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ABSTRACTS OF SUBMISSIONS ACCEPTED FOR PRESENTATION

SCIENTIFIC ABSTRACTS

A QUALITATIVE STUDY TO EXPLORE PHYSICIAN DECISION MAKING ABOUT COLON CANCER SCREENING IN ADULTS AGE 75 AND OLDER. C. Lewis[1]; J.M. Griffith[1]; C. Golin[2]; A.T. Brenner[1]; M. Pignone[1].[1]University of North Carolina at Chapel Hill, Chapel Hill, NC; [2]University of North Carolina at Chapel Hill, 27599–7590, NC. *(Tracking ID # 173387)*

BACKGROUND: Individualized decision making is recommended for colon cancer screening in adults age 75 and older.
METHODS: We conducted focus groups with primary care physicians practicing in community settings. We presented two clinical vignettes of women age 75 with fair and poor health states. Physician participants discussed their decision making processes and the role of patient preferences in these decisions. The focus group content was recorded, transcribed, and content-analyzed independently by two coders who met and reviewed the transcripts together to determine final codes and overarching themes.
RESULTS: To date, we have completed 3 focus groups with 13 physicians. Several major themes have emerged: 1) the need to consider both clinical and non-clinical factors for each individual patient, 2) the difficulties with making specific recommendations, and 3) physician and patient roles in the decision making process. Representative quotes for each of these themes follow. On the importance of individualized decision making, one participant remarked "What you're doing is each person is an individual and you are making that decision based on them" Participants reported difficulty with decisions, one commented on the uncertainty, "Not being really able to say for sure about life expectancy none of us really know." Another was concerned about regret: "You don't want to do harm to people. That's the downside" Remarking on the physician's role, one participant commented, "My job is to give them all the data and try to explain to them what my thought process is and I why I want them to do it, but my job is not to talk them into anything". Another suggested a more directive approach for someone in poor health. " I just want you to know to do things like colon cancer screening or breast cancer screening, I don't think we need to worry about it at this point because I think that you would have a hard time with surgery." Another participant implied a more patient centered approach, "If someone is 80 years old and they're saying I've lived a good life, something is going to take me out of here and if it happens to be colon cancer, that's fine."
CONCLUSIONS: Physicians endorsed an individualized decision making approach for colon cancer screening in older adults that included clinical and non-clinical factors. Some aspects of the decisions that were considered difficult included the uncertainty involved and the possibility of regret. The perceived role for the patient in the decision making process appeared to vary depending on the clinical situation and the physician style.

ADVANCE CARE PLANNING IN DIVERSE OLDER ADULTS: ENGAGEMENT AND PERCEIVED BARRIERS. R. Sudore[1]; A. Schickendanz[1]; C.S. Landefeld[1]; S. Knight[1]; D. Schillinger[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173249)*

BACKGROUND: Advance care planning (ACP) for end-of-life care includes the steps of contemplation, discussion, and documentation. Many elders do not engage in ACP (especially minorities), and most studies have only focused on the documentation step. This study explores which ACP steps older adults engage in and perceived barriers to ACP.
METHODS: Subjects included 147 English or Spanish-speakers, aged 50 years, from an urban county, general medicine clinic who participated in phone interviews six months after enrolling in an advance directive study. We assessed whether subjects engaged in ACP (contemplation, discussion with family/friends or clinicians, or documentation) within the past six months, and whether subject characteristics were associated with engagement. Using the standardized s-TOFHLA, subjects' literacy was classified as adequate (scores 23–36) or limited (22). We also assessed self-reported barriers to ACP.
RESULTS: Mean age was 61 years; 53% were female, 78% were non-white, 31% were Spanish-speaking, 69% reported poor health, and 40% had limited literacy. Most subjects contemplated ACP (60%) and discussed ACP with family/friends (54%). However, only 20% discussed ACP with clinicians and 10% documented their ACP wishes. Subjects who discussed ACP with family/friends more often discussed ACP with clinicians (35% vs. 3%, $P < .001$) and documented ACP wishes (16% vs. 3%, $P = .008$) than subjects who had not. Spanish-speakers more often discussed ACP with family/friends (76% vs. 45%) and clinicians (36% vs.14%) than English-speakers, $P < .001$. In addition, subjects with less education (9 yrs vs.12 yrs, $P < .001$) and lower literacy scores (20 vs. 26, $P = .009$) more often discussed ACP with clinicians. Common barriers to ACP included "feeling too healthy" (44%); "preferring to leave one's health to God" (38%); "poor relationships with family/friends or clinicians" (32%); and "needing more information about one's health or healthcare choices" (31%).
CONCLUSIONS: More subjects contemplated and discussed advance care planning with family/friends than discussed ACP with clinicians or documented their treatment wishes. Those subjects who discussed ACP with family/friends were more likely to discuss ACP with clinicians and to document their wishes. Therefore, discussions with family/friends should be encouraged and facilitated. Demographic disparities were not observed as a barrier to ACP in this study. On the contrary, minority status, lower education and limited literacy were associated with more rather than less engagement in ACP. However, clinicians may help to mitigate patient-perceived barriers to ACP by addressing patients' readiness, faith, and relationships, as well as educating patients about their healthcare options.

AN UNFOLDING LONG CASE OR CASE VIGNETTES: A COMPARISON OF TWO INSTRUCTIONAL METHODS IN INPATIENT GERIATRICS FOR MEDICAL STUDENTS. N.A. Rughwani[1]; P. Gliatto[1]; R. Karani[1]. [1]Mount Sinai School of Medicine, New York, NY. *(Tracking ID # 171422)*

BACKGROUND: The rise in elderly patients with hospitalizations notable for functional decline and high symptom burden creates a critical need for training

interventions. Third year medical students (MS3) encounter many older adults yet have inadequate formal opportunities to learn about their specific needs. Case based learning incorporates active learning in small groups using relevant clinical problems. A single unfolding long case (LC) has been shown to improve knowledge & skills of residents but there is no evidence that such outcomes are transferable across cases and contexts. Research has indicated that transfer and application of knowledge are especially difficult when a subject is taught in a single context. Thus, a case-based session with multiple cases and time for learners to work through them may result in more enduring knowledge and improved knowledge transfer across cases. Our aim is to assess the impact of 2 instructional methods (LC vs. case vignettes (CV)) in inpatient geriatrics on the long term knowledge & application skills of MS3.
METHODS: IRB exemption was obtained. After review of guidelines and needs assessment data, 5 topics (perioperative assessment, delirium, venous thromboses, pressure ulcers & functional assessment) were selected. Competency-based learning objectives, LC, CVs and an evaluation tool were then developed. An expert panel reviewed the material. All MS3 on their medicine clerkship were assigned to either LC or CVs based on their rotation month. For LC sessions, students work through an unfolding LC which provides relevance and detail of the patient in a sequential manner. For CV sessions, students work together on a short case and then break into groups to solve 2 other cases based on the topic of the day. A 60 item computer-based MCQ test is used to assesss achievement of learning objectives. Exam questions assess higher order cognitive skills such as knowledge application & patient management. Demographic and course evaluation data are also gathered from participants.
RESULTS: Thus far, the course has been conducted 6 times using each method thrice. 65 students completed the course- 52% female, mean age 25.Average pre-course scores increased 18% from 62.2%(SD 8%) to 80.2%(SD 6.1%) post-course. Scores increased 21.4% & 19.7% in the CV & LC groups respectively. 95% found the course useful with realistic & relevant content. 91% would recommend the experience to others.
CONCLUSIONS: Preliminary results show significant improvement in the knowledge & application skills of MS3 in geriatric inpatient medicine topics. Little difference is seen at this stage between the 2 teaching methods. Further data collection is ongoing to validate our findings & determine the impact of the course on enduring knowledge & skill retention at 1 year.

ARE DRUGS-TO-AVOID CRITERIA AN ACCURATE DIAGNOSTIC TOOL FOR PROBLEM PRESCRIBING? M. Steinman[1]; C.S. Landefeld[2]; G.E. Rosenthal[3]; D. Bertenthal[2]; P.J. Kaboli[4]. [1]San Francisco VA Medical Center and UCSF, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA; [3]University of Iowa, Iowa City, IA; [4]Iowa City VA Medical Center and University of Iowa, Iowa City, IA. *(Tracking ID # 171957)*

BACKGROUND: The drugs-to-avoid criteria of Beers et al. is commonly used as a marker of medication prescribing quality in elders. However, few studies have empirically evaluated the test characteristics of these criteria as a diagnostic instrument to identify prescribing problems.
METHODS: We used data from a cohort of 256 patients from the outpatient clinics of the Iowa City VA Medical Center who were age 65 and older and taking 5 or more medications. Subjects' medication lists were scrutinized by a geriatric pharmacist and study physician during an in-person interview with the patient. We compared the study team's assessments of prescribing problems with "potentially inappropriate medications" identified by the Beers criteria.
RESULTS: Assessments were made for 3678 medications taken by 256 patients. The physician/pharmacist team recommended discontinuing a drug, starting an alternative therapy, or modifying drug dose for 705 drugs (19% of total). Beers criteria violations were identified for 214 drugs (6% of total). Compared to expert review, the Beers criteria had a sensitivity of 12% and a specificity of 96% for identifying prescribing problems, for a positive likelihood ratio of 2.9 and a negative likelihood ratio of 0.9. In our sample, the positive predictive value of a Beers criteria violation was 41%; that is, the expert reviewers recommended discontinuation, substitution, or dose modification for 87 of the 214 drugs identified as problematic by the Beers criteria. A wide variety of drugs that were considered problematic by the Beers criteria were deemed acceptable by the reviewers. Similar results were obtained when analyses were restricted to the part of the Beers criteria which evaluated medications without reference to dose, drug-disease, or drug-drug interactions, and when restricted to high-severity Beers criteria violations and/or high-priority expert recommendations.
CONCLUSIONS: Drugs-to-avoid criteria may have limited utility as a diagnostic test for prescribing problems.

ARE OLDER PATIENTS BEING OVER-TREATED FOR OSTEOPENIA? L.M. Kern[1]; A.S. Carmel[1]; L. Russell[2]; M. Vargas[3]; M. Reid[1]. [1]Weill Medical College, Cornell University, New York, NY; [2]Hospital for Special Surgery, New York, NY; [3]School of Nursing, Columbia University, New York, NY. *(Tracking ID # 173170)*

BACKGROUND: Treatment of osteopenia with bisphosphonates has been found to have no effect on fracture incidence. Nevertheless, pharmaceutical companies estimate that one-third of patients with osteopenia are treated with medication. Absolute T-scores and physician specialty have been found to be predictors of treatment for osteoporosis, but predictors of treatment for osteopenia are unknown. We sought to determine if treatment for osteopenia varies with absolute T-score and physician specialty (internal medicine vs. geriatrics).
METHODS: We conducted a retrospective cohort study of patients seen in 2 hospital-based practices (internal medicine and geriatrics). We selected patients who had had dual energy x-ray absorptiometry (DEXA) scans ordered and/or completed in the study period, i.e. 2003 for internal medicine and 2000–2003 for geriatrics. We used random (internal medicine) or 100% sampling (geriatrics). We reviewed the medical records of these patients and included those with documented osteopenia on the scan ($-2.5 <$ T-score ≤ -1.0). We excluded those who had a prior diagnosis of osteoporosis, a history of fracture, or no follow-up visit in the year following the scan. We collected data on the following patient variables: age, gender, race, insurance type, family history of osteoporosis, family history of fracture, height, weight, smoking status, physician specialty, scan date, and T-score. We also collected data on the use of bone-enhancing medications (calcium, multivitamin, bisphosphonate, parathyroid hormone, hormone replacement therapy, selective estrogen receptor modulators, and calcitonin) before and after the DEXA scan. We used multivariate logistic regression to determine variables associated with bisphosphonate treatment after DEXA, including those variables with bivariate p-values < 0.20.
RESULTS: We reviewed the charts of 934 internal medicine and 345 geriatric patients. Of those, 687 (54%) had DEXA reports available and, of those, 320 (25%) had osteopenia. Of those with osteopenia, 58 (18%) were excluded for a prior diagnosis of osteoporosis, 38 (12%) for a history of fracture, and 42 (13%) for a lack of follow-up in the following year. We included 182 patients (149 internal medicine and 33 geriatrics). Of those, the average age was 66 years (SD 10), 94% were female and 44% were white. We found that 31% of all patients with osteopenia were treated with bisphosphonates after the DEXA scan. Adjusting for age, gender, race, family history of osteoporosis, family history of fracture, and baseline use of calcium or vitamin D, the variables significantly associated with post-DEXA bisphosphonate treatment were absolute T-score [odds ratio (OR) 0.22; 95% confidence interval (CI) 0.08, 0.60], baseline bisphosphonate use (OR 19.00; 95% CI 4.33, 83.44), and physician specialty (OR for geriatrics vs. internal medicine 0.11, 95% CI 0.02, 0.74). When patients on bisphosphonates at baseline were excluded, absolute T-score persisted as a predictor (adjusted OR 0.17; 95% CI 0.06, 0.49), but physician specialty did not (adjusted OR 0.32; 95% CI 0.05, 1.93).
CONCLUSIONS: Nearly one-third of patients with osteopenia are being treated with bisphosphonates. Patients with lower T-scores and those cared for by internists are more likely to be treated. Educational efforts may be needed to decrease over-treatment of osteopenia.

CAN ITEMS FROM EXISTING END-OF-LIFE SURVEYS BE USED FOR PUBLIC HEALTH SURVEILLANCE? J.K. Rao[1]; L. Abraham[1]; L.A. Anderson[1]. [1]Centers for Disease Control and Prevention (CDC), Atlanta, GA. *(Tracking ID # 172995)*

BACKGROUND: Although clinicians and health systems have long acknowledged end-of-life (EOL) issues as a societal concern that warrants improvement, public health has only recently recognized EOL as an issue meriting its involvement. In 2004, key stakeholders developed consensus on a series of initial priorities for public health activities with respect to EOL issues. Among the top 5 initial priority recommendations are to "educate the public about advance care planning, hospice and palliative care", and to "collect, analyze, and share EOL data through state surveys." We sought to determine the number and types of existing surveys that examined respondents' knowledge, attitudes, and actions concerning advance directives as well as hospice and palliative care.
METHODS: We conducted an environmental scan to identify existing EOL surveys or survey items by performing literature and internet searches and consulting EOL experts. Once identified, the surveys were abstracted and characterized along the following dimensions: 1) survey population (e.g. general public, patients, family members), 2) mode of administration (telephone, written, in person), 3) perspective of EOL (retrospective, prospective), and 4) whether the survey included items on advance directives and hospice.
RESULTS: To date, we have identified 33 surveys containing EOL items. Of the 31 surveys performed in the United States, 13 were conducted within specific states, 4 included nationally-representative samples, with the remainder using a variety of other sampling frames. In 17 surveys, the respondents were members of the general public, and in 10 surveys, the respondents were family members of deceased individuals. Sixteen surveys were administered by telephone. Seventeen surveys were prospective, 15 were retrospective, and 1 included both perspectives of EOL. Overall, 29 surveys included specific questions on advance directives and 28 included items on hospice and palliative care.
CONCLUSIONS: We identified a number of EOL surveys that were applied in diverse settings and populations. Items from these surveys could be used to yield valuable population-based information about the public's knowledge, attitudes, and actions concerning advance directives and hospice care. Such data could inform public health interventions that could be used to complement the efforts of health care providers and health systems to improve the experiences of dying individuals and their families.

CARDIOPULMONARY RESUSCITATION-WHO WILL SURVIVE? I.D. Hanson[1]; H.A. Fakhry[1]; C. Chandravanka[1]; W. Wiese-Rometsch[1]; B. Dubaybo[1]. [1]Wayne State University, Detroit, MI. *(Tracking ID # 172902)*

BACKGROUND: Cardiopulmonary resuscitation (CPR) is generally performed on all patients that have undergone in-hospital cardiac or respiratory arrest, provided a "Do Not Attempt Resuscitation" order has not been entered. There have been several studies to identify predictors of survival for patients undergoing CPR, but to date there is no predictive model in existence that can quickly and accurately stratify likelihood of survival given the presence or absence of patient characteristics. The

purpose of this study was to elucidate factors that predict survival of CPR and survival to hospital discharge following successful CPR, and to create a predictive model that will allow clinicians to quickly and objectively assess the likelihood of survival in both situations.
METHODS: We analyzed 117 consecutive attempted adult in-hospital adult cardiopulmonary resuscitations during a three-year period of time at an urban Veteran's Administration Medical Center. Data was collected from an Utstein-based form. The outcome measures were survival of CPR and survival to hospital discharge. Several patient characteristics were first analyzed using univariate logistic regression. Factors that were significant in predicting survival were then analyzed with multivariate linear regression. A single risk scale was then developed for both survival of code and survival to discharge using variables proven to be significant by the logistic regression model.
RESULTS: Of the 117 patients, 56% survived CPR while 26% survived to hospital discharge. Predictors of CPR survival were patient age and code type (specific arrhythmia or respiratory arrest). Predictors of survival to hospital discharge were code type, admission diagnosis and neurological status immediately following CPR. Logistic regression analysis for survival of CPR revealed a goodness-of-fit p-value = 0.756, Cox-Snell R = 0.397 and area under the ROC = 0.733; for survival to discharge, goodness-of-fit p-value = 0.613, Cox-Snell R = 0.604 and area under the ROC = 0.844. Single risk score models were created using linear regression, and each variable in the models were weighted equally. The single-risk score models for both survival of CPR and survival to discharge had comparable areas under the ROC curves. Cut-points on the ROC curves for both models were chosen to maximize sensitivity and specificity. The arithmetic sum of the risk values then yielded a single risk score. If the score falls below the cut-point, survival is the predicted outcome. If it falls above the cut-point, death is the predicted outcome. For survival of CPR, the single risk model has a sensitivity of 62.2%, specificity of 75.0%. Positive predictive value (PPV) is 70.5% and negative predictive value is 60.0%. For survival to hospital discharge, sensitivity is 80.0% and specificity is 73.0%. PPV is 70.6% and NPV is 81.8%.
CONCLUSIONS: By calculating a risk score for survival of CPR and survival to hospital discharge following successful CPR, clinicians will be better able to individually assess each patient's likelihood of survival. Thus, futile resuscitations can be avoided and patients and their families can be better informed of the risks and benefits of undergoing further CPR.

CAREGIVING BEHIND BARS: THE ROLE OF CORRECTIONAL OFFICERS IN GERIATRIC PRISONER HEALTHCARE. B. Williams[1]; K. Lindquist[1]; T. Hill[2]; L. Walter[3]. [1]University of California, San Francisco, San Francisco, CA; [2]California Prison Health Care Receivership, San Jose, CA; [3]San Francisco VA Medical Center/UCSF, San Francisco, CA. *(Tracking ID # 173177)*

BACKGROUND: The increasing number of elderly prisoners is creating a healthcare crisis in US prisons. "Geriatric" in prison is defined as age 55+ years because prisoners develop more comorbid conditions and functional impairment at a younger age than elders in the community. Correctional officers play an important role in the healthcare of older prisoners as they are the main interface between prisoners and the prison health system. Since officers determine which prisoners receive care for functional impairment we assessed (1) how often officers were aware of their older prisoners, (2) how often officers reported functional impairment and geriatric syndromes in their geriatric prisoners, and (3) how rates of officer-reported functional impairment compared with rates in the community.
METHODS: We randomly selected 618 geriatric prisoners (age 55+) from 11 California prisons stratified by 5-year age groups and performed individual interviews with each prisoner's officer. We did not complete interviews about prisoners who were unknown to their officer. Officers were also invited to complete interviews for prisoners they considered "high risk" who were not in our random sample. Validated instruments were used to gather officers' knowledge of prisoners' Activities of Daily Living (difficulty with eating, bathing, dressing, transferring, toileting), the presence of geriatric syndromes (falls, incontinence and memory problems), and whether the officer felt the prisoner was unsafe in their current location or would need a higher level of care (transfer to a medical ward) within the year. Analyses accounted for clustering by prison and age-stratified sampling.
RESULTS: Of the 618 geriatric prisoners, 34% (211) were unknown to their assigned officer, including 42 (25%) of subjects 70+ yrs. Of the 407 prisoners known to their officer, 5% were reported to be impaired in 1+ ADL; 5% had fallen in the past year; 3% were incontinent; and 6% had memory problems. Officers identified 3% as being unsafe in their current location and 16% that would require transfer to a higher level of care within the year (including 51% of those 70+ yrs). Among the additional 57 prisoners identified as high risk, officers reported 32% were impaired in 1+ ADL, 22% had fallen in the past year, 23% were incontinent, 30% had memory problems, 45% were unsafe in their current location and 82% would require a higher level of care within the year (all $p < 0.01$ compared to randomly sampled subjects).
CONCLUSIONS: Nearly one-third of geriatric prisoners were unknown to their assigned officer, including a quarter of prisoners 70+ years, making assessment and provision for their functional impairments unlikely. Even among the geriatric prisoners who were known to their officer, functional impairment was likely under recognized since officers' reports of ADL impairment (5%) were lower than rates for community dwelling elders (~10%) even though prisoners are known to have higher rates of impairment. Officers were able to identify cases of extreme impairment based on their descriptions of the 57 prisoners they identified as "high risk." Geriatrics training for officers and a formalized system for geriatric screening could help to identify older prisoners with functional impairment and geriatric syndromes and improve the quality of geriatric healthcare in prison.

CARING FOR THE DYING IN ONCOLOGY. M.J. Silveira[1]; J. Forman[2]. [1]Ann Arbor VAMC, Health Services Research and Development Center of Excellence, Ann Arbor, MI; [2]Ann Arbor VAMC, Ann Arbor, MI. *(Tracking ID # 174157)*

BACKGROUND: Efforts to improve care of the dying have focused how sub-specialists in palliative care, rather than physicians with pre-existing relationships with those patients, can meet the growing demand for end-of-life care. Presumably, providing end-of-life care through existing sources of care could expand access to end-of-life care more quickly and cost-efficiently than would creating sub-specialty palliative care services. With this idea in mind, we conducted focus groups with oncologists to ask "What does it take to care for the dying in oncology?"
METHODS: We conducted 11 focus groups with oncologists and their nursing staff at 5 sites throughout Southeast Michigan to explore their care of patients with incurable and advanced cancer. Physicians and nurses were interviewed separately. Interviews were taped, transcribed, and analyzed using cross-case comparison. Transcripts were reviewed by multiple readers to: 1) develop a coding scheme, 2) identify themes, and 3) design an interpretive model.
RESULTS: Oncologists and their nursing staff feel they have the knowledge and desire to provide competent end-of-life care to their patients with incurable and advanced cancer. Their ability to do so, however, depends upon the following care delivery issues that are often beyond their control: 1) A system to maintain continuity between a single provider or group of providers with patients until death; 2) Time to assess patients thoroughly and identify and address their needs - especially when those needs were psychosocial; 3) Care coordination to provide a point of contact for patients, facilitate information sharing between patient and provider or among providers, and identify and access community services such as hospice; and 4) Clear role delineation among providers caring for mutual patients. Subjects feel that palliative care experts are needed only for the most challenging of cases; otherwise, they present an obstacle to continuity with oncology. Clinics in which long-term continuity is not established with patients (e.g., resident-run clinics), however, may benefit from the availability of dedicated palliative care services.
CONCLUSIONS: For oncologists to provide end-of-life care, they need better support within oncology rather than education or palliative care services to refer patients to. Support tailored to the specific needs of each oncology practice may allow patients to have greater access to end-of-life care through their established source of care.

CHARACTERISTICS OF ELDER PATIENTS PRESENTING TO THE EMERGENCY DEPARTMENT WITH ALTERED MENTAL STATUS: RESULTS OF A NATIONAL SURVEY. M.S. Galindo[1]; C. Sarkisian[1]; J. Boscardin[1]; D. Zingmond[1]. [1]University of California, Los Angeles, Los Angeles, CA. *(Tracking ID # 172854)*

BACKGROUND: Altered mental status (AMS) is common in elder patients in the emergency department (ED) and is associated with a poor prognosis. The national epidemiology of patients with AMS has not been described.
METHODS: We used the National Hospital Ambulatory Medical Care Survey (NHAMCS, 2001–2004) to examine characteristics of patients 65 and older who presented to the ED with symptoms of AMS. Using the Reason for Visit Classification, a cluster of symptoms suggestive of AMS was generated. We examined demographics, physical findings, and other clinical data in elder patients who presented with one or more AMS symptoms. We compared the characteristics of elder AMS patients to those of elder patients without AMS. We also examined discharge diagnoses (ICD-9CM codes) and disposition from the ED in this patient group.
RESULTS: A total of 148,725 patient visits were available, representing a weighted estimate of 442 million visits. Of these, 65.7 million (14.9%) were 65 years or older. Among elder patients, 7.3% presented with symptoms of AMS (weighted estimate 4,792,035 visits). Compared to elder patients presenting for other reasons, AMS patients were older (mean age 79.2 vs. 77.2), more likely to reside in a skilled nursing facility (27.3% vs. 10.6%), and to have a dementia diagnosis (7.5% vs 1.3%). On initial examination, elder patients presenting with AMS were more likely to have abnormal vital signs or to be disoriented. They were more likely to be dead on arrival or die in the ED (2.4% vs. 0.7%), to be admitted to the hospital (60.6% vs. 36.1%) or the intensive care unit (6.1% vs. 3.4%), or to be transferred to another facility (5.9% vs. 2.8%). All comparisons above were significant at the level of $p < 0.05$. The most common primary diagnoses among elder AMS patients were cerebrovascular accidents (CVAs, 13.4%), infections (12.6%), non-specific general symptoms (11.0%), diabetic complications (5.7%), syncope (5.0%), altered level of consciousness (3.8%), and volume depletion (2.7%). Delirium was documented in 1.2% of elder AMS patients.
CONCLUSIONS: We defined a group of AMS patients whose characteristics accord well with the known risk factors, severity of illness, and underlying etiology in patients with delirium. Elder patients with AMS are more likely to be clinically unstable and frequently present with other non-specific symptoms. Clinicians should emphasize CVAs, infections, and hypoglycemia in their diagnostic assessments. Delirium is rarely documented, even when the patient's presenting complaint is AMS. Future studies should examine the appropriateness of the elements of care given to elder patients with AMS.

