post-gastrectomy patients
LEARNING OBJECTIVE 2: Recognize nutritional and metabolic deficiencies in bariatric surgery patients and the optimal treatment
CASE: A 37-year-old African American woman had an out-of-country gastric sleeve procedure 3 months prior to presentation. The surgery resulted in intractable nausea, vomiting and a 90-pound weight loss. Upon presentation the patient complained of 2 weeks of numbness and tingling in her bilateral lower extremities, which lead to numerous falls. She denied any bladder or bowel incontinence. The patient's home medications included a multivitamin with iron, folate at 1 mg daily, weekly vitamin B12 injections, potassium chloride at 20 mEq daily, promethazine for nausea and omeprazole for gastric reflux. On neurological exam, mental status and speech were appropriate, and cranial nerves II through XII were intact bilaterally. The patient had 5/5 strength in the upper and lower extremities bilaterally. She was responsive to light touch over her lower back, torso and bilateral lower extremities and had intact proprioception when the great toe was moved up and down with the eyes closed. She had slightly diminished sensation to temperature above the level of the mid-calf, and she had decreased pinprick sensation above the level of the mid-calf and below the level of L2. Vibration sensation was diminished over the medial malleoli bilaterally. MRI showed no evidence of spinal cord compression and transverse myelitis. We obtained ferritin, vitamin B12 and methylmalonic acid, homocysteine, 1,25-dihydroxyvitamin D and vitamin E (alpha-tocopherol) levels; thyroid stimulating hormone; HIV; RPR; hemoglobin A1C; along with serum ceruloplasmin and selenium levels. All

of her labs came back within normal limits, except for her level of vitamin E, which was low at 4.0 mg/L (normal=5.5–18.0 mg/L).
DISCUSSION: Neurologic complications following bariatric surgery are most commonly associated with nutritional deficiencies in vitamins and minerals such as thiamine (B1), B12, folate, and copper. The associated complications can involve many areas of the nervous system and include encephalopathy, optic neuropathy, myelopathy, polyradiculoneuropathy, and polyneuropathy. Vitamin E deficiency is very rare in all forms of bariatric surgery. The most common findings of low vitamin E levels include loss of deep tendon reflexes, truncal and limb ataxia, diminished perception of vibration and position, ophthalmoplegia, muscle weakness, ptosis, and dysarthria. Low vitamin E levels have been found 6–12 months after surgery but symptoms may not appear for 5–10 years. Guidelines suggest that post-bariatric surgery patients take multivitamins that contain folate, calcium citrate, vitamin D, elemental iron, and vitamin B12. Because of the rarity of vitamin E deficiency following bariatric surgery, there are no set guidelines suggesting these patients take vitamin E supplements. However vitamin E neuropathy and myopathy are often treatable. In this case, the recommended daily dose of vitamin E is 400 IU. Differential diagnosis of neurological symptoms in post-gastrectomy patients should always include hypovitaminosis E, and a vitamin E level should be obtained. Early detection could lead to earlier resolution of symptoms.In order to prevent post-surgical vitamin E deficiency and associated neurological complications, perhaps guidelines should include a standard multivitamin formulation rich in vitamin E.

VARIATIONS ON A THEME: ATYPICAL HEMOLYTIC UREMIC SYNDROME IN A PATIENT WITH ADULT-ONSET STILL'S DISEASE Shail Rawal[1]; Katerina Pavenski[3]; Louise Perlin[2]; Laurence Rubin[2]; Martina Trinkhaus[3]; Yael Einbinder[4]. [1]University of Toronto, Toronto, ON, Canada; [2]St. Michael's Hospital, Toronto, ON, Canada; [3]St. Michael's Hospital, Toronto, ON, Canada; [4]St. Michael's Hospital, Toronto, ON, Canada. (Tracking ID #1628512)

LEARNING OBJECTIVE 1: Recognize the clinical features of atypical hemolytic uremic syndrome.
LEARNING OBJECTIVE 2: Describe the pathogenesis of atypical hemolytic uremic syndrome and its treatment.
CASE: A previously healthy 26 year-old woman was admitted to a peripheral hospital following a several month history of rash, myalgias, serositis and fevers. Complications in hospital included peritonitis requiring laparotomy with no pathology identified, and acute left-sided vision loss with a diagnosis of an acute retinal artery occlusion. A diagnosis of Adult-Onset Still's Disease (AOSD) was made on the basis of her rash, serositis (peritonitis, pericarditis, pleuritis), fever, granulocytosis, and a ferritin of > 1,500 nmol/L. Therapy with oral prednisone was initiated and her symptoms improved. The etiology of her retinal artery occlusion remained unclear, and she was discharged home with Rheumatology and Ophthalmology follow-up. In the weeks following discharge, she developed shortness of breath, generalized weakness, and progressive vision loss. Investigations were consistent with a thrombotic microangiopathy (TMA) and acute kidney injury. A presumptive diagnosis of TTP/HUS was made, and she was transferred to St. Michael's Hospital in Toronto for plasmapheresis (PLEX) and hemodialysis. Her clinical condition improved with plasmapheresis and pulsed corticosteroids, and she was discharged home on oral prednisone with hemodialysis. Within days of discontinuing her PLEX, she developed headache, vision loss, malignant hypertension and an altered level of consciousness/seizure. Investigations showed recurrence of her thrombotic microangiopathy. Genetic testing performed through the Hospital for Sick Children in Toronto revealed an activating mutation in C3 in the complement pathway. Therapy with eculuzimab (Soliris) was initiated for atypical hemolytic uremic syndrome (HUS). Markers of hemolysis normalized within 12 h of commencing therapy and hemodialysis was no longer required. The patient was discharged home 1 week later on oral prednisone and a plan to continue eculizumab.
DISCUSSION: Fifteen cases of TMA occurring in patients with AOSD are described in the literature. TMA typically occurs early in the disease course and is associated with an altered level of consciousness/seizures, acute kidney injury and vision loss. To our knowledge, this is the first case report to describe atypical HUS in a patient with AOSD. Ten percent of HUS cases are classified as atypical as they are not precipitated by Shiga-like toxin. Rather, atypical HUS is a disease of uncontrolled complement activation that is either familial or sporadic and is associated with a high mortality rate. Eculizumab is a humanized monoclonal antibody against C5 that inhibits terminal complement activity and has recently received FDA approval for atypical HUS. Our case adds to the growing body of evidence that suggests that eculizumab may be used to successfully treat atypical HUS in adult patients.

VENTRICULAR SEPTAL RUPTUREA AS A RARE IMMEDIATE COMPLICATION OF ACUTE MYOCARDIAL INFARCTION Abhilash Akinapelli; Jaya S. Gupta; Showri Karnam; Andrew G. De Nazareth; Susan M. Schima. Creighton University Medical centre, Omaha, NE. (Tracking ID #1643279)

LEARNING OBJECTIVE 1: To be aware that ventricular septal rupture can also occur as an immediate complication of an acute myocardial infarction.
LEARNING OBJECTIVE 2: Physical exam plays a key role in early identification of these patients at risk to enable prompt life saving treatment.
CASE: A 78 year old woman was transferred from an outreach hospital with an acute anterior ST elevation myocardial infarction. She presented with acute onset substernal chest pain of 20 min duration that was accompanied by dyspnea, nausea, and diaphoresis. Thrombokinase was administered and she was transferred to our coronary care unit within 2 h. Upon arrival, exam revealed grade III/VI pansystolic murmur best heard at left sternal border and jugular venous distention. Immediate bedside transthoracic echocardiogram (TTE) was performed which revealed ventricular septal defect (VSD). She immediately underwent coronary angiography, which showed single vessel disease, a 99 % stenosis of the distal left anterior descending artery. Stent deployment was not possible secondary to extensive calcification of the vessel, however balloon angioplasty provided TIMI III flow. Left ventriculogram confirmed VSD. An intra-aortic balloon pump was placed to help decrease afterload. Patient underwent VSD repair the following morning. Intraoperatively, she was found to have a hemorrhagic septum, and a large area of septum was removed and patched. Her postoperative course was complicated by cardiogenic shock and oliguria. On the fourth postoperative day she became hypotensive, bradycardic, and suffered cardiac arrest. Despite sustained efforts, she was unable to be resuscitated.
DISCUSSION: Ventricular septal rupture, before the thrombolytic era, complicated 1–2 % of acute myocardial infarctions. Reperfusion therapy decreased the incidence of septal rupture to 0.2 %. It typically occurs 2–8 days after an acute myocardial infarction. In patients undergoing thrombolysis for acute myocardial infarction, the risk factors for septal rupture include advanced age, female sex, hypertension, extensive myocardial infarction and absence of smoking. Incidence of rupture is increased in those with single vessel disease, who have less evidence of collateral circulation. Prior angina or infarction may lead to myocardial preconditioning with development of collateral circulation, both of which reduce the likelihood of developing septal rupture. The median time from the onset of infarction to rupture is comparatively shorter at 24 h in patients receiving thrombolysis. Typical presentation of ventricular septal rupture includes clinical deterioration of a patient with recent myocardial infarction. Signs may include increasing dyspnea, chest pain, and cardiogenic shock. Clinical evidence on exam of a harsh pansystolic VSD murmur along the left lower sternal border should raise suspicion. Doppler Echocardiography is usually diagnostic. The sensitivity and specificity has been reported to be as high as 100 %. In current practice, ventricular septal rupture is considered a surgical emergency. Current guidelines from the American College of Cardiology-Americal Heart Association recommend immediate operative intervention in patients with septal rupture. Long term survival is improved in patients who undergo

prompt surgey. Further benefit is seen in those patients who undergo concurrent coronary artery bypass grafting surgery, if clinically indicated.

VERTEBRAL OSTEOMYELITIS PRESENTING AS ATYPICAL CHEST PAIN Janine Adamczyk; Aaron Fox. montefiore medical center, Bronx, NY. (Tracking ID #1642271)

LEARNING OBJECTIVE 1: Recognize vertebral osteomyelitis as an uncommon cause of chest pain or back pain
LEARNING OBJECTIVE 2: Review the pathogenesis, diagnosis and treatment of the disease
CASE: A 58 year-old female presented with worsening chest pain for 1 month. The pain was constant, 8/10 in severity, worsening with deep inspiration and physical activity and located substernally with bilateral radiation below her breasts. Three months ago, she had started physical therapy for new-onset low back pain (which had resolved) and initially attributed the chest pain to a muscle strain. She was afebrile, had clear lungs and a regular heart rate and rhythm without murmurs. Tenderness was reproducible in a band-like distribution over her sternum, ribs and medial thoracic vertebrae. Her chest X-ray was clear and her laboratory showed negative cardiac enzymes, no leukocytosis, hemoglobin 10.9 g/dL and erythrocyte sedimentation rate of 120 mm/h. Magnetic resonance imaging (MRI) revealed multi-level discitis /osteomyelitis of the thoracic spine (T6/T7), the cervical spine (C6/C7) and lumbar spine (L3/L4) with kyphotic angulation and compression of the thecal sac. The patient denied any neurologic symptoms, any drug use or dental procedures. Several blood cultures grew methicillin-sensitive staphylococcus aureus (MSSA). She was started on a six-week course of antibiotic therapy with nafcillin, fitted a spinal brace and ruled out for endocarditis by negative transesophageal echocardiogram.
DISCUSSION: Complaints of chest pain or low back pain are frequently encountered in the primary care office. Imaging for low back pain is not recommended within 6 weeks of symptom onset unless "red flags" are present (i.e. neurological symptoms or suspicion of osteomyelitis). Osteomyelitis of the vertebrae and disc space most commonly occurs due to hematogenous spread from a distant site of infection (e.g. intravenous catheters, endocarditis or dental infections) and due to local instrumentation or an adjacent soft tissue infection. Given increasing rates of nosocomial bacteremia, an aging population and injection drug use, the incidence of the disease is rising (1:145 000) and it primarily affects men over 50 years of age. Staphylococcus aureus accounts for more than 50 % of cases. Gram negative bacilli, pseudomonas and mycobacteria are other important pathogens. Clinically, it manifests as progressive back or neck pain and less than 50 % of patients are febrile. As plain X-rays are often normal, an MRI is recommended for diagnosis and has a sensitivity of 91 % within the first 2 weeks of symptoms and of 96 % thereafter. Most commonly, vertebral osteomyelitis responds to antimicrobial therapy (at least 6 weeks) which is usually withhold till the causative organism is identified. If blood cultures are negative, a computed tomography-guided needle biopsy of the spine needs to be performed. Surgery is indicated in threatened cord compression, spinal instability or progression despite medical therapy. Vertebral osteomyelitis has a 5 % mortality rate and, given an often delayed diagnosis, up to 7 % of patients experience permanent neurologic complications. Early diagnosis of the disease led to a complete recovery in our patient.

VINEGAR CAUSING CHEMICAL PNEUMONITIS AND SUBSEQUENT BROKEN HEART: A RARE CASE OF ACCIDENTAL VINEGAR INHALATION RESULTING IN TAKOTSUBO CARDIOMYOPATHY Soujanya Sodavarapu; Amanada Scott; Richard Belkin; Thomas D. Watson. Santa Barbara Cottage Hospital, Santa Barbara, CA. (Tracking ID #1624593)

LEARNING OBJECTIVE 1: Stress induced (Takotsubo) cardiomyopathy has been classically attributed to an intense emotional or physical stress, therefore it has also been known as broken heart syndrome. It is thought that during such an intense state, excessive serum catecholamine levels cause apical hypokinesis and therefore diminished left ventricular systolic function. This case illustrates an interesting and largely unseen cause of Takotsubo syndrome secondary to accidental inhalation of household vinegar. Most reported cases of vinegar inhalation are related to industrial accidents and result in chemical pneumonitis. This is the first reported case of household vinegar inhalation inducing not only chemical pneumonitis, but also Takotsubo syndrome.
CASE: A 77-year-old female with a history of controlled hypertension was doing a daily sinus treatment at home when she accidentally used distilled vinegar instead of distilled water. She began the sinus rinse and immediately realized her mistake, however she had already inhaled a small amount of the vinegar. Soon she developed severe shortness of breath and was brought to the emergency department (ED) by her family. In the ED she required 100 % oxygen via a bag valved mask with an oxygen saturation of only 66 %; she was therefore intubated for acute respiratory hypoxemic failure. An EKG obtained in the ED showed fairly diffuse S-T segment elevation, which was most marked in the inferior and lateral leads. The patient was quickly taken to cardiac catheterization which demonstrated patent coronary arteries as well as the typical findings of Takotsubo syndrome. An echocardiogram showed an ejection fraction of 30–35 % with apical, septal, anteroseptal, anterior, inferior, posterior, and lateral wall motion hypokinesis. The patient was then transferred to the medical intensive care unit where she required aggressive diuresis and had repeated bouts of respiratory failure, necessitating intubation a total of two additional times. She developed recurrent episodes of pulmonary edema in the setting of atrial fibrillation. Medical management included the use of amiodarone, coreg, lisinopril and lasix. Her condition slowly improved over the course of her week-long admission and prior to discharge she was saturating well on room air. She was discharged with pulmonary and cardiology follow up. A follow up echocardiogram in 1 month showed normalization of her global hypokinesis and ejection fraction.
DISCUSSION: The etiology of Takotsubo cardiomyopathy remains uncertain and it is likely that the cause is multifactorial. One mechanism that has been proposed is that this syndrome is the result of high levels of catecholamines and stress-related neuropeptides. In this case, a generally healthy elderly female developed chemical pneumonitis after vinegar inhalation; this stress likely resulted an excess release of catecholamines. There could also be a direct affect of vinegar on her cardiac function which is unknown. This is the first reported case in which chemical pneumonitis from inhaled household vinegar acted.

VIRAL MENINGITIS FROM HERPES SIMPLEX VIRUS TYPE-2 Brienne Miner. Yale New Haven Hospital, New Haven, CT. (Tracking ID #1645055)

LEARNING OBJECTIVE 1: Recognize HSV-2 as a common cause of viral meningitis.
LEARNING OBJECTIVE 2: Recognize a possible link between HSV-2 meningitis and spinal steroid injection.
CASE: A 66-year-old woman with chronic low back pain despite previous lumbar spinal fusion presented with nausea, vomiting, headache, photophobia and neck stiffness. The headache began after a spinal epidural steroid injection for back pain 3 weeks prior to presentation. It persisted despite treatment with pain relievers consisting of butalbital, acetaminophen and caffeine. She denied any history of similar symptoms in the past. In the emergency room the patient had a fever of 104° Fahrenheit. A lumbar puncture showed the following results: opening pressure 39 cmH20, protein 310 mg/dL, glucose 48, 1,200 white blood cells with 86 % lymphocytes, and 2 red blood cells. The results of the PCR from the cerebrospinal fluid showed HSV-2. She had no genital lesions at the time of presentation, had not been sexually active for over 20 years, and denied a history of genital herpes infection or meningitis in the past. The patient received IV acyclovir and supportive therapy. Her symptoms gradually improved and she was discharge from the hospital 5 days after admission on PO acyclovir for a total of 14 days.

DISCUSSION: HSV-1 is a common cause of viral encephalitis. While we often associate HSV-2 with genital herpes, it is also the most common cause of viral meningitis (1). HSV-2 can present as a primary CNS infection with fever and meningeal signs, and can also lead to recurrent episodes of meningitis. With the advent of a PCR test for HSV, we now know that HSV-2 is the most common etiology for Mollaret's meningitis, also known as benign recurrent lymphocytic meningitis (2). Episodes of meningoencephalitis have been noted in the past, though this presentation is less common (3). Previous studies have noted, as we did with this case, that patients with HSV-2 meningitis often have no history of genital herpes and have no herpetic lesions of the genitalia at the time of presentation (2, 3). The proximity of this patient's presentation to a recent spinal steroid injection is a connection that has been noted previously. In a retrospective observational study of 23 patients with HSV-2-positive cerebrospinal fluid, the authors noted two celibate women who developed HSV-2 associated meningitis and meningoencephalitis after lumbar steroid injection for spinal stenosis (3). The appropriate treatment of uncomplicated HSV-2 meningitis has not been firmly established. Despite the recognition that recurrent lymphocytic meningitis is a benign syndrome that usually resolves spontaneously (4), most patients receive antiviral therapy. The route of administration and duration of this therapy are highly variable and there is no controlled trial data to support the efficacy of antiviral therapy in these patients. References: (1) Kupila L. et al. Etiology of aseptic meningitis and encephalitis in an adult population. Neurology 2006; 66: 75. (2) Schlesinger Y. et al. Herpes simplex virus type-2 meningitis in the absence of genital lesions: improved recognition with use of the polymerase chain reaction. Clinical Infectious Diseases 1995; 20: 842. (3) Landry M.L. et al. Herpes simplex type-2 meningitis: presentation and lack of standardized therapy. American Journal of Medicine 2009; 122: 688–691. (4) Shalabi M. et al. Recurrent benign lymphocytic meningitis. Clinical Infectious Diseases 2006; 43: 1194.

WAILINGS & WELLENS' Kate Hust; Anjali Niyogi. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640305)

LEARNING OBJECTIVE 1: Recognize Wellens' sign on EKG tracing.
LEARNING OBJECTIVE 2: Understand implications of Wellens' sign. Identify appropriate work-up and intervention in patient with Wellens' syndrome
CASE: A 42-year-old woman with no known medical history presents complaining of episodic, sub-sternal chest pain for 5 months. Episodes last 20–30 min each and are increasing in frequency and intensity (10/10). No clear pattern of exertional or radiating pain is discernible. Pain is not associated with food. The patient denies orthopnea and paroxysmal nocturnal dyspnea but does endorse non-specific dyspnea on exertion which slows her at times but does not prevent activity. Vital signs are normal. Previously the patient had received morphine and a GI cocktail, both of which temporarily improved her pain. She is screaming loudly and beating her chest in pain. Her chest is tender to palpation, but exam is otherwise unremarkable. Brain natriuretic peptide is normal, and the troponin is <0.01 ng/mL on two occasions, 6 h apart. First and second EKGs show inverted T-waves in leads 1, avL, V1 and V2, with the deepest inversion, including a biphasic component, in V2. Third EKG shows extension of inverted T-waves to V3 and V4.
DISCUSSION: Chest pain is a ubiquitous complaint investigated by internists, and cardiac causes must be quickly investigated. Ischemic etiologies of chest pain are often supported by EKG findings, such as ST-elevation in an acute myocardial infarction. In the absence of ST-elevation and Q-waves, ischemia indicated by Wellens' sign is manifested by deeply inverted t-waves (type A) or biphasic t-waves (type B) in the pre-cordial leads, especially V2 and V3.1 These findings indicate occlusion of the proximal left anterior descending artery (LAD), and extension of the t-wave inversions along the pre-cordial leads suggests an increasingly proximal stenosis. Early recognition of Wellens' sign on EKG is even more critical because it often occurs in the absence of elevated serum cardiac markers, meaning reliance upon a rising troponin will fail to efficiently identify ischemia. Stress testing is avoided in this case as it may provoke an acute myocardial infarction.2 Instead, the LAD stenosis represented by Wellens' sign should trigger urgent revascularization as these EKG findings often herald near total occlusion of the proximal LAD. In an original study, 75 % of cases failed to respond to medical therapy alone and developed an anterior wall myocardial infarction within a few weeks.3 Early recognition of Wellens' sign by internists is critical as its associated ischemia requires immediate attention and intervention.

WHAT'S GOING ON IN THIS MAN'S HEAD? Brian Cruz; Sancia Ferguson. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1640114)

LEARNING OBJECTIVE 1: Recognize corticosteroid use and malignancy as risk factors for Nocardia infection
LEARNING OBJECTIVE 2: Describe the clinical diagnosis of Nocardiosis. Identify treatment options for immunocompetent and immunocompromised patients.
CASE: A 63-year-old man presented with 2 weeks of cough productive of pink sputum and dyspnea on exertion. He was febrile, hypoxic, tachycardic, and had diffuse expiratory wheezes in the mid lung fields and bibasilar crackles. Two months prior he had visual field deficits and right leg weakness, subjective fevers, chills, night sweats, and weight loss. MRI demonstrated 3 enhancing lesions in the left cerebral hemisphere. He was started on dexamethasone for suspected metastatic lung cancer with subsequent improvement in his neurological symptoms. CT angiography of the chest revealed numerous nodular opacities in both lung fields (some with cavitation), a paravertebral mass in the right lower lung, and bilateral consolidation in the lower lobes. Bronchoscopy showed yellowish inflammatory secretions but no evidence of malignancy. Cultures from blood and alveolar lavage were positive for Nocardia species and he was diagnosed with disseminated nocardiosis. Intravenous trimethoprim-sulfamethoxazole and impenem-cilastatin were started. Amikacin was added to the regimen after repeat CT demonstrated progressive disease. Despite initial improvement his mental status declined. Enlarging lesions in left cerebral hemisphere with midline shift were noted on CT scan. Biopsy of the brain yielded poorly-differentiated adenocarcinoma of the lung.
DISCUSSION: The general internist increasingly recognize Nocardia species as causes of localized and systemic infections. Nocardiae are gram-positive, branching, filamentous bacteria that are ubiquitous in soil. While infection can occur in immunocompetent hosts, it is often encountered as an opportunistic pathogen in immunocompromised patients. The most important risk factor for nocardiosis is systemic corticosteroid administration, seen in as many as 62 % of patients. The presence of an underlying solid organ or hematologic malignancy was found in 11 % of nocardiosis patients. Diagnosis of nocardiosis requires a high clinical suspicion. Symptoms such as fever, cough, and pleuritic chest pain are non-specific, their presence in an immunocompromised patient warrants consideration of Nocardia. The organism reproduces slowly on commonly used culture media, often requiring 5–21 days before exhibiting growth. If suspected, special tests and growth media can be employed to isolate the organism and accelerate diagnosis. Skin manifestations may aid in diagnosis and can include cellulitis or subcutaneous nodules. Nocardia brain abscesses are radiographically difficult to distinguish from metastases and may require biopsy. Combination drug therapy is generally used as initial treatment for nocardiosis until susceptibility patterns are identified. Trimethoprim-sulfamethoxazole is the cornerstone of treatment with ceftriaxone, amikacin, imipenem, linezolid, and minocycline also effective against most isolates. Agents with good CNS penetration include TMP-SMX and ceftriaxone. Though Nocardia can successfully be treated in 6–12 months in immunocompetent patients, immunocompromised patients with CNS involvement require 12 months or more of therapy. Successfully treated immunocompromied patients should receive prophylaxis with TMP-SMX, though new data suggest that traditional tri-weekly dosing may be insufficient to prevent recurrence.

WHEN HAVING A BIG HEART CAN BE DANGEROUS Rachel Sandler. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1641539)

LEARNING OBJECTIVE 1: Recognize risks for hemopericardium after cardiothoracic surgery
LEARNING OBJECTIVE 2: Recognize the clinical presentation of cardiac tamponade Identify the classic findings of cardiac tamponade on imaging
CASE: A 32-year-old woman with a history of rheumatic heart disease presented with worsening abdominal pain for 1 day. She also noted palpitations and shortness of breath. Three weeks prior, she underwent mitral valve replacement with St. Jude bileaflet valve and tricuspid valve repair. Two weeks prior, her INR was therapeutic at 2.7. She was in moderate distress with a pulse of 173 and blood pressure of 112/84. Jugular venous pulse was present 4 cm above the sternal angle. Heart sounds were muffled. Epigastrium was diffusely tender to palpation. EKG showed atrial flutter with 2:1 AV conduction. Lactic acid was normal. Her INR was found to be 7.7. Chest x-ray showed a globular heart with increased size from prior films. Bedside echocardiogram revealed a large pericardial effusion. She was taken emergently for pericardiocentesis and 1.6 l of grossly bloody fluid were removed. She underwent subsequent cardioversion.
DISCUSSION: Warfarin is a widely prescribed medication. General internists should be largely familiar with its potential for toxicity given its narrow therapeutic index. Patients started on full-dose anticoagulation with warfarin in the perioperative period have an increased risk for a pericardial effusion. These patients are also more likely to develop larger effusions, putting them at greater risk for cardiac tamponade. Accumulation of the fluid may be seen as late as 30 days after surgery. The recognition of cardiac tamponade is essential in order to quickly treat this condition. Patients in cardiac tamponade are likely to present with symptoms of dyspnea, chest pain and abdominal fullness. Abdominal pain can occur from direct compression of the esophagus by the heart or indirectly from hepatic congestion. Common physical exam findings include tachycardia, hypotension, pulsus paradoxus, and elevated jugular venous pulse. These findings are a result of the increased pericardial fluid limiting diastolic filling pressures and decreasing cardiac output. Chest x-ray with a globular and enlarged cardiac silhouette is highly suggestive of an effusion. Through direct visualization of the heart on echocardiogram at the bedside, a hypoechoic border can be seen around the heart to suggest potential pericardial fluid. In patients who have recently undergone valve replacement surgery on warfarin, the diagnosis of cardiac tamponade must be considered as a potentially life threatening cause of abdominal pain.

WHEN IN DOUBT, SCOPE IT OUT Cady Blackey; Deepa Bhatnagar. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1639858)

LEARNING OBJECTIVE 1: Recognize signs and symptoms of upper gastrointestinal bleeding
LEARNING OBJECTIVE 2: Review a complication of ERCP
CASE: A 62 year-old woman with end stage renal disease presented to the ER with a one-day history of nausea and non-bloody, non-bilious emesis. She complained of constipation. She denied nausea, abdominal pain, hematemasis, melena or hematochezia. One week prior, she was hospitalized for abdominal pain and cholestasis and underwent ERCP with sphincterotomy. Stent was placed in the common bile duct stent for a stricture. Upon presentation, her conjunctivae were pale but anicteric. Her abdomen was soft; no tenderness or organomegaly as palpated. Rectal exam revealed brown stool in the rectal vault. At discharge 3 days prior, her hemoglobin was 8.3 g/dL. On readmission, hemoglobin was 5.6 g/dL. LDH and haptoglobin were normal. Total bilirubin level was normal. Abdominal CT showed gallstones, noted previously, with no hematoma. Nasogastric tube aspirate was negative for blood. She required 4 units of packed red blood cells to maintain her hemoglobin and remained constipated. On the fourth night of readmission, she developed melena on exam. Endoscopic retrograde cholangionpancreatography (ERCP) revealed a bleeding ulcer at the site of the common bile duct stent that was treated with epinephrine, cautery and clipping.
DISCUSSION: In this case, lack of clinical evidence of gastrointestinal (GI) bleeding made the diagnosis challenging. Often internists evaluate for an upper GI bleed based on a history of melena (Likelihood Ratio (LR): 5.1–5.9), melena on exam (LR: 25), or a nasogastric tube aspirate with a bloody or coffee ground appearance (LR: 9.3). These signs and symptoms are all highly suggestive upper GI bleed as cause for acute drop in hemoglobin. However, the findings of melena on rectal exam (sensitivity 49 %) and a bloody or coffee ground aspirate (sensitivity 44 %) are associated with a low sensitivity. Lacking these signs is not sufficient to rule out an upper GI bleed. ERCP has become the preferred method for diagnosis of biliary disease but carries potential for significant complications. While pancreatitis is more common, bleeding due to sphincterotomy may also be seen. Tagged RBC scan or CT angiography may reveal bleeding, but repeat ERCP allows for definitive diagnosis and treatment. Five risk factors for bleeding after ERCP have been identified and include coagulopathy, cholangitis, anticoagulant therapy within 3 days, endoscopist inexperience, and bleeding during the procedure. While this case highlights an uncommon complication of ERCP, internists must be prepared to handle the consequences of biliary tract manipulation.

WHERE HAVE ALL THE MYCOBACTERIA GONE? Rachel Sandler; Kyle Widmer. Tulane University Health Sciences Center, New Orleans, LA. (Tracking ID #1641583)

LEARNING OBJECTIVE 1: Recognize the clinical presentation of pleural tuberculosis
LEARNING OBJECTIVE 2: Identify key laboratory studies consistent with a diagnosis of pleural tuberculosis Recognize nonsurgical approaches to the treatment of pleural tuberculosis
CASE: A 27-year old man from Honduras presented with 2 weeks of worsening dyspnea on exertion. He also noted pleuritic chest pain, sore throat, and night sweats. He was treated 1 week ago with amoxicillin, without improvement. He appeared thin and fatigued. He was breathing 16 times per minute and his oxygen saturation was 97 % on room air. Dullness to percussion persisted up to the third rib along the posterior lung fields with decreased tactile fremitus. His breath sounds were decreased throughout the entire right lung fields, while lungs on the left side were clear to auscultation. Chest radiograph revealed near complete opacification of the right hemithorax. Chest computerized tomography showed a large loculated pleural effusion with surrounding atelectasis. Thoracentesis was performed and revealed an exudative fluid with lymphocytic predominance. Bacterial, fungal and acid fast bacterial cultures of the fluid were negative. Adenosine deaminase of the pleural fluid was elevated to 58, over twice the upper limit of normal. HIV test was negative. PPD was positive to 20 mm. The patient was started on rifampin, isoniazid, pyrimethamine, and ethambutol with resolution of his symptoms.
DISCUSSION: While pleural tuberculosis had previously been a rare cause of exudative pleural effusions in the developed world, the general internist must continue to consider this diagnosis. With the HIV epidemic and global migration, pleural tuberculosis rates are increasingly common. The most common symptoms include pleuritic chest pain, high-grade fever above 38° Celsius, and nonproductive cough. Nonspecific symptoms such as fatigue, night sweats, and weakness may develop acutely with up to two-thirds of patients. The effusion tends to be unilateral and moderate in size. In patients with suspected pleural tuberculosis, definitive diagnosis requires isolation of Mycobacterium tuberculosis from the sputum, pleural biopsy or pleural fluid. Pleural biopsy, although often high yield for mycobacteria, is highly invasive and largely avoided in diagnosis as most clinicians opt for pleural fluid analysis. However, pleural fluid cultures are only positive in approximately 10 % of cases. Pleural fluid analysis suggestive of tuberculosis is exudative with lymphocyte predominance. Adjunct pleural fluid analyses with biomarkers like elevated adenosine deaminase and interferon γ can be used in clinical context. Tuberculin skin testing can also be a useful adjunct in diagnosis. Patients may undergo chest tube placement and video-assisted thoracic surgery procedures in cases of loculated effusions; however, these procedures are often unnecessary if rifampin, isoniazid, ethambutol, and pyrazinamide are promptly started. Within 6 weeks of initiating treatment, most effusions have completed

resolved. The majority of tuberculosis pleural effusions resolve spontaneously; however, the majority of these infections can later develop into active tuberculosis if untreated.

WAITING FOR A LIVER AND SMOKING MARIJUANA: STUCK IN THE WEEDS Megan S. Lemay; William Becker; Jeanette M. Tetrault. Yale-New Haven Hospital, New Haven, CT. (Tracking ID #1634932)

LEARNING OBJECTIVE 1: Recognize the impact of new laws regarding marijuana use on current liver transplant policies
LEARNING OBJECTIVE 2: Identify potential risks of marijuana use related to liver transplantation
CASE: MG was a 47 year old man suffering from decompensated cirrhosis secondary to primary sclerosing cholangitis. Mr. G was admitted to the inpatient liver service in August 2011 with nausea and altered mental status. A urinary toxicology screen on admission was positive for cannabinoids, and he reported recreational marijuana use three times weekly. He denied use of other illicit substances and his last reported use of alcohol was in 2008. Exam was notable for grade 2 encephalopathy, jaundice, and tense ascites. His Model for End-Stage Liver Disease (MELD) score was 22. MG's case was discussed at the Recipient Review Committee for Liver Transplantation. It was determined that MG would need to complete 6 months of rehabilitation for marijuana use and document negative urine toxicology before being considered for transplantation. In the next 2 months, MG developed further complications of cirrhosis including variceal bleeding, worsening encephalopathy, and hepatorenal syndrome. Following his family's decision to withdraw medical care, MG died in November, 2011. His MELD score at the time of his death was 50.
DISCUSSION: Over 16,000 people are awaiting liver transplantation in the US. Currently, 18 states have legalized the use of medical marijuana, and two states recently voted to legalize recreational marijuana. This makes it increasingly likely that transplant programs will be evaluating patients who use marijuana. Controversy surrounds whether marijuana use should impact transplantation listing. On one hand, there are no data suggesting worse outcomes among marijuana users undergoing liver transplantation. In one retrospective cohort study of patients with cirrhosis being considered for transplantation, there was no difference in mortality between marijuana-smokers and non-marijuana smokers. Furthermore, marijuana use has been shown to improve symptoms often experienced by patients with cirrhosis, such as anorexia, nausea, and pain. On the other hand, cannabis use is correlated with use of other illicit drugs and alcohol. Additionally, although adverse effects of smoking marijuana may not be equivalent to cigarette smoking, there is evidence of increased morbidity and mortality among post-transplant cigarette smokers. Overall, no evidence exists that recreational or medical marijuana use has a negative impact on patients with cirrhosis being considered for transplantation. As marijuana becomes increasingly legally available, consideration should be given to whether marijuana use should contraindicate or delay transplant listing.

WAS IT SOMETHING I ATE? A CASE OF THE REFEEDING SYNDROME AS A CAUSE OF NEUROLOGIC AND RESPIRATORY FAILURE David Weir[1]; Parth Rali[1]; William Fleischman[2]. [1]Mount Sinai, New York, NY; [2]Mount Sinai, New York, NY. (Tracking ID #1594699)

LEARNING OBJECTIVE 1: Review the pathophysiology and treatment of the refeeding syndrome.
LEARNING OBJECTIVE 2: Recognize risk factors for the development of the refeeding syndrome in hospitalized patients.
CASE: A 31 year-old man with a history of alcohol abuse presented to our ER with abdominal pain for 3 days. His physical exam was remarkable for visual hallucinations and mild abdominal tenderness. A Wernicke's encephalopathy was suspected and he was started on high-dose thiamine. The following day he developed paresthesias in the upper and lower extremities, as well as horizontal and vertical nystagmus. He quickly developed a progressive generalized weakness with dysphagia and hypoxic respiratory failure requiring intubation. On admission to the Intensive Care Unit his phosphate level was undetectable at less than 0.5 mg/dL. Other serum electrolyte abnormalities were significant for a sodium level of 119 mEq/L, potassium of 2.3 mEq/L, and a chloride level of 74 mEq/L. Electromyography revealed a peripheral polyneuropathy with axonal dysfunction, demyelination, and myopathy. Both an MRI of the brain with gadolinium and lumbar puncture were normal. He was treated with aggressive intravenous phosphate and electrolyte supplementation with gradually increasing caloric support. Over the course of 2 weeks he made a full neurologic recovery.
DISCUSSION: The refeeding syndrome (RFS) is a diagnosis that is often overlooked in hospitalized patients. This syndrome can manifest as a spectrum of disease, from the asymptomatic to cardiac arrhythmias or respiratory failure with multi-organ dysfunction and death. The hallmark of RFS is the development of severe hypophosphatemia after feeding a patient following a period of prolonged malnutrition. Clinical signs and symptoms of the refeeding syndrome appear in patients who begin feeding after a period of malnutrition. It was first described after World War II in prisoners of war who developed heart failure and neurological complications after undergoing prolonged periods of starvation. Hypophosphatemia is the predominant feature of RFS, but other features include fluid-balance and electrolyte abnormalities, altered glucose metabolism and vitamin deficiencies. While the incidence has been reported to be approximately 0.43 % of all hospitalized patients, it may be present in up to 34 % of patients who have been admitted to the ICU. Because of phosphate's crucial role in a number of physiological processes including muscle myocyte and nerve conduction, phosphate depletion can lead to heart failure, arrhythmias, seizures, paresthesias, and a generalized progressive weakness. This generalized weakness can mimic the Guillain-Barre syndrome including diaphragmatic weakness requiring mechanical ventilation as in our patient. The RFS is most commonly seen in patients with anorexia nervosa, alcoholism, inadequate nutrition for greater than 5 days, and post-operative patients. The management of RFS should begin with appropriate repletion of electrolytes with thiamine and vitamin supplementation. Caloric support should begin at 5–20 Kcal/Kg/day, and increase by 10–25 % per day once serum electrolytes have normalized. In patients at risk for RFS, the diagnosis can be made by clinical history and biochemical data, with the predominant feature being hypophosphatemia. While RFS is relatively uncommon in hospitalized patients, this case highlights the importance of physicians being mindful of patients at risk and the severe complications associated with this syndrome.

WEAK LEG, COLD ARM, CLOT IN THE LUNG, HOLE IN THE HEART Mandy Stull; Anthony Donato. The Reading Hospital Health System, West Reading, PA. (Tracking ID #1628399)

LEARNING OBJECTIVE 1: Recognize clinical features suggestive of a paradoxical embolism in the setting of acute cerebrovascular accident.
CASE: 78-year-old male with a history of hypertension and hypercholesterolemia was found minimally responsive, lying on the bathroom floor. Upon initial evaluation, he was found to have a hyperdense right MCA sign, which was compatible with cerebrovascular stroke. The patient's physical exam findings of left hemiparesis, dysarthria, dysphagia, and right gaze preference were also consistent with this diagnosis. MRI of the brain was performed, which identified acute ischemia in the right basal ganglia, internal capsule, and corona radiata. Due to the large size of the stroke, anticoagulation was withheld and an IVC filter was placed. Interestingly, computed tomography imaging also revealed filling defects in the right main pulmonary artery and lower lobe branches compatible with acute pulmonary embolism. However, the patient did not have any signs of tachypnea, tachycardia, or hypoxia, and he was not symptomatic. Further work-up included an ultrasound of his bilateral lower extremities, which was

negative for deep vein thrombus, a carotid ultrasound, which showed 16 % to 49 % stenosis in left and right internal carotid arteries, and a transthoracic echocardiogram, which showed an ejection fraction 66 %. There were no regional wall motion abnormalities and no obvious clot mass. The patient remained in normal sinus rhythm during the hospital course and had normal PTT and platelet studies with no recent administration of heparin. The following day, the patient was noted to have a cold, pulseless right arm. Arterial embolization was suspected in the setting of ischemic right upper extremity. A right brachial and axillary embolectomy retrieved two segments of clot measuring up to 7 cm. Given a high clinical suspicion for patent foramen ovale in the setting of multiple emboli suggestive of both venous and arterial origin, a transesophageal echocardiogram with contrast was performed. A transesophageal echocardiogram subsequently revealed a PFO with right to left shunt on bubble study during valsalva maneuver.
DISCUSSION: Stroke is the leading cause of serious, long-term disability in the United States. Paradoxical embolism via a patent foramen ovale account for 5.5 % of all ischemic strokes. Our patient presented after toileting with an embolic ischemic stroke as well as concurrent pulmonary emboli and right brachial emboli. This constellation of findings led to the discovery of a PFO as a conduit for a paradoxical embolus. Both valsalva maneuver preceding onset of focal neurological deficits and evidence of concurrent venous and arterial emboli are important features of paradoxical embolism. In light of a negative transthoracic echocardiogram, a transesophageal echocardiogram must be pursued to establish the etiology when there is a high index of suspicion for a patent foramen ovale.

WEIL'S DISEASE (ICTERIC LEPTOSPIROSIS) CONTRACTED ON A CARIBBEAN CRUISE Deepa Rani Nandiwada; Aaron Smith. NYU Langone Medical Center, New York, NY. (Tracking ID #1620667)

LEARNING OBJECTIVE 1: Recognize the clinical presentation of leptospirosis
LEARNING OBJECTIVE 2: Understand the diagnosis and treatment of leptospirosis
CASE: A 54 year old man presented with worsening lower extremity pain, headache and fever for 4 days. The patient had no significant past medical history. Fourteen days prior to admission, while on a Caribbean cruise, he suffered a superficial abrasion on his left leg on a rainforest hike. Four days prior to admission he noted a severe, retro-orbital headache, chills, and fever up to 103 F. The fever dissipated after 3 days, followed by the onset of intense, bilateral thigh pain. Patient came to the hospital because of inability to walk due to severe muscle pain. On physical exam his vital signs were significant for tachycardia. He had severe lower extremity weakness. Lung exam was clear to auscultation bilaterally. Abdominal exam was not significant. A complete blood count revealed a white blood cell count of 10,000 k/mm2, a hemoglobin of 14 g/dl and platelets of 45,000 k/mm2. AST and ALT were 130 IU/L and 80 IU/L, total bilirubin 2 mg/dl and a creatine kinase of 8,000 U/L. A chest x-ray revealed mild interstitial infiltrates. The patient became jaundiced with total bilirubin peaking at 45.8 mg/dL, and AST of 432 IU/L. He became anemic and required two units of packed red blood cells. Thrombocytopenia persisted. Worsening renal function and hypotension improved with aggressive intravenous hydration. Initial tests were negative for viral hepatitis, HIV, Lyme disease, West Nile virus, Legionella, dengue virus, and leptospirosis. He was treated with intravenous penicillin for leptospirosis and azithromycin for disseminated legionella. One week later, repeat testing for Leptospira antibodies returned positive at a concentration of 1:400. He was discharged home on oral penicillin.
DISCUSSION: Leptospirosis, caused by the spirochete Leptospira, is the most common zoonotic infection worldwide. It is transmitted through contact with urine from infected animals or contaminated fresh water. The prevalence in developing countries has spread, especially with the rising popularity of adventure tourism. Leptospirosis should be considered in any traveler who returns from an endemic region with any combination of fever, retro-orbital headache, severe myalgias, photophobia, and vomiting. The incubation period ranges from 10 days to 3 weeks. Infection is usually self-limited, however 5–10 % of cases will progress to Weil's disease (icteric leptospirosis). This is manifested by jaundice, acute renal failure, and hemorrhage. Pulmonary involvement, thrombocytopenia, and rhabdomyolysis may occur. Distinguishing between Weil's Syndrome and Dengue hemorrhagic fever can be challenging. Our patient's laboratory values and presentation had features that were classic for both diseases. Thrombocytopenia, bilateral interstitial infiltrates and increased liver enzymes are more consistent with Dengue hemorrhagic fever. However, patients with Weil's syndrome can have significant thrombocytopenia and develop liver failure with hyperbilirubinemia. Diagnosis of leptospirosis is made with the microscopic agglutination test. It can take up to 4 weeks for this result to become positive and so initial titers may be negative. Standard treatment is penicillin or doxycycline.

WELL KNOWN, BUT LEAST SUSPECTED—A CASE OF FUROSEMIDE-INDUCED PANCREATITIS Sathish kumar Krishnan; Dima Dandachi; Malav Parikh; Harvey Friedman. St. Francis Hospital, Evanston, IL. (Tracking ID #1642031)

LEARNING OBJECTIVE 1: Consider furosemide-induced pancreatitis in the differential diagnosis whenever elderly patients, taking furosemide present with epigastric pain.
LEARNING OBJECTIVE 2: Recognize that furosemide can cause pancreatitis, even when prescribed at lower dose and for shorter duration.
CASE: A 81 years old Mexican female presented for epigastric pain and nausea for 1 day. Her past medical history was significant for coronary artery disease with stent placement, hyperlipidemia, hypertension, hypothyroidism, osteoporosis and pancreatitis due to hypertriglyceridemia. She was taking aspirin, clopidogrel, amlodipine, ezetimibe, niacin, levothyroxine, pantoprazole, risedronate and cholecalciferol. She had completed taking furosemide 40 mg/day for about a week. It was prescribed for her leg swelling. She was not a smoker and did not drink alcohol. She had no trauma or any family history of autoimmune disease. Her physical exam was positive for epigastric tenderness. Investigations were as follows. Cardiac biomarkers: unremarkable, EKG: no acute ischemic changes, amylase: 527 IU/L (25–125 IU/L), lipase: 219 IU/L (0–6 IU/L), LFT: unremarkable, serum calcium: 8.6 mg/dL (8.5–10.5 mg/dL), Triglycerides: 46 mg/dL (<150 mg/dL). An US of abdomen was done, which did not show any gall stone, biliary sludge or biliary duct dilatation. A CT scan of abdomen showed the head of pancreas to be mildly hypodense, suggestive of pancreatitis. She was treated with supportive care including pain control and intravenous fluids. The pancreatitis was considered idiopathic. The patient improved and was discharged on the 5th day. Two months later, she presented with epigastric pain, nausea and vomiting. On examination, she had mild epigastric tenderness and bilateral pedal edema. Her amylase and lipase levels were elevated. LFT, lipid level, serum calcium level and US abdomen were unremarkable. A MRCP did not show any biliary duct obstruction or dilatation. After careful questioning, she revealed that she was taking furosemide 40 mg daily on the previous 3 days for her leg swelling. Furosemide was withheld and she was treated with supportive care. Upon discharge, the patient was educated not to take furosemide in future.
DISCUSSION: The true incidence of furosemide-induced pancreatitis is unknown, as the evidence is derived mainly from random case reports. Suggested pathogeneses include a direct toxicity to pancreas, furosemide-induced stimulation of pancreatic secretion, and ischemia. Diagnosis is considered definite, if other causes are ruled out, if there is recovery after drug withdrawal, and if pancreatitis recurs with reintroduction of furosemide. Among the adverse drug reactions of furosemide, pancreatitis is often ignored and under- reported because of the difficulty in implicating the drug as its cause. There are case reports of furosemide-induced pancreatitis with a shorter latency (pancreatitis occurring within days of taking furosemide). But in those instances, the patients were taking higher dose (about 750 mg/day). Our patient is unique that she developed pancreatitis with a shorter latency and at much lower dose(40 mg/day). The physician should have a high index of suspicion for this condition, especially in geriatric patients, HIV + patients, cancer patients, and patients receiving immunomodulating agents. The mainstay of preventing further episodes is avoiding future use of furosemide in those patients.

WHAT WALKS LIKE CELLULITIS, AND TALKS LIKE CELLULITIS, BUT ISN'T CELLULITIS? Susanna A. Curtis; Manuela Calvo. Montefiore, Bronx, NY. (Tracking ID #1641980)

LEARNING OBJECTIVE 1: Recognize alternative diagnoses other than infectious cellulitis in patients presenting with skin erythema, edema and warmth.
LEARNING OBJECTIVE 2: Diagnose pseudocellulitis as a possible side effect of gemcitabine.
CASE: A 39 year-old man presented with right lower extremity erythema, edema, and tenderness for 1 day. He had a history of metastatic perivascular sarcoma of the pelvis with consequent obstructive uropathy and intermittent lower extremity edema due to lymphatic obstruction. His vital signs were within normal limits. On physical exam, his right lower extremity had 3+ pitting edema up to the knee with associated erythema, warmth, and tenderness to palpation. His left lower extremity was not erythematous or edematous but was tender to palpation There were palpable lymph nodes in the left inguinal region. White cell count was 5,000 cells/uL, blood cultures were negative, and lower extremity dopplers revealed no deep vein thrombosis. He received one dose of Vancomycin therapy for presumed cellulitis. The following day his edema, erythema, and tenderness improved drastically, faster than expected for cellulitis. On further questioning he revealed that 5 days prior he had finished the third week of his first cycle of a gemcitabine based chemotherapy. Pseudocellulitis due to gemcitabine was suspected and all antibiotics were stopped. Within 48 h all lower extremity symptoms resolved and the patient was discharged home without antibiotics. He received no further chemotherapy treatments and his symptoms did not recur.
DISCUSSION: Cellulitis is a common admitting diagnosis. Importantly, there are many causes of cutaneous inflammation, and distinguishing noninfectious etiologies from cellulitis can be challenging. Chemotherapy in particular is associated with a variety of dermatologic manifestations such as rash, alopecia, and pruritus. Gemcitabine pseudocellulitis is most commonly a radiation recall reaction that presents as dermatitis in the area of previous radiation days to weeks after induction of chemotherapy. Areas of lymphedema, regardless of radiation exposure, are also at risk though this is far less common. Our review of current literature revealed only 7 cases of gemcitabine pseudocellulitis without prior radiation therapy. Patient's present afebrile, without neutrophilia and with negative blood cultures. Treatment is corticosteroids, though use of NSAIDs and diphenhydramine has also been described. Our patient had no radiation exposure but his large pelvic mass caused pelvic outlet obstruction resulting in persistent edema in his lower extremities. It is hypothesized that chemotherapeutic drugs permeate the lymphatic fluid allowing drug to accumulate in chronically edematous areas thus making them more prone to related drug reactions. Gemcitabine in particular is metabolized primarily in the large organs, therefore the drug is unable to be metabolized and remains active longer when it has accumulated in areas of lymph edema. In summary, when a diagnosis of cellulitis is being considered, noninfectious etiologies of inflammation should also be entertained. Pseudocellulitis should be suspected in patients who are afebrile, culture negative, and whose physical exam findings improve faster than expected. Chemotherapy related drug reactions are an important consideration in a select population, and the appreciation of this diagnosis may dissuade against the inappropriate use of antibiotics.

WHEN ADDING SPICE CAN THREATEN LIFE Robert B. Werner; Nazrul Chowdhury; Roger D. Smalligan. Texas Tech Univ Health Sciences Center, Amarillo, TX. (Tracking ID #1628364)

LEARNING OBJECTIVE 1: To recognize that smoking synthetic marijuana can cause ST Elevation myocardial infarction.
LEARNING OBJECTIVE 2: To recognize that synthetic cannabinoid like K2 ("Spice") may be more likely to cause myocardial infarction than other cannabinoids.
CASE: A 26-year-old male was taken to the emergency department complaining of severe substernal chest pain radiating to the left jaw, associated with palpitations, diaphoresis and dizziness. His mother had a myocardial infarction in her 50s. The patient reported smoking 1 pack of cigarettes per day, consuming moderate amounts of alcohol, and smoking K2, a synthetic cannabinoid. His past medical history was otherwise unremarkable. On physical exam his vital signs included a blood pressure of 124/87, heart rate of 100/min, respiratory rate 23/min, temperature of 99 °F, and an oxygen saturation of 98 % on room air. Laboratory data showed a troponin level of 16.5 and creatine kinase MB fraction of 27 (normal<5), and lipid panel within normal range. EKG showed ST elevation in the inferolateral leads and chest x-ray did not show pneumonia or other pathology. Cardiac catheterization showed patent coronary arteries. The patient was treated with standard acute coronary syndrome therapy and made a full recovery.
DISCUSSION: K2, or as it is known on the streets, "Spice," is a mixture of herbs that have been sprayed with a synthetic compound similar in chemical makeup to 9-tetrahydrocannabinol (THC), the active ingredient in marijuana. It has until recently been available to the public and is a popular drug of abuse among young people. It is the second most popular illicit drug of abuse behind marijuana. Coronary artery spasm has been reported in the literature in association with the use of 12 different illicit substances in young adults, including cocaine, marijuana, alcohol, butane and amphetamines. Smoking cannabis has also been reported as a rare trigger of acute myocardial infarction in teenagers, presumably by this same coronary spasm mechanism. Such cases have shown thrombus formation involving the left coronary artery with no atherosclerotic lesions. Due to the increasing use of K2, its widespread availability, and its mimicry of THC, it is important to understand its effects on the body. Our case illustrates that K2 usage may well cause similar coronary spasm and myocardial infarction and can therefore be life-threatening in young people. Presumably K2 could be even more dangerous in older people with pre-existing atherosclerotic lesions or other coronary artery disease risk factors. Synthetic cannabinoids are not detected on routine urine toxicology tests, making obtaining an accurate history of illicit drug use by these patients of paramount importance. Recently, the DEA has declared synthetic cannabinoids as Schedule I controlled substances. This case reminds physicians to educate their patients regarding the important risks associated with their use and to keep K2 abuse in the differential of patients presenting with acute coronary syndrome or acute myocardial infarction without other obvious risk factors.

WHEN BLOOD DOESN'T HELP Joshua K. Sabari; Matthew Shaines. Montefiore Medical Center, Bronx, NY. (Tracking ID #1629625)

LEARNING OBJECTIVE 1: Recognize the signs and symptoms of Delayed Hemolytic Transfusion Reaction
LEARNING OBJECTIVE 2: Understand the indications for transfusion and possible adverse outcomes in a patient with Sickle Cell Disease.
CASE: A 30 year-old woman with a history of Sickle Cell Disease (Hemoglobin SS), complicated by monthly vasoocclusive crisis (VOC), presented with acute onset chest pain. She described the pain as a "typical" VOC. On presentation she was febrile, tachycardic, tachypnic, hypoxic, and was noted to have scleral icterus and moderate respiratory distress. Laboratory studies revealed a hemoglobin (Hb) of 4.9 G/dL, (baseline Hb 7 G/dL), reticulocytes 24 %, lactate dehydrogenase (LDH) 1,400 U/L (600 during prior crisis), and an indirect bilirubin of 2.6 mg/dl. Chest xray was significant for a left lower lobe infiltrate. Given the presumed diagnosis of acute chest syndrome, and the significant drop in Hb from baseline, an urgent blood transfusion was ordered. Type and screen was drawn prior to transfusion and she was emergently transfused one unit of type O negative blood, with the goal to increase Hb to a safer level prior to exchange transfusion. Repeat Hb post-transfusion decreased to 4.2 G/dL and LDH increased to 1,900 U/L. Subsequently, type and screen drawn prior to transfusion was noted to be positive for Anti-Jkb antibody. After review of the electronic medical record it was noted that the patient was seen in the ED 2 weeks prior to the current admission for VOC and was transfused 2U PRBCs. Type and screen prior to transfusion at that time was negative for autoantibodies. A diagnosis of Delayed Hemolytic Transfusion Reaction was made. The patient was started on high dose methylprednisolone,

epoetin and iron infusion. Hb trended upward to 6.5 g/dL without receiving further blood products, with complete resolution of her presenting symptoms.
DISCUSSION: Sickle cell disease is a common disorder seen by general internists. These patients often receive blood transfusions during inpatient hospitalizations, although they are not always evidence based. It is critical to understand the risks and benefits of transfusion; including the indications for transfusion. We report a case of delayed hemolytic transfusion reaction (DHTR). Indications for transfusion in a patient with sickle cell disease include acute stroke, acute chest syndrome, acute multi-organ failure, acute symptomatic anemia, and reticulopneia (e.g. parvo-B19 induced). The adverse risks of transfusion include febrile non-hemolytic reaction, acute hemolytic reaction, anaphylaxis, transfusion associated acute lung injury, and DHTR. The incidence of DHTR occurs in 1:5,000–10,000 units packed red blood cells transfused; often 3–21 days post transfusion. DHTR is clinically characterized by hemolysis, fever, a positive antiglobulin on Coombs test, and a new positive antibody screen. DHTR is a primary immune response where the recipient generates non-complement binding antibodies that coat donor red blood cells (RBC) leading to extravascular hemolysis. DHTRs are often mild and do not require treatment. On rare occasions hyperhemolysis may occur, requiring symptomatic management. It is important to consider the diagnosis of DHTR as further transfusions often worsen DHTRs or lead to a hyperhemolysis syndrome due to re-exposure to foreign RBC antigens. Treatment is often supportive with steroids to ameliorate immune response and erythropoietin with iron transfusion in an effort to increase hemoglobin production.

WHEN YOU CANNOT BREATH AFTER HEAD TRAUMA: A CASE OF INTRACRANIAL BLEED AND NEUROGENIC PULMONARY EDEMA Mihir S. Shah; Harvey Friedman; Pakhadi Buddhadev. St. Francis Hospital, Evanston, IL. (Tracking ID #1642578)

LEARNING OBJECTIVE 1: Neurogenic Pulmonary Edema (NPE) is a rare disorder where the patient develops pulmonary edema due to an acute intracranial event like hemorrhage, head injury or epilepsy. It occurs due to an autonomic storm which follows minutes to hours after the intracranial event. It usually has a good prognosis with improvement once the neurologic insult is addressed. It is one of the rare complications of intracranial bleed where the patient requires supplemental oxygen and can be fatal if not treated early.
CASE: An 18 y/o male presented to the ER with a mechanical fall and altered mental status. The patient had taken an unknown drug pill prior to the presentation. The patient was hypotensive and tachycardic, with physical examination remarkable for bilateral crackles. The patient's labs were normal on admission and the urine toxicology screen was positive for cannabinoids. His CT scan revealed large intraparenchymal bleed. The patient underwent emergent craniectomy to evacuate the bleed. The patient had an echocardiogram which showed global hypokinesia with an Ejection Fraction of 20 %. The patient was maintained on mechanical ventilation after the surgery and his saturations were <70 % despite maximum FIO2. He was eventually sedated and paralyzed in order to oxygenate him adequately. He was also put on mannitol to control his intracranial pressure. He improved over the next few days and was eventually extubated. A repeat echocardiogram was done, which showed improvement in the left ventricular function with an Ejection Fraction of 60 %.
DISCUSSION: Neurogenic Pulmonary Edema (NPE) is a condition in which there is autonomic nervous system overactivity due to an acute intracranial event. This leads to increased pressure in pulmonary veins which in turn leads to extravasation of fluid into the alveoli leading to pulmonary edema. The medulla oblongata is considered a vital structure in the pathogenesis of this condition. The hypothesis behind NPE is the left ventricular function deteriorates due to systemic hypertension, negative inotropic effect due to excessive vagal discharge and increased venous return. The outcome of these patients is determined by the course of the neurologic insult rather than the neurogenic pulmonary edema. The treatment is usually supportive therapy. These patients may require mechanical ventilation. High PEEP which can increase the intracranial pressure must be avoided. Permissive hypercapnia which can also increase the intracranial pressure by intracranial vasodilation must be avoided as well. Most of the episodes of NPE are well tolerated and resolve in 48–72 h. Our case illustrates the important diagnostic and management issues in the treatment of Neurogenic Pulmonary Edema.

WHY VITAL SIGNS ARE VITAL: TACHYCARDIA AS A SIGN OF SOMETHING MORE INSIDIOUS Joseph T. Knapper; Bhavin Adhyaru. Emory University, Atlanta, GA. (Tracking ID #1625721)

LEARNING OBJECTIVE 1: Recognize tachycardia as a manifestation of systemic disease and, in certain cases, underlying infection.
LEARNING OBJECTIVE 2: Diagnose and treat prostate abscess.
CASE: A 64 year old male with a history of type 2 diabetes and benign prostatic hyperplasia presented to clinic with a few days of fevers, dysuria, hematuria, and increased urinary frequency. His exam was significant for tachycardia and scrotal swelling. Urinalysis on that visit showed 3+ leukocyte esterase, and cultures eventually grew E. coli. Initial testicular ultrasound showed no evidence of torsion. The patient was diagnosed with a urinary tract infection (UTI) and prescribed 7 days of ciprofloxacin. Because he had persistent symptoms a week later, he presented for re-evaluation. He remained tachycardic on exam, and was prescribed an additional 7 days of ciprofloxacin for a complicated UTI. After completing 14 days of antibiotics, the patient returned to clinic reporting no improvement in symptoms. Further, he reported worsening urinary retention that required self-catheterization. On exam, he was afebrile but still tachycardic. The scrotum was full with palpable masses in the right and left spermatic cords and no penile discharge. Prostate exam revealed no masses or tenderness. ECG showed sinus tachycardia and his white blood cell count was slightly elevated at 9.7. Repeat urinalysis was positive for bacteria, trace leukocyte esterase, 11–25 red blood cells, and 26–50 white blood cells. The patient was admitted for further workup of sepsis. On admission, blood and urine cultures were drawn and the patient was placed on IV ceftriaxone due to concern for ciprofloxacin-resistant UTI. Blood and urine cultures came back negative, but the patient continued to have fevers, tachycardia, hematuria, and dysuria. In search of a source for his sepsis, a CT scan of the pelvis was ordered and showed two large prostatic abscesses. The urology team drained the abscesses and injected ceftriaxone into the prostatic tissue. After further treatment with broad-spectrum antibiotics, the patient's symptoms finally improved and his tachycardia resolved. He continued to be symptom free at his 1 month follow up visit.
DISCUSSION: The present case demonstrates the importance of vital signs in the evaluation of patients in outpatient practice. Our patient's tachycardia was overlooked on multiple consecutive clinic visits. The persistence of tachycardia despite antibiotic therapy should have raised suspicion of an inappropriate antibiotic choice or a more serious infectious etiology. When tachycardia persisted on this patient's initial follow-up visit, a change in antibiotic regimen may have prevented this abscess formation. This case also illustrates that clinicians must maintain a high index of suspicion for prostate abscess in males with UTIs or prostatitis who do not respond to standard therapy, as signs and symptoms of prostate abscess are generally non-specific. Fever, chills, and leukocytosis are frequently absent and patients often have a normal prostate exam. Risk factors such as diabetes, prostatic hyperplasia, and urinary catheterization, as seen in our patient, can heighten suspicion. Although a CT was done in this case, transrectal ultrasonography is preferred if prostate abscess is strongly suspected. Once the diagnosis is made, drainage and broad-spectrum antibiotics are the standard of care. Mortality rates are low with appropriate therapy, and outcomes are generally good.