CIRCULATING BLOOD MARKERS AND CALF MUSCLE CHARACTERISTICS IN PERIPHERAL ARTERIAL DISEASE. M.M. Mcdermott[1]; L. Ferrucci[2]; J.M. Guralnik[2]; L. Tian[1]; D. Green[1]; K. Liu[1]; J. Tan[1]; W.H. Pearce[1]; J.R. Schneider[3]; P. Ridker[4]; N. Rifai[4]; F.L. Hoff[1]; M.H. Criqui[5]. [1]Northwestern University, Chicago, IL; [2]National Institute on Aging, Bethesda, MD; [3]Northwestern University Medical School, Chicago, IL; [4]Harvard Medical School, Boston, MA; [5]University of California, San Diego, La Jolla, CA. *(Tracking ID # 173443)*

BACKGROUND: The purpose of this study was to determine whether increased levels of inflammatory blood markers, D-dimer, and homocysteine were associated with smaller calf skeletal muscle area, lower calf muscle density, and increased calf muscle percent fat in persons with lower extremity peripheral arterial disease (PAD).
METHODS: Participants were 423 persons with PAD. Calf muscle area, calf muscle density, and calf muscle percent fat were measured with computed tomography, using a cross-sectional image obtained at 66.7% of the distance between the distal and proximal tibia. Blood markers measured were C reactive protein (CRP), interleukin-6 (IL-6), vascular cellular adhesion molecule-1 (VCAM-1), homocysteine, and D-dimer. In 60% of the participants, physical activity was measured objectively over seven days using a Caltrac vertical accelerometer. Analyses were adjusted for age, sex, race, comorbidities, body mass index (BMI), the ankle brachial index (ABI), tibia length, and other potential confounders.
RESULTS: The table shows associations between quartiles of blood markers and calf muscle area, adjusting for age, sex, race, tibia length, ABI, BMI, smoking, leg symptoms, comorbidities, total cholesterol, and HDL cholesterol. Data shown in the Table are adjusted calf area in millimeters squared by quartile of each blood marker. In addition, higher VCAM-1 ($p = 0.003$), D-dimer ($p = 0.041$), and IL-6 ($p = 0.046$) levels were associated with higher calf muscle percent fat, adjusting for confounders. Higher levels of D-dimer ($p < 0.001$), VCAM-1 ($p < 0.001$), and homocysteine ($p = 0.007$) were associated with lower muscle density, adjusting for confounders. Analyses were not substantially changed when they were repeated within the subset of participants with physical activity data and adjusted for physical activity levels in addition to all other confounders listed.
CONCLUSIONS: These data show, for the first time, that higher blood marker levels are associated with more adverse calf muscle characteristics in persons with PAD. These associations may contribute to previously established associations between elevated blood marker levels and functional impairment and decline in PAD.

Adjusted Associations of Blood Marker Quartiles with Calf Muscle Area in Persons with Peripheral Arterial Disease (n = 423)

	1st (lowest) blood marker quartile	2nd blood marker quartile	3rd blood marker quartile	4th (highest) blood marker quartile	Trend p value
IL-6	5551	5625	5515	5049	0.003
VCAM-1	5688	5476	5361	5196	0.006
CRP	5624	5534	5502	5102	0.003
D-dimer	5704	5557	5507	5163	0.002
Homocysteine	5574	5403	5556	5263	0.175

COGNITIVE FUNCTIONING AND HEALTH-RELATED QUALITY OF LIFE IN CHRONIC HEART FAILURE. U. Subramanian[1]; D.A. Kareken[2]; S. Perkins[3]; Y. Ding[4]; J. Kim[4]; S.J. Pressler (Bennett)[2]. [1]Roudebush VAMC, Indiana University, Indianapolis, IN; [2]Indiana University Purdue University Indianapolis, Indianapolis, IN; [3]Regenstrief Institute, Inc., Indianapolis, IN; [4]Indiana University, Indianapolis, IN. *(Tracking ID # 173365)*

BACKGROUND: Cognitive impairment (CI) has been associated with significantly higher mortality in patients hospitalized with chronic heart failure (HF). However, the relationship between CI and Health-related quality of life (HRQOL) has not been well described. In addition, the relationship between HF and CI has not been well described. Our Objectives were to: 1) examine the associations between cognitive functioning, HRQOL and disease severity; and 2) describe the severity of CI among patients with chronic HF;
METHODS: This is a cross-sectional study of the first 150 HF patients enrolled in a larger study evaluating cognitive deficits in HF. Patients were enrolled from inner-city, community, University primary care clinics as well as specialty HF clinics. During face to face interviews, patients completed the following measures: a) HRQOL, using The Minnesota Living with Heart Failure Questionnaire, a 21-item questionnaire with 6-point response scales; b) cognitive function using a neuropsychological test battery designed to measure cognitive domains of pre-morbid intellectual endowment (Wechsler Test Adult Reading); language ability (Boston Naming Test), verbal learning (Hopkins Verbal Learning Test Total recall), working memory (Hopkins Verbal Learning Test Delayed recall), and psychomotor speed (Trail making Test A; and Trail Making Test B); and c) HF severity, using the validated New York Heart Association (NYHA) functional class. Pearson correlations were calculated between cognitive functioning and HRQOL. ANOVA and ANCOVA were used to assess mean differences in HRQOL and in cognitive functioning, respectively among the NHYA classes.
RESULTS: The sample was 59% male; 67% white, with a mean age of 61 years. Most patients (74%) had Class II and III HF. Patients reported moderately low HRQOL (mean 47 SD 25). Significant correlations were found between cognitive dysfunction and HRQOL (r ranging from −.21 to −.27, p¡Û.01) and between HF severity and HRQOL ($p < .0001$), (class 1 best; class 4 worst). Low intellectual endowment was also associated with low HRQOL ($r = -.26$, $p = .0017$). After controlling for age, education and pre-morbid intellect, trends suggested worsened cognitive function with higher disease severity across NYHA Classes I– III; patients in class IV had significantly better memory and working memory than patients in Classes II and III, although this was the smallest group. Over one-third (43%) of the patients had low scores on three or more cognitive function tests.
CONCLUSIONS: Health related HRQOL may in part be related to cognitive function. Unexpected better memory and working memory among patients with severe HF could reflect enrollment bias, sample size, or survival effects. Future longitudinal studies are needed to fully evaluate CI among patients with HF.

COMMUNICATING WITH SURROGATES: A PHYSICIAN SURVEY. A.M. Torke[1]; M. Siegler[1]; A. Abalos[2]; G.C. Alexander[1]. [1]University of Chicago, Chicago, IL; [2]West Suburban Medical Center, Resurrection Health Care, Chicago, IL. *(Tracking ID # 173599)*

BACKGROUND: When a patient lacks decision making capacity, physicians must make decisions together with surrogates, usually family members or close friends. There has been little previous effort to examine the timing or quality of physician/surrogate communication in the hospital setting.
METHODS: We conducted a survey of resident and attending physicians affiliated with an academic medical center, a Catholic hospital, and a community hospital. All of the hospitals had residency programs and were located in one large metropolitan area. Physicians were identified from monthly schedules and administered a written survey at the end of a period of inpatient service in general medicine or the intensive care unit. The survey addressed attitudes about surrogate decision making and asked each subject to identify and describe a patient who lacked decision making capacity and required a major medical decision. Major domains of the survey included disagreement and conflict, timing of communication, and communication effectiveness.
RESULTS: We have surveyed 229 physicians to date, with a response rate of 71%. Approximately two-thirds of physicians were residents. Approximately half were male (48%), half were white (59%), and the remainder were Asian (26%) or African American (7%). Seventy-seven percent of physicians identified a patient they had cared for in the previous month who lacked decision making capacity and required a major medical decision. Among these patients, most were African American (69%) or white (27%), and three-fourths (75%) were over 60 years of age. Continuity of care was low, with physicians reporting a prior relationship with the patient only 11% of the time. Although physicians reported moderate levels of agreement with surrogates about the facts of the illness (76%), the patient's prognosis (71%) and the right thing to do for the patient (64%), physicians reported interpersonal conflict in only 5% of cases. Communication between physician and surrogate occurred on the first day of hospitalization in 59% of cases. In 18% of cases, there was only one meeting or discussion with the surrogate during the patient's hospital stay, suggesting that a major decision was made with only a single interaction. Twenty-three percent of physicians reported difficulty contacting surrogates. Physicians reported experiencing distress about the decision 22% of the time and a similar proportion (23%) rated the communication as ineffective. We found that perceived communication effectiveness was significantly related to having more than one meeting with the surrogate (chi squared = 6.82 $p = .009$), and neared significance for whether or not communication occurred on the first day of admission (chi squared = 3.01, $p = .083$). Communication effectiveness was not related to patient or physician race, gender, or other demographic characteristics.
CONCLUSIONS: Surrogate decision making is common in the inpatient setting and usually involves the elderly. Although disagreement with surrogates and physician distress are common, overt conflict is rare. Communication is rated as more effective when it occurs on the day of hospital admission and occurs more than once. Further work is needed to determine if promoting earlier, more frequent communication could improve the effectiveness of surrogate decision making.

DIFFERENCES IN THE QUALITY OF THE PATIENT-PHYSICIAN RELATIONSHIP AMONG TERMINALLY ILL AFRICAN AMERICAN AND WHITE PATIENTS: IMPACT ON ADVANCE CARE PLANNING AND GOALS OF CARE. A.K. Smith[1]; R.B. Davis[1]; E.L. Krakauer[2]. [1]Beth Israel Deaconess Medical Center, Brookline, MA; [2]Massachusetts General Hospital, Boston, MA. *(Tracking ID # 173023)*

BACKGROUND: Little is known about the quality of the patient-physician relationship among African American and white patients with terminal illness and its impact on differences in advance care planning and goals of care.
METHODS: We analyzed data from in-person surveys of 803 African American and white patients with an estimated survival of six months. Patients were referred from randomly selected physicians in 5 metropolitan areas and 1 rural county. We first examined differences between African American and white patients in 6 patient reported patient-physician relationship quality measures: trust, feeling respected, feeling that decision making is shared, and perceived physician skill in breaking bad news, listening, and helping with the medical system. We then describe differences between terminally ill African Americans and whites in presence of an advance care plan and goal of "prolong life however possible," first in unadjusted models, then in multivariable models adjusting for age, gender, education, disease, and measures of the quality of the patient-physician relationship. We additionally present the results of subgroup analyses of end-of-life outcomes from interviews with 552 patients who

survived to follow up and responses from caregivers for 191 patients who died before the follow up interview.
RESULTS: Of 803 terminally ill patients, 688 were white and 115 were African American. The mean age of patients was 65.9 (standard deviation 13.3), and the most common diagnoses were cancer (52.9%), heart disease (17.4%), and chronic obstructive pulmonary disease (11.5%). Twenty-nine percent of patients died between the first and follow up interviews (mean time to follow up interview, 125 days). The reported quality of the patient-physician relationship was significantly lower for African Americans than for white patients for all measures except trust, which was of borderline statistical significance ($p = .08$). African Americans were less likely to have an advance care plan (42.6% vs. 77.3%, $p < .001$), and more likely to report a goal of "prolong life however possible" (57.4% vs. 20.0%, $p < .001$). Only 21.1% of African American and 25.9% of white patients had talked with their physician about plans for care near the end-of-life ($p = .29$). In multivariable analysis, substantial differences between African Americans and whites in advance care planning and goals of care remained after adjusting. In a subgroup analysis of patients who survived to a second interview, African American patients were more likely to feel abandoned by their physician (11.8% vs. 3.6%, $p = .005$), and interviews with decedents' caregivers revealed that African Americans were more likely to have died in the hospital (57.7% vs. 31.1%, $p = .008$), without a Do Not Resuscitate order (57.1% vs. 79.7%, $p = .02$), and less likely to have used hospice (38.5% vs. 60.1%, $p = .04$).
CONCLUSIONS: Terminally ill African Americans report lower quality interactions with their physicians than terminally ill white patients. However, quality of the relationship does not explain the observed differences between African Americans and whites in advance care planning and goals for end-of-life care. Physicians in our study referred patients based on an estimated prognosis of 6 months to live, yet, remarkably few patients reported discussing plans for care near the end-of-life with their physician.

DO ELDERLY PATIENTS BENEFIT FROM LARGE REDUCTION IN LOW-DENSITY LIPOPROTEIN CHOLESTEROL? C.R. Rahilly[1]; R. Scranton[2]; E. Lawler[3]; J. Gaziano[4]. [1]Boston VA Healthcare System, Jamaica Plain, MA; [2]New England Veterans Affairs Healthcare System, Boston, MA; [3]Boston University, Boston, MA; [4]VA Boston Healthcare System, Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 172969)*

BACKGROUND: Recent studies have demonstrated that reduction in risk for acute cardiovascular events is proportional to the degree of low-density lipoprotein cholesterol (LDL-C) lowering, and not solely dependent on the achievement of "target" LDL-C level. Whether aggressive LDL-C reduction achieves as much benefit in elderly patients as it does in younger patients is debated. We sought to determine whether elderly veterans who achieve large change in LDL-C benefit as much as younger veterans with similarly large LDL-C reduction.
METHODS: A cohort of veterans in the New England VA Healthcare System database between 1997 and 2005 who were diagnosed with coronary artery disease, peripheral vascular disease, or diabetes mellitus was followed retrospectively for a combined outcome of acute myocardial infarction or revascularization. Pre-outcome LDL-C reduction was categorized into no reduction (< 10 mg/dL, reference), small reduction (10 to 40 mg/dL), moderate reduction (40 to 70 mg/dL), and large reduction (> 70 mg/dL). Patients were stratified into quartiles of age on September 30, 1997. For each quartile of age, Cox proportional hazards was used to estimate hazard ratios (HRs) for each category of LDL-C reduction on the risk of combined outcome compared to reference patients, adjusting for gender, medications, and co-morbidities. In addition, analyses were repeated in a subgroup of patients > = 80 years.
RESULTS: The cohort consisted of 23,513 veterans; among these the median age was 67.1 years and the average follow-up time to outcome or censoring of 3.86 years. In each age quartile, there was a significant relationship between the size of change of LDL-C and magnitude of reduction in risk for combined outcome, at any final LDL-C level (p-value for trend < .0001 in each age quartile). In patients who achieved large LDL-C reduction (> 70 mg/dL) compared to those with no reduction, the HRs for incident ischemic heart disease or cerebrovascular accident were similar across age quartiles: 0.34 in patients = < 60.8 years, 0.30 in patients between 60.8 and 69.1 years, 0.27 in patients between 69.1 and 75.3 years, and 0.24 in patients > = 75.3 years. P-values for each HR were < .0001. In the subgroup of patients age > = 80 (n = 2038), HR for those who achieved the largest LDL-C reduction was 0.27 (p-value < .0001).
CONCLUSIONS: We found that elderly veterans at high risk for acute cardiovascular events benefit from large reduction in LDL-C as much as younger patients do. These findings may support aggressive lipid lowering in all high risk patients, regardless of age.

EFFECTIVENESS OF THE GRACE MODEL OF PRIMARY CARE FOR LOW-INCOME SENIORS: A RANDOMIZED CONTROLLED TRIAL. S.R. Counsell[1]; C.M. Callahan[1]; A.B. Buttar[2]; D.O. Clark[1]; W. Tu[1]; T.E. Stump[1]; G.D. Ricketts[1]. [1]Indiana University Center for Aging Research, Regenstrief Institute, Indianapolis, IN; [2]University of Wisconsin-Madison, Madison, WI. *(Tracking ID # 173385)*

BACKGROUND: Most older adults receive care in primary care settings, and low-income seniors represent a particularly complex and high-cost population. The Geriatric Resources for Assessment and Care of Elders (GRACE) model of primary care was developed to improve the quality of geriatric care, optimize health and functional status, and decrease excess healthcare use. The GRACE model has been shown to increase access to needed services and improve the quality of care provided for geriatric syndromes. The objective of this study is to assess the impact of the GRACE intervention after two years on global health, functional status, and utilization.
METHODS: We conducted a randomized controlled clinical trial of 951 adults aged ≥65 with incomes ≤200% of the federal poverty level who received care at one of six community-based health centers of an urban public healthcare system. Subjects were randomized by physician to receive the intervention (n = 474) or usual care (n = 477). The GRACE intervention includes a nurse practitioner and social worker who provide in-home assessment and care management over two years in collaboration with the primary care physician and a geriatrics interdisciplinary team, and guided by 12 care protocols for common geriatric conditions. The GRACE model uses an integrated EMR and Web-based care management tracking tool, and provides integration with affiliated pharmacy, mental health, home health, community-based, and inpatient geriatric care services.
RESULTS: Baseline characteristics were similar in both groups ($p > 0.05$) and showed mean age 72 years, 76% female, 60% black, 61% education < 12 years, 72% annual income < $10,000, multiple comorbid medical conditions and moderate functional impairment. Intervention patients had a mean of 5 protocols activated (range 2–10) and 19 contacts face-to-face or by telephone (range 3–92) per year by the GRACE team. Intention-to-treat analysis revealed significant improvements ($p < 0.02$) for intervention patients compared to usual care at 24 months in SF-36 scales of vitality (+3.2 vs. −2.0), social function (+3.9 vs. −1.9), mental health (+4.4 vs. −1.1) and mental component score (+2.7 vs. +0.6). Physical function scores declined for both groups but were not significantly different (−5.6 vs. −6.5, $p = 0.65$). Needing more help at 24 months compared to baseline in instrumental (17.4% vs. 24.4%; $p = 0.06$) and basic activities of daily living (12.5% vs. 13.5%; $p = 0.65$) did not differ significantly between groups. Hospital admissions and hospital days per thousand in intervention vs. usual care patients were similar ($p > 0.2$) in Year 1 (384 vs. 358; 2076 vs. 1983) and Year 2 (325 vs. 396, 1739 vs. 2163). Intervention patients had significantly fewer ED visits per thousand in Year 2 (Year 1: 823 vs. 937, $p = 0.22$; Year 2: 643 vs. 841, $p = 0.01$). In the 25% classified at baseline as high-risk by probability of repeated admission (Pra) scores, hospital admission and ED visit rates per thousand were similar ($p > 0.6$) between groups in Year 1 (675 vs. 758; 1068 vs. 1089) and lower for intervention patients in Year 2 (396 vs. 687, $p = 0.03$; 827 vs. 1287, $p = 0.02$).
CONCLUSIONS: The GRACE intervention improved mental health, vitality, and social functioning and decreased ED use in low-income vulnerable elders. In the group at high-risk for hospitalization, the intervention led to substantial reductions in both hospital and ED use in the second year. Home-based geriatric collaborative care management shows promise in preventing high-cost acute care.

HEALTH LITERACY NOT RACE PREDICTS END-OF-LIFE PREFERENCES. A.E. Volandes[1]; M. Paasche-Orlow[2]; M. Gillick[1]; E.F. Cook[3]; S. Shaykevich[3]; E.D. Abbo[4]; L. Lehmann[5]. [1]Harvard University, Boston, MA; [2]Boston University, Newton, MA; [3]Brigham and Women's Hospital, Boston, MA; [4]University of Chicago, Chicago, IL; [5]Harvard University, Newton, MA. *(Tracking ID # 172864)*

BACKGROUND: Several studies have reported that African-Americans are more likely to have preferences for more aggressive care at the end of life compared to Whites. Since the medical information presented to subjects is frequently complex, we hypothesized that apparent differences in end-of-life preferences may be due to disparities in health literacy and not reflect true cultural differences.
METHODS: After hearing a verbal description of advanced dementia, subjects were asked their preferences for end-of-life care if they developed advanced dementia. Subjects then viewed a two-minute video of a patient with advanced dementia and were asked again about their preferences. (The film clip is available online at: http://homepage.mac.com/avolandes/AlzheimersVideo/iMovieTheater18.html). Options included life-prolonging care, limited care, comfort care and don't know. For the statistical analysis, the primary outcome was dichotomized into comfort care and aggressive care (life-prolonging care, limited care, or don't know). Health literacy was measured using the Rapid Estimate of Adult Literacy in Medicine tool (REALM) and divided into three categories: low (0–45, 6th grade and below), marginal (46–60, 7th–8th grade) and adequate (61–66, 9th grade and above). Unadjusted and adjusted logistic regression models were fit using stepwise algorithms of race, health literacy, age, sex, education, marital status, religion, religious attendance, and health status, to examine factors related to initial preferences and factors related to changes in preferences after watching the video. Other than race, which was included in all models, factors were retained if significant at $p < 0.10$.
RESULTS: A total of 82 African-Americans and 64 Whites completed the interview. In unadjusted analyses, African-Americans were more likely to have preferences for aggressive care after the verbal description, OR 4.8 (95% CI 2.1–10.9). Subjects with low or marginal health literacy were also more likely to have preferences for aggressive care after the verbal description, OR 17.3 (95% CI 6.0–49.9) and OR 11.3 (95% CI 4.2–30.8) respectively. In adjusted analyses, health literacy (low health literacy: OR 7.1, 95% CI 2.1–24.2; marginal health literacy OR 5.1, 95% CI 1.6–16.3) but not race (OR 1.1, 95% CI 0.3–3.2) was an independent predictor of preferences after the verbal description. After watching a video of advanced dementia and adjusting for race and education, subjects with low or marginal health literacy were more likely to change their preferences to comfort care (low health literacy OR 20.1, 95% CI 3.9–104.5; marginal health literacy OR 14.8, 95% CI 3.1–71.4). After the video, there were no longer any differences in the distribution of preferences according to race or health literacy ($p < 0.0001$).
CONCLUSIONS: Health literacy and not race was an independent predictor of end-of-life preferences after hearing a verbal description of advanced dementia. However

after viewing a video of a patient with advanced dementia there were no longer any differences in the distribution of preferences according to race and health literacy. These findings suggest that clinical practice and research relating to end-of-life preferences may need to shift from a culturally based paradigm to a patient education model to ensure informed decision making.

HOSPITALIZATION INCREASES THE RISK OF FRACTURE IN HEALTHY OLDER ADULTS. R.L. Gardner[1]; F. Harris[1]; S.R. Cummings[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172228)*

BACKGROUND: People age 65 or older have 13 million hospitalizations per year in the U.S., staying an average of 6 days. The risk of fracture after hospitalization has not been studied. We hypothesized that long or repeated hospital stays would indicate an increased risk of hip and other fractures.
METHODS: The Health Aging and Body Composition Study is a prospective cohort of 3075 well-functioning white and black women and men, aged 70 to 79, recruited from two communities in 1997–1998. Incident hospitalizations and occurrence of post-hospitalization fractures were prospectively validated. We determined the effect of hospitalization for conditions besides fracture, on risk of clinical fracture, while adjusting for age, race, gender, and other confounding factors (e.g., smoking, bone mineral density, corticosteroid use). We excluded fractures due to major trauma, pathologic fractures, stress fractures, and those of unknown cause. We used a time-dependent Cox proportional hazards model.
RESULTS: During a mean 6.6 years of >95% follow up, 2030 subjects had hospitalizations, and 387 suffered clinical fractures, including 83 hip fractures. After adjusting for age, race, and gender, any hospitalization resulted in a 2.0-fold increased relative hazard of clinical fracture (95% CI 1.6 to 2.5). Hospital stays >3 days indicated a 2.6-fold increased relative hazard of hip fracture (95% CI 1.6 to 4.2). Those hospitalized twice had a 2.4-fold increased relative hazard of hip fracture (95% CI 1.2 to 4.9) , and hospitalization three times was associated with a 3.7-fold increased relative hazard of hip fracture (95% CI 1.6 to 8.1).
CONCLUSIONS: Long or repeated hospitalization is associated with an increased risk of hip and other fractures. Measures to reduce fracture risk, such as bisphosphonates or physical therapy, should be considered at hospital discharge in elderly patients, particularly those who stay more than 3 days in the hospital or who have been hospitalized more than once.