WHY WOULD A YOUNG HEART CAUSE PALPITATION? Samian sulaiman; Muhammed Sherid; Husein Husein; Hani Snounou; Salih Samo; Addis Asfaw; Ana Inashvili; Derya Mahmutoglu; Nadia El Hangouche; Mehrnaz Salehidobakhshari; Samaneh Dowlatshahi; Mohamad Albsheri; Shahriar Dadkhah. St. Francis Hospital. Evanston, evanston, IL. (Tracking ID #1623956)

LEARNING OBJECTIVE 1:—To recognize that most wide complex tachycardias (WCT) are ventricular tachycardias, even in the absence of apparent structural heart disease—Diagnostic algorithms of WCT are imperfect, so Electrophysiologic study is the only way for definitive diagnosis.—Idiopathic VT often responds to antiarrhythmic drugs that would be unhelpful or even contraindicated in VT occurring in the setting of coronary heart disease.

CASE: A 20 year-old male presented with a chief complaint of recurrent palpitation. One year ago the patient started having shortness of breath and palpitation while he was resting in his room. The palpitation lasted for about 10 min and resolved before his arrival at ED. Few months later, he had a similar episode and an EKG done in ED showed a WCT with a heart rate of 180, RBBB morphology and upward QRS axis. Patient was hemodynamically stable. The arrhythmia was treated as an SVT with aberrancy. Adenosine was initially infused which failed to terminate the Arrhythmia. He was then given intravenous diltiazem which terminated the Arrhythmia successfully. The Patient was admitted to the hospital for 3 days. During his stay, no further episodes of arrhythmia were noticed on cardiac monitor. The arrhythmia was attributed to his increased intake of caffeinated drinks and was advised to decrease his intake of such drinks. After his third visit to ED for a similar episode, patient was admitted to the hospital and an electrophysiology study was planned. His past medical history was significant for bipolar disorder and mild mental retardation. His medications included valproic acid, risperidone and venlafaxine. Physical exam including vital signs was unremarkable. Further work up revealed normal labs including electrolytes, normal echocardiography and a normal CXR. Electophysiologic mapping revealed idiopathic LV ventricular tachycardia involving the left posterior fascicle. The origin of the ventricular tachycardia was localized to the left inferior septal region which explains the RBBB-Like morphology and the upward axis of QRS complex. Electrogram-guided ablation and empiric anatomic ablation were performed. Aspirin and verapamil were added to his medications. Patient was discharged uneventfully. Patient was free of symptoms for the 3 months after the ablation procedure.

DISCUSSION: Ventricular tachycardia (VT) that occurs in the absence of apparent heart disease is referred to as idiopathic. Idiopathic VT has accounted for approximately 10 % all patients referred for evaluation of VT. Most idiopathic VT originate from the Right ventricle, while LV origin is much less common. Idiopathic LV Tachycardia (ILVT) is often confused with supraventricular tachycardia because of its response to verapamil. The typical patient with ILVT presents at age 20 to 40. Verapamil is effective in the treatment of ILVT, both for the termination of acute episodes and the prevention of recurrence.

YOU ARE TOO BRASH IF YOU IGNORE THE RASH Madan R. Aryal[1]; Madan Badal[1]; Anup Subedee[2]. [1]Reading Health System, Wyomissing, PA; [2]Tulane University, New Orleans, LA. (Tracking ID #1624072)

LEARNING OBJECTIVE 1: Diagnose Syphilitic meningitis in patients presenting with features of meningitis and palmar rash.

LEARNING OBJECTIVE 2: Discuss workup and treatment of syphilitic meningitis

CASE: A 42-year old homosexual male with history of HIV/AIDS and non-compliance with antiretroviral therapy presented with history of intermittent headache, neck-pain, malaise, fever and night sweats for 2 months, and new bilateral palmoplantar rash for 2 weeks. On exam, temperature of 39.6 ° C and neck stiffness were noted. Maculopapular rash with some scaling was present in bilateral distal extremities, especially in the palmar and plantar surfaces. Genital lesions were absent. Complete blood count was unremarkable. CD4 cell count was 287/uL. Cerebrospinal fluid analysis showed WBC 141CMM with lymphocytic predominance, protein 230 mg/dL and glucose 14 mg/dL. Gram-stain, acid-fast stain, India ink stain, cryptococcal antigen, PCR for herpes simplex and toxoplasma antibody tests in cerebrospinal fluid were non-revealing. MRI of brain was unremarkable. Given the palmoplantar rash and the cerebrospinal fluid findings, serologic tests for syphilis were also ordered. Serum RPR was reactive at titer 1:1,024 and FTA-ABS was positive. VDRL in cerebrospinal fluid was reactive at titer 1:32. The patient was started on a two-week course of intravenous aqueous penicillin and had rapid symptomatic improvement over several days.

DISCUSSION: Neurosyphilis may present with widely variable presentations in different stages of syphilis and can be missed if non-neurological symptoms or signs of syphilis, "the great impostor", are not recognized. We here reported a case of syphilitic meningitis in an HIV patient diagnosed due to the presence of palmoplantar rash.It is important to recognize that meningitis can appear in early secondary syphilis, as it did in our case, as the earliest presentation of neurosyphilis. Diagnosis is confirmed with demonstration of VDRL or FTA-ABS titer in cerebrospinal fluid. .A high index of suspicion as well as correlation with non-neurologic symptoms or signs such as palmoplantar rash or epitrochlear lymph node enlargement which can be highly suggestive of syphilis would facilitate early diagnosis and treatment.

"DOC, JUST CUT MY ARM OFF!" Sweetheart Ador-Dionisio[1]; Stacey E. Jolly[2]. [1]Cleveland Clinic, Cleveland, OH; [2]Cleveland Clinic, Cleveland, OH. (Tracking ID #1637160)

LEARNING OBJECTIVE 1: To recognize and distinguish Complex Regional Pain Syndrome (CRPS) from other musculoskeletal, vascular, neurologic, and chronic pain disorders.

CASE: 49 year old male with a history of diabetes, hypertension, hyperlipidemia, and viral pericarditis, presented to clinic complaining of left upper extremity (LUE) pain and swelling for 1 month. Previously, he was evaluated by a cardiologist for possible pericardiocentesis complications as he had intermittent left chest wall pain and swelling. However, given concern for statin-induced myositis, his statin was discontinued. At the visit, he described constant LUE swelling and throbbing pain, associated with tingling in his fingers, exacerbated by movement, with no alleviating factors. He denied trauma, LUE weakness, weight loss, or fevers. On exam, his left chest wall and shoulder were tender to palpation, with visible swelling of the entire LUE, inability to abduct the arm more than 90° due to pain, normal radial pulses, and both left arm and chest felt cool and clammy. X-ray of chest and left shoulder were normal. LUE ultrasound was negative for deep venous thrombosis. CT chest showed no pulmonary disease or chest wall abnormality. Left arm venogram was negative for thoracic outlet syndrome. EMG showed bilateral mild median neuropathies consistent with carpal tunnel syndrome but no evidence of brachial plexopathy or cervical radiculopathy. MRI of the left shoulder and LUE showed full thickness supraspinatus and infraspinatus tears but no evidence of soft tissue swelling or LUE abnormality. Orthopedic and hand surgeons recommended against surgery given his multiple co-morbidities and pain out of proportion to those diagnoses. His pain persisted despite treatment by a rheumatologist and pain specialist.

DISCUSSION: CRPS is the umbrella term that includes reflex sympathetic dystrophy and Sudeck's atrophy. The mechanism of CRPS is unclear but often begins after an inciting event such as soft tissue injury, fracture, myocardial infarction, or stroke. In some cases, no trigger is identified. CRPS is a debilitating disease in which pain triggers repeated cycles of pain and swelling. Diagnosis is made based on clinical presentation but is often underdiagnosed since symptoms are nonspecific, including significant pain, edema, and skin changes. MRI and 3 phase bone scan can be helpful if positive but do not preclude diagnosis if unrevealing. Treatment includes a multidisciplinary approach involving rehabilitation and pain management. Pain is treated in a stepwise approach where pregabalin, NSAIDs, and opioids are initially used, followed by bisphosphonates and a trial of steroids if pain persists. More invasive therapies include nerve blocks, neurostimulation, and rarely sympathectomy as last resort. Consider chronic pain syndrome such as CRPS in a patient with pain out of proportion to injury, local swelling, skin changes, and vasomotor instability, who does not respond to conventional pain management and has no alternative diagnosis to explain the degree of pain and dysfunction in the affected extremity.

"IS IT OR ISN'T IT LUPUS?": A CASE OF NEWLY DIAGNOSED SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) POSTPARTUM Irem Nasir. greenwich hospital, Greenwich, CT. (Tracking ID #1642283)

LEARNING OBJECTIVE 1: To recognize a new diagnosis of SLE postpartum.
LEARNING OBJECTIVE 2: To distinguish an acute presentation of SLE from preeclampsia.
CASE: A 23 year old female G1P1001 with no prior history was vaginally induced at 36 weeks gestation after a diagnosis of severe preeclampsia, and discharged after magnesium IV and labetalol was initiated the week prior. She returned with dyspnea, fatigue, and poor po intake x5 days. She denied fevers, abdominal or chest pain, cough, nausea, vomiting, arthralgias, headaches, or blurry vision. She also noted a petechial rash on both lower extremities. There was no personal or family history of autoimmune or hypercoagulable disorders. She was afebrile. On vitals, sbp 170–180, HR 70, and 94 % RA. There were decreased breath sounds bibasilar, no wheezing, no murmurs. There was no joint swelling or tenderness. She had trace pitting edema and a petechial rash on B lower extremities. Despite increasing labetalol, in addition to nifedipine and hydrochlorthiazide, sbp were persistently elevated. WBC was 6, hemoglobin and platelets were both low at 7.8 and 83, respectively. Cr was elevated at 1.8, from a baseline of 0.9, 4 weeks prior. There was 3+ proteinuria and 3+ hematuria on urinalysis. There were no schistocytes on peripheral blood smear. LDH, liver function tests, and INR were normal. ESR was elevated at 128. On CXR was a globular heart and moderate B pleural effusions. Echo showed an EF 60 %, normal valves, and a small pericardial effusion. On day 4 of admission, a new vasculitic rash was noted on her L foot. ANA was positive at a titer of 1:320. ANCA panel and RF were neg. Anti dsDNA was positive at 1:300 and Anti Ro Ab was positive at >1:8. Both C3 and C4 were low at 23 and 2.3, respectively. HIV ELISA was neg. A new diagnosis of SLE was made postpartum. Prednisone and hydroxychloroquine were initiated. Over the next few days, her dyspnea and vasculitic rash resolved and SBP improved to 120's. Hemoglobin and platelets increased to 9 and 153, respectively. C3 and C4 normalized. Her renal function continued to improve back to baseline, a few weeks later.
DISCUSSION: SLE, an autoimmune disorder primarily affecting women in their childbearing years, is thought to be due to an increase in endogenous estrogens, resulting in an increase in autoreactive B cells. Lupus flares occur at any time during pregnancy, as well as several months after delivery. Skin, joint, and constitutional symptoms are the most common. Hematologic disease, like thrombocytopenia and anemia, range from 10 to 40 % and lupus nephritis from 4 to 30 % peripartum. There are only a few case reports in which a new diagnosis of SLE is made postpartum, as is the case with our patient. An initial diagnosis of severe preeclampsia was made, with sbp 170's and 3+ proteinuria, prompting the induction of delivery. However, she remained persistently hypertensive with acute renal failure, thrombocytopenia, serositis, and a new vasculitic rash. Our case demonstrates that, in the diagnosis of preeclampsia, SLE should be excluded, even in cases of low prevalence, since the treatment of these two conditions is different. Preeclampsia remits with delivery and active SLE requires immunosuppression. Clinicians must maintain a high index of suspicion in the setting of persistently elevated SBP after delivery, accompanied by proteinuric acute renal failure and thrombocytopenia, since acute SLE is an imitator of severe preeclampsia and only an early, accurate diagnosis can prevent irreversible organ damage.

"MY THROAT IS KILLING ME"—MOVING BEYOND INFECTIOUS CAUSES OF THROAT PAIN Lori Randall; Stacy Higgins. Emory University School of Medicine, Atlanta, GA. (Tracking ID #1600402)

LEARNING OBJECTIVE 1: 1. Create a differential diagnosis for persistent oropharyngeal pain.
LEARNING OBJECTIVE 2: 2. Describe clinical features and treatment of oral pemphigus vulgaris.
CASE: A 64-year-old African-American female presented with severe throat pain for 6 months, worsening for 3 days with difficulty swallowing, a white tongue coating, hoarseness, nausea, difficulty clearing secretions, and cough. She had had multiple negative throat cultures and been treated unsuccessfully with antibiotics. ENT performed laryngoscopy showing inflammation and recommended tonsillectomy, but she became worse and came to the ER. Her admission medications included hydrocodone-acetaminophen, liquid ibuprofen, insulin, metformin, gabapentin, lisinopril, metoprolol, hydrochlorothiazide, amlodipine, fluticasone, ipratropium, albuterol, montelukast, rosuvastatin, omeprazole, ranitidine, ondansetron, and promethazine. On exam, she had profuse oral secretions, with easily scraped grayish tongue plaque, cracked lips, and excoriation of her inflamed oropharynx. HIV, RPR, monospot, and hepatitis panels were negative. HSV-1 and HSV-2 IgG were positive, but Tzanck smear was negative. She was treated empirically for candidiasis with IV fluconazole, then with liquid acyclovir for HSV, without improvement. Dermatology was consulted. Lower lip biopsy revealed absent superficial and mid epidermis with a broad suprabasilar bulla in the remaining epidermis, consistent with pemphigus vulgaris; ELISA was positive for desmoglein 3.
DISCUSSION: Pharyngeal pain is a common complaint. Physicians often assume infectious cause. Bacterial causes include groups A, B, and C streptococcus, Mycoplasma pneumoniae, Chlamydophila pneumoniae, Neisseria gonorrhoeae, Arcanobacterium haemolyticum, Fusobacterium necrophorum (Fn), and Corynebacterium diphtheriae. Viral causes include influenza, parainfluenza, coronavirus, rhinovirus, adenovirus, enterovirus, RSV, metapneumovirus, HSV, EBV, and HIV. Immunocompromised patients or those recently on antibiotics may have candidiasis. However, beyond infection, persistent throat pain can indicate laryngopharyngeal reflux, allergic rhinitis, recurrent aphthous stomatitis, Behcet's disease, malignancy, or an autoimmune disorder such as pemphigus vulgaris (PV). PV initially affects the mouth in ~50 % of cases. Skin blistering often comes later, causes poor quality of life, and can even be life threatening. PV has unclear etiology but has been associated with certain ethnic groups (Ashkenazi Jews and Mediterraneans), HLA Class II alleles (DRBI*0402 and DQBI*0503), and drugs (including captopril, penicillamine, and rifampicin). In blistering disorders, autoantibodies attack the desmosomes, which bind cells; in PV, this occurs intraepidermally, with autoantibodies against desmoglein 3. Treatment for PV consists of systemic corticosteroids or other immune suppression, even for oral disease. With steroids, mortality has decreased from 30 % to 6 %. Our patient was initiated on high-dose glucocorticoids with significant improvement. Outpatient, she is on mycophenolate mofetil 1,000 mg BID and prednisone 30 mg daily and doing well. PV and other autoimmune diseases are important to keep on the differential for patients with varied presentations not responding to empiric management. When mucosal or skin lesions are involved, biopsies can be extremely helpful, as can consultants for common complaints that do not resolve easily.

"ROUTINE" DENTAL CARE? A CASE OF PNEUMOME DIASTINUM DURING A DENTAL CAVITY REPAIR Shobhit Gupta; Robert Freed; Anthony A. Donato. Reading Hospital, Reading, PA. (Tracking ID #1642009)

LEARNING OBJECTIVE 1: Recognize that routine dental procedures can cause pneumomediastinum
LEARNING OBJECTIVE 2: Recognize clinical features of pneumomediastinum to prevent respiratory collapse
CASE: A 46 year-old female presented to the ED with complaints of headache and left-sided facial swelling hours after a dental filling using an air-turbine drill. During the procedure the patient had acute onset of left jaw pain, for which the filling was aborted and patient directed to the ED. She was found to have facial crepitus but specifically denied chest pain, shortness of breath or dysphagia. Chest X-ray was normal and she was sent home with oral amoxicillin. She returned 2 days later with severe left-sided pleuritic chest pain and was found on CT scan to have pneumomediastinum with extensive subcutaneous air in her neck, extending to her maxilla and pre-orbital region. She was admitted with a diagnosis of traumatic dental filling complicated by pneumomediastinum and begun on broad-spectrum antibiotics to prevent mediastinitis. For the next 2 days she remained hemodynamically stable and did not require surgical intervention. She was discharged with oral amoxicillin and close follow-up.

DISCUSSION: Pneumomediastinum is a well-recognized entity associated with trauma or surgical procedures of the respiratory or alimentary tract. Pneumomediastinum after routine dental procedures, however, is a rare but equally destructive phenomenon. The use of high pressure pneumatic drills is increasingly being used by dentists as an alternative to standard rotary drills. However, this procedure has been associated with subcutaneous and mediastinal emphysema. An exact mechanism is postulated to be air dissection through cervical facial planes via the submandibular space, resulting in mediastinal emphysema, infection, pneumothorax, pneumopericardium and air embolism. Delay in recognition can lead to complete cardiovascular and respiratory collapse requiring surgical intervention. If promptly recognized, supplemental oxygen and antibiotics may prevent the potentially life-threatening complications of pneumomediastinum.

CLINICAL PRACTICE INNOVATIONS (CPI) A CHECKLIST TO OPTIMIZE TRANSITIONAL CARE MANAGEMENT BETWEEN HOSPITALISTS AND A PATIENT CENTERED MEDICAL HOME

Scott Joy[1]; Katie Arvidson[3]; Kelly Griffey[3]; Sharon Khan-Khan[3,2]; Jonathan Manheim[1,2]; Erin Marcum[1,2]. [1]The Colorado Health Foundation, Denver, CO; [2]Presbyterian/St. Luke's Medical Center, Denver, CO; [3]HCA/HealthONE, Denver, CO. (Tracking ID #1639916)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): What are critical data items necessary to communicate between hospitalist and outpatient providers to deliver comprehensive care team management for patients being discharged from a hospital to a Patient Centered Medical Home?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Identify the critical items necessary to communicate between the hospital and outpatient team to optimize patient care during the transition of care period Simplify the documentation process for the critical items to improve communication and efficiency between hospitalists and the outpatient care team Integrate this information into the electronic health record

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): In the 2013 Physician Fee Schedule Rule, CMS released guidelines for Transitional Care Management Services. To optimize the service provided to patients after discharge, clear communication must take place between the hospitalists and the outpatient team in the transition of care (TOC) period. We sought to identify these critical pieces of information to allow our team to proactively address patients needs before their TOC face-to-face visit. Checklists have been shown to be effective at communicating critical needs and improving quality of care. In Fall 2012, a group consisting of hospitalists, primary care physicians, practice administrators, clinical nurses, social workers and electronic medical record analysts was convened to determine best practice for communication, workflow and integration of data in the TOC period. The intended strategy was to develop a one page TOC document to be completed by the hospitalist and then to fax/scan the completed document into the EHR for review by the outpatient team.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Create a single document in checklist format to communicate critical data from the inpatient to outpatient setting necessary to optimize TOC Integrate the data into the EHR to allow the data to be pushed to and shared by relevent team members

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): A single page document was created in checklist format as below, followed by Yes or No checkboxes and areas to write in additional detail. 1. Inpatient Care Team: (Name of Hospitalists, contact number) 2. Patient Information (name, DOB, best phone contact #, e-mail address, insurance status) 3. Scheduling Needs: -moderate complexity (schedule within 14 d) -high complexity (schedule within 7 d) -special needs(vision, hearing, translation, disability) 4. Critical Clinical Information: -Discharge Diagnosis? -Outstanding Diagnostic Testing Results Pending? -Critical Follow-up Testing Needed? -High Risk Medication prescribed (warfarin, insulin, narcotics)? -Infection Control Precautions? -Advanced Directive? 5. Social Work/Behavioral Health Needs: Rx assistance, home O2, DME, Home Health, PT/OT, Transportation, Mental Health/Substance Abuse: 6. Discharge Summary Completed? 7. Medication List included?

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A checklist on a single sheet of paper can be created to communicate critical data required to optimize TOC between hospitalists and a Patient Centered Medical Home The checklist allows the care team to prioritize issues and optimize pre-visit time prior to the patients follow-up TOC appointment. This document can be integrated into existing EHR systems to allow for electronic flow and sharing of the information to relevant team members in an outpatient clinic setting.

A MULTIDISCIPLINARY APPROACH TO IMPROVE GLOBAL IMMUNIZATION FOR INPATIENTS

Thomas K. Spain[1]; John Starmer[2]; Asli O. Weitkamp[2]; Christine A. Kennedy[3]; Audrey H. Kuntz[4]; Neesha N. Choma[5]. [1]Vanderbilt University School of Medicine, Nashville, TN; [2]Vanderbilt University Medical Center, Nashville, TN; [3]Vanderbilt University Medical Center, Nashville, TN; [4]Vanderbilt University Medical Center, Nashville, TN; [5]Vanderbilt University Medical Center, Nashville, TN. (Tracking ID #1642346)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Expansion of The Center for Medicare and Medicaid Services (CMS) immunization core measure on January 1, 2012 significantly increased the volume of eligible inpatients who require screening for influenza and pneumococcal vaccination while hospitalized.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Develop a standardized and sustainable process to screen and administer vaccines to all eligible inpatients in a large quarternary academic medical center.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): To address the new CMS measure, a multidisciplinary committee was formed in August 2011 including physician, nursing, pharmacy, quality, and informatics representation. A new screening process was implemented in two phases. Phase I consisted of a provider-driven "exit check" integrating a vaccine advisor into the computerized discharge order process. The advisor was triggered by a decision support algorithm utilizing age, vaccine history, time of year, and comorbid diagnoses, giving providers the choice to either order appropriate vaccine(s) stat at discharge or document a reason for patient decline or exclusion. Phase II consisted of a nurse-driven protocol which screened all patients for immunizations during the routine admission assessment. Modifications to the existing electronic history form allowed nurses to document declinations, recognized exclusions, and vaccines received elsewhere. A nurse-protocol vaccine order was generated, if appropriate, to be given at 8 am on hospital day two. Patients who had received vaccines based on the admission protocol or per the electronic immunization record did not trigger the exit check, which ultimately serves as a safety net prior to discharge. Phases I and II were piloted in Fall 2011 on adult inpatients with pneumonia, and expanded on January 1, 2012 to include all eligible inpatients. Barriers addressed during implementation included institutional culture around importance of global immunizations, nurse vs. physician driven orders, provider concerns about vaccinating select patient populations (e.g. transplant and ICU patients), pharmacy processes affecting vaccine delivery, cost and wastage, and interoperability of clinical informatics systems.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary measure was the percentage of eligible inpatients who received influenza or pneumococcal vaccine screening during their hospital stay. Data was obtained from chart

abstraction of a random subset of charts selected for CMS core measure reporting.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): The rate of influenza vaccine screening during the first calendar quarter of 2012 was 94 %. Initial data from the current season shows a sustained screening rate of 93 % in October 2012. Although there is no true baseline comparator prior to this newest core measure, our rate of influenza vaccine screening for adult inpatients with pneumonia was 84 % during the fourth quarter of 2011. The rates of pneumococcal vaccine screening during the first, second, and third quarters of 2012 were 87 %, 88 %, and 96 % respectively. A trend towards improved screening rates over the course of 2012 has mirrored ongoing efforts to identify specific process failures and iteratively improve them.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An approach to inpatient vaccine screening efforts integrating a nurse-driven protocol, a provider-driven exit check, and informatics decision-support into existing workflow shows promise as a comprehensive and sustainable strategy for improving hospital vaccine screening practices.

A QUALITY IMPROVEMENT APPROACH TO IMPROVING OPIATE PRESCRIBING IN OUTPATIENT PRACTICE Constance van Eeghen; Charles D. MacLean; Amanda G. Kennedy; Mark Pasanen. University of Vermont, Burlington, VT. (Tracking ID #1643297)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The epidemic of prescription drug abuse has had an important impact in primary care due to both the complexity of caring for opiate dependent patients and the practice management issues that often arise.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): While most states have implemented Prescription Drug Monitoring Programs (PDMPs) and other public health measures, less attention has been paid to improving primary care office systems around opiate prescribing. In this study we developed and implemented a quality improvement (QI) process for best practice opiate management. The objective of this study is to describe the implementation process, and the barriers and enablers to adoption in 10 outpatient practices in Vermont.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We used a LEAN QI approach to assist practice teams analyze office workflow and select/implement from among 14 best practice strategies. The LEAN QI approach was characterized by short cycle time for implementation planning (8 h of meeting time for multi-disciplinary teams that ranged from 3 members to 8), direct involvement of front line providers and staff, and a tightly structured problem-solving approach. The study subjects were the practice members, all of whom were affected by office system changes, with a subset participating directly on teams to select and plan those changes. Of these practices, 1 was Internal Medicine, 6 Family Medicine, 2 were a combination of both, and 1 Orthopedic. Practice size ranged from 2 providers to 20. Teams collected information through their meetings to produce system diagrams that measured delays and errors in office processes, which were used both to plan changes and guide qualitative data collection. Each team's workflow analysis resulted in the selection of strategies and led to discussions with the team that identified barriers and enablers to implementation. We used a consensus approach among the project staff to categorize barriers and enablers.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): All 10 practices completed the workflow analysis. Each practice planned to adopt between 2 and 10 of the 14 strategies offered. These included systematic use of the PDMP (100 %), agreement across all providers to use the same office systems processes (90 %), use of a risk assessment screening tool as part of the assessment of patients receiving opioids (90 %), and systematic use of drug screening as part of the monitoring process (90 %). One of the most important determinants of successful implementation was leadership and support from an influential provider in the practice, including resource support for team meetings, liaison to foster uptake by colleagues in the practice, and role modeling best practice behaviors. Important barriers included finding time for office teams to convene, distractions of day to day work, and heterogeneity of individual prescriber attitude regarding optimal approach to managing opiates.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): LEAN QI techniques can help improve opioid prescription management in varied office settings. Strategies for managing opiates that include pre-treatment risk assessment and systematic ongoing monitoring for misuse are most favored by busy clinicians in the practices studied. Implementation of such strategies depends on a commitment from practice leadership to support adoption of innovation through specific roles and actions.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This QI approach to improving opiate prescribing may be adaptable to other settings.

A QUALITY IMPROVEMENT PROJECT TO REDUCE EMERGENCY DEPARTMENT DELAYS WITH THE ELECTRONIC MEDICAL RECORD Changwan Ryu[1,2]; Teresa M. Michel[1]; Stacey Gonzalez[1]; Dinesh John[1]; Joan Mitchell[1]. [1]Syracuse VA Medical Center, Syracuse, NY; [2]SUNY Upstate Medical University, Syracuse, NY. (Tracking ID #1624350)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Our emergency department (ED) experiences significant delays in patient care, as measured by the number of visits lasting >6 h and total hours of diversion, resulting in countless missed opportunities for the care of our veterans.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Streamline patient flow from the ED to the hospital wards by improving the electronic medical record admission process. 2. Improve ED performance by reducing the number of visits lasting >6 h and total hours of diversion.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Collaborating with our colleagues from business and clinical applications, we created a flow-map of the admission process. It revealed that completion of admission orders by the admitting service was a rate-limiting step for ED flow because patients cannot be transferred to the wards without them. We identified our bottleneck as the inefficient need for completing both paper and electronic orders. After the ED physician notifies the admitting service, the resident completes a paper order that contains the diagnosis, status, service, and need for telemetry, and physically hands it to the clerk. All other treatment orders are electronic and cannot be submitted until the clerk has processed the paper order. After the clerk inputs the paper order, the clerk hands it to the nurse for admission notification, and then the nurse hands it to administration. We changed this by creating an electronic order set to replace the paper order, and instituted a system of computer alerts to automatically facilitate communication. This ensured physicians and staff would not have to waste time physically delivering paper orders. We successfully performed a trial with our Internal Medicine (IM) residents, and then proceeded to meet with leaders from multiple departments for widespread implementation.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Our primary outcome will compare admission order completion times between paper and electronic orders because this was the rate-limiting step in the admission process. We will collect the times from 400 paper orders and 400 electronic orders and conduct an independent sample t-test for significance. Additionally, we will construct control charts on ED visits >6 h and total hours of diversion to evaluate the effectiveness of our intervention on delays.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Presently, 95 % of our admissions utilize our electronic order set. We continue to seek out feedback and adjust our order set as needed. For our primary measure, preliminary data from 100 admissions using electronic orders showed a time of 43 min, vastly improved from the 111 min it took with paper orders. We will continue to collect data on admission order times, the number of ED visits >6 h, and total hours of diversion.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The trial with our IM residents provided an opportunity to conduct a PDSA cycle prior to implementation. After formulating a plan with our IM department, we did a trial with our residents and studied the results by examining admission order times and immediate feedback. This proved to be instrumental in our act of transitioning to our new admission process. Our multidisciplinary approach enabled us to gather insight from multiple points of view on our admission process, which was vital for completing our flow-map and enlisting the support of ancillary services. Through this collaboration, we were able to develop an efficacious and sustainable quality improvement project.

A SHARED MEDICAL VISIT MODEL FOR WEIGHT LOSS: A PILOT STUDY Ingrid Lobo; Brandy Deffenbacher; Carmen Faust. University of Colorado, Denver School of Medicine, Aurora, CO. (Tracking ID #1637792)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can the group visit approach be applied to weight loss management in the ambulatory clinic setting?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): objective 1:To pilot test within an academic primary care setting a weight loss visit program that operates during regular clinic hours and is integrated into existing clinic routines. objective 2:To gauge success and sustainability through assessments of program-associated patient participation, process measures, work productivity and patient and provider satisfaction.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Three medical providers at three different outpatient clinic sites each assumed leadership of a group visit series. In each group, 15 English-speaking adults with a BMI >30 m/kg were invited to participate. Groups met monthly for 6 months for a total of 6 visits. The shared medical visit took the place of a normal morning or afternoon clinic session for the provider, pre-empting usual one-on-one patient appointments for that day. The group visit model combined a group educational segment and then patients were seen individually if needed. This could be for blood pressure control, medication titration or any acute issue. A medical assistant checked patient in, started an electronic visit note, and escorted patients to a conference room for the shared portion of the visit. The main focus of the group visits were weight loss. Topics covered included nutrition, food shopping, eating out, exercise, mood and sustaining weight loss. Services were billed using standard Evaluation and Management (E&M) codes.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Measures of success included patient's interest and completion of the 6 month course and a smooth integration of the group model into the ambulatory clinic setting. Process measures included the number of patients who lost weight, % weight loss, and maintenance of weight loss. Patient and provider satisfaction were measured through survey data. Provider productivity, measured in work-related value units, was compared to a typical clinic morning or afternoon for that provider where patients were seen one-on-one.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Weight loss group visits were successfully integrated into regular clinic hours with minimal disruption to existing clinic routines. Attendance has been high, with 34 patients attending at least 3 of the 6 visits. Attrition reached 26 % by the fourth session. Patient feedback has been positive. 96 % indicated "group visits are better for managing my weight loss than my usual care alone" and "group visits presented useful information." Providers seem to like this type of health care delivery. After completion of the program, 79 % of patients lost weight with 2.37 % weight loss. Provider productivity, measured in work-related value units, was 16 % greater during group visits as compared to one-on-one clinic sessions.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The group visit model is potentially a successful way to tackle weight loss management in the ambulatory clinic setting. The program filled and was integrated into a typical clinic day. The pilot suggests that although weight loss was achieved, it was not significant. However, patients and providers seem to like this type of health care delivery. With further development of the curriculum, continued patient feedback, and a close look at financial sustainability, this could be a successful method to approach obesity in the ambulatory clinic setting.

A POPULATION MANAGEMENT SYSTEM FOR IMPROVING COLORECTAL SCREENING RATES IN A PRIMARY CARE SETTING Charlotte A. Wu[1,2]; Amara L. Mulder[3]; Manuela V. Costa[3]; Adrian Zai[4]; Lori Tishler[3]; John R. Saltzman[5]; Asaf Bitton[3,6]; Andrew L. Ellner[1,7]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Medical School, Boston, MA; [3]Brigham and Women's Hospital, Boston, MA; [4]Massachusetts General Hospital, Boston, MA; [5]Brigham and Women's Hospital, Boston, MA; [6]Harvard Medical School, Boston, MA; [7]Harvard Medical School, Boston, MA. (Tracking ID #1641764)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Provision of colorectal cancer (CRC) screening in primary care is currently suboptimal because of uncoordinated care systems and poor patient-provider communication.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Our goal was to optimize adherence to evidence-based guidelines for CRC screening in a large hospital-based academic primary care clinic by shifting non-visit-based health maintenance tasks from a physician-dependent to team-based model using an interactive IT registry tool (TopCare-PIMS).

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): TopCare-PIMS is an automated, closed-loop network of 5 inter-related registries that monitor and track patients overdue for CRC screening at the Phyllis Jen Center at Brigham and Women's Hospital. This system is rooted in a population-based, rather than visit-based, workflow and empowers providers to utilize non-clinical support staff to perform tasks, including:—contacting patients via mail and phone—obtaining and scanning outside records—systematically documenting patient decline after discussion of risks and benefits—deferring patients from screening for specified periods of time—excluding patients permanently from screening Provider training in TopCare-PIMS was performed in 5 suites, with plans to expand to 3 remaining suites, representing approximately 2400 total overdue patients. LEAN/six sigma quality improvement principles and process mapping guided implementation.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): First, we conducted semi-structured interviews and observations with providers to understand barriers to registry use and task delegation to other team members. Second, we began extracting monthly data from TopCare-PIMS to provide real-time trends in physician compliance with CRC screening. Reasons for patient non-participation were obtained to guide future interventions to increase screening rates.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): During Phase 1 implementation in the first two suites, 19 of 31 physicians received 1:1 training while

the rest were trained via written materials. Prior to implementation, 445 patients were overdue for colonoscopy out of a total of 1,050 patients. The screening rate improved from 58 % to 68 % over 9 months. The overall rate of adherence to the evidence-based algorithm (including documented deferred tests, as well as outside tests) increased to 83 %. Among 445 overdue patients: 44 new colonoscopies were ordered via the TopCare-PIMS, 164 patients were deferred, and 88 outside colonoscopies were documented. After system optimization based on Phase 1, including integrating a real-time algorithm for PCP-patient linkage and improving capture of outside colonoscopy record entry from our EMR, we began Phase 2 implementation to 3 additional suites in 12/2012.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): We have begun to successfully implement a population management system that uses closed loop communication to improve CRC screening rates.—Well-designed IT systems can enable sharing of patient care responsibilities and allow physicians to practice at the top of their license.—Process mapping helped us understand deficiencies in the current siloed screening process and helped us build a safer, more efficient process.—Interdepartmental collaboration with the endoscopy team was crucial for project success.—Implementing population management systems present novel opportunities for working across institutions and departments in the evolving "medical neighborhood."

AN ANALYSIS OF TIME COST OF THE COMMON PRECEPTING MODEL IN AN OUTPATIENT INTERNAL MEDICINE RESIDENCY TRAINING CLINIC Eric Martin[1,2]; Scott Joy[1,2]. [1]University of Colorado Denver, Denver, CO; [2]High Street Internal Medicine, Denver, CO. (Tracking ID #1642259)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The time cost of the common precepting model in outpatient internal medicine residency training has not been quantified, resulting in unknown amounts of unaccompanied patient time, and an unclear impact on resident-patient counseling.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Emphasize the time cost of the common precepting model in a residency training program 2. Quantify unaccompanied patient time, and resident-patient counseling time 3. Generate consideration of systems that optimize UPT, and improve RPC

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The traditional teaching model in outpatient residency training involves a resident-patient encounter, followed by senior faculty staffing, and ends with resident-patient counseling. This model results in an unknown amount of unaccompanied patient time (UPT), and an unclear impact on resident-patient counseling (RPC). A literature search for relevant MeSH and non-MeSH terms revealed no similar studies. We have quantified these time periods in hopes of implementing alternative models that minimize UPT, and as a consequence, improve patient satisfaction, maximize resident and patient education, and improve clinic efficiency.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): At a primary care residency training program in Denver, Colorado, between December 18, 2012 and January 7, 2013, a resident physician and a medical assistant served as time recorders. Times of resident exam room entry and exit were recorded into an excel spread sheet. Initial Encounter Time (IET) was defined as resident entry to resident exit time for staffing. UPT was defined as resident exit for staffing to resident return for counseling. RCT was defined as resident entry time for counseling, to resident exit for visit conclusion. Not all encounters during the aforementioned time period were included in data analysis due to observer absence, or atypical patient encounter and/or needs. Pertinent details regarding each encounter were noted and were taken into consideration at data analysis.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): After atypical record exclusion, averages of IET, UPT and RPC were attained for all participants, with resident categorization by post-graduate year level. IET, UPT, and RPC averages were summed to provide average total time. Forty-four encounters were included in data analysis. Notable results demonstrated UPT that was stable across all training levels, averaging 12:25. RPC decreased steadily as PGY increased, with PGY3's averaging 6:10, and PGY1's averaging 9:17. Total Times decreased from a PGY1 mean of 1:02:36, to a PGY3 mean of 59:54.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): While the traditional precepting model provides valuable education to the resident, the opportunity cost of UPT cannot be ignored, particularly in regards to providing better patient specific education at the point of care. Interestingly, our data demonstrates a stable UPT across training levels, and a trend towards decreased RPC time from PGY1 to PGY3. Next steps for our clinic are to design systems that optimize UPT. UPT alternatives being explored include computer or print based patient-specific education to be reviewed by the patient during UPT, use of instant messaging (IM) between junior/senior residents and attending physicians to reduce UPT, and electronic solutions such as a web-based, clinic specific "virtual preceptor" that a resident can access during IET that provides attending answers and algorithms to the most common clinical questions encountered in primary care settings.

ANTIBIOTIC TIMEOUT PROGRAM: IMPLEMENTING A HOSPITAL STEWARDSHIP INTERVENTION Kimberly M. Tartaglia; Curt Walker; Allison Heacock; Ivy Kuofie; Beth Liston; Jessica West; Kurt Stevenson. Wexner Medical Center at the Ohio State University, Columbus, OH. (Tracking ID #1631248)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Excessive antibiotic use has been associated with occurrences of Clostridium difficile infections, increasing bacterial resistance, adverse drug reactions, and is a driver of rising healthcare costs.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Modeled on a national initiative by the Centers for Disease Control and Prevention (CDC) entitled 'Get Smart for Healthcare', the Antibiotic Timeout (ATO) program is a quality improvement effort designed to optimize use of antimicrobials. Our objective was to introduce the concept of an antibiotic time-out to all inpatient general medicine services as purposeful review of a patient's antibiotics 48–72 h after admission with the goal of determining the indication, dose, and duration for any necessary antibiotics.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The ATO program is a patient safety initiative championed by the division of hospital medicine in collaboration with the Antimicrobial Stewardship Program at our institution. The program and rationale was introduced to hospital medicine physicians in May 2012. After introduction of the program, we developed a template that facilitated progress note documentation of participation in an antibiotic time-out with specific information on antibiotic dose, indication, and planned duration of treatment. We then worked to integrate the initiative into routine work practice through weekly reminders to physicians on service that included education on the program and feedback on current performance.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): To measure the impact of our program, we tracked participation in the antibiotic time-out through physician documentation in our electronic health record from May to December 2012. Outcome measures for our program include antibiotic use and cost data as well as occurrences of hospital-acquired C. difficile infections both before and after implementation of the program.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): For the resident supported general medicine services, physician compliance with documentation was 1 % at baseline

(May 2012) and increased to 45 % documentation for inpatients on antibiotics by week 30 (December 2012.) For attending only services, documentation of an antibiotic time-out was 1 % at baseline and increased to 28 % documentation by week 30 of our initiative.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Clinician participation in and documentation of the ATO program increased with weekly reminder messages with feedback on current performance targeted to the current physicians on service. Next steps in the program are evaluating the program's impact on antibiotic usage and cost data as well as continued monitoring of C. difficile infections within the institution.

BUILDING SYSTEMS OF CARE: DOES A MULTI-FACETED DIABETES IMPROVEMENT PROJECT CHANGE CLINIC STAFF ASSESSMENT OF THE CARE SYSTEM? Debra Maltby; Yue Gao; Anna P. Goddu; Tonya Roberson; Marshall Chin; Monica E. Peek. University of Chicago, Chicago, IL. (Tracking ID #1641918)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Does a multifaceted intervention improve specific components of a diabetes care system?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The objectives of the "Improving Diabetes Care and Outcomes on the South Side of Chicago" initiative are to: 1) build and strengthen community partnerships and the medical neighborhood to improve diabetes resources and quality of care, 2) empower patients to take ownership of their health, and 3) redesign the health center delivery system through planned visits, care coordination, shared decision making, provider education and care coordination.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The initiative is a multi-year, multi-faceted project that addresses the high prevalence of diabetes on the South Side of Chicago and serves primarily African American patients who lack access to healthcare. Interventions correspond to many elements of the Chronic Care Model (CCM). The most visible and effective interventions include developing successful community partnerships in underserved neighborhoods, designing patient education classes specifically tailored to the area's unique culture and creating provider workshops emphasizing culturally based communication and shared decision making. The six participating health centers have quality improvement teams that extend and reinforce the work of the initiative with clinic redesign efforts including group visits, patient outreach, peer mentoring, referral tracking for behavioral health, nutrition and diabetes education. The clinics are starting to focus on expanding care coordination and customizing newly implemented electronic health records to foster chronic disease information systems, registries and clinical decision support.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Six health center teams completed self-evaluation using a modified version of the Assessment of Chronic Illness Care (ACIC) specific to diabetes. The ACIC is a validated tool addressing improving chronic illness care at the community, organization, practice and patient level. The seven components (organization of the healthcare delivery system, community linkages, self-management support, decision support, delivery system design, clinical information systems and integration of CCM components) are scored from zero to ten and correspond to the elements of the CCM. Health center teams completed the evaluation every 6 months for a total of six measurement points in time. Data from the ACIC survey was analyzed using Page's L test to examine trends with a small number of observations.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Participants' ratings showed significant ($p<0.05$) improvements in four of the ACIC domains; community linkages (First 4.0, Last 5.0, Range 3.8 to 6.0), diabetes self-management (First 6.1, Last 6.2, Range 6.1 to 7.8), diabetes delivery system design (First 5.4, Last 5.8, Range 4.9 to 7.1) and integration of CCM (First 4.3, Last 5.4, Range 4.3 to 6.1) The overall average also improved significantly (First 5.2, Last 5.8, Range 5.0 to 6.7). Significant improvement was not found in the other domains of the ACIC.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An initiative to improve diabetes care tailored to the needs of a specific community has had positive impacts. Health center evaluations of diabetes care management systems showed significant positive change on elements of the CCM most closely matching the diabetes initiative's most successful interventions.

COMMUNITY-BASED CARE COORDINATION TO OVERCOME FRAGMENTATION OF SERVICES IN AURORA, COLORADO Joseph D. Johnson[1,2]; Maisha Pollard[2]. [1]University of Colorado Denver, Aurora, CO; [2]The Fields Foundation, Aurora, CO. (Tracking ID #1642210)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In North Central Aurora, 45 % of women over 20 lack a high school education and 15 % of children are born to mothers under 20, unfortunate facts given the myriad of independent medical and social health providers servicing the area.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The Fields Foundation's Clinical Community Coordination Program's primary objective is to help these young families and at-risk youth to access existing services and overcome the burdens of poor health literacy, lack of awareness of this support structure, and lack of coordination amongst providers. Secondary objectives are to improve sexual health literacy and reduce pregnancy rates amongst youth.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The program is administered by an independent community organization and revolves around a community-based nurse care coordinator overseeing 2 tiers of community health workers (CHWs). Tier 1 is a broadly available "street team" available in person or via social media to provide intermittent education and service coordination to a large pool of potential patients. Tier 2 is based upon continuous family-based care relationships, with CHWs and care coordinator navigating and interfacing with multiple providers to ensure care access, understanding of care goals, and appropriate service utilization. We have developed a family-based documentation technique that reflects our holistic recognition that a person's chief complaint is not always a medical issue, but may rather involve domestic issues, food insecurity, legal trouble, etc. In lieu of the complexity of the community's health and social welfare systems, this intervention must be grassroots-led, rather than connected to any one institution or provider network. Our partners, including the Piton Foundation, Colorado Children's Health Access Program, and the University of Colorado School of Public Health and Departments of General Internal Medicine and Community Pediatrics, support this approach. Tier 1 CHWs have already begun providing care, and we are currently developing a problem-based learning curriculum to train Tier 2 CHWs, with a goal to begin enrolling continuity patients in autumn 2013.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Our metrics include utilization data, health indicators including pregnancy rates, and markers of financial and social well-being. We will compare these metrics to those of nearby control communities, similar to the approach employed assessing the Earth Institute's Millennium Villages Project. Metrics are coordinated with our partner institutions and organizations.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): To date, we have completed a full needs assessment in the form of a PhotoVoice project, as well as a survey of sexual health knowledge and attitudes amongst local high school students. These assessments identify a need for holistic care coordination, as well as a strong community and political will to implement such a design.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our results will be generalizable to other

communities lacking an inclusive safety net care structure, demonstrating that community-based care coordination provides cost-effective, culturally appropriate care that improves both health utilization and outcomes. This evidence will ultimately support the policy goal of primary care reimbursement reform by the Colorado Department of Health Care Policy and Financing. Finally, this project provides educational benefit, demonstrating the potential for community-based participatory research within a primary care medicine residency program.

CREATING A CHECKLIST TO USE DURING TEAM HUDDLE TIMES TO OPTIMIZE PRACTICE EFFICIENCY AND CARE MANAGEMENT IN AN ACADEMIC PATIENT CENTERED MEDICAL HOME Scott Joy[1]; Eric Martin[3]; Carly Byrne[2]; Gerardo Caldero Rosales[2]; Oswaldo Hernandez[2]; Lucy Llamas[2]. [1]The Colorado Health Foundation, Denver, CO; [2]HCA/HealthONE, Denver, CO; [3]University of Colorado Health System, Denver, CO. (Tracking ID #1640050)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): How can we maximize the content discussed during team huddle to optimize review of the medical record, standardize and improve team communication, and improve the quality of care for patients scheduled for a clinic visit in a primary care setting?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Create a simple checklist to use during team huddle to standardize team communication with the intent to optimize visit efficiency and quality of care Measure the time required to complete a huddle session between medical assistants and providers using this checklist

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Excellent communication and coordination among the members of the team has been found to be a critical feature of successful patient-centered practices, and is a must pass factor for NCQA certification as a Patient Centered Medical Home, in that the practice must participate in team meetings, particularly huddles. There are no specific guidelines for what huddles need to consist of, other than it being a team meeting to discuss patients on the day's schedule and involve a communication process that may include regular e-mail exchanges, tasks or messages about a patient in the medical record. Our practice has internal medicine residents that rotate in our clinic either in the AM or PM, and our huddles occur twice a day. To standardize the effort and time required to huddle, we sought to create a checklist that would cover critical issues necessary to optimize the visit time for the patient and the skill sets of the schedulers, medical assistants, and providers (including behavioral health and social work), focus on quality measures necessary for the delivery of high quality primary care, and to review messaging from previous notes from providers or clinical staff.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Create a single checklist to use during each huddle between providers and medical assistants to create an efficient and reproducible mechanism for team communication Measure the time it takes for provider/MA to huddle prior to clinic session

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Our checklist consisted of the following questions: 1. Is this a New or Established Patient? 2. What is Reason for Visit? 3. Review Grey box (this is a section in our electronic medical record (eCW) that alerts the team to outstanding items,such as Labs, Diagnostic Imaging, Referrals, Actions, Telephone Encounters, Web Encounters, Documents and P2P communication) 4. Any outstanding Actions and/or Alerts for the patient? 5. What is current status of age appropriate vaccinations for this patient? 6. What information do you need to make this visit most efficient and effective? (asked by MA to provider) By following this checklist, we have found that It takes an average of 4:07 min (range 1:00 to 7:04, SD 0.07) to complete the huddle per provider schedule

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A simple, standardized set of questions can improve communication between medical assistants and providers in a PCMH This set of questions can be used to identify outstanding items necessary for the patients care, help to develop an optimal plan for the face-to-face visit, and takes less than 5 min to complete This checklist provides a standard mechanism within a primary care practice to optimize vaccinations for patient in a PCMH

CREATING A NEW HABIT: IMPROVING PHYSICIAN COMPLIANCE IN HIV SCREENING Marelle Yehuda; Valentina Rodriquez; Robert E. Graham; Ladan Ahmadi. Lenox Hill, New York, NY. (Tracking ID #1642500)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The objective of the study was to determine the rates of HIV screening at our New York City hospital and to make systems based improvements, based on data from a survey of resident physicians, to improve our rate of screening.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To evaluate rate of HIV screening after the implementation of a resident education initiative, the addition of a reminder to screen for HIV to the admission form and facilitation and clarification of the order entry for HIV screening on our EHR.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): In September 2010 New York State legislation amended the public health law to require that HIV testing be offered to all patients, ages 13 to 64, in primary care settings, emergency departments and inpatient settings. Barriers to HIV screening include lack of physician knowledge about the mandate, work load, and difficulty discussing the topic of HIV with patients. This study aimed to determine if physician education, work flow improvement and clarification of HIV screening law would improve the rates of screening at our New York City Hospital.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The first 134 medical records of all patients admitted to the department of medicine at Lenox Hill Hospital in June 2011, were reviewed for the presence or absence of a rapid HIV antibody test or documentation of offering HIV screening. Patients with known HIV infection, admitted for routine chemotherapy, requiring ICU or ICU step down admission or having a terminal end stage disease were excluded. Three interventions were instituted to improve inpatient HIV screening based on a resident survey which identified barriers to HIV screening. These included a resident education initiative, the addition of a reminder to screen for HIV to the admission form and facilitation and clarification of the order entry for HIV on our EHR. We then reviewed the first 135 medical records of patients admitted after the interventions were put in place, using the same exclusion criteria, for documentation of HIV screening or offering of screening.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Prior to the implementation of our intervention program, 8/87, or 9.1 % (CI 4–15 %), of qualifying patients admitted to the department of medicine were offered or screened for HIV. Repeat chart review after implementation of our program found that of 85 qualifying patients 13 had been screened or offered screening for HIV, or 15.3 % (CI 8.4–24.7 %) P=0.32.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Interventions attempted based on survey information from residents failed to improve the rate of HIV screening at our New York City Hospital indicating that bad habits are hard to break. As seen in our resident survey the stigma associated with the disease and physicians' comfort with offering testing continue to be major barriers to wide spread screening. We will continue to offer the educational intervention quarterly

in hopes of changing physician habit and incorporating HIV screening into routine admission to the hospital.

CREATING AN INTENSIVE CARE MANAGEMENT TEAM AND IDENTIFYING HIGH RISK PATIENTS IN AN ACADEMIC GENERAL INTERNAL MEDICINE PRACTICE Scott Joy[1,3]; Leanne Clark[1]; Lynn Haley[1]; A. Meghan Hayes[3]; Gretchen Hubner[4]; Michael Masse[4]; Katey Morris[2]; Steve Mack[3]; Alyssa Nash[3]. [1]The Colorado Health Foundation, Denver, CO; [2]Walgreens, Denver, CO; [3]University of Colorado Health System, Denver, CO; [4]HCA/HealthOne, Denver, CO. (Tracking ID #1639919)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): How can an academic General Internal Medicine practice create an intensive care management (ICM) team, identify patients at high risk for overutilization, understand current utilization of hospital/ER services for this group of patients, and identify medication adherence issues?
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Identify patients who historically have been high utilizers of ER/hospital services and determine the frequency of ER visits/hospitalizations over a 12 month period Create a registry of these patients in an electronic health record (EHR) and an electronic method for team/PCP communication Build a relationship with local pharmacy to identify patients with medication adherence issues
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Patients were identified as being high utilizers of ER/Hospital services by PCP, Hospitalist or case management referral, or data from a health risk assessment completed by patients in our office. A patient-specific alert (Intensive Care Management) was created in our EHR that allowed this group to be queried and alert other providers of patients co-managed by the ICM team. A multidisciplinary team (attending/resident physicians, clinical psychologist, social worker, medical/administrative assistant, pharmacist) was created and meets weekly for up to 90 min to review each patient. Team conversations are documented in a specific "Notes" section in the EHR. If the team decided an action needed to be taken during that review (vaccination due, f/u testing, records review), an electronic notification was created for the PCP to review during huddle at next patient visit. ICM patients filling their prescriptions at our collaborating pharmacy were reviewed by pharmacy systems to identify gaps in medication adherence.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Form clinical team to evaluate and provide additional oversight of high risk patients Identify high risk patients within our practice Determine ER/Hospital visits from 1/1/2012 to 12/31/2012 to establish baseline of utilization Create notifications, alerts and specific area for documentation of team review and care plan within our EHR Improve communication between pharmacy and primary care practice to proactively screen for medication adherence issues
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Number of high risk patients identified: 12 Total number of ER visits/Hospital Admissions for this group: 114 (average 9.5 visits/patient; range 0 to 37 visits, ER visits 94, Hospitalizations 20) Months with highest numbers of ER/Hospitalizations: August (19), October (14), September (13) Number of patients followed by collaborating pharmacy as documented in e-prescribing system: 5 (42 % of group) Number of patients in this group identified as having potential adherence issues: 1 (20 %)
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A multidisciplinary team can be formed within an academic General Internal Medicine clinic and workflows can be developed within the EHR that allow the team to communicate with one another and with the PCP. Utilization for this group was not constant throughout the year, spiking in late Summer/early Fall. For patients that fill their medications with our collaborating pharmacy, a mechanism can be developed to proactively track medication adherence. Now that a process and baseline measurements have been established for this group, interventions can be developed with the intent to reduce the overutilization of services, particularly ER visits.

CREATION AND EVALUATION OF A MULTI-DISCIPLINARY HOSPITAL FOLLOW-UP CLINIC IN AN ACADEMIC GENERAL INTERNAL MEDICINE CLINIC Shana Ratner; Christine D. Jones; Jamie Cavanaugh; Katy K. Tsai; Genevieve G. Embree; Brooke B. McGuirt; Robin H. Roche; Thomas M. Miller; Betsy B. Shilliday; Darren A. DeWalt. University of North Carolina, Chapel Hill, NC. (Tracking ID #1624771)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Most initiatives to reduce hospital readmission focus on discharge and care management and do not optimize the outpatient settings that receive patients.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To create a standardized approach to primary care follow-up after hospitalization using a clinical pharmacist, care manager, and physician 2) To improve access to primary care for the recently discharged patient 3) To reduce 30-day readmissions for the Internal Medicine population
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The UNC Internal Medicine Clinic is an academic general internal medicine practice with 13,958 patients. Approximately 200 of these patients are discharged monthly from UNC Hospitals, and 15–20 % are readmitted within 30 days. Prior to our innovation, primary care follow-up was determined by inpatient teams, access was often obtained in our embedded urgent care, and content of the follow-up visit was not standardized. We developed a quality improvement team including leadership from inpatient and outpatient settings. The team set the aim to reduce UNC readmissions by 20 % in our practice population. Using best practices identified by the Care Transitions Program® and the IHI STAAR Guide, we designed a standardized visit process for a clinical pharmacist practitioner and physician team. We first created a hospital discharge database with real-time display of daily discharges stratified by readmission risk (low, medium, or high). A care manager tested several methods of outreach to schedule and guide patients to a hospital follow-up appointment. Using the Model for Improvement, we tested the visits with selected patients and refined the approach. To fill the demand of moderate and high risk patients, we increased access with 108 hospital follow-up appointments monthly.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Run charts and control charts are used to monitor the new processes. Before expanding capacity to accommodate all moderate and high risk patients, we conducted a retrospective cohort study to compare 30 and 90-day readmission rates for patients seen in the special hospital follow-up clinic versus usual care (using risk-matched controls). Other intermediate outcomes include time to follow up, access to urgent care services for other conditions, no-show rates, and visit duration.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): The first 48 patients seen in the hospital follow-up clinic who met inclusion criteria were compared to a risk-matched control group. Age, length of stay, and comorbidities were similar between the two groups. Patients seen in hospital follow up clinic were seen sooner than those in the usual care group (median time to internal medicine clinic follow-up 7 vs 14 days, $p=0.0005$). There was a trend toward fewer 30-day readmissions in the hospital follow-up group 6/48 (12.5 %) vs usual care 12/48 (25.0 %), $p=0.117$. There was a statistically significant difference in 90-day readmissions between the two

groups; hospital follow-up clinic 10/48 (20.8 %) and usual care 21/48 (43.8 %), p=0.016.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): As the healthcare system works to reduce 30-day readmissions, primary care clinics can be successful in improving access and standardizing content of visits. Within 6 months, we implemented a multidisciplinary program utilizing a clinical pharmacist, social worker, and physician. This method is showing promise in reducing 30 and 90-day readmissions.

DECREASING FOLEY CATHETER UTILIZATION ON THE YALE NEW HAVEN HOSPITALIST SERVICE Jose Salvana. Yale New Haven Hospital, New Haven, CT. (Tracking ID #1642916)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The Yale New Haven Hospitalist service (HS) has expanded over the last 10 years from being responsible for less than 10 % to covering over 60 % of the internal medicine inpatient census and are in a position to impact inpatient catheter associated urinary tract infections.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To decrease unnecessary use of foley catheters on the Hospitalist Service.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Yale New Haven Hospital adapted the Sunrise Clinical Manager (SCM) as its primary Electronic Medical Record (EMR) in 2007. The Hospitalist Service (HS) created an Access database: LISTMAKER in September 2008 to generate worksheets for patient assignments. The worksheets are distributed to HS medical providers at the start of each workday. The worksheet was developed into a quality improvement tool identifying the performance improvement priorities set by the HS. Functionality was added to the worksheets by leveraging embedded SCM order filters to create a column identifying active FC orders and day counts. Baseline data was collected for a month starting November 15, 2009. The electronically generated FC order reminders were incorporated into the worksheets on December 15, 2009. Foley catheters that were maintained >14 days were excluded from the study.An in-service reviewing the IDSA Guidelines: Diagnosis, Prevention and Treatment of Catheter Associated Urinary Tract Infections in Adults, 2009. was held at the start of the project cycle and updates were reviewed annually. A physician champion was identified to track FC utilization. Periodic reviews of the metrics were undertaken during monthly quality and performance improvement meetings. The need for evidence based indications for FC use was stressed during each educational session

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): FC utilization is defined via two metrics: (1) the percentage of the daily census with an FC order (Daily Prevalence) and (2) number of days the catheter orders are maintained (FC Days).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): The HS had 41,474 unique discharges during the study period. The daily prevalence of FC use decreased from 16.6 +/− 3.28 % to 11.27 +/− 3.15 % (p<0.001). The mean FC Days decreased from 2.73 +/− 0.97 days to 2.24 +/− 0.8 days (p< 0.001). The decrease in Foley catheter utilization has been sustained over last 3 years with a daily prevalence of 10.8 +/− 2.5 % and means FC Days of 2.0 +/− 0.58 days in the last quarter of 2012.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The HS was successful in decreasing overall FC utilization 32 % through the use electronically generated daily reminders, by developing the infrastructure for periodic review of metrics and by identifying a physician champion to promote evidence based best practices. The infrastructure we created leverages functionality already available on the EMR and the implementation of the program had little incremental cost to the system.

DEVELOPMENT OF A HEPATITIS C TESTING AND TREATMENT LINKAGE PROGRAM IN AN URBAN PRIMARY CARE CENTER Zachary Rosner[1,2]; Alain H. Litwin[1,2]; Meredith Steinman[1]; Angela Jeffers[1]; Laura J. Guderian[1,2]. [1]Montefiore Medical Center, New York, NY; [2]Albert Einstein College of Medicine, New York, NY. (Tracking ID #1642671)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): New treatments are available for treatment of chronic hepatitis C (HCV) infection, yet many patients face barriers to accessing treatment in specialty clinics and may benefit from hepatitis C services located within a community health care center.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To increase HCV testing and linkage to care for a high-risk patients. 2) To provide HCV treatment in an accessible primary care setting.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Setting: In order to increase testing and treatment for chronic HCV, services were initiated through an academic community health center which also provides substance abuse treatment. The health center and affiliated outreach locations are all in an urban setting. Testing started in September 2012 and results are presented through early January 2013. Staff: A patient care navigator helps coordinate outreach and testing programs. An infectious disease trained primary care provider oversees the medical evaluation and treatment of eligible patients. Supervision is provided by an experienced hepatitis C provider and support by a program coordinator and with resident physician participation. Program: Outreach efforts include poster placement and recruitment in clinic waiting areas, participation in health fairs, and collaboration with community organizations. Testing is performed in multiple settings with high-risk populations. Chronically infected patients are referred to the physician for further management. A patient navigator assists patients throughout the process. Tasks performed by the patient navigator include initial antibody testing, ensuring follow-up viral load testing after a positive antibody test, assisting patients with insurance or housing, referring for additional social support services, patient teaching, and helping to coordinate medical care by obtaining prior authorization and ensuring delivery of HCV antiviral medications. All activities are done in conjunction with the medical provider and a dedicated weekly clinic session allows the physician and patient navigator to see patients and coordinate care as a team.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We evaluated the program by number of tests done, number of patients with chronic infection, the number linked to care and those lost to follow-up at any stage.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): A total of 498 participants have been tested between the start of testing in September and early January 2012. Antibody testing was positive for 130 (26 %) participants. Ninety-two patients (18 % of all tested) were found to have detectable viral load tests. To date, 83 chronically infected patients (90 % of those identified) have been linked with care. Ten (2 %) patients were lost to follow-up, seven prior to receiving viral load testing and three after.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Efforts targeting at risk populations in an urban setting can successfully link patients to care for hepatitis C within a primary care setting. A patient navigator can help guide patients through the testing process and initiation of treatment. Early results suggest that placement of HCV services in a primary care setting may help improve linkage to care and avoid significant loss to follow-up.