HOW ELDERS HELP THEMSELVES RECOVER FROM MAJOR SURGERY. V. Lawrence[1]; H. Hazuda[2]; J. Cornell[1]. [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 # 172840)*

BACKGROUND: Elders undergo >500,000 major abdominal operations annually; that number will double in the next 20 years. Yet little is known of their sources of support and adaptive strategies during recovery. We aimed to systematically 1) characterize sources of support (eg, family, friends) and 2) identify patients' proactive adaptive strategies that improve recovery.
METHODS: Prospective cohort study of 200 consecutive patients (pts) ≥60 years old; Basic and Instrumental Activities of Daily Living (ADL, IADL) assessed preoperatively (preop) and at 1, 3, 6, 12, and 24 weeks postoperatively (postop) with standardized questionnaires; support and adaptive strategies assessed at postop time points with a semi-structured open-ended questionnaire. Two bilingual investigators (clinician, social scientist) jointly coded themes in subjects' responses.
RESULTS: Data were available for 77% of the 935 total potential postop interviews for the 187 pts meeting inclusion criteria (187 pts × 5 timepoints); 150 pts (80%) had ≥3 postop interviews. Mean (SD) age was 68.6 (6.4) with 43% women, 57% Mexican American, 34% non-Hispanic White, and 9% other ethnoracial groups; educational levels were: <high school - 60%, high school - 16%, and >high school - 24%. Sources of support included family members (172 pts, 92%), friends (134, 72%), nurses or physicians (79, 42%), neighbors (15, 8%), as well as spirituality (65, 35%). Adaptive strategies included: 1) cognitive structuring (eg, humor, patience, determination; 96, 56%); 2) nonexercise activities (eg, resting, diversionary activities to relieve boredom; 91, 61%); 3) specific environmental maneuvers (eg, chair for balance, mopping with rag on foot; 64, 34%); and 4) compliance with medical advice (eg, abdominal splinting, walking or exercise; 132, 71%). The most frequently cited medical advice was exercise, specifically walking (59% and 49% of pts citing medical advice, respectively). Sources of support and types of adaptive strategies did not significantly vary by gender, age, or ethnoracial groups. Mean recovery times were 3 months in ADL and 6 months in IADL. Adjusting for age, ethnicity, and gender, ADL recovery was associated with nonexercise activities (OR 1.64, 95% CI 0.93–2.91, $p = 0.09$) and exercise (OR 1.75, 1.02–3.01, $p = 0.04$). IADL recovery was associated with cognitive structuring (OR 1.49, 1.04–2.13, $p = 0.03$), nonexercise activities (OR 1.56, CI 0.97–2.52, $p = 0.07$), and exercise (OR 1.6, CI 1.0–2.6, $p = 0.05$). After adjusting for clinical variables and preop functional status with logistic regression, none of the adaptive strategies was associated with recovery but statistical power was limited. However, the number of different types of adaptive strategies per patient (none – 25 pts, one – 51 pts, two – 63 pts, ≥3–48 pts) was signficantly associated with both ADL and IADL recovery, after adjusting for demographic and clinical variables and preop functional status (ORs 1.5–1.7, $0.005 \le p \le 0.04$).
CONCLUSIONS: As expected, elders' sources of postop support are primarily social. Importantly, adaptive strategies are both mental and physical and consistent across demographic groups. Increasing the number of different types of strategies independently predicts recovery. To our knowledge, these are the first results of this type. A variety of adaptive strategies should be taught to elders having major abdominal surgery to improve postoperative recovery.

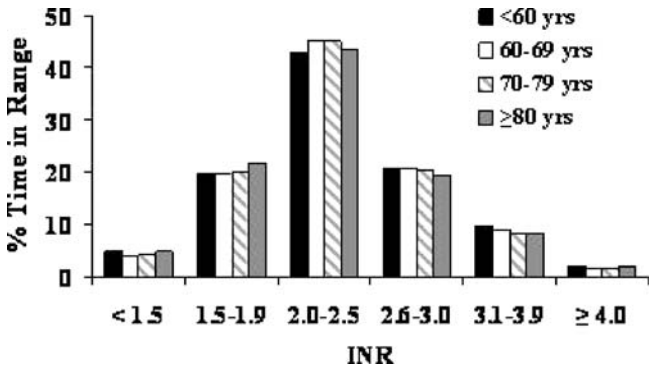
IMPROVING THE QUALITY OF CODE STATUS DISCUSSIONS BY INCORPORATING CARDIOPULMONARY RESUSCITATION OUTCOMES AND GOALS OF CARE. A. Curtis[1]; J. Khan[2]; K. Cannon[1]; G.E. Rosenthal[2]; L. Kaldjian[2]. [1]VA Iowa City Health Care System, Iowa City, IA; [2]University of Iowa, Iowa City, IA. *(Tracking ID # 173413)*

BACKGROUND: The quality of code status discussions is compromised when patient understanding of resuscitation is poor and physician communication is incomplete. The purpose of this pilot study was to explore whether discussing cardiopulmonary resuscitation (CPR) outcomes and goals of care affect patient preferences regarding code status.
METHODS: We surveyed 34 adult inpatients on the general medicine service at a Midwestern university hospital. A trained internist administered surveys within 72 hours of hospital admission over two months. The survey queried knowledge about CPR (graded as poor (<1), fair (2–3), good (>3) depending on the number of CPR components named), treatment preferences (including CPR), goals of care (cure, improve health, maintenance of current health, live longer, comfort, and accomplish something particular), communication with a physician about treatment preferences, and demographic variables, including advance directives. Charts were reviewed for documented code status, and the patient's attending physician was contacted to estimate patient prognosis.
RESULTS: Demographics included: mean age 49 (range 30–92), 65% female, 29% with a prognosis of less than 24 months, and 32% had documented do not resuscitate (DNR) orders. 52% of patients had a living will, 59% had a medical power of attorney, and 52% had spoken with a physician about their resuscitation preferences during or prior to admission. Patient knowledge of CPR was "poor" in 50%, "fair" in 21%, and "good" in 29%. Of the patients who had spoken with a physician about CPR, knowledge of CPR was "poor" in 50%, "fair" in 48%, and "good" in 2%. When asked about CPR survival rates, 47% stated "do not know" and 47% thought chances for survival were greater than 50%. After being informed that only 1 in 10 patients survive a cardiac arrest even with CPR, 12% changed their minds about their resuscitation preferences. Patients expressed preferences for the following goals of care: cure (70%), improve health (79%), maintenance of current health (91%), live longer (79%), comfort (37%), and to accomplish something particular (73%). Only 24% had discussed their goals with their physician. At the end of the interview, 24% stated that after discussing goals of care their wishes regarding resuscitation had changed and 94% reported that the discussion about CPR outcomes and goals of care had been helpful in some way.
CONCLUSIONS: Patient understanding of CPR, even after conversations with physicians, is generally poor. However, discussing CPR outcomes and goals of care is feasible and, for some patients, influences their resuscitation preferences. Further research is needed to confirm and clarify these findings.

IS WARFARIN CONTROL MORE DIFFICULT IN THE OLDEST PATIENTS WITH ATRIAL FIBRILLATION? THE ATRIA STUDY. M.C. Fang[1]; A.S. Go[2]; Y. Chang[3]; L.H. Borowsky[3]; N.K. Pomernacki[4]; D. Singer[3]. [1]University of California, San Francisco, San Francisco, CA; [2]University of California, San Francisco and Kaiser Permanente Division of Research, Oakland, CA; [3]Massachusetts General Hospital, Boston, MA; [4]Kaiser Permanente Division of Research, Oakland, CA. *(Tracking ID # 172781)*

BACKGROUND: Warfarin effectively reduces stroke risk in atrial fibrillation but also increases hemorrhage risk. Older patients are less likely to receive warfarin in part because of perceptions that warfarin control is more difficult in the elderly. However few data are available about the control of warfarin in the oldest patients. We studied a large cohort with atrial fibrillation to assess whether anticoagulation control varied by age.
METHODS: The ATRIA study is a cohort of 13,559 patients with atrial fibrillation enrolled in an integrated healthcare delivery system. The median follow-up was 6.0 years, accumulating 34,716 person-years of follow-up on warfarin. Warfarin exposure was determined using validated algorithms based on warfarin prescriptions and serial outpatient international normalized ratio (INR) values in pharmacy and laboratory databases. Other patient characteristics were ascertained from automated health plan databases. Primary outcomes were (1) time in therapeutic INR range, and (2) INR variability, defined as the deviation from the previous INR value over time. We examined the association of age group (<60, 60–69, 70–79, and ≥80 years) and outcomes after adjusting for demographic and clinical covariates.
RESULTS: At study entry, patients aged ≥80 years were less likely to receive warfarin than those younger than 80 years (43% vs. 56%, $p < 0.01$) and more likely to have more stroke risk factors, with a mean CHADS2 score of 2.3 vs. 1.4 ($p < 0.01$). The proportion of time in a therapeutic INR range of 2.0–3.0 did not differ by age (Figure); 64.5% in patients ≥80 years vs. 65.1% in those <80 years (adjusted odds ratio = 1.0, 95%CI: 0.9–1.1). Notably, there were no significant differences by age in the proportion of INRs ≥4.0 (1.7% vs. 1.6%, adjusted OR = 1.1 [0.9–1.4]). Mean INR variability was also not significantly higher in the oldest patients (0.5 vs. 0.5).
CONCLUSIONS: In this large cohort of patients taking warfarin, older patients did not have significantly worse INR control. Importantly, INRs ≥4.0, which are

associated with the highest risk of hemorrhagic complications, were not more common in the oldest patients. Concerns about more difficult warfarin control based on age alone should not deter clinicians from prescribing warfarin to older patients with atrial fibrillation.



LONG TERM OUTCOMES OF UNEXPLAINED SYNCOPE IN OLDER ADULTS. N. Jarmukli[1]; O. Roussanov[2]; G. Estacio[2]; M. Capuno[2]; J. Hill[2]; S. Wilson[2]. [1]Salem VAMC, Salem, VA; [2]Salem Veterans Affairs Medical Center, Salem, VA. *(Tracking ID # 172420)*

BACKGROUND: The incidence of syncope begins to rise after the age of 50. Syncope mechanisms in older adults were suggested to be somewhat different from those in younger patients. There is limited and conflicting data on the prognosis in older subjects with unexplained syncope.
METHODS: Patients with a first episode of syncope at the age of 50 or above that occurred between January 2000 and May 2002 were identified through retrospective review. Patients were evaluated and followed at Veterans Affairs Medical Center. Clinical outcomes in subjects with unexplained syncope were analyzed and compared with predicted survival based on life tables and Charlson comorbidity index.
RESULTS: Two hundred and seventy six patients with new onset syncope at the age of 50 or above were included in the study. One hundred and forty were evaluated as inpatients, 23 were seen in ER and discharged, 104 reported syncope during an outpatient visit, and 9 had syncope in the hospital. The most common causes of syncope were orthostatic hypotension in 34 (12%), reflex-mediated in 32 (11%), cardiac in 25 (9%), and neurological in 15 (5%) patients, respectively. In 147 (53%) patients, age 72.5 +/− 9.7 years, no definite cause of syncope was established despite the extensive cardiac and neurological evaluation. One, two, and five year mortality in subjects with unexplained syncope was 15, 25.2, and 37.4 percent, respectively. This is twice as high as seen in general population adjusted by age and sex. However, when further adjusted by comorbidity index, mortality was similar to predicted values (18%, 23%, and 40%, respectively). Excess deaths were seen in the first 6 months of follow up accounting for 73 percent of first year mortality. In turn, 90 percent of those deaths occurred in patients with limited life expectancy, and only one was sudden.
CONCLUSIONS: While an important early mortality marker, new onset unexplained syncope in older adults is not an independent predictor of decreased long term (1 to 4 years) survival when adjusted by age and comorbidity.

NORTHWEST 2007 REGIONAL RESIDENT AWARD WINNER. S. Garten[1]. [1]Society of General Internal Medicine, Washington, DC. *(Tracking ID # 178588)*

BACKGROUND: place
METHODS: holder
RESULTS: for
CONCLUSIONS: poster session

OBESITY EXPLAINS EXCESS DISABILITY IN OLDER BLACK WOMEN. C.S. Lynch[1]; S.A. Studenski[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173845)*

BACKGROUND: Obesity is associated with higher disability rates. Although it has been linked to other outcomes such as chronic disease, mobility problems, and poor quality of life, the extent to which obesity accounts for higher rates of disability in Black women is not known. Therefore, the objective was to examine whether obesity explains excess disability in older Black females.
METHODS: We performed a secondary analysis of data from the 1995 National Health Interview Survey-Disability (NHIS-D) Supplement. The predictor variables were race-gender group (White male, WM; Black male, BM; White female, WF; Black female; BF) and body mass index (BMI) categorized by standard classes (normal weight, 18.5–24.9 kg/m2; overweight, 25–29.9; class 1 obesity, 30–34.9; class 2, 35–39.9; and, class 3, > =40). The outcome was self-reported disability according to difficulty with activities of daily living (ADLs), dichotomized as yes/no.. We observed the association between obesity and ADL difficulty among different race-gender groups using chi-squared analyses. Subsequently, logistic regression analysis was performed to determine the odds ratios (OR) for disability with 95% confidence intervals (CI).
RESULTS: Non-institutionalized individuals aged 50+ years were included in this analysis. The 5,179 participants comprised 37% WM, 48% WW, 5% BM, and 8% BW. Obesity prevalence was significantly different among race-gender groups with the highest rates among BW (class 1–22%, class 2–14%, and class 3–9%) (÷2 = 210.57, p < .001). Analyses also revealed a statistically significant difference in difficulty with ADLs as a higher proportion of BW (58%) had ADL difficulty than WM (40%), BM (53%), and WF (50%). When stratified by BMI category, results showed a similar pattern for difficulty with ADLs, but not among higher obesity groups (class 2 and 3). Regression analyses (table) showed an increased relative risk of ADL difficulty for each race-gender group with BF having the highest OR. When BMI was added, the risk of disability decreased substantially among BF and minimally in BM and WF.
CONCLUSIONS: Obesity and disability rates predominate in BF. Excess weight appears to be an important predictor of disability among older BF. Weight reduction and maintenance may help decrease the excess disability in Black women.

Regression Analysis of ADL Difficulty with Race-Gender Group and BMI Category

	Before BMI adjustment	OR	95% CI (Lower limit)	(Upper limit)
Race-gender group	WM	1.00		
	BM	1.75	1.33	2.30
	WF	1.52	1.35	1.72
	BF	2.09	1.68	2.61
	After BMI adjustment	OR	95% CI (Lower limit)	(Upper limit)
Race-gender group	WM	1.00		
	BM	1.74	1.32	2.29
	WF	1.49	1.31	1.68
	BF	1.79	1.43	2.24

OVERUSE OF PAP SMEAR SCREENING IN THE ELDERLY. M.B. Barton[1]; T. Wolff[1]; E. Moy[1]; H. Burstin[1]. [1]Agency for Healthcare Research and Quality, Rockville, MD. *(Tracking ID # 172916)*

BACKGROUND: Since 2002 both professional societies and the United States Preventive Services Task Force have concluded that the benefit of repeat pap smear testing wanes with advancing age, and recommended stopping pap smear screening at 65 or 70 years of age. Studies have shown continued high rates of utilization of pap smears in samples of women over age 70. Among the elderly, those with poor health and therefore fewer remaining life years are least likely to enjoy any benefit from screening for cancers with long lead times, such as cervical cancer.
METHODS: We examined three national 2003 datasets to determine the correlates of overuse of pap smear screening in the elderly, defined as 70 years and above. The Medical Expenditure Panel Survey (MEPS) and National Health Interview Survey (NHIS) are nationally representative in person surveys while the National Ambulatory Care Survey, including both hospital clinics (NHAMCS) and outpatient practices (NAMCS), collects information on the basis of clinician visits. We defined recent pap smears on the basis of survey as having been obtained in the prior 2 years. In available data we examined the association of income level, education level, insurance coverage, and region as well as clinical history (overall health status, and history of hysterectomy) with recent pap smears. For the ambulatory medical care surveys we assessed the proportion of visits among elderly women that included a pap smear, and compared this rate across provider specialties.
RESULTS: Eligible respondents included 1679 in MEPS and 2746 in NHIS; a total of 2866 visits among women in this age group were included in the NAMCS and 2082 in the NHAMCS. Overall, recent pap smear testing was reported by 42% of elderly women in MEPS, and 50.9% of elderly women in NHIS. Weighted analyses showed that health status was significantly correlated with recent pap smear receipt, with 45.8% of women in good or better self-reported health with a recent pap smear, and 39.5% of women reporting fair or poor health (p = .03). Women who had a hysterectomy were less likely to report a recent pap smear (38.8% versus 50.3%, p < .0003). Income was correlated with recent pap testing, with the highest rate in the high income group (p < .0001) while insurance status was of borderline significance (p = .06). Region was not associated with recent pap smear receipt. Increasing education level was associated with higher rates of recent pap smear testing (55.7% versus 44.4% for the highest vs lowest education categories, p < .001) with a similar impact of high income versus near poor/low income, though that finding was non significant. Three percent of visits to primary care specialties for eldery women included pap testing in the NAMCS; 2.8% in the NHAMCS. Pap smears were more common during office visits to obstetrician/ gynecologists (26.8%), or ob/gyn clinics (31.0%), compared to family or internal medicine doctors or clinics (all under 2.1%).

CONCLUSIONS: Nationwide, as many as half of women over the age of 70 and fully 38.8% of women who have a history of hysterectomy reported a recent pap smear test. While the data suggest some appropriate targeting by health status, approximately two out of five elderly women in poor health report recent testing. It is likely that successful approaches to further improving targeting of pap smear screening will include both increasing awareness of guidelines among clinicians as well as helping clinicians to understand the potential harms to patients of over-screening.

PATIENT AND FAMILY REASONS FOR DECLINING HOSPICE: PROBLEMS AND SOLUTIONS. E.K. Vig[1]; H. Starks[1]; J. Taylor[1]; E. Hopley[1]; K. Fryer-Edwards[1]. [1]University of Washington, Seattle, WA. *(Tracking ID # 169876)*

BACKGROUND: Hospice aims to provide quality, patient-centered end-of-life care, yet many hospice-eligible patients who are referred do not enroll. The objective of this research was to identify patient and family barriers to hospice enrollment (phase 1), and strategies used by hospice providers to address those barriers (phase 2).
METHODS: In phase 1, we conducted semi-structured interviews with patients and/or family members of patients who were referred to hospice, but declined admission. We asked participants to tell us about the patient's illness, the hospice referral, and why they had not enrolled. We did a content analysis of the interview transcripts to characterize the reasons for declining hospice admission. In phase 2, we enrolled hospice admissions staff and asked them to describe how they had or would respond to each of the reasons for declining enrollment during an admissions interview with a potential new hospice patient. We identified key phrases, and summarized their strategies.
RESULTS: We conducted 30 patient and family interviews. Reasons for declining hospice fell into three broad categories: patient/family perceptions (e.g., "not dying yet;" "I'm still able to care for him"), hospice specific issues (e.g., variable definitions by hospices of hospice-eligible patients), and systems issues (e.g., concerns about continuity of care). We presented these results to 18 hospice clinicians. These clinicians had encountered each reason for declining hospice admission, and offered strategies for responding. We identified data on the full range of responses to each reason for declining enrollment. The following illustrates response strategies to one reason for declining hospice admission. A wife said: "***I don't feel that I really need it [hospice] yet. I'm very comfortable with what I'm doing and am certainly capable of giving the care that he needs.***" Hospice clinicians offered the following strategies: 1. WE'RE HERE TO SUPPORT BOTH OF YOU. "[Some people] are private or feel threatened or feel like it's saying, 'I'm not doing a good job.' [We tell them] 'You've done a great job, and we're going to be here to support you as things change and new things happen.'" 2. HE NEEDS YOU: "You don't want to supplant them, so I switch it around and say, 'He's going to need you for a very long time. What do ***you*** need to take care of you, so you can be there for that whole length of time? [Then] you get to be the wife and not just his caregiver. You have time to just be the family and do what matters to the two of you.'" 3. BUILD THE RELATIONSHIP WHEN THINGS ARE OK: "[I make the case and say] 'You get to know ***this*** team, you know ***this*** nurse, you know ***this*** social worker, [which] makes it easier to get the help you need when things start to go down hill.'" 4. APPROACH IT FROM A DIFFERENT ANGLE: "Talk about the financial aspect, [that] this is an entitlement that you have under Medicare to receive these services, your medications, your equipment and all that." 5. CALL US BACK WHEN : "Depending on what the diagnosis is, we usually know what's gonna happen. So [we suggest to them], 'When they start having this or this or this, you might want to call us back.'"
CONCLUSIONS: In order to increase the likelihood of hospice enrollment among their hospice-eligible patients, physicians may want to adopt some of the strategies used by hospice clinicians for talking to patients and families.

PHYSICIANS KNOWLEDGE OF LAWS AFFECTING MEDICAL DECISION MAKING FOR SERIOUSLY ILL PATIENTS. L.J. Staton[1]; N.A. Desbiens[1]. [1]University of Tennessee, Chattanooga, TN. *(Tracking ID # 173828)*

BACKGROUND: In 2004, lawmakers passed the Tennessee Health Care Decisions Act (TNHCDA). While the TNHCDA provides legal protection for physicians, it also requires them to take on additional roles in decision making for seriously ill patients. We sought to determine whether Tennessee physicians are knowledgeable about important provisions of the law more than two years after its passage.
METHODS: We obtained a random sample of 600 out of 14,434 active licensed physicians from the Tennessee Department of Health. We developed a 26 item true/false questionnaire and mailed it to subjects in 5 rounds. We here report on a subset of 7 questions about the major provisions of the law. The main outcome variable was the percentage of correct responses for each true/false question. Chi -square tests were done to see whether physicians who cared for hospital patients or practiced in a teaching setting had better knowledge of the law than those who did not using S-Plus 7.0 (Insightful Corp; Seattle, WA).
RESULTS: Of the 600 physicians surveyed, 333 (58%) responded. The majority of physicians were white (76%), male (79%) with a median age of 47 years (IQR: 39,55). Sixty one percent of physicians in the sample cared for hospitalized patients and 28% worked in teaching settings. Physicians reported caring for a median of 5 (IQR: 0,10) patients who died in the hospital in the previous year. Only 11% of physicians knew that, if a surrogate decision maker (SDM), requests that hydration or nutrition be discontinued and the physician of record agrees, that these treatments could not be stopped without consulting another physician. Only 22% correctly knew that if a patient does not have advance directives and decision making capacity, it is the physician's duty to designate a SDM. Only 33% knew that the physician of record could designate a non-relative to be SDM, even if a patient had a relative. Thirty five percent of physicians did not know that is the physician's duty to determine when an advance directive goes into effect and 24% did not know that if a hospital transfer could not be made, care that the physician considers to be medically appropriate can be given. There was better knowledge about whether physicians could decide about appropriate care for patients when there was no SDM and whether physicians could provide temporary care until a transfer could be arranged if they think that the care requested by the surrogate decision maker is inappropriate, though 11% and 9% of physicians were wrong on these items, respectively. There were no significant differences in responses among physicians who cared for hospitalized patients compared to those who did not (all p-values > 0.21). Physicians with teaching affiliations were not significantly more correct than other physicians (all p-values > 0.07).
CONCLUSIONS: Two years after enactment, Tennessee physicians did not know important provisions of a new law on decision making for seriously ill patients. Physicians who care for hospital patients and physicians practicing in teaching settings did not have better knowledge of the law. New methods must be devised to be sure that physicians understand key laws that impact patient care.