DEVELOPMENT OF A STUDENT-FACULTY COLLABORATIVE CLINIC WITH A SPECIAL FOCUS ON SERVING POST-INCARCERATED PATIENTS Kimberly Sue[1,2]; Rachel E. Simon[1,2]; Gabriel Sneh[1,2]; Mihir J. Chaudhary[1,2]; Jessica Zeidman[2]; Marya J. Cohen[2]. [1]Harvard Medical School, Boston, MA; [2]MGH-Chelsea, Chelsea, MA. (Tracking ID #1634482)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Individuals released from jail/prison have high rates of chronic medical conditions, mental health and social service needs, but tend to have low engagement in primary care; can a student-faculty clinic attend to the complex needs of patients who have been recently incarcerated?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The initial weeks following release from prison and jail represent a key period during which health providers can intervene to improve the outcomes of this population. A student-faculty collaborative clinic—the Crimson Care Collaborative (CCC) Clinic at MGH Chelsea—was established in 2010 in large part to address the needs of the post-incarceration population. The objectives are:—Conduct a systematic review of the clinic's formerly incarcerated patients to assess their health and social services needs—Develop and pilot a qualitative instrument that will be administered to post-incarcerated patients to allow us to better understand how incarceration has affected their health—Use the above data to develop a post-incarceration health program that will better meet the needs of post-incarcerated patients most effectively

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Chelsea, MA is the smallest city in the state (pop. ~ 40,000). The city is mainly Latino and a hub for immigrants; roughly 25 % of inhabitants live below the poverty line. It is estimated that 4–6 people are released per week from prison/jail into the Chelsea area. The CCC-Clinic is located in Adult Medicine at MGH Chelsea. The clinic established relationships with several area prisons and jails and began receiving referrals for individuals returning to greater Chelsea. The goal is to schedule patients within 2 weeks of release. The clinic also has a team of students that conduct outreach to relevant social service/advocacy agencies.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Enhanced access to healthcare system for post-incarcerated patients. Improved patient satisfaction with post-incarceration healthcare.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): The preliminary data from our chart review show that the post-incarcerated patients (n=17) are predominantly older men with high rates of chronic disease (e.g. type II diabetes, hypertension and COPD) as well as infectious disease (HIV, Hepatitis C). 13/17 patients reported at least one mental health diagnosis (9 reporting depression and/or anxiety) and several reported physical trauma and/or PTSD symptoms. 6/17 reported housing instability and/or homelessness. 14 reported histories of substance use, primarily alcohol, cocaine and heroin. Only 3/17 are employed. There were high rates of missed appointments among this group.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?):—Individuals returning to the community from prison or jail have significant co-morbidities, including chronic disease, infectious disease, mental health and substance abuse.—These patients have unique and complex social services needs, including vocational training and access to stable housing. The clinic should ensure access to job training, housing specialists and mental health care. The high no-show rate suggests that health care providers must engage these patients earlier/more intensively, perhaps even while they are incarcerated.—Students are an essential part of providing high-quality primary care with an intensive focus on social services for this population; this clinic is an ideal place to engage students with health disparities and social medicine.

DEVELOPMENT OF AN INTERACTIVE, WEB-BASED COMPREHENSIVE PERFORMANCE DASHBOARD FOR USE IN PRIMARY CARE PRACTICE NETWORKS Charlotte E. Ward; Wei He; Jeffrey M. Ashburner; Steven J. Atlas. Massachusetts General Hospital, Boston, MA. (Tracking ID #1641544)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Improving care and containing costs, a key goal of health care reform, requires measuring performance across a broad range of outcomes and delivering data that is informative and actionable.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To develop and implement a novel performance reporting system that provides outcome measures, patient demographic information, and productivity information to providers, and practice and network leaders.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Primary Care Performance Report (PCPR) interface was designed with input from local physician and administrative focus groups. It was developed in collaboration with a business IT team that used an existing software system to meet design goals. Reports were created and tailored to whether the user is an individual provider or a practice/network leader. Reports covered three domains in distinct sections at the level of the provider/practice: 1) patient demographics, 2) visit-based and panel productivity, and 3) outcome measures (including quality of care and patient survey composite measures, and resource utilization). All outcome measures are located within the same tab and divided into separate tables that can be viewed on a single page and are designed to give an overview of quality measures across the three domains. Users can then drill down into each category of data by: 1) reviewing individual components that drive composite performance and 2) viewing their performance in relation to other providers in their practice, or their own practice to other practices within the network. These elements allow users to identify areas needing improvement and to identify those in their practice or network that are excelling. National benchmarks are also displayed for measures when available in order to compare results to external high performers. Dissemination of the PCPR employed the use of a 'Train-the-Trainer' model to promote local, graduated dissemination. Our team demonstrated the use and application of the PCPR to network and practice leaders, who received their practice reports first. They then reviewed practice-level reports with physicians at team meetings. After this meeting, individual providers were sent emails that provided embedded links to their own reports for review.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Measures of system usage, utilization and ultimately, tracking changes in outcome measures over time.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Out of 45 users that were sent an invitation to view the primary care performance report in the Fall of 2012 as part of a preliminary roll-out, 24 users had done so within the first week of going live. The report had been viewed 154 unique times by these 24 users. Results from the full dissemination effort are pending.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A comprehensive quality reporting system can be successfully developed and implemented to better inform providers and practice leaders about performance measures. However, in order to guide innovation and change, users will need to learn to incorporate such data into local and network level quality improvement initiatives. Understanding how to disseminate such information to busy providers to prevent them from being overwhelmed by the quantity and complexity of the data will determine whether such PCPRs promote practice innovation or not.

DIABETIC GROUP VISIT IN A SAFETY NET AMBULATORY HEALTH CENTER Melanie Gordon[1]; Renee E. Walker[2]. [1]Stroger Cook County Hospital, Chicago, IL; [2]University of Wisconsin- Milwaukee, Milwaukee, WI. (Tracking ID #1641137)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Insufficient time for clinic visits in safety net systems can lead to ineffective communication between patient and provider, thus decreasing quality of patient-centered care; can maximizing the clinician- patient time improve care delivered to patients with type 2 diabetes?
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Enhance comprehension of diabetes in patients within a safety net community by maximizing time with their personal primary care physician. The goal would be to strengthen the patient/provider relationship, as well as empower patients to self-manage their disease.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): A physician led diabetic group visit was implemented in a health center that serves a low income, uninsured population. This innovative approach required the provider to see several patients simultaneously to manage their diabetes. Fifteen patients with type 2 diabetes attended monthly, three-hour group sessions for 6 months with their personal primary care physician (PCP). Each session was an informal round table discussion centered on a topic chosen by group consensus. Examples of topics include: 1) what is diabetes? 2) healthy eating and 3) increasing your physical activity. Patients and PCP discussed questions, misconceptions, barriers, and solutions related to topics. The physician provided information regarding community resources available to patients that would assist with lifestyle modifications. A pre and post test was administered at the first (baseline) and last session (6 months) to assess knowledge of diabetes. Brief Individual patient visits were completed each month with medication adjustment and concerns addressed.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): To measure quality improvement, quantitative and qualitative analyses were conducted. First, assessment in improvements of scores (pre versus post-test) were analyzed. Second, assessment of knowledge, skills, and attitudes regarding techniques for improving patient-provider communication, and diabetes self-management were conducted using semi-structured interviews.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Preliminary findings show an improvement in post-test scores, suggesting increased comprehension and enhanced communication with the PCP. Patients also expressed feeling more empowered to self-manage their diabetes. While we are cautious in our interpretation of the data due to a small sample size (n=15), we are triangulating the data with qualitative analyses, which are pending.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Self-management is important in patients with chronic disease. Lack of resources in some clinics prevents adequate education to assist patients with this endeavor. Through group visits, a provider can simultaneously educate patients while addressing barriers and concerns relevant to them. Using topics chosen by the group and developing solutions based on patients needs or resources keeps the visit patient centered and strengthens the relationship between patient and provider. This novel approach was found to increased patients' comprehension of diabetes and serves as a tool to disseminate information about access to care and community resources available to patients. Many patients showed initiative by joining community wellness groups for further education on lifestyle modifications after the group visit ended, a display of empowerment. Using this format to deliver care could serve as a model for other chronic diseases and allow physicians to maximize their time while improving delivery of patient centered care.

ESTABLISHING ATTENDING PHYSICIAN SAFETY AND QUALITY METRICS: SELECTION AND PILOTING OF NATIONAL PERFORMANCE MEASURES FOR INDIVIDUAL HOSPITALISTS

Henry J. Michtalik[1,2]; Peter J. Pronovost[2,1]; Redonda G. Miller1; Jill A. Marsteller[3,2]; Joanne E. Spetz[4]; Daniel Brotman[1]; Daniel E. Ford[1]. [1]Johns Hopkins University School of Medicine, Baltimore, MD; [2]Armstrong Institute for Patient Safety and Quality, Baltimore, MD; [3]Bloomberg School of Public Health, Baltimore, MD; [4]Philip R. Lee Institute for Health Policy Studies, San Francisco, CA. (Tracking ID #1638916)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Performance measures are increasingly being used to rank physicians and determine reimbursement through pay-for-performance programs and value-based purchasing; however, systematic methods to identify quality measures attributable to individual hospitalists have been limited.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Determine criteria for selecting measures that can be attributed to individual hospitalists. 2. Apply these criteria to currently collected and reported quality and safety measures to generate attending-physician-level metrics. 3. Assess the distribution and variability of these metrics to compare individual hospitalist providers and programs.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We used a mixed-methods approach to evaluate and select inpatient performance measures. First, we used a series of interviews to perform a multi-stakeholder analysis with 2 hospitalists, 3 hospital administrators, and 2 quality improvement experts to determine qualitative criteria for selecting appropriate attending-physician-level measures. Next, we applied these criteria to 64 mandated, publicly reported Maryland Potentially Preventable Complications (PPCs) and 50 Joint Commission Core measures to determine a set of quality metrics. Finally, we examined both metric distribution and variability. For the PPCs, we examined the number of events from 2011 to 12 in 4 hospitalist programs within our network; for the Core measures, we compared 45 Maryland hospitals during a performance period (2010–11) against a baseline period (2008–9) and scored each measure on achievement of benchmarks and improvement to determine a final performance score ranging from 0 to 100.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): To minimize cost and resource utilization we examined standardized, commonly reported performance measures. For the qualitative criteria used in the selection of metrics, we sought and achieved consensus amongst the stakeholders. For the quantitative evaluation of the selected metrics, we examined distribution and variability to distinguish both between hospitalist programs and individual providers.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Stakeholders reached consensus that measures should be actionable, attributable, and accountable. Actionable was defined as a measure which could be actively intervened upon during a single hospital admission or a preventable adverse event. Attributable was defined as measures associated with, or under the supervision of, an attending physician. Accountability was defined as being within the direct or indirect responsibility of an attending physician. Thirty-four of the 64 Maryland PPCs and 19 of the 50 Joint Commission Core measures reviewed met all three criteria. Regional review of PPCs over time showed variation both between and within 4 hospitalist programs in our network, with a range of 0 to 54 events per month. Statewide examination of the Core measures showed a near normal distribution with a performance score ranging from 18 to 100, indicating good discrimination amongst hospitals.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our analysis identified criteria to assign commonly collected, standardized quality and safety measures to individual hospitalists. Regional and statewide analysis of these measures suggests adequate variation to assess quality. These measures may be used in the future to compare individual hospitalists and programs both within and between institutions.

FOOD RX: MOBILIZING OUTPATIENT CLINICS TO PRESCRIBE HEALTHY FOOD FOR UNDERSERVED PATIENTS
Anna P. Goddu[1]; Tonya Roberson[1]; Katie Raffel[2]; Marshall Chin[1]; Monica E. Peek1. [1]University of Chicago, Chicago, IL; [2]University of Chicago, Chicago, IL. (Tracking ID #1641685)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients living with diabetes in underserved communities face significant challenges to eating healthy; to support them, clinics should integrate community nutrition resources into diabetes care.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To develop a program integrating community nutrition resources into diabetes care, in collaboration with clinics, a local farmers market, and a national retail pharmacy. 2. To assess the feasibility of using a provider's prescription to offer financial incentives for healthy food, raise awareness of local food resources, and provide nutrition education to underserved patients. 3. To increase utilization of community resources for fruits, vegetables and other healthy food by patients with diabetes living on the South Side of Chicago.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Food Rx leverages a novel platform—the prescription—to link clinics with nutrition resources on the South Side of Chicago, a food desert. Food Rx was collaboratively and iteratively developed by the clinics, community partners, and research team. Primary care providers and endocrinologists prescribe Food Rx to diabetes patients at six practices: four federally-qualified health centers, an academic primary care center, and an academic endocrinology clinic. Food Rx includes a behavioral prescription, a nutrition education handout, a map of local food partners, and a coupon for healthy food. The coupon is redeemable at a local farmers market and nine participating Walgreens stores expanded to sell healthy food.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We have regular calls and in-person check-ins with the clinics, Walgreens, and Farmers Market and save all anecdotal feedback (e.g. emails, re-stock requests). We are identifying purchasing trends among our patients via coupon redemption data and qualitatively exploring barriers/facilitators to Rx utilization via in-depth interviews.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Anecdotal evidence suggests that Food Rx may be a powerful tool to promote healthy food as part of diabetes treatment: providers prescribing Food Rx report that it is "empowering," and patients report that the educational handout is useful and the coupon helpful. Integrating Food Rx into the clinics can be challenging, especially because physicians may not remember to use it. Visually highlighting the Rx (e.g. colorful shelves in workrooms) is helpful, and involving staff with more time to counsel patients (e.g. nutritionists) and/or familiarity with the community (e.g. medical assistants) holds promise to improve integration with care. The value of the Rx—both the voucher amount and any minimum purchase required—is a strong determinant of its use. The convenience of redemption sites and patients' existing use of those retail locations (e.g. for medication refills) are key to facilitating use of the Rx.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The collaborative process of designing Food Rx, as well as the diversity of the coordinating team, enabled us to meet the demands of clinic workflow, research methodology, and organizational priorities of our partners, a major national corporation and a small, local non-profit organization. The coordinating team was also able to balance standardizing the intervention with adapting components to each clinic. Involving non-physician staff at the clinics may be critical to dissemination of the Rx. Although implementation is in early stages, Food Rx shows promise as a model for integrating community resources into clinical care of underserved patients.

HEALTH CARE ADVOCACY FOR SURVIVORS OF DOMESTIC VIOLENCE
Arash Nafisi; Hillary Kunins. Montefiore Medical Center, Bronx, NY. (Tracking ID #1635005)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Survivors of domestic violence face numerous health risks and encounter many barriers to accessing health care, potentially compromising their quality of health.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To assess the needs and barriers to care for survivors of domestic violence with the goal of developing a sustainable model for care that effectively addresses this population's medical needs.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We established a collaboration between an academic federally qualified health center and the Family Justice Center (FJC), an umbrella domestic violence service organization providing comprehensive services, including legal, counseling and social service support to clients affected by domestic violence. We developed on-site medical office hours at the FJC, where a medical resident met with survivors, ascertained medical needs and facilitated prompt access to primary care via on-the-spot medical appointments for interested survivors. Survivors' needs and ability to access health care were demonstrated via a voluntary medical needs assessment, an 11 question paper survey available in English and Spanish, adapted from a New York City Department of Health questionnaire.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1) Identifying medical needs and barriers to care via a medical needs assessment and informal feedback. 2) Quantifying the number of clients able to attend a medical appointment.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): 23 survivors completed the medical needs assessment. 16 of 23 (70 %) rated their overall physical health from very poor to average on a five point scale. 13 of 19 (68 %) experienced somatic symptoms within the past 30 days. 15 of 18 (83 %) stated they needed to see a physician in the past year but were unable to do so. 18 of 22 (82 %) were currently interested in seeing a medical provider. Of the 11 survivors who were prescribed medications, five ran out of or stopped taking them. Moreover, of the 20 survivors who had previously seen a physician, 14 had not discussed their relationship issues with their doctor. Of the 12 survivors seen during medical office hours at the FJC, six were interested in and were provided with primary care appointments; four of six attended their initial primary care visit. Upon subsequent follow up, survivors reported to FJC staff appreciation for an initial medical visit in a neutral space outside the medical establishment. However, they reported significant hardships in accessing care, including mistrust of the health care system, trouble accessing providers due to improper documentation and privacy/safety concerns in the waiting room.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Collaboration between physicians and advocates for survivors of domestic violence can facilitate better access to health care for this cohort. In this small sample, survivors had medication lapses and difficulty accessing primary care, yet had health conditions and symptoms requiring medical attention. Though domestic violence survivors may have competing demands such as concern for safety, financial insecurity and housing instability, this study found that survivors identified primary care as a need and were able to attend a primary care visit. To improve the health status of domestic violence survivors, medical collaboration with domestic violence organizations may be one avenue to promote primary care access and utilization. Though preliminary results from this study are compelling, more work must be done to identify and address barriers to care to facilitate easier access to medical care for survivors of domestic violence.

HOSPITAL AT HOME AS AN INTERAGENCY COLLABORATIVE AT THE PHILADELPHIA VA MEDICAL CENTER Elizabeth A. Mann[1]; Bruce Kinsosian[1,2]; Rachel K. Miller[1,2]; Haggerty Mary-Ann[2]; James Hammond[2]; Ariel Feinberg[2]. [1]University of Pennsylvania, Philadelphia, PA; [2]Philadelphia VA Medical Center, Philadelphia, PA. (Tracking ID #1643764)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can hospital-level services be delivered safely and inexpensively in the home by a team of home care practitioners and community home health agency staff?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Create an interdisciplinary and interagency team to deliver in-home care 2. Demonstrate Hospital at Home as a safe and effective alternative to hospital admission 3. Provide cost-savings to the VA health system

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Prior studies of Hospital at Home programs have shown in-home care to be safe, effective, and reduce costs by 30 %. We adapted the traditional model, which uses only VA staff, by forming a team comprised of community health agency employees and VA home care providers. Patients were enrolled from the Philadelphia VA Medical Center emergency department, clinics and inpatient medicine wards. Patients received daily physician and nursing visits, parenteral therapy, necessary laboratory and radiology testing and allied services in their homes. At the completion of therapy, patients were discharged back to the care of their primary care physician. Funding was supplied by the Hospital at Home Fund, which was credited with the direct variable costs for an equivalent DRG at the Philadelphia VA.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Clinical data included diagnoses, length of stay, prior hospitalizations and readmissions. Financial data included direct variable costs and costs of hospitalization for those transferred to Hospital at Home from an inpatient ward. Qualitative data regarding patient experience in the program will also be collected.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Hospital at Home admitted 17 veterans 25 times during the first two quarters. Two patients comprised 28 % of admissions. There were 33 hospital admissions in the 6 months prior to initiation of the program. 56 % of Hospital at Home admissions were CHF exacerbations. Additional admission diagnoses were UTI, asthma exacerbation, pneumonia, upper GI bleed and uncontrolled diabetes. The average length of stay was 5.2 days. 11 patients were transferred from the inpatient wards; their mean pre-transfer length of stay was 1.6 days. There was 1 readmission within 30 days and there were 25 readmissions within 180 days. The median time to post-discharge contact with a PCP was 4.5 days and the median time to follow-up PCP appointment was 23.5 days. The Hospital at Home Fund was credited with $192,402 at the start of the program. The fund had a net balance of $63,716 at the end of the year, representing 32 % savings of the direct variable costs for equivalent DRGs and 60 % savings after excluding transfer costs of $87,164 due to hospitalization. Direct costs for in-home services averaged $240/day.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our program demonstrates that high quality medical care can safely be provided in the home by VA practitioners teaming with community home health agency staff. Compared with the traditional model, this integrated model is simpler to implement and can provide additional cost-savings. Costs may also be reduced by identifying eligible patients prior to hospital admission. This program benefits integrated payer systems such as the VA network, but may also benefit traditional health systems facing the financial costs of Medicare readmissions. Future directions of our program include improving primary care follow-up time and educating VA staff on early identification of potential participants.

IDENTIFICATION OF FACILITATORS AND BARRIERS TO IMPLEMENTATION OF E-CONSULTS USING THE CONSOLIDATED FRAMEWORK FOR IMPLEMENTATION RESEARCH Leah M. Haverhals[1]; George Sayre[2]; Christian Helfrich[2]; Susan Kirsh[3]; David Aron[3]; Michael Ho[1]; Julie Lowery[4]. [1]Department of Veterans Affairs, Denver, CO; [2]Department of Veterans Affairs, Seattle, WA; [3]Department of Veterans Affairs, Cleveland, OH; [4]Department of Veterans Affairs, Ann Arbor, MI. (Tracking ID #1641113)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In 2011 the Veterans Health Administration (VHA) began implementation of electronic consults (E-Consults) as an alternative to in-person visits with specialists in order to improve access and reduce travel burdens for patients.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The purpose of this evaluation was to identify barriers and facilitators to implementation of E-Consults in order to improve dissemination.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): E-Consults allow primary care providers to obtain specialty care advice by submitting consults about specific patients via the VA's electronic health record. Specialists can respond with advice and/or recommend that the patient be seen in-person at the specialty care clinic. A new E-Consult program was piloted at 24 facilities in 14 specialties or conditions, such as rheumatology and diabetes.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We conducted semi-structured interviews with clinical leaders, primary care providers, specialists, and support staff at E-Consults pilot sites. Sites were selected based on variation in implementation success, defined as the ratio of E-consults to all consults for a specific specialty of focus, and the ratio of E-consults for patients from outlying clinics relative to medical center-based clinics. Interview data were coded deductively using constructs from the Consolidated Framework for Implementation Research (CFIR), and rated according to their role in implementation (positive or negative, weak or strong). We looked for CFIR constructs consistently associated with implementation across sites, and based recommendations on best practices from more successful sites, or surmountable barriers at less successful sites.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Interviews were conducted with 37 participants at four low and four high implementation sites. Five themes distinguished high implementation sites, and suggested potential recommendations to improve subsequent dissemination of E-Consults: 1) Adaptability: Conduct a trial, with the explicit agreement to revise the approach if it doesn't work. 2) Compatibility: Disseminate the benefits (using actual data) of E-Consults for patients and for workflow to participating providers. 3) Networks and Communications: Specialists must reach out to primary care providers to engage them. 4) Training: Include one-on-one, hands-on demonstrations. 5) Access to Knowledge and Information: Provide more guidance and details for implementation, including a better infrastructure for program roll-out—e.g., a standardized template for scheduling, tracking, and recording workload and a timetable for implementation.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The systematic and data-driven identification of factors affecting implementation success is critical for improving dissemination of new initiatives. A deductive coding and rating process using the CFIR provides such an approach and identifies those areas on which organizations should focus their implementation efforts.

IMPLEMENTATION OF A STRUCTURED, ELECTRONIC REFERRAL SYSTEM TO SUPPORT THE PRINCIPLES OF THE PCMH-NEIGHBORHOOD Jennifer J. Monacelli; Nathaniel Gleason; Chanda Ho; Michael Wang; Don Collado; Ralph Gonzales. UCSF, San Francisco, CA. (Tracking ID #1642240)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Referrals often lack a clear clinical question, key clinical data, and the referring provider's expectations regarding duration of specialty care and co-management roles, all of which may lead to inefficient care that is not patient-centered.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES):—To develop a set of structured referral templates that communicate specialist recommendations regarding the diagnostic data needed to optimize the initial specialty visit.—To integrate the referral templates into the electronic health record (EHR), and point-of-care workflow, in a manner that maximizes usability and acceptability.—To improve communication regarding expected duration of specialty care, and allocation of co-management responsibilities, through the use of Care Coordination Agreements (CCAs).
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Structured referral templates were developed with formal input from specialists and PCPs. Eight medicine subspecialty practices, and all primary care practices, across a single academic institution were included. The templates elicit the consultative question, convey information about referral appropriateness, list optimum pre-referral diagnostic studies, and auto-populate relevant diagnostic data. Three CCA options are offered: Consultation Only; Co-Management—PCP is First Call; and Co-Management—Specialist is First Call. We introduced "First Call" as short hand for the provider with primary management responsibility (e.g. urgent patient concerns, and medication titration).
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Process evaluation was based on chart abstraction of all referrals sent to participating subspecialties during the 2nd and 8th months following implementation. Uptake measures included the proportion of referrals using a template, and the distribution across PCPs and primary care practice sites. Adoption measures included the proportion of referrals 1) containing a consultative question, and 2) submitted with all recommended tests. For patients missing≥1 diagnostic test at the time of referral, we determined if the PCP ordered those tests after viewing the template.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): We developed templates for 68 diagnoses across 8 specialties. In the 2nd month of implementation, PCPs used a template in 136 referrals (82 % of referrals to participating specialties). Of these, 96 % contained a consultative question, 68 % contained all recommended tests, and 86 % included a CCA. In the 8th month, PCPs used the template in 181 referrals (78 %). Of these, 98 % contained a consultative question, 79 % contained all tests, and 82 % included a CCA. After combining both study sample months, 68 % (n=271) of referrals employed a template that recommended specific tests. Of these, 25 % (n=67) were missing ≥1 test at the time of referral. After viewing the referral template, 21 % (n=14) of PCPs ordered all missing tests, 18 % (n=12) ordered some of the missing tests, and 61 % (n=41) ordered none of the missing tests. The distribution of Care Coordination Agreement selection was 58 % Consultation Only, 26 % PCP First Call, and 15 % Specialist First Call.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Nearly all referrals placed using a structured template included a consultative question (prior studies show up to 24 % of referrals lack a question). Template use appears to increase the ordering of key pre-referral diagnostic tests for some patients. Over half of PCPs requested brief consultation followed by return to primary care for management.

IMPLEMENTATION OF A WEB-BASED PATIENT PORTAL TO IMPROVE TEST RESULT NOTIFICATION IN A COMMUNITY-BASED PEDIATRIC PRIMARY CARE PRACTICE Nive Maniam[1,2]; Garrett M. Chinn[3,2]; Lynn A. Volk[1,2]; Deborah H. Williams[1]; David W. Bates[2,1]; Steven R. Simon[3,2]. [1]Partners HealthCare, Wellesley, MA; [2]Brigham and Women's Hospital, Boston, MA; [3]VA Boston Healthcare System, Boston, MA. (Tracking ID #1642933)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Timely notification of test results is an element of CMS's meaningful use criteria and a JCAHO Patient Safety Goal; however, little is known about the adoption of web-based patient portals to communicate test results in community practices.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Examine how test result notification changes with implementation of a patient portal. Evaluate the timeliness of test result notification before and after portal adoption.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We studied the timing and method of test result notification before and after adoption of a patient portal in a pediatric practice. Before the portal, physicians utilized in-person (follow-up visit), telephone, letter, or regular email message encounters. The patient portal enabled physicians to post results to the portal, generating a portal email. We extracted automated data from the electronic health record, including date of physician review of test results, date of patient notification, and notification method. We compared the timing and method of notification in the 6 months before portal adoption (pre-adoption), the 6-month period beginning 4 months after portal launch (early post-adoption) and the 6-month period beginning 1 year after portal launch (late post-adoption).
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary outcome measure was the percent of results communicated within 30 days by each notification method per time period. Secondary outcome measures included the average time to notification after physician review by notification method.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): 2,055 results reviewed: 711 pre-adoption, 643 early post-adoption, and 701 late post-adoption. Pre-adoption: clinicians notified patients of 54 % of test results within 30 days, primarily by telephone (74 %) but also in-person (17 %) and rarely by postal mail (1 %) or email (2 %). [10 % of tests notified by unspecified methods, 4 % notified by more than one method] Early post-adoption: clinicians notified patients of 62 % of test results within 30 days, primarily by telephone (49 %) and portal email (30 %) but also in-person (13 %) and rarely by postal mail (2 %). [9 % of tests notified by unspecified methods, 3 % notified by more than one method] Late post-adoption: clinicians notified patients of 63 % of test results within 30 days, primarily by telephone (72 %), but also through portal emails (17 %) and in-person (11 %). [5 % of tests notified by unspecified methods, 5 % notified by more than one method] Average time to notification of in-person and telephone encounters increased between pre and post portal adoption. Average time to notification using patient portal emails decreased from 5.3 days in early post-adoption to 3.0 days in late post-adoption.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): After patient portal implementation, more patients are notified of test results within 30 days. In-person encounters as a notification method declined. Telephone encounters decreased after the initial adoption of the patient portal but increased in the late adoption period. Portal emails decreased in the late adoption period with overall time to notification decreasing by 2.3 days. These data suggest that a majority of patients may prefer to have their results communicated by telephone even though they may receive notification more quickly through a patient portal. When implementing a patient portal, physicians should assess patient preferences for a preferred method of result notification.

IMPROVING ADULT PNEUMOCOCCAL VACCINATION COVERAGE IN PRIMARY CARE CLINICS IN NEW HAMPSHIRE: CONTEXT MATTERS Antonia Altomare[1,2]; Ellen Eisenberg[1,3]; Auden McClure[1,3]; John N. Mecchella[1,2]. [1]Dartmouth Hitchcock Medical Center, Lebanon, NH; [2]The Dartmouth Institute for Health Policy and Clinical Practice, Lebanon, NH; [3]Geisel School of Medicine at Dartmouth, Hanover, NH. (Tracking ID #1632574)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): National coverage of pneumococcal vaccination in adults 65 years of age and older is 60 % despite strong evidence supporting the efficacy of pneumococcal vaccination against invasive pneumococcal disease and a target coverage goal of 90 %.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Improve adult pneumococcal vaccination coverage to 90 %. 2. Provide clinic-specific immunization data and engage clinics in the quality improvement process. 3. Assess the effectiveness of a new electronic health record (EHR) clinic workflow.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We utilized a microsystems approach to analyze three primary care clinics within an academic institution. Data regarding pneumococcal vaccination coverage was queried from the Dartmouth-Hitchcock Data Trust. All three clinics were provided with their baseline vaccination data displayed in statistical process control charts and analysis of means charts (by visit type and by provider). Meetings were held with clinic staff to update them on current vaccination guidelines and to introduce a new vaccination EHR workflow that included prospectively identifying patients coming to clinic who were not up-to-date and preparing a vaccination order for the visit provider.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The absolute number of pneumococcal vaccines administered per month and the percentage of all eligible patient visits in which a patient was brought up-to-date per month were measured before and after our site visits.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): We analyzed 59,239 office visits for a total of 51,404 patients over the age of 65 between January 2010 and August 2012. All three clinics had a statistically significant improvement in the average number of vaccines administered per month: Clinic A 9.2 vs 23.6, Clinic B 8.6 vs 19.8, and Clinic C 4.9 vs 21.0; and the average percentage of patients brought up-to-date on pneumococcal vaccination per month: Clinic A 35.2 % vs 52.3 %, Clinic B 13.3 % vs 24.4 %, and Clinic C 13.8 % vs 40.6 % (all $p<0.01$ using two sample t-tests and proportional t-tests). Adoption of the new EHR workflow varied by clinic. Making individual clinic data available for review was identified as a primary source of motivation that guided successful change across clinics. In addition, Clinic A engaged support staff who were empowered to create system change and utilize the EHR workflow. Clinic B only started using the EHR workflow after a local champion was identified and led the improvement initiative. Clinic C chose to implement an alternative EHR workflow that involved a vaccination reminder at the time of scheduling eligible patient appointments.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Improving pneumococcal vaccination coverage has significant implications for population health and is possible through context specific interventions. Improving vaccination coverage requires knowledge of the barriers, understanding of the local context, and motivation to change. This study supports the effectiveness of the EHR as a quality improvement tool that may affect change; however, its use alone is not sufficient. Sustainable change requires multifaceted context specific interventions and engagement of key stakeholders.

IMPROVING PROVIDER EXPERIENCE AND INTERDISCIPLINARY COLLABORATION IN THE COMPLEX CARE MANAGEMENT PROGRAM AT THE GENERAL MEDICINE CLINIC AT SAN FRANCISCO GENERAL HOSPITAL Anneliese Johnson[1]; Julia Janssen[1]; Fern Ebeling[2]; Lisa Tang[2]; Lindsay Evans[2]; Claire Horton[1]; Reena Gupta[1]; Elizabeth Davis[1]. [1]University of California-San Francisco, San Francisco, CA; [2]San Francisco General Hospital, San Francisco, CA. (Tracking ID #1642742)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): It is often difficult for members of a care management team managing medically and socially complex patients to communicate and collaborate with busy primary care providers in an academic clinic.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): This intervention aims to 1) improve provider satisfaction with the General Medicine Clinic Care Management Program and 2) to determine optimal methods of communication between the care management team and providers.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Complex Care Management Program (CCMP) is an interdisciplinary team embedded in San Francisco General Hospital's General Medicine Clinic focused on improving care for frequently admitted high risk patients. The CCMP seeks to achieve its aims through collaboration with primary care providers and patients, and in the process improve providers' experiences caring for complex patients. The first step in this project was to meet with providers and the care management team informally to elicit feedback about communication needs and optimal methods for communication. We then created guidelines for charting and email communication between both groups. When the clinic launched huddles before every shift, the care management team joined the huddles to enhance in-person communication. We also conducted care management educational sessions during resident pre-clinic conferences. We conducted preliminary surveys of providers whose patients were entering the program and shared this information with the care management team to inform program design. We are also conducting follow up provider surveys and will design our next improvement steps based on these results.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Providers who have patients enrolled in the CCMP are asked to complete an anonymous survey at time of enrollment, 6 months, and 1 year. Specific areas that the survey addresses include 1) physician satisfaction with chronic care, 2) time spent managing complex patients and 3) knowledge of patients' clinical characteristics.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Currently, results from 6 month surveys showed: 1) 53 % increase of providers rating quality of care as 'very good' or 'excellent' compared to time of enrollment, 2) 50 % increase of providers reporting 'yes' when asked if they knew all the meds that their patient was prescribed and taking and 3) overall improved satisfaction in communication with patients and family members, coordination of care, monitoring chronic conditions, referrals to community resources and efficiency of office visits. When asked to compare the care the patient received before and after enrollment in CCMP, all providers responded that the care was 'better' or 'much better'. Since start of the program in February 2012, 23 providers have had patients enrolled in the program. Currently, 10 providers have completed the initial enrollment survey and 7 providers completed the 6-month follow-up survey. Over the next several months, we will focus on increasing survey response rates.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Complex care management can improve provider experience and perceived quality of care. Email guidelines and huddles are helpful tools for optimizing communication between interdisciplinary teams and primary care providers. Ongoing evaluation of provider experience informally and through surveys helps to foster collaboration between providers and other care team members.

INCREASING EFFECTIVE SMOKING CESSATION INTERVENTIONS IN AN ACADEMIC INTERNAL MEDICINE CLINIC Shana Ratner; Stephanie Flecksteiner; Douglas Friedman; Hongxen Nguyen; William A. Wolf; Brooke B. McGuirt; Thomas M. Miller; Michael Pignone. UNC Chapel Hill, Chapel Hill, NC. (Tracking ID #1632590)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The University of North Carolina Internal Medicine Clinic was underutilizing effective smoking cessation interventions for patients with tobacco abuse.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To determine the prevalence of tobacco abuse in our clinic population 2) To simplify the North Carolina Quitline referral process and improve our referral rates 3) To assess efficacy of Quitline referrals for our patients

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The UNC Internal Medicine practice is a Level 3 Patient Centered Medical Home with 13,958 active patients and 103 mostly part-time providers (68 residents, 24 faculty, and 11 midlevel providers). From January–April 2012, we sought to improve the quality of our smoking cessation services with four intern Quality Improvement projects. The first project determined the prevalence of smokers in our clinic, mapped the care process (including methods of assessment and intervention, particularly referrals to the NC Quitline), and performed chart reviews to determine frequency of intervention. The second project surveyed residents about their knowledge base, used this information to revise our tobacco abuse educational curriculum, created clinical tools for medication dosing and motivational interviewing, and piloted a reminder to ensure that providers reviewed nurse documentation of smoking status. The third project simplified the process of Quitline referral creating a single step for provider ordering. Fourth, an intern called patients referred to the Quitline to assess patient satisfaction and cessation outcomes.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We performed chart reviews to measure nurse documentation (smoking status, readiness to quit) and provider documentation (smoking cessation interventions). We developed run charts to track monthly the number of current smokers in the practice, proportion expressing readiness to quit, number of Quitline referrals, and feedback from the Quitline. Patient satisfaction with the Quitline was also assessed by phone interview. We looked at quit rates (1 visit as current smoker followed by at least 2 visits in a row as former smoker) before, during, and after our interventions.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): At baseline, 19 % (2,659/13,958) of patients were current smokers and 32 % (857/2,659) of smokers reported readiness to quit. Nurses documented smoking status at 98 % of visits, but among patients ready to quit, providers only mentioned smoking 45 % of the time. After implementing the smoking cessation curriculum, there was an increase in Quitline referrals from a mean of 0.33 (range 0–1) to 9 (range 4–18) per month. After changing to a single step process for Quitline referral, referrals increased from 9 to 22 (range 15–34) per month. Of 16 patients contacted for feedback about Quitline referral (31 attempted, 16 reached), all 16 reported cutting back, 14 found the service helpful, and 2/16 had quit smoking. During 2011 (before our interventions) 62/2,659 smokers quit, whereas in 2012 (during and after our interventions), 55/2,669 smokers quit.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Intern quality improvement projects were effective in improving smoking cessation processes in our practice. Interventions included physician prompting, simplifying process, resident education, and tracking patient level outcomes. Physician prompting and simplifying the process drastically increased the number of Quitline referrals made.

INNOVATIVE MULTIMEDIA METHODS TO ENHANCE PATIENT-CENTERED CARE IN UNDERSERVED POPULATIONS

Pamela S. Ganschow[2]; Elizabeth A. Hahn[1]; Elizabeth A. Jacobs[3]. [1]Northwestern University Feinberg School of Medicine, Chicago, IL; [2]Rush University Medical Cemter and Stroger Hospital of Cook County, Chicago, IL; [3]University of Wisonsin School of Medicine and Public Health, Madison, WI. (Tracking ID #1641256)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The strategic use of health information technology has the potential to enhance patient-centered care for diabetes patients with low literacy, computer, and/or English language skills.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To test whether a bilingual, low literacy, multimedia information and assessment system used in daily clinical practice increases the impact of diabetes-specific patient educational guides, enhances patient-centered care, and improves patient outcomes. 2. To evaluate the relationships between patient characteristics, resources, needs, health behaviors and health outcomes using the Behavioral Model for Vulnerable Populations. 3. To determine the short-term cost-effectiveness of the multimedia system and to develop a budget impact model to assess the affordability of the system.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We developed the DiabetesHelp-Talking Touchscreen (TT) as an integrated software system for patient education and assessment. It delivers educational information on diabetes medication, enables patients to self-administer patient-reported outcomes questionnaires, and can create an individually tailored list of concerns to share with health care providers. The user-friendly software is designed to be accessible to patients across the spectrum of computer and literacy skills. There is minimal screen text and it will read text aloud on-demand. Strategies to include the use of simple and familiar words, providing definitions for technical or unfamiliar words, and reinforcing the written messages with visual images were implemented to enhance the ease of use. We are conducting a randomized controlled trial with 151 English- and 152 Spanish-speaking adult patients with Type 2 diabetes. Participants assigned to the DiabetesHelp-TT intervention have access to the multimedia patient education program on a kiosk in the clinic waiting room. They receive a CD-ROM to take home and can print out information. Participants assigned to the Control arm receive the same educational material in written booklets. All participants complete a comprehension measure and a battery of self-report measures on the TT at baseline and 1 month later.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary endpoints are: satisfaction with the method of information delivery, comprehension of educational information, knowledge about diabetes, and satisfaction with health care communication. The secondary endpoints are: adherence, self-efficacy and health status. Additional measures include: health literacy, health beliefs, patient preference for decision-making, and evaluation and use of DiabetesHelp-TT.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): 25 % of English- and 75 % of Spanish-speaking participants have less than a High School education. Mean number of correct health literacy responses was 9 in english and 8 in Spanish (out of 16 items). Mean age is 55 years (range: 23–80); 44 % are on pills only, 20 % are on insulin only, and 36 % are on both. The majority of partipants in the intervention arm, regardless of prior computer experience, rated the overall design of DiabetesHelp-TT as very good (39 %) or excellent (40 %), and reported that it was very easy (38 %) or easy (61 %) to use.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The TT is a practical, user-friendly method for delivery of educational health information. This novel multimedia system increases access of underserved populations to new technologies, and contributes information about the experiences of diverse populations with new technologies.

INTER-PROFESSIONAL "COMMUNITY OF PRACTICE" TO IMPLEMENT "UNIVERSAL PRECAUTIONS" FOR OPIOID SAFETY WITHIN THE PATIENT CENTERED MEDICAL HOME

Michael Saenger[1,2]; Ingrid M. Duva[1]; Corrine Abraham[1]; Roeina Porter, RN[2]; Veronica D'Antignac[2]. [1]VA National Quality Scholars Program, Atlanta, GA; [2]Grady Health System, Atlanta, GA. (Tracking ID #1643849)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In the face of a prescription opioid overdose death epidemic, provider-centric care slows "Universal Precautions" implementation for safer opioid use in chronic non-cancer pain (CNCP).
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): By emphasizing an Inter-Professional (IP) Community of Learning and Practice (CoP) within the Patient Centered Medical Home (PMCH), this quality intervention aims to increase safety for both patients with CNCP on chronic opioid therapy and the public at large. The IP CoP is hypothesized to facilitate: 1)implementing potential harm assessment with "Universal Precaution's" (UP) Medication Agreements (MA) and Urine Drug Screening (UDS); and 2) learning and self-regulating to promote continuous improvement beyond lagging guidelines.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Contexts: first pilot in urban, Internal Medicine resident continuity clinic; second trial in VA community clinic new to PCMH (Teams of one each provider, RN, LPN, and Clerk; Teams see their patients once or twice a year) but knew 2010 VA opioid guidelines. Caring but mutually exasperated Nursing staff and an internist started urban pilot. Diverse Task Force (TF) developed which: surveyed literature; updated MA; crafted tracking documents; standardized institutional policy; and became CoP. Prior to TF, Nurses documented Pain Numeric Rating Scale (NRS), which providers ignored while refilling opioids; after IP CoP the Nursing staff facilitated UP for each CNCP patient on opioids. VA pilot initiated Team-level QI through IP champions consisting of two RNs and two MDs. IP role models led four monthly 90 min CoP sessions: team forming/storming/norming; QI "fishbone" of barriers to good CNCP care; bio-psychosocial approach to complex pain; and opioid pros/cons/UP. Future CoP sessions include: UDS interpretation; and feedback of audited measures for analysis by Teams.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Safety measures-Team-level, percentages of: MA<360 days; UDS<90 days; and morphine equivalent daily dosages<100 mg. Each measure will use Weissman et. al. "Achievable Benchmarks of Care" for continuously improving target. Balancing measures will be: longitudinally tracked subset of individual patients' NRS; and qualitative analysis of CoP/Team functioning by surveys and focus groups.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): First pilot (urban clinic) demonstrated 30 % decrease in monthly opioid refills. The second implementation (VA clinic), shows rapid UP uptake with opportunity for dramatic decrease in unsafe opioid refills. Responsibility for UP now shared amongst IP Team: RN triages refill requests and provides pain management self-care education; LPN collects UDS and reinforces bio-psychosocial care; Clerk scans MA and assists in scheduled follow-up rather than walk-in appointments. One Team's improvements in<4 months: MA up from 13 to 38 % of patients on chronic opioids; recent UDS up from 16 to 41 %, with 75 % of the additional UDS uncovering aberrant behavior.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): As Mary Dixon-Wood noted in the Michigan ICU project, two different CoPs exceeded UP standards faster than a checklist or changing institutional policy. IP CoP involves the whole healthcare team, keeps the patient at the center with sustainable and continuous improvement.

KEEPING THE PRIMARY CARE PRACTICE AT THE CENTER OF POST-HOSPITALIZATION CARE TRANSITION Ning Tang; Jeffrey Fujimoto; Leah Karliner. UCSF, San Francisco, CA. (Tracking ID #1634592)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Post-hospitalization phone calls have traditionally been made by hospital-based nurses; can shifting these calls to primary care practice-based nurses improve care coordination and prevent medical mishaps?
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Improve care coordination and patient education around follow-up appointments, medication changes and adherence, and home care needs. Identify early symptoms of worsening disease with the goal of assisting Primary Care Physicians (PCPs) to intervene quickly.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): From July to December 2012, two nurses integrated in the General Internal Medicine (GIM) practice called all patients discharged home from the Medicine Service at UCSF Medical Center within 72 h of discharge. Nurses used a standardized call script to review all key post-discharge issues, including follow-up appointments, medication reconciliation, home care needs, durable medical equipment needs, new symptoms, and how to access urgent clinical assistance. Nurses documented their calls using a template in our electronic medical record (EMR). Gaps in care were immediately handled at the time of the call by forwarding the EMR note to the PCP, schedulers, social workers, and other clinic staff with highlighted action items.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Measures of success included GIM appointment scheduling for patients discharged without an appointment; identification and resolution of medication-related problems, need for home care, in-home assistance, durable medical equipment, or referrals to social work; and, identification of patients with new or worsening symptoms that required immediate PCP attention.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): To date, 268 of 482 (56 %) total discharged patients had follow-up phone calls completed on average 2.6 days after discharge. Our nurses found that 29 % of patients did not have a follow-up appointment scheduled, 19 % had unmet home care needs, 17 % described new symptoms, 16 % needed medication refills, 13 % needed referrals, 10 % had equipment problems, 6 % were unaware of their follow-up appointment times, and 2 % had medication errors. Nurses provided education about how to get care urgently to 87 % of contacted patients. Additional education about follow-up appointments, medications, symptom management, and diet was provided for 81 %, 53 %, 51 %, and 8 % of contacted patients, respectively. Of the remaining 214 patients without completed calls: 44 had already been seen in follow-up or called by their PCP, 25 had been readmitted, 3 were in the ED at the time of the call, 6 calls were deferred for PCP feedback, 1 refused, 1 ended the call prematurely, 7 were not called due to staffing issues, and 127 were unreachable despite multiple attempts.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our program has demonstrated immediate benefits of relocating post-discharge nurse phone calls to the primary care practice. Clinic nurses had easy access to clinic schedulers to arrange follow-up appointments; they knew how to quickly access PCPs to troubleshoot clinical problems or obtain orders for needed medications, home care, or equipment. We continue to fine-tune the program, including finding ways to contact patients who are difficult to reach, increasing the efficiency of the nurses' time spent on each patient call—for example bringing patients in for an in-person nursing visit when medication reconciliation is too difficult over the phone, and better identifying patients who benefit the most from this program.

LETTING PATIENTS DECIDE: A NOVEL STRATEGY FOR INCREASING USE OF PATIENT DECISION AIDS IN PRIMARY CARE Leigh H. Simmons[1]; Karen R. Sepucha[2]; Lauren Leavitt[1,2]. [1]Massachusetts General Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. (Tracking ID #1642563)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patient decision aids have been shown to help inform and engage patients in decision making, however, implementation of decision aids in primary

care has had limited success. A significant barrier is the identification of eligible patients for decision aids. We have tested an intervention of patient self-ordering of decision aids.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Design an intervention that allows patients to self-order decision aids 2. Identify differences in ordering patterns of patient-triggered versus physician-initiated decision aid ordering 3. Identify areas of unmet need for decision support based on patient ordering patterns of decision aids

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our intervention was conducted in an internal medicine primary care clinic that has a well-established program in which physicians can order DVD and booklet decision aids for patients through the electronic medical record. Most of these orders take place during the office visit and patients view programs after the visit. We created an order sheet to be included with the mailed reminder letter for the annual visit. The sheet listed 14 commonly-used decision aids and patients were instructed to select up to two decision aids of interest. Medical assistants processed the returned forms and the decision aids were mailed to patients prior to the annual visit.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We analyzed information on ordering patient gender and age, and number and types of decision aid orders by patients and providers (data follows). We are also surveying patients who have received decision aids on their knowledge about the target conditions and their decision-making process. We will also be measuring office staff and provider satisfaction with the distribution process and enhanced use of the decision aids.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): We analyzed information on gender, age, and decision aid orders by patients and providers during a three-month period. From Sept–Nov 2012, 54/767 (7 %) patients returned the order form, 57 % were female and the average age was 60. Patients ordered 121 decision aids, an average of 2.2 decision aids each. The top three programs ordered by patients were advance directives (n=18), anxiety (n=16) and insomnia (n=15). During that same time period, physicians in the practice ordered 83 decision aids. The top three programs ordered by physicians were prostate cancer screening (n=20), advance directives (n=14) and insomnia (n=11). The ordering process was well-received by patients and by office staff. Medical assistants and front desk staff became engaged in the decision aid program and were integral to project design. The project successfully introduced a new workflow to a practice that had previously relied solely on physician-driven ordering of decision aids.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Engaging patients in self-ordering of decision aids has the potential to significantly increase the use of the tools. There appears to be an unmet need given the level of interest patients have in ordering these programs. Patients ordered programs on chronic symptomatic conditions (e.g. insomnia and anxiety) at a higher rate than did physicians, who ordered more programs on cancer screening options and advance directives planning. Further research is needed to determine whether the programs have a different impact when patients self-select programs versus receive them from physician prescription. The program continues with full engagement of office staff and physicians.

LONG TERM PATIENT CARE BENEFITS ASSOCIATED WITH RESIDENT-LED DECISION SUPPORT HUDDLES IN AN OUTPATIENT CLINIC Laura Divoky[1,2]; Tho Luong[1,2]; David B. Sweet[1,2]; Lynn Clough[1,2]. [1]Summa Health System, Akron, OH; [2]Northeastern Ohio Medical University, Rootstown, OH. (Tracking ID #1641668)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Clinical inertia can lead to less intensification of care than would be advisable for patients with chronic diseases such as diabetes mellitus (DM).

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): For patients with DM: 1. Increase intensification of care to reach ADA recommended glycemic, blood pressure (BP) and lipid targets (A1c<7.0, BP<130/80, LDL<100) 2. Increase the percentage of patients reaching ADA recommended targets and improve overall levels

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): In this Quality Improvement project, clinic sessions during the 4th quarter of 2011 began with resident-led huddles lasting <10 min in which residents discussed current A1c, LDL and BP levels of patients with DM scheduled to see their primary care physician (PCP) during that session and also presented fellow residents and faculty with a paper copy of this information. The intervention took place only during this quarter. These indicators along with decision support prompts continued to be presented in the Electronic Health Record (EHR) as they had been previously.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Between Oct 2011 and Sept 2012 rates of intensification of care for patients seen by their PCP who were not at goal for the three quality indicators were monitored and compared with those of historical controls seen between Jan 2010 and Sept 2011. Mean BP, LDL and A1c results and percent of patients at goal for a Static group of patients with at least one clinic visit during 2010, 2011 and the first 3 quarters of 2012 were determined.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): After introduction of peer huddles intensification of BP care at PCP visits increased from 46.7 % to 49.6 % (p=0.036); glycemic control intensification increased from 67.3 % to 75.0 % (p<0.001) and lipid control intensification was unchanged. In the Static patient group of 781 patients rates of BP control improved with introduction of huddles from 39.2 % to 44.5 % (p=0.019), with systolic BP decreasing from 133.5 to 130.7 (p<0.001) and diastolic BP from 77.3 to 75.7 (p<0.001). Glycemic control worsened slightly—the number of patients with glycemic control declined from 41.4 % to 37.7 % (p=0.02) and A1c levels increased from 7.8 to 7.9 (p=0.02). Lipid control (65.0 % and 66.9 %), LDL levels (91.6 and 89.9) and the percent of patients reaching all 3 targets showed non-significant improvement (12.3 % and 12.8 %).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Resident-led presentation of decision support information for patients with DM was associated with increased intensification of care and improvement in BP control up to 9 months after the intervention was completed. The patient results utilized in the huddles were already being presented in the EHR and only needed to be reconfigured to make them available for the huddles. The major change was peer presentation and discussion of the quality indicators. Longer term use of the intervention is planned to see if it will lead to improvement in A1c and LDL outcomes. The brief time required for the intervention and the associated improvement in BP control make it a potentially beneficial intervention for other residency programs.

MULTIDISCIPLINARY GROUP EDUCATION SESSIONS TEACHING PATIENT SELF-MANAGEMENT SKILLS IMPROVES OUTCOMES FOR LOW-INCOME, LOW-LITERACY PATIENTS IN AN URBAN SETTING Stacie Schmidt[1]; Amber Knight[2]; Lesley Miller[1]; Shelly-Ann Fluker[1]; David Levitch[2]; Jada C. Bussey-Jones[1]; Mary Katherine Brown[2]; Kristi Quairoli[2]; Michael Fost[3]. [1]Emory University, Atlanta, GA; [2]Grady Memorial Hospital, Atlanta, GA; [3]Georgia State University, Atlanta, GA. (Tracking ID #1639428)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In an urban outpatient setting serving large numbers of low-income, low-

literacy patients, do multidisciplinary group sessions for obesity improve patient (1) perceptions of overall health, (2) perceptions of healthcare delivery, and (3) outcomes in weight loss?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): (1) Develop a multidisciplinary group education class aimed at enhancing patient/provider interaction, as compared to a standard clinical encounter (2) Deliver patient-centered information in a manner that promotes autonomous decision-making and enhances patient self-efficacy regarding healthy diet and exercise choices, in keeping with PCMH principles (3) Demonstrate that the program improves (1) patient outcomes related to perceptions of health and healthcare delivery and (2) clinical parameters, such as weight

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The Grady Primary Care Center (PCC) is an urban outpatient clinic located in Atlanta, Georgia with ~70,000 visits annually. Mostly patients have low-literacy and are uninsured. Approximately 60 % are obese, often with other related chronic illnesses. Due to time constraints and lack of provider knowledge, little time is spent empowering patients to make healthy choices related to diet and exercise. Investigators conducted a pre-post intervention study among obese adults in the PCC with at least one other chronic condition. Enrollees attended group sessions teaching self-management skills for making healthy behavioral choices related to diet and exercise. A team of healthcare providers (physician, pharmacist, nutritionist, and nurse) lead sessions twice per month. Patients were invited to attend five sessions in total. We treated three groups of patients, with each group conducted in successive quarters over the year.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Patients completed pre and post intervention surveys: Short Form 36 (SF 36) Health Survey assessing perceptions of overall health, and the Patient Assessment of Chronic Illness Care (PACIC) Survey assessing patient activation, goal setting, and problem-solving in line with the chronic care model. We measured pre- and post-survey scores using matched pairs t-tests.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Fourteen patients completed pre- and post-surveys. Significant differences in overall scores for both the PACIC [t=−2.42, p=0.04, CI (−2.056, −0.048)] and SF-36 [t=3.52, p=0.01, CI (2.509, 14.004) were observed. There was no significant difference in overall mean arterial pressure pre- and post-intervention. Weight loss did reach a statistically significant change [t=−2.48, p=0.02, CI (−9.542, −0.752), mean of the differences=−5.147], although this did not meet clinical significance (defined as >5 % weight loss).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): In our urban outpatient clinic serving low-income, low-literacy patients, group classes teaching self-management skills related to diet and exercise improved obese patients' perceptions of overall health, as well as their satisfaction with healthcare delivery in line with PCMH principles and the chronic care model. A larger sample size is needed for definitive analysis and should be followed over time to determine if outcomes persist.

MULTIDISCIPLINARY LONGITUDINAL APPROACH TOWARD PATIENTS WITH HIGH ADMISSION RATES Anunta Virapongse; June Ree; Wendy Daisley; Erin Sullivan; Caridad Aguirre-Pellicer; Michael Greenblatt; Diane Ackroyd; Nicole Lapinel; Kathleen Kane; Miriam Raport; Mary McGinn. Lenox Hill Hospital, New York, NY. (Tracking ID #1624270)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): To identify high-volume users and develop a process for creating longitudinal care plans that would be implemented at the time of Emergency Department (ED) arrival so as to optimize care and decrease readmissions.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Create a multidisciplinary committee (Complex Care Committee or CCC) to review identified patients and determine and fix gaps in care. 2. Develop brief care plans that can be placed into the ED record to help assist providers in decision making regarding admission and care. 3. Improve transitions in care and ultimately reduce readmission rates.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Patients were selected for review if they had greater than 3 admissions over 3 months, or if they were designated by case management as a good candidate forintervention. At each biweekly meeting, the charts for the last few hospital stays are pulled for each patient. Input is obtained from committee members and the primary care physician regarding the medical and social history, baseline vitals and medications, therapeutic interventions and key consultants. Following discussion, a care plan is created and placed on a password protected share drive. Because the ED has an electronic medical record (EMR) and is independent of the hospital system, which lacks an EMR, key components from the care plan are placed into the ED record for reference by providers. Some interventions for these patients include designating the same hospitalist across all visits, predetermined pain regimens, and prepaid patient phones at time of discharge. At each CCC meeting, updates on all CCC patients are discussed and care plans are modified accordingly.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary success outcome was a reduction in the number of admissions to less than 1 hospital admission per month. This was calculated by rate of admissions per month prior and after care plan development. Secondary outcomes were the rate of ED visits and length of stay prior and after care plan development.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): From August 2011 to August 2012, we reviewed 61 patients. For purposes of data analysis, we excluded patients with a diagnosis of sickle cell disease, patients which we had discussed less than 3 months ago, and patients that did not have a care plan placed into the ED medical record. In the remaining population (n=31), after creation of a care plan we decreased the hospitalizations by 49 % (p=.004) and overall acute care visits (ED and hospital visits) by 30 % (p=0.19). We also saw a slight decrease in ED visits in this population by 2 % (p=.954).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): By examining high volume, high utilizing patients in this manner, organizations can design a targeted approach that encompasses both the medical aspect and the socioeconomic difficulties that face these patients. Using this methodology, organizations can start to think of each hospitalization almost as a 'clinic visit', with the ultimate goal of achieving good outpatient follow-up and care. Providers will also become more aware of surrounding community resources that were previously underutilized, as well as gaps in the hospital and community safety net.

PALLIATIVE CARE CONSULTS IN THE INTENSIVE CARE UNIT: A QUALITY IMPROVEMENT TRIGGER PROJECT Sarah Nickoloff[1,2]; Katherine Recka[1,2]; Sean Marks[1,2]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]Zablocki VA Medical Center, Milwaukee, WI. (Tracking ID #1596683)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The Zablocki Veteran Affairs Medical Center (VAMC) has a high proportion of deaths in the intensive care unit (ICU), a late referral pattern for palliative care (PC) consults, and considerable moral distress among staff regarding the care provided for veterans in the VAMC ICU.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Increase number of appropriate PC assessments in the ICU 2. Reduce moral distress for nursing and physician staff

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): One quarter of all US hospital deaths occur in the ICU. Identifying unmet PC needs at admission and throughout hospital course is therefore important. Studies show increased patient and family satisfaction and decreased length of ICU stay for patients who receive PC consultation. The literature does not address whether PC consultation decreases moral distress among ICU physician and non-physician staff. To address this moral distress, a nursing screening trigger was piloted for veterans in the ICU who met specific clinical criteria which generated a PC screening assessment. A 5 question screening was performed on admission and every third day thereafter, and included questions about the patient's prognosis, care requirements, symptoms, goals of care and staff beliefs about the patient's care.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Number of appropriate PC assessments in the ICU 2. Feedback from physician and non-physician staff 3. Awareness of PC and implementation of primary PC by the ICU team

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Nine ICU PC consults were placed compared to three consults in the 2 weeks prior to the project, and four consults during the same 2 weeks the previous year. Nursing staff gave overwhelmingly positive feedback about the screening tool, and felt that it helped to mitigate moral distress surrounding the care of certain veterans in the ICU. Physician staff was less receptive to the project, and none of the consults were generated specifically through the protocol. There appeared to be an increase in primary PC after initiating the project, as evidenced by an increase in family meetings held by primary teams. Although the project was clearly set up to initiate a PC "assessment" and not a consult, many nursing providers were frustrated and confused when a formal PC consult was not generated. The PC team felt that ICU nurses were not directly communicating concerns for unmet PC needs to ICU attendings, instead communicating them to a third party (PC team) who often was not directly involved in the patient's care.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Nurse led ICU triggers to generate PC assessments hold promise in assuring uniform access to excellent patient care among all ICU patients as well as reducing moral distress in the ICU. The screening tool may have been more effective as a tool for ICU nurses to have a standardized way to communicate unmet PC patient care needs directly to the ICU attending during patient care rounds, rather than immediately involving the PC team. Future projects need to provide careful attention to the project design to assure that it fosters direct communication among the ICU team, and reduces misunderstanding about the outcome of a positive screen. While the screening tool appears to have been useful in increasing awareness of PC in the ICU, it is clear that further investigation is necessary to implement effective and sustainable strategies to address unmet ICU PC needs.