PREDICTORS OF CAM USE BY OLDER ADULTS WITH CHRONIC KNEE PAIN. N.E. Morone[1]; T. Rudy[1]; D. Weiner[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173109)*

BACKGROUND: Why older adults with chronic pain choose complementary and alternative medicine (CAM) is not well studied, even though we know that approximately 1/3 of older adults have used CAM in the previous year. Studies in younger populations suggest a holistic view of health is associated with CAM use as well as other characteristics such as female gender, higher education, and chronic health conditions such as chronic pain. Our objective was to identify the predictors and articulate the reasons for selecting CAM treatments for chronic knee pain among older adults.
METHODS: Community dwelling older adults ≥ 65 years with chronic knee pain due to OA who had participated in a randomized trial of osteopuncture were recruited to answer a 43-item survey that probed their attitudes toward CAM and the use of 16 CAM modalities in the previous year. Demographic factors, physical function as measured by the Western Ontario and McMaster University (WOMAC) function score, and 4 validated attitudes towards CAM were tested: (1) Satisfaction with conventional medicine (e.g., Thinking about the last time you went to see a medical doctor, how satisfied were you with the care you received?), (2) Spirituality (e.g., When I have health problems, I try prayer first, then go to the doctor if I get really sick), (3) Holistic view (e.g., I am worried about the side effects of medicines and want to try more natural remedies), and (4) Paternalistic view towards physicians (e.g., I put myself into my doctor's hands, to take care of things for me, and to tell me what's best for my health). We used multinomial logistic regression to determine the association between demographic factors, function, attitudes, and CAM use.
RESULTS: 72 of 84 (86%) older adults responded to the survey. Mean age was 71.8 years, 44 (61%) were female, 47 (65%) had at least some college education, 44 (61%) had used at least one CAM modality in the previous year for their knee pain. The three most commonly used therapies were supplements (37.5%), meditation or relaxation exercises (13.9%), and tai chi or yoga (13.9%). CAM use was significantly associated with female gender ($p = .019$). This was particularly pronounced among users of ≥ 2 CAM modalities as 34% of women vs. 3% of men had used ≥ 2 CAM therapies in the previous year. There was a trend toward CAM use with higher education ($p = .061$). It was significantly associated with decreased functional status ($p = .021$). Among the 4 attitudes tested CAM use was associated with increased spirituality and a decreased paternalistic view of physicians ($p = .018$ and $p = .019$ respectively) but it was not associated with satisfaction with conventional medicine or a holistic view ($p > .05$).
CONCLUSIONS: Among older adults with chronic knee pain due to OA, female gender and decreased function were significantly associated with CAM use as were two attitudes: increased spirituality and decreased paternalistic view of physicians. By identifying predictors of CAM use in older adults, clinicians can understand what motivates their health care seeking behavior; this in turn can inform targeted patient education about CAM.

PREVALENCE AND CORRELATES OF FRAILTY IN THE HEALTH AND RETIREMENT (HRS) STUDY. I. Popescu[1]; F.D. Wolinsky[2]. [1]Iowa City VA Health Care System and the University of Iowa, Iowa City, IA; [2]University of Iowa, Iowa City, IA. *(Tracking ID # 173696)*

BACKGROUND: Frailty represents a state of decreased reserve and vulnerability to stressors in older adults, and it is associated with disability, morbidity and mortality. Although a clinical phenotype has been described, there is no standard definition of frailty, and few population-based prevalence estimates exist. Therefore, further exploration of the frailty phenotype criteria in nationally representative samples is a research priority. In this study we evaluate the prevalence of frailty and its correlates in a nationally representative sample of community-dwelling older adults.
METHODS: We conducted a cross-sectional analysis of the 2004 survey interview data of the 1,738 participants in the Health and Retirement Study for whom physical measurements were performed. Frailty was defined as the presence of at least three of the five Cardiovascular Health Study (CHS) criteria: weight loss of 10 lbs or more over two years, self-reported exhaustion, lowest quintile for grip strength, lowest quintile for gait speed, and low self-reported activity. Pre-frailty was defined as meeting two of these five criteria. Potential correlates included socio-demographic factors, comorbid-

ity, health status, cognitive status, and concurrent disability. ADL and IADL difficulties were identified based on self-reported data. Cognitive status was measured with immediate and delayed word recall tests, and the Telephone Interview for Cognitive Status (TICS) cognitive battery. Multinomial logistic regression was used to estimate the association of frailty and pre-frailty with the potential correlates.
RESULTS: The prevalence of frailty and pre-frailty was 7.6% (n = 133) and 15.3% (n = 266), respectively. Among frail participants, 29% had weight loss, 63% reported exhaustion, 71% reported low activity, 77% had slow gait speed, and 83% had low grip strength. In crude analyses frail and pre-frail participants were older than non-frail participants (mean ages 83 vs. 79 vs. 76 years, respectively, $p < .001$), less likely to be white (82% vs. 93% vs. 92%, p.004), less likely to have high school education (61% vs. 65% vs. 74%, $p < .001$), and more likely to have > 3 comorbidities (51% vs. 43% vs. 27%, $p < .001$). Frail participants were more likely to have impaired cognition (20% vs. 7%, $p < .001$) and lower scores on immediate and delayed word recall (mean 5 vs. 4 and 4 vs. 3 words from a 10-word list). In multivariable models, age, race, female gender, comorbidity, falls, chronic pain, IADL and ADL difficulties and impaired immediate word recall were all independently and significantly associated with frailty, whereas the association with pre-frailty was more modest and significant only for age, gender, comorbidity, pain, and IADL and ADL disability. Associations were strongest for age 80 and older (OR 4.57, 95%CI 4.17–4.97, $P < .001$ for frailty; OR 2.18, 95%CI 1.89–2.47, $P < .001$ for pre-frailty), ADL (OR 6.75, 95%CI 6.25–7.25, $P < .001$ for frailty; OR 2.66, 95%CI 2.25–3.07, $P < .001$ for pre-frailty) and IADL difficulties (OR 2.61, 95%CI 2.40–3.02, $P < .001$ for frailty; OR 2.01, 95%CI 1.71–2.31, $P < .001$ for pre-frailty).
CONCLUSIONS: In this study of community-dwelling older adults, we were able to replicate the CHS criteria for the frailty phenotype. The prevalence of frailty and pre-frailty in this sample were similar to those from previous reports, and the cross-sectional correlates were comparable.

PREVENTIVE HEALTH CARE: WHAT OLDER WOMEN WANT. M.A. Schonberg[1]; R. Davis[2]; E.R. Marcantonio[2]. [1]Beth Israel Deaconess Medical Center, Brookline, MA; [2]Harvard University, Brookline, MA. *(Tracking ID # 170388)*

BACKGROUND: There is ineffective targeting of preventive health measures to older women based on life expectancy. One reason may be due to older women's preferences regarding screening. We examined how women aged 80+ value different preventive health measures compared to women 65–79.
METHODS: We telephone surveyed 107 English speaking women aged 80+ and 93 women 65–79 randomly selected from a large academic primary care practice. On a 4 point Likert scale, we assessed how important women considered 30 different preventive health measures, including screening tests (e.g. mammography), counseling on geriatric syndromes (e.g. incontinence) and healthy lifestyle (e.g. exercise), immunizations (e.g. flu shots), and recommendations for over the counter prevention medications (e.g. aspirin). We then asked women to rank their top 4 measures. We weighted whether a woman ranked a measure as 1, 2, 3, or 4 and we averaged the score given to each measure across all women. We asked women whether they had received these services recently and we collected data on sociodemographics and health.
RESULTS: Of 200 women (59% response rate), 25% were aged 85+ and 29% were 80–84. The majority had private insurance (82%) and were in good to excellent health (83%). Women aged 65–79 were more likely than women 80+ to consider screening tests and exercise counseling very important to their health. Regardless of age, women were more likely to highly value a preventive health measure if they had received it recently. The table demonstrates how older women prioritized preventive health measures by age. For women 65–79, 5 of 6 of their top preventive measures were screening tests. Women 80–84 and 85+ prioritized other measures such as flu shots, counseling about chronic pain, and aspirin recommendations. Women 85+ were more likely (52%) than women 80–84 (38%) and 65–79 (31%, $p = 0.02$) to report receiving counseling about falls; there were no other significant differences in receipt of counseling by age (49% reported receiving counseling about chronic pain, 38% about incontinence, 23% about memory loss, 39% about depression, and 51% about nutrition). Reported receipt of several screening tests is in parentheses below.
CONCLUSIONS: As women age into their 80's and 90's their preventive health priorities change. Many screening tests become less highly valued and counseling about geriatric health syndromes (e.g., incontinence or pain) become more highly valued. Despite increased value, receipt of counseling on many geriatric health syndromes is low, highlighting the need to integrate more counseling into the care of these women.

Rankings of How Elderly Women Value Preventive Health Measures by Age

65–79 (n=91)	80–84 (n=57)	85+ (n=50)
1. Mammography (89%)	1. Flu Shot	1. Flu Shot
2. Colonoscopy (88%)	2. Counseling: Chronic Pain	2. Aspirin Recommendation
3. Flu shot	3. Bone Density (75%)	3. Mammography (67%)
4. Bone Density (82%)	4. Mammography (79%)	4. Calcium Recommendation
5. Cholesterol Screening	5. Counseling: Incontinence	5. Vision testing
6. Diabetes Screening	6. Clinical Breast Exam	6. Cholesterol Screening
7. Counseling: Diet	7. Cholesterol Screening	7. Counseling: Exercise
8. Calcium Recommendation	8. Colonoscopy (78%)	8. Counseling: Memory Loss
9. Counseling: Memory Loss	9. Aspirin Recommendation	9. Counseling: Falls
10. Pap smears	10. Diabetes Screening	10. Colonoscopy (63%)

(*continued*)

Table (continued)

65–79 (n=91)	80–84 (n=57)	85+ (n=50)
7. Counseling: Diet	7. Cholesterol Screening	7. Counseling: Exercise
8. Calcium Recommendation	8. Colonoscopy (78%)	8. Counseling: Memory Loss
9. Counseling: Memory Loss	9. Aspirin Recommendation	9. Counseling: Falls
10. Pap smears	10. Diabetes Screening	10. Colonoscopy (63%)

PRIMARY AND SPECIALTY CARE BEFORE DEATH AND HOSPICE ENROLLMENT AMONG WOMEN WITH ADVANCED BREAST CANCER. N.L. Keating[1]; M.B. Landrum[1]; E. Guadagnoli[1]; E.P. Winer[2]; J. Ayanian[1]. [1]Harvard Medical School, Boston, MA; [2]Dana Farber Cancer Institute, Boston, MA. *(Tracking ID # 172276)*

BACKGROUND: Hospice care can improve symptom management and quality of life for patients nearing the end of life, yet many patients who are eligible for hospice are not enrolled. Hospice enrollment varies substantially by patient and area level characteristics, but much of this variation remains poorly understood. Therefore, we assessed whether the types of physicians seen, number of outpatient visits, and hospitalizations before death were associated with hospice enrollment and the timing of enrollment.
METHODS: Using SEER-Medicare data, we studied a population-based cohort of 4,455 women aged 65 and older diagnosed with stage III or IV breast cancer during 1992–1999 who died before the end of 2001. We described hospitalizations, outpatient visits, and the physicians seen before death and used logistic regression to assess the relationship of these factors with hospice enrollment and, among enrollees, enrollment within 2 weeks of death, adjusting for patient and tumor characteristics.
RESULTS: Among 4,455 women diagnosed with advanced cancer, 37% enrolled in hospice before death. Among hospice enrollees, the median duration of enrollment was 22 days (mean [SD] = 61.2 [112.5] days). Adjusted hospice enrollment rates were higher for hospitalized patients (45% if hospitalized for 1–7 days, 46% if 8–20 days, 35% if more than 20 days) than those not hospitalized (31%) ($P < 0.001$). Adjusted rates were also higher among patients seeing a cancer specialist and primary care physician (PCP) (41%) and those seeing a cancer specialist and no PCP (38%) than among those seeing a PCP and no cancer specialist (30%) or neither type of physician (22%) ($P < 0.001$). Hospice enrollment also increased with increasing numbers of outpatient visits ($P < 0.001$). Hospitalizations, physicians seen, and visits were not associated with referral within 2 weeks of death (all $P > 0.10$).
CONCLUSIONS: Among older women with advanced breast cancer, those with more physician visits, especially visits with cancer specialists, were more likely to enroll in hospice care, but patterns of care before death were not associated with late enrollment. Additional research is needed to understand better the respective roles of primary care physicians and cancer specialists in hospice referrals.

PSA TESTING IN MEDICARE: DOES PSA TEST USE FALL WITH WORSENING PROGNOSIS? W.P. Moran[1]; G. Chen[1]. [1]Medical University of South Carolina, Charleston, SC. *(Tracking ID # 173132)*

BACKGROUND: PSA as a test for prostate cancer is controversial, with outcomes clouded by test performance characteristics, lead and length bias and competing mortality. National guidelines suggest that if a benefit is to be gained, it will be for men who are likely to live at least ten years after cancer is diagnosed. The objective of this study was to determine the relationship of the four prognostic categories to PSA testing via a validated prognostic index which predicts probability of 4-year mortality in community-dwelling elderly.
METHODS: We performed a retrospective cross-sectional analysis of the Medicare Current Beneficiary Survey (MCBS), a nationally representative sample of non-institutionalized Medicare beneficiaries (age 65) from the 2002 wave. Based on MCBS self-reported data, we assigned all individuals to one of four prognostic categories. Logistic regression was used to explore the relationship of PSA testing to age, race, MD visit number, comorbidities and prognostic category. The study subjects enrolled in HMOs or with prior history of prostate cancer were excluded.
RESULTS: PSA test was done in 69.4% of the 2636 men surveyed (88% white, 7.1% African American, 4.4% other) with mean age = 76 (range 65–101, SD = 7.03). The mean number of physician office visits was 6.1 (range 0–78, SD = 6.89). 15% of men were assigned to prognostic category 1 (4% chances of 4- year mortality), 47% to Category 2 (15% 4-yr mortality), 28% to category 3 (42% 4-yr mortality) and 10% to category 4 (64% 4-year mortality). PSA usage by the prognostic category was 71%, 73%, 68%, and 58% respectively. Logistic regression analysis indicated significantly increased PSA use was associated with physician visit frequency, diagnoses of hypertension, cancer, and arthritis. PSA use was significantly decreased with African American race and prognosis categories 3 and 4.
CONCLUSIONS: PSA testing is positively related to physician visit frequency, the presence of comorbidity, and negatively related to African American race. After adjusting for these covariates, only the two worst prognostic categories were associated with lower PSA test use. Even for worst prognostic category (men would be predicted to die within 4 years of 64% chance), over half of men are still tested with PSA. There may be an opportunity to reduce the adverse quality of life impact of PSA testing and subsequent treatment for men who are unlikely to derive a longevity benefit - specifically those men who are unlikely to live 10 years.

RACIAL AND ETHNIC DISPARITIES IN END-OF-LIFE CARE AMONG PATIENTS WITH ADVANCED CANCER. A.K. Smith[1]; C.C. Earle[2]; R.B. Davis[1]; E.P. Mccarthy[1]. [1]Beth Israel Deaconess Medical Center, Brookline, MA; [2]Dana-Farber Cancer Institute, Boston, MA. *(Tracking ID # 172769)*

BACKGROUND: Hospice improves care for patients at the end of life. We studied Medicare beneficiaries newly diagnosed with advanced-stage cancer to determine whether rates of hospice enrollment, length of stay (LOS) in hospice, and hospitalization in the last month of life vary by patient race/ethnicity.
METHODS: We analyzed data from 59,677 beneficiaries aged 65 and older diagnosed with cancer in the Surveillance, Epidemiology, and End Results (SEER) Program from 1992–1999. We included patients with stage IIIB/IV non-small cell lung (NSCLC) (n = 29,456), extensive-stage small cell lung (n = 5,984), and stage IV colorectal (n = 11,136), female breast (n = 2,897), and prostate (n = 10,204) cancer. We used linked Medicare claims to determine hospitalization, hospice enrollment and LOS. Using Cox proportional hazards regression, we compared rates of hospice enrollment and LOS by race/ethnicity for all cancers and for individual cancers. Models were adjusted for year and age at diagnosis, sex, marital status, foreign birthplace, SEER registry, median household income and metropolitan status of place of residence, insurance type, low income status, tumor grade, stage at diagnosis (NSCLC only), and hormone receptor status (breast cancer only). For hospice LOS, we further adjusted for illness duration. We explored the length of stay in the hospital in the last month of life and death in the hospital among decedents with fee for service insurance.
RESULTS: Of 59,677 patients, 78.3% were non-Hispanic White, 10.1% non-Hispanic Black, 6.7% Asian/Pacific Islander, and 4.9% Hispanic. Compared to White patients, we found significantly lower rates of hospice use for Black and Asian patients but not for Hispanics (Table). On average, 10.6% of patients enrolled within 3 days of death, and these results did not differ by race/ethnicity. Compared to White patients, in the last month of life Blacks and Asians were more likely to spend more than 14 days in the hospital and die in the hospital. Results were similar across patients with different types of cancer.
CONCLUSIONS: Black and Asian patients with advanced cancer were substantially less likely to use hospice care than White patients, and more likely to spend a greater proportion of time in the hospital at the end-of-life and die in the hospital compared to whites. Rates of hospice use and hospitalization for Hispanics were similar to Whites. These findings raise concerns about the quality of end-of-life care for Black and Asian patients with advanced cancer.

Hospice Enrollment and Hospitalization Among Patients with Advanced Cancer by Race/Ethnicity (*adjusted hazard ratios < 1.00 indicate lower rates of hospice enrollment compared to White patients)

	% Enrolled in Hospice	Hospice Enrollment Adjusted HR (95% CI)*	% Hospitalized in Last Month of Life	% Died in Hospital	% >14 Days in Hospital in Last Month of Life
White	41	1.00	46	28	11
Black	35	0.91 (0.86–0.96)	48	33	16
Hispanic	37	0.99 (0.92–1.06)	42	26	10
Asian	29	0.72 (0.67–0.78)	42	31	13

RELATIONSHIP BETWEEN QUALITY OF CARE AND PATIENT OUTCOMES FOR HOSPITALIZED ELDERS. V. Arora[1]; S. Chen[1]; J. Siddique[1]; G. Sachs[1]; D. Meltzer[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 170238)*

BACKGROUND: Ideal quality measures are associated with meaningful outcomes. However, asessing the impact of quality measures on relevant patient outcomes can be particularly challenging for hospitalized older patients with multiple comorbidities. This study aims to assess the relationship between quality of care for hospitalized elders, as measured by ACOVE (Assessing Care of Vulnerable Elder) Quality Indicators (QIs), and functional decline, a relevant outcome for these patients.
METHODS: During an inpatient interview, patients age 65 and older at a single hospital were identified as "vulnerable" using the Vulnerable Elder Survey (VES-13), a validated tool based on age, self-reported health, or physical function. Patients also reported their function in Activities of Daily Living (ADLs) for 2 time periods: a) time of admission (present); and (b) one month prior to admission (retrospective). During a one- month post-discharge telephone survey, patients reported ADLs during (c) time of discharge (retrospectively); and (d) one-month after discharge (present). Functional decline, a binary outcome defined as an increase in ADL impairments, was calculated for 4 time periods from above: (1) admission to discharge; 2) one month before admission to one month after discharge; 3) admission to one month after discharge; and 4) one month before admission to discharge. Adherence to 16 hospital care QIs, ranging from general hospital care (pain, nutrition, etc.) to geriatric-specific conditions (pressure ulcers, dementia, etc.) was obtained by chart audit. Multivariate logistic regression, adjusting for the fact that frail patients are more likely to decline (VES-13 score), interaction between VES-13 score and QI adherence, and the number of baseline ADL limitations, was used to assess the effect of adherence to ACOVE QIs on functional decline in each time period.
RESULTS: 61% (3113/5084) of patients admitted between May 2004 and April 2005 participated. Roughly half (53%, n = 1652) of participants were 65 years or older. 48% (793/1652) of older inpatients were identified as "vulnerable." Chart audits have been completed on 73% (580) of those identified as vulnerable elders. Of these, 499 (86%) patients completed the inpatient interview and 441 (61%) the follow-up survey. A complete ADL assessment was available for 407 of these patients. 212/407 (52%) patients suffered functional decline in any time period. In multivariate logistic regression, adherence to three of the sixteen quality indicators were associated with a higher likelihood of functional decline in at least one time period. Patients who received exercise programs (OR = 1.87, 95% CI 1.02–3.43, p = 0.04), early discharge planning (OR = 1.58, 95% CI 1.05–2.37, p = 0.03), and a formal physician assessment (at least 2 ADLs or IADLs) of functional status (OR = 1.89, 95% CI 1.05–3.37, p = 0.03), were more likely to experience functional decline.
CONCLUSIONS: Higher quality of hospital care, as measured by certain ACOVE QIs, is associated with functional decline. This finding is in contrast with an earlier study which found that higher quality of care, as measured by ACOVE QIs, is associated with improved survival in community-dwelling elders. This suggests that indicated care processes are being selectively applied to those hospitalized older patients most at risk of functional decline. This implies that strong tests of whether adherence to quality indicators will improve outcomes will require experimential rather than obesrvational study designs.

ROLE OF INFLUENZA VACCINATION IN ELDERLY PATIENTS PRESENTING WITH NON-ST ELEVATION MYOCARDIAL INFARCTION. I. Singla[1]; M. Zahid[1]; B. Good[2]; A. Macioce[2]; A.F. Sonel[2]. [1]University of Pittsburgh, Pittsburgh, PA; [2]VA Healthcare System,University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172308)*

BACKGROUND: The role of inflammation secondary to acute respiratory infections in pathogenesis of acute cardiac event has been proposed. The benefit of influenza vaccination in reducing mortality in setting of acute myocaridal infarction has been shown in few small studies.We evaluated whether there is association of influenza vaccination with reducing cardiac mortality in elderly patients admitted with suspected Non-STEMI.
METHODS: We prospectively collected data on 1541 consecutive patients without ST elevation, admitted from 2001–2005. Out of 1541 patients, 247 were studied, who had age > 65 years and were admitted during winter or high influenza season (October 1st to January 31st). These patients were followed for 6-month end point recurrent MI or death. Patients were divided into two groups depending on whether they did or did not receive influenza vaccination before admission. Association between baseline characteristics and adverse outcome (primary end point of recurrent MI and composite end point of MI or death) were tested using univariate logistic regression model.
RESULTS: Of the 247 patients, 117 (47.4%) had influenza vaccination before the index admission. The two groups were similar in terms of comorbiditeis like diabetes mellitus, smoking,history of coronary artery disease, hypercholesterolemia and left ventricular ejection fraction. There were a total of 16 (8.1%) recurrent MI and 65 (26.3%) total adverse events(recurrent MI or death) at 6-month.Influenza vaccination was not associated with 6 month recurrent MI incidence (OR 0.7, 95% CI = 0.2–1.8, p = 0.45) ,6 month mortality (OR 0.9, 95% CI 0.5–1.7 , p = 0.75) or 6-month composite end point (OR 0.8, 95% CI = 0.5–1.5, p = 0.56). There was also no significant association between influenza vaccination in prior years and 6 month endpoint.
CONCLUSIONS: Our results suggest that benefit of influenza vaccination may not extend beyond protection against influenza and pneumonia for elderly population. However, further studies are needed to clarify the role of influenza vaccination in reducing cardiac mortality in elderly population as shown in some small studies.

THE DARTMOUTH CPR SCORE: A NEW CLINICAL PREDICTION RULE TO DETERMINE IN-HOSPITAL CPR SURVIVAL BASED ON PATIENT'S PRE-ARREST CHARACTERISTICS. H.F. Ryder[1]; R.H. Lilien[2]; F.C. Brokaw[3]. [1]Dartmouth College, Lebanon, NH; [2]University of Toronto, Toronto, Ontario; [3]Dartmouth Hitchcock Medical Center, Lebanon, NH. *(Tracking ID # 173008)*

BACKGROUND: Closed-chest cardiac massage was first used to resuscitate patients in good physiological condition who were the victims of acute insult. Over time, cardiopulmonary resuscitation (CPR) became part of care offered to all patients in cardiac arrest. However, survival from CPR to hospital discharge remains low. Many hospitals have "Do Not Resuscitate" policies allowing patients to determine no resuscitation be attempted. Unfortunately, less than 1/4 of seriously ill patients discuss preferences with their physicians and less than half of in-patients who prefer not to receive CPR have DNR orders written. The biggest obstacle is physician reluctance; many physicians feel untrained to estimate outcome and avoid this issue with patients. Accurate prediction of CPR outcomes would be helpful to patients deciding whether to forgo this intervention. A clinical prediction rule, using pre-arrest data to determine an individual's risk of not surviving CPR, could empower physicians to prognosticate more accurately, increase code discussions and promote patient autonomy.
METHODS: We retrospectively reviewed medical records of cardiac arrests resulting in CPR attempts at Dartmouth Hitchcock Medical Center, a 380-bed acute care facility in New Hampshire, between January 2003 and December 2005. All patients over 18 years with in-hospital cardiac arrest and attempted resuscitation by the CPR team were eligible. Syncope, seizures, and primary respiratory arrests were excluded. We collected data on demographics, functional status, medical history, and diagnostic tests available at admission. The primary outcome was survival to hospital discharge. We used Linear Discriminant Analysis to perform a multivariate analysis and created a 12-feature clinical prediction rule to distinguish between survivors and non-survivors (Table 1).

RESULTS: A 12-feature rule most accurately differentiated survivors from non-survivors. We aimed to achieve 100% sensitivity to avoid high false-negative rates. With a cutoff of 7 points on The Dartmouth CPR Score, we achieved 99% sensitivity and 7% specificity on Dartmouth data. Comparing our score to previously published scores, only our score was able to reliably differentiate Dartmouth patients who lived from those who died.
CONCLUSIONS: We used a mathematically rigorous approach to build a clinical prediction rule for survival of attempted resuscitation. The results generated a reasonable score that performed better than previous methods on our data. This could be because all previous rules were based on older data collected before standardization of CPR data collection and therefore can not be generalized; our rule should have no such problem. In addition to more accurately predicting who will live, we have the lowest false negative rate, ie. The Dartmouth CPR Score most accurately predicts who will not survive. While our tool needs to be prospectively validated, it offers helpful information to physicians and patients trying to decide whether CPR is a good choice for them.

The Dartmouth CPR Score

Variable	Point score
Age >70	3
ADLs with assistance	1
Debilitated	1
Angina pectoris	−4
Cancer	1
Recent MI	−1
CVA	3
Hypotension	4
Abnl pH	2
Abnl PaCO2	−2
Abnl PaO2	2
Abnl Bicarb	2

URINARY INCONTINENCE IN OLDER COMMUNITY-DWELLING WOMEN: THE ROLE OF COGNITIVE AND PHYSICAL FUNCTION DECLINE. A.J. Huang[1]; J.S. Brown[2]; D.H. Thom[2]; H.A. Fink[3]; K. Yaffe[1]. [1]San Francisco Veterans Affairs Medical Center, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]Veterans Affairs Medical Center, Minneapolis, Minneapolis, MN. *(Tracking ID # 171514)*

BACKGROUND: Urinary incontinence and cognitive impairment are common problems in older women. Among the debilitated, institutionalized elderly, incontinence is often seen in the setting of advanced dementia. Among older persons in the community, the association between milder, pre-clinical cognitive decline and incontinence is unclear. Previous attempts to assess the relationship between cognitive decline and incontinence have not taken into account decline in physical function, which could underlie an association between incontinence and cognitive decline.
METHODS: We examined the association between cognitive decline, physical function decline, and urinary incontinence in 6,361 community-dwelling women aged 65 years and older enrolled in the longitudinal Study of Osteoporotic Fractures. Women were recruited from population-based sites in Baltimore, Maryland; Minneapolis, Minnesota; the Monogahela Valley, Pennsylvania; and Portland, Oregon. Cognitive function was assessed by administering the modified Mini-Mental State Examination (mMMSE), Trails B test, and Digit Symbol Substitution Test (DSST). Physical function was assessed by measuring walking speed over a 6-meter course and time needed to complete 5 chair stands. Both the clinical frequency and functional disruptiveness of women's incontinence symptoms were assessed by self-administered questionnaires. Women were considered to have recent, significant decline in cognitive or physical function if their cognitive or physical performance declined by > 1 SD beyond the mean decline in the 6 years preceding assessment of incontinence.
RESULTS: Women with decline in physical function measured by either walking speed or chair stand speed were more likely to report weekly incontinence after adjusting for age, diabetes, depression, body mass index, stroke, alcohol use, global health status, and baseline physical function (OR = 1.31, 95%CI = 1.09–1.56, P < 0.01 for walking speed decline; OR = 1.40, 95%CI = 1.19–1.64, P < 0.01 for chair stand decline). There was no significant association between cognitive decline and weekly incontinence after adjusting for characteristics such as age, diabetes, depression, stroke, alcohol use, and global health status (P > 0.20 for all models). However, women with cognitive decline were more likely to report disruptive incontinence that interfered with their activities (OR = 1.52, 95%CI = 1.09–2.13, P = 0.01 for mMMSE decline; OR = 1.51, 95% CI = 1.01–2.28, P = 0.04 for DSST decline), even after adjustment for multiple characteristics, including frequency of incontinence and physical function decline.
CONCLUSIONS: Both cognitive and physical function decline appear to be important contributors to urinary incontinence in community-dwelling women aged 65 years and older. While decline in physical function is associated with having more frequent incontinence, women with cognitive decline may have more difficulty coping with incontinence symptoms regardless of frequency. Clinicians may want to screen for cognitive and physical function decline in older women presenting with urinary incontinence.

USE OF EARLY INPATIENT DNR VARIES WIDELY AND IS STRONGLY RELATED TO SUBSEQUENT ICU AND HOSPITAL USE AT THE END OF LIFE. D. Zingmond[1]; C. Ko[1]; J. Tomlinson[1]; N.S. Wenger[1]. [1]University of California, Los Angeles, Los Angeles, CA. *(Tracking ID # 173117)*

BACKGROUND: Do not resuscitate (DNR) orders reflect preferences and prognosis and are an important step in decision making about aggressiveness of care for inpatients, although prior work suggests that many patients who hold preferences for less aggressive care do not have these translated into DNR orders. The use of DNR orders is known to vary widely across small areas, as is ICU and hospital use toward the end of life (EOL). We evaluated whether regional early inpatient DNR use was related to ICU and hospital use at the EOL.
METHODS: We performed two analyses on different California patient samples: (1) Medicare enrollees age 65+ hospitalized in 2001 and (2) Individuals age 50+ at death in 2001 who had been hospitalized within the prior 6 months. We assembled California hospital record discharge abstracts from the annual Patient Discharge Database (PDD) from 2000 and 2001. DNR within 24 hours of hospital admission has been reported in PDD since 1999. In analysis (1), we compared hospital referral region (HRR) DNR rates for hospitalized Medicare patients to HRR summary measures of hospitalization, ICU use, and hospital death in the last six months of life for Medicare beneficiaries reported by the Dartmouth Atlas of Health Care. In analysis (2), multivariate linear and logistic regression analyses on longitudinal patient level data were performed to estimate the impact of DNR orders on cumulative inpatient length of stay (LOS) and hospital death among patients hospitalized in the last six months of life. Independent variables included patient characteristics (age, race, gender, Charlson Index, source of admission, median income, and rural residence) and hospital characteristics (size, ownership/control, and academic medical center). Regression models included clustering on hospital to account for correlation within facility. PDD does not report ICU days.
RESULTS: In analysis (1), unadjusted DNR order rates for the 587,159 individuals hospitalized in 24 California HRRs were highly correlated with reported ICU days at EOL (Correlation = −0.73; see Figure) and hospital use at EOL (r = −0.61). In analysis (2), 137,594 Californians died in 2001 who had been hospitalized in the prior six months; 21% had an early DNR order. Mean cumulative LOS was 14.6 days and 26.3% of deaths occurred in a hospital. Patients with early DNR orders, compared with those without early DNR orders, had significantly shorter cumulative inpatient LOS (Beta: −6.11 days; 95% CI: −6.46 to −5.76) and lower adjusted odds of hospital death (Odds Ratio: 0.38; 95% CI: 0.35 to 0.40).
CONCLUSIONS: Use of DNR orders is associated with lower intensity of care at EOL. Research is needed to understand whether wide variation in early DNR orders use reflects patient preferences, advance care planning or practice styles that impede translation of preferences into care-directing orders.

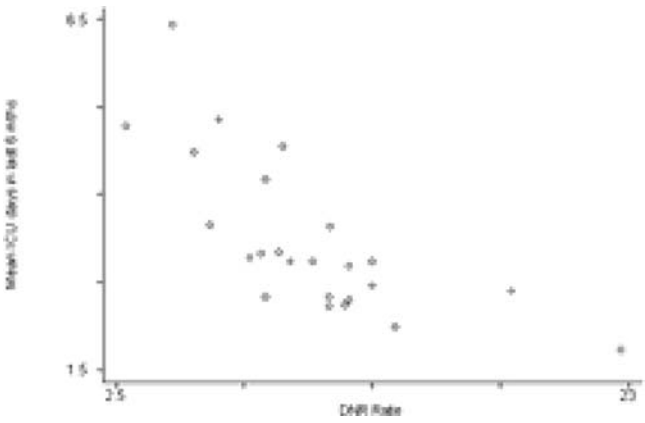


Figure: HRR-Level DNR Rates for hospitalized patients versus ICU days in the last six months of life.

USING THE MEDIA TO INITIATE ADVANCE CARE PLANNING. R. Sudore[1]; C.S. Landefeld[1]; S.Z. Pantilat[1]; K. Noyes[1]; D. Schillinger[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173341)*

BACKGROUND: While direct consumer advertising has been shown to drive pharmaceutical requests, little is known about whether the media can influence advance care planning. In 2005, there was extensive media coverage about the legal battle surrounding Terri Schiavo (TS) (a 41 year old woman in a persistent vegetative state who died after her feeding tube was removed). We assessed whether media coverage of the TS case motivated patients to discuss or document their wishes for advance care planning for end-of-life care.
METHODS: Subjects included 117 English or Spanish-speakers, aged ≥50 years, from an urban county, general medicine clinic who participated in follow-up phone interviews six months after enrolling in an advance directive study. We asked whether subjects knew of the TS case and if, because of TS, they had talked to their family/friends or physicians about advance care planning, wanted to or filled out an advance directive, and were more sure of their own goals for care. We also explored whether subject characteristics were associated with these advance care planning activities.

Using the standardized s-TOFHLA, subjects' literacy was classified as adequate (scores 23–36) or limited (≤22).
RESULTS: The mean age was 60 years; 55% were female, 79% were non-white, 39% were Spanish-speaking, 71% reported poor health, and 40% had limited literacy. One hundred seven subjects (92%) knew about TS. Subjects with adequate literacy were more likely to know about TS than subjects with limited literacy (100% vs. 79%, P < .001) as were English vs. Spanish speakers (96% vs. 85%, P = .04). Because of TS, 66% of subjects talked to their family/friends about advance care planning, yet only 8% spoke with their physicians. Because of the TS case, 60% of subjects felt more sure of their own goals of care and 37% wanted to fill out an advance directive. However, only 3% had filled out an advance directive. After adjusting for subject characteristics, only Spanish-speakers were more likely to talk with their family/friends because of the TS case (OR 4.5; 95% CI 1.1–18.1) but they were less likely to want to fill out an advance directive (OR 0.2; 95% CI 0.03–0.9).
CONCLUSIONS: Due to mass media coverage of the Terri Schiavo case, almost all subjects knew of TS; however, the media was less likely to reach subjects with limited literacy and Spanish-speakers. Familiarity with the TS case helped subjects define their own goals of care, to discuss advance care planning with family/friends (especially Spanish-speakers), and to want to document their treatment wishes. However, clinical discussions and documentation remained low. Media cases, such as the TS case, may represent a unique opportunity for clinicians to help patients define their own goals of care. In addition, media cases may be used as a clinical tool to initiate advance care planning discussions and documentation.

WHERE WOULD YOU LIKE TO SPEND THE LAST DAYS OF YOUR LIFE: A LACK OF CONCORDANCE BETWEEN PREFERRED AN ACTUAL SITE OF DEATH. S. Fischer[1]; J.S. Kutner[2]. [1]University of Colorado Health Sciences Center, Aurora, CO; [2]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 173939)*

BACKGROUND: Death in the United States frequently occurs in institutions despite the overwhelming majority of persons who state that they prefer to die at home. Research to date has not compared individual preferences to actual site of death. The purpose of this study was to examine concordance between preferred and actual site of death among economically and ethnically diverse seriously ill adults.
METHODS: This observational cohort study recruited patients admitted to the general medical service at the University of Colorado Hospital, Veteran's Affairs Hospital and Denver Health Medical Center (safety net hospital). Patients who were English or Spanish speaking, able to consent, and admitted for > 24 hours were invited to participate in a brief interview and asked where they preferred to spend their last days of life. Follow up data collection is ongoing at 6-month intervals (hospital records and death certificates).
RESULTS: The sample (n = 402) included 80 (20%) African Americans (AA), 212 (53%) Caucasians (C) and 87 (23%) Latinos (L). Average age was 59 years (+ 15 SD). Seventy-six percent stated that they wished to die at home, 11% hospital, 5% nursing home, and 5% hospice. There were no significant differences by ethnicity. To date, 18% of the study population have died with complete records for 36 subjects to date. An overall concordance rate of 27% (n = 10) was found between preferred and actual site of death. Of the 23 subjects who wished to be at home 8 died at home, 11 in the hospital, and 4 in an inpatient hospice unit. Of the 6 subjects who wished to be in the hospital setting, 2 died at home, 1 in the hospital, and 3 in a nursing home. Of the 3 subjects who preferred to be in an inpatient hospice unit, 1 died at home and 2 died in the hospital. Follow up is ongoing. Once adequate power is achieved, we will examine predictors of concordance between preferred and actual site of death.
CONCLUSIONS: This study demonstrates that among this ethnically diverse, seriously ill population, most persons did not die where they preferred to die. Further research must address how palliative care can facilitate higher concordance between stated preferences and end-of-life care.

"I FEEL YOUR PAIN: " PHYSICIAN ATTITUDES TOWARD OPIATE PRESCRIBING FOR PATIENTS WITH CHRONIC NON-MALIGNANT PAIN. J.J. Lin[1]; D.J. Alfandre[1]; C. Moore[1]. [1]Mount Sinai School of Medicine, New York, NY. *(Tracking ID # 172831)*

BACKGROUND: Primary care physicians frequently express dissatisfaction about caring for patients with chronic pain and report that inadequate training, concern about addiction, and triplicate prescription form requirements are impediments to prescribing opiate analgesics. Additionally, there is evidence that elderly patients may be at increased risk of experiencing poorly treated pain. We sought to determine if general internists versus geriatricians and attending-level physicians versus house staff physicians have differing attitudes regarding prescribing opiate analgesics for patients with chronic pain.
METHODS: Anonymous written survey of geriatric and internal medicine physicians at a large urban academic medical center about their beliefs and behaviors regarding opiate prescribing for patients with chronic non-malignant pain. The questionnaire evaluated knowledge and misconceptions regarding opiate use, perceived barriers to opiate prescribing and frequency of opiate prescribing. Logistic regression was used to determine associations between physician factors (general internist vs. geriatrician and attending-level vs. house staff physician) and attitudes regarding opiate prescribing. The regression models controlled for physician level of training and physician specialty.
RESULTS: One hundred and thirty-two (105 internists and 27 geriatricians) of 187 physicians completed the survey for an overall response rate of 71%. Thirty-three percent of respondents were attending-level physicians and 67% were house staff physicians (interns, residents, or fellows). There were no significant differences between respondents and non-respondents. Compared with geriatricians, internists were more likely to be concerned about illegal diversion (ORadj = 10.0, P = .004), were more likely to be concerned about their inability to prescribe the correct opiate dose (ORadj = 11.1, P = .020), and were more likely to be concerned about the length of time required to fill out triplicate prescription forms (ORadj = 3.7, P = .049). There were no differences between internists and geriatricians in those who write 6 or more prescriptions for opiate analgesics per month. House staff physicians were more likely to be concerned about the length of time required to fill out triplicate prescription forms (ORadj = 5.6, P < .01), were more likely to be concerned about regulatory scrutiny (ORadj = 3.7, P = .04), and less likely to say that they write 6 or more opiate analgesic prescriptions per month (ORadj = .2, P < .01) compared with attending-level physicians.
CONCLUSIONS: Factors shown to have an adverse effect on opiate prescribing disproportionately affect the attitudes of internists and house staff compared to geriatricians and attending-level physicians, respectively. Further research is needed to determine if these differences in attitudes affect quality of care provided to elderly patients with chronic pain.

A LITTLE HELP FROM MY FRIENDS: EFFECT OF SOCIAL NETWORKS ON THE DIAGNOSIS AND CONTROL OF DIABETES. A.A. Baig[1]; J. Escarce[1]. [1]University of California, Los Angeles, Los Angeles, CA. *(Tracking ID # 172296)*

BACKGROUND: Studies have found that strong social networks improve health and reduce mortality. No study has assessed whether one explanation for these effects is that social networks promote earlier diagnosis and better control of chronic disease. We assessed the effect of social networks on receiving a diagnosis of diabetes among adults with laboratory evidence of the disease and on control of diabetes among diagnosed diabetics.
METHODS: We used data from the Third National Health and Nutrition Examination Survey (NHANES III, 1988–1994) and included 882 diabetics age 20 or older who had an 8-hour fasting blood glucose test and were not pregnant or breastfeeding. We identified persons with diabetes as those who reported a provider diagnosis of diabetes, were taking diabetes medications, or had a fasting glucose over 125 mg/dl. Diagnosed diabetics were those who reported a diagnosis or were taking medications; undiagnosed diabetics were those who did not report a diagnosis and were identified exclusively through the fasting glucose. We measured the strength of social networks using a score based on respondents' reports of the number of phone calls and get-togethers per week with family and friends, attendance of religious services, memberships in clubs or other organizations, and attendance at club meetings. We estimated multivariate logit regression models to assess the effect of social networks on the likelihood of being diagnosed with diabetes by a health care provider among adults with laboratory evidence of diabetes. Among known diabetics, we estimated models to assess the effect of social networks on control of blood glucose (HbA1c), blood pressure, and low-density lipoprotein (LDL) cholesterol. Criteria for glucose, blood pressure, and LDL cholesterol control were based on clinical recommendations. We controlled for age, gender, race, income, education, family history of diabetes or cardiovascular disease, insurance, marital status, comorbidities, body mass index, and smoking.
RESULTS: Among the 882 diabetics, 59% had received a diagnosis from a provider. The regression analyses found that diabetics with higher social network scores were more likely to have received a diagnosis. The odds ratio of 1.18 (95% CI, 1.04–1.34) corresponds to an increase in the probability of diagnosis from 54% to 64% as the social network score rises from the 25th to the 75th percentile of the distribution. However, social network scores did not affect glucose, blood pressure, or cholesterol control among diagnosed diabetics.
CONCLUSIONS: Diabetics with stronger social networks were more likely to know they had diabetes, although social networks did not influence the control that diagnosed diabetics had of their disease. Our findings reinforce the importance of social connections and active participation in the community for people with chronic disease. Further understanding of the mechanism through which social networks impact the diagnosis of diabetes may represent a promising strategy to improve diabetes identification and management.

A NOVEL COST-EFFICIENT CLINICAL DATABASE DESIGNED TO EVALUATE A GLYCEMIC CONTROL INITIATIVE AND RELATED OUTCOMES. N. Kumar[1]; A. Golas[2]; R. Corbin[3]; S. Flanders[3]; R. Juneja[2]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]Indiana University Purdue University, Indianapolis, Indianapolis, IN; [3]Clarian Health Partners, Indianapolis, IN. *(Tracking ID # 173830)*

BACKGROUND: Quality medical care is increasingly guided by evidence-based best practices. One intervention that has attracted significant interest is the impact of tight inpatient glycemic control on clinical and financial outcomes. While the evidence for such intervention exists, it often lies in various separate hospital databases. To address this issue and to assess the impact of a Systematic Utilization of Glucose Assessment and Response (SUGAR) program at our facility, we developed an integrated electronic database for data collection, analyses and reporting. The SUGAR program was designed utilizing a multidisciplinary team approach to standardize and improve inpatient glycemic control. The specific objective of this database was to test the efficacy of this pilot program.
METHODS: Existing data repositories within Clarian Health Partner Hospitals were identified. Blood glucose (BG) measurements were the primary variables for each

patient record. Other key variables such as age, gender, and admitting diagnosis were relationally aligned to the BG values and then electronically extracted to populate a data repository matrix. The data was blinded and collated by coding thus maintaining security and avoiding bias. Statistical report syntax linked the selected variables in the database to answer critical questions regarding the presence of an association between inpatient glycemic control and clinical and financial outcomes.
RESULTS: Initial data analysis suggests that after the inception of the SUGAR program in June 2003 the numbers of BG's tested has increased from 60,000/month–85,000/month. The program has also led to an improvement of glycemic control from 75.5% to 85.7% of BG's being less than the hospital target of 180 mg/dL. Simultaneously, hospital length of stay and mortality has both significantly decreased over this period of time which could also be attributed to improvement in other quality measures. Though confirmatory validations of our results are still pending they could potentially be reproducible by using conventional chart review methods which are much more labor intensive.
CONCLUSIONS: The database design of the SUGAR program has far reaching potential and provides a cost-efficient, confidential method for large scale clinical data access and interpretation. It provides a means to measure clinical and financial improvements as they relate to tight inpatient glycemic control. Similar models could be developed to evaluate other chronic diseases such as Stroke and CHF thus improving the overall standard of healthcare.

A PRIMARY CARE INTERVENTION FOR WEIGHT MANAGEMENT. A.G. Tsai[1]; T.A. Wadden[1]; M.A. Rogers[1]; M. Ferguson[1]; C.S. Wynne[1]; S. Day[1]; F. Pearson[1]; D. Beshel[1]; B.J. Islam[1]. [1]University of Pennsylvania, Philadelphia, PA. *(Tracking ID # 173615)*

BACKGROUND: The U.S. Preventive Services Task Force has called for clinicians to provide intensive weight management counseling for obese patients. However, primary care providers may not have the time or skills to adequately address weight management. It is unclear whether effective weight management is feasible in primary care. We sought to test whether training full-time clinic staff to provide brief visits for weight loss counseling would be more effective than usual care.
METHODS: Nursing assistants at two primary care medical practices in the University of Pennsylvania Health System were trained to provide brief weight loss counseling. Eligible patients received the approval of their primary care physician to participate in the study. Participants had to have a body mass index (BMI) between 27 and 50 kg/m2 and be on stable doses of medication for weight-related co-morbidities. Enrolled patients were randomized to a control condition in which they met with their primary care provider every 3 months and received written materials for weight management ("Usual Care") or to an intensive arm ("Lifestyle Counseling"), in which they saw their primary care provider every 3 months but also had 8 meetings with a nursing assistant during the first 6 months. Weight was measured at each visit. Fasting lipids, glucose, and blood pressure were measured at baseline and again at 6 and 12 months.
RESULTS: A total of 39 patients have been randomized to date. We report here outcomes for the 15 patients who have completed 6 months in the study. Patients assigned to the Lifestyle Counseling group lost 3.7±3.0 kg (4.0±3.5% of initial weight) and those in Usual Care lost 0.0±3.3 kg (0.2±3.2% of initial weight). The difference between groups (3.7 kg, equal to 3.8% of initial weight) was statistically significant ($p = .04$). There were no significant changes between groups for changes in lipids, blood pressure, or blood glucose. Patients assigned to Lifestyle Counseling attended 4.7 out of 8 possible visits. Within the Lifestyle Counseling group, the number of visits attended correlated with weight loss ($r = 0.87$; $p = 0.012$).
CONCLUSIONS: These results suggest that auxiliary health care providers can be trained to provide weight loss counseling, with modest but statistically significant weight losses. This model of weight loss counseling is consistent with recent recommendations that auxiliary and mid-level health care providers take a more active role in patient care. Updated results will be available at the time of the meeting.

A SYSTEMATIC REVIEW OF TELEPHONE-BASED APPLICATIONS TO SUPPORT CHRONIC DISEASE SELF-MANAGEMENT. C.A. Muller[1]; D. Schillinger[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173120)*

BACKGROUND: The health care system must reorient provision of care for chronic disease sufferers by providing evidence-based interventions that maximize patient function and prevent disability. Telephonic technologies are a potential solution, but their population-level reach, generalizability and effectiveness over time are unclear.
METHODS: We performed a systematic literature review to examine the population-level reach (including population engagement and intervention use) and effectiveness of telephone-based health programs used in the proactive treatment of people with chronic diseases. English language articles were extracted from Medline, PsychInfo, CINHAL, Cochrane Library and Journals@OVID. Case series studies less than 10 subjects were excluded. Articles that targeted patients with one or more chronic diseases and used one or more 'tele-applications' aimed at improving patient self management were included. We excluded articles that described diagnosis and/or treatment focused services, help lines, and models where the telephonic component was inextricable for evaluation.
RESULTS: Twenty-two articles have been identified ($N = 922$). Interventions cover: diabetes (41%), CVD (23%), multiple conditions (23%), mental health (9%) and arthritis (4%). The median sample size was 85 (range 14–591). Interventions used health providers, such as a nurse or case manager ($n = 12$), and/or automated technologies ($n = 12$) to deliver functions such as education, reminders and monitoring. 73% ($n = 16$) had comparison groups (10 studies were RCTs, 2 retrospective case controls, 3 concurrent control and 1 pseudo-randomised study) and 27% ($n = 6$) were pre/post case series. Of the 22 studies, 9 specified enrolled versus non-enrolled population sizes and 3 reported the total population characteristics. The reach in these studies ranged from 11% to 66% of the total population, and the enrolled appeared representative of the larger population. Six studies examined the level of patient use and interaction with the intervention (an important determinant of effectiveness) and reported positive results. Studies with a comparison group ($n = 16$) measured intervention effectiveness differently. When compared with the comparison group, effects at intervention completion were reported as significant in improving self efficacy ($n = 4$), behavior change ($n = 1$), physiologic indicators ($n = 1$), functional indicators ($n = 8$), health service access ($n = 3$), provider practice change (e.g. guideline use, $n = 1$), reduction in hospital and ED utilization ($n = 1$) and return on investment ($n = 1$). These studies also reported non-significant effects in some behavior change measures ($n = 3$), functional indicators ($n = 6$) and office visits ($n = 1$). Short-term maintenance following intervention completion (range 8–12 weeks) was measured in 19% ($n = 3$) of studies with a comparison and found to be significant. No studies investigated long-term maintenance.
CONCLUSIONS: Published literature regarding proactive telephone-based interventions that target individuals with chronic conditions is not sufficiently robust to estimate representativeness of studied populations, intervention reach, intervention effectiveness or potential long-term maintenance of effects. Evidence is required to inform reorientation of our system. Future studies must move beyond measuring patient-centered outcomes to provide evidence on the whole picture as a basis for policy development.