PATIENT ATTRIBUTION TO CARE PROVIDERS IN A PRIMARY CARE NETWORK: COMPARING RETROSPECTIVE AND PROSPECTIVE ALGORITHMS Steven J. Atlas[1]; Gregory Estey[2]; Jeffrey M. Ashburner[1]; Priya Rao[2]; Wei He[1]; Henry Chueh[2]. [1]Massachusetts General Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. (Tracking ID #1633399)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Population management systems, using advanced information technology to redesign care delivery, must identify and attribute patients to specific primary care physicians (PCPs) and practices. We previously developed and validated a retrospective algorithm to attribute patients seen witin a large primary care network to a specific PCP (PCP-linked). If a patient could not be linked to a PCP with high accuracy, the patient was linked to the practice where he/she received care (practice-linked). Though useful for quality assessment and reporting, real-time attribution is needed for population-based interventions. A prospective linkage algorithm was developed with the goal of performing more sensitive, near real-time patient attribution.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To compare retrospective and prospective patient attribution algorithms and examine differences in quality outcome measures. We hypothesized that differences in patient attribution using retrospective and prospective algorithms would be associated with differences in quality of care measures.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Both retrospective and prospective linkage algorithms use patient visit data to confirm linkage to PCPs and practices with patient age categories used to define the frequency of PCP visits. The prospective algorithm includes an age dependent "linkage expiration date" and excludes patient address and PCP practice style (used in the retrospective algorithm). We compared patient attribution and outcomes from each algorithm as of December 31, 2011.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Percentage of patients linked to a PCP, practice or neither using each algorithm. Comparison of preventive cancer screening and chronic disease (diabetes mellitus [DM] and coronary artery disease [CAD]) performance measures among patients: 1) PCP-linked in both algorithms, 2) practice-linked in both algorithms, and 3) PCP-linked in the prospective algorithm but practice-linked in the retrospective algorithm.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): There were 190,167 patients in either cohort (185,424 prospective and 153,747 retrospective). Compared to retrospective cohort patients, prospective cohort patients were more likely to be PCP-linked (63 % vs. 53 %) or not linked (19 % vs. 6 %), and less likely to be practice-linked (15 % vs. 22 %) or missing (3 % vs. 19 %). Comparing cancer screening rates, PCP-linked patients in both cohorts had higher screening rates than practice-linked patients in both cohorts (breast: 85.5 % vs. 69.8 %, cervical: 86.4 % vs. 74.4 %, colorectal: 79.4 % vs. 61.4 %). Patients PCP-linked in the prospective cohort but practice-linked in the retrospective cohort had intermediate screening rates (breast: 72.7 %, cervical: 84.6 %, colorectal: 67.7 %). For patients with diabetes or CAD, those PCP-linked in the prospective cohort but practice-linked in the retrospective cohort had the lowest rates compared to PCP- and practice-linked in both cohorts (Hemoglobin A1c <9 %: 48.4 % vs. 82.4 % and 66.2 %, DM low density lipoprotein [LDL] <100 mg/dl: 26.7 % vs. 59.2 % and 46.0 %, CAD LDL <100 mg/dl: 38.8 % vs. 70.4 % and 52.6 %).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This prospective patient attribution algorithm identified more individuals than a retrospective algorithm and was more likely to link patients to a specific PCP. Differences between these algorithms affected performance outcome measures. These results highlight the importance of patient attribution in population management activities.

PRE-VISIT PLANNING: A FOUNDATION FOR OUTPATIENT-CENTERED CARE Jaishree Hariharan; Melissa McNeil; Thomas Painter; Pamela Dittoe; Gary Fischer. University of Pittsburgh Medical center, Pittsburgh, PA. (Tracking ID #1641766)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The usual process of ordering chronic-disease monitoring labs and preventative health tests during the office visit uses valuable face-to-face time for low-value tasks and does not allow for decision-making during the visit

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Maximize the doctor-patient interaction by ensuring that chronic- disease monitoring labs, screening tests and self-

monitoring tasks are ordered prior and available at the appointment. 2. Improve quality of care and patient outcomes for diabetes, hypertension and prevention screening

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): University of Pittsburgh Physicians—General Internal Medicine (UPP-GIM), is an academic practice of 79 faculty and resident physicians, and cares for 18,400 adults, 35 % with hypertension and 11 % with diabetes. UPP-GIM uses an electronic health record (Epic) with built-in health maintenance prompts to track services for prevention and chronic- disease monitoring, and a secure patient portal (HealthTrak). The practice leadership recognized a need to contact patients with chronic diseases prior to their scheduled office visits ('pre-visit planning') to complete necessary laboratory tests,certain preventative services and by tracking self-monitoring tasks (glucose or blood pressure) in preperation for their appointment. A team comprising of physicians, the clinic manager, nurses, pharmacist, and information technology (IT) experts met regularly to develop a protocol for pre-visit planning. We focused on patients with diabetes or hypertension or requiring preventative services (i.e. mammograms). Targeted lab tests included for diabetes (i.e. A1c, LDL) and for medication monitoring (i.e. potassium for diuretics) The protocol involves two outreach coordinators (RNs) identifying patients who meet criteria and are due for targeted services 3 weeks in advance of their appointment by running daily reports in the electronic health record (EHR). The coordinators review each chart, identify and order necessary services, and attempt to call the patients. Patients who subscribe to HealthTrak receive secure electronic messages. All patients receive letters containing printed orders along with blood pressure and glucose logs, as appropriate, with instructions to record these values in preparation for the visit.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Process measures include method of contacting patients, time taken to complete a day's appointments and type of tasks performed. Outcome measures include percentage of patients completing tests before appointment, physician and patient satisfaction, compliance with mammogram screening, diabetic eye exam and improvement in A1c and lipids and BP control.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Preliminary results on process measures for the first 3 weeks are highlighted. Our practice averaged 118 visits a day between 11 faculty and five residents. 34 % of patients (595/1,774) met criteria for pre-visit planning. 75 % of targeted patients were reached (45 % by telephone, 30 % by secure email). Each nurse averaged 10 h to complete tasks for 1 day's appointments, including 1.2 orders per patient and BP logbooks for 17 %. Only 2 % declined pre-visit planning. Outcome measures will be evaluated.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Pre-visit planning transforms the clinic visit from reactive to pro-active care. It is feasible with care coordinators and protocol driven care, but is time- consuming. However we believe it is a valuable service for outpatient-centered care

PRIMARY CARE-BASED COMPLEX CARE MANAGEMENT: USING AN INTERDISCIPLINARY GERIATRIC APPROACH TO IMPROVE CARE FOR FREQUENTLY ADMITTED PATIENTS IN A SAFETY NET PRIMARY CARE CLINIC Elizabeth Davis[1]; Julia Janssen[1]; Anneliese Johnson[1]; Valy Fontil[1]; Louise Aronson[2]; Margaret A. Handley[1]; Fern Ebeling[3]; Lisa Tang[3]; Lindsay Evans[3]; Reena Gupta[1]; Claire Horton[1]. [1]San Francisco General Hospital, University of California San Francisco, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]San Francisco General Hospital, San Francisco, CA. (Tracking ID #1642923)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In the General Medicine Clinic (GMC) at San Francisco General Hospital, 2.7 % of patients account for 35 % of hospitalizations, reflecting both the poor health of these patients and the high cost of their care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The GMC Complex Care Management Program is an interdisciplinary team embedded in GMC that aims to 1) reduce hospitalization, 2) reduce cost of care, and 3) improve patient satisfaction and functional status among the highest utilizing patients in GMC.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): This primary care-based program uses lessons learned from geriatric care management as well as homeless and psychiatric case management to improve care for frequently admitted patients in a safety net primary care clinic. The team identifies patients using utilization data, provider referral, health plan referral, and referral from hospital-based programs. The team performs comprehensive assessments and creates patient centered care plans. The health coach proactively coaches patients toward care plan goals while the nurse focuses on complex clinical issues, resolving rising problems before they become critical. Patients have direct phone access to the team. When patients are admitted, the team sees them in the hospital, performs post-discharge coaching, and confirms follow up appointments. As patients stabilize, they move to less intensive levels of care, allowing capacity to bring new patients into the program. The nurse and health coach have frequent contact with primary care providers and round weekly with the program physician, social worker, and coordinator. A patient advisory board provides input on program design and services.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The team uses a weekly data dashboard to drive progress toward improvement goals. The evaluation uses the RE-AIM framework (Glasgow, 1999): 1) Reach: whether patients in the program are high risk. 2) Efficacy: utilization, functional quality of life, provider and patient experience, and cost. 3) Adoption: percentage of primary care providers and patients who participate. 4) Implementation: enrollment, home visits, clinic visits, phone calls, consults with providers, and completion of post-discharge care. 5) Maintenance: outcomes after graduation.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): 47 patients are enrolled in the program, 6 have been discharged, 37 declined to participate, and 40 are waitlisted. The patients are high risk: Most have 2–4 major chronic diseases, 50 % have histories of substance use and 37.5 % have a mental illness. Their average Charlson Comorbidity Index score indicates a relative risk of death of 4.4. 66 % are 59 or younger, and 12 % are over 70. Preliminary data shows a reduction in hospital days by 35 % (24.8/yr ->16.0/yr) and ED visits by 55 % as compared to the year prior to enrollment. In an average week, the team completes one home visit, 4 clinic visits, 15 consults with other providers, coordination of 2 discharges, and 50 phone visits.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An interdisciplinary complex care management team can significantly reduce hospitalization for high-risk patients in a safety net clinic. Using a weekly data dashboard focuses the team on achieving program goals. Patients are very complex and at times require frequent contact to achieve utilization reductions, which limits the capacity of the team to enroll new patients.

PROVIDING TIMELY, LOW-COST, ACCESS TO SPECIALTY CARE IN A FEE-FOR-SERVICE SETTING: IMPLEMENTATION OF AN ECONSULT SYSTEM Nathaniel Gleason; Jennifer J. Monacelli; Chanda Ho; Michael Wang; Don Collado; Ralph Gonzales. UC San Francisco, San Francisco, CA. (Tracking ID #1635329)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Electronic consultations (eConsults) allow primary care physicians (PCPs) efficient access to specialist input on clinical questions that do not require

an in-person evaluation, and integrated delivery systems have shown that eConsults can improve access to specialty care; however, implementation of eConsults in a traditional fee-for-service setting has structural and financial barriers.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To develop common expectations, and a financial model, for an eConsult program with robust input from PCP and specialist stakeholders. 2. To integrate the workflow into the shared Electronic Health Record (EHR). 3. To evaluate the utility, acceptability and impact of the eConsult program.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The program was designed and implemented at an academic medical center with support from the Medicaid Delivery System Redesign and Innovation Program (DSRIP). Participating specialties included Cardiology, Endocrinology, Gastroenterology, Hepatology, Pulmonary Medicine, Sleep Medicine, Rheumatology, and Nephrology. The expected turnaround time for eConsults is 72 h. Both the PCP and specialist are compensated the equivalent of 0.5 wRVU for each eConsult completed. Specialist e-consultants can elect to decline the eConsult due to case complexity, and convert the referral to an office visit.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The observation period was June-November 2012. The 8 weeks prior to eConsult launch served as the baseline period, and the subsequent 13 weeks as the study period. EHR data was used to determine referral rates, and email surveys to examine acceptability. The primary outcome was defined as the total number of referrals to participating specialists per 100 primary care visits per week. Our a priori hypothesis was that the introduction of eConsults would decrease the standard office-based referral rates without increasing the overall referral rate (eConsult + office-based). Differences in average referral rates between baseline and study periods were compared with a paired *t*-test.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): During the study period, 79 different PCPs submitted 176 eConsults to 8 specialties. 14 % were converted by specialists to in-office visits. The 151 completed eConsults represented 8 % of primary care referral volume to participating specialties. 77 % were completed within 72 h. The average weekly referral rate for standard office-based visits was 12.1 (SD=1.63) during the baseline period, compared with 9.7 (SD=0.79) during the study period ($P<0.001$). Survey response rates were 61 % for PCPs and 78 % for specialists. Among PCPs, 83 % "strongly agreed" that the eConsult response influenced their care plan. Among specialists, 65 % "strongly agreed" that the eConsult question was clear, and 61 % "strongly agreed" that the question was of "optimal complexity". The distribution of time spent in responding to each eConsult was 56 % (<10 min), 36 % (10–20 min) and 8 % (>20 min).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This fee-for-service eConsult program has high acceptability and utility among primary care and medicine subspecialty providers, and appears to reduce office-based referral rates. Since total wRVU-based payments for eConsults (1.0 wRVU) are less than 50 % of typical office-based wRVU (2.4–3.2) for new patient visits, this program has the potential to reduce specialty-related health care costs.

STAR (SAFE TRANSITIONS ACROSS CARE): A FOCUS ON AN INTERDISCIPLINARY DISCHARGE PROCESS Nancy M. Denizard-Thompson; Kirsten Feiereisel; James L. Wofford. Wake Forest School of Medicine, Winston-Salem, NC. (Tracking ID #1637026)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Given the complexity of the discharge process and the needs of our patients, there are numerous potential sources of error, oversight or miscommunication that can lead to undesired outcomes during transitions of care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Improve coordination of care with a focus on patient safety 2) Decrease variability in discharge process across teams through a standardized process 3) Engage clinical pharmacists in discharge planning to decrease medication error

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): The discharge process is the final opportunity to address our patient's needs and to prepare for a safe transition out of the hospital. On busy teaching services at an academic medical center, there may be different approaches to discharge and varied knowledge of safe transition of care. Our program engages an interdisciplinary team to actively coordinate discharge planning using a standardized discharge tool. Central to the process are the attending leadership, clinical pharmacist engagement, and team communication. A one page discharge planning tool was developed to highlight key pitfalls of discharge including items such as follow-up, home needs and discharge medications. The team, led by the attending, completes the tool prior to a patient's discharge with the Care Coordinator and team pharmacist. The pharmacist plays an integral role in reviewing medications and addressing access to medications. The tool has the dual functionality of educating learners experientially on the critical aspects of the discharge process while ensuring engagement of the attending and pharmacist in discharge instruction, a task historically managed by less experienced team members. The program was implemented on one teaching service with one of four attendings rotating every 2 weeks. A retrospective analysis was completed reviewing impact on discharge medication errors.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Success is measured by evidence of increased tool usage, decreased discharge medication errors and favorable provider assessment as a clinical practice and educational tool.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): During 4 months of data collection, the percentage of completed tools steadily increased from 48 % to 89 % of discharged patients. Retrospective analysis evaluated 158 discharges that occurred prior to implementation of the tool. Findings demonstrated that when no standardized discharge process was used that medication errors occurred in one out of three discharges. With utilization of the discharge tool and the pharmacist as part of the discharge process, medication errors at discharge were dramatically reduced from 34.7 % to 13 % ($z=4.12$, $p<0.0001$). Of those errors that occurred, 100 % occurred when the discharge protocol was not followed completely. All four attendings noted the tool to be easy to use, time efficient, educational for learners and facilitated a hands-on approach to discharge management.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1) A standardized discharge tool and interdisciplinary approach to discharge planning incorporating a clinical pharmacist facilitates reduced discharge medication error, enhances team communication regarding discharge planning and promotes safe transitions of care. 2) Educators valued this intervention as a means of teaching learners about important components of discharge planning while actively engaging members of the team. 3) The team demonstrated steady growth in usage of the tool with persistent attending leadership and enthusiasm.

THE EVOLVING ROLE OF GRASS ROOTS EMERGENCY MEDICAL RESPONSE IN THE OCCUPY WALL STREET ERA: HURRICANE SANDY AND THE PEOPLE'S MEDICAL RELIEF, NEW YORK CITY 2012 Amit Patel; Noriyuki Murakami; Magni Hamso. Montefiore Medical Center, Bronx, NY. (Tracking ID #1646423)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Is there a role for horizontal democracy in disaster relief?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Coordinating an emergency medical response in

the immediate aftermath of Hurricane Sandy using horizontal democracy and Occupy Wall Street (OWS) philosophy. Establishing a long-term medical and social relief network to fill the gap in primary care for affected residents. Coordinating healthcare advocacy aimed at equitable resource distribution for disaster victims using OWS direct actions to interface with city, state and federal administrations.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Hurricane Sandy made landfall on October 26, 2012, affecting 24 states, causing 131 fatalities, and costing $63 billion dollars in damages to property, infrastructure and services. In New York, the Rockaways, Coney Island and Staten Island were among the most affected areas. Low income residents especially faced displacement, prolonged loss of heat and power and inadequate access to basic supplies and health care. Using the online InterOccupy hub, OWS created a network for disaster relief by coordinating teams to canvass every resident in heavily affected areas. Volunteer physicians joined street medics to do house calls, phone triage and direct EMS to people requiring emergency care. Community organizations donated supplies and provided space for storage, soup kitchens and medical clinics. Periodic systems evaluations took place with all key volunteers, and the People's Medical Relief (PMR) evolved into a complex system of medical service provision, pharmaceutical dispensing, medical information management, and advocacy. Currently, PMR is streamlining legal counsel for flood insurance relief, creating permanent clinics to address inadequate access to care, developing a wellness space for mental health, and re-programming electronic medical records for clinics still suffering after the storm.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Current data is limited to that collected just 1 week after the disaster. Successful interventions were promoted via general assembly meetings, allowing for immediate evaluation of efficacy and sustainability. Interventions deemed inefficient were terminated or redesigned by general consensus.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Over 60,000 residents were canvassed for needs including access to food, water, blankets, medications, and medical attention. Over 800 residents were evaluated and serviced at medical clinics and 200 homebound people were given medical care. Over 200 people were vaccinated. A weekly working group was formed with city officials to help relay the needs of the affected communities.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Grassroots interventions coordinated via horizontal democracy are an effective way to respond to the shifting needs of communities, particularly in disaster settings. Volunteer-run horizontal movements have the flexibility to allow simultaneous means-testing and immediate reconfiguration of services, allowing relief efforts to evolve in real-time. While federal agencies require time and finances to mobilize and federalize their medical corps from across the nation, movements such as the PMR access locally available medical professionals who are state licensed and eager to volunteer. They are further equipped to advocate for the communities they serve and are positioned to ensure that resources are distributed equitably to the areas that need them the most.

THE MEDICATION METRONOME: A HEALTH IT SYSTEM TO IMPROVE MEDICATION MANAGEMENT AND LABORATORY MONITORING FOR CHRONIC DISEASES Jeffrey M. Ashburner[1]; Richard W. Grant[1]; Michael Jernigan[2]; Leila H. Borowsky[1]; Steven J. Atlas[1]. [1]Massachusetts General Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. (Tracking ID #1636660)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Lack of timely medication intensification and inadequate medication safety monitoring are two prevalent and potentially modifiable barriers to effective and safe chronic care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To test a model of chronic disease medication management in which medication initiation or dose adjustment orders are explicitly and immediately linked to future planned laboratory monitoring. We hypothesize that establishing a visit-independent, health information technology (HIT) supported cycle of laboratory monitoring and iterative medication dose adjustment will result in more effective chronic disease care.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We designed and implemented the Medication Metronome system in two primary care practices to facilitate laboratory monitoring and medication dose adjustment. Consenting providers were randomly assigned to intervention or control groups for the 1-year trial. Providers allocated to the intervention have an additional feature in their electronic medication prescription interface that enables them to schedule future laboratory tests when ordering new prescriptions or adjusting doses to treat type 2 diabetes, hypertension, or hyperlipidemia. Laboratory testing for efficacy and/or safety monitoring can be automatically ordered within the electronic medication order module. This process initiates automated patient reminders that includes a mailed letter and lab slip 1 week before the test is due and (if necessary) a second letter and lab slip 1 week after the test due date if no result is found. Notification of persistently overdue lab results (>3 weeks after due date) is added to a physician "Watchlist" of test results within the electronic health record (EHR). Control physicians have access to the same EHR but without the added Medication Metronome interface.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Primary outcomes include the percentage of follow-up time that a patient is at or below risk factor goal (HbA1c$\leq$7.0 % among type 2 diabetics prescribed hypoglycemic agents; LDL-cholesterol$\leq$130 mg/dl for patients with hyperlipidemia s without cardiovascular risk and$\leq$100 mg/dl for patients with cardiovascular risk). Additionally, safety monitoring outcomes include the percentage of laboratory tests (e.g. liver function tests after initiating statins) completed within a four-week period after corresponding medication prescription.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): The Medication Metronome system was implemented for intervention physicians beginning May 25, 2012. As of December 25, 2012, all 22 intervention physicians have used the system to initiate laboratory follow-up for 795 medication starts or adjustments. Among these patients, 131 safety laboratory tests and 664 efficacy laboratory tests were ordered. All patients received a mailed letter and a printed lab slip. Additionally, 142 patients received a second letter and lab slip after lab due date passed without documented completion within our network. 89 notifications were sent to physicians' Watchlist 3 weeks after an overdue, uncompleted lab test order.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A HIT infrastructure can be adapted to support non-visit based medication management for efficacy and safety monitoring. Outcomes assessing efficacy and safety of medication ordering will be performed after 1 year to determine whether this HIT system improved care compared to a usual care control group.

THE VA'S SPECIALTY CARE TRANSFORMATIONAL INITIATIVES TO IMPROVE ACCESS AND DELIVERY OF SPECIALTY CARE Michael Ho[1]; David Aron[4]; Anne E. Sales[2]; David Au[5]; Christian Helfrich[5]; Katherine Fagan[1]; Anne Lambert-Kerzner[1]; Julie Lowery[2]; Catherine Battaglia[1]; Leonard Pogach[3]; Glenn D. Graham[3]; Vaness Ellington[3]; Susan Kirsh[4]. [1]Eastern Colorado Health Care System, Denver, CO; [2]VA Ann Arbor Health Care System, Ann Arbor, MI; [3]Washington DC VA Medical Center, Washington, DC; [4]Louis Stokes Cleveland VA Medical Center, Cleveland, OH; [5]VA Puget Sound Health Care System, Seattle, WA. (Tracking ID #1640348)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In the VA, Veterans can experience difficult access, fragmented care, long wait times, and significant travel distances for specialty medical care.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): In May 2011, the VA Office of Specialty Care Transformation (OSCT) launched four initiatives to improve access and delivery of specialty care to Veterans.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): These initiatives include: 1) Innovations in Consult Management (E-Consults), 2) Specialty Care Access Network-Extension for Community Healthcare Outcomes (SCAN-ECHO), 3) Specialty Care Mini-Residency Program (SC-MRP), and 4) Specialty Care Neighborhood Team (SCNT). In E-consults, primary care providers (PCPs) can ask questions regarding a Veterans' care to specialists and receive recommendations through the electronic medical record within 48 h. In SCAN-ECHO, there are regular videoconferencing sessions between primary and specialty care providers. During these sessions, there is a didactic lecture about a clinical topic and patient case presentations, including discussions of diagnostic or therapeutic treatment options between providers. The SC-MRP initiative trains physicians, NPs, and PAs to perform procedures (e.g., knee injections) and principles of disease management within the scope of primary care settings. The goal of SCNT is to deliver coordinated medical, surgical and/or psychosocial care based on a Veteran's condition. A care coordinator facilitates communication among specialists, PCPs, and patients; and a patient navigator helps Veterans with their care.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): As part of the implementation process, OSCT also funded an evaluation center, whose goals are to provide data to OSCT to inform any changes needed to current and future implementation sites. The center is using a mixed-methods approach. Data sources include cross-sectional, in-depth interviews and surveys of administrators, PCPs, specialists, and patients; and administrative data from central VA data sources. Following data collection, meta-inferences are made based on a merging data approach to ask how the qualitative interview themes helped us understand the quantitative survey data findings, and vice versa.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): The evaluation is ongoing. By end of November 2012, E-Consults have been implemented at 115 hospitals for 51 specialties. There have been 242,054 E-consults generated for 188,299 Veterans. For SCAN ECHO, 11 sites have implemented the program for 15 specialties with 737 sessions conducted. There are 3 SC-MRP sites initiated in 2011 with 2 sites focused on musculoskeletal care and 1 site on dermatology. For SCNT, 25 sites have begun the initiative focused on 19 specialties/conditions. New sites and specialties are being added on a yearly basis.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): OSCT and the evaluation center have adopted a participatory action research framework where the needs of OSCT drive the evaluation and findings from the evaluation center inform OSCT of how to implement and adapt the initiatives with the goal of enhancing these initiatives and making them sustainable.

USE OF CLINICAL DECISION SUPPORT TOOLS TO IMPROVE PRIMARY CARE CHRONIC KIDNEY DISEASE MANAGEMENT
Cara Litvin[1]; Steven M. Ornstein[2]. [1]Medical University of South Carolina, Charleston, SC; [2]Medical University of South Carolina, Charleston, SC. (Tracking ID #1642050)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can electronic health record (EHR)-based clinical decision support (CDS) tools be used to improve management of chronic kidney disease (CKD) in primary care practices?
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To develop and assess CDS tools that can be used to enhance care of patients with CKD 2) To implement these tools in participating practices using a multi-method intervention to facilitate adoption
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): This 2 year demonstration study which began on September 1, 2012 is being conducted in PPRNet, a national primary care practice-based research network whose members share a common EHR. Twelve primary care practices in 12 states, representing 25 physicians, 9 physician's assistants, and 6 nurse practitioners are participating. CKD CDS tools developed by the research team include a risk assessment tool that may be embedded within progress notes, EHR health maintenance protocols, an EHR flow chart and a patient registry generated from EHR data. To facilitate implementation, practices are receiving quarterly CKD performance reports and hosting annual half-day practice site visits for academic detailing, performance review and CDS training.
MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): A set of 12 primary care CKD quality measures for primary care related to screening at-risk patients, monitoring, blood pressure management, lipid and hemoglobin assessment and avoidance of nephrotoxic drugs has been developed for this project using a consensus process among PPRNet providers. The primary emphasis of the analyses will be on changes over time in performance on each of these measures over the 2 year intervention. Quarterly semi-structured interviews with key practice personnel are being conducted to determine which CDS attributes are perceived to promote adherence to these measures. Barriers to using the CDS tools and "best practices" of successful adopters are being assessed.
FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Baseline data analyses reveal that CKD affects 6.7 % of the 38982 active patients in these practices. Notable among practices is the low frequency of screening for proteinuria in patients with CKD (practice median 23.9 %, range 10.7 % to 54.8 %) or in patients with risk factors for CKD (practice median 21.9 %, range 11.4 % to 50.6 %). To date, reported use of the CDS tools varies widely by practice and by provider. Reported barriers include incorporating CDS use into existing workflow, varying use of EHR tools among providers at the same practice, and lack of awareness of CDS functions by some providers. Facilitators include ease of use of the tools and practices' prioritization of improving CKD management.
KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): There is no "one size fits all" approach to CDS implementation in primary care practice. For successful adoption, CDS tools must be adapted to meet the needs of each practice.

USING SYSTEMS ENGINEERING TO IMPROVE HOUSESTAFF SCHEDULING AND CLINIC UTILIZATION
Shihfan Yeh[1]; Luci Leykum[1]; Jane O'Rorke[1]; Jonathan F. Bard[2]. [1]STVHCS/UTHSCSA, San Antonio, TX; 2UT Austin, Austin, TX. (Tracking ID #1635021)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Scheduling the block and clinic schedules for Internal Medicine residents is a logistical challenge: many hours are required; errors can be easily made, particularly when schedules are changed; and scheduling in a way that optimizes day-to-day clinic access is almost impossible on a practical level.
OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Our goal was to use systems engineering principles to optimize resident schedules in a way that allows for the greatest availability in continuity clinics and improves patient access to primary care physicians.
DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): We sought to apply principles from systems engineering to the problem of

resident scheduling. Our Internal Medicine residency program has 87 residents, 77 of whom are categorical with primary care clinics. We considered this a scheduling problem related to control or disruption management. We first identified the "hard constraints" in the scheduling process, which includes days off, required rotations, and clinic availability during each rotation. These constraints could not be violated. We also identified the "soft constraints" that would optimally be followed, such as maximizing the trainee to supervising physician ratio in clinic. We wrote a scheduling program in C++ that included these constraints, assigning a weight to each that reflected its importance. This program was run in Windows 7 on a PC laptop with an i5 processor and 4GB of memory.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We compared the output of the program with the schedule done by hand monthly over a 7-month period with regard to number and type of constraint violations, allowing us to refine the program and the approach to the constraints. We also compared performance of the by-hand and programmed schedules with regard to number of clinic sessions, number of underutilized sessions, and ability to schedule two weekly sessions on the same day rather than different days.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): The total number of clinic sessions assigned by the programmed schedule increased by 2.3 % a month, or 22.6 clinic sessions/month. This translates into the ability to accommodate approximately 130 additional appointments each month, improving patient access. The number of underutilized clinic sessions decreased by 12.9 %/month. Finally, for residents who had 2 clinics/week, the percent of time that they were assigned these clinics on the same day increased by 8.9 %/month. The final program allowed no hard constraint violations. The by-hand schedule allowed a total of 12 constraints during this period (0 to 4/month). These constraint violations led to a suboptimal ratio of housestaff to attendings in the clinic during these sessions.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our approach to scheduling using an optimized program process is superior to a schedule done by hand. Interfacing our program with the commercial product we use to make the schedule available on the internet was initially a challenge. Our solution is cutting and pasting the program output into this product. We also had to create the program in a way that allows an interface that can be used by the Chief Residents. Updating the program as changes are made over time to our rotations and schedules will be a long-term consideration, but should not be difficult since the base program and user interface has been created. Because many of the rules for resident scheduling are mandated at the ACGME level, our program should be generally applicable to other IM residencies.

USING TEAM-BASED CARE TO IMPROVE MONITORING AND QUALITY OF CARE IN DIABETES Jason Higdon[1]; Jillian Gaumond[2]; Jennifer Zreloff[1]. [1]Emory University School of Medicine, Atlanta, GA; [2]Emory Healthcare, Atlanta, GA. (Tracking ID #1642366)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): As the focus of healthcare shifts towards providing high quality care for chronic medical conditions, we must develop novel ways to provide better care, meet quality metrics, and manage ever-increasing demands in primary care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): In a university-based and NCQA recognized Patient-Centered Medical Home (PCMH), we sought to improve the percentage of patients with diabetes who have met all three quality goals (hemoglobin A1c <7 %, blood pressure <130/80, and LDL <100) and are compliant with comorbidity monitoring.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): Our PCMH pilot practice consists mostly of patients on an employer-sponsored health plan. We have developed standardized, protocol-driven diabetes care as outlined below: 1. Implementation of standardized medication initiation and titration protocols for both oral medication and insulin. 2. Empowering and educating team members to provide the highest level of care they are able to. RN's use an insulin titration protocol during post-visit telephone calls and a portal messaging system to help patients adjust their insulin in between office visits. Medical assistants, LPN's, and RN's have achieved competency in diabetic foot exams and perform them as part of the office visit. All team members have received training in helping patients set health-focused self-management goals. We have an in-house nutritionist who is available, particularly to those patients who are having difficulty meeting their goals. 3. Using a "diabetes report card" we track our performance at a clinic level for hemoglobin A1c, blood pressure, LDL, foot exam, eye exam, and urine protein. We can also drill down to the patient level to see who needs outreach for monitoring or more intensive care to bring them to goal. We have regularly scheduled disease registry meetings, a team-driven reminder system, and standing orders in place for our team to reach out to these patients to ensure they get the care they need.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We compared the percentage of patients who have met monitoring goals for hemoglobin A1c, foot exam, urine protein, and eye exam as well as those who have met their quality goals with hemoglobin A1c, blood pressure, and LDL.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): We compared the results from patients in our clinic to a traditional primary care clinic in the same healthcare system/geographic location and to another clinic whose patients are on a separate employer-sponsored plan but that does not function as a medical home. 16 % of PCMH patients met all three quality goals compared to 12 % in the traditional practice and 3 % in the other employer-sponsored clinic. 86 % of PCMH patients had their A1c checked within the last 6 months compared to 72 % in the traditional clinic and 55 % in the other employer-sponsored clinic. 71 % of our patents had a documented foot exam within the last 12 months compared to 18 % and 42 %, respectively. 56 % of our patients had a documented eye exam in the last 12 months compared to 36 % and 5 %, respectively. 74 % of our patients had a document urine protein within the last 12 months compared to 5 % and 43 %.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. Using standardized, protocol-driven care provides the foundation for team-based care 2. Empowering and educating team members to provide care beyond their typical roles leads to improved monitoring and quality of care 3. Access to accurate data is crucial in implementing population based-care for chronic medical conditions

USING TEXT MESSAGING TO PROVIDE SELF-MANAGEMENT SUPPORT AND CARE COORDINATION FOR INDIVIDUALS WITH CHRONIC DISEASE Shantanu Nundy[1]; Jonathan J. Dick[2]; Patrick Hogan[1]; Anna P. Goddu[1]; Arnell Bussie[3]; Marshall Chin[1]; Monica E. Peek[1]. [1]University of Chicago, Chicago, IL; [2]Columbia University College of Physicians and Surgeons, New York, NY; [3]University of Chicago Health Plan, Chicago, IL. (Tracking ID #1638381)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Self-management support is an essential component of the Chronic Care Model yet is often unavailable in primary care settings or limited by staff availability and reimbursement.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The objectives of the program are to improve self-management and support team-based care through the use of cell phone technology and remote case managers. Using diabetes as a model chronic disease for our initial pilot, we also aim to improve glycemic control.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS): CareSmarts is a mobile phone-enabled care management program

developed for individuals with chronic illness. It is fully funded by the University of Chicago Health Plan (UCHP) and currently offered to individuals with type 1 or type 2 diabetes who receive primary care at the University of Chicago Medical Center (UCMC). The program was designed to address key barriers to care management including patient engagement, limited clinician availability, and integration with primary care. CareSmarts is theory-driven and leverages social support, self-efficacy, and health beliefs to promote behavior change. Eligible patients are enrolled over the phone by nurse-case managers at UCHP. Through CareSmarts, patients receive automated text messages on their personal mobile phones consisting of educational messages and reminders. They text back self-assessments that enable nurse-case managers to provide between-visit support. For example, if a patient texts that she is currently out of her medications, an alert is triggered that prompts the nurse-case manager to contact the patient. Nurse-case managers then communicate with the primary care team via email to coordinate next steps.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary outcome measure is pre-post changes in glycemic control (HbA1c). Secondary outcome measures include self-care measures and healthcare utilization and costs. Finally, we collect bimonthly feedback from health plan administrators and clinic staff on program implementation.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE "FINDINGS WILL BE DISCUSSED"): Ninety-one percent of physicians agreed to have their patients contacted for enrollment. Approximately one in five eligible patients agreed to participate and since May 2011 retention is over 95 %. Between enrollment and 3 months, improvements were observed in medication adherence (Morisky scale, $p=0.00$) and self-reported exercise ($p=0.04$) and foot care ($p=0.01$). Weekly timesheets suggest that 1 full-time-equivalent (FTE) can manage 350–400 patients. Nurse-case managers at UCHP value the opportunity to be involved with patient outreach while fulfilling their administrative responsibilities. Primary care physicians welcome having additional support for patient education and case management, which integrates into primary care yet does not require them to learn a new technology or modify clinic workflows.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Mobile technology, as a widely used communication platform, can be effectively used to provide self-management support and enhance team-based care. Mobile phone-based programs should strengthen traditional patient-provider communication and be integrated with primary care. Our practice innovation is designed for typical outpatient practices but incorporates remote monitoring from trained health professionals (e.g., MA or LPN). The growing trend towards care coordination, primary care medical homes, and accountable care organizations may enable widespread diffusion of this model.

INNOVATIONS IN MEDICAL EDUCATION (IME) A CLER LOOK AT MORBIDITY AND MORTALITY CONFERENCES Laura Fanucchi[1]; Lia S. Logio[2]; Eugenia Siegler[2]. [1]University of Kentucky College of Medicine, Lexington, KY; [2]New York-Presbyterian Hospital/Weill Cornell Medical College, New York, NY. (Tracking ID #1636556)

NEEDS AND OBJECTIVES: Needs: 1. Educate residents about patient safety concepts, human factors, system complexity, and communication. 2. Provide an open, non-judgmental forum to discuss patient care episodes that did not go as intended. 3. Increase resident interaction and communication with nursing, pharmacy, hospital administration, and departmental leadership Objectives: 1. Promote a systems-based, interdisciplinary culture of patient safety 2. Participate in a modified root-cause analysis. 3. Identify contributing factors to adverse events and near misses. 4. Consider action items as potential remedies for identified problems.

SETTING AND PARTICIPANTS: ● Monthly ● Part of core educational conference series for internal medicine residents ● Facilitators include departmental and residency program leadership as well as representatives from the hospital Division of Quality and Patient Safety. ● Interdisciplinary representation: Nursing, Pharmacy, Administration, other clinical departments

DESCRIPTION: Although most residency training programs incorporate a morbidity and mortality conference (M&MC) to analyze adverse events and medical errors and to promote quality assurance, there is no standard format. Given the growing focus on patient safety in residency education, during the 2011–2012 academic year, the university based internal medicine residency program at New York-Presbyterian Hospital/Weill Cornell Medical College, re-defined the M&MC as an interdisciplinary Patient Safety Conference (PSC). Once every 4 weeks, residents gather together with nursing, pharmacy, hospital administration, and departmental leadership to discuss in an open forum patient care episodes that did not go as intended. The communication errors, gaps in care, and systems issues are enumerated with clear explanations of the underlying concepts including human factors, system complexity, communication and hierarchy. The second half of the conference allows the inter-professional collective to consider action items as potential remedies to the problems identified. This approach is particularly relevant as it meets the Accreditation Council of Graduate Medical Education (ACGME) Clinical Learning Environment Review (CLER) Program patient safety focus area.

EVALUATION: In the first year of this conference, real change has occurred. Residents volunteer to help champion the best ideas from the conference and bring them to action. Examples of these changes include a marked reduction in unnecessary, disruptive pages to residents related to pharmacy orders by pharmacy participation in interdisciplinary rounds, the grassroots modification of the handoff tools in the electronic record, and the development of a structured transfer note for patients moving from the intensive care unit to the floors. Additional outcomes of this effort include increased engagement of house staff in incident reporting and a new recognition of gaps in care as well as solutions to those gaps that have replaced cynicism among the trainees.

DISCUSSION/REFLECTION/LESSONS LEARNED: Departmental M&MCs in are already an established component of most residency programs, and can be modified to an interdisciplinary PSC. Such modification meets the CLER objectives for patient safety in that it can provide an opportunity for residents to report errors, unsafe conditions, and near misses, and to participate in inter-professional teams to promote and enhance safe care. The model is simple and effective and has added value to both educational and patient care goals.

A CURRICULUM TO IMPROVE AND TEACH PRIMARY CARE TEAM FUNCTION Carole M. Warde[1]; Marjorie Pearson[2]. [1]Greater Los Angeles VA Health System, North Hills, CA; [2]RAND, Santa Monica, CA. (Tracking ID #1623552)

NEEDS AND OBJECTIVES: Coordination of front-line primary care teams has led to improved quality and efficiency of care. Over 900 VA clinics are transforming to a team-based primary care model called PACT (Patient-Aligned Care Teams). VA primary care health professionals have been regrouped into "teamlets" and are now expected to function as multidisciplinary teams. We aimed to develop an interactive program to assist PACT teamlets with trainees to learn, practice and coach effective team function in their practice settings. Our specific objectives were to: 1. Identify a conceptual model to guide the development and evaluation of this educational intervention 2. Develop a pilot interprofessional educational curriculum and associated teaching and evaluation tools 3. Deliver the pilot curriculum to 2 VA teamlets 4. Evaluate and revise the pilot curriculum and teaching and evaluation tools

SETTING AND PARTICIPANTS: Two coaches pilot-tested the developed program with two volunteer PACT teamlets from different VA facilities

DESCRIPTION: Our conceptual model of team function includes three domains: team work—team relationships; task work—quality improvement activities; and team processes—venues of team work (team meetings). We used this model to design the first iteration of our curriculum, coaching, and evaluation tools. Each pilot included 4 site visits, followed by 4

conference calls with teamlet leaders, and a final site visit. Our formative evaluation included quantitative and qualitative methods to monitor the effectiveness of the innovation and to adapt and revise the curriculum and instruments. The final iteration emphasized specific behaviors in each of the three aspects of team function: 9 for team relationship performance, 7 for effective team meetings, and 6 for quality improvement performance.
EVALUATION: Teamlets demonstrated learning needs in all three areas of team function. The curriculum was generally well-received, especially the relationship-centered coaching practices, onsite sessions, and teamlet leader coaching. There was modest evidence of improvement in the specific behaviors of teamlet relationships, QI processes, and meeting processes. One teamlet mastered team meeting processes early on, tackled barriers to relationships and improvement activities, and made significant improvements in all three areas of team function. Additionally, we found that teamlet leaders needed and wanted more coaching in leadership practices and that more administrative involvement was necessary.
DISCUSSION/REFLECTION/LESSONS LEARNED: There are three major lessons from TEX. 1) The triple-focused model of team function was useful for curriculum development and participant learning. Early mastery of team meeting processes facilitated learning in the other two areas and simultaneous learning of team relationship and QI behaviors were complimentary. 2) We learned that coaching is necessary for the teamlets, teamlet leaders and the administrative leaders directing and supporting the teamlets in the three aspects of team function. Coaching of teamlet leaders should target leadership practices knowledge and skills. Administrative leaders could improve teamlet function by setting goals and determining incentives to improve teamlet engagement and accountability. 3) Finally, situating health professions trainees within PACT teamlets is a "win-win" situation for both trainees and their teamlets in terms of learning and facilitation of quality improvement processes.

A HOME VISIT CURRICULUM TO FOSTER INTERPROFESSIONAL LEARNING AND IMPROVE CARE COORDINATION FOR HIGH-RISK PATIENTS IN TRAINEE PRIMARY CARE CONTINUITY CLINICS Melissa Bachhuber[1,2]; Shalini Patel[1,2]; Bridget O'Brien[1,2]. [1]UCSF, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA. (Tracking ID #1636783)

NEEDS AND OBJECTIVES: Home visits are an important component of healthcare delivery to high-risk patients, yet most trainees receive little hands-on training in home care medicine skills. To address this need we developed an interprofessional home visit curriculum using a combination of formal instruction, experiential learning and reflective practice. Specific objectives included:—Engage learners from medical and nursing backgrounds to collaborate and participate in a shared home visit experience.—Demonstrate the importance and challenges of care coordination and interdisciplinary communication through home visits.—Encourage trainees to reflect on patient safety issues and impact on outpatient clinical practice that arise during home visits.
SETTING AND PARTICIPANTS: At the San Francisco VA Primary Care Clinics, two resident trainees are paired with an NP student practice partner. Residents and NP student partners often see one another's high-risk patients in clinic. Our home visit curriculum extended this collaboration by having practice partners conduct joint home visits.
DESCRIPTION: The interprofessional home visit curriculum included an introductory home visit session focused on skills such as functional assessment and home safety evaluations. After this formal instruction, each trainee selected one panel patient using general guidelines on an ideal high-risk patient for the home visit. Preceptors consulted with trainees to ensure appropriate patients were selected. Resident and NP student pairs, along with a supervising preceptor from medicine or nursing, visited the two patients during a half-day session. This allowed each trainee to lead one home visit on their own panel patient and to observe one home visit led by their practice partner. Trainees developed multidisciplinary care plans for their patients identified during the home visit. A group debrief session following the home visits provided an opportunity for trainees to reflect upon and discuss care coordination and patient safety issues.
EVALUATION: Twenty-one trainees and 9 faculty preceptors participated in the home visit curriculum. Trainees evaluated the home visit curricular sessions favorably. The mean rating for overall quality was 4.0 out of 5 (n=11); likelihood of changing clinical practice as a result of the session was 4.5 out of 5 (n=10). Analysis of trainees' written reflections (n=15) on lessons learned during the visits highlighted three themes: improved insight into patients' functional status, medication errors, and home safety assessment. A sample trainee reflection was "[What surprised me] was the method by which the patient took medications- how chaotic it was".
DISCUSSION/REFLECTION/LESSONS LEARNED:—Many trainees participate in home visit observations as medical or nursing students. However, leading a home visit on a selected panel patient can promote later stage trainees to learn concepts such as patient safety, coordination of care and interprofessional communication.—Coordinating trainee, preceptor, and patient schedules was a significant logistical challenge, so providing plenty of lead time is critical.—Faculty development on home visits was important to the success of the curriculum. Enlisting clinic preceptors for home visits bolsters the longitudinal relationship between preceptors and trainees.—Participating in home visits with trainees from other professions and with practice partners promotes team building.

A NOVEL OSCE CURRICULUM FOR TEACHING THE MUSCULOSKELETAL EXAM TO INTERNAL MEDICINE RESIDENTS Trishul Siddharthan; Sarita Soares; Stephen Holt. Yale University, New Haven, CT. (Tracking ID #1643985)

NEEDS AND OBJECTIVES: Musculoskeletal complaints are among the most common presenting symptoms to a primary care provider. Despite the high burden of musculoskeletal disorders, physicians are often underprepared to manage such disorders due to inadequate training during medical school and residency. We present here a novel experiential curriculum to teach internal medicine residents the evaluation and management of joint specific disorders using a multi-station objective structured clinical exam model (OSCE). The objectives were to improve trainee knowledge of and confidence in the musculoskeletal exam for a range of conditions common to primary care practice.
SETTING AND PARTICIPANTS: Twenty-one of forty-six residents from Yale's Primary Care Internal Medicine Program rotated over a period of 6 months through the musculoskeletal curriculum during their ambulatory blocks. Participants included all 3 years of residency training. Eleven Yale Medical Student volunteers who had received 45 min of training served as standardized patients. Two chief residents and nine clinical faculty served as evaluators and instructors at each OSCE station.
DESCRIPTION: Three musculoskeletal teaching workshops (Neck Pain, Back Pain and Knee Pain) were created. Each workshop was preceded by a 1 h lecture which reviewed relevant anatomy, history, exam findings, work up and treatment. The workshops themselves consisted of three to four case-based OSCE's through which residents rotated over a 90 min period. Residents were evaluated on exam technique, assessment and treatment plan and received feedback from faculty instructors and medical student standardized patients.
EVALUATION: Outcomes assessed in this study include: formative assessment of the individual residents by faculty instructors; perceived educational value of the curriculum as assessed by anonymous surveys of participating faculty, residents, and students; and efficacy of the educational intervention as assessed by a formal post-workshop OSCE exam and a confidence and knowledge based questionnaire. As half the residency program had yet to participate in their ambulatory block OSCE, we are able to compare participants of the curriculum to internal controls using a retrospective cohort analysis.
DISCUSSION/REFLECTION/LESSONS LEARNED: Whereas previous studies have utilized OSCE's to evaluate resident medical knowledge, this curriculum aims to utilize the OSCE itself as a standardized teaching tool. Preliminary data suggests improved disease specific knowledge, as well as improved confidence and competence in the musculoskeletal exam among participating trainees. Furthermore, both resident and student participants reported high levels of satisfaction with the curriculum.

Importantly, our curriculum involves learners across several levels of medical training including medical students, residents, and faculty, thus meeting both undergraduate, graduate, and continuing medical education needs. The voluntary and enthusiastic participation of medical students in our study suggests a cost-effective and pragmatic model for combining medical student and resident physical exam education as well as a tool to generate interest in primary care medicine among medical students. We have shown that it is possible to implement an effective OSCE-based musculoskeletal exam curriculum in a medium sized training program. Further evaluation is needed to determine whether this intervention leads to sustained improvements in musculoskeletal exam confidence and competence in the outpatient setting.

A NOVEL TRANSITIONS OF CARE CURRICULUM FOR PGY-1 RESIDENTS IN INTERNAL MEDICINE Justin P. Lafreniere[1]; Evelyn Gathecha[3]; Nowreen Haq[3]; Nancy L. Schoenborn[2]; Fatima Sheikh[2]; Colleen Christmas[2,1]. [1]Johns Hopkins Bayview, Baltimore, MD; [2]Johns Hopkins Bayview, Baltimore, MD; [3]Johns Hopkins Bayview, Baltimore, MD. (Tracking ID #1623437)

NEEDS AND OBJECTIVES: Twenty percent of Medicare patients are readmitted within a month of discharge, costing $26 billion annually. Most have multiple chronic conditions, require complex systems to safely coordinate their care, and experience negative outcomes when such systems are not in place. Physicians are ill-trained in how to provide these services. Many have called for evidence-based curricula emphasizing interprofessional and experiential learning to address this urgent, currently unmet need. We designed a curriculum focusing on the skills, attitudes and behaviors necessary to promote safe transitions. After completing the curriculum, learners:—Demonstrate an understanding and appreciation of the importance of 1) primary care physician involvement; 2) medication reconciliation; 3) goals of care; 4) functional assessment; and 5) transitional care, during care transitions.—Demonstrate high quality 1) medication reconciliation; 2) discussion of goals of care; and 3) functional assessment, during care transitions.—Identify barriers associated with poor care transitions and propose quality improvement projects to address these barriers.
SETTING AND PARTICIPANTS: This 2 week rotation for PGY-1 Internal Medicine residents employs interprofessional experiential learning in inpatient, outpatient and subacute care settings.
DESCRIPTION: There are four educational activities. 1) Teaching Modules provide didactics on medication reconciliation, goals of care, functional assessment and transitional care in a multimedia format. Learners use this knowledge and practice these skills during Transition Audits. 2) Transition Audits ask learners to use a tool to evaluate care transitions executed by their colleagues in outpatient and inpatient settings, focusing on the topics emphasized in the modules. Learners fill in gaps uncovered by the audit by completing the necessary assessments. 3) Transitional Care Site Visits give learners guided observational experiences in rehabilitation centers, assisted living facilities, nursing facilities and home care. 4) The Transition Conference is a capstone experience during which learners host a collaborative conference attended by multidisciplinary members of the health care team. Learners present a patient-based care transition experience, facilitate group reflection on related system- and individual-level issues, and propose quality improvement initiatives.
EVALUATION: We developed mini-CEX instruments to provide formative evaluation of learner skills at functional assessment, medication reconciliation, and discussing goals of care. A reflective writing exercise provides summative evaluation of learner attitudes related to care transitions. These are analyzed for themes related to our stated curricular objectives and are also used to evaluate learner reflective capacity. The results of the Transition Audits combined with a chart review provide a summative evaluation of learner behaviors. Since we implemented this curriculum in September 2012, there are only preliminary evaluation data available at this time.
DISCUSSION/REFLECTION/LESSONS LEARNED: This curriculum is highly innovative and fills the gaps that are present in resident education nationwide. It was developed as part of a course in curriculum development using a well-established approach to designing evidence-based curricula; nevertheless, we have found its implementation to be invigorating and challenging. We hope to share with our audience not only our preliminary evaluation data but also our personal perspectives related to program implementation.

A PILOT PRIMARY CARE RESIDENCY TRACK: EDUCATION AND LEADERSHIP IN PATIENT-ALIGNED CARE TEAMS (ELPACT) Olivia A. Arreola-Owen[1]; Carole M. Warde[2]; Arthur G. Gomez[2]. [1]Cedars-Sinai Internal Medicine Residency, Los Angeles, CA; [2]Greater Los Angeles VA Health System, Los Angeles, CA. (Tracking ID #1637787)

NEEDS AND OBJECTIVES: To recruit and prepare future general internists to practice in a patient centered medical home (PCMH) model, the balance of inpatient to outpatient residency training must change. We propose situating residents within patient-centered care teams will increase the appeal of primary care as a career choice while improving residents' abilities to care for patients with chronic diseases. In July 2012, we began a pilot primary care track for two PGY2 Cedars-VA Internal Medicine Residents where they: 1) Practice team-based, longitudinal care for a panel of complex medical patients 2) Develop and implement quality improvement processes targeting patient outcomes and care efficacy 3) Learn to be primary care mentors and role models from dedicated and satisfied generalist faculty 4) Learn, apply, and teach PCMH-relevant knowledge, attitudes and skills in chronic care management, quality improvement, teamwork, and team leadership
SETTING AND PARTICIPANTS: The Greater Los Angeles VA Healthcare System is implementing the PCMH model called PACT (Patient Aligned Care Teams). Patients are cared for by teamlets consisting of a general internist, nurse practitioner (NP), registered nurse care manager, licensed vocational nurse, pharmacist, and medical service assistant. Our new primary care track, entitled ELPACT (education and leadership in PACT) incorporates 2 internal medicine (IM) residents, 2 NP students and a pharmacy student into academic PACT teamlets, where the trainees participate as team members. We are reporting on the clinical experiences of the IM residents.
DESCRIPTION: Our training pilot includes two alternating 3-month block rotations during the PGY2 year. These blocks consist of 12 weeks of a 10-half day weekly schedule that includes: four PACT clinics; one PACT educational session; and 5 outpatient subspecialty clinics most relevant to primary care (e.g. endocrinology, nephrology, rheumatology, women's health, mental health). Each resident is responsible for an assigned patient panel and ongoing QI with longitudinal coaching and mentoring by the team's general internist faculty. The weekly educational conferences are learner-centered, interactive, and are attended by the whole team, including current patients. Topics include patient-centered care, team member relationship behaviors, the chronic care model emphasizing self-management support, quality improvement process development and implementation, care coordination, and leadership practices.
EVALUATION: We are currently planning to evaluate the new track in 4 domains: 1) Reaction: residents' feedback on the quality and usefulness of the curriculum, mentoring, and clinical experiences; 2) Knowledge: residents' scores on the residency in-service exam which will be compared to a random sample of their peers; 3) Behaviors: faculty evaluation of patient-centered communication skills using a mini-CEX format, a QI process performance, team member evaluation of teamwork, communication and participation in team meetings; 4) Outcomes: residents' performance on 6 quality of care measures as measured for all VA primary care physicians as well as quality improvement processes developed and implemented.
DISCUSSION/REFLECTION/LESSONS LEARNED: Thus far, resident perception of the primary care track has been positive with high ratings for consistent longitudinal care of complex patients, increased mentorship, and patient-centered communication. Team cohesiveness, care coordination, and quality improvement activities have benefited from incorporation of the residents into PACTs.

A SMARTPHONE APPLICATION FOR TEACHING BAYESIAN INTERPRETATION OF RANDOMIZED CLINICAL TRIALS Robert L. Goodman. Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1615323)

NEEDS AND OBJECTIVES: Clinicians are familiar with the use of Bayes' theorem for the interpretation of diagnostic test results (sensitivity and specificity and all that). However, clinicians are less familiar with the use of these same methods in the interpretation of clinical trial results. Here, we (mistakenly) believe that we can estimate "posterior probability" (that the "null hypothesis is true," for example) without taking into account "prior probability." As a result, we misinterpret trial results, most notably p-values and 95 % confidence intervals. The goal of the "Bayesian Clinical Trialist" app is to teach Bayesian interpretation of clinical trials to clinicians, trainees, and students, as well as to help them actually perform simple Bayesian analyses of clinical trial results themselves, with the hope of achieving better understanding of RCT results, and, ultimately, better patient care. Objectives of the app:—Users are able to calculate 95 % "credible intervals" using results of randomized trials and the users' own "prior probabilities."—Users are able to demonstrate the effect that different "priors" have on their posterior probabilities, just as in diagnostic testing.—Users are able to correctly interpret classical, frequentist 95 % confidence intervals and p-values.
SETTING AND PARTICIPANTS: The application is currently used in small group didactic sessions with internal medicine housestaff. It is also used in "journal club" settings and "at the bedside." The app is intended for those who will be applying the medical literature—that is, clinicians, trainees, and students.
DESCRIPTION: The app is used as part of a session on Bayesian interpretation of clinical trials. The session consists of a review of conditional probability and Bayes' theorem; its application to diagnostic test interpretation; an introduction to its application to clinical trial interpretation. The app is then used to interpret results of randomized trials. For example, a trial of pentoxifylline in subjects with alcoholic hepatitis (Gastroenterology 2000;119:1,637–164) showed a dramatic absolute risk reduction of 21.6 % (95 % CI, 3 %–40 %). If the user enters a prior estimate of "0" (i.e., no effect), and an imprecise "confidence region" of 20 % to–20 %, the 95 % "credible interval" is–2 to 25 %, a result no longer conventionally "statistically significant." The user can then change his/her prior and see how changes in the prior affect posterior estimates.
EVALUATION: Evaluation of the use of the app is planned. This will consist of pre- and post- evaluation of learners' ability to calculate posterior estimates using users' own priors; ability of users to recognize the impact of prior probability on posterior estimates; and ability to correctly interpret "classical" measures such as p-values and 95 % confidence intervals.
DISCUSSION/REFLECTION/LESSONS LEARNED: Using the app, learners can see exactly how their priors affect their posterior estimates, and how, in some cases (where there is a lot of data, for example), the prior will have little or no impact on the posterior probability, while in other cases (where there is little data, e.g.), the prior can have large effects on posterior estimates. As expected, users have difficulty estimating "prior probabilities," and some find the subjectivity objectionable. Parallels are made, however, with diagnostic test interpretation, and the unavoidable subjectivity inherent therein as well.
ONLINE RESOURCE URL (OPTIONAL): The app (Bayesian Clinical Trialist) can be downloaded for free from the Apple App store onto iPhone or iPad.

A MULTIDISCIPLINARY TRANSITIONS IN CARE WORKSHOP FOR MEDICAL STUDENTS Lauren Block; Melissa Morgan-Gouveia; Danelle Cayea. Johns Hopkins University, Baltimore, MD. (Tracking ID #1629621)

NEEDS AND OBJECTIVES: Transitions in care represent a vulnerable time for patients. While medical students are often involved in negotiating safe transitions for patients, identified knowledge gaps in the discharge process speak to the need for more formal and coordinated education in this area. We implemented an interactive workshop for medical students highlighting key skills in effective discharges and available resources appropriate for their developmental stage.
SETTING AND PARTICIPANTS: We developed a three-hour curriculum for second and third-year medical students at the midway point of their internal medicine clerkship.
DESCRIPTION: Students participated in five interactive small-group sessions focusing on case-based learning of key skills in safe transitions. These sessions were taught by pharmacists, nurses, case managers, and internists. Key skills emphasized included medication reconciliation, identifying barriers to discharge, patient education and discharge instructions, effective discharge summaries, communication with outside providers, and collaborating with a multidisciplinary team. Techniques used to encourage student involvement in the sessions included role playing, brainstorming, critiquing written text, and discussion. A large-group reflective exercise before and after the case-based sessions was used to contextualize learning within students' experiences during their clinical clerkships, and focused on ways to improve problematic transitions in care for their patients using a multidisciplinary approach.
EVALUATION: Program evaluation included qualitative, quantitative, and experiential feedback, and was IRB approved. All participating students completed a mini-CEX in which they reviewed discharge instructions with a patient under the observation of a nurse or a physician. The reflective exercise applied skills students learned to a discharge witnessed on the wards and generated qualitative data. Finally, students were asked to complete a pre- and post-workshop survey focused on frequency and independence in performing ten discharge tasks and collaboration in discharge-related activities. Responses were scored on a scale of 0–4, with 4 representing better scores. Pre- and post-curriculum data were analyzed using paired t-tests. During the first three sessions, a total of 72 students participated in this workshop. All completed their mini-CEX and contributed qualitative data. Survey response rate was 68 % (N= 49). Post-workshop, students reported significant increases in independence in medication reconciliation (mean score 3.2 vs. 2.7, p=0.01), educating patients at discharge (3.3 vs. 2.8, p=0.02), reviewing discharge instructions (3.3 vs 2.8, p<0.01), communicating with the outpatient provider (3.1 vs. 2.6, p<0.01), and collaborating with the team in discharge activities (3.4 vs. 3.0, p<0.01). A significant increase in understanding of the role of nurses, case managers, and pharmacists in discharge planning and communication with these individuals was observed following workshop participation.
DISCUSSION/REFLECTION/LESSONS LEARNED: A brief, interactive, case-based workshop integrated into the medical students' clinical clerkship and taught by an interdisciplinary team was effective in promoting independence in discharge-related tasks as well as collaboration with allied health professionals.

AN INTERCLERKSHIP INTENSIVE ON ADDICTION AMONG CLERKSHIP-YEAR MEDICAL STUDENTS Babak Tofighi[1]; Joshua D. Lee[2]; Demian Szyld[3]; Jennifer McNeely[4]; John Rotrosen[5]; Paul Kim[6]; Melanie Jay[7]. [1]New York University School of Medicine, New York, NY; [2]New York University School of Medicine, New York, NY; [3]New York University School of Medicine, New York, NY; [4]New York University School of Medicine, New York, NY; [5]New York University School of Medicine, New York, NY; [6]New York University School of Medicine, New York, NY; [7]New York University School of Medicine, New York, NY. (Tracking ID #1628418)

NEEDS AND OBJECTIVES: Despite the high prevalence of substance use disorders, medical students (MS) often lack adequate training in dealing with addiction and its comorbidities. New York University School of Medicine's (NYU SOM) curriculum reform committee developed a four-week Addiction Interclerkship Intensive (ICI). The ICI aimed to integrate basic and clinical addiction science, develop clinical reasoning and practical skills, and expose MS to an interdisciplinary body of medical faculty. Objectives were improved knowledge of addiction neurobiology,

treatment principles, and health systems, and improved self-efficacy and skills as addiction treatment providers through practice-based learning.
SETTING AND PARTICIPANTS: NYU SOM MS in their 9th month of clinical clerkships
DESCRIPTION: The NYU SOM Office of Medical Education led an interdisciplinary panel of faculty and MS clerkship directors to provide 29 h of ICI training. Nationally, MS are exposed to less than 15 h of SU training. Teaching modalities included plenary lectures, small group workshops, objective structured clinical exams (OSCE), ultrasound (US) guided vascular access workshop, clinical simulators, and at-home web-based modules. Session topics included: an addiction basic science overview, workshops in epidemiology, screening, treatment, and tobacco control, an interactive session with Alcoholics Anonymous (AA) participants, a prescription opioid pain and addiction OSCE, and simulations of pathologies (upper gastrointestinal bleed (GIB), pneumonia, respiratory distress) associated with addiction. Online surveys were completed after each component using a 4-point Likert scale and queried open-ended suggestions for improvement.
EVALUATION: 34 faculty, 13 staff, and 17 actors conducted the ICI involving 162 MS across 4 days. Assigned survey response rates were 100 %. Using a 4-point Likert scale, MS agreed or strongly agreed they were more knowledgeable of: screening, diagnosing, counseling, and treating SU patients (80 %); the behavioral effects of substance misuse (72 %); the risks/benefits of chronic opioid pain management (77 %); self-efficacy of referring patients to AA (86 %); developing a differential and plan for upper GIB, pneumonia, and respiratory distress (63 %, 65 %, and 62 %); and were more skilled at US guided vascular access (68 %). MS ratings (1–4) of ICI components ranked their favorability from high to low: clinical simulations (mean score, 3.5), US guided vascular access (3.49), OSCE case (3.0), addiction treatment workshop (2.9), SU epidemiology (2.9), opioid addiction (2.9), overview lecture of addiction (2.8), tobacco control (2.8), and basic science review of SU (2.7). Thematic analysis of open-ended responses suggested: MS participation in ICI planning, clinical case presentations, and immediate OSCE feedback.
DISCUSSION/REFLECTION/LESSONS LEARNED: This curriculum was innovative for its interdisciplinary approach in integrating several interactive teaching modalities. Strengths of the ICI included skills-based OSCE and simulations, small group workshops, and interdisciplinary faculty. Evaluation of this 4-day ICI MS intervention appeared to demonstrate the acceptability of an addiction curriculum in undergraduate medical education. Basic science and addiction research lectures were rated less favorably. Our outcomes highlight prior addiction education research findings suggesting the integration of experiential learning in order to better develop students' skills for assessment and intervention.

AN INNOVATIVE EDUCATIONAL PROGRAM FOR PRIMARY CARE SOCIAL SERVICE PHYSICIANS IN RURAL CHIAPAS, MEXICO Andrew J. Van Wieren[1,2]; Patrick F. Elliott[1,2]; Patrick M. Newman[1,2]; Lindsay B. Palazuelos[2]; Jafet Arrieta[2]; Hugo E. Flores[2]; Andrew L. Ellner[1,3]; Daniel Palazuelos[1,2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Partners in Health, Jaltenango, Mexico; [3]Harvard Medical School, Boston, MA. (Tracking ID #1631523)

NEEDS AND OBJECTIVES: Graduating Mexican medical students are required to complete a year of primary care social service (pasantia) before obtaining their full medical license. Theoretically, distributing social service physicians (pasantes) throughout Mexico would provide a safety net for the underserved. However, pasantes are typically unpracticed and unsupervised, distracted by pending residency entrance exams, and often never arrive to the rural areas where they are needed most. Compañeros en Salud (CES), a sister organization of Partners in Health, has worked in Chiapas, Mexico for over 20 years, and has found the provision of high quality primary care limited by a shortage of well-trained physicians. Identifying known shortcomings of the pasantia, several U.S. medical residents and CES staff have created and implemented an innovative educational program that aims to: 1) mentor pasantes to more effectively deliver primary care; 2) expose pasantes to central concepts of global health and social medicine; and 3) foster career development of pasantes.
SETTING AND PARTICIPANTS: Since February 2012, CES has placed 6 pasantes in previously unstaffed rural clinics in Chiapas. Several U.S medical residents from Brigham and Women's Hospital (BWH) and other programs have contributed to curriculum development and delivery. Attending physicians from both BWH and the Mexican CES team have supervised the educational program.
DESCRIPTION: Our program mentors pasantes to more effectively deliver primary care through: 1) accompaniment in clinic by U.S. medical residents and CES staff; 2) teaching evidence-based treatment algorithms for common primary care problems; and 3) reviewing challenging clinical cases. We host monthly 2–3 day global health seminars in an effort to help pasantes design and implement quality improvement projects within their communities, and to frame their work within the larger historical and political context of Chiapas. Finally, we foster career development by providing pasantes with test preparation materials and future job opportunities with CES.
EVALUATION: We have IRB approval for an ongoing research study to qualitatively evaluate pasantes' experience with the educational curriculum and seek their input on how to improve it. In the future, we hope to quantitatively assess how the curriculum influences process measures such as pasantes' adherence to treatment algorithms and clinical outcomes like control of chronic diseases.
DISCUSSION/REFLECTION/LESSONS LEARNED: The pasantia system is intended to serve as a safety net for the poor. However, the lack of formal mentoring offered to pasantes often results in dissatisfied physicians and patients. To our knowledge, we have developed the first educational program to support pasantes as they transition from medical students to independent primary care providers. A major challenge was that our initial model relied largely on 3 BWH resident volunteers to mentor a growing number of pasantes. Thus, we have created a formal elective in global primary care education open to residents from other programs to meet additional need. To make the model sustainable, we have begun to retain graduating pasantes as CES employees to train future pasantes. Given the ubiquity of the pasantia model in Latin America, our educational curriculum could be exported to impact both pasantes and their patients in countless other settings.

ATTENDING TO OUR FIRST OBLIGATION: THE DO NO HARM PROJECT Brandon Combs; Tanner Caverly. University of Colorado, Denver, CO. (Tracking ID #1621208)

NEEDS AND OBJECTIVES: Harms from overtesting, overdiagnosis, overtreatment, and preference misdiagnosis are a serious threat to the health of our patients and the long-term solvency of our health care system. Harms of overuse have not traditionally been taught to medical trainees and there are few incentives to pay attention to overuse. We have introduced the Do No Harm Project as a means to raise awareness and emphasize scholarship among housestaff and faculty highlighting the importance of doing "as much as possible for the patient and as little as possible to the patient."
SETTING AND PARTICIPANTS: All internal medicine housestaff and faculty at the University of Colorado.
DESCRIPTION: Interns and residents are asked to submit reflective clinical vignettes that demonstrate harms from overtesting, overdiagnosis, overtreatment, or preference misdiagnosis as well as the benefits of shared decision making. Participating housestaff are offered a writing day to complete their work. Vignettes are written in collaboration with any attending in any specialty. Vignettes are submitted for voting among a panel of physicians to determine quarterly and annual winners to whom cash prizes will be awarded. Vignettes are judged on two criteria: 1) clarity and 2) relevance to the concepts of avoiding overdiagnosis/overtreatment and enhancing shared decision making. All cases are published to our website and housestaff are encouraged to submit cases to local and national conferences as well as to peer reviewed journals for publication.
EVALUATION: We will measure the effect of the project longitudinally with a survey that assesses attitudinal change among housestaff around concepts of overdiagnosis and shared decision making. We will dissemi-

nate the Do No Harm Project at regional and national meetings to promote extension of this project to other institutions.
DISCUSSION/REFLECTION/LESSONS LEARNED: Housestaff and faculty have been eager to participate in the Do No Harm Project. Since we began 5 months ago in August 2012, housestaff have submitted 15 vignettes. Cases have highlighted harms from incidental findings and low-value diagnostic testing, as well as the benefits of incorporating patient preference to avoid unnecessary procedures. Two abstracts outlining this program have already been presented at local conferences in Colorado. Other academic institutions have been interested in collaboration and we are in the process of extending the Do No Harm project outside the University of Colorado. Vignettes provide a potent way to humanize the harms that can result from overdiagnosis or failing to consider patient preferences in the course of routine medical practice. The Do No Harm Project attempts to counteract deeply held cultural beliefs that more care is better through clinical vignettes reminding us of our first obligation—to do no harm.
ONLINE RESOURCE URL (OPTIONAL): www.medschool.ucdenver.edu/gim/donoharmproject

BRINGING EFFECTIVE CHRONIC PAIN EDUCATION TO LIFE FOR RESIDENT PHYSICIANS Michael Picchioni. Baystate Medical Center/Tufts University School of Medicine, Springfield, MA. (Tracking ID #1644279)

NEEDS AND OBJECTIVES: Chronic Pain management remains a major challenge for primary care internists and is routinely reported by trainees as an area they are not comfortable with. In addition this part of practice is a source of frustration for all providers; perhaps resident physician the most. Though a minority within each resident's practice, these patients often take up a disproportionate share of time and attention from the resident and the clinic. This can be very distracting from the care of other patients and other learning objectives. A variety of educational strategies have been implemented to help physicians in training learn to deal with or in spite of these challenges. Unfortunately, they frequently fail to meet the learner's needs. Some institutions have sequestered these patients among attending physicians which may help the patients and the practice, but certainly does not educate the trainees. The objectives of this program were to (1) provide the support needed to prevent burnout and negative attitudes toward patients with chronic pain and (2) prepare residents to manage chronic pain patients by actively involving them in a Best Practice model of care.
SETTING AND PARTICIPANTS: The setting is an urban clinic affiliated with a large independent academic medical center where the predominant providers are resident physicians.
DESCRIPTION: For nearly 10 years this clinic has had a comprehensive policy for managing patients requiring long-term opioid analgesics (LTO) that was developed and periodically refined by a multidisciplinary team. All new providers are oriented to the policy through a workshop when they first join the group and each patient is case managed by a nurse. Residents serving as PCP for patients with chronic pain have this policy reinforced during routine care by their team nurse, advanced practitioner and supervising attending physician. In addition, for the past 3 years, all patients receiving LTO are seen approximately once per year for a "Controlled Substance Review" visit that is highly structured to ensure the clinic's policy is being followed and for supplemental advice from a physician experienced in chronic pain management. Residents rotate through this clinic several times during PGY-2.
EVALUATION: All 5 of the Team Nurses describe this structure as invaluable in managing this cohort of patients Faculty preceptors commonly report that having this clinic reduces the frustration they feel as not being able to fully address the needs of chronic pain patients while trying to manage other co-morbidities. Similarly, PCP's find the support of this clinic helpful in providing comfort with their decisions to either continue or cease LTO therapy with their patients for whom the indications are unclear. Most importantly, the residents who participate in this clinic almost universally describe a sharp new sense of understanding of a rational approach to patients with chronic pain.
DISCUSSION/REFLECTION/LESSONS LEARNED: The "Controlled Substance Review" clinic appears to have provided the missing link between education and practice in chronic pain management. It simultaneously provides the additional structure needed to help our policy be successful and provides the learning experience needed by residents to solidify their understanding of safe and effective management of chronic pain.

BROWN MEDICAL SCHOOL PRECLINICAL ELECTIVE ON HEALTHCARE OF UNDERSERVED POPULATIONS Lucinda B. Leung[1]; James E. Simmons[2]; Joseph S. Rabatin[2,3]. [1]UCLA Medical Center, Los Angeles, CA; [2]Alpert Brown Medical School, Providence, RI; [3]Memorial Hospital of Rhode Island, Pawtucket, RI. (Tracking ID #1626066)

NEEDS AND OBJECTIVES: Brown medical students have a strong interest in medical service, yet receive little formal education on care of underserved populations; this may impact their preparedness for residency. A multi-institutional survey of US residents revealed that actual and perceived knowledge about underserved patients is low. Internal medicine residency training devotes less time to addressing unique cultural and healthcare needs of non-English speaking patients, compared to other vulnerable populations (e.g., substance abuse). Data from UCLA/Drew medical school, which stress minority/multicultural health and offer clinical rotations in underserved settings, suggest that such medical education programs may influence students to practice in underserved areas. Thus, Brown's preclinical elective course aimed to: (1) provide students with knowledge, skills and support to care for the underserved, (2) enable the opportunity to practice clinical skills in underserved settings, and (3) create future leaders in primary care and care of the underserved.
SETTING AND PARTICIPANTS: In 2010–2011, Brown opened a new elective to any preclinical medical student. A total of 19 students successfully completed the class, with 4 s-year and 15 first-year students.
DESCRIPTION: The course consisted of student-led seminars with guidance from a faculty advisor, focusing on medical care of vulnerable populations. Examples of seminars include: "Healthcare for Underserved Populations in Rhode Island," "Paying for Healthcare for the Underserved in New England" and "Making Fun of Patients: Cynicism, Humor, and Physician Response to Underserved Populations." Second, the class mandated clinical experience as a student provider at one of three free clinics: Brown Student Community Clinic, Rhode Island Free Clinic and Clinica Esperanza. Third, a culminating project experience required students to identify a healthcare problem and brainstorm feasible solutions.
EVALUATION: An anonymous written survey following the course included six 5-point Likert scale questions and three open-ended questions. Satisfaction was strongly positive, with the majority (93 %) of participants in agreement with "Recommend class to future students" (n=15). Other categories similarly received positive reviews ("Class was informative" 93 %; "Clear, well-organized" 80 %; "Stimulating and interesting" 93 %; "Sufficient opportunity to ask questions" 100 %; "Final project employed critical thinking and brainstorming that will be helpful in the future"100 %). Notable responses to "My favorite part of this class…" were "deconstructing specific problems (relevant to underserved communities)," "the volunteer experiences" and "the final project … to synthesize many of the ideas and information presented throughout the course." When asked how to improve the course, notable responses included "the final paper really helped me focus and get excited about topics" and "entrepreneurial guidance/logistical advice about what it takes to make our ideas a reality." Under additional comments, one student wrote "I'm really glad this class was given. I hope to see it really expand and help future students!"
DISCUSSION/REFLECTION/LESSONS LEARNED: Based on course evaluations and continued course participation this year, a preclinical elective dedicated to healthcare of the underserved is both promising and feasible. More research is needed to determine if course participants attained improvements in knowledge and skills and if participants will serve as leaders in medical care of the underserved.

CAMBRIDGE INTEGRATED CLERKSHIP SYSTEMS ROUNDS: MEDICAL STUDENT-DRIVEN QUALITY IMPROVEMENT AND PATIENT ADVOCACY Arjun Suri[1]; Alejandra Ellison-Barnes[1]; David R. Ziehr[1]; Benjamin Jastrzembski[1]; Juliana E. Morris[1]; Ariel Wagner[1]; Andres Patino[1]; Divya Mallampati[1]; David Bor[2,1]; David Hirsh[2,1]; Elizabeth Gaufberg[2,1]. [1]Harvard Medical School, Boston, MA; [2]Cambridge Health Alliance, Cambridge, MA. (Tracking ID #1642468)

NEEDS AND OBJECTIVES: The rigorous third year of medical school seldom encourages students to analyze social and systemic factors that compromise or enhance patient care. To advance this imperative, students at the Cambridge Integrated Clerkship (CIC) designed the CIC Systems Rounds as a reflective and educational initiative. The objectives are to engage students in a collaborative experience that fosters creativity in quality improvement, enable students to address gaps endemic to the health care system, and empower students to serve as advocates.
SETTING AND PARTICIPANTS: The CIC at Harvard Medical School comprises a cohort of 12 third-year medical students who engage in a longitudinal integrated curriculum and contribute to the care of a panel of medically and socially diverse patients at the Cambridge Health Alliance, a safety net institution. Whether observing poorly coordinated care or recognizing innovative practices, students experience with patients the strengths, frailties, and injustices found within the local and national healthcare and social support systems. As patients teach students, students gain an awareness of—and the ability to contribute to—potential improvements to the health care system.
DESCRIPTION: The process of this student-driven initiative begins when students collect cases from clinical experiences that demonstrate recurrent, surprising, or inspiring events in the health care system. During monthly Systems Rounds, students informally present stories on topics including medication reconciliation, health literacy, and immigration documentation status. The group then deconstructs each case, emphasizing major themes, sharing similar experiences, and proposing how providers, systems, or other actors might have helped or hindered the patient's care. After meeting, participants document cases in a standardized format that incorporates both quantitative and qualitative data.
EVALUATION: The outcomes of CIC Systems Rounds reflect the impact upon both patients and students. In terms of patient care, students organize quarterly meetings with faculty, administrators, and community groups as well as an annual CIC Systems Grand Rounds to share cases, discuss solutions, and contribute to quality improvement efforts. Compiling and coding cases allows students to reflect on the breadth and depth of their experiences in the third year. The group is also developing scholarly work for a broader audience and collaborating with other medical schools across the country.
DISCUSSION/REFLECTION/LESSONS LEARNED: The CIC grants students a unique view of patients' journeys through the medical system. The Systems Rounds further allows them a forum to analyze the systems successes and failures they witness daily in their medical training. These physicians-in-training are thus better positioned to become change agents and advocates early in their medical careers. With individual patient experiences at its core, CIC Systems Rounds inspires students to examine health holistically, think creatively about interventions to improve patient outcomes, and deliver compassionate, patient-centered care. Finally, the simplicity and flexibility of the program enables medical residents, community groups, patients, and other providers to replicate the process and broaden the movement for quality improvement. Engaging these diverse perspectives can be a tool to encourage active participation and collaboration. Cambridge Integrated Clerkship Systems Rounds demonstrates how educational transformation furthers the transformation of our health care system.

CREATION OF A WEB-BASED MOBILE APP TO TEACH AND FACILITATE SYSTEMS NAVIGATION IN A STUDENT-RUN FREE CLINIC Ammar Siddiqui; Yasmin S. Meah; Chloe Ciccariello; Alexa Gips; Mark Kurzrok; Noa Simchoni; Thomas McBride; David C. Thomas. Ichan School of Medicine at Mount Sinai, New York, NY. (Tracking ID #1642709)

NEEDS AND OBJECTIVES: 1) Educate students about patient barriers to accessing needed services through an experiential learning process; 2) Design a program in which students develop systems-level solutions to problems of healthcare access; 3) Create a web-based mobile app which educates clinical providers about specialty appointment requirements and costs at the point of care.
SETTING AND PARTICIPANTS: The East Harlem Health Outreach Partnership (EHHOP) is Mount Sinai's student-run primary care clinic (SRC) for uninsured adults. The population carries a high-burden of diseases that frequently require specialty care. Obtaining referrals for uninsured patients is cumbersome; specialties have variable procedures and costs, and long wait-times. In 2012, EHHOP trained preclinical medical students as Referrals Managers (RMs) to develop systems-level interventions to access specialty services. Providers at EHHOP involved in the referrals process consist of Teaching Seniors (MS4s), Senior Clinicians (MS3s), and the Access to Care Team (MS2s).
DESCRIPTION: RMs collaborated with clinical administrators to determine average wait-times, appointment hours, prerequisite medical tests, costs of referrals, and documentation needed at appointments. To gather information on real-time barriers, RMs accompanied patients to all specialty appointments. RMs used this field-data to develop specialty-specific protocols and create a mobile-phone application that providers can access on-site when making referrals. The mobile application allows providers to educate patients on referral procedures and may drive providers to make more educated decisions about whether a specialty service is necessary or feasible.
EVALUATION: Evaluation of this intervention is on-going and will include the following: 1. Qualitative feedback from RMs and clinicians on the utility of the mobile application in facilitating the referrals process and educating students on barriers to care; 2. Quantitative surveys on the educational impact of this project on the RMs' ability to navigate healthcare systems; 3. Quantitative data on the percentage of completed referrals and average time from referral to specialty appointment. Preliminary data suggests that systems interventions implemented since the development of this app have significantly improved referral completion rates and reduced wait-times.
DISCUSSION/REFLECTION/LESSONS LEARNED: The mobile-phone application allows clinical students to factor in access-to-care issues when referring patients for specialty care. Through the process of creating and updating the mobile phone application, preclinical students in this program apply system-level solutions to address barriers to access and learn to navigate healthcare systems, particularly for vulnerable patients. The challenges to sustaining this program are encouraging clinicians to use the application at the point-of-care, keeping the application accurate and up-to-date and quality control of the program particularly as EHHOP, like other SRCs, experiences yearly transitions of student leadership. An additional challenge has been to preemptively determine costs of medical procedures, which hospital administrators were reluctant to share.
ONLINE RESOURCE URL (OPTIONAL): http://ehhop0.appspot.com

DEVELOPMENT AND EVALUATION OF AN INTERPROFESSIONAL COLLABORATIVE CASE CONFERENCE SERIES Meg Pearson; Bridget O'Brien; Rebecca L. Shunk. UCSF, San Francisco, CA. (Tracking ID #1620786)

NEEDS AND OBJECTIVES: Interprofessional collaboration (IPC) is widely recognized as an important part of quality primary care, but many primary care clinics provide inadequate opportunities for trainees to develop the knowledge, skills, and attitudes needed for IPC. To address this gap, we created a yearlong series of monthly collaborative case conferences (CCC) beginning August 2012 in which trainees from a variety of health professions facilitate and participate in an interprofessional discussion about medically and psychosocially complex patients from their primary care panels with the goal of developing an improved plan of care for the patient. The two overarching educational objectives of CCC are to: 1) enhance our primary care educational curriculum by adding interactive, multidisciplinary trainee-led conferences that supplement team-based

clinical practice and didactic teaching conferences. 2) foster a culture of interprofessional collaboration within our program.

SETTING AND PARTICIPANTS: Our project is housed in the San Francisco VA Center of Excellence in Primary Care Education (COE-PCE), which trains nurse practitioner students and internal medicine residents to work as part of a Patient Aligned Care Team with a designated RN, LVN, and clerk as well as associated health professionals and trainees (clinical psychology fellows, clinical pharmacy residents, social work interns, and dietetic interns)—all of whom participate in CCC.

DESCRIPTION: Each CCC is an hourlong case-based conference. Trainees work closely with a faculty mentor to prepare, which includes selecting an appropriate patient, creating a case write-up and discussion questions, inviting discussants involved in the patient's care or with relevant expertise, selecting two pertinent articles from the literature, creating a facilitation plan to encourage participation and collaboration among all participants, and disseminating the learning materials. The trainee writes a post-conference care plan detailing 2 or more innovations for the patient's care that arose during CCC and completes a 3-month update on the status of the proposed interventions.

EVALUATION: Our evaluation of CCC includes interprofessional trainee, staff, and faculty participants' satisfaction with the organization, facilitation, educational value, and collaborative nature of the conference and their self-assessment of knowledge, skills and attitudes related to IPC. Our evaluation of participants' achievement of learning objectives combines observed behaviors during the conferences, documents generated in preparation for and subsequent to the conferences, and formative assessments by peers and faculty mentors. Conference evaluations forms and check-ins with faculty mentors create opportunities for trainees to engage in self-reflection.

DISCUSSION/REFLECTION/LESSONS LEARNED: In response to trainee feedback, we ask consultants to prepare a concise presentation (5 min max), specifically addressing the following question: "What key points should primary care providers know about this topic and when should they refer?" These mini-lectures allow our trainees to come away with clinical pearls without detracting from the collaborative, conversational nature of the conference. Some cases are sensitive in nature, involve bad outcomes, and trigger emotional responses. We learned that it is best to disseminate a draft of the case template to discussants at least a week prior to the conference to allow for written revisions if necessary, as well as for in-depth phone and email conversations prior to the conference.

DEVELOPMENT AND EXECUTION OF AN INTERNAL MEDICINE SUBSPECIALTY FELLOW TEACHING COMPETITION Dustin T. Smith[1,2]; Wendy S. Armstrong[1]; Ryan M. Ford[1]; Karen L. Law[1]; Kimberly D. Manning[1]. [1]Emory University School of Medicine, Atlanta, GA; [2]Atlanta Veterans Affairs Medical Center, Decatur, GA. (Tracking ID #1628940)

NEEDS AND OBJECTIVES: Excellence in teaching exists amongst trainees at academic medical institutions and may be an underrecognized teaching resource. Many fellowship programs have adopted curricula to enhance trainees' teaching skills, but effective ways to promote the teaching skills of fellows have yet to be fully defined. We created a teaching competition using internal medicine subspecialty fellows identified as excellent teachers in order to augment the opportunity for learning and highlight the teaching skills of trainees in our Department.

SETTING AND PARTICIPANTS: Active fellowship trainees in our Department who were identified as excellent teachers were selected to participate in a teaching competition in front of a live audience in the School of Medicine.

DESCRIPTION: Fellowship program directors in the Department of Medicine at our institution were asked to recommend one fellow to represent their program in a teaching competition. Programs were given suggestions for how to identify a fellow with excellent teaching skills but ultimately programs had the final decision for whom to select to represent their program. The only criterion for participation was that the fellow had to be an active trainee. No limitations were placed with regards to postgraduate year, ACGME versus non-ACGME status, chief fellow status, or type of fellowship track. Eight fellows were selected and consented to participate. The Department provided instruction and orientation to participants via a session on effective teaching skills prior to the competition. Fellows had intellectual freedom to develop a presentation on a medical topic of their choice but the primary focus of this activity was on creative and effective teaching techniques. The competition was held for one night during the Spring of 2012. Faculty, house staff, and medical students from the School of Medicine were invited to attend. The presentation order was randomly assigned. Six judges were recruited to observe the presentations in front of a live audience. Judges were selected by a committee based on a record of teaching excellence and included 2 senior faculty members and 1 junior faculty member from our department, 1 chief medical resident, 1 senior medical student, and 1 faculty member from another department.

EVALUATION: Judges scored the presentations on design (subcategories included purpose, organization, attention, retention, and audio-visual) and delivery (subcategories included pitch, pace, clarity, posture, and energy). Points were deducted for those speakers who exceeded the time limit of 8 min. Following all presentations, final scores were tabulated and the fellow with the highest average score was designated winner and awarded a monetary prize and teaching award plaque to be displayed by that particular trainee's fellowship program.

DISCUSSION/REFLECTION/LESSONS LEARNED: The development and execution of a fellow teaching competition at our institution celebrated learning for a variety of learners, encouraged collegiality amongst different divisions within our Department, spotlighted fellows who were excellent teachers, allowed for role modeling of teaching skills, and demonstrated how to effectively optimize a teachable moment in a short amount of time. Future evolutions will quantify the benefits of faculty, house staff, and students attending and further refining this competition based on subsequent feedback. Exceptional presentations will be circulated within the Department, demonstrating teachable moments and scaling effective teaching techniques to a larger audience.

DEVELOPMENT AND EVALUATION OF A NOVEL ONLINE ETHICS CURRICULUM FOR GLOBAL HEALTH TRAINING Matthew DeCamp[1,2]; Joce Rodriguez[3]; Michele Barry[3]; Jeremy Sugarman[1,2]. [1]Johns Hopkins School of Medicine, Baltimore, MD; [2]Johns Hopkins University, Baltimore, MD; [3]Stanford University, Stanford, CA. (Tracking ID #1629378)

NEEDS AND OBJECTIVES: Medical students, residents and faculty increasingly participate in global health training and service programs abroad. These programs raise ethical issues—for example, regarding cultural differences, sustainability and supervision—that if unaddressed might hinder program success or harm trainees or host communities. To prepare trainees for these issues, we developed a novel ethics curriculum to increase trainees' knowledge of these ethical issues; provide skills for navigating them; and increase trainees' confidence.

SETTING AND PARTICIPANTS: An interdisciplinary team with expertise in global health training programs and ethics developed an online curriculum and pre/post-test evaluation strategy. Content validity and pilot testing were provided by external experts and participants in the Stanford Center for Innovation in Global Health (CIGH) scholars program, which includes global health training and a six-week experience abroad.

DESCRIPTION: With funding from the Doris Duke Charitable Foundation, we built upon ethics and best practice guidelines by soliciting actual ethics cases from leaders in global health and colleagues. We developed ten cases covering common and important ethical issues, altering details to protect privacy and confidentiality and to meet educational objectives. Example scenarios include navigating cultural norms, minimizing safety risks to trainees, ensuring appropriate benefits for the host community, and managing situations where trainees might act beyond their skill level. Employing adult learning strategies, cases are problem-based; provide real-time corrective feedback; allow self-guided navigation; include multimedia content; and require <10 min

to complete. To enhance accessibility, the curriculum is free, requires no login, and is optimized for low bandwidth.

EVALUATION: We evaluated the curriculum using (1) web data; (2) open user demographic data; and (3) pre- and post-tests tailored to content. One pre/post-test group, the July 2012 cohort of Stanford CIGH scholars, is reported here. Knowledge assessment included five multiple choice questions and free text description of ethical issues. Confidence and perceived skills were assessed using 5-point Likert scales. Since normality and equal intervals could not be assumed, we used non-directional Wilcoxon signed-rank tests of statistical significance at $p<0.05$ (STATA r.12). Following IRB approval, 38 eligible CIGH scholars were recruited to complete a pre-test, the curriculum, and a post-test within a month prior to their experience abroad. Nineteen residents (50 %) completed both pre- and post-tests (8 internal medicine, 7 in pediatrics, 4 other). Fifteen (79 %) had been abroad before; of these only 4 (27 %) reported prior ethics training specific to short-term global health programs. Following the curriculum, the mean knowledge exam score increased from 52 % to 64 % ($p<0.01$); the average number of ethical issues described increased from 4.1 to 4.6 ($p<0.05$ one directional test). There were significant increases in respondents' confidence (3.1 to 3.4; $p=0.02$) and available strategies for managing ethical issues (3.4 to 3.9; $p=0.01$).

DISCUSSION/REFLECTION/LESSONS LEARNED: Our curriculum meets a critical need and effectively increases trainees' knowledge, confidence and strategies for managing ethical issues in short-term global health training. While the case-based, online format is uniquely tailored to this objective, more comprehensive curricula are needed to improve further trainees' attitudes, skills and behaviors.

ONLINE RESOURCE URL (OPTIONAL): http://ethicsandglobalhealth.org

DEVELOPMENT AND IMPLEMENTATION OF AN INTERPROFESSIONAL STANDARDIZED PATIENT ASSESSMENT

Sandra K. Oza[1]; Aimee Sznewajs[1]; Maria A. Wamsley[1]; Christy K. Boscardin[1]; Win May[2]; Andrew Nevins[3]; Malathi Srinivasan[4]; Ann Homan[1]; Bernie Miller[1]; Mark Lovett[1]; Karen E. Hauer[1]. [1]University of California, San Francisco, School of Medicine, San Francisco, CA; [2]Keck School of Medicine, University of Southern California, Los Angeles, CA; [3]Stanford University School of Medicine, Palo Alto, CA; [4]University of California, Davis School of Medicine, Sacramento, CA. (Tracking ID #1642592)

NEEDS AND OBJECTIVES: The World Health Organization identifies interprofessional collaborative practice as a means to improve the quality of patient care in increasingly complex care systems, and interprofessional education (IPE) as essential preparation for health professions trainees entering practice. Interprofessional learning assessments can determine "work-readiness" and simultaneously highlight the importance of interprofessional practice to trainees. To achieve these objectives, we developed and implemented an interprofessional standardized patient (SP) assessment for medical students.

SETTING AND PARTICIPANTS: The assessment was administered to eligible students at four California medical schools during the 2012 California Clinical Performance Examination, a clinical skills assessment conducted at the completion of the core clerkships.

DESCRIPTION: Four authors (SKO, AS, MW, KEH) representing both medicine and nursing developed an interprofessional SP case for the 2012 California Clinical Performance Examination. The case portrays a 55 year-old hospitalized woman who develops acute chest pain, a common clinical problem that is a learning objective of the Clerkship Directors in Internal Medicine. The student is tasked with collaborating with a standardized nurse (SN) to gather information and initiate a diagnostic and management plan. To adhere to principles of IPE, we employed an interprofessional team at all stages of case development and actor training. Each encounter lasts 15 min, after which SPs assess students using a 29-item SP checklist comprising the expected history taking, physical exam, information sharing, and communication skills (based on the SEGUE Framework). We developed an 11-item SN assessment checklist targeting the Core Competencies for Interprofessional Collaborative Practice, which assesses the student's collaboration in the domains of information gathering and communication skills. The case was implemented at four medical schools between April-August 2012. The Institutional Review Boards at the participating schools approved a study of the case. Complete data is available from two schools ("A" and "B").

EVALUATION: Of 333 eligible students, 307 consented to participate in the study (146 of 163 students from A). Of a possible 100 %, mean overall performance on the SP checklist was 73.56 % (standard deviation (SD) 9.63) at A and 74.41 % (SD 9.31) at B. Mean SP communication scores were 87.88 % (SD 14.25) at A and 87.41 % (SD 9.81) at B. Mean overall performance on the SN checklist was 80.07 % (SD 13.72) at A and 81.71 % (SD 13.25) at B. Mean SN communication scores were 90.18 % (SD 13.23) at A and 95.78 % (SD 12.44) at B.

DISCUSSION/REFLECTION/LESSONS LEARNED: We developed and implemented a case and training procedure using both a SP and a standardized health professional for assessment of medical students' clinical skills and interprofessional collaboration. Participation from an interprofessional team upheld the principles of IPE, and ensured accurate portrayals of healthcare professionals by actors. Our data show that students were successful in this high-stakes assessment, particularly with respect to communication with both the SP and SN. We demonstrate that a SP exercise can be adapted to assess interprofessional collaborative practice, and believe this is a useful method to guide curriculum design and assessment. Future work should compare these findings to assessments of trainees' interprofessional competency in authentic clinical settings to enhance future SP and interprofessional assessments.

DEVELOPMENT OF HOSPITAL MEDICINE EDUCATORS: DESIGN AND IMPLEMENTATION OF A PHYSICAL DIAGNOSIS COURSE FOR PHYSICIAN ASSISTANT STUDENTS

Dustin T. Smith[1,2]; Joanna M. Bonsall[1]; Marquitha S. Mayfield[3]; Margaret DeMoss[1]; Jennifer N. Larson[1,2]; Dana Sayre-Stanhope[3]; Daniel D. Dressler[1]. [1]Emory University School of Medicine, Atlanta, GA; [2]Atlanta Veterans Affairs Medical Center, Decatur, GA; [3]Emory University School of Medicine, Atlanta, GA. (Tracking ID #1628921)

NEEDS AND OBJECTIVES: Advanced practice clinicians such as physician assistants (PAs) represent a growing proportion of providers who care for hospitalized patients. While many PA training programs rely on community outpatient clinicians to train early-level PA students in physical diagnosis, Hospital Medicine (HM) faculty and Internal Medicine (IM) residents with an interest in teaching can potentially provide a more consistent learning experience in physical examination for 1st year PA students. In 2011, the PA Student Physical Diagnosis Preceptorship (PASPDP) course was designed in collaboration with leadership in the School of Medicine's PA Program and the Division of Hospital Medicine to 1) augment history and physical examination skills of pre-clinical PA students and 2) provide a valuable teaching and academic pursuit vehicle for a growing academic HM faculty group as well as IM residents interested in developing teaching skills.

SETTING AND PARTICIPANTS: We designed a physical diagnosis course for 1st year PA students at our institution. The PA program transitioned their student physical diagnosis training from experiences in outpatient clinician offices to training by HM faculty plus IM residents—all managed and coordinated by our Division of Hospital Medicine and the PA program.

DESCRIPTION: From January to September 2012, 56 PA students spent one afternoon bimonthly at one of our six hospitals where our faculty and residents practice. During each session, Hospitalist or resident preceptors introduced students to hospitalized patients with diagnoses related to the organ system the students were studying in concurrently-running didactic modules. The students interviewed and examined the patients and formulated a focused presentation to their preceptors, who provided feedback. Preceptors then returned to the bedside with students to observe them performing portions of the physical exam, provide feedback on technique, demonstrate clinical findings and engender learner competency.

EVALUATION: Both students and preceptors received formal course evaluation. Future directions will focus on quantifying the faculty, resident, and student benefits and further refining the course based on feedback. A program and course evaluation is currently underway and will utilize surveys, focus groups, and structured interviews with students and preceptors.
DISCUSSION/REFLECTION/LESSONS LEARNED: The PASPDP course successfully trained 56 first-year PA students. Student feedback was overwhelmingly positive, with many commenting on instructor enthusiasm, personal attention and in-depth teaching. HM faculty and IM residents who served as preceptors perceived the course as a valuable way to teach early level learners and actively engage in an academic pursuit that offers professional fulfillment. The IM residency program lauded residents who voluntarily participated, and some have applied their efforts to achieve graduation with Distinction in Teaching. Leadership from the PA Program, the Division of Hospital Medicine and the IM residency program identified the course as a strong and successful collaboration in education, and plan for a robust 2nd year of the course.

DEVELOPMENT OF A LEADERSHIP OBSERVATION AND FEEDBACK TOOL (LOFT) Sandra K. Oza[1]; Edna Miao[2]; Read Pierce[4]; Anda Kuo[3]; Sandrijn van Schaik[3]. [1]University of California, San Francisco School of Medicine, San Francisco, CA; [2]University of California, San Francisco School of Medicine, San Francisco, CA; [3]University of California, San Francisco School of Medicine, San Francisco, CA; [4]University of Colorado School of Medicine, Denver, CO. (Tracking ID #1642790)

NEEDS AND OBJECTIVES: Competency in team leadership is a required outcome of residency training, but assessment tools for leadership skills outside of high-acuity settings are lacking. The Leadership Practice Inventory (LPI) is a validated leadership assessment tool used widely in a variety of non-clinical settings. We aimed to identify appropriate terminology and important skills associated with clinical team leadership based on the LPI construct, in order to create a behaviorally anchored tool for use during observation of and feedback on resident physician clinical leadership skills.
SETTING AND PARTICIPANTS: The initial phase of the study was conducted among PGY-2 and PGY-3 residents leading multidisciplinary inpatient pediatrics and internal medicine teams at a single academic medical center. The second phase of the study utilized an invited panel of 15 national and international experts in healthcare leadership.
DESCRIPTION: We modified the LPI based on in-depth review of the clinical teamwork and leadership literature to create an on-line instrument with open-ended questions about residents' leadership skills. We asked PGY-2 and PGY-3 residents leading multidisciplinary inpatient pediatric and internal medicine teams at UCSF to identify 5 team members to provide feedback using our instrument. We utilized an iterative qualitative analysis process to code this feedback and identify major themes. We then extracted leadership behaviors from these themes, and asked an expert panel in healthcare leadership to rate the importance of behaviors using modified Delphi methodology. In a second round, the experts assigned the training level at which each behavior can be expected of physicians in training.
EVALUATION: During the first phase, a total of 75 team members provided feedback. Qualitative analysis resulted in ten major domains of clinical leadership, and 30 associated behaviors. The ten domains are: 1) shows appreciation to motivate the team, 2) balances autonomy and supervision, 3) is accessible and involved, 4) ensures collaboration with team members for shared decision making, 5) assists with workload management, 6) provides supportive feedback, 7) manages challenges productively, 8) promotes a learning environment, 9) models professional behavior, and 10) establishes expectations and goals. Importance ratings given to each of the 30 behaviors by the expert panel during the first of two Delphi rounds were analyzed using Content Validity Index (CVI, a measure of agreement or consensus). CVI estimates were all 0.80 or greater, indicating high agreement on the importance of behaviors. The panelists also recommended the addition of seven new clinical leadership behaviors. In the second Delphi round, experts identified the training level at which each behavior could be expected of a trainee. Using this data, we developed a behaviorally anchored, developmentally oriented tool, which we plan to pilot among residents leading multidisciplinary teams.
DISCUSSION/REFLECTION/LESSONS LEARNED: Our study identified important clinical leadership behaviors and fostered the development of a behaviorally anchored instrument, the Leadership Observation and Feedback Tool (LOFT). Piloting this tool in real-world clinical settings will provide additional data with which to determine the construct validity and reliability of the instrument. Ultimately, we hope that the LOFT instrument will fill an unmet need of graduate medical educators by serving as a validated tool for assessing clinical leadership skills.

DEVELOPMENT OF A SYSTEMATIC REVIEW TRAINING PROGRAM FOR ATTENDING PHYSICIANS TO MENTOR INTERNAL MEDICINE RESIDENTS Tanu S. Pandey; Brian P. Lucas. John H Stroger Jr. Hospital of Cook County, Chicago, IL. (Tracking ID #1642279)

NEEDS AND OBJECTIVES: ACGME requires that Internal Medicine residency programs assign sufficient educational resources to facilitate resident participation in scholarly activity. Yet there are few programs with structured mentorship programs for research. Other obstacles seem prohibitive including lack of mentorship, limited funding and feasibility constraints with unexpected delays, slow institutional review boards, and lack of statistical expertise. We created a house staff research mentorship program to foster resident research through a formal faculty development course. Neither this course nor the research projects developed from it require funding, IRB review, or participant recruitment.
SETTING AND PARTICIPANTS: Junior faculty physicians from the Department of Medicine were chosen to undergo a five-week training session of 1-h lectures on how to conduct systematic reviews and meta-analyses by an institutional expert. Webcasts of these training sessions were developed for review to ameliorate scheduling conflicts. Mentors were then matched with 2 to 3 residents, with an effort to align the career interests of the mentee.
DESCRIPTION: In September 2012, 12 core faculty members were invited to attend training sessions to learn how to conduct systematic reviews and meta-analyses. 46 residents signed up for this program and 30 were matched with mentors after an interview and elimination process. 11 topics were listed, encompassing a wide variety of specialties in Medicine. Research questions were generated by the physician faculty. There were responsible for teaching the elected residents how to design and conduct a systematic review, extract data, perform statistical analyses using freely available software, and assessing quality control of work done by the residents. The expectation was to submit a manuscript for publication before the end of the academic year. The institutional expert was available to address concerns and gaps in learning during regular meetings. Authorship order was to be arranged based on the quality and amount of effort, timeliness of tasks, overall contribution, and in the case of ties, random chance.
EVALUATION: The program is currently in its fourth month since inception and progressing as expected. All projects are expected to culminate in a manuscript by the end of the academic year. An official research director will be appointed to administer the program in future and we hope that funding will be granted by the Department to support future training and publication to open access journals.
DISCUSSION/REFLECTION/LESSONS LEARNED: Residents have generally indicated that the mentorship has promoted their critical thinking and analytical skills. Others aspire to conduct an independent project in the future as well as mentor other residents through the process. Publications will enhance their fellowship applications and stimulate interest in research. A successful mentorship program will also encourage departmental support and funding. This program is feasible, easily implemented, and worthwhile to residents, junior faculty, and their institutions.

DEVELOPMENT OF A MULTIDISCIPLINARY CURRICULUM IN ACCORDANCEWITH NATIONAL COMMITTEE FOR QUALITY ASSURANCE (NCQA) GUIDELINES FOR THE PATIENT-CENTERED MEDICAL HOME (PCMH) Stacie Schmidt; Shelly-Ann Fluker; Jada C. Bussey-Jones; Danielle Jones; Kristina L. Lundberg; Stacy Higgins. Emory University, Atlanta, GA. (Tracking ID #1628435)

NEEDS AND OBJECTIVES: Teach internal medicine residents the PCMH-principles of (1) managing patient populations, (2) coordinating patient care, and (3) working within multidisciplinary teams

SETTING AND PARTICIPANTS: The Grady Primary Care Center (PCC) is an academic safety-net, hospital-based clinic accommodating ~70,000 visits annually. The patient population is largely uninsured with low literacy and other cultural challenges to caring for their chronic diseases. To overcome this, we piloted a curriculum whereby Emory internal medicine residents work collaboratively with other team members to deliver multidisciplinary patient-centered care in accordance with NCQA guidelines for a PCMH.

DESCRIPTION: During their ambulatory months, residents have a half-day of protected time weekly for PCMH activities. During the first half of the year, PGY-1 residents "shadow" their team nurses, pharmacists, and social workers in the outpatient setting, in an effort to learn the roles of other members within their healthcare team. During the second half of the year, interns participate in patient-population management, whereby they run electronic reports on panels of patients with uncontrolled disease (e.g., diabetes) and conduct follow-up encounters to target those individuals. PGY-2 s work with other team members (e.g. pharmacists) to discuss a panel of patients with socioeconomic, cultural, and systemic obstacles to controlling specific chronic diseases. Residents are given protected time to invite patients back for prolonged sessions to discuss these issues. Pharmacists are present in the clinic room with the resident during the encounter so that identified issues can be addressed; this promotes direct communication and coordination with the patient, pharmacist, and resident as a team. PGY-3s expand upon the population management skills by running a report on continuity patients with a particular uncontrolled disease (e.g. diabetes) and inviting them back for group education sessions. Residents have protected time to plan the sessions and lead the group education simultaneously with team nurses. While individual components of our program were adapted from other published reports, no study to our knowledge has incorporated all of the aforementioned strategies into a sustainable curriculum run longitudinally over the postgraduate years. Further, the tactics employed in our curriculum enabled us to achieve the rare level 3 NCQA accreditation for a PCMH, and may allow other residency programs with similar demographics and resources to attain the same.

EVALUATION: Residents complete a written post-course survey addressing the curriculum using a 10-point scale as well as open-ended questions eliciting suggestions for improvement. Residents also document PCMH patient encounters in the electronic medical records, which serves to prove our adherence to NCQA guidelines.

DISCUSSION/REFLECTION/LESSONS LEARNED: We found it difficult to perform scheduling due to the volume of residents (e.g. two pharmacists, but up to six residents available to work with them at a time). At times, residents repeated components of the curriculum (e.g. patient population management) because of this overscheduling problem. Further, we would like to implement PCMH principles year-round (not just on ambulatory months) and are currently building protected time into the clinic schedule for team meetings to occur quarterly. Finally, our current evaluation system focuses mainly on resident feedback; we plan to evaluate patient satisfaction and outcomes going forward.

DIRECT OBSERVATION OF RESIDENTS: A NOVEL FACULTY FINANCIAL INCENTIVE PROGRAM Lauren Acinapura; Nicole Sirotin; Johanna Martinez; Pamela Apolaya; Christina Harris. Weill Cornell Medical Center/New York Presbyerian, New York, NY. (Tracking ID #1642554)

NEEDS AND OBJECTIVES: The advent of milestone "core-competency based" evaluations put forth by ACGME has caused effective resident evaluation to be based largely on criteria ascertained through direct observation. In 2011, the Weill Cornell Internal Medicine Associates (WCIMA) began utilizing milestone evaluations for ambulatory rotations and realized that increased direct observation was essential to meaningfully complete the milestone evaluations, but was limited by multiple faculty-reported barriers, including time constraints, conflicting priorities, and lack of a simple framework to use to observe residents quickly and provide meaningful feedback. To address this need we created the Direct Observation Faculty Group Incentive Program, a novel effort to increase faculty direct observation of residents by linking direct observation to a group faculty financial incentive with the ultimate goal of improving patient care, and resident evaluation.

SETTING AND PARTICIPANTS: WCIMA, the academic General Internal Medicine practice of Weill Cornell Medical Center, serves as the primary site for general medicine ambulatory education for the Internal Medicine Residency Training Program, consisting of 129 residents. In August, 2012, four WCIMA faculty members underwent direct observation training at the ABIM. In October, 2012, we conducted the first part of a series of faculty development sessions for WCIMA faculty on direct observation techniques.

DESCRIPTION: The faculty group incentive program requires every faculty preceptor to directly observe a portion of one resident-patient encounter during at least 75 % of their precepting sessions. They must record their observations on a mini-CEX form, adopted from the ABIM, give the resident verbal feedback and submit the form to the resident's evaluation file. All mini-CEX forms are entered into a central electronic database to share summative data with each resident's assigned preceptor, and to monitor faculty progress towards the group incentive. The increase in billing codes for each resident observed (from 99213GE to 99214GC or higher) contributes to the funds for the faculty group incentive. If the group meets the 75 % goal, the allocated funds will be distributed based on the number of precepting sessions each faculty member does. A post intervention evaluation to measure the impact of this program is planned.

EVALUATION: To date 16 faculty members have been trained in direct observation techniques and the incentive program was fully implemented in January 2013. Pre-intervention surveys were conducted among the 16 faculty members that completed the training session. This seasoned group of preceptors, with an average 18 years of precepting experience, all reported that in the first 6 months of the academic year they directly observed their resident "40 % or less of precepting sessions". Preliminary feedback from preceptors and residents who underwent direct observation has been positive from both parties.

DISCUSSION/REFLECTION/LESSONS LEARNED: We present a novel program that links ACGME and ABIM goals of increased direct observation of resident physicians with a group faculty financial incentive. Our goal is to improve patient care, resident education and feedback while increasing the revenue of our practice. Increased direct observation and mini-CEX data will improve continuity preceptor's ability to evaluate milestones progress. Future directions include evaluating patient related quality measures and both the resident and faculty experience of increased direct observation.

EDUCATING RESIDENTS ON HEALTH AND HEALTH CARE DISPARITIES THROUGH AN INTERACTIVE WEB-BASED MODULE USING CLINICAL CASES Jessie K. Kimbrough-Sugick[1]; Letitia Wright[2]; Stephen Sisson[2]. [1]University of Michigan, Ann Arbor, MI; [2]Johns Hopkins University School of Medicine, Baltimore, MD. (Tracking ID #1642776)

NEEDS AND OBJECTIVES: Racial and ethnic disparities in health are well documented and will magnify as the diversity of the US population continues to grow. Residency programs care for a significant amount of racial and ethnic minorities, yet national studies have shown residents' perceived preparedness to be deficient in various areas of cross-cultural care (e.g. caring for patients who have mistrust of the health system). Other national studies have shown that residents recognize that health disparities are prevalent but they lack adequate training and role-modeling on

addressing disparities. To help meet these needs in medical education, we created an interactive web-based module using clinical cases to educate internal medicine residents on health and health care disparities and the role that they can assume to help eliminate disparities. Our primary objective is to educate and promote a commitment to eliminating disparities in health.
SETTING AND PARTICIPANTS: The curriculum will be disseminated through the Johns Hopkins Internet Learning Center to internal medicine residency programs across the US.
DESCRIPTION: Our web-based module was designed to be interactive and educate resident learners about the root causes and impact of health and health care disparities. The content of the curriculum uses a patient-based approach. The module uses a diverse group of patients in a variety of clinical settings. Clinical cases include highlighting the role of the social determinants of health for a Latina woman who has had a recent stroke. Another case, explores the role of cultural and language barriers for an elderly Middle Eastern immigrant man with newly diagnosed type 2 diabetes mellitus. Our module also discusses the roles that residents can assume as health care professionals to help eliminate disparities in health. The accompanied assessment questions cover a range of topics in cross-cultural care, including caring for patients with language barriers, limited health literacy, disabilities, and chronic diseases with stigma such as HIV.
EVALUATION: Pre and post test questions will be used to evaluate the effectiveness of the curriculum and analyzed with descriptive statistics.
DISCUSSION/REFLECTION/LESSONS LEARNED: As the US population continues to grow in diversity, the need for physicians trained in cross-cultural care continues to expand. Residents' self-perceived preparedness to care for diverse populations is deficient. Our curriculum attempts to meet the needs of educating residents on cross-cultural care with a focus on health and health care disparities, in addition to promoting a commitment to eliminating disparities in health for all patients.

EFFECTIVENESS OF A QUALITY IMPROVEMENT MODULE WITHIN AN INTERNAL MEDICINE (IM) HONOR'S ELECTIVE FOR MEDICAL STUDENTS Kimberly M. Tartaglia; Curt Walker. Wexner Medical Center at the Ohio State University, Columbus, OH. (Tracking ID #1633079)

NEEDS AND OBJECTIVES: Numerous studies exist that assess resident curricula on quality improvement (QI), but rigorous evaluation of QI curricula in undergraduate medical education is lacking.
SETTING AND PARTICIPANTS: We developed a QI curriculum that was embedded in a 9-month Honor's elective offered to high-performing, fourth year medical students interested in Internal Medicine.
DESCRIPTION: During the QI module, students completed a reflection on writings by Atul Gawande and completed web-based QI modules offered by the Institute for Healthcare Improvement. Knowledge was reinforced through two 60-min discussions entitled "Patient Safety" and "Improving Performance." Students then participated in a QI project that focused on creation of a team, summary of best practices, and identification of well-defined aims and measures.
EVALUATION: The impact of the curriculum was assessed using both a self-assessment and Quality Improvement Knowledge Assessment Tool (QIKAT), a validated tool that examines student comfort on QI skills in 12 domains and assesses knowledge through 3 scenarios (each scored 0–5). Students who received the curriculum were administered the QIKAT at the end of the module. Fourth year students who matched in IM but were not in the Honor's elective served as controls. Data were collected for two academic years and included 14 intervention and 11 control students. At baseline, there was no difference between groups in prior exposure to QI principles. Results of independent samples *T*-test analyses suggested that students in the intervention group were significantly more comfortable with their skills in quality improvement in 8 of the 12 domains ($p<0.05$). Additionally, intervention students scored significantly higher in each of the three case scenarios (knowledge assessment) when compared to controls (Case 1, MI=4.2, MC=2.0; Case 2, MI=3.9, MC=2.0; Case 3, MI=4.1, MC=2.0; $p<0.05$). Although multiple regression analyses suggests that students who self-report greater comfort with QI principles scored higher on each of the three case scenarios, participation in the QI curriculum remained the primary driver of success on the QIKAT assessment tool (Case 1, $\beta=.73$, $p<.01$; Case 2, $\beta=.57$, $p<.05$; Case 3, $\beta=.68$, $p<.01$).
DISCUSSION/REFLECTION/LESSONS LEARNED: A 9-month curriculum in quality improvement can effectively increase student comfort and knowledge on QI principles. An experiential component that builds on independent preparation is the hallmark of the curriculum. With a faculty champion, this curriculum is highly portable to other settings.

EVALUATION OF A PATIENT SAFETY AND TRANSITIONS OF CARE CURRICULUM FOR THIRD YEAR MEDICAL STUDENTS Sara M. Bradley[1,2]; Dennis Chang[2]; Reena Karani[3,1]. [1]Mount Sinai School of Medicine, New York, NY; [2]Mount Sinai School of Medicine, New York, NY; [3]Mount Sinai School of Medicine, New York, NY. (Tracking ID #1610939)

NEEDS AND OBJECTIVES: The Joint Commission, American Geriatrics Society, Accreditation Council on Graduate Medical Education (ACGME), and the Liaison Committee on Medical Education (LCME) have all recognized patient safety and transitions of care as key components of high quality patient care and noted that there is a critical unmet need for medical education in these areas. In response, we developed a clinically relevant curriculum on patient safety and transitions of care for third year medical students during the Integrated Internal Medicine-Geriatrics Clerkship. The curriculum includes a post-discharge visit to a patient the student took care of in the hospital following interactive didactic sessions on the core principles of these important topics and an opportunity to debrief and reflect following the patient visit. The objectives of this study are to assess the feasibility of implementing a post-discharge visit in an urban tertiary care setting and to evaluate the effectiveness of the curriculum on students' knowledge, skills, and attitudes.
SETTING AND PARTICIPANTS: Third year medical students at an urban medical school on the Internal Medicine-Geriatrics clerkship
DESCRIPTION: The curriculum includes interactive didactic sessions covering an introduction to patient safety and discharge planning and transitions of care. Students then go in pairs on post-discharge visits to patients they took care of in the hospital and complete a template of questions with the patient. The curriculum also includes reflective writing and a debriefing session after the post-discharge visit. Participants complete pre and post intervention assessments of knowledge, skills, and attitudes, and an evaluation of their satisfaction with the curriculum.
EVALUATION: After 6 months, all 71 students completing the Internal-Medicine-Geriatrics clerkship received the didactic sessions. All students completed a post-discharge visit as well. Thirty-nine students visited their own patient while the remainder visited their partner's patient. The average time to complete the post-discharge visit was approximately 1.5 h. On average, students rated the didactic sessions as good to very good (mean score 3.82 on 1 to 5 scale). Students agreed to strongly agreed that they gained skills they plan to apply to future patient care experiences and that the program added to their learning about discharge planning and transitions of care beyond other experiences in the clerkship. Analysis of pre and post assessments did not show significant changes in attitudes or confidence. The percent of knowledge questions correct did increase from 61 % to 68.8 % ($p=0.00549$). In the reflective questions, when asked if they would change how they communicated with patients at discharge in the future, students most often cited the importance of ensuring clear patient education about the reason for hospitalization and treatment plan. Barriers to being able to visit patients included distance to patient's home, inability to contact patient, death, readmission, and that the patient changed their mind.
DISCUSSION / REFLECTION / LESSONS LEARNED: Third year medical students were satisfied with a patient safety and transitions of care curriculum and felt it added to their learning beyond other experiences in the clerkship. Lessons learned include having students identify more than one patient to visit after discharge in case the original patient is unavailable and liberalizing patient criteria for the visit including allowing visits to more distant sites.

EVALUATION OF A POCKET-SIZED ULTRASOUND DEVICE AS AN AID TO THE PHYSICAL EXAMINATION Jason Ojeda[1,3]; James Colbert[1,3]; Graham T. McMahon[1,3]; Carol Benson[2,3]; Peter Doubilet[2,3]; Justina Wu[1,3]; Joel T. Katz[1,3]; Maria Yialamas[1,3]. [1]Brigham and Women's Hospital, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA; [3]Harvard Medical School, Boston, MA. (Tracking ID #1642158)

NEEDS AND OBJECTIVES: Studies have shown that internal medicine residents do not routinely possess necessary expertise in the physical exam. Recently, pocket-sized ultrasound devices have become available that can be used as point-of-care tools by practicing clinicians. We hypothesized that such devices could be utilized by resident physicians as tools to improve their physical diagnostic skills. As such, we set out to determine the diagnostic accuracy of residents using a pocket-sized ultrasound device compared with residents using physical exam techniques for the following physical findings: pleural effusion, paralyzed hemidiaphragm, splenomegaly, aortic stenosis, aortic regurgitation, mitral regurgitation, tricuspid regurgitation, elevated right atrial pressure, hypertrophic cardiomyopathy, dilated left ventricle, mitral valve prolapse, abdominal aortic aneurysm. We also set out to determine the diagnostic accuracy of internal medicine residents using the standard physical exam as compared to a master clinician, evaluate the perceived utility of the physical exam versus ultrasound for various findings among medical residents, and determine the perceived ability of residents to integrate ultrasound examination into their daily patient care routines.
SETTING AND PARTICIPANTS: We studied 40 internal medicine residents across all years of training at an academic medical center. Ten patient subjects with previously identified physical findings were recruited from attending clinics across the same academic medical center.
DESCRIPTION: Forty residents were randomized into the intervention group by blindly selecting names out of a bag based on the residents' ability to attend one of two training sessions. Two groups of 10 residents attended 1 of 2 identical 3 h training sessions on the use of pocket-sized ultrasound for cardiac, lung, and abdominal findings that included both a didactic and hands-on component. After completing the training, residents had 4 weeks to practice with the devices on the wards and in their continuity clinic. The control group did not receive any ultrasound training or access to ultrasound devices.
EVALUATION: After 4 weeks all 40 residents underwent an assessment of their physical diagnosis skills by performing physical exams on 10 patient subjects with various physical exam findings and noting their findings on assessment form. Each of the patient subjects was also examined by a master clinician and had an ultrasound performed by professional faculty. The residents in the ultrasound group also performed a focused ultrasound exam on each patient as well and again documented their findings. All residents also completed a qualitative survey on the day of assessment examining their perceived confidence in their physical exam as well as their attitudes regarding the utility of ultrasound.
DISCUSSION / REFLECTION / LESSONS LEARNED: The data has been collected and is in the process of being analyzed and will be ready for presentation and discussion at the SGIM meeting.

EVOLUTION OF AN INTERNET-BASED QUALITY-FOCUSED MEDICAL EDUCATION PROCESS IN AN AMBULATORY CARE ORGANIZATION Maura J. McGuire[1,2]; Thomas Bogetti[1]; Steven J. Kravet[3,2]. [1]Johns Hopkins Community Physicians, Baltimore, MD; [2]Johns Hopkins University School of Medicine, Baltimore, MD; [3]Johns Hopkins Community Physicians, Baltimore, MD. (Tracking ID #1639066)

NEEDS AND OBJECTIVES: As organizations implement team-based workflows to achieve quality, safety, and compliance goals, assuring primary care providers (PCP) understand and participate is important. In our experience, PCPs need training in quality systems and teamwork (QST) beyond what they might otherwise absorb in traditional CME and staff meetings. We implemented a mandatory QST curriculum, delivered by a distance learning program (DLP), combined with a participation incentive to (1) assure PCPs completed QST (2) provide real-time access to subject matter experts (3) promote high quality care, as a complement to support staff training in these areas.
SETTING AND PARTICIPANTS: Our group is an academically affiliated, multispecialty group practice with more than 35 practices and 220 PCPs caring for 220,000 patients. We have 8 patient centered medical homes (PCMH), attest to meaningful use of our electronic medical record, and use protocol orders to enhance delivery of preventive care.
DESCRIPTION: The QST curriculum and participation incentive were implemented in 2007 to provide additional education after an electronic medical record (EMR) implementation. It provided PCPs with 1 education-related relative value unit (E-RVU), per hour, worth approximately $27. Each PCP was required to complete 4 h of EMR training each year. We added non-EMR QST content in 2009, and allowed PCPs to earn up to 8 E-RVU/year. Annual learning needs assessments and management input inform the QST curriculum. DLPs provide accessible interactive and recorded learning, and CME credit has been available for most programs since 2010.
EVALUATION: From 2007 to 2009, training was provided by both in-person and distance-learning programs. After investment in enhanced web-conferencing system (Adobe Connect@), DLP programming expanded from 10 to 49 programs between 2009 and 2011. PCP evaluations of DLPs (2010 vs. 2011) showed high satisfaction with knowledge gains (89 % vs. 97 %) and program quality (93 % vs. 99 %); with 437 CME vs. 631 CME hours earned. Recorded content is available. Sample QST topics in 2011 included: Meaningful Use of the EMR; Team-based Care, Performance Improvement in Hypertension, and Safety Attitudes in our Practices. In 2011, the program cost $60,000, including $43,000 to cover an average of 6.4 E-RVU earned by each PCP.
DISCUSSION / REFLECTION / LESSONS LEARNED: Healthcare organizations may struggle with the quality and operations-related education of busy PCPs, despite their role as leaders of healthcare delivery teams. Our program allowed us to confirm completion of QST material and assure PCPs knew we valued their time. The program has also been used to provide a variety of clinical and quality content with expert interaction to PCPs. While we have not linked this process directly with outcomes, evaluations indicate increasing use and high satisfaction, and we believe it has assisted our group with top box performance in HEDIS and other metrics.
ONLINE RESOURCE URL (OPTIONAL): https://collaborate.johnshopkins.edu/sites/JHCPResourceCenter/Pages/Education/Provider_Education.aspx

EXPANDING HEALTH POLICY EDUCATION: INTEGRATING A SKILLS-BASED CURRICULUM FOR THE NEXT GENERATION OF PRACTITIONERS Krisda Chaiyachati[1,2]; Theodore Long[1,2]; Trishul Siddharthan[1,2]; Ali M. Khan[1,2]; Rebecca Brienza[1,2]. [1]VA Connecticut Healthcare system, West Haven, CT; [2]Yale University School of Medicine, New Haven, CT. (Tracking ID #1637033)

NEEDS AND OBJECTIVES: As legislative action increasingly shapes health care delivery, health policy has become a critical component of all levels of health professional training. A paucity of formal curricula, however, limits the impact of that education. What curricula do exist emphasize the acquisition of facts, rather than the complementary skills necessary to develop effective change agents. Rapid change in the US health care system demands that health professional trainees be able to apply policy concepts to improve institutions of care, whether large or small. To that end, we developed a novel curriculum, integrating core policy concepts with advocacy and leadership skills needed to effect change utilizing the following objectives: 1. Understand current, core healthcare issues and their historical underpinnings 2. Develop effective leadership and organizational skills for effective team functions 3. Practice strategies for engaging with civic organizations and media outlets

SETTING AND PARTICIPANTS: Internal medicine residents and nurse practitioner fellows (n=20) participating in the VA Connecticut Healthcare System (VACHS) Center of Excellence in Primary Care Education (COEPCE) in West Haven, Connecticut.
DESCRIPTION: Serving as a foundation for our leadership and practice objectives, the knowledge-based curriculum provides an introduction to domestic health policy, health economics, healthcare delivery systems, health law, and quality improvement. Leadership is taught through interactive workshops on organizational and team-based strategies, complemented by plenary sessions with invited speakers from state legislature, local media, and local civic leaders. We subsequently focused on key skills for advocacy—public speaking, debate strategy, and opinion-based writing—through workshops designed to apply knowledge into practice, like creating opinion-editorial (Op-Ed) and letter-to-editor (LTE) pieces for publication and hosting forums for formal engagement with local government officials.
EVALUATION: Currently, in the second year, the model has become an integral part of our curriculum within the VACHS COEPCE. Current and ongoing evaluation strategies for trainees include three domains: attitude change via Likert scales; acquired knowledge via questionnaires and performance evaluation in workshops; and skill application through tangible products generated in experiential workshops. We are encouraged by Likert scales and questionnaires that indicate improved trainee confidence in health policy knowledge and the tangible products of trainee work. To date, our trainees have published Op-Ed and LTE pieces in the Washington Post, Yale Daily News, Connecticut Post, and Academic Medicine.
DISCUSSION / REFLECTION / LESSONS LEARNED: We believe that our curriculum integrating core health policy knowledge with advocacy skills represents a novel approach to health professional education, fostering a spectrum of effective health advocates, ranging from team leaders in routine clinical settings to future change agents in the national healthcare arena. Moving forward, we aim to improve our ability to evaluate and teach skill competency, adapt the curriculum to trends in the American healthcare agenda, and modify our curriculum so that all trainees, in spite of the variety of career ambitions, feel equally empowered to apply health policy knowledge for advocacy.