AN EPIDEMIC OF MUSCULOSKELETAL SYMPTOMS AMONG PHYSICIANS IN TWO INSTITUTIONS USING EMR-BASED SYSTEMS FOR ROUTINE CARE. R. Yaghmai[1]; M.J. Renvall[2]; B.A. Golomb[1]; L.A. Lenert[1]; J.W. Ramsdell[2]. [1]University of California, San Diego; San Diego Veterans Administration Healthcare, La Jolla, CA; [2]University of California, San Diego, San Diego, CA. *(Tracking ID # 172551)*

BACKGROUND: Most physicians are familiar with the concept of computer-based patient records or electronic medical records (EMR). There are numerous potential advantages to EMR-based care including more efficient and simultaneous access to patient data, electronic reminders, and decision support systems. However, there may also be unintended negative effects of transitions of previously paper-based systems to computers. One potential problem is repetitive motion injuries including musculoskeletal problems of the upper limb in physicians using such systems.
METHODS: A cross sectional survey was conducted examining the prevalence of symptoms consistent with repetitive motion injury in two university-affiliated General Internal Medicine/Geriatric (GIM/G) group practices: The Veterans Affairs San Diego Healthcare System (VASDHCS) and the GIM/G Physicians at the University of California, San Diego Medical group practice (UCSD). Physicians at the VASDHCS converted to an EMR system (CPRS/VISTA) eight years ago. Physicians at UCSD converted to an EMR system (EPIC care) one year ago. Both groups use EMR systems for progress notes, order entry, and results reporting. Data collected in the survey included 1) demographic information and risk factor for injury: age, BMI (weight in kg/ height in cm^2), gender, years of employment, hours of computer use, and self report of upper extremity symptoms, 2) a visual analog scale (VAS) rating of discomfort/pain, and 3) a validated outcome measure questionnaire of upper-extremity disability and symptoms (QuickDASH). The scores were grouped into mild or moderate-severe. Hours of work, hours of computer use and years of employment were collapsed into categories. Chi square analyses were used to examine differences between the two outcomes and demographic variables. Regression analyses were run between continuous variables (age, BMI, years of employment, hours of computer use) and VAS & QuickDASH.
RESULTS: 60 subjects (46/47 physicians at the VASDHCS and 14 /29 from UCSD) completed the survey. Overall, 50/60 physicians (83%) reported some musculoskeletal symptoms based on the VAS score and 49/60 (82%) scored more than 0 on the QuickDASH. VAS scores ranged from 0 to 100%, mean 28 + 25; QuickDASH scores ranged from 0 to 55 points, mean 10 + 13 points. 24/60 (40%) of physicians reported moderate-severe musculoskeletal symptoms (VAS scores > 25%) and 16/60 (27%) had QuickDASH scores exceeding 11 (moderate-severe functional problems). There was no statistically significant difference in the outcome scores by institution, gender, age, BMI, and years of employment. There was a significant relationship between hours of computer use and the VAS score ($P < 0.01$).
CONCLUSIONS: In two group practices using different EMR systems, GIM/G physicians had a high prevalence of musculoskeletal symptoms consistent with repetitive motion injury. About 80% of physicians reported symptoms and about 1/3 of physicians suffer moderate-severe functional and symptomatic problems. The results suggest that physician-users of EMR systems may be at high risk for developing repetitive motion injuries. In order to reduce the likelihood of such injuries, we must pay careful attention to education, ergonomics, and early treatment interventions.

ASSOCIATION OF HEALTH LITERACY TO ANNUAL EYE EXAM IN ADULTS WITH DIABETES. N.S. Morris[1]; C.D. Maclean[1]; B. Littenberg[1]. [1]University of Vermont, Burlington, VT. *(Tracking ID # 173872)*

BACKGROUND: Recent studies have suggested an association between limited health literacy and the use of preventive health care services. The objective of this study was to determine if health literacy was associated with an annual eye exam in adults with diabetes after adjusting for potential socioeconomic and diabetes management confounders.

METHODS: Design: Cross sectional survey of the Vermont Diabetes Information System (VDIS). Subjects/Setting: 1002 adults with diabetes randomly selected from primary care practices in Vermont, northern New York, and New Hampshire who completed an in-home survey. Measures: demographic data, self-reported utilization of speciality services, and the Short Test of Functional Health Literacy (S-TOFHLA), a 36-item timed reading comprehension test designed to measure reading ability. Analysis: Bivariate associations between the outcome and multiple predictors were tested using t-tests (for continuous variables) and chi-square tests (for categorical variables). All associations that were significant at $p < 0.2$ were included in the final model. Logistic regression was then used to measure the association between annual eye exam (yes/no) and literacy (adequate or limited) after controlling for potentially confounding patient characteristics. Interaction terms were introduced to investigate whether the relation between literacy and annual eye exam varied by socioeconomic status, insurance, duration of diabetes, diabetes education, visit to an endocrinologist, or immunization status.
RESULTS: The 1002 subjects were predominately white, educated, and older with a mean age of almost 65 years. Most had health insurance, were diagnosed with diabetes on average 7 years and almost half had an A1C < 7%. One-hundred and seventy-one (17%) subjects had limited literacy. Of those with limited health literacy, 58% had an eye exam within the past year compared to 61% of those with adequate health literacy. Unadjusted, health literacy was not associated with annual eye exam (OR 0.9; 95% Confidence Interval 0.64, 1.27; $p = 0.55$). Even when socioeconomic characteristics, duration of diabetes, diabetes education, visit to an endocrinologist, and immunization status were taken into account, logistic regression shows that literacy is not associated with annual eye exams in this population of adults with diabetes (OR 0.67; 95% Confidence Interval 0.42, 1.07; $p = 0.09$).
CONCLUSIONS: In this population of primarily rural, older adults, literacy is not associated with annual eye exams even when accounting for socioeconomic and diabetes management confounders. Further study of the subset of the population that did not get an annual exam will add to our understanding of the factors contributing to our ability to meet national guidelines for optimal diabetes care.

BARRIERS AND ENABLERS OF SELF-CARE: EXPERIENCES OF PATIENTS WITH HEART FAILURE. A. Jovicic[1]; S.E. Straus[2]. [1]University of Toronto, Toronto, Ontario; [2]University of Calgary, Calgary, Alberta. *(Tracking ID # 171919)*

BACKGROUND: Patients hospitalized for heart failure who are discharged from hospital to the community setting have a high risk of readmission in the first six months following discharge. This study investigates the factors that affect the patients' ability to manage the illness during this period.
METHODS: This is a qualitative study consisting of individual interviews with patients who were hospitalized for heart failure and released to the community setting. Patients aged 65 years or older, who were discharged from the Toronto Western Hospital within six months prior to commencement of this study, who were not cognitively impaired and who were not readmitted to hospital were eligible to participate. Eligible patients were contacted by mail and telephone and invited to participate. Patient interviews consisted of semi-structured discussions focusing on problem solving, coping with the illness, and obstacles which patients encountered when managing heart failure. Each conversation was audio-taped, transcribed, and coded using qualitative data analysis software. Grounded theory approach was used in order to reveal principal themes in the participants' responses.
RESULTS: Of the patients eligible to participate, nine patients agreed to participate in the study. The content analysis of the transcripts revealed several barriers and enablers to patient self-care. The patients articulated that the principal barriers to managing their health were: Depressed mood; confusion about their current life situation and options for the future; reduced mobility, which hindered day-to-day activities, access to care and social contact; and, gaps in care, such as not being prescribed medications or referred to appropriate services. Women identified social isolation as an additional major issue. Content analysis of patients' responses indicates that lack of knowledge about appropriate health behaviour is another barrier to self-care. The patients' social networks were the most frequently cited factor which improved the patients' ability to manage the illness. The social network contacts provided referrals, advice on coping with symptoms of heart failure, and emotional support. Men relied mostly on their wives for assistance with day-to-day activities. Women living alone relied on volunteer agencies and home care for social contact and for assistance with household chores.
CONCLUSIONS: Barriers to managing heart failure included gaps in medical care, patients' reduced mobility, confusion, depressed mood, and lack of knowledge about the disease and its management. Social network partly compensated for some of these issues by providing patients with emotional support and advice on self-care.

BEYOND LANGUAGE BARRIERS AND ACCESS TO CARE: LESS MENTAL HEALTH CARE UTILIZATION BY IMMIGRANTS IN PRIMARY CARE. K.S. Jabbar[1]; J. Tran[2]; J. Liebschutz[3]; T. Averbuch[1]; J. Samet[3]; R. Saitz[3]. [1]Boston Medical Center, Boston, MA; [2]Personnel Decisions International, Quincy, MA; [3]Boston University, Boston, MA. *(Tracking ID # 172813)*

BACKGROUND: Immigrants utilize fewer general medical services, in part due to access to care barriers such as language and lack of insurance. However, how immigrant status affects mental health care utilization is less clear and depends on the population studied. We conducted a study in an urban primary care setting to determine the relationship between immigrant status and mental health care utilization in English-speaking patients.
METHODS: We screened consecutive patients in a primary care practice at an academic-affiliated safety net hospital for a study examining the prevalence of post-traumatic stress disorder. Eligible subjects were 18–65 years old, English speaking and had an appointment with a primary care clinician. The independent variable, immigrant status, was defined as being born outside the US or Puerto Rico. The dependent variable was mental health care utilization, defined as at least one visit to a mental health professional and/or prescription of psychoactive medication in the 12 months prior to the research interview. Health care utilization data was obtained from the electronic medical record. Mental health disorders were assessed using the Composite International Diagnostic Interview (PTSD) and the Patient Health Questionnaire (depression and generalized anxiety/panic disorders). We report descriptive and bivariate analyses. All study participants had access to mental health care and medications via public or private insurance or an uncompensated care program; therefore, health insurance status was not analyzed.
RESULTS: Of 509 participants, 144 (28%) were immigrants. Compared to participants born in the US or Puerto Rico, immigrants were more likely to have completed high school (53% vs. 38%), to be employed (63% vs. 47%), and to earn less than $20,000 per year (55% vs. 48%). Almost 50% of immigrants reported English as their first language; 95% of immigrants indicated they preferred to speak English with their primary care provider. Seventy-four (52%) immigrants and 219 (61%) native-born participants met diagnostic criteria for at least one of the following mental health disorders: PTSD, major and/or other depression, anxiety disorder ($p = 0.10$). Of the entire sample, 48 (33%) immigrants and 174 (48%) native-born participants utilized mental health care ($p = 0.004$). Of the those participants with at least one mental health disorder, 34 (46%) immigrants and 132 (61%) native-born subjects utilized mental health care ($p = 0.03$).
CONCLUSIONS: Despite their English language fluency and access to health care, immigrant patients in an urban primary care setting utilized less mental health care than their native-born counterparts even among those with mental health disorders. Additional research on immigrant mental health utilization should consider patient factors, such as culturally based attitudes, and clinician factors that might influence immigrant mental health care utilization.

CAN A "SMART FORM" INCREASE PHYSICIANS' SATISFACTION WITH MANAGING PATIENT HEALTH BEHAVIOR RISKS? RESULTS OF A PHYSICIAN SATISFACTION SURVEY. A.J. Melnikas[1]; J.L. Schnipper[1]; J.A. Linder[1]; L.A. Volk[2]; S. Turovsky[1]; B. Middleton[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]Partners HealthCare System, Inc., Wellesley, MA. *(Tracking ID # 172774)*

BACKGROUND: Managing weight, diet and exercise in patients with Coronary Artery Disease (CAD) and Diabetes Mellitus (DM) is an important component of disease management. Guidelines recommend that physicians encourage their patients with these chronic diseases to exercise, and studies show that exercise counseling can be effective. However, physicians do not feel confident in their ability to design and prescribe exercise programs. Current clinical decision support (CDSS) tools typically aim to assist physicians to prescribe medications, provide preventive services, and update coded information in the patient electronic health record (EHR). CDSS could also assist physicians in managing these chronic diseases by providing recommendations and patient handouts regarding diet and exercise. This pilot study evaluates changes in physicians' perceived ability to manage smoking, weight, diet and exercise in their CAD and/or DM patients after using a new electronic health record tool.
METHODS: Twenty-six physicians at Partners HealthCare System-affiliated primary care clinics participated in a pilot of the Coronary Artery Disease (CAD) and Diabetes Mellitus (DM) Smart Form (SF), an EHR-based documentation tool that incorporates patient chart review, effective coded data capture and actionable clinical decision support on one page. The Smart Form assists clinicians to order appropriate medications, make referrals, and print instructions and educational handouts. These handouts cover topics such as "Weight Loss - The First Steps," and also include exercise "prescriptions." The Smart Form also facilitates referrals to nutritionists. The pilot period ran from March 6 to May 16, 2006. We surveyed pilot users before and after the pilot to see if using the CAD/DM Smart Form increased physicians' perceived ability to manage smoking, weight, diet and exercise in their care of patients with CAD and/or DM.
RESULTS: Response rates for the pre-survey was 65% and 54% for the post survey. Based on feedback collected during the pilot and in the post survey, overall reactions to the CAD/DM Smart Form were positive. 71% of post survey respondents would recommend the Smart Form to other clinicians. Although not significant, responses suggest that the CAD/DM Smart Form marginally improved physicians' satisfaction with their treatment of smoking (47% in the pre survey were satisfied with their ability to manage smoking as compared to 57% in the post survey), managing weight (17% to 21%) and managing diet and exercise (6% to 29%). Overall, more than half of all respondents to the Smart Form post survey (57%) reported that printing patient instructions was one feature in the Smart Form they found very helpful. In addition, 64% of pilot physicians agree that the CAD/DM SF helps them comply better with guidelines and 71% feel the Smart Form helps them improve the quality of patient care.
CONCLUSIONS: Clinical decision support tools typically aim to assist physicians in prescribing medications, updating coded information in the patient's record and scheduling referrals and labs. Our survey results suggest that these tools could be helpful in the management of other behavioral risk factors related to chronic diseases not easily managed with medication, such as diet and exercise counseling. The physician's ability to get patients involved in their own care, through handouts and

"exercise prescriptions" may be one important step in helping to manage health behavior risks in patients with chronic diseases.

CHANGE IN DEPRESSION AND ANXIETY SYMPTOM BURDEN AFTER PULMONARY REHABILITATION IN VETERANS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE. P.A. Pirraglia[1]; B. Casserly[2]; L. Nici[1]. [1]Providence VA Medical Center/Brown University, Providence, RI; [2]Brown University, Providence, RI. *(Tracking ID # 172304)*

BACKGROUND: The benefit of pulmonary rehabilitation for chronic obstructive pulmonary disease (COPD) is well recognized. This intervention has been demonstrated to reduce dyspnea and to improve exercise tolerance and quality of life. Despite the high prevalence of depression and/or anxiety in COPD, the benefit of pulmonary rehabilitation with respect to depression and anxiety symptoms is less well studied. Our objective was to assess change in depression and anxiety symptom burden before and after participation in an ongoing VA pulmonary rehabilitation program.
METHODS: We performed a sequential cohort study of 20 pulmonary rehabilitation participants with COPD at a Veteran Affairs Medical Center. The Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) were administered prior to pulmonary rehabilitation and after completion of the program. The six minute walk distance was obtained pre- and post- pulmonary rehabilitation.
RESULTS: Mean age was 66 years +/− 9, all participants were male, and 15% were active smokers. The mean number of comorbid diseases was 11 +/− 8, and mean FEV1 was 1.2 L +/1 0.5. At baseline, 40% had a depression diagnosis, and 40% were taking an antidepressant medication. Baseline BDI was 16.1 +/− 11.6, and follow-up BDI was 11.8 +/− 10.7. For the BAI, the scores were 15.2 +/− 10.7 at baseline and 10.4 +/− 9.4 at follow-up. There was a significant improvement in BDI score (4.0 +/− 7.4, $p = 0.042$) and in BAI score (4.8 +/− 1.6, $p = 0.0070$). The degree of BDI and BAI improvements were not significantly different between those receiving antidepressant medication at the time of pulmonary rehabilitation and those who were not. The mean six minute walk distance improved by 173 feet reaching clinical and statistical significance ($p = 0.0011$).
CONCLUSIONS: Pulmonary rehabilitation had beneficial effects on depression and anxiety symptom burdens as well as exercise tolerance regardless of whether the patient received antidepressants during pulmonary rehabilitation. Therefore, pulmonary rehabilitation may represent a useful adjunct to medical therapy for depression and/or anxiety in veterans with COPD. Further work is planned to integrate and test a collaborative care approach to depression and anxiety embedded in a pulmonary rehabilitation program.

CHARACTERISTICS OF YOGA USERS IN THE UNITED STATES: RESULTS FROM A NATIONAL SURVEY. G.S. Birdee[1]; A. Legedza[2]; R.S. Phillips[2]. [1]Harvard Medical School, Boston, MA; [2]Beth Israel Deaconess Medical Center, Boston, MA. *(Tracking ID # 171594)*

BACKGROUND: There are limited data on the characteristics of yoga users in the United States. In this context, we characterized users of yoga, medical reasons for use, and medical disclosure.
METHODS: We utilized the 2002 National Health Interview Survey Alternative Medicine Supplement, a U.S. nationally representative survey ($n = 31044$), which collected data on the use of yoga. Utilizing bivariable and multivariable models, we examined associations between yoga use in the prior year and age, sex, race, education, income, insurance status, regional residence, smoking, alcohol intake, physical activity, and body mass index (BMI). We also examined respondents' use of yoga for medical conditions. For analysis, the most common conditions were collapsed into three categories: 1). pain (chronic, back, and neck); 2). rheumatologic conditions (arthritis, joint pain, gout, lupus, and stiffness); and 3). mental health (depression, anxiety and relaxation). In addition, we examined disclosure of yoga use to medical professionals. In computing national estimates, we utilized SUDAAN to account for the complex sampling scheme of NHIS.
RESULTS: We found that 5% of respondents reported yoga use within the prior year. Among yoga users ($n = 1593$), the mean age was 39.5 years. The majority of yoga users were Caucasian and female (85% and 76% respectively). 50% of yoga users attained at least a college education. When compared to non-yoga users in a multivariable logistic model, yoga users were more likely to be female (OR 3.76 [3.21–4.41]); less likely to be black (OR 0.66 [0.54–0.80]) than white; less likely to be over the age of 65 (OR 0.22 [0.17–0.29]) than 30–39 years of age; more likely to have completed college (OR 2.61 [2.29–2.96]); more likely to have lived in the West (OR 1.67 [1.40–1.99]), Midwest (OR 1.20 [1.02–1.41]), and the Northeast (OR 1.40 [1.16–1.67]) than the South; less likely to smoke (OR 0.76 [0.65–0.89]); less likely to be obese (OR 0.36 [0.24–0.54]) than normal weight (BMI greater than 30 versus 18–25 respectively); and more likely to consume alcohol (OR 2.20 [1.91–2.55]). Neither insurance status nor income was associated with yoga use. The most common medical conditions yoga was used for include pain (6.3%), rheumatologic conditions (3.0%), and mental health conditions (1.7%). When asked about the importance of yoga in maintaining health and well being, 61% of users reported it as important. Only 27% disclosed yoga practice to their medical professional.
CONCLUSIONS: We estimate that there were 10,386,456 million yoga users in the United States in 2002, who tended to be young, white, educated, female, normal weight, and non-smoking. Most respondents felt that yoga was an important part of maintaining their health. The most common conditions treated with yoga included pain, rheumatologic conditions, and mental health conditions. Disparities in use of yoga were observed by race, age, and BMI. Whether these disparities translate into differences in health outcomes requires further research.

CHRONIC ILLNESS AND UNMET NEED IN A SINGLE PAYER HEALTHCARE SYSTEM. A.S. Bierman[1]; B. Ko[1]; Y. Li[1]; J. Balinski[1]; R. Moineddin[1]. [1]University of Toronto, Toronto, Ontario. *(Tracking ID # 173111)*

BACKGROUND: The increasing prevalence of chronic illness and disability has strained the ability of health care systems to provide needed care. In Canada, the proportion of the population reporting unmet need for health care has risen dramatically and socioeconomic disparities in unmet need have been reported despite universal coverage. We assessed factors associated with unmet need and determined the contribution of chronic illness and disability to patient reported unmet need in a single payer system.
METHODS: We analyzed data from the Ontario component of the 2000/2001 Canadian Community Health Survey (CCHS) Cycle 1.1) a nationally representative cross-sectional survey of the Canadian community-dwelling population including all respondents age 25 and older. The survey response rate was 84.7%. The CCHS allowed us to examine a comprehensive set of factors that may contribute to unmet need for health services including sociodemographic characteristics, mental and physical health, psychosocial factors, health behaviors, and social determinants of health. A series of multivariable logistic regression was used to assess the independent association of the following measures of chronic illness and disability: diagnosis with common specific chronic conditions including CHF, CAD, diabetes, asthma depression; number of chronic conditions; ADL limitations; activity restrictions; and global health to unmet need after adjusting for potential confounders. Results are weighted to produce estimates for the Ontario population. To account for survey design, all confidence intervals and p-values were determined using bootstrapping.
RESULTS: The study sample includes 30,723 respondents representing 7.8 million Ontario residents who had a mean age of 48 years, were 48.5% male, 32.8% foreign-born, and 16.9% visible minorities. Although low-income individuals were more likely than high-income individuals (15.4% vs. 11.3%) to report unmet need, it was the sickest respondents who were at the greatest risk (i.e., 29% of respondents in poor health). In adjusted analyses, all measures of health and functional status, but not income, were strongly associated with unmet need including poor health (OR 8.4, 95% CI 6.7, 10.5), >3 chronic conditions (OR 4.4, 95% CI 3.7, 5.2), and IADL/ADL limitations (OR 3.2, 95% CI 2.8, 3.7). See figure. Individuals reporting any one of nine chronic conditions or depression were two to three times as likely to experience unmet need. For example, respondents reporting heart disease were twice as likely (OR 2.0, 95% CI 1.7, 2.5) and those with depression nearly three times as likely (OR 2.9, 95% CI 2.5, 3.3) to report unmet need. Global health, chronic illness, and disability were independently associated with unmet need, as were gender, depression, stress, tobacco use, food insecurity, and community engagement.
CONCLUSIONS: Despite universal health insurance, Ontarians with chronic illness and disability are at significantly increased risk for experiencing unmet need. Small differences in unmet need associated with income are explained by worse health status among low-income respondents. There is opportunity to improve access to care through health system reform aimed at improving chronic illness care and reducing population risk for chronic disease.

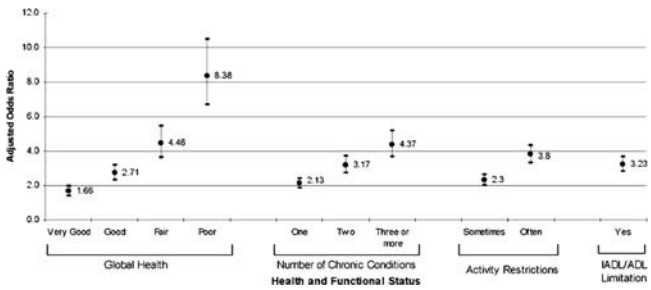


Figure 1. All analyses and proportions are weighted to reflect provinical population estimates. Each model is adjusted for age, gender, marital status and income. Error bars indicate 95% confidence intervals. Reference levels for each model are: global health (excellent health); number of chronic conditions (none); activity restrictions (never); and IADL/ADL limitaitons (no).

CLINICIAN MEDICATION PREFERENCES IN A COMPLEX PATIENT A.L. Sellers[1]; R.M. Shewchuk[1]; M.M. Safford[1]; T.K. Houston[1]; J.J. Allison[1]; C.I. Kiefe[1]; R.M. Centor[1]. [1]University of Alabama at Birmingham, Birmingham, AL. *(Tracking ID # 172606)*

BACKGROUND: Because clinical practice guidelines have been developed for many chronic diseases in isolation, implementing guideline-based medicine may be difficult for the complex patient. Quality measures based on guidelines for single conditions do not capture the complexity of clinical decision making for many patients with multiple co-morbidities. We used Analytic Hierarchy Process (AHP) to examine how clinicians prioritized treatment for a hypothetical 69 year old woman with hypertension, diabetes, hyperlipidemia, and osteoporosis.

METHODS: Clinicians were medical students, residents, and attending faculty from two academic Internal Medicine and Family Medicine programs. Based on a patient vignette, clinicians estimated the value of treatment with alendronate, glyburide, simvastatin, and hydrochlorothiazide. AHP decomposed complex medical decision making into a series of pair-wise comparisons and then produced a set of medication preference ratings. For each clinician, the medication preference ratings summed to 1.0 and indicated the relative assigned priority of each medication. Latent Class Analysis (LCA) assigned clinicians to distinct clusters based on medication preference ratings. We examined the mean preference ratings and distribution of clinician type within each cluster.
RESULTS: Of all 104 participants, 42.3% were third-year medical students and first-year residents, 35.6% were second-year and third-year residents, and 21.1% were attending physicians. Most participants were male (56.4%) and from the Internal Medicine program (83.7%). From the LCA, a three cluster structure produced the best fit. The mean medication preference ratings differed significantly between the three clusters (Table 1, $p < 0.001$). The conditions most heavily emphasized were: hyperlipidemia for Cluster 1, hypertension for Cluster 2, and diabetes for Cluster 3. There were important differences in the proportion of Family Medicine versus Internal Medicine clinicians by cluster.
CONCLUSIONS: Clinician medication preference ratings for a hypothetical, complex patient fell into one of three distinct clusters, each prioritizing treatment for a different condition. There were also important differences in cluster by primary care specialty. These findings illustrate important variability in physician preferences for guideline-recommended treatment and suggest lack of supporting evidence to guide clinical decisions for complex patients. Guidelines and quality measures should more explicitly consider patient complexity.

Mean Medication Preference Ratings by Cluster

	Cluster 1	Cluster 2	Cluster 3
Alendronate	0.24	0.6	0.7
Glyburide	0.26	0.26	0.56
Simvastatin	0.33	0.16	0.16
Hydrochlorothiazide	0.18	0.53	0.21

CONGESTIVE HEART FAILURE DISEASE MANAGEMENT IN MEDICARE MANAGED CARE. A. Mehrotra[1]; B.J. Mcneil[2]; B.E. Landon[2]. [1]University of Pittsburgh, Pittsburgh, PA; [2]Harvard University, Boston, MA. *(Tracking ID # 173804)*

BACKGROUND: In 2001 the Center for Medicare and Medicaid Services (CMS) required all participating Medicare health plans to participate in a three year quality assessment and performance improvement program for CHF and simultaneously initiated an "extra payment" program to reward high quality CHF care. These initiatives made it more likely that Medicare managed care plans would institute a CHF disease management program. Despite substantial enthusiasm for disease management, however, little is known about the content of health plans disease management programs and what barriers health plans face in implementation. We sought to describe the structure and content of the Congestive Heart Failure (CHF) disease management programs being used by Medicare managed care plans.
METHODS: Structured telephone survey of Medicare managed care plans supplemented by open-ended in-depth interviews with twenty health plans selected from each of CMS's ten regions. Surveys and interviews were conducted between March 2003 and February 2004.
RESULTS: We received survey responses from 84 of 120 eligible health plans (70%). Almost all respondents (92%) reported that the health plan had a CHF disease management program; however, 45% of the programs were implemented in 2001 or later (after the CMS initiative). Health plans have taken two different approaches to disease management with 58% creating an in-house program and 42% externally contracting with a commercial vendor. Commercial vendor use was more common in larger (57% $>$30,000 Medicare enrollees vs. 24% $<$15,000, $p = 0.05$), national (50% vs. 21%, $p = 0.03$), and for-profit (45% vs. 21%, $p = 0.03$) health plans. Disease management programs more commonly focused on improving patient self-management than on changing physician behavior. For example, 87% of the programs provide a scale for patients, but only 62% address ACE inhibitor use and only 23% provide feedback to individual physicians on whether their care was consistent with CHF guidelines. As compared to in-house programs, commercial vendor programs were more likely to enroll only high-risk patients (56% vs. 23%, $p = 0.003$) and to enroll patients for a short period of time (38% $>$12 months vs. 68%, $P = 0.03$). Seventy-five percent of health plan representatives believed that disease management programs decreased costs, and 77% believed they improved health outcomes.
CONCLUSIONS: Our examination of Medicare managed care plans use of CHF disease management programs finds that there is wide spread use of such programs. Some of these programs appear to have been initiated in response to the institution of a CHF quality improvement initiative and financial incentives for improved quality. The content of the health plan programs differs from disease management programs previously described in the literature in that they are less likely to focus on medication management and compliance with guidelines. This likely reflects the difficulty disease management programs have in engaging physicians. The question remains whether Medicare health plan disease management programs will achieve quality improvement and cost savings and are sustainable in the long-term.

CONTRA-BAND: A SYSTEMATIC REVIEW COMPARING LAPAROSCOPIC ADJUSTABLE BANDING TO GASTRIC BYPASS FOR THE TREATMENT OF MORBID OBESITY. J.A. Tice[1]; L. Karliner[1]; M.D. Feldman[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173760)*

BACKGROUND: Bariatric surgical procedures have increased exponentially in the US due to the obesity epidemic and some notable celebrity endorsements. Laparoscopic adjustable gastric banding (LB) is heavily promoted as a safer, potentially reversible and effective alternative to gastric bypass (GB), the current standard in the US. We investigated whether the balance of patient-oriented clinical outcomes for LB were equivalent to GB.
METHODS: We searched the Medline database, Cochrane clinical trials database, Cochrane reviews database and the Database of Abstracts of Reviews of Effects using the key words gastroplasty, gastric bypass, laparoscopy, Swedish band, and gastric banding. The search was performed for the period from 1966 through December 2006. We manually searched the bibliographies of systematic reviews and key articles for additional references. We included studies with data directly comparing LB to GB with at least one year follow-up. Study quality was evaluated based on the overall study design, equivalence of the two groups at surgery, completeness of follow-up, objective and unbiased assessment of outcomes, and the quality of the statistical analyses. We abstracted the following outcomes: resolution of obesity-related morbidities, percentage of excess body weight lost (EBWL), quality of life, perioperative complications, and long-term adverse events.
RESULTS: The search identified 12 comparative studies, most of poor quality. There were no randomized trials and only 3 studies matched on important baseline characteristics. Few studies reported outcomes beyond 1 year. Follow-up beyond 1 year was often less than 50%. EBWL at 1 year was consistently greater for GB than LB (median difference 26%, range 19 to 34%, $p < 0.001$). When reported, resolution of diabetes, hypertension, and hypercholesterolemia was greater following GB. In the highest quality study, the EBWL was 76% in the GB group versus 48% in the LB group; diabetes resolved in 78% of patients in the GB groups versus 50% in the LB group. No study identified a subgroup favoring LB. Adverse events were inconsistently reported in the 12 studies. Although operative mortality was $<0.5\%$ for both procedures, perioperative complications were more common in the GB group (9% versus 5%). In contrast, long-term reoperation rates were lower following GB (16% versus 24%).
CONCLUSIONS: Weight loss outcomes strongly favored GB over LB. Patients treated with LB had lower short-term morbidity than GB, but reoperation rates were higher for patients receiving LB. The large absolute differences in weight loss outcomes and the reduction in obesity-related comorbidities are compelling even though the studies have sub-optimal quality. GB should remain the primary bariatric procedure used to treat morbid obesity.

DEPRESSION AND ANXIETY HAVE INDEPENDENT AND ADDITIVE ADVERSE EFFECTS ON PAIN AND DISABILITY IN PRIMARY CARE PATIENTS WITH CHRONIC MUSCULOSKELETAL CONDITIONS. M.J. Bair[1]; J. Wu[2]; T.M. Damush[1]; J.M. Sutherland[1]; K. Kroenke[3]. [1]Roudebush VA HSR&D Center of Excellence on Implementing Evidence Based Practice, Indianapolis, IN; [2]Indiana University School of Medicine, Indianapolis, IN; [3]Indiana University School of Medicine and Regenstrief Institute, Indianapolis, IN. *(Tracking ID # 172375)*

BACKGROUND: Individually, clinical depression and anxiety are strongly associated with chronic pain. However, little is known how psychiatric comorbidity affects patients with chronic pain, especially in the primary care setting. Therefore, we compared the individual and combined impact of depression and/or anxiety on pain intensity, functional status, disability days, and health-related quality of life (HRQL) among primary care patients with chronic musculoskeletal pain.
METHODS: We analyzed baseline data from the Stepped Care for Affective disorders and Musculoskeletal Pain (SCAMP) study, an ongoing randomized clinical trial of care management for patients with comorbid pain and depression nested within a prospective cohort of pain patients with and without depression. At baseline, all patients ($N = 440$) had chronic pain ($>$ 6 months duration) of the low back, hip or knee. Patients with depression (Patient Health Questionnaire-9 (PHQ-9) score $>$ 10) were over-sampled. Pain was assessed by the Brief Pain Inventory and anxiety by the GAD-7 anxiety scale. Four groups were identified based on pain concomitant with depression, anxiety, or both (i.e. pain only; pain and depression; pain and anxiety; or pain, depression, and anxiety). We used ANOVA models to compare baseline differences across the four groups on pain intensity, functional status, disability days, and HRQL.
RESULTS: Participants ($N = 440$) were 52% men, 62% White, 33% African-Americans and had a mean age of 59. Fifty-four percent ($n = 236$) reported pain only, 14% ($n = 62$) had pain and depression, 7% ($n = 32$) had pain and anxiety, and 25% ($n = 110$) had pain, depression, and anxiety. Patients with concomitant pain,

depression, and anxiety had more severe pain (0 to 10 scale, higher scores represent more severe pain) than those with pain and depression, pain and anxiety, or pain only (mean scores: 6.4 vs. 6.1 vs. 5.8 vs. 5.4, $p < 0.0001$). Functional impairment, as assessed by the Roland Disability Scale, was significantly greater in those with all three conditions (pain, depression, and anxiety) compared to those with two conditions (pain and depression or pain and anxiety) and those with pain only (mean scores: 18.1 vs. 17.9 vs. 15.5 vs. 12.1, $p < 0.0001$). Disability days (in the last 3 months) were also substantially higher in patients with concomitant pain, depression, and anxiety compared to the other patient groups (mean days: 42 days vs. 37 vs. 33 vs. 18, $p < .0001$). We found a similar gradient effect of 3 vs. 2 vs. 1 condition(s) in terms of worse scores on several other pain measures as well as poorer function on multiple domains of HRQL (e.g. pain, social functioning, vitality, and mental health).
CONCLUSIONS: Among primary care patients with chronic musculoskeletal pain, depression and anxiety both have strong independent and additive adverse effects on pain intensity, functional status, disability days, and HRQL. Thus, attention to both depression and anxiety which commonly co-exist with chronic pain is important to optimize clinical outcomes and patient health-related quality of life.

DEPRESSION DIAGNOSIS IMPACT ON THE EFFECTIVENESS OF A MULTIDISCIPLINARY DIABETES AND CARDIOVASCULAR RISK REDUCTION CLINIC. P.A. Pirraglia[1]; T.H. Taveira[2]; L.B. Cohen[2]; W. Wu[1]. [1]Providence VA Medical Center/Brown University, Providence, RI; [2]Providence VA Medical Center/ University of Rhode Island, Providence, RI. *(Tracking ID # 173287)*

BACKGROUND: Depression may complicate management of diabetes and related cardiovascular risk factors. We examined whether was so among diabetics in a multidisciplinary Cardiovascular Risk Reduction Clinic (CRRC) at the Providence Veterans Affairs Medical Center.
METHODS: From consecutive CRRC participants, we selected those with depression (depression diagnosis and no other diagnosed mental health condition) and no depression (without any mental health condition), based on the patient's problem list at entry into the CRRC. We calculated an adjusted UKPDS score for 20 year risk because the UKPDS takes HbA1c into account while the Framingham Risk Score does not. Age at diagnosis of diabetes was not included in the calculation of the UKPDS score, as we did not have this information. Using general linear models, we analyzed the relationship between depression diagnosis and FRS controlling for potential confounders.
RESULTS: 220 (86%) participants had no depression and 37 (14%) had depression. Our sample was mostly Caucasian and male. Age was 67.6 years±10.2. Baseline hemoglobin A1c was 8.5±2.1, body mass index was 30.5±5.9, low density lipoprotein was 110 mg/dL±35, and 25% were current tobacco smokers. On average, patients had 4 CRRC visits. Those with depression differed only in being younger (63±11 vs. 68±9, $p = 0.002$).There was a significant improvement in UKPDS score of 18.6±15.9 in those with a depression diagnosis compared to 11.7±15.7 in those who did not have a depression diagnosis ($p = 0.039$). In a regression model including number of CRRC visits and age, the relationship of depression diagnosis with improvement in UKPDS score remained ($= 6.3$, $p = 0.047$).
CONCLUSIONS: Counter to the prevailing notion that depression interferes with self-care and medication adherence, and adds to competing demands, we found greater improvement in cardiovascular risk outcome among those with a depression diagnosis compared to those without. Future work will examine the impact of depression treatment and of diagnosed versus undiagnosed depression.

DEPRESSION TREATMENT AMONG HIV +/–VETERANS: DOES PROVIDER COMFORT PREDICT TREATMENT? K. Sueoka[1]; J. Goulet[2]; A.A. Butt[3]; S. Crystal[4]; C.L. Gibert[5]; D. Rimland[6]; K.J. Bryant[7]; M. Rodriguez-Barradas[8]; A.C. Justice[2]. [1]Yale University, New Haven, CT; [2]Yale University, Veterans Affairs Medical Center, West Haven, CT; [3]University of Pittsburgh, Veterans Affairs Medical Center, Pittsburgh, PA; [4]Rutgers, The State University of New Jersey, New Brunswick, NJ; [5]George Washington University Medical Center, Veterans Affairs Medical Center, Washington, DC; [6]Emory University, Veterans Affairs Medical Center, Decatur, GA; [7]National Institutes of Health (NIH), National Institute on Alcohol Abuse and Alcoholism (NIAAA), Bethesda, MD; [8]Baylor College of Medicine, Veterans Affairs Medical Center, Houston, TX. *(Tracking ID # 173503)*

BACKGROUND: Despite a higher prevalence of depression among HIV-infected veterans, previous research has shown that infectious disease (ID) providers report substantially less comfort with depression treatment than do general medicine (GM) providers. We examined whether HIV-infected patients who are treated by ID providers are less likely to have their depressive symptoms treated compared to HIV-negative controls managed by GM providers.
METHODS: We used survey, service utilization, and pharmacy data on patients from the Veterans Aging Cohort Study (VACS), a prospective cohort study of HIV-positive and age-, race- and site-matched HIV-negative subjects at 8 Veterans Affairs Healthcare Centers. To date, the VACS study has consented and enrolled 5,998 patients. We utilized the Patient Health Questionnaire (PHQ-9) to identify depressive symptoms. Each of 9 DSM-IV criteria items was rated by the patient as "0" (not at all) to "3" (nearly every day). Patients were considered to have depressive symptoms (as per Kroenke et al) if 5 or more criteria were present at least "more than half the days" in the past two weeks, resulting in a score of 10 or more, and one of the symptoms was depressed mood or anhedonia. Treatment was defined as receipt of a selective serotonin uptake inhibitor (SSRI) within the 6 months prior to or after survey. In addition, a variable indicating any VA mental health service utilization during that period was constructed. Patients receiving only tricyclic anti-depressants ($n = 50$) were not considered treated due to the potential use for other conditions such as pain. Patients receiving mono-amine oxidase inhibitors ($n = 3$) were excluded due to contraindications with SSRI. In addition, female patients, because of their small number, and those with a diagnosis of schizophrenia or PTSD, were excluded. Bivariate comparisons by provider type were assessed using chi-square and t-tests. Logistic regression was used to determine whether provider type was associated with treatment adjusting for potential confounding variables.
RESULTS: The analytic sample consisted of 732 male veterans with a PHQ-9 score indicative of depressive symptoms. The sample was predominantly African-American (58%) and had a median age of 48 years. There were 434 ID patients and 298 GM patients. There was no significant difference in patients' age or race by provider type. Caucasian patients were significantly more likely to have received SSRI (48% vs. 30%, $p < 0.01$). There was no significant difference in the proportion of patients with depressive symptoms who were treated (38% of ID patients vs. 34% of GM patients, $p = 0.36$). This remained true even when mental health service utilization was included (48% vs. 49%, $p = 0.80$). After controlling for patient age, race, and the number of comorbid conditions, ID patients did not differ significantly in receipt of SSRI ($OR = 1.16$, 95% $CI = 0.84, 1.58$).
CONCLUSIONS: Despite our previous analysis demonstrating substantial differences in provider comfort with depression treatment, both HIV-negative and HIV-positive veterans were equally unlikely to be treated for depressive symptoms. This overall low rate of treatment suggests that comfort with treatment does not insure treatment among those with active depressive symptoms.

DID PAY-FOR-PERFORMANCE CHANGE ANYTHING IN PRIMARY MEDICAL CARE IN THE UNITED KINGDOM? B. Guthrie[1]; S. Grant[2]; H.T. Davies[3]; G. Huby[4]. [1]University of Dundee, Dundee, Scotland; [2]University of Glasgow, Glasgow, Scotland; [3]University of St Andrews, St Andrews, Scotland; [4]University of Edinburgh, Edinburgh, Scotland. *(Tracking ID # 172948)*

BACKGROUND: Since 2004, ~20% of UK General Practice income has depended on performance measured by 147 quality indicators in the national pay-for-performance scheme (Quality and Outcomes Framework - QOF). In 2005/6, median achievement on the composite quality score was 1034/1050 points (98.5%), prompting debate about whether QOF had changed care, or was simply paying for existing work. This study examines in detail the impact of QOF on organization of chronic disease care in 4 practices.
METHODS: In-depth, qualitative examination of practice organization, in 4 practices in 2 cities, caring for 4–12,000 patients and varying in terms of QOF achievement. Data collection in 2005/6 included non-participant observation of staff at work over 7 months, informal interview during observation, and semi-structured formal interview with physicians, nurses and administrative staff. Text data was systematically coded for analysis, and established methods for ensuring analytical rigor used.
RESULTS: ***Motivation to change.*** Providers reported that QOF was highly motivating. Physicians cited substantial financial rewards, public reporting of QOF scores, and belief that the underlying measures represented high quality care. Non-physicians with no direct financial incentive cited opportunities to take on new responsibilities, and pride in delivering high quality care. ***Organizational change.*** Pre-QOF, participants reported sporadic use of chronic disease care management processes such as use of disease registers, most commonly for diabetes. Post-QOF, practices used existing, but under-exploited, electronic medical records to systematically record QOF data, to create registers, to identify and send for patients needing review, and to monitor progress against targets. Clinical care was changed to match QOF requirements by using structured data entry templates embedding clinical guidelines, and through electronic reminders in the consultation. In all practices, new administrators and nurses were employed to help implement QOF, and existing staff took on new tasks around recall and data entry. QOF dominated practice planning in 3 practices, with other quality improvement activity crowded out. The fourth practice invested QOF income in other quality improvement activity, but the financial sustainability of this was being questioned within the practice during the period of observation. In all practices, physicians in particular were concerned that the disease focus in QOF potentially threatened traditional, patient-centred primary care, and that non-incentivized diseases like depression were under-treated.
CONCLUSIONS: QOF drove significant organizational change towards recommended models of chronic disease care, but it also crowded out other practice generated quality improvement, prompting concern that quality of care might worsen for un-incentivized problems. Providers rapidly responded to pay-for-performance in the UK because the single payer system created coherent incentives, and they could make use of existing (but under-exploited) information technology and multi-disciplinary teams. Directly generalizing the QOF experience to other countries is not straightforward, but pay-for-performance may be less motivating in settings where quality measurement, financial incentives and public reporting are

fragmented across many payers. Implementation of intended organizational change is likely to be more difficult in settings where information technology and team care are less established.

DO PRIMARY CARE PROVIDERS WORRY ABOUT WORRISOME RESULTS? EFFECTS OF FEEDBACK ON PROCESSES AND OUTCOMES OF CARE. S.D. Fihn[1]; C. Bryson[1]; M. Mcdonell[2]; P.H. Diehr[3]; V.S. Fan[1]. [1]HSR&D Center of Excellence, VA Puget Sound, Seattle, WA; [2]HSR&D VA Puget Sound Health Care System, Seattle, WA; [3]University of Washington, Seattle, WA. *(Tracking ID # 173174)*

BACKGROUND: Although audit/feedback improves care only marginally, many health care systems, including the Veterans Health Administration (VA), routinely notify clinicians about results falling outside predetermined limits. We reexamined data from the Ambulatory Care Quality Improvement Project (ACQUIP) to determine whether alerting providers to worrisome values yielded any discernible effect.

METHODS: ACQUIP was a 2-year, firm-randomized trial conducted in 7 VA primary care/ GIM (PC) clinics. Responses to mailed questionnaires addressing 6 chronic conditions were merged with inpatient, outpatient, pharmacy, and laboratory records. Clinicians in intervention firms received individual, visit-based reports related to clinical findings (e.g., BP, HbA1c), symptoms (e.g., angina, depression, dyspnea) and health habits (e.g., excessive alcohol intake) plus periodic, aggregate reports about individual patients with worrisome results. This included specific information about abnormal findings and contact information. Criteria for worrisome results were predefined by expert panels for each condition. Control clinicians received no reports. For patients with worrisome results, we examined 35 outcomes that included number of PC visits, number of condition specific visits, number of existing and new prescriptions for relevant drugs, medication adherence (using ReComp - a novel measure of adherence), and applicable clinical measures in the year following feedback.

RESULTS: Of 22,413 initial entrants, the number whose provider received a report of worrisome results and the total number with each condition were: coronary disease (762/8152), hypertension (438/11,945), diabetes (555/4928), COPD (812/4983), depression (1059/6598), and problem drinking (401/5858). Six of 35 comparisons favored the intervention group, one favored the control group and 28 were not statistically significant. Intervention patients with worrisome coronary disease (having angina or taking nitroglycerine 1–2 times/week), had slightly more PC visits than controls (1.24 vs. 1.14, $p=0.002$). Although diabetics in the intervention group with HbA1c values >8 had more PC visits (1.33 versus 1.19, $p=0.002$), more new prescriptions for diabetic medications filled (0.79 versus 0.63, $p=0.004$) and more HbA1c tests performed (0.59 versus 0.47, $p=0.001$), follow up HbA1c values did not differ between groups (9.3 versus 9.2, $p=0.65$). Intervention patients with poorly controlled hypertension (>140 systolic or >90 diastolic) filled more new antihypertensive medications (1.10 versus 0.93, $p=0.046$), but follow-up blood pressures did not differ between intervention and control groups (systolic 161 versus 160, $p=0.83$; diastolic 95.2 versus 94.3, $p=0.28$). Problem drinkers in the intervention group (AUDIT C score 8) made significantly more PC visits than controls (1.21 versus 1.12, $p=.048$). Depressed patients in the control group (Hopkins Symptom Checklist [SCL] score >1.75) filled more prescriptions for antidepressants than intervention patients (1.14 versus 1.00, respectively, $p=.039$). Mean follow-up SCL scores (2.25 versus 2.30, $p=.40$) and Audit C scores (9.41 versus 9.56, $p=.16$), however, were comparable for the intervention and control groups, respectively.

CONCLUSIONS: The ACQUIP trial demonstrated no substantial positive effect of audit/feedback related to worrisome findings. Informing PC providers specifically about therapeutic failures minimally increased utilization but failed to improve outcomes.

DO PROVIDERS DO A BETTER JOB WITH DIET AND EXERCISE COUNSELING WHEN PATIENTS NEED IT THE MOST? H.K. Seligman[1]; J.D. Piette[2]; D.S. Lessler[3]; L.D. Chew[3]; B.M. Reilly[4]; J. Johnson[5]; M. Brunt[6]; J. Huang[7]; M. Reggenstein[7]; D. Schillinger[1]. [1]University of California, San Francisco, San Francisco, CA; [2]University of Michigan, Ann Arbor, MI; [3]University of Washington, Seattle, WA; [4]Cook County Hospital, Chicago, IL; [5]Louisiana State University, New Orleans, LA; [6]Cambridge Hospital, Cambridge, MA; [7]George Washington University, Washington, DC. *(Tracking ID # 172121)*

BACKGROUND: It is unclear whether providers offer higher quality diet and exercise counseling to patients with the greatest need for assistance. We examined patient characteristics associated with difficulty following recommendations, and whether clinicians targeted counseling toward patients with the greatest barriers.

METHODS: The Consortium for Quality Improvement in Safety Net Hospitals and Health Systems conducted a telephone survey of 802 English- and Spanish-speaking patients with diabetes in 4 public health care systems. We used 2 dependent variables related to diet and exercise: difficulty following recommendations and perceived counseling quality. We measured difficulty following recommendations by degree of difficulty following a recommended eating plan or exercise regimen. We measured counseling quality by patients' reports of how well their provider explained (a) types of healthy foods and the importance of eating them, and (b) the importance of exercising regularly. Independent variables included demographic characteristics (race, education, insurance, and English proficiency), literacy level, pain, depression, and co-morbidities (self-reported health status, diabetes control, and insulin treatment). We also determined whether patients' reports of provider communication skills (asking about barriers or using words you did not understand) were associated with perceived counseling quality. We used logistic regression to estimate odds ratios. Results account for clustering within study site.