FACILITATING THE DIRECT OBSERVATION OF STUDENT PERFORMANCE WITH MOBILE TECHNOLOGY Gary S. Ferenchick; David Solomon. Michigan State University, East Lansing, MI. (Tracking ID #1640265)

NEEDS AND OBJECTIVES: Direct observation of a medical trainees' performance in authentic clinical settings remains challenging. The rationale for direct observation is to ascertain and document the acquisition of the clinical skills needed to care for patients. One of the few feasible ways to efficiently distribute criterion-based assessment tools in clinical settings is with technology; including internet enabled mobile devices such as smartphones. The objectives of this study were to assess the feasibility and acceptability of a clinical assessment tool called the CEX app, and to measure its inter-rater reliability and validity.
SETTING AND PARTICIPANTS: Between July 2010 and October 2012, 367 third year medical students at Michigan State University's College of Human Medicine completed 5 to 10 formative CEXs during their internal medicine clerkship. Observers (attendings and residents) used the CEX app to guide and document their observations, record their time observing and giving feedback to the students, and their overall satisfaction. Inter-rater reliability and validity were assessed with 17 observers who viewed 6 videotaped student-patient encounters, and by measuring the correlation between student CEX scores and their scores on subsequent standardized-patient OSCE exams.
DESCRIPTION: We developed a web-based content management system which enables users with average computing skills to author customizable assessment tools for delivery to any internet enabled device. These customized tools function like "Apps", but they work on most internet enabled mobile devices. We developed, implemented and assessed a specific clinical assessment tool (i.e. the CEX app) and measured its utility in displaying problem-specific checklists corresponding to training problems created by the Clerkship Directors in Internal Medicine (CDIM), and evaluated its utility in the assessment of students in authentic clinical settings.
EVALUATION: 3567 CEXs were completed by 506 different observers (125 attendings and 381 residents). The average number of completed CEXs per student was 9.8 (±1.8), and the average number of CEXs completed per rater was 6.9 (±15.9 SD). Of the 18 CDIM training problems, students were assessed on 8 problems > 5 % of the time (abdominal pain, altered mental status, chest pain, CHF, COPD, dyspnea, diabetes and headache). Of the 3567 CEXs, 27.6 % assessed communication skills, 21.1 % history taking and 48.8 % physical exam skills. On average students performed 82.5 % of the items correctly. Faculty reported that 45.2 % of the CEXs took them <10 min, and for 69 % of the CEXs, feedback lasted <10 min. Faculty reported a high satisfaction (91.7 %) with the CEX. Inter-rater reliability was measured at 0.69 among the observers viewing the videotapes, and their ratings discriminated between competent and non-competent performances. Student CEX grades, however, did not correlate with their end of third year OSCE scores.
DISCUSSION / REFLECTION / LESSONS LEARNED: The implementation of this CEX app, which displays on most contemporary mobile devices, was found to be feasible and its use reliably captured students' clinical performance data with a high rate of user satisfaction. Our embedded checklists had adequate inter-rater reliability and concurrent validity. The grades measured on this app, however, were not predictive of subsequent student performance.
ONLINE RESOURCE URL (OPTIONAL): The CEX app can be accessed with any internet connection (including desktop computers) at: www.justintimemedicine.com/mobile; log in with the username cexapp@msu.edu and the password test

FROM DETROIT TO YOUR CITY - A PUBLIC HEALTH SOLUTION; A MEDICAL EDUCATION PILOT PROGRAM'S SUCCESS AND ITS POTENTIALLY GROUNDBREAKING NATIONAL IMPACT **COURTNEY M. MOORE, M.D. CANDIDATE 2014*; DIANE L. LEVINE, M.D.* WAYNE STATE UNIVERSITY SCHOOL OF MEDICINE*** Courtney M. Moore; Diane L. Levine. Wayne State University School of Medicine, Detroit, MI. (Tracking ID #1635001)

NEEDS AND OBJECTIVES: 60 % of Michiganders suffer increased morbidity and disability from chronic ailments including hypertension and cardiovascular disease. Escalating health care costs, mounting numbers of the uninsured, difficulty in accessing care and an insufficient supply of practitioners hinder diagnosis and treatment. As medical students in Detroit we recognized a unique opportunity to address these issues while enriching our educational experience by conducting a need-based, mobile, and cost-effective public health initiative longitudinally during our medical training. We elucidated a public health need, considered obstacles which limit healthcare access and developed an efficacious and sustainable solution while infusing our community with much needed medical trainees. This mutually advantageous arrangement enhanced our education through exposure to public healthcare program development, statistical analysis, and the publication process.
SETTING AND PARTICIPANTS: Our organization adopted a multidisciplinary approach to address the global health needs of our population through collaboration with colleagues from a variety of health fields. Access to medicine is an obstacle in Detroit therefore our organization was designed with mobility in mind. To increase accessibility we hosted our health fairs at locations which catered most conveniently to our patient population; churches, recreational areas, public transportation hubs, and street-side in high foot traffic areas.
DESCRIPTION: Cardiovascular health (the foci of our program) is a multidimensional ailment which can be improved by healthy lifestyle education, counseling and management which we delivered as an inclusive four station health fair. We conducted blood pressure screenings as an inexpensive, easily obtained objective measurement of one aspect of

cardiovascular health. Exercise, nutrition and stress management screening, education and counseling were provided through comprehension level appropriate discussion and literacy level adjusted reading materials and illustrations. Physician referrals were made to those who did not already have an existing primary care physician. Contact information for our organization and institutions which offered low-cost or free healthcare services (including radiologic, laboratory, physical therapy, prescriptions and transportation) were also provided.
EVALUATION: More than 1,500 patients attended our health events in two years. Subjective data via surveys and discussion groups and objective data including patient demographics (blood pressure readings, previous hypertension diagnosis, and time spent receiving counseling) was collected. Data analysis revealed that 70 % of our patients were amenable to the cardiovascular health counseling demonstrating that our program was efficacious and also illustrated areas which required further investigation including time spent counseling, age specific counseling techniques and follow-up methods.
DISCUSSION / REFLECTION / LESSONS LEARNED: Our innovative, pilot health initiative efficaciously addressed public health needs in Detroit. The 1,500 patients who attended our health fairs accessed health screenings, education, counseling and resources they might not have otherwise received while students garnered educational enhancements which will serve as invaluable career assets. The positive public health improvements which could result if a portion of the 19,000+ U.S. medical students, schools, and their communities replicated a similar, mutually beneficial four year academic course would be immense.

GHACS: THE GLOBAL HEALTH/CLINICAL SKILLS FACULTY DEVELOPMENT FELLOWSHIP AT MONTEFIORE Shwetha Iyer; James Grigg; Erin J. Goss; Linnea Capps; Darlene LeFrancois; Gerald Paccione. Montefiore Medical Center, Bronx, NY. (Tracking ID #1642645)

NEEDS AND OBJECTIVES: Resident interest in Global Health (GH) is at an all-time high as evidenced by increased global health curricula in resident training programs. Ethics and the ACGME require that residents abroad be supervised by U.S. board certified physicians. But finding suitable faculty is hard, financing time abroad expensive, and stable funding is scarce. To address these challenges, Montefiore established in July 2012, a unique faculty development fellowship in Global Health and Clinical Skills (GHACS) for Internists and evaluation of its impact is currently underway.
SETTING AND PARTICIPANTS: Montefiore is the main teaching hospital of the Albert Einstein College of Medicine in NY. Its principle GH site is in Kisoro, Uganda, where for 8 years we've collaborated with Kisoro District Hospital (KDH) and the NGO, Doctors for Global Health in supporting hospital services, community projects, and education for staff and Village Health Workers. Kisoro is a farming district in SW Uganda whose population makes <$2/day. KDH has 150-beds staffed by only 1–3 Ugandan doctors. Montefiore helps staff the IM wards: 18 Montefiore PGY IIIs and 12–16 Einstein students work in the hospital and surrounding community over the year. GHACS faculty-fellows supervise the wards and co-lead community projects. GHACS fellows are junior faculty internists with prior experience in the developing world, commitment to social justice through health, and interest in careers as clinician-educators.
DESCRIPTION: GHACS is a 2-year faculty-fellowship with 4 fellows, 2 per year, who divide their time between New York 8 months/year, and Kisoro 3 months/year in two six-week blocks. In both locations, fellows engage in patient care, teaching, and research in 2 arenas: health services delivery through community projects in Kisoro, and clinical education. In NY, GHACS spans 12 sessions/week (5 clinical/precepting; 7 teaching/research). The increased number of sessions in NY support >90 % of the clinical income, making the fellowship sustainable at a salary between fellow and attending, while allowing for time abroad. Partners share a panel of patients and cross-cover residents who are in Uganda. In Kisoro, fellows hold daily attending rounds with residents, consult on difficult cases with Ugandan faculty, and work on community projects. Fellows are mentored by senior clinicians in NY and Uganda to develop clinical skills, curricula in clinical reasoning, and small-group exercises. Novel activities sponsored in the residency program include weekly Kisoro cases; journal clubs in Clinical Skills, Medical Education and Global Health; Physical Diagnosis Rounds; Clinical Reasoning Seminars, and a 1 month GH Course (earning NYS Certification).
EVALUATION: GHACS activities have received excellent evaluations by residents and GHACS fellows feel positively about their experience thus far. Written evaluations are underway and include feedback on resident and fellow journal clubs and formal teaching seminars.
DISCUSSION / REFLECTION / LESSONS LEARNED: GHACS is a novel program in generalist education that grows from the synergy of two experiences in clinical mentoring: supervising residents and students in a resource-poor setting in Africa where clinical skills are essential; and using those skills to strengthen bedside acumen in housestaff at home. It allows globally-minded primary care clinician-educators to practice both internationally and in the US, while developing and teaching low-tech clinical skills valuable everywhere.

GOTMEDS? DESIGNING AND PILOTING AN INTERACTIVE MODULE FOR TRAINEES ON REDUCING DRUG COSTS Vineet Arora[1]; Rupali Kumar[1]; Jeanne M. Farnan[1]; Andrew Levy[1]; Neel Shah[2]. [1]University of Chicago Medical Center, Chicago, IL; [2]Massachusetts General Hospital, Boston, MA. (Tracking ID #1641454)

NEEDS AND OBJECTIVES: Patients are facing a rise in the out-of-pocket cost of drugs. Multiple studies show physicians are unaware of how much prescription drugs cost to patients. Patients and physicians agree that more discussion of patients' out-of-pocket drug costs is necessary. While patients have expressed a desire to have their physicians educate them on the cost and quality of their treatment options, physicians are unlikely to do so. One reason is because of the lack of standard education on drug cost reduction strategies exists in medical training. Our aim was to create an interactive educational module that makes strategies and resources for lowering patients' prescription drug costs readily accessible and easily applicable for medical trainees.
SETTING AND PARTICIPANTS: The module was piloted with the Pritzker School of Medicine Quality and Safety Track (QST), consisting of four medical students and two attendings. Feedback on potential improvements to the module was elicited from the stakeholders and pilot participants and was subsequently incorporated into the module.
DESCRIPTION: Based on expert opinion from a pharmacoepidemiologist and pharmacist, literature review, and input from trainees, an educational module was designed, comprised of a PowerPoint presentation, Pocket Reference Cards, and a Video Vignette. The participants completed pre- and post-tests to evaluate their preparedness and confidence regarding drug cost reduction strategies and counseling. Participants ranked each item 1–5 (Strongly Disagree-Strongly Agree). Paired t-tests comparing mean response on Pre- and Post-Test were performed for each item, as well as Wilcoxon signed-rank tests.
EVALUATION: The resulting curriculum used the mnemonic "GOTMeDS?" which encompassed the strategies trainees should use to reduce patient out of pocket costs: (G) Generics; (O) Ordering in bulk; (T) Therapeutic alternatives; (Me) Medication review; (D) iscount programs; (S) Splitting pills. The interactive module includes a case that highlights the costs for a patient on multiple medications (ASA, statin, beta blocker, ARB, Plavix, and non-generic antidepressant) and asks trainees to use the GOTMeDS strategy along with online resources (LowestMed App & Consumer Reports Best Buy Drugs) to potentially save the patient over 50 % of the cost. Paired t-tests revealed a significant increase in mean score for the following three Pre-/Post-test items: (1) "I know where to look to find the most cost-effective drugs in a particular drug class," (2.00 vs. 3.50, $p<0.01$) (2) "I know where to look online for medication cost-saving resources," (2.33 vs. 3.83, $p<0.01$) and (3) "I know which mobile applications are useful for medication cost-saving resources" (2.17 vs. 3.83, $p<0.05$). The module was piloted with all 88 first year medical students. 100 % reported confidence in screening patients for difficulty to pay for medications after the session. 100 % found it useful & 98 % helpful

for free clinics they work in. Comments were very positive: "These [are] skills easily implemented to make a very significant impact. A.k.a. SUPER high yield!"
DISCUSSION / REFLECTION / LESSONS LEARNED: An interactive educational module may improve medical trainee knowledge and confidence regarding ability to communicate with about drug costs. Future work will test the module on a larger scale and assess changes in practice using a standardized patient exercise to evaluate trainees behaviors in practice.
ONLINE RESOURCE URL (OPTIONAL): http://www.costsofcare.org/education/teaching-value-project

GLOBAL HEALTH AT HOME: DEVELOPMENT OF THE VULNERABLE AND IMMIGRANT POPULATIONS (VIP) PROGRAM FOR MEDICAL RESIDENTS Nicole Sirotin[1]; Anthony Pho[1]; Carla Boutin-Foster[1,2]. [1]Weill Cornell Medical College, New York, NY; [2]Weill Cornell Medical College, New York, NY. (Tracking ID #1642122)

NEEDS AND OBJECTIVES: The ACGME recommends that residency programs provide residents with core knowledge and skills that will enable them to respond with sensitivity when interacting with patients. Traditionally, these curricula focus on the vulnerability and health disparities of racial and ethnic minorities, a valid but incomplete view of vulnerable groups. The urban and rural poor, newly insured and uninsured, multiethnic, lesbian, gay, bisexual and transgender (LGBT) populations, and people with disabilities, many of whom are foreign born, represent emerging groups that may not be addressed in traditional resident curricula. The benefits of creative and competency based curricula are well established. First, training focused on health disparities and cultural competency improves both doctor and patient satisfaction. Secondly, medical trainees increasingly desire global health education, although most physicians trained in the United States will practice here. Health equity themes that are traditionally taught in global health curricula utilize teaching frameworks that can be applied to emerging local populations. Thirdly, trainees who have received advanced training in health disparities are more likely to practice in underserved areas.
SETTING AND PARTICIPANTS: We present the Vulnerable and Immigrant Populations (VIP) program at the Weill Cornell Medical College/New York Presbyterian Internal Medicine Residency Program as an illustrative case that creatively incorporates themes of global and local health disparities.
DESCRIPTION: The components of VIP were developed based on a thorough review of the literature and consultation with domain experts. The final curriculum consists of a six-part series focusing on 1) Health Disparities, 2) Food Insecurity, 3) Immigrant Health, 4) LGBT health, 5) People with Disabilities and 6) Mistrust/Bias. This PGY-2 curriculum is taught using small group discussions, case presentations, critical review of the literature and role-play. The series starts by introducing a conceptual framework for how disparities affect the health of individuals and concludes with a reflective look at the impact of unconscious bias on the provider patient relationship. Unique aspects of the VIP program include discussing the role of hospitals in deportations, the health effects of asylum seekers and the care of US and foreign born transgendered people.
EVALUATION: To date 17 residents completed VIP, representing half of the PGY-2 class. Of the surveys completed, 86 % rated the sessions as good or excellent and 76 % agreed these sessions would change their clinical practice. Qualitative feedback included, "very relevant to public health service but something we hear very little about," "very valuable to discuss multifactorial impact on health."
DISCUSSION / REFLECTION / LESSONS LEARNED: The Vulnerable and Immigrant Populations (VIP) curriculum trains culturally competent physicians who recognize global health themes in vulnerable populations at home. VIP focuses on population health through three ACGME core competencies: patent care, interpersonal and communication skills and professionalism. The goal of VIP is to enhance interest, knowledge and skills in caring for vulnerable populations, build understanding in common themes of global and local population health and inspire long-term involvement in the care of vulnerable populations. Future directions include formal evaluation of the effectiveness of the VIP curriculum on improving knowledge and attitudes and expansion into more clinical experiences with vulnerable populations.

HEALTH POLICY AND ADVOCACY FOR THE BUSY CLINICIAN 101: CAN WE MAKE AN IMPACT? Maggie K. Benson; Vikram Krishnasamy; Peggy Hasley. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1628426)

NEEDS AND OBJECTIVES: Physicians work in a complex health system where providing care for patients requires understanding of pathophysiology and therapeutics, as well as knowledge of the health care system and skills for implementing change. We designed a two-week elective for internal medicine residents to address the following goals: 1. To understand the basic structure and function of and influences on the American healthcare system. 2. To practice techniques for advocacy that can be used by clinicians in promoting the health of their patients.
SETTING AND PARTICIPANTS: We enrolled seven second and third year residents, including 2 men and 5 women. Participants had a variety of career aspirations, including general and subspecialty medicine. The elective took place at an academic medical center and in offices of state legislators in Harrisburg, Pennsylvania.
DESCRIPTION: Participants completed selected readings and participated in interactive discussion sessions organized around subtopics in health policy during week one. Learners were also asked to match the current state legislative agenda with a preventable adverse outcome experienced by one of their patients. They researched and presented their topics to each other, and prepared a one-page "Leave Behind," summarizing the main advocacy points. The topics selected by residents included Medicaid expansion, controlled substance monitoring, and reproductive rights. In the second week, participants traveled to the state capitol to meet with health care advocacy groups, legislators and policymakers. Participants presented the "Leave Behind" on their chosen topic and discussed their patients' stories to advocate for change. The final day of the elective included a reflective wrap up session.
EVALUATION: In quantitative evaluation, we evaluated the knowledge of the participants before and after the elective, and compared their knowledge to a group of PGY and gender matched control residents. The mean number of questions answered correctly was 4.6/7 in the control group and 4.8/7 in the participant group before the elective. After the elective, the participants scored 5.7/7. We did not perform statistical analysis secondary to the small sample size. We asked participants to compare their attitudes pre and post course. Questions were asked on a 5 point scale with 1 being "not likely at all" and 5 being "very likely." For example, participants were asked their likelihood of "teaching about topics of health policy and advocacy with learners on your medicine team." For this question, scores increased from 2.4/5 to 4.6/5. Similar changes were seen in other attitude and behavior questions.
DISCUSSION / REFLECTION / LESSONS LEARNED: A few central themes emerged during qualitative analysis. Participants realized that health policy has a tremendous impact on how practitioners care for patients and underestimated the impact their patients' stories would have on policymakers. Participants expressed disbelief at the lack of physician involvement in the health policymaking, and pledged to be more involved in the future. At the end of the elective, participants stated they will "become a more outspoken advocate for my patients," "vote for people who stand for what I now know," and "be aware of both national and domestic politics." It is our impression that our elective had a lasting impact on the residents who participated, both in their knowledge of health systems and policy, and in their skills, attitudes and behaviors in becoming advocates for change in the health care system.

IF YOU BUILD IT…REDESIGNING PRIMARY CARE TRAINING AROUND ACTIVELY TRANSFORMING CONTINUITY CLINICS Richard Pels[1,2]; Rachel Stark[1,2]; Priyank Jain[1,2]; Barbara Ogur[1,2]; David Bor[1,2]. [1]Cambridge Health Alliance, Cambridge, MA; [2]Harvard Medical School, Boston, MA. (Tracking ID #1640361)

NEEDS AND OBJECTIVES: Diagnosis and therapy in internal medicine have shifted profoundly to the ambulatory setting. But the lack of satisfying primary care continuity experiences, the need to prioritize acute inpatient responsibilities, the minimal engagement in practice management and the dearth of positive role models discourage trainees from pursing careers in primary care. We seek to transform resident professional development through the redesign of medicine residency training at our institution. We seek to do this concurrent with enhancing systems performance via patient-centered practice transformation at resident continuity clinic practice sites.
SETTING AND PARTICIPANTS: The Cambridge Health Alliance Internal Medicine Residency Program is a university-affiliated, community hospital primary program in an urban, highly diverse and largely underserved setting. All three continuity clinic sites and all twenty-four residents are participating in the innovation.
DESCRIPTION: In July 2012, the residency implemented a "2+4" immersion schedule. Residents spend 2 weeks in ambulatory training alternating with 4 weeks of other experiences, throughout the 3 years of residency, resulting in 25 % greater time on ambulatory rotations and 30 % more clinic sessions. Resident continuity clinics are transforming into Patient-Centered Medical Homes. Residents are assigned to care teams with two other residents, a preceptor, nurse, and medical assistant, and work with this team throughout residency. During ambulatory rotations, residents have four clinic sessions and one administrative session each week. They participate in population and complex case management, and systems improvement.
EVALUATION: Early feedback from residents and preceptors has been very positive. Residents report they are better able to focus on their clinic patients and to provide meaningful longitudinal care. Residents meet regularly with their care teams and review panel quality metrics and complex cases. Two of the three resident clinic sites are co-locating providers (including residents) alongside nurses and medical assistants. And residents are engaged in site-based practice improvement teams. Year-long experiential curriculums in community health and health advocacy, and longitudinal experiences for first-year residents with specialists in mental health, addictions, and geriatrics have been successfully launched. A robust plan for quantitative and qualitative program evaluation is underway. Data from the first 6 months will be available for reporting at the time of the SGIM meeting.
DISCUSSION / REFLECTION / LESSONS LEARNED: Residency redesign with concurrent practice transformation provides a facilitating framework for innovative, longitudinal care experiences with patients, and for educational immersion in outpatient medicine. When residents are fully integrated with care teams and have predictable clinic schedules, without the distraction of concurrent acute care responsibilities, they can develop meaningful relationships as members of care teams and practice improvement teams, and participate in practice transformation. We believe the emphasis on continuous relationships with patients, staff and clinic sites will enhance residents' humanistic professional identity. Outcomes may help to inform similar efforts in other residency programs.
ONLINE RESOURCE URL (OPTIONAL): http://www.challiance.org/Academics/Ambulatoryblockrotations.aspx

IMPLEMENTATION OF HOSPITAL BASED CLINICAL PERFORMANCE METRICS TEACHING SESSIONS FOR MEDICINE RESIDENTS ON DUKE GENERAL MEDICINE David Gallagher; Noppon P. Setji; Jonathan Bae. Duke University, Durham, NC. (Tracking ID #1637066)

NEEDS AND OBJECTIVES: Medicine residents have limited exposure to some of the common topics in quality improvement and clinical performance. One identified need in medicine resident education was promoting knowledge of how inpatient clinical performance is measured. We designed teaching sessions for medicine residents to improve understanding of how clinical performance is measured and acted upon in hospitals and health systems and specifically at Duke. The goals for these presentations were: a. To define for residents common clinical performance measurements and review quality improvement strategies that could impact the measurement b. To align the presentations with Duke University Health System clinical care priorities c. To present the information in a small amount of time and an efficient manner so as not to interfere with resident report or clinical work
SETTING AND PARTICIPANTS: Third year (Senior) medicine residents on Duke University Hospital inpatient general medicine rotations.
DESCRIPTION: Duke hospital medicine partnered with the Duke internal medicine residency program to design a series of weekly short educational sessions focused on clinical performance metrics. A fixed group of hospital medicine faculty developed the curricula and educational materials to present to the residents and engage them in discussion. These topics included: work culture, hospital throughput and discharge efficiencies, patient satisfaction, readmissions, and infection control. These educational sessions were integrated into existing resident case conferences on a rotating basis. The performance metric data was shown via powerpoint presentation and followed by a hospitalist-led discussion. The effectiveness of the teaching sessions was evaluated with an anonymous cross-sectional survey of the Duke third year senior residents who had participated in the weekly educational sessions from July 2011–June 2012. This included evaluations of how the learner's knowledge increased because of the presented material (Likert Scale of 1–5) as well their satisfaction with the educational value of the material itself. The survey was reviewed by Duke IRB and declared exempt.
EVALUATION: From July 2011–June 2012, 51 residents participated in the clinical performance review sessions. Surveys were sent to all learners of which 28 (55 %) responded. Overall the residents rated the presentations as highly influential on increasing their knowledge of the topics. The highest scored presentation was on work culture (Likert score 4.15/5) and the lowest scoring presentation was hospital throughput and discharge efficiencies (Likert scale 3.73/5). Residents indicated that we met our 3 educational goals (89–96 % answering "yes"). Ninety percent of residents indicated these sessions were of educational value to them. Many residents commented on the positive learning experience; "Interesting, valuable, and time efficient. I enjoyed exposure to systems based issues that are not frequently addressed at other parts of the curriculum. Presenters were enthusiastic and interested in teaching".
DISCUSSION / REFLECTION / LESSONS LEARNED: Because of the high level of satisfaction with these educational sessions we have expanded the course in scope and topics. Residents gave very useful specific feedback for future topics included glycemic control, coding and billing, and unintended consequences of performance metrics. These sessions have served as a tool to educate residents in quality improvement and as a valuable means to engage residents in local performance improvement efforts.

IMPLEMENTATION OF A NOVEL CURRICULUM IN SOCIAL MEDICINE AND HEALTH ADVOCACY IN INTERNAL MEDICINE RESIDENCY TRAINING Danny McCormick[1,2]; Rachel Stark[1,2]; Priyank Jain[1,2]; David Bor[1,2]; Richard Pels[1,2]. [1]Cambridge Health Alliance, Cambridge, MA; [2]Harvard Medical School, Boston, MA. (Tracking ID #1641708)

NEEDS AND OBJECTIVES: Physicians often identify social, political and health care system level forces that produce inequalities in access to and quality of care for socially disadvantaged patients; they can be highly effective advocates in shaping health policy, health care delivery and the health of the public. Yet most physicians are inadequately trained to take advantage of their unique position to engage in advocacy to improve health care systems. To address this training gap, we created an experiential required curriculum in social medicine and health advocacy for primary care residents.
SETTING AND PARTICIPANTS: Each year, one third of the intern, second and third year resident groups (n=8) in the internal medicine residency training program participate together in a year-long didactic and project-based curriculum at the Cambridge Health Alliance, a public integrated health care system in Cambridge, Massachusetts.
DESCRIPTION: Participation in the social medicine and health advocacy curriculum is now a program requirement, modeled after a highly successful

one-month elective offered for the past decade. It is delivered in 27 half day group sessions over the course of a year; twenty different faculty members participate. The sessions are equally divided between didactic and project-based learning. Didactic sessions are conducted as interactive lectures and workshops. They cover topics such as health policy and financing, social determinants of health, health challenges of specific vulnerable populations (such as the poor, uninsured, immigrants, homeless persons, racial and ethnic minorities, prisoners and people in resource-poor settings globally), theoretical foundations of physician advocacy and principals of organizing for social change. Two groups of four residents participate in a project-based learning experience in which they identify a clinical or health care system barrier to equitable health/medical care, conduct a literature review on these barriers, formulate a solution to the problem identified and conduct an advocacy campaign to realize the proposed solution. Projects selected by the 2012–2013 cohort focus on access to outpatient suboxone treatment for opiate addiction and on residency training in the use of suboxone nationally.

EVALUATION: We measure the educational impact of the year-long curriculum, with a 15-item survey designed to assess changes in residents' self-reported knowledge and skills on aspects of social medicine and research-based advocacy. We also assess changes in the likelihood of residents' intention to incorporate advocacy in to their medical careers. The survey is administered prior to and following completion of the curriculum and mean changes in ratings for each item will be calculated.

DISCUSSION / REFLECTION / LESSONS LEARNED: Increasingly, society recognizes physicians' professional duty to advocate on behalf of patients, communities and the broader society. The American Medical Association (AMA) has stated that physicians must "advocate for the social, economic, educational, and political changes that ameliorate suffering and contribute to human well-being". Working collaboratively with, and in large part motivated by the expressed educational needs of residents in our program, we designed and implemented this novel curriculum. Preliminary data suggest residents' feel that the course helps then reconnect with the idealism that drew them to careers in medicine and value this.

IMPLEMENTING A LEADERSHIP AND HEALTH SYSTEMS INNOVATION ELECTIVE FOR FIRST AND SECOND YEAR MEDICAL STUDENTS Janine Knudsen[1]; Barsam Kasravi[3]; Bradley Turner[3]; Molly Coye[2]. [1]Harvard Medical School, Boston, MA; [2]UCLA Health System, Los Angeles, CA; [3]UCLA David Geffen School of Medicine, Los Angeles, CA. (Tracking ID #1642901)

NEEDS AND OBJECTIVES: Today's health care environment is changing dramatically and there is a growing need for physician leaders with skills, insight, and vision to help develop more effective, efficient health care systems. However, most medical schools lack a clear leadership pipeline or curriculum that prepares their graduates for these new opportunities. Additionally, few medical school curricula provide students with first-hand exposure to health system operations and innovations occurring within their local institutions. The elective "Leadership in Health Systems Innovation" is a new course at the UCLA David Geffen School of Medicine that aims to address this education gap through interactive sessions and conversations with health care leaders. The course is focused on three main areas: 1. Introduction to major challenges and innovations in the US health care system 2. Development of leadership and operational skills 3. Facilitation of student involvement in innovative local health care projects

SETTING AND PARTICIPANTS: 17 first and second year medical students at the UCLA David Geffen School of Medicine participated in a seven-week long elective course involving weekly 2-hour sessions. Each session was divided into a 1 h discussion with a guest speaker and a 1 h activity to build leadership skills or health system knowledge.

DESCRIPTION: Through its interactive weekly sessions, the elective introduces medical students to key leaders and projects within UCLA and the Los Angeles area and engages students in leadership and health system skill-building activities. An emphasis is placed on self-reflection and identification of leadership styles and attributes. Sessions are supplemented with readings on health policy, business strategy, quality improvement, and leadership. Course speakers to date have included the CEO and COO of the UCLA Health System, the Director of the Los Angeles County Department of Health Services, and UCLA's Chief Quality Officer for the Departments of Medicine and Neurosurgery. Speakers are asked to describe their work, reflect on their leadership path and attributes, and comment on major changes occurring within their institution. Discussions are then directed by the student audience. Skill-building sessions include health policy lectures and debates, personality assessments, introductions to quality improvement tools, and reflections on the speakers. A final assignment encourages students to identify and develop a relationship with a mentor and create long-term goals for personal development throughout medical school.

EVALUATION: Medical students are assessed based on their final assignment submission. The course will be evaluated by surveying students to assess satisfaction with the course, development of a leadership and/or health system skillset, and suggestions for course improvements.

DISCUSSION / REFLECTION / LESSONS LEARNED: The "Leadership in Health Systems Innovation" elective was successfully implemented in Fall 2012 and will continue in Spring 2013. The course succeeded in creating a growing community of medical students interested in health systems, exposing them to key health system leadership, and laying the groundwork for leadership skill development. The diverse interest of student participants, including policy, research, and business topics, were identified at the start of the course and used to guide course content. This built-in flexibility to address student interests ensured that speakers, activities, and readings were engaging and supported professional growth during and after the course.

IMPROVING RESIDENT COUNSELING COMPETENCE: A 5A'S SKILLS-BASED OBESITY CURRICULUM Shwetha Iyer[1]; Hillary Kunins[2,1]; Angela Jeffers[1]; Melanie Jay[3]; Sheira Schlair[1]. [1]Montefiore Medical Center, Bronx, NY; [2]Department of Health, New York, NY; [3]NYU School of Medicine, New York, NY. (Tracking ID #1643058)

NEEDS AND OBJECTIVES: Obesity is a significant problem that primary care physicians should be equipped to address. The 5A's counseling framework has been shown to be effective at addressing obesity in primary care. We therefore adapted and conducted a pilot evaluation of a previously developed 5A's obesity counseling curriculum that was novel in its approach to integrating motivational interviewing into the 5A's framework. We evaluated change in residents' self-assessed 5A's obesity counseling.

SETTING AND PARTICIPANTS: Our target audience was 28 interns and residents in the Primary Care/Social Internal Medicine Residency Program at Montefiore Medical Center (Bronx, New York).

DESCRIPTION: Residents were trained in the 5A's to: Assess obesity risk, Advise a weight-control program, Agree on mutual goals, Assist in establishing appropriate intervention, and Arrange for follow-up. The curriculum was delivered 4 times over a 6-month period to residents during ambulatory medicine blocks. The 3-hour curriculum included a 2-hour interactive session on the epidemiology of obesity, 5A's obesity counseling framework and practical tools. It was novel in highlighting motivational interviewing microskills practice in teaching how to "Agree" and "Assist" in obesity management, an area seldom emphasized in residency behavioral medicine training.

EVALUATION: One week prior to curriculum participation, residents (n= 28) completed a previously validated survey with 16 items (4-point Likert scale with 1=not able to perform to 4=able to perform well) measuring self-assessed 5A's obesity counseling competence. A post-intervention survey was conducted 2 months later. The 16 items on the survey were grouped into the five 5A's domains. Likert scores were dichotomized to 1= not able to perform and 2=able to perform and analyses compared mean scores of questions in each domain before and after curriculum participation using the Wilcoxin signed-ranks test. Twenty residents reported their counseling competence in: 1) Assessing (i.e. identifying co-morbidities, stage of change, obtaining a diet history and BMI, psychosocial screening); 2) Advising (i.e. discussing the effect of obesity on present and future health, discussing treatment options); 3) Agreeing on common goals; 4) Assisting (i.e. providing brief counseling interventions and using motiva-

tional interviewing to change behavior); 5) Arranging further help (i.e. recognizing and referring patients with eating disorders, making referrals). After the curriculum, there was a significant increase in mean scores in ability to Assess (pre test mean=1.55, post test mean=1.83; z=.001), Advise (pre test mean=1.38, post test mean=1.85; z=.001) and Agree (pre test mean=1.44, post test mean=1.73; z=0.010). There were no significant differences in the Assist (pre test mean=1.58, post test mean=1.77; z=0.083) and Arrange (pre test mean=1.35, post test mean=1.52; z=0.213).
DISCUSSION / REFLECTION / LESSONS LEARNED: We implemented a novel curriculum for residents to master 5A's obesity counseling strategies, which incorporated obesity counseling skills practice specifically in motivational interviewing. Analyses showed improvement in the domains of Assessing, Advising and Agreeing with the patient. Further evaluation with additional learners and direct observation of counseling skills is needed to fully elucidate the impact of the curriculum in promoting effective use of the 5A's for obesity counseling.

IMPROVING RESIDENT DOCUMENTATION, CODING AND BILLING WITH A PRACTICAL TUTORIAL Moyna H. Ng. Lenox Hill Hospital, New York, NY. (Tracking ID #1624275)

NEEDS AND OBJECTIVES: While Internal Medicine residents undergo rigorous clinical training, they rarely participate in any structured learning in inpatient medical coding, billing and adequate supporting documentation. There is cursory exposure in the ambulatory care setting. Residents perceive medical billing and coding as extremely complex. Since these skills are essential once they become practicing physicians, an innovative tutorial was developed and incorporated into the Medical Consultation rotation targeted at the PGY-3 trainees.
SETTING AND PARTICIPANTS: During a 2 week rotation on Medical Consultation, a PGY-3 resident works with an academic hospitalist and they are charged with coding and billing each inpatient encounter on mock billing cards.
DESCRIPTION: The tutorial is divided into four phases. Phase One - the resident codes and bills each patient visit without any aide. Phase Two - the resident is given a reading packet consisting of two articles on coding and billing, a hospitalist progress note template, a hospital pocket pamphlet on coding and billing and a one page reference guide published by CMS. Phase Three -the resident meets with the academic hospitalist to review each mock billing card and the corresponding documentation for appropriate coding and level of service billing. Phase Four - a billing report card is generated at the end of the rotation.
EVALUATION: A pre- and post-rotation survey based on a Likert scale assessing the resident's knowledge, confidence and ability to teach documentation, coding and billing is given at the beginning and end of the rotation, respectively. At the end of the rotation, billing report cards are generated that show the percentage of levels of service billed for initial encounters (99221–99223) and subsequent visits (99231–99233); percentage of underbilling and overbilling and appropriately coded notes.
DISCUSSION / REFLECTION / LESSONS LEARNED: Results to date reveal a statistically significant trend towards improvement in knowledge, confidence and ability to teach the fundamentals of medical coding and billing with proper documentation. Residents are highly satisfied with this short and effective tutorial. It is noted that residents became more cognizant of the need for supportive documentation. Review of their consultations and subsequent progress notes revealed more attention to detail and improved documentation. Residents have commented that this tutorial also helped to sharpen their critical thinking skills as they documented their thought process. This tutorial also incorporates the Systems Based Practice competency to teach residents to work effectively in various health care delivery settings.

INCREASING RESIDENT EDUCATION AND CONFIDENCE IN PRESSURE ULCER STAGING Keri Holmes-Maybank; Patty J. Iverson; Justin Marsden; Jingwen Zhang; Patrick D. Mauldin; William P. Moran. Medical University of South Carolina, Charleston, SC. (Tracking ID #1642097)

NEEDS AND OBJECTIVES: Pressure ulcers have a major impact on patients including decreased quality of life, decreased functionality, increased infection, and increased pain. 10–18 % of acute care patients have pressure ulcers either at presentation or develop pressure ulcers over the course of hospitalization. An 80 % increase in pressure ulcer-related hospitalizations was seen from 1993 to 2006 nationally. Pressure ulcer-related hospitalizations result in an approximately 8 day increase in average length of stay (LOS 13–14 days). As a result in the increase of pressure ulcers, both state and federal agencies may penalize hospitals for pressure ulcers which occur during hospitalization, but not those present on admission. With the serious healthcare and financial implications, it is imperative for residents to identify and stage pressure ulcers.
SETTING AND PARTICIPANTS: We performed a three month focused effort on pressure ulcer education for 99 internal medicine residents years 1–3. The emphasis was on residents working in the inpatient setting.
DESCRIPTION: A multi-strategy approach of a one hour lecture and one-on-one academic detailing session about pressure ulcer staging based on the National Pressure Ulcer Advisory Panel criteria was performed. Educational posters were placed in resident work areas and laminated cards with staging information were given to the residents after detailing. Seventeen residents were at the lecture and ninety-three were detailed. Eighty-eight residents took a pre-test and ninety-three residents took a post-test via survey monkey to assess their confidence with staging and staging knowledge. The pre- and post-tests had identical questions. One question assessed self-efficacy of resident staging using a five point Likert scale (range 1=not confident to 5=very confident). Three additional questions included photos and descriptions of a deep tissue injury, stage II pressure ulcer, and an unstageable pressure ulcer for the residents to assess.
EVALUATION: The pre and post-test results of 85 residents were matched and compared. The resident comfort level was assessed via Wilcoxon signed rank test with a significant increase in confidence after education (pre-test 6(1), 24(2), 38(3), 13(4), 4(5), post-test 1(1), 8(2), 25(3), 41(4), 10(5), $P<0.0001$). A significant improvement in knowledge of deep tissue injury (DTI) and unstageable pressure ulcers was revealed via McNemar's test (DTI pre-test 25, post-test 55; unstageable pre-test 40, post-test 66, $P<0.0001$). A non-significant improvement was seen in the question regarding identifying a stage II pressure ulcer (pre-test 48, post-test 55, $P=0.3105$).
DISCUSSION / REFLECTION / LESSONS LEARNED: Our multi-strategy approach to pressure ulcer education by a 1 hour lecture and one-on-one detailing led to a significant increase in resident knowledge and confidence of pressure ulcer staging.

INTEGRATING A CURRICULUM ON COST-CONSCIOUS CARE INTO UNDERGRADUATE MEDICAL EDUCATION Kimberly M. Tartaglia; Nicholas Kman; Holly Cronau; Cynthia Ledford. Wexner Medical Center at the Ohio State University, Columbus, OH. (Tracking ID #1640836)

NEEDS AND OBJECTIVES: Although physicians direct as much as 87 % of all health care spending, studies demonstrate that physicians have poor knowledge regarding the costs of medical care. According to the 2011 Association of American Medical Colleges (AAMC) Graduate Questionnaire, 64 % of medical students nationally felt they received inadequate instruction on health economics.
SETTING AND PARTICIPANTS: Medical students enrolled in their clinical clerkships participated in a cost-conscious care curriculum integrated across clerkships.
DESCRIPTION: The purpose of our project was to develop an interdisciplinary curriculum that provides medical students foundational knowledge in health economics and cost-effectiveness principles. Learning opportunities have been integrated into the inpatient internal medicine, family medicine, emergency medicine, and subinternship experiences. For the inpatient internal medicine clerkship, students complete a brief e-learning module that outlines the principles of cost-effectiveness and provides guidance on how these principles can be applied in the inpatient setting. Students then complete a reflective exercise describing a scenario in which a patient experienced lack of

attention to cost-conscious care, and students are asked to identify solutions and barriers to reducing inefficiencies. During the subinternship experience, students participate in an interactive case-conference that blends clinical reasoning with principles of cost-conscious care. The case uses real hospital charges to highlight how inefficiencies, lack of communication, and wasteful care can impact cost. Additional topics provided in other clerkships include healthcare financing, the impact of the patient-centered medical home on cost, and the impact of the uninsured population on the cost of healthcare.
EVALUATION: Thematic analysis on the reflective exercise during the inpatient internal medicine clerkship is underway. Student perceptions of the interactive case conference were assessed using a five question survey. To date, 51 students (96 %) completed the survey. The results showed 100 % of students who completed the survey felt the material was presented at an appropriate level. All students felt that the case conference was an effective way to teach about the financial cost of diagnostic testing. Eighty-eight percent felt the case-conference would change their future practice patterns. Comments were universally very positive.
DISCUSSION / REFLECTION / LESSONS LEARNED: Our initial survey results confirm that students value discussions on cost-conscious care as applied to patients. Our next steps are to develop a knowledge application tool that can be used to evaluate students and assess the curriculum as a whole. Additionally, the American College of Physicians (ACP) in collaboration with the Alliance for Academic Internal Medicine (AAIM) created a High-Value Cost Conscious Care Curriculum that provides medical schools and residency programs excellent foundational content for teaching this necessary curricular addition.

INTENSIVE MENTAL HEALTH TRAINING FOR MEDICAL RESIDENTS Robert C. Smith. Michigan State University, East Lansing, MI. (Tracking ID #1624581)

NEEDS AND OBJECTIVES: Two-thirds of all mental health patients are under the sole care of untrained primary care physicians. Even larger numbers of less severely distressed patients routinely have their psychosocial and emotional needs overlooked, and patients with organic diseases like diabetes do worse in the presence of unchecked mental illness. To generate discussion and to inform our work, we present an intensive mental health curriculum for medical residents that we are developing under a 5-year HRSA grant. We have demonstrated positive patient outcomes in RCTs for the models being taught. Our overarching objective: graduating residents will be as skilled with mental and psychosocial problems as they are with medical problems.
SETTING AND PARTICIPANTS: The curriculum is integrated with the standard medical residency curriculum for 39 residents who care for a socioeconomically diverse patient population. They are taught primarily by 17 GIM faculty in a university-based program's medical clinic and its affiliated underserved clinic and community hospital.
DESCRIPTION: Curriculum Objectives. Following training, residents will demonstrate mastery of: 1) an evidence-based patient-centered interviewing model; 2) advanced patient-centered interactions, such as efficiency and working with special populations; 3) an evidence-based model of shared decision-making; 4) an evidence-based mental health treatment model for the management of common primary care mental health conditions like depression, medically unexplained symptoms, drug/alcohol misuse/abuse, non-adherence, stress, working with families, practical psychopharmacology, community resources, and referral to mental health professionals; 5) personal awareness; 6) working in a multi-disciplinary team to improve patient safety. Procedure. We use 100 h a year of mostly experiential training to teach the objectives. In PGY-1, objectives 1–3 above are the focus, occurring in lectures throughout the year as well as a concentrated, full-time one-month rotation. In PGY-2/3, objectives 4–6 are the focus, training for diagnosis and management of mental health problems in the same out- and in-patient settings where residents' other training occurs. Primary care faculty trained to the fellowship level train the residents with back-up from mental health professionals.
EVALUATION: Using a quasi-experimental design that compares trained residents to untrained controls in a similar residency in Grand Rapids, MI, we will evaluate learning by residents at the start of PGY-1 and the end of PGY-3 in these ways: a) blinded ratings of digitally recorded simulated patient interviews to assess patient-centered interviewing, shared-decision making, and mental health care, b) knowledge of the objectives; and c) attitudes of self-efficacy for the objectives. We also will conduct extensive formative evaluation.
DISCUSSION / REFLECTION / LESSONS LEARNED: We present this curriculum to initiate discussion of how to better prepare our graduates, especially when there are not sufficient numbers of mental health professionals to play more than a consultative role. We are not proposing to turn physicians into psychiatrists but to train them to handle most high prevalence psychosocial and mental health problems, training them also in referral to mental health professionals for more severe problems. Ample evidence indicates that patients would prefer seeing primary care doctors for their mental health and other psychosocial problems.

INTERPROFESSIONAL PANEL MANAGEMENT: TEACHING RESIDENTS DATA-DRIVEN LONGITUDINAL AND CONTINUOUS CARE Catherine P. Kaminetzky[1,2]; Jacqueline R. Keedy[2,1]; Ginger A. Evans[1,2]; Anne P. Poppe[3,1]; Joyce E. Wipf[1,2]. [1]VA Puget Sound Health Care System, Seattle, WA; [2]University of Washington, Seattle, WA; [3]University of Washington, Seattle, WA. (Tracking ID #1635790)

NEEDS AND OBJECTIVES: The Institute of Medicine and others have issued urgent calls to improve the quality of health care; however, few physicians have been trained to use clinic patient panel data in decision making with the health care team. Panel management is defined as providing high quality continuous care of the entire panel of patients, which requires periodic tracking of panel data on clinical and preventive measures, not only during clinic visits. ACGME requires that medicine residents receive their continuity panel performance data related to chronic disease and preventive health, faculty guidance in developing data-based action plans that are evaluated bi-annually, and work in interprofessional (IP) teams to enhance patient care and safety. We developed an innovative panel management curriculum to teach medicine residents how to review and utilize data related to indicators of quality of care, including measures of chronic disease, prevention and access. We describe one workshop focused on emergency room (ER) utilization as an exemplar of our Panel Management curriculum.
SETTING AND PARTICIPANTS: In an academic primary care continuity clinic, faculty physicians and pharmacists teach an IP group of trainees that includes medicine residents, nurse practitioner students and pharmacy residents.
DESCRIPTION: Funded as a VA Center of Excellence in Primary Care Education, we implemented a series of workshops as a longitudinal panel management curriculum with the following learning objectives: 1) promote preventive health and chronic disease care for all patients in the resident's panel; 2) use data to take individual- and population-focused action; and 3) work collaboratively and effectively with health care team members from other professions. During the ER utilization session, trainees are provided with a list of their own continuity patients, which rank orders the high ER-utilizers over the past 2 years. Then the IP group brainstorms potential factors that may contribute to ER visits and creates a chart biopsy tool. Next, each trainee is given time to independently review the charts of their top ER utilizers using this newly developed tool. Then, the group reconvenes, trainees present their patients' cases and group discussion ensues with the following emphasis: 1) explore management strategies and untapped system resources to improve individual care, 2) track factors found to result in ER visits and plot all results in a frequency graph, 3) generate ideas for population-focused improvement projects to promote appropriate ER utilization.
EVALUATION: The Panel Management curriculum is assessed for trainee perception of curriculum content (importance and relevance), level of trainee confidence in performing Panel Management activities, subsequent frequency of using Panel Management techniques covered in workshops, and tracking of patient data on ER utilization and chronic disease measures (e.g. diabetes and hypertension) for longitudinal outcome.
DISCUSSION / REFLECTION / LESSONS LEARNED: This panel management curriculum provides trainees with the skills and tools to

evaluate their own performance data and formulate an action plan with their clinic team. Early feedback from participants is positive for: 1) greater understanding of ER utilization and contributing factors and 2) perceived value of between-visit-care and IP collaboration. Not only does this panel management meet ACGME requirements, but it prepares trainees for lifelong performance improvement.

INVOLVING ATTENDING FACULTY IN RESIDENT QUALITY IMPROVEMENT CURRICULUM TO ACHIEVE ABIM MAINTENANCE OF CERTIFICATION CREDIT Julie L. Oyler; Lisa M. Vinci; Vineet Arora. University of Chicago, Chicago, IL. (Tracking ID #1641411)

NEEDS AND OBJECTIVES: Attending faculty require American Board of Internal Medicine (ABIM) Practice Improvement Module (PIM) Points to achieve Maintenance of Certification (MOC). This can be challenging for academic faculty with varied administrative, teaching, and clinical responsibilities. Our aim was to include attending faculty in a preexisting resident quality improvement curriculum designed around the ABIM PIMs and provide an opportunity for faculty to meet the self evaluation of practice performance requirements of the MOC program.
SETTING AND PARTICIPANTS: Faculty interested in gaining MOC credit were enrolled in a year long course with internal medicine residents. Up to three faculty joined groups of 8–12 residents in four weekly 75 min lectures over the course of the first month.
DESCRIPTION: Three courses were held each year. Faculty supervised residents' collection of chart review and patient survey data using the Cancer Screening PIM. Faculty also facilitated the completion of the system survey. Faculty and resident reviewed the preliminary data at the end of the month and brainstormed ideas for improvement in the residents' continuity clinic. Residents then spent the rest of the year using the Donabedian model for improvement to develop sustainable quality improvement (QI) projects in their continuity clinic. Faculty enrolled in the ABIM MOC course came to a final presentation during which resident presented the results of their QI project. Faculty gave feedback to the residents using the Quality Improvement Project Assessment tool (QIPAT) developed at Mayo. Residents then entered the final data into the ABIM PIM. Faculty received 20 MOC points in self-evaluation of practice performance from the ABIM at the end of the course.
EVALUATION: From July 2009 to December 2012, 24 faculty enrolled in the quality improvement course to receive ABIM MOC credit. Twenty-four Faculties have completed the year long curriculum. Faculty were surveyed about their comfort with QI methodology using the Quality Improvement Knowledge Assessment Tool (QIKAT) before and after their participation the ABIM MOC course. Of the 22 (90 %) responders, there was a low level of comfort with basic QI methodology. Comfort with "implementing a structured plan to test change was low at the beginning of the course (30 %) but improved significantly to 80 % after the course. Similarly, comfort with implementing a PDSA cycle" was low before the course (20 %) but improved to 80 % of the faculty being moderately or extremely confident in these areas of QI methodology after the course. Faculty noted in qualitative analysis that they were interested in taking the QI skills they learned by observing the residents and using them in their own practice. For instance, "I may apply this knowledge to future attempts to improve care delivery in my patient population, like meeting blood pressure goals in renal transplant recipients." and "I will use this to teach QI to Hematology Oncology fellows." 60 % (9/15) of faculty who completed the course over 1 year ago renewed their ABIM certification.
DISCUSSION / REFLECTION / LESSONS LEARNED: Involving faculty in a preexisting resident quality improvement curriculum can both help faculty become more comfortable with QI methods and help them receive maintenance of certification credit.

LEADERSHIP CURRICULUM HELPS PRIMARY CARE RESIDENTS LEARN METHODS TO DECREASE HEALTH DISPARITIES Katy Hicks; Kristin Burnett Fernandez. Alameda County Medical Center, Oakland, CA. (Tracking ID #1625509)

NEEDS AND OBJECTIVES: For 26 years, the Alameda County Medical Center (ACMC) Primary Care Training Program (PCTP) has trained diverse primary care physicians with the goal of improving access to high quality care for underserved populations. Our program aims to improve primary care residents' preparedness to practice in low income underserved communities, and by doing so, improve health outcomes, reduce health disparities, and increase the number of medical graduates choosing to become primary care providers. With assistance from a federally funded grant, we have created and launched a leadership curriculum for our PCTP. This curriculum is part of our innovative 5 year primary care training project, Project LINC. Project LINC prepares primary care residents to lead efforts in reducing health disparities by teaching change agent and advocacy skills and by linking behavioral and addiction medicine to chronic disease management and healthy aging.
SETTING AND PARTICIPANTS: Highland Hospital, a public hospital serving a diverse population in Oakland, CA. Nineteen primary care residents within the internal medicine residency program received the Leadership Training Curriculum during the 2011–2012 academic years.
DESCRIPTION: Teaching methods included small group participatory discussions, assigned readings with discussion, personality testing with discussion, pilot leadership activities with mentorship by leadership faculty. Topics included collaboration skills, learning to work in a group, and being a change agent
EVALUATION: 53 % of PGY1-3 residents completed online evaluations via the online site Survey Monkey. A retrospective pre-test design was used wherein residents were asked to rate their beliefs, knowledge and attitudes before and after the program at the same time. A 5-point Likert scale was used with 1=Strongly Disagree, 3=Agree and 5=Strongly Agree. Following completion of the Leadership Curriculum, residents felt they were: -Better able to describe potential causes of racial and ethnic disparities -Better able to describe individual actions that may reduce health disparities -More likely to believe that developing health advocacy skills are an important part of becoming a physician -More likely to know when to consider social barriers to health care for their patients -More confident in their abilities to influence others to act toward a mutual goal -Better able to identify ways to improve the health of their communities -Better able to describe how physicians can effectively partner with community organizations
DISCUSSION / REFLECTION / LESSONS LEARNED: Preliminary results demonstrate that residents' awareness of barriers facing the underserved was increased, as was their ability and desire to work toward overcoming these barriers. Leadership training should be considered an important curricular element for training primary care providers who plan to work with the underserved. Primary care leadership training has been demonstrated to be successful in creating physician advocates for the underserved in Title VII residency programs.

LEANING TOWARDS PATIENT-CENTERED TEACHING ROUNDS Himani Divatia; Joseph Deutsch. Christiana Care Health System, Newark, DE. (Tracking ID #1638570)

NEEDS AND OBJECTIVES: The current process for managing patients on an inpatient teaching service at Christiana Care Health System ("CCHS") contributes to redundancy in patient care. At baseline, we found that medical interns were spending approximately 30 min with each patient each morning on tasks and communication that were ultimately duplicated by others. Additionally, no patients had an initial plan of care documented by the completion of teaching rounds around noon. There was also limited standardization of work flow between teaching services, and restrictions on resident duty hours, without a concurrent reduction in patient care responsibilities, were limiting opportunities for medical education. With this background in mind, our goal was to develop a way to manage teaching patients which would eliminate waste, improve efficiency, improve resident education and ultimately improve patient care. Our overall goal was to have 100 % of CCHP teaching patients to have an initial plan of care communicated to the patient and the healthcare team by 11:30am.

SETTING AND PARTICIPANTS: Our team was comprised of Christiana Care Hospitalist Partners ("CCHP") teaching attendings, Internal Medicine (IM) residency program director, IM residents and the nurse manager of 5D. The intervention was implemented on a CCHP Inpatient Teaching Team, with a focus on the 5D unit. Our intervention consisted of redesigning teaching rounds in order to create a more lean and efficient rounding process.
DESCRIPTION: Specific initiatives included establishment of a progress note template in order to facilitate efficient note writing, specific role designation of each team member, and definition of a new work flow pattern that emphasized team rounding instead of each team member working in isolation. Implementation of these initiatives was intended to decrease the time spent by each team member doing similar tasks, increase the time the entire teaching team spent with each patient, increase time for resident education, enhance communication, and complete all patient care tasks and documentation as part of a one piece flow.
EVALUATION: Post-intervention, 94 % of CCHP teaching team patients had their plan of care communicated to them and documented in the chart by 11:30am, which facilitated earlier access to current information by other health care providers. Time spent per patient by each intern before rounds was reduced from 30 min to 10 min. Additionally, valuable time spent with each patient was increased by 8 min in this new rounding methodology, while still reducing overall rounding time by an average of 12 min. This resulted in increased opportunities for resident education.
DISCUSSION / REFLECTION / LESSONS LEARNED: Rounding as a team at the bedside resulted in a structure which facilitated concurrent communication amongst team members and the patient and family. Reduction of "pre-rounding" time improved team efficiency, while template notes and defined role assignments standardized documentation and the rounding process. Our intervention can be adopted by additional teaching teams but would require focusing on faculty and resident development through presentations as well as simulation sessions. Future directions include standardizing the rounds process among the different CCHP teaching teams, improving the computer/iPad access in rooms, and integrating this process with the Multidisciplinary Rounds process.

MASTERY LEARNING OF ORAL CASE PRESENTATION SKILLS
Heather L. Heiman; Toshiko Uchida; Gary J. Martin. Northwestern University Feinberg School of Medicine, Chicago, IL. (Tracking ID #1642491)

NEEDS AND OBJECTIVES: The oral case presentation is a challenging yet essential skill for medical students. We have previously shown improvement in the oral case presentation skills of second year students through a curriculum of online learning and deliberate practice. Deliberate practice is a component of the mastery learning model. In mastery learning, students deliberately practice a task until they demonstrate a fixed standard of competency. All learners achieve competency, but the practice time required varies. Mastery learning is shown to improve trainees' skills in advanced cardiac life support, central venous catheter insertion, and cardiac auscultation. While these are primarily psychomotor tasks, we sought to extend mastery learning to the oral presentation, a more cognitive skill. We aimed to set competency standards for a set of six cases, to determine whether all students could achieve those standards, and to understand how much practice would be required for all students to achieve competence.
SETTING AND PARTICIPANTS: Ten clinicians from medicine and pediatrics participated in a 4-hour workshop to establish minimum passing scores for each case. Following a curriculum of online learning and deliberate practice, all 170 students in the second year class at Northwestern University Feinberg School of Medicine were required to take a summative clinical skills assessment including an oral presentation case. All students had to achieve a passing score on that case or to remediate it through more practice and re-assessment. One-hundred nine students (64 %) provided consent for their data to be included.
DESCRIPTION: Students constructed oral presentations based on cases that were presented as video interviews accompanied by written physical exams. Presentations were scored by trained fourth-year medical students using dichotomous checklists of 22–26 items. We used the Angoff and Hofstee standard setting procedures to establish passing scores for each of six cases. Angoff and Hofstee outcomes were averaged to determine a minimum passing score, which ranged from 66 % to 70 % of items correct.
EVALUATION: Of the 109 students who consented for data inclusion, 13 (12 %) did not achieve the passing standard during their clinical skills assessment. These students prepared one new practice case and met with a fourth year medical student who listened to their presentation and provided specific feedback. At least 1 day later, the remediating students presented a different test case. All 13 students achieved the passing standard on their second test case.
DISCUSSION / REFLECTION / LESSONS LEARNED: We successfully applied a mastery learning model to the oral case presentation. A panel of clinician educators set reasonable minimum passing scores. Most students (88 %) passed their case after the standard curriculum of online learning plus deliberate practice. Twelve percent of students required one more practice case and could then demonstrate competence. Our main limitation of was the use of a single case to test students. This limitation resulted from time constraints and the need for trained fourth-year raters. We plan to continue this curriculum for future classes, and we hope to determine how it affects student performance with real patient cases during the third year.
ONLINE RESOURCE URL (OPTIONAL): http://simulation.northwestern.edu/elm/oralcasepresentations2/player.html

MEASURING AND EVALUATING SYSTEMS THINKING
Mamta K. Singh[1]; Mary Dolansky[2]; Shirley Moore[2]; Aleece Caron[3]; Patrick Palmeri[4]. [1]Louis Stokes Cleveland VA Medical Center, Cleveland, OH; [2]Case Western Reserve University, Cleveland, OH; [3]Case Western Reserve University, Cleveland, OH; [4]Summa Health System, Akron, OH. (Tracking ID #1640983)

NEEDS AND OBJECTIVES: Systems Thinking is an approach to problem solving that views 'problems' as parts of an overall system, rather than a specific part and requires cyclical rather than linear cause-effect thinking. This is a critical skill needed for professional development. The Accrediation for Graduate Medical Education recognizes this with its establishment of Systems Based Practice as one of its core 6 competencies with systems thinking at the heart of this competency. However, the measurement and evaluation of Systems Based Practice skills is vague especially the ability to evaluate the extent to which educational interventions that teach systems thinking are effective is not widely known. Using the conceptural framework of Miller's Pyramid of Assessment, the basic tenet of "Knows" needs to be fulfilled in Systems Thinking and therefore a valid and reliable measure of systems thinking is needed.
SETTING AND PARTICIPANTS: To assess discriminant validity of the Systems Thinking Scale, three dose levels of systems thinking education were provided to different sets of students and changes in systems thinking were compared among the groups. The first group consisted of graduate level healthcare students (N=12) taking a 12-week improvement course that emphasizes systems thinking during experiential quality improvement projects (high dose). The second group consisted of graduate medical students (N=78) who were exposed to a 4- hour error case that addressed systems thinking using root case analysis (low dose). The third group consisted of graduate entry nursing students (N=32) in a nursing pharmacology course who did not receive systems thinking training
DESCRIPTION: The Systems Thinking Scale (STS) consists of 20 items that use a 4-point likert-type response scale. The STS was administered in a pretest-posttest format and validity was assessed by comparing change differences among the three groups.
EVALUATION: Psychometric analyses of the STS included assessment of internal reliability (α=.83; n=342) and test-retest reliability (r=.74; n=26) To assess discriminant validity, three dose levels of systems thinking education were provided to different sets of students and changes in systems thinking were compared among the groups. The STS was administered in a pretest-posttest format and validity was assessed by comparing change differences among the three groups. There were no differences in STS mean scores at pretest. At post test, the high dose-

education group scored significantly higher on the STS than both the low and no dose groups (p=.05 and .01, respectively).
DISCUSSION / REFLECTION / LESSONS LEARNED: A reliable and valid measure of systems thinking increases our ability to assess the effect of our educational efforts to enhance systems thinking of our healthcare professional graduates.

MEDICAL STUDENTS AND PHYSICIANS REFERRED FOR REMEDIATION: DESCRIPTIVE STATISTICS AND OUTCOMES
Jeannette Guerrasio; Eva M. Aagaard. University of Colorado, Aurora, CO. (Tracking ID #1618679)

NEEDS AND OBJECTIVES: Regardless of the level of training and specialty, approximately 7–28 % of medical trainees will require remediation in the form of an individualized teaching or learning plan to achieve competence in the necessary skills to become a physician. 17 % of attendings are also able to identify peers that are in need of remediation. Yet, only a few small studies on remediation exist in the literature. This innovation was designed to determine trends and predictors of poor academic outcomes among struggling medical students and physicians
SETTING AND PARTICIPANTS: From academic years beginning 2006–2011, the remediation program at the University of Colorado accepted self-referrals, medical students referred by their clerkship director, residents and fellows referred by their program director, students who received negative comments on their evaluations, all learners in and danger of failing a course or who had failed a course (n=151).
DESCRIPTION: Once referred, the learner's areas of deficiency were identified, a remediation plan implemented, and their performance subsequently assessed. The following metrics were analyzed using chi square, Fisher's Exact Test, analysis of variance and logistic regression: gender, level of learner, deficits, faculty time needed to remediate the learner, reassessment methods used and learner outcomes, including program completion and probation.
EVALUATION: Referred medical students were more likely to have mental well-being problems (p=0.025) and physicians (residents and in practice) were more likely to be referred for clinical reasoning deficits and poor professionalism. Males were more likely to struggle with communication skills (p=0.014) and mental well being (p=061). Clinical reasoning, and mental well being struggles each required significantly most faculty time to remediate (p<0.001;p=0.03) Among students, difficulty with interpersonal skills showed trends towards not matching into a residency program. Poor professional was the only predictors of probationary status (p=0.001). Being placed on probation were more like to have a negative outcome, including restricted practice, be transferred to another program, to withdraw or be terminated (p<0.0001). Faculty time reduced the odds of probation by 3.1 % per hour and negative outcomes by 2.6 % per hour (p= 0.001, OR 0.969; p=0.002, OR 0.974)
DISCUSSION / REFLECTION / LESSONS LEARNED: Deficits among learners referred for remediation vary based on the level of learner. The type of deficit can be used to predict the amount of time needed for remediation, not matching into a residency program, probationary status and negative academic and career outcomes. Faculty time dedicated to remediation has been shown to decrease probation and negative academic and career outcomes. Overall, the remediation process had highly successful outcomes for its participants.

MENTAL HEALTH EDUCATION FOR MEDICINE TRAINEES THROUGH A PRIMARY CARE INTERPROFESSIONAL CASE CONFERENCE: PROMOTING COLLABORATIVE LEARNING AND ADDRESSING CHALLENGES Shalini Patel[2,1]; Christina Kim[2]; Erick Hung[1]. [1]UCSF, San Francisco, CA; [2]VA San Francisco, San Francisco, CA. (Tracking ID #1642458)

NEEDS AND OBJECTIVES: Internal medicine residents often train in the same outpatient clinics as mental health trainees and students from other professions (nursing, pharmacy, and social work). This innovative model for an ambulatory case conference brings interprofessional trainees together to promote collaborative learning and care models. Objectives: - Describe the advantages and challenges of teaching in an interprofessional educational setting. - Discuss how to engage trainees at various developmental levels and in other medical disciplines and health professions. - Understand how to model and teach interprofessional case presentation, inquiry, and collaboration to care for high-risk patients. - Identify opportunities for medicine residents to collaborate and learn with trainees from other professions such as mental health at various institutions.
SETTING AND PARTICIPANTS: The learning environment at the Downtown San Francisco VA community based outpatient clinic includes psychiatry and internal medicine residents, NP and medical students, psychology fellows, and pharmacy trainees. The clinic serves a significant proportion of high-risk homeless patients with chronic medical and psychiatric disease whose care depends on collaborative interprofessional work.
DESCRIPTION: The weekly case conference model emphasizes several principles, including: (1) assessing the trainee's needs; (2) interprofessional learning and engagement; (3) a learner-driven approach; (4) modeling consultation and inquiry with different professions. The model uses a format in which a trainee is encouraged to present a case that he/she finds interesting, challenging or frustrating that would benefit from interprofessional input. The interprofessional group of trainees then generates questions for further inquiry and the facilitator assigns trainees to research answers for each of the questions. At the next session, the group reviews the case and questions and trainees present their findings succinctly (5–10 min). Educators involved in the case conference facilitate the discussion and provide context when needed.
EVALUATION: Fifteen trainees who participated in the case conferences for 6 or 12 months completed evaluations of the conference and surveys regarding attitudes towards interprofessional care. Trainees agreed that they saw greater value in discussing patients in an interprofessional group as a result of the conferences (mean score 5.4 on a Likert scale of 1 to 6). Additionally, trainees felt they had a better understanding of other professions' roles (mean score 5.2). Trainees' written reflections underscored the value of interprofessional team based care. An example includes: "[I value] interactions with such a diverse group about complicated issues. I utilize other providers better, they utilize me better"
DISCUSSION / REFLECTION / LESSONS LEARNED: (1) A learner driven conference about patient care issues that trainees feel challenged with can increase participant engagement in interdisciplinary conferences. (2) Encouraging trainees to use multiple sources for queries (i.e. evidence-based literature or discussion with colleagues) can help all levels and backgrounds of trainees feel comfortable in participating. (3) Facilitators need to resist from answering questions immediately or dominating discussion to allow cross disciplinary teaching among trainees. (4) It is critical that facilitators ensure that learning topics are clear and well balanced among disciplines.

MIXED-METHODS EVALUATION OF THE MGH GLOBAL PRIMARY CARE CURRICULUM Patrick T. Lee[1,2]; Elizabeth Cunningham[1]; David Munson[1]; Joseph Joyner[1]; Sarah Wakeman[1]; Renuka Tipirneni[1]; Ashley Dunkle[1]; Debora Paterniti[3]; Valerie E. Stone[1]. [1]Massachusetts General Hospital, Boston, MA; [2]Cambridge Health Alliance, Cambridge, MA; [3]University of California, Davis, Davis, CA. (Tracking ID #1631145)

NEEDS AND OBJECTIVES: Global learning and local innovation are particularly relevant for US health reform and the care of vulnerable populations. Future GIM leaders require training that prepares them to compare, select, implement, and continuously improve innovations at the care team, practice setting, and community levels. Current educational models and ACGME competencies strongly emphasize domestic health system issues, overlooking useful global lessons that are directly relevant to these domestic challenges. We evaluated the impact of a novel comparative health systems curriculum on trainees' preparedness to engage in health system strengthening for vulnerable populations.

SETTING AND PARTICIPANTS: 13 Massachusetts General Hospital (MGH) internal medicine interns (8 primary care, 5 categorical) participated in the IRB-approved study.
DESCRIPTION: The MGH Global Primary Care (GPC) Curriculum customizes a four-week, call-free ambulatory month with 70 h of instruction focused on comparative lessons in improving care for vulnerable populations. The curriculum, which is tailored to the learning preferences of MGH interns, provides an entry point in integrated global health and primary care training for all MGH primary care, global primary care, and self-selected categorical internal medicine interns. Interns are introduced to potential faculty mentors at an early point in their training. Interactive case studies of best practices in health care policy and delivery from the US, Mexico, Bangladesh, Uganda, and Liberia are paired with local health care delivery experiences in Boston. Seven learning objectives are linked to ACGME core competencies in medical knowledge, practice-based learning and improvement, professionalism, and systems-based practice.
EVALUATION: We performed a mixed-methods evaluation of the GPC Curriculum. Preparedness was assessed in 4 domains: knowledge, self-reported preparedness, practice intentions, and complexity of thinking. Twenty-four knowledge questions, Three multi-part Likert questions, and a semi-structured interview were administered before and after the curriculum. Knowledge and Likert scores were compared quantitatively. Interviews were analyzed iteratively for persistent themes in the qualitative data. Mean knowledge scores increased from 59 % before to 80 % after the curriculum ($p<0.0001$). Likert scores (1=strongly agree; 5=strongly disagree) for self-reported preparedness improved significantly for all 7 learning objectives, with mean scores improving from 2.93 before to 1.84 after the curriculum ($p<0.0001$). Specific lessons learned included: new insights regarding the role of physicians, the nature and composition of teams, and the integration of public health and clinical medicine; the usefulness of comparative analysis to inform US health care delivery; and a rise in optimism "to make a difference on the system as a whole," which was linked to a shift in focus from problems to solutions. There was no observable impact on future practice intentions.
DISCUSSION / REFLECTION / LESSONS LEARNED: The GPC Curriculum improved MGH interns' preparedness to engage in health systems strengthening for vulnerable populations. Further studies are needed to validate the longer-term impact of the GPC Curriculum and the efficacy of comparative health systems training in other settings. Teaching the next generation of GIM leaders a set of comparative health systems competencies may serve to accelerate diffusion of innovation in US health care.
ONLINE RESOURCE URL (OPTIONAL): https://hub.partners.org/globalprimarycare/Programs/Curriculum

NOVEL INTEGRATION OF SYSTEMS-BASED PRACTICE INTO INTERNAL MEDICINE RESIDENCY PROGRAMS: THE INTERACTIVE COST-AWARENESS RESIDENT EXERCISE (I-CARE) Robert L. Fogerty[1,4]; Jason Heavner[3]; John P. Moriarity[1]; Andre N. Sofair[1]; Grace Y. Jenq[2]. [1]Yale School of Medicine, New Haven, CT; [2]Yale School of Medicine, New Haven, CT; [3]Yale School of Medicine, New Haven, CT; [4]Yale-New Haven Hospital, New Haven, CT. (Tracking ID #1638279)

NEEDS AND OBJECTIVES: The Accreditation Council for Graduate Medical Education (ACGME) and American Board of Internal Medicine (ABIM) have identified cost-awareness as an important component to residency training. However, cost-awareness is generally not emphasized in traditional residency curricula. Novel methods are needed to provide cost-awareness in a time efficient manner.
SETTING AND PARTICIPANTS: Internal Medicine interns, residents, Faculty and Yale School of Medicine third year students at three Yale-affiliated teaching hospitals in Connecticut.
DESCRIPTION: The Interactive Cost-Awareness Report (I-CARE) follows a traditional, Morning Report style teaching session run by a Chief Resident, where the diagnostic workup of a patient is discussed in a 1 hour didactic session. I-CARE takes place over a 4 day period every fourth week. One hour each day is provided for each level of training: medical students, interns and sub-interns, residents, and lastly, attending physicians. Those planned to participate in a later session are prohibited observing the trainee sessions, however all trainees are present to observe the attending physician session. Following the initial case presentation, trainees can inquire of the Chief Resident for further information in an effort to make a diagnosis. Additional history and/or physical exam maneuvers not included in the initial presentation (such as travel history, dermatographism, straight leg raise) have no associated cost and are free to the group of trainees should they be specifically requested. Laboratory tests, diagnostic imaging, and diagnostic procedures can also be requested, and the actual patient charge from our institution for that item is recorded by the Chief Resident in real time. These charges are blinded to the participants at the time of the exercise. The actual charges for each group's diagnostic workup are recorded and shared in a friendly competition across training levels and training sites.
EVALUATION: Anonymous, voluntary survey of all participants and comparison of expenditures by training level.
DISCUSSION / REFLECTION / LESSONS LEARNED: Interns, residents and attending physicians were asked to complete the survey. Thirty-seven surveys were returned (39 % response rate). Response was overwhelmingly positive, with 31 respondents (84 %) identifying the SBP case as 'an overall improvement' to Morning Report. Using a 10 point Likert Scale, survey respondents rated the educational quality of the I-CARE case 8.57 and the educational quality of the prior morning report format 6.81 ($p<0.001$). Narrative responses from survey respondents were also positive. (Fig. 1) Sampling of the first five cases revealed 100 % accuracy of diagnosis by the attending physician group, 60 % accuracy by residents and interns and 50 % accuracy by medical students. Furthermore, dichotomous *t*-test was performed (Excel 2010, Redmond, WA) to determine difference in expenditures. The attending physician group spent less on average than non-attending participants ($1027.45 vs $4264.00, $p=0.02$). This difference persisted with medical students excluded from the analysis ($1027.45 vs $3962.80, $p=0.03$). The I-CARE provides for immediate inclusion of cost-awareness and enhances Systems-based Practice education in an Internal Medicine Residency Program with minimal additional resources by using a pre-existing educational conference. The I-CARE is easy and quick to implement, and the preliminary results show a popular cost-awareness educational experience.

OUTCOMES OF A NEW WEB-BASED PTSD TRAINING FOR PRIMARY CARE PROVIDERS Karen H. Seal[1,2]; Kristin Samuelson[1,3]; Nicole McCamish1; Christopher J. Koenig[1]; Daniel Bertenthal[1]; Gary Tarasovsky[1]; Gerard Choucroun[1]. [1]San Francisco VAMC, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]Alliant International University, San Francisco, CA. (Tracking ID #1633151)

NEEDS AND OBJECTIVES: Patients with posttraumatic stress disorder (PTSD) diagnoses most often present to primary care providers (PCPs) first. Many patients, particularly Iraq and Afghanistan veterans, resist specialty mental health treatment, primarily due to stigma. Most PCPs have not been trained to assess for and initiate management of PTSD. Web-based instructional programs are increasingly used to facilitate continuing medical education. The main aim of this study was to develop, disseminate, and evaluate the effectiveness of a web-based PTSD training for PCPs.
SETTING AND PARTICIPANTS: Between 10/25/2011 and 12/06/2012, PCPs were recruited and enrolled in the study, primarily in response to UCSF CME e-mail announcements. Consenting study participants completed online assessments at baseline, end-of-training, and after at least 30 days to receive 2 units of CME credit.
DESCRIPTION: A general internist and a PTSD psychologist developed evidence-based educational content for a 70-minute web-based PTSD training program for PCPs, accredited by the University of California, San Francisco (UCSF) Office of Continuing Medical Education (CME). The training focused on the management of combat-related trauma, but also generalized to other types of trauma. The training consisted of 4 modules: (1) Assessment and Diagnosis of PTSD; (2) Comorbid Conditions and

Differential Diagnoses; (3) Pharmacological Interventions, and (4) Psychotherapeutic Interventions for PTSD. Clinical vignettes of PCPs interacting with patients brought to life concepts introduced in the modules.
EVALUATION: To date, 80 PCPs have completed the baseline and end-of-training assessment, and 66 have completed the 30-day follow-up assessment. Descriptive quantitative statistics were used to describe changes in participants' PTSD-related knowledge, self-efficacy, and self-reported practice behavior. Qualitative data was summarized for quality improvement. PCPs reported practicing a mean of 14 years; 65 % endorsed caring for veterans or military personnel. There was a significant increase in PTSD-related knowledge from baseline to post-training, and from baseline to follow-up after 30 days (both p's<0.001). After completing the training, PCPs reported significantly increased comfort with 11 of 12 PTSD-related skills (i.e., evaluating comorbid conditions, prescribing medication for nightmares, explaining evidence-based psychotherapeutic options etc....); 97 % found the training to be moderately to very educational, whereas 16 % found it burdensome; 92 % anticipated applying training content in their practices, and after 30 days, 47 % reported having actually done so. Qualitatively, compared with scheduled web-casts, many PCPs preferred the asynchronous web-based modules because they could complete them at any time, at their own pace, and in any setting. PCPs responded favorably to video-recorded clinical vignettes, but requested more interactive exercises before and after each module to reinforce content.
DISCUSSION / REFLECTION / LESSONS LEARNED: This is the first evaluation of an online PTSD training program for PCPs, many of whom care for large numbers of patients with trauma, but have had limited training in this area. PCPs responded very favorably to the training and many were able to apply concepts in their daily practice. Future implementation considerations involve condensing the training and adapting it for smartphone use for even greater convenience and usability, with clinical outcomes confirmed by chart review.
ONLINE RESOURCE URL (OPTIONAL): https://ihrc.ucsf.edu/Collector/Survey.ashx?Name=ELearning_SGIM

OUTPATIENT DOCUMENTATION IN THE ELECTRONIC HEALTH RECORD: CURRENT RESIDENT PRACTICES, OPPORTUNITIES AND TOOLS FOR CURRICULAR INNOVATION Jaishree Hariharan; Sarah A. Tilstra; Thomas Radomski; Jodie Bryk; Peggy Hasley. University of Pittsburgh Medical Center, Pittsburgh, PA. (Tracking ID #1642054)

NEEDS AND OBJECTIVES: Clinical documentation is essential for tracking disease over time, supporting clinical decision-making, and is vital for appropriate billing. The electronic health record (EHR) has simplified communication among providers and improved clinical decision support. Nevertheless, it has created complexity in documentation for medical trainees to master. Very little is known about documentation practices of trainees, and how to best teach this complex system. Our objectives are: 1. Describe documentation practices of residents for outpatient clinical encounters 2. Identify weaknesses in EHR documentation utilizing chart review and resident survey 3. Develop standardized EHR documentation templates for common visit types to improve efficiency and quality of documentation
SETTING AND PARTICIPANTS: The University of Pittsburgh medical center is an urban academic center with 120 internal medicine residents. The pilot site is the Division of General Internal Medicine faculty and resident practice, where fifty- two categorical residents have their weekly continuity clinic and see 3–7 patients per half-day session. The practice has a fully integrated EHR (Epicare).
DESCRIPTION: A chart audit tool to describe current practices in resident documentation and use of the EHR was created by a team consisting of three faculty preceptors and two residents. The tool contained a scoring system addressing the appropriateness of essential components of the visit. "Appropriateness" is based on component needs for quality documentation and billing level as determined by the team. These components included (1) the written note, (2) the presence of pertinent patient instructions, and (3) updated sections in the EHR, which includes tabs for problem list,history section, health maintenance and medication list. Approval was obtained from our institutional QI board prior to chart review. Thirty charts from 30 unique residents, (10 from each PGY level) were audited by the team, targeting a variety of clinical encounters (new patient, follow-up, annual visit, pre-operative evaluation). A resident survey is planned to assess perceived weaknesses in documentation efficiency and quality and barriers to EHR use. Based on these results, we plan to develop standardized templates for common clinic encounters using best practice information.
EVALUATION: Results show that the most common visit types were "follow-up visits" (53 %) followed by "annual physicals" (23 %). Eighty percent of residents used templates for visit documentation. Appropriateness of visit note documentation was greater than 80 % for chief complaint, history of present illness, medications, physical exam, and assessment and plan. Only 37 % of resident charts had updated problem lists, 23 % of medication lists were not updated or incorrect, and 50 % of health maintenance tabs were updated. Patient instruction section use was infrequent at 27 %, and 33 % failed to meet billing standards.
DISCUSSION / REFLECTION / LESSONS LEARNED: Our initial audit suggests that medical care is more completely documented in the visit note, but not updated within the EHR and appropriate billing needs to improve. Curricular innovation and training is required to utilize the full potential of the EHR. Our resident survey will be vital in determining the necessary components to improve quality and efficiency of EHR documentation.

OUTPATIENT INTENSIVE ORIENTATION PROGRAM Ryan Nall; Anita Vanka; Kelly Ford; Howard Libman. BIDMC, Boston, MA. (Tracking ID #1642599)

NEEDS AND OBJECTIVES: At Beth Israel Deaconess Medical Center, interns have three two-week ambulatory block rotations. While continuity clinic is scheduled weekly throughout the year, some interns may not have their first ambulatory block until 2 months into the year and, based on resident surveys and feedback from preceptors, are slow to gain familiarity with outpatient practice. Through the use of an intensive ambulatory orientation program (IOP), interns will improve their efficiency and familiarity with the ambulatory setting earlier in the year.
SETTING AND PARTICIPANTS: Outpatient general medicine practice. Internal medicine interns/general medicine faculty.
DESCRIPTION: An IOP in the ambulatory setting was scheduled for all interns during the first 2 weeks of the academic year. The class was divided in half; one group began on the inpatient service, and the other group began in the ambulatory setting. The groups switched after 1 week. Specific IOP learning objectives are described below. ● Identify clinical support staff and their role in patient care ● Demonstrate comfort in the ambulatory setting ● Demonstrate the effective use of the online medical record ● Demonstrate means of effective documentation and patient communication ● Identify effective ways to keep track of follow up items ● Identify how to get the most out of the preceptor-preceptee relationship ● Describe several strategies to manage difficult patients
EVALUATION: Interns (n=43/49, 88 %) and faculty (n=21/80, 27 %) completed anonymous surveys. Intern Survey Results ● 86 % of interns agreed or strongly agreed with the statement, "I feel that I now have a reasonable understanding of how my outpatient practice site works." ● 88.4 % of interns agreed or strongly agreed with the statement, "I am comfortable documenting a clinical encounter." ● 92.9 % of interns agree or strongly agree with the statement, "I am comfortable ordering a test and following it up." Faculty Survey Results ● 76.2 % agreed or strongly agreed with the statement, "I believe that the 1 week intensive outpatient orientation for interns has allowed them to function comfortably in clinic." No faculty disagreed with this statement. ● 90.5 % agreed or strongly agreed that interns were functioning better in clinic at this stage of the year than they had in previous years. ● 90.5 % agreed or strongly agreed that they would recommend continuing the outpatient IOP for interns in future years.
DISCUSSION / REFLECTION / LESSONS LEARNED: Upon completion of the IOP, the majority of interns felt that they understood how their practice site worked, the role of staff, how to order and follow up tests, and how to document clinical encounters. The IOP improved faculty impressions of intern function in clinic, and over 90 % of faculty who completed the survey felt that the program

should continue in future years. While we have no prior data for comparison, the intern survey results would suggest that IOP learning objectives were met. In addition, faculty believed that the IOP improved intern function in clinic compared to previous years.

PATIENT SAFETY MORNING REPORT: USING AN OLD CONFERENCE TO TEACH NEW TRICKS Christopher J. Smith[1]; Allison Ramey[1]; Elizabeth Lyden[2]; Julie Fedderson[1]. [1]University of Nebraska Medical Center, Omaha, NE; [2]University of Nebraska Medical Center, Omaha, NE. (Tracking ID #1636625)

NEEDS AND OBJECTIVES: Root-cause analysis (RCA) is a method for investigating and correcting systems defects. While it is expected that residents learn how to recognize and analyze system errors, it can be logistically challenging to teach given competing duty obligations. Although residents are on the front-lines of patient care, they rarely take part in institutional patient safety initiatives. To address these challenges, we developed an interactive case conference ("Patient Safety Morning Report") in which learners explored themes of patient safety via a modified-RCA.
SETTING AND PARTICIPANTS: Patient Safety Morning Report took place at a university-based Internal Medicine residency program. Participants were senior residents, interns, and medical students rotating on the inpatient wards service.
DESCRIPTION: Patient Safety Morning Report was developed and moderated by a chief resident and faculty with expertise in patient safety. It was held over three 45 min sessions, during the normal morning report time. After a didactic primer on RCA, a clinical vignette demonstrating an adverse patient outcome was presented. An event flow-diagram was displayed and the group analyzed the case to identify contributing factors. Systems-focused questions were generated and researched independently by participants prior to the next session. During the second session, participants reported their findings which were integrated into a fish-bone diagram. During the third session, participants created causal statements and solutions to address the root-causes of error.
EVALUATION: Participants' attitudes and knowledge relating to patient safety and RCA were tested pre- and post-intervention. Thirty-five learners attended at least one of the three conferences, and twenty-two (10 students and 12 residents) took both pre- and post-tests (63 %). There was significant improvement in the median Likert score for three of ten attitude-based questions related to blame, the RCA process, and identification of systems-level problems. There was significant improvement in three of nine knowledge-based topics, including contributing factors, causal statements, and hierarchy of actions. There was borderline significant improvement (p= 0.0522) in understanding of fishbone diagrams. The median number of correct answers to knowledge based questions increased from six to eight (p=<0.001). Scores were similar for residents and students.
DISCUSSION / REFLECTION / LESSONS LEARNED: Patient Safety Morning Report is an effective strategy for teaching RCA and principles of patient safety. Pilot data indicate that participants find the conference enjoyable, relevant, and sustainable. The current study shows the intervention also improves attitudes and knowledge related to patient safety. By integrating the intervention into the pre-existing morning report schedule, learners did not sacrifice time from other duties. The intervention also served to diversify the morning report experience, while teaching and assessing several important educational outcomes (i.e. Milestones) across multiple Accreditation Council for Graduate Medical Education competency domains. Future areas of interest include making the conference inter-professional. Ultimately, learner-generated solutions will be conveyed to hospital administration, serving as a means by which residents can impact institutional patient safety.

PILOT OF A DIRECT OBSERVATION PROGRAM OF FACULTY TEACHING CLINICAL SKILLS Rupel Dedhia; Melanie Gordon; Andem Ekpenyong. Rush University Med Center, Chicago, IL. (Tracking ID #1642546)

NEEDS AND OBJECTIVES: Clinical educators charged with the responsibility of educating medical students and residents often receive minimal feedback on their teaching behaviors. At Rush Medical College (RMC), a direct observation project was implemented to evaluate the teaching behaviors of faculty during our clinical skills course and provide them with detailed feedback. The objectives of the project were as follows: 1) Outline an approach to evaluate faculty teaching clinical skills in a small group setting 2) Implement feedback from the project to improve the course.
SETTING AND PARTICIPANTS: The Medical Interviewing and Physical Examination Course for first and second year medical students. In each year, there are six small group workshops, each consisting of approximately twenty students and one faculty member.
DESCRIPTION: During the 2011–2012 academic year, six faculty members were observed teaching a clinical skills teaching workshop. Direct observation was performed by three peer observers (current and former course directors of the physical diagnosis course). Faculty began the two-hour session by discussing a clinical case (focused on one organ system) followed by demonstration and practice of the corresponding physical examination. The workshop was videotaped and peer observers were present for the entire session. The Stanford Faculty Development Program-26 tool (SFDP-26) was used. Although this tool was validated for medical students evaluating their teachers, we opted to also use it for peer observation and faculty self-assessment. At the completion of each session, students and faculty were asked to complete the SFDP-26 tool. Feedback was provided to the faculty in one-on-one sessions using his or her video clips and an action plan was developed. Participation in the project was purely voluntary. All participants consented to the study and approval was obtained from the institutional review board.
EVALUATION: The data collected (student, peer, and self-assessments) using the SFDP-26 tool is currently being analyzed to compare teaching behaviors both before and after the feedback session. Faculty were also surveyed about their experience during this project.
DISCUSSION / REFLECTION / LESSONS LEARNED: While the initial goal of the project was to provide specific feedback to our faculty about their teaching, this project also offered faculty the opportunity to reflect on their teaching and discuss concrete ways to improve the course. During the one-on-one feedback sessions, both effective and less effective teaching behaviors were highlighted using the video clips and data from the student evaluations to create specific action plans. Faculty made recommendations to the course directors, which led to upgrading the resources for the course (e.g. increasing laboratory space for students to practice the exam and providing every classroom with a smart board for displaying abnormal physical examination findings). We were also able to evaluate the ability of faculty to deliver the goals and objectives of the course. We have used insights gained from the project to enhance faculty orientation and redesign some of the small group workshops to better engage the students. Overall, this project allowed us to utilize several modalities to provide detailed feedback to our faculty about their teaching and make significant improvements to the course.

PODCAST PEARLS: THE IMPACT OF A BRIEF WEEKLY 21ST CENTURY EDUCATIONAL TOOL Melissa Dattalo; Ryan E. Childers; Colleen Christmas. Johns Hopkins Bayview Medical Center, Baltimore, MD. (Tracking ID #1642545)

NEEDS AND OBJECTIVES: Morning report is an age-old venue for teaching in residency training. New challenges to resident work hours have challenged these old teaching paradigms. We sought to capture the essential teaching points from the Johns Hopkins Bayview Internal Medicine residency program's daily morning reports and synthesize them into an educational tool for our housestaff. We created the "Podcast Pearl," an audio file consisting of teaching pearls from each morning report, and sent it electronically to residents and faculty at the end of each week. We aimed to assess the impact this weekly audio recording had on resident and faculty education, satisfaction, and connectedness to the residency program.

SETTING AND PARTICIPANTS: We distributed the "Podcast Pearl" audio file to 57 residents and 49 faculty members at Johns Hopkins Bayview Medical Center.
DESCRIPTION: To create the Podcast Pearl, one of the Assistant Chiefs of Service (chief residents) helped the resident presenter identify the salient teaching points from the morning report, and then conducted a brief 1–2 min interview with the resident using a digital recording device. These recordings were edited using freely available software (iTunes, Wavosaur), converted into 6–8 min MP3 recordings, and sent via secure intranet to residents and teaching faculty weekly. After 4 months of use, the residents and teaching faculty were surveyed to examine utilization patterns, educational impact, satisfaction, and degree of connectedness to the residency program.
EVALUATION: 30 out of 57 residents (53 %) and 18 out of 49 (37 %) of teaching faculty responded to the survey. 26.6 % of residents reported they attended morning report more than 70 % of the time. 70 % of residents reported using the Podcast Pearl, with 23 % using at least half of the recordings. 60 % of residents who listened to the Podcast Pearl used a computer, 35 % used a smartphone, and 10 % used a tablet. 100 % of residents who used 1 or more Podcast Pearls and who were not able to attend morning report (due to ICU rotations, vacation, etc.) reported that they learned something new. 46 % reported they learned something new "often" or "always". 100 % of teaching faculty who responded to the survey reported using 1 or more of the Podcast Pearls, with 56 % reporting using at least half of the recordings, and 17 % reporting using all available recordings. Faculty were more likely than residents (94 % vs. 60 %) to use a computer to listen to the Podcast Pearl. 56 % of faculty reported that the Podcast Pearl improved their learning. 94 % of faculty reported that listening to the Podcast Pearl made them feel more connected to housestaff. 78 % of faculty strongly agreed that educators should integrate technology into residency curricula.
DISCUSSION / REFLECTION / LESSONS LEARNED: A brief, weekly recording of teaching pearls from daily morning reports within an internal medicine residency program was a popular educational tool among both residents and teaching faculty. Residents tended to be more likely to use smartphones and tablets to listen to the educational recording, whereas faculty were more likely to use computers. The Podcast Pearl was an effective educational supplement for residents unable to attend morning report. This recording made nearly all faculty feel more connected to the residency program. Though further study of objective educational outcomes is needed, a brief weekly recording of teaching pearls in the form of a "podcast" is a satisfying educational supplement for residents and faculty.

PUBLIC NARRATIVE AS A TOOL TO PROMOTE TEAM-BASED CARE Rachael E. Bedard[1,2]; Rachel Stark[1,2]; Elizabeth Gaufberg[1,2]. [1]Cambridge Health Alliance, Cambridge, MA; [2]Harvard Medical School, Cambridge, MA. (Tracking ID #1643075)

NEEDS AND OBJECTIVES: Healthcare organizations across the country are undergoing significant changes to become Accountable Care Organizations and Patient-Centered Medical Homes. A key transformation is the transition to a team-based model of care that requires a new approach to leadership. How to best integrate internal medicine residents into this team-based structure remains a challenge. Our project provides a tool to help practicing clinical teams work together effectively by sharing the strategy of Public Narrative. Objectives: -To teach participants the leadership art of Public Narrative -To teach elements of effective story-telling and invite participants to practice the art of story-telling with their clinical team members -To assess the impact that training in Public Narrative has on team identity and efficacy
SETTING AND PARTICIPANTS: The Cambridge Health Alliance (CHA) is an integrated public healthcare system comprised of three hospital campuses and an extensive primary care network. Public Narrative workshops are held with practicing clinical teams (comprised of primary care physicians, resident providers, nurse practitioners, nurses, medical assistants, front desk staff) at CHA's three teaching ambulatory practice sites. Participating teams include at least two internal medicine residents.
DESCRIPTION: Public Narrative, developed by Marshall Ganz at the Kennedy School of Government, is the art of translating values into action. Individuals engage in public narrative to interpret themselves to one another, to forge a sense of shared community, and to inspire their community to action. The process involves learning to tell a "story of self", a "story of us", and a "story of now". We believe Public Narrative is a tool that can be leveraged for change in healthcare settings at multiple organizational levels. Participating care teams attend a 3-hour workshop during which they are introduced to the concept of public narrative and review its theory and practice. They then craft and share 'stories of self' in small groups by being prompted by the question "why do you do the work you do?". In developing their stories, participants find opportunity to explore and articulate core values. In hearing others' stories told, participants find that they share motivations for their work and are energized by the emergence of common themes. A large group discussion builds on these commonalities as a foundation for crafting a "story of us". Participants are then encouraged to think about their "story of now", the challenges they face as a community that demand urgent action.
EVALUATION: Following the workshop, participants are surveyed about their experience. Three months later, the same team is asked again to reflect on their experience, the impact that it has had on their sense of "teamness", on team communication and on their team's ability to navigate challenges. Data collection for our first workshop is underway and will be available at the time of the SGIM meeting.
DISCUSSION / REFLECTION / LESSONS LEARNED: The workshop provides a rare opportunity for individuals who have worked side-by-side for years to connect in new and meaningful ways. Feedback has been consistently positive thus far. Public narrative is a useful strategy to engage individuals to begin to work across disciplines in teams in the ambulatory setting. Participating residents emerge from the workshop better prepared to become effective leaders in their current institution's transformations and in the team-based approach to care that will be the norm when they graduate.

REMEDY AT UCSF: A SUSTAINABLE STUDENT-RUN INITIATIVE Lily B. Muldoon[1]; Jessica Gould[1]; Jacob Mirsky[1]; Sharad Jain[1]; Hemal K. Kanzaria[2]. [1]UCSF School of Medicine, San Francsico, CA; [2]UCLA, Los Angeles, CA. (Tracking ID #1627410)

NEEDS AND OBJECTIVES: The US healthcare system annually discards over $200 million worth of medical equipment from operating rooms and spends additional millions in disposal costs. This translates to 33 lb of waste per patient per day. Many health professional students do not recognize the magnitude of this waste, or the extent of worldwide healthcare discrepancies. Remedy at UCSF (R@UCSF), an interdisciplinary service-learning program, reduces medical waste and health disparities through socially responsible supply redistribution. Medical supplies are recycled and delivered based on identified need to international and local projects that support under-resourced regions.
SETTING AND PARTICIPANTS: Founded by University of California San Francisco (UCSF) medical students in 2004, R@UCSF partners student volunteers from each of the UCSF health professional schools with nurses, medical assistants, midwives, operating room technicians and physicians working in under-resourced communities.
DESCRIPTION: R@UCSF provides a sustainable experiential curriculum for students to link essential medical supplies with underserved communities by recovering unused surplus at UCSF. Working with both hospital staff and resource-poor clinics, students first identify supplies that are often discarded due to federal regulations or procedural excess but remain in demand by recipient clinics. Students then hold educational sessions for staff to put unused medical supplies in 17 collection bins strategically placed throughout the hospital. Through the UCSF Interprofessional Health Education Program, R@UCSF recruits nursing, medicine, dentistry, and pharmacy students. New students partner with current members to collect, transport, and sort medical supplies. Students then coordinate supply redistribution with UCSF staff traveling to in-need clinics. The hands-on experience exposes new students to the magnitude of medical waste and

demonstrates which supplies recipient communities deem most useful. Students distribute supplies during summer volunteer projects and international fourth year rotations.

EVALUATION: Quantitative and qualitative evaluation to inform program improvement is on-going. Over 50 students from across disciplines have engaged in the program. R@UCSF surveys students to determine how the program has impacted travel-abroad experiences, formation of career plans, and potential for scalability outside of UCSF. For example, students have recently integrated the R@UCSF model at Kaiser Oakland Hospital; the long-term goal is to replicate this throughout the Kaiser system. The volume and type of collected supplies and donations to receiving communities are recorded. R@UCSF has donated over 26,000 lb of supplies in the past 4 years. From 2010 to 2012, the organization directly supplied health projects in over 20 countries.

DISCUSSION / REFLECTION / LESSONS LEARNED: Recognizing the need for interdisciplinary team building in health education, R@UCSF bridges each of the professional schools in a service-learning curriculum that recovers and redistributes medical equipment. Student participation is high, reflecting the desire of students to work in teams to engage in systems-based practice to help address real-world problems. Student enthusiasm, administrative support, storage space, and socially responsible donation are essential for success. The R@UCSF model can be implemented at other medical centers with the ability and responsibly to recover unused medical supplies and reduce waste and inequity worldwide.

RESIDENT ATTITUDES AS LEARNERS AND TEACHERS IN MEDICAL SIMULATION: A SURVEY STUDY FROM THE MASSACHUSETTS GENERAL HOSPITAL DEPARTMENT OF MEDICINE Lee Park; Ian Barbash; Ada Stefanescu; Katie Famous; Paul F. Currier. MGH, Boston, MA. (Tracking ID #1641375)

NEEDS AND OBJECTIVES: Mannequin-based simulation has been widely accepted across multiple specialties, but its routine use in internal medicine training has been limited. Our internal medicine residency has developed a mandatory simulation-based education curriculum for interns, facilitated by second and third year residents. Simulation has not yet been employed in an evaluative fashion in our program. This survey study was designed to assess resident attitudes toward medical simulation, characterize the experience of residents as facilitators and teachers during simulation, and to understand resident attitudes toward the possibility of simulation as an evaluative tool.

SETTING AND PARTICIPANTS: The simulation curriculum was composed of 8 ward emergency cases distributed over 4 one-hour sessions, and was administered to interns in four-week blocks. A total of 65 interns participated in the curriculum. A total of 38 s and third year residents facilitated the sessions and debriefings. The simulation sessions took place in the hospital's simulation laboratory.

DESCRIPTION: During each one-hour session, groups of 2–3 interns participated in two simulation cases, with ~15 min of active simulation and ~15 min of debriefing. The cases included congestive heart failure, COPD, gastrointestinal bleeding, alcohol withdrawal, hypertensive emergency, atrial fibrillation, myocardial infarction, and pericardial tamponade.

EVALUATION: An online survey tool was used (REDCap) to create and distribute an anonymous survey to all interns and residents who participated in the simulation sessions. The survey was distributed to the interns at the end of their simulation experience (at the end a 4 week block) and to the second/third year residents at the end of the entire simulation curriculum. Response rates were 69 % (45/65) for interns, and 95 % (36/38) for residents. Among the residents, 58 % (21/36) were PGY-2, and 42 % (15/36) PGY-3. Among the interns 95.6 % felt that simulation was a safe environment, and that they were better prepared to take care of patients after participating in simulation. The majority (73 %) of interns wanted to participate in simulation on a monthly basis during residency. More interns than residents thought that participation in simulation should be required (93 % vs. 69 %, $p=0.007$). Among the residents, 91.7 % thought that participating in the sessions improved their teaching skills, and 53 % felt that teaching via simulation should be a required experience during residency. Interns and residents agreed that the cases accurately represented actual clinical encounters (both 89 %). More interns believed that graduation from residency should require demonstrated competency in management of basic internal medicine cases (50 % vs. 78 %, $p=0.01$). Both interns and residents were concerned that evaluation during simulation would undermine the safe environment, and that it would not be a valid assessment of their clinical competency.

DISCUSSION / REFLECTION / LESSONS LEARNED: Internal medicine interns and residents enjoyed simulation and felt that participation should be required for all trainees. Interns felt that simulation helps them with clinical management, and residents felt that it improved their teaching skills. While both interns and residents felt that the simulation cases accurately represented actual clinical encounters, they had concerns about the use of evaluation during simulation. These concerns would need to be addressed if simulation is employed as an evaluative tool.

RESIDENT ENGAGEMENT IN QUALITY IMPROVEMENT THROUGH THE PATIENT-CENTERED MEDICAL HOME Thomas B. Morland[1]; Kathie Huang[1]; Alithea Gabrellas[1]; Nicholas Leon[2,1]; Judy A. Shea[1]. [1]University of Pennsylvania, Philadelphia, PA; [2]Jefferson School of Pharmacy, Philadelphia, PA. (Tracking ID #1639039)

NEEDS AND OBJECTIVES: The Patient-Centered Medical Home (PCMH), Ambulatory Intensive Care Unit (A-ICU), and Accountable Care Organization (ACO) are expanding the role of primary care. It is unclear to what degree internal medicine programs are preparing residents to function within these emerging healthcare structures. The objective of this study is to document residents' baseline knowledge, attitudes, skills and behaviors related to emerging healthcare structures and to demonstrate the feasibility of a curriculum to improve resident performance.

SETTING AND PARTICIPANTS: Junior residents in the primary care-internal medicine program at the University of Pennsylvania were recruited to participate. A total of six residents constituting an entire class of the program enrolled.

DESCRIPTION: Residents were administered a survey assessing their knowledge and attitudes related to the PCMH and ACO. Participants attended a lecture covering key concepts of the PCMH, ACO, and A-ICU. To assess residents' skills and behaviors, residents worked to improve three quality improvement metrics drawn from elements of the PCMH certification process. To address the PCMH standard of providing self-care support to patients, residents were asked to enroll patients in a resident-run A-ICU. Patients had to be consented prior to enrollment. In the A-ICU, care plans were created to achieve both patient and provider goals. The plan was to be followed through by a team of 2 resident doctors and a pharmacist with supervision from an attending physician.

EVALUATION: Six residents completed the baseline survey. Although all residents had heard of the PCMH, none could reliably distinguish the PCMH from the ACO. Residents reported low-to-moderate preparedness to lead a modern primary care practice. The baseline quality metrics included rates of colonoscopy and enrollment of patients in the electronic portal. Response times to results in the electronic inbox were also tracked. At baseline the colonoscopy rate for the residents' panel was 62 %, and 23 % of patients were enrolled in the electronic portal. No resident on an outpatient rotation had more than 1 result in the electronic inbox which remained unviewed after 48 h. Residents received individual quarterly feedback reports on the key metrics. They were also expected to participate in quarterly update meetings with the program director and other residents. During these meetings, they were asked to present an update on one of their A-ICU patients or discuss their work on a key quality metric.

DISCUSSION / REFLECTION / LESSONS LEARNED: Baseline survey results indicate that residents lack knowledge regarding the details of emerging healthcare structures and have low confidence in their preparedness to lead a modern primary care practice. We test the feasibility of implementing a formal curriculum to teach residents the knowledge,

attitudes and behaviors they will need to be leaders of a future healthcare system based in an expanded role for primary care. Increasing exposure of trainees to the PCMH and other emerging primary care structures will be necessary to improve the pipeline for primary care and to nurture leaders for a reformed healthcare system.

SAFE MED RECONCILIATION (SATISFY PATIENTS USING A MEDICAL RESIDENT EDUCATIONAL INTERVENTION TO IMPROVE OUTCOMES) Jessica Logan[1,2]; Cherinne Arundel[2]; Rebecca Swenson[2]; Hanna Mariani1. [1]George Washington University, Washington, DC; [2]Washington DC VA Medical Center, Washington, DC. (Tracking ID #1640995)

NEEDS AND OBJECTIVES: The ACGME has mandated teaching quality improvement concepts to medical trainees. Our aim is to improve the accuracy of medical reconciliation by doing a real-time, experiential learning curriculum on medication reconciliation and quality improvement. The learning objectives of our intervention are: -Recognize the relevance of proper medication reconciliation -Demonstrate accurate discharge medication reconciliation -Recognize trainees' role in System-Based and Practice-Based Learning and Improvement -Apply quality improvement principles to the medication reconciliation process

SETTING AND PARTICIPANTS: This project is a two part learning session held bimonthly during morning report. Morning report is attended by residents, interns, and medical students from three university based programs (George Washington University, Georgetown University, and Uniformed Health Services).

DESCRIPTION: In the first session, the importance of medication safety is highlighted using a case in which a serious medication error occurred. A literature review and internal data on medication errors is presented. Trainees learn how to perform a proper discharge medication reconciliation, and an instructional pocket card is provided. In the second session, the principles of quality improvement are introduced in individualized team based small group discussions. The facilitators discuss principles of quality improvement, help the team develop an aim statement, and gather ideas on continual improvement and sustainability of the project. The teams assess their own medication reconciliation performance using a self evaluation rubric at the start and end of the educational intervention. Suggestions for improvement by the residents are incorporated for continuous project enhancement.

EVALUATION: The accuracy of discharge instructions pre- and post-intervention will be compared using a predetermined scoring system with chi-squared analysis. Pre-intervention data on the accuracy of medication reconciliation has been collected and scored. We are also soliciting continuous feedback from learners for continuous project improvement.

DISCUSSION / REFLECTION / LESSONS LEARNED: This educational intervention should result in more accurate patient medication lists at discharge and increased patient satisfaction. It is our hope that this will lead to a decrease in readmissions and morbidity/mortality due to medication errors. In addition, with the advent of the ACGME milestones, quality improvement has become an important educational topic. The milestones mandate that residents "engage in a quality improvement intervention," and this innovation will allow them to engage in such a project. We have encountered several challenges in the implementation stage including finding the right format to engage an ever changing group of learners with varied "switch" dates among academic institutions, engaging learners who have participated in the curriculum before, and involving all stakeholders in the medication reconciliation process.

SELF-ASSESSMENT OF PERFORMANCE: A NOVEL CURRICULUM FOR QUALITY IMPROVEMENT EDUCATION Kartik K. Patel; David A. Wininger. The Ohio State University, Columbus, OH. (Tracking ID #1639945)

NEEDS AND OBJECTIVES: The ACGME mandates the inclusion of practice-based learning and improvement education in GME training program curricula. Trainees must demonstrate the ability to "continuously improve patient care based on constant self-evaluation…" The Self Assessment of Performance (SAP) curriculum was designed to meet these requirements. The objective of this educational program is to enrich routine inpatient care with real-time assessment of quality performance and to develop skills in designing effective quality interventions.

SETTING AND PARTICIPANTS: Internal medicine residents rotating through General Medicine (GM) four-week inpatient blocks participate in the SAP curriculum. There are 10 participants each block. While all trainees (n=140) are eligible to participate, the curriculum is used by 4 of 5 GM services. By the end of the academic year, 95 unique residents will have participated.

DESCRIPTION: The four-week SAP curriculum starts by instructing trainees to build a registry of patients they encounter during the first 2 weeks of the block. Residents are expected to have at least 25 patients on their registry. At the start of week 3, each participant is assigned a quality metric and instructed to perform a chart review on their registry of patients. To complete their self-assessment, they calculate a SAP score: number of eligible patients compliant to the metric/total number of eligible patients. Five metrics have been developed for the curriculum: Same day discharge summary; verified code status order; appropriate DVT prophylaxis for low risk patients; pneumococcal vaccination for eligible patients; and discharge summary sent to next care provider. All metrics were designed to be applicable to GM patients, and be easily captured from chart review. The metrics assignment email includes background information, instructions for chart review with screen shots of the EMR, and a data reporting worksheet. The worksheet also contains three questions used for reflection: How would you improve your personal performance? How would you improve performance across the medical center? Do you agree or disagree that your metric represents quality care and why? In the 4th week, a faculty instructor precepts the final meeting where the SAP score results and ideas for improving are discussed as a group. The meeting is scheduled for 30 min to mitigate conflict with clinical time. All participants are required to submit a completed worksheet by the end of the block.

EVALUATION: Residents are provided feedback at the final meeting regarding the efficacy and feasibility of their proposed interventions, and the thoughtfulness of their metric critique. Average SAP scores ranged from 39.1 % (DVT prophylaxis) to 94.9 % (timely DC summary). The SAP curriculum was generally well accepted by housestaff. Over the first 6 blocks, 98 % of trainees completed the basic requirements. 88.9 % of participants agreed or strongly agreed that the exercise would affect their patient care in the future. 90.7 % and 92.6 % favorably rated (agreed or strongly agreed) the ease of creating the patient list and the ease of performing the chart review respectively.

DISCUSSION / REFLECTION / LESSONS LEARNED: A key feature of the SAP curriculum is the opportunity for residents to assess their individual performance in real-time using their own patients. Performance can be tracked over time as trainees rotate through each year. The SAP curriculum can be modified to include rotations outside of GM. A formal tool to quantitatively evaluate performance and give feedback is being developed.

SHARED MEDICAL APPOINTMENT CURRICULUM FOR INTERNAL MEDICINE RESIDENTS IN A SAFETY-NET HEALTH CENTER Katherine Lupton[1,2]; Michelle E. Hauser[1,2]; Barbara Ogur[1,2]. [1]Cambridge Health Alliance, Cambridge, MA; [2]Harvard Medical School, Boston, MA. (Tracking ID #1642170)

NEEDS AND OBJECTIVES: Changes in the primary care landscape—incorporation of new technologies into healthcare, transformation to team-based medical care, and new payment structures—increasingly require physicians to be facile with models of care delivery beyond the traditional 1:1 office visit. Shared medical appointments (SMA), also called group visits, are a well-described innovative format for providing care for chronic disease, and many primary care doctors are incorporating them into their practice. The skills necessary for success in the group setting, however, are often not part of residency training and must be learned independently or in venues outside the training environment.

SETTING AND PARTICIPANTS: The Cambridge Health Alliance internal medicine residency curriculum was recently redesigned to provide increased focus on skills needed in the ambulatory setting. Internal medicine residents now follow a 2+4 schedule, spending 2 weeks on ambulatory—including 4 weekly continuity sessions—alternating with 4 weeks of traditional inpatient and elective rotations. The Windsor Street Health Center, a safety-net community health center serving a large underserved and immigrant population in Cambridge, MA, is a new continuity site for residents. Many providers at Windsor Street are experienced with SMAs, having successfully conducted SMAs for low-income and non-English speaking patients on topics ranging from diabetes to men's health to buprenorphine therapy for opioid addiction. Each continuity resident at Windsor Street will participate in the SMA curriculum.
DESCRIPTION: We have developed and are currently piloting a curriculum to teach SMA skills to internal medicine residents. Beginning in the PGY2 year, residents will attend didactics and complete core readings outlining SMA principles. They will then spend several months observing SMAs conducted by experienced faculty while they work individually or in groups to design a SMA group focus that fits their clinical interests. Residents will recruit a core group of patients to their SMA groups, and by the end of the PGY2 year will begin to conduct SMAs that will continue for the remainder of their residency. Residents will be observed by and receive feedback from experienced faculty, and there will be reflection sessions to discuss the experience of conducting SMAs and get help with any issues that arise.
EVALUATION: Residents will complete a questionnaire before beginning the SMA curriculum examining their knowledge of and attitudes toward SMAs, familiarity with how SMAs are planned and conducted, issues best addressed in the group setting, and their confidence in skills necessary to conduct SMAs. They will take the same questionnaire after completing the didactic and observation portions of the curriculum, and again after gaining experience conducting SMAs. Objective patient measures such as hemoglobin A1c, weight or smoking status will be examined pre- and post-SMA participation where appropriate.
DISCUSSION / REFLECTION / LESSONS LEARNED: An initial pilot by one resident has proven successful with patients and was assessed as educationally valuable by the resident. Questions that have arisen to date include how to carve out time to plan and conduct SMAs in addition to residents' regular clinic duties, how to ensure appropriate supervision and feedback on residents' SMA implementation, and how to incorporate patient experiences and feedback into resident evaluations.

SIGN-OUT: A BRIEF EDUCATIONAL INTERVENTION AND ANALYSIS Kevin D. Hauck; Lauren Shapiro. Montefiore Medical Center, Bronx, NY. (Tracking ID #1641791)

NEEDS AND OBJECTIVES: Failure to give complete sign-outs during clinical handoffs is a potential source of patient harm. Duty hour restrictions have increased the number of handoffs that occur between primary and covering residents, and highlight the need for high quality sign-outs. This study examined the effect of an hour-long educational intervention on sign-out quality. The intervention was adapted from a previously developed curriculum that preliminary testing showed to be well received and increase resident comfort with the sign-out process.
SETTING AND PARTICIPANTS: Participants were interns and residents on an inpatient medical service at Montefiore Medical Center. The intervention took place during an hour usually reserved for clinical education.
DESCRIPTION: This hour-long educational intervention consisted of a lecture supported by a slide presentation and behavior modeling. The lecture component emphasized the importance of a standardized sign-out format, and thorough, 360-degree communication between day and night residents. There was additional time provided for the participants to practice thorough sign-outs in pairs with a trained moderator. Finally, the intervention was summarized in an easy to remember mnemonic (SIGNOUT) that participants learned to incorporate into their sign-outs.
EVALUATION: Eight days of sign-outs between day and night residents on the internal medicine teaching service at Montefiore Medical Center were audiotaped and any written components collected. Four days of data were collected before the intervention, and four after. To assess sign-out quality, investigators adapted a previously evaluated 6-component coding scheme which included a patient's clinical condition, code status, recent or scheduled events, anticipatory guidance, tasks to be completed, the presence of a plan and rationale for any task assigned and a global assessment of the sign-out's quality. A total of 534 sign-outs were evaluated; 16 sign-outs had missing data and could not be coded. Four hundred forty-nine sign-outs contained both written and verbal elements; 29 were written only. The overall quality and completeness of the sign-out did not significantly change after the intervention. The clinical condition, code status, recent/scheduled events and global assessment were significantly more likely to be included in the sign-out before the intervention.
DISCUSSION / REFLECTION / LESSONS LEARNED: This one-hour educational intervention did not improve the quality of the sign-outs. The sign-outs were collected during the same month with the same primary interns, with 4 days in the first 2 weeks and then 4 days in the last 2 weeks. Thus fatigue among residents in the post intervention 4 day period of the study may have accounted for some of the decrease in quality. Performing high-quality sign-outs requires several different skills including superior communication and organization. A single hour session may not be long enough to impart these skills and improving sign-out quality may require a longer, more intense intervention. While previous research has shown that a one-hour intervention increased comfort with sign-outs, our study suggests that it does not increase quality. Future research should focus on developing more potent educational interventions.

TEACHING ADVOCACY: A MODEL FOR CLINICAL SKILLS DEVELOPMENT AND HUMAN RIGHTS-BASED SERVICE LEARNING Luis Villegas[1]; Taryn Clark[1]; Margaret Fabiszak[1]; Terri G. Edersheim[3]; Joanne Ahola[1]; Nicole Sirotin[2]. [1]Weill Cornell Medical College, New York, NY; [2]Weill Cornell Medical College, New York, NY; [3]Weill Cornell Medical College, New York, NY. (Tracking ID #1642204)

NEEDS AND OBJECTIVES: Over 400,000 foreign-born torture survivors live in the United States; approximately 20 % of them reside in the New York metropolitan area. Over the previous year, New York City has experienced a significant increase in the number of asylum applications filed, indicating a potential rise in the number of torture survivors. Approximately 10–15 % of foreign-born patients who present to urban primary care centers and emergency departments are survivors of torture; however, few are recognized as such by healthcare professionals. Article 10 of the UN Convention Against Torture states that education on torture should be included in all medical training. The American College of Physicians and the US government have ratified this declaration, but few medical schools include any formal training or education on torture as part of their curriculum.
SETTING AND PARTICIPANTS: The Weill Cornell Center for Human Rights (WCCHR) was established in 2010 to educate medical students on the health sequelae of physical and psychological torture, while performing medical evaluations of torture survivors seeking asylum.
DESCRIPTION: WCCHR is the first medical asylum evaluation clinic in the United States to be founded, directed, and run by medical students. WCCHR partners with Physicians for Human Rights to perform medical, psychological and gynecologic evaluations for torture survivors who seek asylum. Through WCCHR, first and second year students have their first contact with patients, learn basic history-taking as well as focused physical exam skills, including gynecologic exams and learning how to characterize scars. The students also engage in diagnosing psychological conditions, such as Post Traumatic Stress Disorder and Major Depression, in these patients. The students learn vital advocacy skills, such as writing medical affidavits, used in the legal process of gaining asylum.
EVALUATION: WCCHR has trained 116 medical students, including 84 from Weill Cornell Medical College (WCMC) and 32 from Columbia University. The center holds two trainings per year, and students, as well as

faculty from other institutions (including UPenn, UCLA, and NYU) have participated. WCCHR has completed 95 evaluations for 84 clients from 35 different countries. As of December 2012, 67 WCMC students have attended at least one asylum evaluation, 29 have attended at least two, and 13 have attended three or more. A questionnaire administered to 32 medical students trained in 2012 revealed 88 % were likely to do another evaluation, 97 % would recommend WCCHR to a colleague, and 53 % planned to conduct asylum evaluations after graduation.

DISCUSSION / REFLECTION / LESSONS LEARNED: WCCHR is a novel, interdisciplinary model for teaching both clinical skills and human rights training to medical students in the pre-clinical years. This model will serve to create a workforce of physicians who are trained in these important skills and contribute to this work throughout their lifetime, regardless of specialty. In addition, the students learn valuable clinical skills in a safe, service-oriented environment. WCCHR is a truly interdisciplinary program; students learn medical, psychological and gynecological clinical skills while collaborating with physicians, community-based organizations and attorneys in advocacy work.

ONLINE RESOURCE URL (OPTIONAL): http://wcchr.com

TEACHING ELECTRONIC PATIENT-DOCTOR COMMUNICATION USING A PATIENT WEB PORTAL Bradley H. Crotty; Arash Mostaghimi; Bruce E. Landon. Beth Israel Deaconess Medical Center, Boston, MA. (Tracking ID #1642385)

NEEDS AND OBJECTIVES: Patients frequently use secure web portals to access their medical record and communicate with their doctors. Few institutions, however, train residents on best practices for electronic communication or provide opportunities for electronic communication with patients. We aimed to create an electronic communication curriculum for residents using PatientSite, a web-based patient portal, and to explore resident attitudes toward online communication over an academic year.

SETTING AND PARTICIPANTS: This intervention was created and implemented at Beth Israel Deaconess Medical Center, Boston, MA. Residents who practiced at the hospital based primary care site (n=125/159) were enrolled in the PatientSite portal. All medical residents were eligible to participate in the didactic components. Patients must enroll in the portal through an eligible provider, and can then access their medical information, order med refills, and send messages to their clinician.

DESCRIPTION: We designed the curriculum based upon a review of the literature of patient portal experiences and best practices. All residents participated in a lecture and a small group discussion; those at the hospital based primary care site also had experiential learning through PatientSite. The major domains covered were: Patients, The Patient Experience, The Provider Experience, and Systems-Based Practice. The lecture covered an overview of portal functionality and usage, while the small group discussion focused more on developing skills to respond to patient concerns and use the communication tool effectively. Equity in access and health literacy were addressed in both sessions. The practice did not make any attempt to notify patients that they were eligible to enroll in the portal and individual residents varied in promoting the site to their patients. Faculty preceptors were automatically copied on all messages sent to residents as a redundancy feature.

EVALUATION: Residents were surveyed at the beginning and end of the intervention regarding perceived benefits and burdens of using a web portal for patient communication. In the pre-intervention survey, the majority of residents felt that the portal would increase work for providers but would benefit patients. The survey also revealed that 53 % of residents had already used email to communicate with their patients. Almost 75 % of surveyed residents were concerned about medical liability. Post-intervention surveys demonstrated statistically significant changes in areas of provider workflow (Agree +20 % p=0.04), patient care delivered (Agree +38 % p<0.01) and patient empowerment (Agree +18 % p=0.02) among those residents who used the portal. Usage statistics were recorded from the patient portal. Residents enrolled 424 patients, 26 % of whom emailed their resident at least once. Six residents (14.6 %) reported that they had missed or delayed responding to a patient's message, and four (9.8 %) reported that they had received an inappropriately urgent message.

DISCUSSION / REFLECTION / LESSONS LEARNED: Implementing a patient web portal and secure messaging in a residency clinic is feasible, and may improve the work and educational experience of trainees, better preparing them for real-world practice. Residents remained concerned about medical liability from inappropriately urgent messages, and about 1/10 residents reported receiving such a message. Clinic supervision policies appear warranted. Our next step will be testing an assessment tool for faculty to use when reviewing resident-patient exchanges to facilitate feedback.

TEACHING ESSENTIAL SKILLS: TRAINING MEDICAL STUDENTS IN QUALITY IMPROVEMENT, PROCEDURES, AND TRANSITIONS OF CARE Saumil Chudgar; William C. McManigle; Aubrey Jolly Graham; Jonathan Bae; Noppon P. Setji; Cara L. O'Brien. Duke University School of Medicine, Durham, NC. (Tracking ID #1641002)

NEEDS AND OBJECTIVES: Medical school educators are charged with providing students the tools needed to succeed as physicians. After 4 years, trainees begin residency with a knowledge base shaped by individual experiences and with an awareness of both strengths and potential gaps in preparation. At the our institution, four areas—overnight patient care ("cross-cover"), consultative General Internal Medicine, hands-on experience performing procedures, and an understanding of quality improvement in medicine—are areas in which additional training can be provided in an effective, efficient manner. The overall objective is to determine whether introducing a selective in Hospital Medicine and Quality Improvement provides students a way to grow their understanding of these crucial topics.

SETTING AND PARTICIPANTS: A new clinical selective was approved for second-year medical students at the Duke University School of Medicine. Students are required to have successfully completed the eight-week core Internal Medicine rotation prior to registration. Five students have participated to date.

DESCRIPTION: The selective exposes students to overnight cross-coverage care and emergencies, common bedside procedures (thoracentesis, paracentesis and lumbar puncture), training in consultative General Medicine, practice with patient care transitions, and an introduction to quality improvement in healthcare. Students completed optional pre-rotation and post-rotation confidence and knowledge assessments. Self-reported confidence was reported using a five-point Likert-type scale. Students were directly observed and given feedback on transitions of care by practicing physicians. Data were analyzed using the paired t-test. IRB exemption was obtained.

EVALUATION: Post-rotation confidence improved in management of cross-cover emergencies including chest pain, dyspnea, hyperglycemia, altered mental status, and responding to alert laboratories (p<0.05). Similar improvement in confidence was seen in common General Medicine consultation diagnoses, encompassing cardiac risk assessment, hypertension, anemia, acute kidney injury, and delirium (p<0.05). Students' ability to explain risks of and describe the techniques to perform a thoracentesis and paracentesis improved as well (p<0.05), though this was not true for lumbar puncture (p>0.05). Confidence in delivering clear, concise verbal handoffs of care (p<0.05) also improved. Significant improvement was seen in developing a quality improvement project, writing an aim statement, and using a PDSA cycle to document a test of change (p< 0.05). All students scored 100 % on the post-rotation knowledge assessment of quality improvement principles.

DISCUSSION / REFLECTION / LESSONS LEARNED: These data frame evidence of an effective, novel medical school curriculum. Early results indicate a promising combination of improved clinical knowledge, improved procedural skills, and improved confidence in areas such as quality improvement and transitions of care that have increasing recognition of importance in the medical school curriculum. Medical student training requires an increased and earlier emphasis on clinical skills and understanding of quality improvement to improve patient safety and care. By beginning this training earlier in medical school and in a directed manner, it provides a framework for a more competent and confident healthcare provider.

TEACHING MEDICAL STUDENTS TO REFLECT "DEEPER" Amy C. Hayton; Raymond Wong; Ilho Kang; Lawrence Loo. Loma Linda University, Loma Linda, CA. (Tracking ID #1628510)

NEEDS AND OBJECTIVES: While many studies have examined the importance of reflective writing in medical education, there is a paucity of research evidence for any particular intervention to improve the quality or "depth" of reflection among medical students. To facilitate the development of critical reflection, a new curriculum enhancement was introduced during the third year of medical school. Prior to the intervention the students were given a written reflection assignment with no explanation of critical reflection. The objectives of this curriculum were to impart the importance of reflection, define critical reflection, identify the components of critical reflection, and produce a written critical reflection paper.
SETTING AND PARTICIPANTS: Participants included all medical students rotating through their required junior Internal Medicine (IM) ten-week clerkship at the Loma Linda University School of Medicine.
DESCRIPTION: A ninety-minute interactive teaching session on critical reflection was introduced at the start of each rotation. Key components included: ●A 4 minute video from the popular TV show Scrubs, highlighting a young doctor's reflection experience of a patient facing death. ●A large group discussion of the key concepts and core components of critical reflection. ●A small group interactive exercise where students compared and contrasted three essays portraying different levels of reflection. Each small group reported their findings to the larger group. ● A faculty presenter shared a personal reflection critical to her own professional development. During the course of each ten-week rotation, students were asked to write two reflection papers about a clinical experience.
EVALUATION: A previously validated tool, the REFLECT rubric, was used to grade the written reflection papers as either nonreflective (=1), thoughtful action (=2), reflection (=3), or critical reflection (=4). Students were credited with completion of the assignment after submitting their papers. The REFLECT rubric grades were not used to evaluate the students but rather as a means to evaluate the curriculum intervention. Sixty-seven reflection papers after the intervention were compared to sixty reflection papers written prior to the intervention. To minimize bias and blind the four faculty graders, names and dates were removed from each typed reflection paper. Differences in grading were discussed and consensus was reached. The primary analysis showed that the number of students writing "critical reflection" papers increased after the educational intervention, from 15 % (9/60) to 42 % (28/67) $p=0.0012$. The kappa statistic used to measure inter-rater reliability was found to be "slight to moderate" at 0.37.
DISCUSSION / REFLECTION / LESSONS LEARNED: In the initial analysis, our ninety-minute educational intervention successfully improved the depth of reflection by increasing the number of students who wrote "critical reflection" papers as measured by the REFLECT rubric. Strengths include the number of faculty evaluators and their blinding that minimized bias in grading. The low inter-rater reliability highlighted a significant limitation of the REFLECT rubric which may limit the applicability of our results to other institutions. We believe this curriculum enhancement could readily be adapted to a clerkship seeking to enhance student reflection and ultimately promote educational activities that foster lifelong learning.

TEACHING PATIENT-CENTERED USE OF THE ELECTRONIC MEDICAL RECORD Wei Wei Lee; Lollita Alcocer. University of Chicago, Chicago, IL. (Tracking ID #1642502)

NEEDS AND OBJECTIVES: When electronic medical records (EMRs) are used during clinic visits, they can be viewed as an obtrusive "third party" in the doctor-patient interaction. Over the past decade, EMR use in clinic visits have become the norm. Preliminary studies demonstrate that EMR use in exam rooms can prevent physicians from focusing on patients and may be detrimental to the doctor-patient relationship. Currently, there is no curriculum at the University of Chicago that teaches students how to optimize EMR use to build relationships with patients. Our objectives are to: 1) Identify best practices in patient-centered EMR communication and teach these skills and behaviors to medical students through an interactive lecture. 2) Develop an OSCE to allow students to practice patient-centered use of EMR skills. 3) Evaluate the impact of the lecture and OSCE on students' knowledge and skills.
SETTING AND PARTICIPANTS: We will deliver an interactive lecture on patient-centered use of the EMR to all second year students ($n=88$) as part of their required Clinical Skills Course. They will also be required to participate in an OSCE to practice these skills.
DESCRIPTION: We developed an interactive lecture on how to conduct patient-centered interviews while engaging patients with the EMR. Our lecture outlines the problem, reviews the literature and identifies best practices. We screen a teaching video depicting a poorly conducted patient interview to stimulate discussion. Students reflect on the video and fill out a checklist on barriers related to communication, behaviors and patient-doctor relationship. We then introduce a toolkit with our "Best Practices" and "Ten-tips" for patient-centered EMR use. Each student is given a pocket card summarizing the main teaching points, behaviors and skills. At the conclusion of our lecture, we role-play a clinic visit to demonstrate an improved patient-doctor-EMR interaction using the tools and tips we introduced. After the lecture, the students participate in an OSCE to evaluate their patient-centered use of the EMR skills. We developed a Clinical Evaluation Exercise (CEX) tool for preceptors and observing students to use in rating the student's performance. Standardized patients also fill out an evaluation form to rate their satisfaction with the student's communication skills, with a focus on EMR integration.
EVALUATION: 1) We will distribute a pre and post-test at the lecture to evaluate impact on student knowledge and attitudes. 2) The OSCE allows us to evaluate students' skills in patient-centered EMR use. The CEX tool allows observing students and faculty to rate the student's performance. 3) The standardized patient's evaluation will also be used to assess the student's skills. 4) To assess the impact of our curriculum, we will use third year students who did not get the lecture on patient-centered EMR use as historical controls by having them participate in the same OSCE. We will compare their scores on the CEX tool and standardized patient evaluations with those of the second year students who did received the lecture.
DISCUSSION / REFLECTION / LESSONS LEARNED: Our project on patient-centered EMR use is innovative and timely and addresses an existing gap in medical education. This curriculum can be adapted for residents and practicing physicians in the future and has the potential to improve the integration of technology in a patient-centered manner. We believe that teaching students these skills early on will help to improve their relationships with patients in their clinical practice.

TEACHING TRANSITIONS OF CARE THROUGH ANALYZING READMISSIONS Kara Bischoff; Aparna Goel; Jayson Morgan; Michelle Mourad; Sumant Ranji. UCSF, San Francisco, CA. (Tracking ID #1634621)

NEEDS AND OBJECTIVES: Nearly one in five Medicare patients are readmitted within 30 days of discharge from the hospital. Preventing readmission has become a central priority nationwide and many medical centers have developed multifaceted programs aimed at improving transitions of care and reducing readmissions. However, residents have not been fully utilized in these efforts and literature suggests improvements are needed in how we educate and employ residents in efforts to decrease readmissions. By engaging residents in analyzing their patients' readmissions, we aim to develop residents' practice-based learning and systems-based practice regarding transitions of care.
SETTING AND PARTICIPANTS: All PGY-2 medicine residents rotating on an inpatient wards month at University of California at San Francisco Medical Center, a 600-bed tertiary care hospital.
DESCRIPTION: Residents receive formal education about safe discharge practices for preventing avoidable readmissions during regularly scheduled noon conference didactics. Thirty days after completing a wards month, residents receive a list of patients discharged under their care who were subsequently readmitted to the hospital within 30 days. Using a structured tool, residents collect follow-up information on at least four of their

patients. In addition to reviewing the electronic medical record, residents are also expected to contact patients and their families, outpatient providers, and the readmitting team. Residents are responsible for recording patient outcomes, identifying systems issues and reflecting on how this review will impact their clinical practice. Residents share their results with their team members at either a team dinner or electronically on a shared "Portfolio" website. Residents receive informal feedback from the outpatient and inpatient providers who they contacted, and faculty mentors are responsible for providing comments for the resident on the "Portfolio" site.

EVALUATION: Residents' work is reviewed by their wards attendings and a four-member evaluation subcommittee. Residents receive feedback on their ability to execute safe transitions of care, as well as their process of analyzing readmissions and forming plans for improvement. They are scored on five relevant milestones and are awarded an overall level of entrustment based on their ability to safety execute transitions of care from the inpatient to outpatient setting.

DISCUSSION / REFLECTION / LESSONS LEARNED: In order to assess the value of this educational exercise, residents are asked to complete post-surveys. Preliminary results from the first 11 participants show that all residents believe that following up on their patients after discharge will lead to improvements in their care, most (73 %) are motivated to pursue a system change based on what they learned and nearly all (91 %) believe that this should be a required exercise for all residents. Through qualitative analysis of residents' work, the most commonly identified themes contributing to readmission are medication issues, the importance of timely outpatient follow-up and the need for advance care planning. Our results suggest that this is a valuable exercise that fills a current educational gap and can inform systems changes to improve care transitions.

TEAM-BASED EDUCATION FOR IMPROVING PANEL MANAGEMENT IN A PATIENT CENTERED MEDICAL HOME Anne Dembitzer[1,2]; Colleen Gillespie[2]; Lucas Dreamer1; Ashley E. Jensen[2,1]; Rachel Blitzer[2,1]; Katelyn Bennett[2,1]; Mark D. Schwartz[2,1]; Scott Sherman[1,2]. [1]NY Harbor VA, New York, NY; [2]New York University, New York, NY. (Tracking ID #1641516)

NEEDS AND OBJECTIVES: To maximize the benefits of the medical home (PCMH) model, staff needs to be well-trained in interdisciplinary teamwork, panel management, and staff-led quality improvement projects. Currently, few programs are in place to foster development of such capacities through team-based learning. To address these educational gaps, we created, implemented, and evaluated a tailored curriculum within VA's Patient Aligned Care Teams (PACT).

SETTING AND PARTICIPANTS: The educational intervention was part of the PROVE study (Program for Research on the Outcomes of VA Education) which sought to assess the impact of panel management on chronic disease outcomes through the addition of a non-clinical panel management assistant (PMA) to randomly selected PACT teams. Of the 12 teams allocated a PMA, six were randomly selected to participate in five, Twenty-minute education sessions over the nine-month intervention. Each PACT team met bi-weekly and included 1–5 Primary Care Providers (PCPs), a nurse (RN), a Licensed Practical Nurse, and a clerk.

DESCRIPTION: The curriculum was developed based on relevant literature and VA guidelines for PACT implementation. The case-based sessions were held during PACT team meetings. Sessions were facilitated by a MD and/or PhD education specialist and divided into 3 modules: working in multidisciplinary teams, practicing panel management, and leveraging the clinical microsystem. A case of a hypertensive patient with suboptimal medication adherence was presented in the first module and the team discussed role responsibilities and communication. The second module utilized panel data, a list of PCP's uncontrolled hypertensive patients were presented to enhance understanding of panel management. Teams discussed data quality, interpretation, and gaps and then prioritized a set of interventions. The third module addressed team motivation and barriers to population-based care within the microsystem. Discussions resulted in proposals for microsystem change including group visits and improved tracking of missed RN blood pressure appointments.

EVALUATION: Following the intervention, we surveyed the 44 PCPs and 17 RNs to assess the impact of the educational sessions (response rate 76 %). Survey items were rated on a 5-point Likert scale, and reported as the proportion that agreed or strongly agreed. Teams assigned to the intervention, participated in 1.5–2 h of education. Most participants felt that the education sessions promoted constructive discussion (63 %), creative problem solving (56 %) and brainstorming of panel management strategies (56 %). Half reported that the sessions offered time not otherwise available for panel management. About a third felt the sessions improved their understanding of team roles (38 %).

DISCUSSION / REFLECTION / LESSONS LEARNED: This brief curriculum appeared to enhance the ability of PACT teams to communicate and collaborate effectively, implement panel management and brainstorm microsystem ideas as a team. Surveys revealed sustained role confusion, barriers to PM implementation, and uncertainty about working as a team, highlighting areas for further educational intervention and quality improvement within PCMH models. By making use of existing meeting times and using team panel data at two busy outpatient clinics, this intervention demonstrates that it is possible to implement such a training program in a real world setting.

THE BEHAVIORAL MEDICINE TOOLBOX: EQUIPPING RESIDENTS WITH THE TOOLS NECESSARY TO NAVIGATE THE SOFTER SIDE OF MEDICINE Katherine J. Kueny; Rachel Bonnema; Emily Leasure. University of Nebraska Medical Center, Omaha, NE. (Tracking ID #1640449)

NEEDS AND OBJECTIVES: Though behavioral medicine is a specialty valued by many, educators might struggle to incorporate behavioral medicine topics into their curriculum, due to lack of time, resources, or other factors. Figuring out what behavioral medicine education should consist of, who is responsible for teaching the curriculum and finding the time to teach it, are a few of the many barriers that programs face. These are all barriers that we considered prior to implementing our new curriculum. Objectives: 1) To improve the residents' ability to conduct a patient-centered interview and use motivational interviewing techniques. 2) To improve residents' knowledge when assessing and treating psychosocial issues. 3) To enhance residents' confidence assessing and treating psychosocial concerns. 4) To provide a forum for residents to discuss concerns related to treating difficult patients. 5) To enhance the residents' ability to self-evaluate their patient care skills and provide constructive feedback to peers.

SETTING AND PARTICIPANTS: We initially developed one curriculum for 1st, 2nd, and 3rd year residents. The noon conference series is taught in a classroom setting. The behavioral medicine seminar is conducted in a seminar setting. Videotape reviews take place at our resident-run continuity clinic, which is a NCQA Level III certified patient centered medical home.

DESCRIPTION: This curriculum was designed to fill a gap in our residency program by equipping residents with a behavioral medicine "toolbox" to help them remember tools they can access when challenging patient encounters arise. Our curriculum was implemented in 3 phases. We first hired a behavioral medicine director and licensed mental health provider to provide residents with informal education in the clinic and on-site consultation with their patients. The second and third phases were the implementation of our formal curriculum. We chose to have a behavioral medicine expert, along with an MD, teach the curriculum to provide both perspectives. The second phase was the development of a behavioral medicine noon conference series that rotates through a variety of behavioral medicine topics. The conferences are hands on, utilizing role plays, videos, and interaction with the residents. During each noon conference, we provide new "tools" to add to the overall "behavioral medicine toolbox". The third phase of the curriculum was the implementation of a 4 week seminar that 3–4 residents would participate in once a week. The seminar includes didactic teaching, videotape reviews, and informal discussions guided by the particular needs of the residents.

EVALUATION: We utilized a pre- and post-test method to evaluate the seminar. We chose a knowledge questionnaire that was already validated, along with an efficacy questionnaire to assess the residents own confidence level with managing psychosocial concerns. We also have a general evaluation to evaluate the resident's overall experience of the seminar.
DISCUSSION / REFLECTION / LESSONS LEARNED: Lessons Learned: 1) A separate curriculum is needed for 3rd year residents. 2) We need to develop our own assessments to more adequatley assess our specific curriculum. 3) Having residents start videotaping prior to the seminar will allow us to hit the ground running. 4) Residents are often uncomfortable with viewing their encounters at first. We will tape a role play to view at the first seminar to ease their discomfort. 5) Seminars seem most conducive to 3–4 residents, and are not as effective with only 1–2.

THE COURTEOUS CONSULT: A POCKET CARD AND TRAINING TO IMPROVE HOUSE STAFF CONSULTS Lauren Peccoralo; Anna Podolsky; David T. Stern. Mount Sinai School of Medicine, New York, NY. (Tracking ID #1636401)

NEEDS AND OBJECTIVES: Communication and courtesy are important components of consultations, but little is known about the quality of physician trainee consults and no published interventions have improved these interactions. The goal of this study was to assess residents' views on the impact of consults on patient care and assess the impact of a pocket card on the quality of trainee consults.
SETTING AND PARTICIPANTS: Survey participants included all levels of physician trainees in all specialties at Mount Sinai School of Medicine in New York, New York (approximately 1000 eligible trainees). Training session participants included incoming first year residents (approximately 350 eligible trainees).
DESCRIPTION: From March to May 2011, we conducted an online pre-intervention survey (based on focus groups) about consultation interactions. Based on survey results, previous literature and guidelines, we developed a pocket "Consult" card and a training session for calling consults (the intervention). The forty-minute long training session included a 20 min didactic component 2 five-minute videos and ten-minute role-play scenario. The session was given to 300 incoming first year residents as part of hospital-wide orientation in June 2011. We evaluated the training session and card from October to December 2011 using online post-intervention surveys. Results were analyzed using descriptive and nonparametric tests.
EVALUATION: Three hundred ninety nine trainees (40 % response) responded to the pre-intervention survey. When asked to rate the impact of the consultation interaction on the following patient outcomes, participants reported a large impact on: timeliness of treatments (62 % of participants), timeliness of tests performed (57 %), appropriateness of diagnosis (56 %), discharge planning (49 %), and timing of discharge (43 %). Three hundred trainees (30 % response rate) responded to the post-intervention survey. After the training, trainees felt that the caller more often showed appreciation to the consult team (Mean [M]; 3.28(pre) vs. 3.50(post), $p=0.016$) and came to the bedside for evaluation (M; 2.4 vs. 2.7, $p=0.013$). In addition, 60 interns that attended the session responded to the survey (20 % response rate). These trainees felt more comfortable calling consults after the training session (M; 3.0 vs. 3 .45, $p<0.001$) and using the consult card (M; 3.25 vs. 3.4, $p<0.001$).
DISCUSSION / REFLECTION / LESSONS LEARNED: Trainees believe that consult interactions impact patient care and outcomes. Evidence suggests that our consult training intervention improved trainee comfort calling consults and may improve consult interactions especially regarding courtesy and in person interaction.

THE INTERNATIONAL SCHOLARS PROGRAM (ISP): BALANCING RESEARCH AND CLINICAL CARE. OUR TEN YEAR EXPERIENCE Peter D. Bulova; Adeel Butt; Shanta M. Zimmer. UPMC, Pittsburgh, PA. (Tracking ID #1635189)

NEEDS AND OBJECTIVES: To recruit an elite and internationally diverse group of medical graduates who have a clear ambition to pursue careers in academic medicine. To foster and enhance clinical, educational, and research relationships with medical schools throughout the world. To train future clinician-investigators to serve as key contacts and bridges for international collaboration in medical clinical research and medical education. To develop future leaders in research and academic medicine
SETTING AND PARTICIPANTS: Over the past 10 years we have recruited 4–6 International Medical Graduates per year who demonstrate promise in research careers or as academicians. We have now trained 34 residents in the program. Applicants are selected for excellence in clinical care as well as evidence of an interest in a career involving research. The residents are a part of a track within our categorical residency program, and at the end of the three-year training program, the ISP graduates are eligible to sit for the American Board of Internal Medicine (ABIM) Certification Examination. Clinical training in the ISP is similar to training in the categorical training program and conforms to all requirements of the Residency Review Committee and the ABIM. In addition, time is protected for ISP scholars to receive formal classroom or hands-on training in various aspects of clinical or basic science research.
DESCRIPTION: Residents participate fully in our traditional 3 year residency. In addition, they have 2 months of a clinical research methods curriculum. The classes are as follows: Clinical research methods. Statistical approaches in clinical research Computer methods in clinical research Measurement in clinical research. Ethics in clinical research Residents have a clinical mentor, an assigned general research mentor, and a research mentor chosen by the ISP scholar in their field of study. All participate in a monthly seminar series to discuss issues in research.
EVALUATION: All 34 Residents entered the program with an interest in Academics. They are from over 20 different medical schools in Austria, Brazil, China, Greece, India, Iran, Lebanon, Pakistan, and Peru. Thirty-two of the 34 graduates obtained fellowships at peer institutions, while all 34 continued in academics. All have successfully completed residency with a 100 % board pass rate. The number of publications per resident by the international scholars far exceeds that of categorical residents. For example, in 2011–2012 the international scholar residents averaged 2 publications in peer reviewed journals per resident (32 by 16 residents), compared with an average of 0.5 per categorical resident. The International Scholars as well as our Clinician Scientists have served as models for integrating research and scholarly projects into our clinical program.
DISCUSSION / REFLECTION / LESSONS LEARNED: The ISP has added diversity to our residency training program and enhanced the research mission without compromising the clinical mission of excellence in patient care. The residents found the integration within the general categorical program to be its most important component. Recruitment of talented scholars from around the world to a specific curriculum has created a successful model of academic training for international medical graduates seeking research careers in subspecialties of internal medicine.
ONLINE RESOURCE URL (OPTIONAL): http://www.residency.dom.pitt.edu/Program_Overview/tracks/isp.html

THE RESIDENT AS PRECEPTOR: INCORPORATING SUPERVISION OF MEDICAL STUDENTS IN THE AMBULATORY SETTING INTO A RESIDENCY CURRICULUM Sudha Dubey[1]; Robert Hirten[2]; Sheira Schlair[2]. [1]Beth Israel Medical Center, New York, NY; [2]Montefiore Medical Center of Albert Einstein College of Medicine, Bronx, NY. (Tracking ID #1638660)

NEEDS AND OBJECTIVES: Supervising students in the inpatient hospital setting has long been an important component of internal medicine residency training and reinforces residents' medical knowledge and teaching skills. However similar interaction between students and residents in the ambulatory setting is rare in academic training programs as is formal evaluation of resident teaching skills. Several studies have shown that junior attendings exhibit low confidence and competence in teaching skills, suggesting residency is an appropriate time for intervention. Our aim was to teach residents effective precepting skills in the ambulatory setting by providing a resident-as-preceptor curriculum followed by supervised medical student precepting sessions.

SETTING AND PARTICIPANTS: Senior internal medicine residents (n =11), fourth year medical students (n=11) and attending internal medicine physicians (n=6) at an ambulatory internal medicine teaching clinic at Montefiore Medical Center (Bronx, NY.)
DESCRIPTION: A resident committee at one ambulatory teaching clinic site performed an informal needs assessment that showed senior resident interest in developing ambulatory precepting skills. Clinic and residency administration buy-in was achieved for a pilot project of residents serving as preceptors in clinic sessions with fourth year medical students. A two-hour learner-centered, highly interactive curriculum focused on effective ambulatory teaching strategies, adult learning theory, and the one-minute preceptor model and RIME scheme was developed by two senior residents led by one faculty member. The residents were then assigned to precept medical students in the ambulatory medicine clinic for 1–2 sessions each supervised by an attending physician. A resident led the precepting encounter while an attending was instructed to silently observe the session and interject only if he/she disagreed with management.
EVALUATION: Resident preceptors, students and supervising attendings were surveyed to assess whether goals of precepting were met, as well as to assess learner satisfaction and overall precepting effectiveness. All questions were scored on a 1–4 Likert scale or open-ended qualitative format. Precepting goals included: 1. Eliciting the student's clinical reasoning and independently formed assessment and plan; 2. Teaching general principles that can be applied in future encounters; 3. Giving behaviorally specific positive feedback; 4. Correcting errors with specific feedback about how to improve; 5. Completing the encounter in a time-efficient manner. On preliminary review of the data, all groups felt that each of these goals were met. 55 % of residents and 33 % of attendings "strongly agreed" that the resident preceptors were able to elicit the student's reasoning, assessment, and plan, while the remaining 45 % and 67 % respectively indicated that they "agreed." Residents overall felt that they were comfortable in their role as preceptor (82 % indicated "agree" or "strongly agree") and that the experience had added educational value to their residency (73 % indicated "strongly agree" and the remaining 27 % indicated "agree.")
DISCUSSION / REFLECTION / LESSONS LEARNED: In an innovative resident-as-teacher initiative, senior medical residents found a brief learner-centered curriculum to be practical and precepting experience to be empowering. Learners and supervising attendings agreed that resident preceptors met teaching objectives effectively and residents found it to be a meaningful and educationally valuable component of their residency experience.

THE SIMULATED MEDICAL EDUCATION PROGRAM: NEW SENIOR BOOT CAMP Bridget B. Stiegler. Banner Good Samaritan Medical Center, Phoenix, AZ. (Tracking ID #1641009)

NEEDS AND OBJECTIVES: Restriction of resident work hours has prompted the need for supplementary forums wherein we educate and evaluate resident's ability to apply important internal medicine skills. In addition, there have been measurable changes in public expectation of how new doctors learn new skills. The shifting focus of patient advocacy groups towards quality improvement, the emergence of a more team-oriented approach to patient care, and the development of high fidelity medical technology have highlighted simulation education as a viable component of internal medicine residency training. In response to these changes the Banner Good Samaritan Academic Medical Service developed the Internal Medicine Simulation Boot Camp, a program utilizing high fidelity mannequins in patient hybrid simulation exercises. In September of 2012 the new senior residents participated in a series of four installations focusing on the fields of Pulmonology, Cardiology, Gastroenterology, and Neurology. Residents took a pre-quiz at the start, and a post-quiz at the completion of each boot camp. The simulation team looked at change in quiz scores from pre to post quiz after the intervention of intensive simulation training. Residents were also surveyed on multiple subjective outcomes, results of which were highly in favor of simulation training.
SETTING AND PARTICIPANTS: Internal Medicine and Medicine-Pediatrics residents in their second year of training were included in Boot Camp. These residents were excused from their regularly scheduled Tuesday morning academic lectures for the month of September. The Internal Medicine attendings, as well as consultants and fellows worked together to run boot camp in the Simulation Training Lab at Banner Good Samaritan Medical Center.
DESCRIPTION: Two weeks prior to camp residents received study materials related to the upcoming session. The day of boot camp, they were split into three teams, with six residents each. Teams then rotated through a total of six stations, comprised of simulated clinical cases, simulated procedures, and focused academic small groups. The residents took a quiz at the start of each boot camp and prior to leaving the simulation center. Subjective outcomes surveyed included preparedness for the experience, the value of the reading matierial provided, the relevance of the simulated cases and the likelihood that the boot camp experience would influence practice and clinical decision making.
EVALUATION: There was an average score increase of 33 % between the pre and post quiz results, from 54 % (pre) to 87 % (post). Paired t-test was significant for post versus pre test total at $p<0.001$ for all four boot camp sessions. 100 % of participants completed the survey, with 82 % of participants feeling their simulation training will enable them to make better clinical decisions. 95 % of participants felt extremely confident performing new skills on their patients after simulation training, and 100 % of those surveyed would recommend that other residency programs adopt high fidelity simulation training as part of internal medicine curriculum.
DISCUSSION / REFLECTION / LESSONS LEARNED: Our goal as physician educators is to build a comprehensive, efficient, clinically relevant educational experience for our residents. With the Senior Boot Camp, we are able to impart a large amount of practical information to a large number of learners in a systematic and reproducible fashion. The boot camp format shows statistically significant improvement in scores and subjectively positive evaluations for all involved.

THE UNIVERSITY OF QUEENSLAND/OCHSNER CLINICAL SCHOOL PARTNERSHIP: A MODEL OF TRANSNATIONAL MEDICAL EDUCATION AIMING TO CREATE PRIMARY CARE PHYSICIANS Gerald D. Denton; Richard Deichmann; Leonardo Seoane. Ochsner Health System, New Orleans, LA. (Tracking ID #1629687)

NEEDS AND OBJECTIVES: After many years of preparatory work, the Australian Medical Council (AMC) formally accredited a partnership between the University of Queensland (UQ) in Australia and the Ochsner Health System in New Orleans in 2010. One of the goals of the partnership is to emphasize primary care while training physicians capable of practicing in Australia, New Zealand, and the US.
SETTING AND PARTICIPANTS: The UQ/Ochsner Clinical School (UQ-OCS) partnership allows a cohort of US citizens to enroll in an Australian medical degree program in which they complete their first 2 years of medical school in Brisbane, Australia (Phase I), finish the final 2 years in New Orleans (Phase II) and graduate with a MB BS (MD equivalent) degree. Students are college graduates who meet minimal MCAT and undergraduate GPA criteria
DESCRIPTION: The curriculum of the UQ/OCS differs from traditional US medical school curricula with regards to primary care. Traditional US models have a heavily structured clerkship year that generally includes mandatory rotations in pediatrics, internal medicine, surgery, obstetrics/gynecology, psychiatry, family medicine, and/or neurology. Some of these clerkships include outpatient care, but most do not. The less structured fourth year includes some required rotations but is largely structured to meet each student's perceived needs. In contrast, the UQ/OCS curriculum has a strong focus on outpatient primary care starting early in the preclinical years. Phase I is a Problem-Based Learning program, where students principally work in small groups of 10 students and receive bedside teaching in small groups of 5 students. Additionally, students complete 8 weeks of clinical electives during phase 1 in Australian health settings including rural and primary health care. After moving to New Orleans for Phase II students complete an integrated third and fourth year, with ten eight-week rotations, including required rotations in general practice, primary care in rural or disadvantaged populations, inpatient

internal medicine, general surgery, psychiatry, pediatrics, obstetrics/gynecology, 2 rotations in specialty medicine or surgery and one elective.
EVALUATION: Traditional UQ students in Australia choose to do primary care/rural medicine at a relatively high rate. The first UQ/OCS cohort of students appear to be well qualified (Step 1 pass rate=89 %, step 2CS pass rate=89 %, step 2 CK pass rate=100 %, mean step 1 score of 213 and mean step 2 score of 243). Five of the nine graduating students have interviews with US primary care specialties—Family Medicine (1) and Internal Medicine (4).
DISCUSSION / REFLECTION / LESSONS LEARNED: The UQ-OCS Partnership is a unique entity designed to train US citizens in an international setting with a focus on outpatient primary care. The first graduates of the program are well-qualified and are interviewing for primary care specialties at a high rate. Ongoing data collection and analysis are required. While there are multiple influences on student specialty choice in the US, this model of education may direct more students towards primary care.

THE USE OF HEALTH SERVICES DATA TO INFORM CURRICULUM DEVELOPMENT Lynn Byars; Charles D. Magee; William F. Kelly; Michael Roy. Uniformed Services University of the Health Sciences, Bethesda, MD. (Tracking ID #1643129)

NEEDS AND OBJECTIVES: Curriculum content has largely been determined based on educators' opinion, intuition, and preferences, which vary with their own expertise, and are shaped by national accreditation bodies. Many US medical schools undertook curriculum reform to integrate basic and clinical sciences. Ideally, the process should be informed by the specific health needs of patient populations, which may be quite distinct by geographic region, setting or mission. The Association of American Medical Colleges asserts, "medicine must always be responsive to evolving societal needs, practice patterns, and scientific developments." Delays in recognizing and incorporating emerging health trends into curricula deprive trainees of the "preparedness for practice" they are promised. Health services data provides a means to inform curriculum developers of the specific health needs for their population by identifying trends in common and emerging health issues. This allows new curricula to respond to emerging diseases while confirming clinical topics with enduring educational value. The primary objective of this innovation is to utilize health services data, specifically admissions and outpatient encounters, to inform curriculum development of the most common and emerging diagnoses in our patient population.
SETTING AND PARTICIPANTS: This innovation uses health services data from our health system to assist curriculum design committees for both preclerkship and clinical settings.
DESCRIPTION: Admission and outpatient encounter ICD-9 diagnoses were analyzed to generate a population health profile. This data was stratified to look at the needs of the population as it applied to unique educational components of our medical school curriculum. Emerging disease patterns were identified for incorporation into our curriculum as we undertook redesigning our educational activities.
EVALUATION: Admission and top outpatient encounter ICD-9 diagnosis codes were accessed for all facilities in our medical system for calendar year 2011. Applied to the Internal Medicine population, the top non-obstetric admissions include chest pain, anxiety, pneumonia, and epilepsy/convulsion diagnoses. Although chest pain and pneumonia are well represented in our current curriculum, anxiety and epilepsy/convulsion diagnoses receive less representation. The top outpatient encounter diagnoses include diabetes mellitus, spine and appendicular diagnoses, anxiety and affective mental health, and upper respiratory infections. Diabetes and musculoskeletal disease seem intuitive and are well represented in our current curriculum. However, the emerging mental health profile identifies a need to review the existing neurobehavioral health curriculum.
DISCUSSION / REFLECTION / LESSONS LEARNED: Using health services data to inform curriculum development addresses the societal obligation to graduate students competent to provide care to a defined patient population. Tailoring curriculum to meet unique and emerging health needs present in our populations may improve both curriculum content and delivery. Data monitoring may decrease latency in curriculum development, and further align basic and clinical sciences. However, this data should inform, rather than direct curriculum development, as physicians must still be prepared to practice safely in any population. Access to health services data is not ubiquitous and many institutions may not have representative population level information available.

THE "PROFESSIONALISM MATRIX": A TOOL TO TEACH AND EVALUATE PROFESSIONALISM Van Geslani; Lawrence Loo; Sam Baz; Leah Tudtud-Hans. Loma Linda University School of Medicine, Loma Linda, CA. (Tracking ID #1639099)

NEEDS AND OBJECTIVES: While professionalism is a widely accepted core clinical competency, students residents, and faculty often disagree whether certain actions are unprofessional or not. What constitutes a breach of professional conduct often requires an understanding of the context of the situation and reasoning by those involved. We developed a tool, the "Professionalism Matrix," that was incorporated into a case based educational conference with the specific goals of describing the challenges in defining professionalism, recognizing professionalism as a competency, and using the Professionalism Matrix as a systematic approach to teach and evaluate professionalism.
SETTING AND PARTICIPANTS: We have applied the Professionalism Matrix in 3 interactive conferences to date—the first for house staff in our Internal Medicine (IM) residency, the second at our annual institutional chief residents conference that included all departmental specialties and finally in a University wide faculty development session that had representatives from the School of Medicine, Nursing and related Allied Health professionals.
DESCRIPTION: The Professionalism Matrix incorporates the Accreditation Council for Graduate Medical Education's (ACGME) definition of Professionalism along with the American Board of Internal Medicne's (ABIM) 10 related milestones, cross-referencing this with a systems-based practice definition that considers the context of the situation. The contextual framework includes 3 levels: the "Micro" level (or behavior that is influenced by the individuals' knowledge, skills, beliefs, and attitudes); the "Meso" level (or behavior that is influenced by the immediate organizational structure such as the School of Medicine, Department or residency program); and finally the "Macro" level (or behavior that is influenced by national organizations, policies or trends within the United States). Based on the authors' actual experiences, a series of clinical vignettes are presented with situations that pose opportunities for potentially unprofessional behavior. Participants are broken into small groups and each is given one clinical vignette to discuss the observable actions within the context of the Professionalism Matrix and the possible clinical reasoning of those involved. An audience response system polls the larger group as to what they believe the individual in the vignette should do versus what they actually do in the particular situation. Small groups then report their discussions using the Professionalism Matrix as a framework for how the context and reasoning of those involved might explain the potentially unprofessional behaviors reported in each vignette.
EVALUATION: Conference evaluations have been uniformly positive that the Professionalism Matrix facilitated a systems-based practice approach to the interpretation of potentially unprofessional conduct.
DISCUSSION / REFLECTION / LESSONS LEARNED: The small and large group discussions highlighted the importance of considering the micro, meso, and macro levels that may have influenced individuals reasoning and motivations for seemingly unprofessional actions. Whether these simulations actually translate into actual behavioral changes by participants still remains to be determined. This integration of the ACGME's definition of professionalism, the ABIM/ACGME related milestones, cross-referenced with a system-based framework to analyze issues contextually makes the Professionalism Matrix a novel educational tool that could readily be adopted by other institutions.

USING STANDARDIZED PATIENTS TO TEACH RESIDENTS SKILLS IN RISK COMMUNICATION AND SHARED DECISION MAKING WITH EVALUATION VIA THE OPTIONS INSTRUMENT
Kathleen Fairfield; Thomas P. Gearan; Kristen A. Sciacca. Maine Medical Center, Portland, ME. (Tracking ID #1636482)

NEEDS AND OBJECTIVES: The clinical skill of shared decision making (SDM) is important, yet many faculty members have limited SDM experience, particularly around risk communication. Our objective was to develop curricular materials, teach, and evaluate residents in the curricular milestone, "Engage patients/advocates in shared decision making for uncomplicated diagnostic and therapeutic scenarios".
SETTING AND PARTICIPANTS: PGY3 residents experienced newly developed SDM simulation cases using standardized patients (SP) over two academic years at a state-of-the-art Simulation Center allowing for faculty observation of multiple concurrent sessions from a control room.
DESCRIPTION: We developed two cases to illustrate SDM for counseling about colorectal screening choices (CRC) and mammography for women in their 40s, and trained SP for these cases. We also developed instructions to anchor residents in risks and benefits for each scenario, and icon arrays to use as risk communication tools. Each half-day session began with a brief faculty introduction to SDM, use of icon arrays, and review of screening guidelines. Each resident then completed one case, with immediate SP feedback. This was followed by a 30 min faculty debrief and didactic session focusing on the key steps and competencies in SDM. Each resident then completed the second case with immediate SP feedback. Every SP completed the Options Instrument after each scenario and reviewed it directly with the resident. The Options Instrument includes 12 items, each with a 5 point scale (a higher point value indicates the desired behavior was observed) to evaluate the degree of SDM.
EVALUATION: 16 PGY3 residents completed the SP event in May and August 2012. Faculty observers observed a wide range of skills in counseling about risk and benefit and other SDM skills. Resident feedback was positive, although August PGY3 residents were more enthusiastic than graduating PGY3 (May), and both groups found the CRC case more challenging. Residents requested access to icon arrays to use for risk communication in clinic. Options scores were higher for mammography (median 3.07, SD=0.64) than for CRC (median 1.86, SD=0.53), $p<0.001$. We did not observe statistically significant increases in scores within case when comparing the first to second encounter ($p=0.94$ for CRC, $p=0.24$ for mammography).
DISCUSSION / REFLECTION / LESSONS LEARNED: Using SP for SDM education is novel and allows for teaching and evaluating SDM. Immediate feedback by the SP and use of the Options tool were positive and allows for systematic evaluation. Other alternatives to didactics to extend resident knowledge and skills for SDM should be explored. Notably, this format requires trained faculty and SP, and is time intensive. An alternative would be to have residents role-play SDM using icon arrays and give feedback to each other. A substantial challenge will be determining whether residents use SDM techniques during actual clinical encounters.

WEIGHT MANAGEMENT: A PRIMARY CONCERN (INTEGRATION OF A PRIMARY CARE WEIGHT MANAGEMENT CURRICULUM INTO GRADUATE MEDICAL EDUCATION)
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NEEDS AND OBJECTIVES: Despite the heightened focus on the obesity epidemic in America, formal weight management curricula are rarely integrated into graduate medical education for Internal Medicine residents. Several studies demonstrate that Internal Medicine residents have negative opinions about their skills for treating obese patients. They report feeling unprepared to perform obesity counseling and ill-equipped to use available pharmacological agents in the treatment of obesity. It is essential that residency training programs bolster knowledge of clinical weight management and address physicians' negative views toward the treatment of obesity.
SETTING AND PARTICIPANTS: A two-week-long outpatient weight management elective was piloted in the Internal Medicine residency program at NYP-Weill Cornell in 2012. 131 Internal Medicine residents, at all training levels, were eligible to participate. A maximum of 2 residents were permitted to enroll for each elective block during the academic year.
DESCRIPTION: A literature review was conducted to evaluate previously-developed, resident-level weight management curricula. Licensure testing domains for specialty certification in Obesity Medicine were also reviewed. Finally, a representative panel of experts in the field of Obesity Medicine was assembled and polled for additional guidance in creating and piloting a comprehensive curriculum for weight management. The summative curriculum emphasized nine obesity-related content areas: 1) endocrinology 2) cardiology/lipidology/hypertension 3) sleep disorders 4) osteoarthritis/joint disease 5) diet/nutrition 6) eating disorders 7) pharmacology for weight loss 8) bariatric surgery 9) direct clinical management of the obese patient in a newly formed weight management practice housed in the faculty-resident outpatient center. A syllabus was created with supplemental reading in each content area.
EVALUATION: In the development of the curriculum, an IRB-approved survey was conducted among 177 faculty, fellows and residents within the Department of Medicine. Of the 121(68 %) respondents, 94.8 % indicated that a weight management elective would be very useful for the residency program, with 88.6 % of all respondents stating that they had not received sufficient weight management education. While 93 % of all respondents indicated that they believe obesity to be an international epidemic, only 23.4 % reported having successfully helped patients lose weight, and 15 % of respondents felt that they could effectively prescribe pharmacological agents to assist obese patients with weight loss. A 46 item multiple choice test composed of MKSAP-style questions on the topic of obesity and its comorbidities was rendered at the beginning and end of the elective. To date, 6 residents have completed the elective. The mean pre-test score was 21.8, while the mean post-test score was 27.4 (out of 46). Of the patients referred to the weight management practice for treatment, a formal evaluation of patients' mean weight loss, weight loss maintenance, and improvement in co-morbid conditions (i.e. A1c reduction in diabetics) is in progress.
DISCUSSION / REFLECTION / LESSONS LEARNED: There is limited published information directly outlining the topic areas that should be addressed for resident-level weight management curricula. However, there is a great need for structured training given the prevalence of obesity in our culture. Ideally, the NYP-Weill Cornell weight management elective can serve as a model for the future implementation of weight management curricula in national residency education.

WRITING FOR CHANGE: TRAINING RESIDENTS IN ADVOCACY THROUGH PUBLIC MEDICAL COMMUNICATION
Louise Aronson[1]; Anda Kuo[1]; Sharad Jain[1]; Vanessa Grubbs[1]; Jennifer Siegel[2]; Alice H. Chen[1]. [1]UCSF, San Francisco, CA; [2]Boston University, Boston, MA. (Tracking ID #1640417)

NEEDS AND OBJECTIVES: Medical narratives are used in advocacy to educate, change opinions and influence policy. From letters to the editor or opinion columns in newspapers to essays in medical or policy journals, physician's stories inspire change and give a voice to society's most vulnerable. Although law and business schools teach persuasive communication, medicine has used narrative principally for self-reflection and humanism. The new field of Public Medical Communication broadens communications skills in medicine to include persuasive writing and engagement with the public and policymakers about health and health care. We developed, implemented and assessed a brief curriculum to train residents in advocacy-based Public Medical Communication.
SETTING AND PARTICIPANTS: Nineteen internal medicine ($n=15$) and pediatrics ($n=4$) residents at the University of California, San Francisco, participating in advocacy educational tracks at San Francisco General Hospital.

DESCRIPTION: Five faculty with narrative, policy, advocacy, and underserved medicine expertise collaborated to develop a 3-part workshop. Each 2-hour-long session included: close reading of newspaper, medical journal and health policy journal articles; discussion of narrative craft and how to select target audience, publication venues and advocacy levels; development of opening paragraphs or ledes (session 1) and writing workshop style works-in-progress sessions of the residents' draft articles (sessions 2–3). Faculty reviewed additional drafts as needed. Participants scored session quality, relevance and usefulness on a 0–5 scale and provided qualitative feedback. Faculty tracked resident publications.
EVALUATION: All 19 residents completed evaluations. Most had little writing experience. Combined session ratings for quality, relevance and usefulness were 4.95, 4.925 and 4.975, respectively, on a 5-point Likert scale. All residents drafted articles based on their clinical experience and tied to an advocacy issue. With additional revisions and faculty help, six residents published seven articles in the New York Times (2), Health Affairs Narrative Matters (2), Huffington Post (2) and Annals of Internal Medicine. Qualitative feedback included: "Thank you for pushing us—I thought that the writing was incredible painful and so valuable," "Glad we were encouraged to read aloud, great experience," and "I enjoyed the pre-reading and discussion of how to actually write a piece/lede."
DISCUSSION / REFLECTION / LESSONS LEARNED: Narrative writing is a relevant and useful advocacy tool for generalist residents. Despite initial discomfort with both writing and reading works-in-progress aloud, this advocacy-focused Public Medical Communication workshop was enthusiastically received by the learners. All trainees were able to develop the basics of publishable pieces within the framework of a few structured seminars, and a quarter completed articles accepted for publication in national media, medical and health policy journals. Although publication was possible from just a 6 hour curriculum, it required additional faculty time after the workshop. This is an innovative method to address core ACGME competencies and help residents translate their clinical experiences into meaningful public service and discourse.

"ARE YOU UPDATED?" USING A SIGNOUT AUDIT TOOL TO ADDRESS ACGME MILESTONES AND ENTRUSTABLE PROFESSIONAL ACTIVITIES IN PATIENT HANDOFFS Shannon K. Martin; Elizabeth A. Paesch; Jeanne M. Farnan; Julia Espel; John McConville; Vineet Arora. University of Chicago, Chicago, IL. (Tracking ID #1629822)

NEEDS AND OBJECTIVES: ACGME Milestones and Entrustable Professional Activities (EPAs) have emerged as benchmarks for housestaff professional development. Residents must demonstrate expertise in these patient care activities in order to progress in training, and thus programs will require tools for direct observation in order to evaluate these skills. These tools must evaluate milestone-specific performance in a manner that can provide both summative and formative feedback in a timely fashion. We report the use of one such tool, the UPDATED signout audit tool, to evaluate ACGME milestones related to handoffs.
SETTING AND PARTICIPANTS: This intervention occurred with interns in the internal medicine residency program at the University of Chicago, an academic medical center whose electronic health record features an electronic signout. This is a document generated from a template that partially automates some fields using information from the electronic chart (e.g. patient medications). Other information must be entered in free-text form (e.g., hospital course and tasks for overnight care).
DESCRIPTION: The UPDATED audit tool was used to evaluate electronic signouts done by internal medicine interns on non-critical care internal medicine services. This tool emphasizes several key areas reflected in ACGME milestones, including ensuring accurate documentation (ICS-F1, P-A1), appropriate synthesis and definition of clinical problems (PC-C1) and effective communication during transitions of care (ICS-C1). All 45 interns were assigned independent review of two electronic signouts from July-October by one of eight faculty auditors (4 chief residents and 4 hospitalists). Seven items specific signout attributes were scored, and an overall score of 0 to 9 was assigned. Audits scoring 0–3 were categorized as "Poor", 4–6 as "Fair", and 7–9 as "Good". Ratings among faculty members were compared for consensus.
EVALUATION: Of the 45 interns, 32 had complete audits, 6 partial audits, and 7 were unable to be audited during the initial period. Interns were identified for immediate feedback if they received two "Fair" scores or one "Poor" score. If signouts were unable to be fully audited or received at least one "Fair" score, interns were assigned additional review in subsequent months. Signouts were considered satisfactory if both audits were scored as "Good". Of the 32 completed audits, 16 % (n=5) of interns were identified for immediate feedback, and 41 % (n=19) for additional future review. The remaining interns (44 %) were satisfactory. Audits were incorporated into intern semi-annual performance reviews within the housestaff evaluation committee. Interns achieving a satisfactory audit were designated as "Competent", those awaiting further review as "Undergoing further evaluation of competence", and those flagged for immediate feedback as "Received immediate feedback and undergoing further evaluation of competence." The 13 interns not fully audited were designated as "Waiting to be evaluated." A second round of audits will be done from December-April.
DISCUSSION / REFLECTION / LESSONS LEARNED: The UDPATED Signout Audit Tool is a feasible and effective way to use direct observation to address resident achievement of competency in ACGME milestones related to handoffs. The tool is a useful way to incorporate milestones in evaluation of housestaff readiness to progress in training and is well-suited to be included as an assessment for the proposed EPA encompassing patient handoffs, Managing Transitions of Care.

"HOW DOES A STUDENT-RUN CLINIC IMPACT MEDICAL STUDENT ABILITY TO CARE FOR PATIENTS WITH CHRONIC ILLNESS?" Linda Wang[3]; Matthew A. Spinelli[3]; Nandini C. Palaniappa[3]; Yasmin S. Meah[1,2]; David C. Thomas[2]. [1]Icahn School of Medicine at Mount Sinai, New York, NY; [2]Icahn School of Medicine at Mount Sinai, New York, NY; [3]Icahn School of Medicine at Mount Sinai, New York, NY. (Tracking ID #1642314)

NEEDS AND OBJECTIVES: Traditional medical school curricula rarely allow the opportunity to follow patients longitudinally or care for patients with chronic illness. Given the largely inpatient setting of most clerkships, students receive limited exposure to chronic illness management and seldom engage in systems-based care in ambulatory or primary care practices. Student Run Clinics (SRCs) are a novel setting through which students may gain exposure to the care of patients with chronic illness. For 5 years the SRC of the Icahn School of Medicine at Mount Sinai, the East Harlem Health Outreach Partnership (EHHOP), has implemented a Chronic Care Program for senior medical students. The objectives of the program include positively impacting medical student experiences in 1) knowledge about managing patients with chronic illness, 2) ability to practice cost-conscious chronic care, 3) engagement in interdisciplinary teamwork, 4) exposure to primary care mentors, and 5) likelihood of engaging in a career in primary care.
SETTING AND PARTICIPANTS: All clinical encounters, with the exception of group and home visits, take place in EHHOP's Saturday morning clinics for uninsured patients. There are currently 30 third, fourth, and MD/PhD students enrolled, who are selected through an application process, as well as 50 patients with chronic conditions who benefit from dedicated provision of care.
DESCRIPTION: This track allows medical students to experience the role of primary care provider, under attending supervision, for patients with complex medical conditions. Through this track, students are pivotal in executing long-term care plans, engaging in systems-based navigation of care and interacting with interdisciplinary partners. To date, however, we lack data on the impact of such a program on improving knowledge about chronic illness, the ability to practice cost-conscious care, the depth of involvement in interdisciplinary care and the effect of such a program on career choice.
EVALUATION: Current and former medical students will be invited to participate in an anonymous online survey. Responses will be stratified into Chronic Care participants versus non-participants to compare Chronic Care track medical student experiences with the experiences of other medical students in the 5 domains listed above. We anticipate that current medical

student exposure to chronic illness management and systems-based care through traditional medical school curricula is minimal as compared to the training through the EHHOP Chronic Care Program. We hypothesize that chronic care curricula within EHHOP fills a void in primary care education, and positively impacts the likelihood that medical students will choose a career in primary care.
DISCUSSION / REFLECTION / LESSONS LEARNED: SRCs provide a valuable setting to increase exposure to systems-based practice and chronic illness management, and may have a significant role in leading students toward careers in primary care.

"MEET YOUR COLLEAGUES": ENHANCING THE APPEAL OF EDUCATION IN COLLABORATIVE CARE Traci A. Takahashi[1,2]; Douglas B. Berger[1,2]; Joyce E. Wipf[1,2]; Sarah E. Shannon[3]; Brenda K. Zierler[3]. [1]VA Puget Sound, Seattle, WA; [2]University of Washington, Seattle, WA; [3]University of Washington, Seattle, WA. (Tracking ID #1629931)

NEEDS AND OBJECTIVES: Interprofessional Education (IPE) is designed to produce team-players whose collaborative practice will avoid medical errors, reduce costs, and improve quality. IPE is particularly pressing for primary care providers (PCPs), who are increasingly working in team-based patient centered medical homes responsible for care coordination. However, teaching IPE to physicians is challenging because team-skills may be seen as non-essential and flattening of traditional hierarchies may be threatening. Responding to early trainee feedback suggesting limited tolerance for sessions explicitly teaching team skills, we developed a new blended curriculum called "Meet Your Colleagues" to teach clinical content in a way that also advanced core competencies for interprofessional practice as defined by the IPE Collaborative.
SETTING AND PARTICIPANTS: Our academic outpatient clinic is participating in a grant-funded program to innovate primary care training. Learners include internal medicine residents and Doctor of Nursing Practice (DNP) students, with associated health trainees participating in selected workshops.
DESCRIPTION: "Meet Your Colleagues" workshops are interactive, with members of other health professions teaching clinical skills relevant to primary care practice and briefly introducing their training, scope of practice, and typical work environments. Areas of possible miscommunication or discipline-specific differences in approach are explored when they arise. Selected examples of content include physical therapists demonstrating selection, fit, and safe use of mobility aids and trainees learning to walk with aids; pharmacists and pharmacy residents leading a game-show style quiz on adverse drug reactions and teaching proper use of respiratory inhalers; an optometry resident and blind rehab therapist demonstrating tools for low vision adaptation and helping trainees interact with a blinded person; and wound care nurses teaching lymphedema care, dressing selection and application. Future workshops include dentistry, podiatry, and spiritual health.
EVALUATION: In anonymous written evaluations completed after each session, trainees rated the usefulness of these workshops as good to excellent (4.7 on a 5 point scale) and reported increased confidence using the relevant skills. Descriptive comments showed that trainees learned key lessons for interprofessional practice, such as respecting the culture and role of other health professions and cross-discipline communication. In informal group evaluations, trainees requested more of these workshops and preferred them to sessions designed solely to teach interprofessional skills. Future evaluations will specifically assess impact on trainees' perceptions of participating professions and referral patterns, as anecdotally we observed increased pharmacy referrals after pharmacy workshops.
DISCUSSION / REFLECTION / LESSONS LEARNED: Content-focused workshops that introduce other health professionals and their skill sets can promote IPE competencies in ways that primary care trainees find appealing. Close collaboration between educators in primary care and other disciplines is essential in choosing topics and ensuring relevance for trainees. This model does not replace IPE focused solely on team and communication skills. However for residents and students eager to learn facts essential for primary care, positioning other health professionals as content experts may be a complementary approach to foster interprofessional respect and collaborative practice.

"SHOW ME THE FOLLOW-UP!": IMPLEMENTATION OF ASSESSMENT BASED ON AN ENTRUSTABLE PROFESSIONAL ACTIVITY FOR INTERNS IN CONTINUITY CLINIC Ryan Laponis; Karen E. Hauer; Maya H. Dulay; Reena Gupta; Tacara N. Soones; Jeff Kohlwes; Harry Hollander; Patricia S. O'Sullivan; Katherine Julian. University of California San Francisco, San Francisco, CA. (Tracking ID #1642540)

NEEDS AND OBJECTIVES: As a mechanism to assess the required American Board of Internal Medicine (ABIM) milestones in residency training, the Alliance for Academic Internal Medicine (AAIM) developed sixteen end-of-training Entrustable Professional Activities (EPAs). These EPAs are intentionally broad and the AAIM has encouraged the development of discrete, more specifically characterized EPAs that, in aggregate, inform the broader end-of-training EPAs. In the often chaotic and time-pressured learning environment of continuity clinic, a discrete EPA can focus learners and faculty on key competencies that learners need to acquire and upon which they will be assessed. To begin to meet the emerging need for milestone-based assessment, we developed and implemented an assessment of a discrete EPA for interns in the continuity clinic setting that maps to seven ABIM milestones, named Implementation of a Patient Follow-up Plan EPA.
SETTING AND PARTICIPANTS: Sixty-two internal medicine interns and thirty-six faculty members at six continuity clinic sites (3 Veterans Affairs clinics, 1 safety-net clinic and 2 academic clinics) in a single internal medicine residency program participated.
DESCRIPTION: Our discrete EPA is the Implementation of a Patient Follow-up Plan EPA. This EPA begins at a continuity visit when the intern communicates the attending-approved plan to a continuity clinic patient and ends when the intern follows-up with the patient at an appropriate interval. The assessment is performed by a single attending for each intern and consists of three elements: 1. Direct observation by an attending of visit closure via a 4-item behaviorally-anchored checklist; 2. Chart review of visit documentation via a 4-item checklist completed when the attending signs the intern's note; and 3. Assessment of follow-up via a 3-item checklist completed at an agreed-upon time between the intern and the attending depending on the clinical scenario (i.e.: active diuresis for heart failure may require follow up within days, whereas stable diabetes may require follow-up in 3 months). All checklist items allow for comments, but require that the attending identify whether the intern behavior was present or absent (ie: yes/no). The checklist items map to seven ABIM milestones. Each attending is assigned to at least one intern and must perform three discrete EPA assessments per intern over the course of the first 6 months of the year. After three assessments, the attending provides an overall level of entrustment for this discrete EPA.
EVALUATION: We plan to survey both interns and attendings regarding feasibility, meaningfulness of the EPA assessment, confidence in completing/assessing the EPA and reflections on receiving/granting entrustment.
DISCUSSION / REFLECTION / LESSONS LEARNED: Assessment of an EPA in the continuity clinic setting provides a meaningful structure to trainee assessment because it focuses on a particular patient care activity and, in this case, facilitates specific feedback on observable behaviors. Key obstacles to successful implementation have been identifying time for intern and faculty development on both the concept of EPAs and the three elements of this discrete EPA as well as identifying time for verbal feedback from attendings to interns. Next steps include generating an electronic platform that allows for efficient capture of EPA assessments, remediation strategies and developing additional discrete EPAs in continuity clinic for more advanced trainees.

THE EFFECT OF THE US GREAT RECESSION ON UTILIZATION OF OUTPATIENT AND EMERGENCY DEPARTMENT CARE FOR MENTAL HEALTH AND SUBSTANCE ABUSE PROBLEMS Karen E. Lasser[1], David Himmelstein[2], Steffie Woolhandler[2]; [1]Boston Medical Center, Boston, MA; [2]CUNY School of Public Health at Hunter College, New York, NY, United States (control ID# 1625557)

Background: The US Great Recession which began in December 2007 and was worst in 2009 led to significant job losses resulting in loss of health insurance as well as increased psychological distress. Few population-based data are available on changes in utilization of outpatient and emergency department care for mental health and substance abuse problems prior to and during the recession.

Methods: We analyzed data from the 2006 to 2010 National Hospital Ambulatory Medical Care Survey (NHAMCS) and National Ambulatory Medical Care Survey (NAMCS), nationally representative samples of ED-based, hospital clinic-based, and community office-based visits. We calculated visit volume according to the following categories of visit diagnoses: substance use diagnoses only, and mental health diagnoses only. Defining outpatient visits as hospital clinic and office-based visits, we calculated the number of outpatient visits in which buprenorphine was prescribed. We defined these visits as office based opioid treatment (OBOT) visits.

Results: Outpatient and ED visits for substance use problems rose from 2006 to 2009 (Table). OBOT visits accounted for 25 % of outpatient substance abuse visits in 2006, and rose to 36 % of such visits in 2010. There was no trend in number of mental health visits over the study period, or in number of mental health visits according to insurance type (data not shown).

Conclusions: The Great Recession had mixed effects on mental health visits, perhaps reflecting the counterbalancing effects of health insurance loss and increased psychosocial stress. Substance abuse visits rose continuously, to more than double their 2006 level. Increasing use of OBOT does not explain the observed increase in outpatient substance abuse visits. In the wake of the Great Recession, a strong social safety net is needed for individuals with substance abuse problems.

Visits, millions	2006	2007	2008	2009	2010
Substance abuse, total	2.9	3.9	3.9	4.4	5.9
Outpatient	1.6	2.8	2.7	3.1	4.5
OBOT	0.4	0.7	1.0	1.6	1.6
ED	1.3	1.1	1.2	1.4	1.4
Mental health, total	50.3	59.2	46.7	63.0	53.3
Outpatient	47.3	56.4	43.8	59.7	50.1
ED	3.0	2.8	2.9	3.3	3.2