RESULTS: The sample was 1/3 White, 1/3 Latino, 1/3 Black, and 62% female, with a mean age of 58 years. 33% were uninsured, 43% had less than a high school degree, and 24% completed the survey in Spanish. 33% and 44% reported difficulty following their recommended eating plan and exercise regimen, respectively. Patients were more likely to report difficulty with their eating plan if they had low literacy (OR 1.7, $p=0.03$), depression (OR 1.8, $p=0.001$), fair or poor health status (OR 1.4, $p=0.02$), or poor diabetes control (OR 2.2, $p=0.001$). In addition to patients with these characteristics, those with pain were also more likely to report difficulty with their exercise regimen (OR 4.1, $p<0.001$). 8% and 13% reported poor quality diet and exercise counseling, respectively. Patients were more likely to report poor quality diet counseling if they had low literacy (OR 3.8, $p<0.001$), depression (OR 2.7, $p<0.001$), fair or poor health status (OR 1.7, $p=0.04$), or poor diabetes control (OR 4.6, $p<0.001$). These same characteristics were associated with poor quality exercise counseling. Patients with providers who asked about barriers (63%) or infrequently used words their patients did not understand (89%) were more likely to report high-quality counseling (OR 5.3, $p<0.001$ and OR 4.5, $p<0.001$, respectively). Results were similar after adjusting for patient demographics.

CONCLUSIONS: Providers do a good job providing nonspecific counseling, but need to improve in their ability to offer tailored counseling to patients with common barriers to behavioral change. These barriers include low literacy, pain, depression, and medical co-morbidities. Providers who ask about barriers and communicate clearly are better able to engage patients with difficulty following recommendations. Future research should explore ways to overcome difficulties initiating and sustaining healthy behaviors, and evaluate the clinical yield of offering more intensive counseling to patients with the greatest barriers.

DO VITAMIN SUPPLEMENTS AFFECT BLOOD PRESSURE IN ADULTS? S.M. Chang[1]; R.F. Wilson[1]; C.R. Schneyer[1]; G.P. Prokopowicz[1]; R. Qayyum[1]; E.B. Bass[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 172377)*

BACKGROUND: Non-pharmacologic treatments are important for blood pressure (BP) control. The role of vitamin supplements remains uncertain despite high usage. We conducted a systematic review to synthesize studies on the effect of vitamin supplements on BP in adults without specific nutritional needs or altered mineral metabolism.

METHODS: We searched MEDLINE, EMBASE, Cochrane databases, and references from pertinent articles for randomized controlled trials (RCT) of single, paired, or multi-vitamin combinations with reported BP outcomes published between 1966 and July 2006. Exclusion criteria were defined a priori to select studies of adults without special nutrient needs or altered vitamin metabolism that could distinguish the BP effect of chronic vitamin supplement usage (at least 2 weeks) from other interventions. Paired reviewers independently reviewed articles, extracted data, and assessed study quality. For each vitamin group, we performed a meta-analysis on the mean difference between the change in BP of the intervention and control groups. Studies without adequate data for meta-analysis are described qualitatively.

RESULTS: Our search identified 2317 potentially relevant articles, of which 34 met eligibility criteria. 8 articles reported the BP effect of antioxidant supplements. Meta-analysis of 4 RCTs (140 patients) found a significant 5.2 mm Hg mean decrease in systolic BP (CI -9.2, -1.1) and a non-significant 2 mm Hg mean decrease in diastolic BP (CI -4.7, 0.8) with antioxidant supplementation versus placebo. 4 other RCTs found a small positive BP effect in 21 hypertensive patients, but no significant BP effect in other selected populations. 7 articles reported the BP effect of folate ± B vitamin supplements. Meta-analysis of 6 RCTs (314 patients) found a significant 3.2 mm Hg mean decrease in systolic BP (CI -6.3, -0.06) and a significant 1.8 mm Hg mean decrease in diastolic BP (CI -3.5, -0.02) with folic acid versus placebo. In another RCT (24 patients), post-treatment systolic BP was not significantly different between folic acid and placebo groups. 12 articles reported the BP effect of vitamin C supplements. Meta-analysis of 6 RCTs (225 patients) found a non-significant 0.8 mm Hg mean increase in systolic BP (CI -2.1, 3.8) and a non-significant 0.8 mmHg mean decrease in diastolic BP (CI -3.3, 1.8) with vitamin C versus placebo. 3 of 6 other studies (113 patients) found a significant positive BP effect of vitamin C versus placebo. 3 studies (57 patients), found no significant BP effect of vitamin C. 7 articles reported the BP effect of vitamin E supplements. After excluding 2 studies due to quantitative heterogeneity, meta-analysis of 3 RCTs (234 patients) found a non-significant 3.6 mm Hg reduction (CI -7.5, 0.3) in systolic BP and 0.4 mm Hg reduction (CI -2.5, 1.8) in diastolic BP with vitamin E versus control. Of the 2 excluded studies with widely disparate results, one (27 patients) found a significant decrease in systolic and diastolic BP with vitamin E versus

placebo. The other (52 patients) found a significant increase in systolic BP with vitamin E versus placebo. 2 other studies (262 patients) found no significant BP effect of vitamin E.
CONCLUSIONS: We conclude that antioxidant or folate supplements may yield a small decrease in BP, comparable to the benefit seen with dietary changes. Although relatively few studies met our strict eligibility criteria, the observed decrease in BP could translate into important benefits on a population basis.

DOES VHA/PRIVATE SECTOR PRIMARY CARE CO-MANAGEMENT IMPACT THE QUALITY OF CARE FOR HYPERTENSION, DIABETES, HYPERLIPIDEMIA, AND OBESITY? D.M. Shivapour[1]; P. Kaboli[2]. [1]University of Iowa, Iowa City, IA; [2]VA Iowa City Healthcare System and University of Iowa, Iowa City, IA. *(Tracking ID # 173571)*

BACKGROUND: Patients who receive primary care in the Veteran's Health Administration (VHA) frequently have an additional primary care provider in the community. The impact of this "co-management" on quality of care for chronic conditions is unknown. We evaluated the impact of co-management on quality of care for veterans with hypertension, diabetes, hyperlipidemia, and obesity.
METHODS: The study included a convenience-sample of primary care patients with hypertension from six VHA clinics. Consenting patients were interviewed before scheduled visits and implicit review of medical records was performed by study physicians. Each condition had the following outcomes of interest: hypertension [achievement of goal blood pressure (BP) ($<140/90$ or $<130/80$ for patient with diabetes) and use of guideline-concordant therapy], hyperlipidemia [LDL cholesterol], diabetes [HgbA1c], and obesity [body mass index (BMI)].
RESULTS: 191 patients were approached and 189 (99%) agreed to participate. Mean age of patients was 66 years, 97% were male, 92% white and 36% identified a non-VHA provider who co-managed their care. Mean BP was 140/76, LDL of 99.1, HgbA1c of 6.5, and BMI of 30.4. For hypertension, 51% of patients were at BP goal, 58% were on guideline-concordant therapy, and 32% had both. Co-managed patients were as likely to attain BP goal as VA-managed patients (51% vs. 51%, respectively; $P=.99$), be on guideline-concordant therapy (63% vs. 56%, respectively; $P=.35$), and were taking the same mean number of BP medications (2.5 vs. 2.4, respectively; $p=.85$). For type of anti-hypertensive medication, there was no difference in use of calcium channel blockers or beta blockers, but co-managed patients were more likely to be using thiazide diuretics (43% vs. 29%, respectively; $p=.03$) and less likely to use ACE inhibitors (43% vs. 61%, respectively; $p=.02$). Co-managed patients had similar rates of comorbid illnesses compared to VA-managed patients, including hyperlipidemia (58% vs. 50%, respectively; $p=.28$) and diabetes (36% vs. 35%, respectively; $p=.94$), the two most common. For patients with hyperlipidemia there was no difference in LDL cholesterol (97.1 vs. 100.1, respectively; $p=.55$), for diabetics no difference in HgbA1c (6.5 vs. 6.4, respectively; $p=.74$), and for obesity no difference in BMI (29.8 vs. 30.9, respectively; $p=.40$).
CONCLUSIONS: In a primary care cohort with hypertension, VHA/private sector co-managed patients had similar rates of BP control and guideline-concordant therapy, with some differences in anti-hypertensive use. For hyperlipidemia, diabetes, and obesity, there was no difference in measures of disease control. Although co-management may make communication more complex between providers and decrease continuity, it had no impact on quality for these four chronic medical conditions. Since clinical outcomes appear similar and given the prevalence of co-management, future work should assess whether co-management results in excess care or has other positive or negative effects.

EFFECT OF CHRONIC DISEASES AND COMORBID CONDITIONS ON OSTEOPOROSIS SCREENING. F.F. Homayounrooz[1]; K. Jain[2]; J. Zuleta[3]; S. Cykert[4]. [1]Saint Mary's Hospital, Yale University School of Medicine, Waterbury, CT; [2]George Washington University, Washington, DC; [3]University of Miami Miller School of Medicine, Greensboro, NC; [4]University of North Carolina, Greensboro, NC. *(Tracking ID # 173276)*

BACKGROUND: Bone densitometry exam with DXA is an important tool in identifying patients (pts) with low bone densities and high fracture (fx) risk. Osteoporotic fxs account for more than 1.2 million fxs and at a cost of $20 billion yearly. Mortality from hip fxs is 25% per year. Despite this impact, many women don't get screened. One barrier might be that physicians don't order tests in pts with comorbid conditions. We examined the association of comorbid illnesses and the rate of DXA screening in an out patient setting.
METHODS: This study was a prospective cohort quality improvement project, at 12 outpatient clinic centers, to enhance adherence to osteoporosis screening guidelines in eligible or at risk pts. Female pts age 65 or older as of June 2004, were recruited from each clinic site and administered a questionnaire on osteoporosis knowledge, attitudes and beliefs, socioeconomic status and comorbid conditions. We examined the relationship of comorbid illnesses individually and as a comorbid score to the rate of osteoporosis screening.
RESULTS: We present results of 371 pt questionnaire surveys with a mean age of 74 years (age 65–100).Of 332 charts reviewed, 40% had DXA screening. Using chi-square test we found positive correlation between DXA screening and a diagnosis of cancer ($p=0.01$). We also found a positive association between DXA screening and thyroid disease ($p=0.01$). A diagnosis of diabetes mellitus (DM) had a negative association with DXA screening ($p=0.02$). No association was found between other chronic disease conditions and DXA screening. The positive association of cancer and thyroid disease was also present using logistic regression analysis OR = 2.10 (95% CI 1.08–4.02) and OR = 1.81(95% CI 1.00–3.26) respectively. The negative correlation of DM and DXA screening was also present with logistic regression analysis OR = 0.6 (95% CI 0.35–1.00).The combined comorbid score was not associated with DXA scan performance.
CONCLUSIONS: Pts with cancer and thyroid disease appear to have an increase rate of DXA screening. Physician awareness of detrimental effects of aromatase inhibitor therapy and of over-supplementation of L-thyroxin on bone mineral density, might explain these findings. Diabetic pts, on the other hand, were screened less. This phenomenon might be attributable to the association of diabetes and increased severity of illness, or physicians' perception of competing medical interests. In order to maximize osteoporosis screening further investigation of this result is warranted.

EFFECT OF PROACTIVE STANDARDIZED 12-MONTH VISITS FOR DIABETIC PATIENTS: R. Chaudhry[1]; V.L. Hunt[1]; S. Tulledge-Scheitel[1]; M. Thomas[1]; R. Cabanela[1]; A. Rahman[1]; L.A. Davis[1]; R. Stroebel[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 172837)*

BACKGROUND: The performance on both process and outcome metrics for diabetes care are important quality indicators.
METHODS: Utilizing an electronic diabetes registry, an electronic tool called PRECARES was developed to identify patients due for all of their 12-month surveillance tests (hemoglobin A1C, LDL screening, and urine microalbumin). In March and June 2006, a subset of diabetic patients who were identified by PRECARES as being due for their 12-month tests were contacted by the appointment secretaries by letter for 2 of the 4 sections of our practice as a pilot initiative. A standardized order set was developed for the secretaries to order the tests on behalf of the physician when patients called. An appointment with the physician was scheduled a day after the tests were done. The patients of the other 2 sections of the Division continued to receive the usual care which included patient or physician initiated 12-month rechecks and ordering of the tests.
RESULTS: 42.86% of the Intervention group called to schedule an appointment. Ninety-three percent of those who scheduled an appointment attended the appointment. Outcomes for the 2 groups including hemoglobin A1C and LDL check, control of hemoglobin A1C, LDL level, blood pressure reading, aspirin use and all adult preventive services were assessed 2 months after the last intervention and are displayed in the table below. The patients in the intervention group had improved performance on all the process and outcome indicators for the diabetes and for most adult preventive services. Patients and physicians have expressed satisfaction with this process. Patients appreciate receiving in-person advice regarding management with test results already available. Physicians appreciate proactive testing since they can spend time more effectively during the visit discussing results and recommendations with their patients.
CONCLUSIONS: A well planned systematic and proactive model of care for the subset of patients with diabetes who are due for their 12-month tests improves performance for all the measured quality indicators including the control of diabetes for the patients. Otherwise, this subset of diabetic patients might not get their 12-month tests on time.

Rates of Diabetes Quality Measures

	Intervention n=65	Control n=66	P-value
HbA1c last 6 mo.	49.23%	1.52%	<.0001*
HbA1c <7%	27.69%	1.52%	<.0001*
LDL last 12 mo.	52.31%	3.03%	<.0001*
LDL<100 mg/dL	35.38%	1.52%	<.0001*
BP<130/80	60.00%	40.91%	0.0289*
Aspirin	54.35%	52.22%	0.7704
Non-Smoker	84.62%	86.36%	0.7763
***statistically Significant**			

EFFECTS OF SELF-MANAGEMENT SUPPORT ON STRUCTURE, PROCESS AND OUTCOMES AMONG VULNERABLE PATIENTS WITH DIABETES: A 3-ARM RANDOMIZED TRIAL. D. Schillinger[1]; M. Handley[1]; F. Wang[1]; H. Hammer[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173605)*

BACKGROUND: Despite widespread acceptance of the benefits of self-management support (SMS) for patients with chronic disease, the evidence base in support of SMS is mixed. Few controlled studies simultaneously report on outcome variables across the range of chronic illness measures, most studies combine SMS with other interventions, no studies compare alternate forms of SMS, and few involve vulnerable populations.

METHODS: We implemented a RCT of SMS among diverse diabetes patients in a safety net system. English, Spanish and Cantonese-speaking patients with HbA1c >8.0% were randomized to (a)usual care, (b)weekly automated telephone disease management (ATDM) or (c)monthly group medical visits (GMV) as adjuncts to care. ATDM employs interactive phone technology to provide surveillance, education, and counseling. GMVs employ a collective approach to self-management support with roots in adult educational practice. The SMS programs use distinct communication methods but share common theory and objectives, including developing behavioral 'action plans'. Medication intensification was not an explicit goal of either intervention. Patients were exposed for 9 months; outcomes were measured at baseline and 1 year. We explored effects across a heirarchy of measures that correspond to structure, process, and outcomes in the Chronic Care Model. We measured effects on structure of care using the Patient Assessment of Chronic Illness Care (PACIC) instrument and processes of care using the Interpersonal Processes of Care (IPC) instrument. For behavioral outcomes, we measured self-efficacy and self management behavior; for functional outcomes, we measured number of bed days, days that diabetes interfered with daily activities, and SF-12 scores. For clinical outcomes, we measured glycemic control, blood pressure, and BMI. All analyses compared the 3 groups with respect to changes from baseline to follow-up, controlling for baseline measures.
RESULTS: We enrolled 339 subjects, with mean age 56, 55% limited English proficiency, 50% uninsured, and 54% < high school education. Mean HbA1c was 9.5%, BP 140/77, and BMI 31.5. When compared to usual care, patients in both ATDM and GMV reported improvements in PACIC (structure of care, $p < .001$), but only the ATDM arm reported improvements in IPC (processes of care, $p < .01$ vs. usual care and GMV). Patients in both arms reported improvements in behavioral outcomes ($p < .05$ vs. usual care), although ATDM patients reported more robust improvements in self-management than GMV ($p = .02$). With respect to changes in functioning, patients in ATDM reported fewer bed days per month than usual care (−1.7 days, $p = .03$) and GMV (−2.3 days, $p < .01$), less interference with daily activities than usual care (OR 0.37, $p = .02$), and better mental health than GMV and usual care (SF-12 MH 6.4 pts, $p = .03$). We observed no differences between the 3 groups in physical functioning, or HbA1c, BP, or BMI.
CONCLUSIONS: Providing tailored SMS for diverse, vulnerable patients with diabetes results in improvements in patients' experiences with chronic illness care, behavioral outcomes, and functional status. The degree to which SMS interventions enhance interpersonal processes of care may influence the extent of patient activation and functional improvements. While ATDM appears to be a more effective communication vehicle than GMV to deliver population-based SMS, in order for SMS to translate into improvements in clinical metrics it must be combined with other elements of the Chronic Care Model.

EFFICACY OF MASSAGE THERAPY FOR DECREASING PHYSICAL AND EMOTIONAL SYMPTOM DISTRESS AND IMPROVING QUALITY OF LIFE IN ADVANCED CANCER. J.S. Kutner[1]; M.C. Smith[2]; L. Corbin[3]; L. Hemphill[4]; D. Fairclough[3]. [1]University of Colorado Health Sciences Center, Denver, CO; [2]Florida Atlantic University, Boca Raton, FL; [3]University of Colorado Health Sciences Center, Aurora, CO; [4]Denver VAMC, Denver, CO. *(Tracking ID # 171857)*

BACKGROUND: This study evaluated the efficacy of massage therapy (MT) compared to "non-moving touch" (NMT) for decreasing pain, improving quality of life, and lessening physical and emotional symptom distress among persons with advanced cancer.
METHODS: Multi-site randomized clinical trial comparing MT to NMT among English-speaking adults with advanced cancer who had at least moderate pain (>= 4 on 0–10 scale) in the week prior to study enrollment. Participants received up to six 30 minute treatments over a two-week period by trained massage therapists (MT arm) or study personnel with no body or energy work training (NMT arm), following specific study treatment protocols. Outcomes were collected at baseline, at weeks 1, 2 and one week after the final treatment, and immediately prior to and following each treatment. Weekly outcome measures included pain (Brief Pain Inventory - BPI, 0–10 scale), quality of life (McGill Quality of Life Questionnaire - MQOL, 0–10 scale), and non-pain symptom distress (Condensed Memorial Assessment Scale - MSAS, 0–4 scale). The Memorial Pain Assessment Card (MPAC - pain and mood scales, 0–10 scale), was measured immediately prior to and following each treatment. Intention to treat analyses compared the two treatment arms, using a repeated measures model that accommodates incomplete data.
RESULTS: 382 patients were randomized (190 MT, 192 NMT). The average age was 65.5 years (SD 14.3). 60% were women, 91% were White, 78% were at home. The most common cancer was lung (25%), followed by breast (16%). All except 2 had known metastases; 27% had bony metastases. 58% had concomitant medical conditions. Average pain intensity at study enrollment was 4.4 (0–10 scale), with worst pain intensity of 7.8 in the prior week. There were no differences between the study groups in baseline characteristics, number of treatments received or duration of follow up. Participants received, on average, 4.1 treatment sessions. Both study groups experienced improvement in pain, quality of life and non-pain symptom distress over the course of the study, but there were no statistically significant differences between the study arms (Table). Both MT and NMT were associated with improvement in pain and mood (MPAC) measured immediately prior to and following each treatment session (MT: pain improved by 1.84 points, mood improved by 1.55 points; NMT: pain improved by 1.02 points, mood improved by 0.98 points), however, MT was superior for pain by 0.81 points ($p < 0.0001$) and for mood by 0.57 points ($p = 0.0004$).
CONCLUSIONS: MT provided greater short-term improvement in pain and mood than did simple touch, findings that were not sustained over time. Improvements in pain, non-pain symptom distress, and quality of life in both study arms may indicate that attention and touch, which is simple and inexpensive to provide, may be beneficial to persons with advanced cancer.

MT vs. NMT: No differences over study period

Measure	Change: MT	Change: NMT	p value
BPI Mean	0.31	0.33	0.88
BPI Worst	0.75	0.55	0.44
BPI Interference	0.42	0.44	0.93
MQOL Overall	0.36	0.35	0.99
MQOL Physical Well-being	0.14	0.33	0.53
MQOL Existential	0.02	0.11	0.56
MQOL Support	−0.08	0.04	0.46
MSAS Global	0.12	0.10	0.77
MSAS Physical	0.12	0.08	0.52
MSAS Psychological	0.06	0.10	0.69

ETHNIC DIFFERENCES IN THE DISCLOSURE OF HERBAL MEDICINE USE-RESULTS FROM THE 2002 NATIONAL HEALTH INTERVIEW SURVEY. D. Mehta[1]; P. Gardiner[1]; R.S. Phillips[2]; E.P. Mccarthy[2]. [1]Harvard Medical School, Boston, MA; [2]Beth Israel Deaconess Medical Center, Brookline, MA. *(Tracking ID # 171670)*

BACKGROUND: An estimated 38 million Americans have used herbal and dietary supplements (HDS) in the past year, yet national rates of disclosure to conventional heathcare providers remains unknown. Therfore, we estimated national rates of HDS disclosure and examined correlates of disclosure.
METHODS: We used data on HDS use in the previous 12 months from respondents to the 2002 Alternative Medicine supplement of the National Health Interview Survey (NHIS). We used bivariable analyses to determined the prevalence of overall HDS disclosure and to identify differences by race/ethnicity. We used multivarible logistic regression to identify independent correlates of HDS disclosure. Factors considered included race/ethnicity, age, sex, education, income, region, place of birth, insurance status, source of care, self-rated health, disease burden, prescription medication use, and use of HDS for health and well-being. In addition, we estimated disclosure rates for commonly used herbs. All analyses were performed using SAS-callable SUDAAN and were weighted to account for complex sampling design.
RESULTS: Among HDS users (n = 5,456), an estimated 32% of adults disclosed their HDS use to their conventional healthcare providers. HDS disclosure varied significantly by race/ethnicity: 17% of Asians, 22% of Hispanics, 31% of non-Hispanic Blacks, and 35% of non-Hispanic Whites ($p < 0.001$). After adjustment Asian (aOR = 0.53 [0.32, 0.87]) and Hispanic (aOR = 0.68 [0.51, 0.92]) adults remained less likely to disclose HDS use compared to non-Hispanic White adults. In addition, respondents who were male (aOR = 0.81 [0.70,0.94]), had less than a high school education (aOR = 0.63 [0.47, 0.84]), were uninsured (aOR = 0.68 [0.52, 0.89]), and had no source of usual medical care (aOR = 0.38 [0.27, 0.54]) were substantially less likely to disclose HDS use after adjustment. Individuals using prescription medications (aOR = 2.53 [2.05, 3.12]) and those who reported HDS use as important to their health and well-being (aOR = 2.08 [1.79, 2.42]) were more likely to disclose HDS use. Differences in disclosure rates were observed for commonly used herbal remedies (see table).
CONCLUSIONS: Approximately one-third of US adults disclose HDS use to their conventional healthcare provider, with substantial variation by type of herb. Ethnic minorities and persons of lower socioeconomic status are substantially less likely to disclose HDS use to their healthcare providers. The reasons for ethnic variation in rates of disclosure and whether this variation results in ethic variations in heath outcomes requires further study.

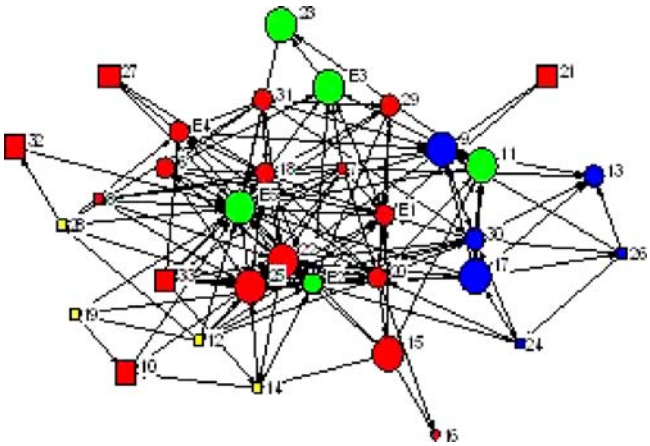
Disclosure Rates of Common Herbal Medicines

Herb	% of Herb Users	% Disclosed
Echinacea	39	34
Ginseng	23	35
Gingko	20	39
Garlic	19	39
Glucosamine	14	52

FACTORS AFFECTING INFLUENTIAL DISCUSSIONS AMONG PHYSICIANS: A SOCIAL NETWORK ANALYSIS OF A PRIMARY CARE PRACTICE. N.L. Keating[1]; J.Z. Ayanian[2]; P.D. Cleary[3]; P.V. Marsden[4]. [1]Harvard Medical School, Newton, MA; [2]Harvard University, Boston, MA; [3]Yale University, New Haven, CT; [4]Harvard University, Cambridge, MA. *(Tracking ID # 172264)*

BACKGROUND: Physicians often rely on colleagues for new information and for advice about the care of their patients, and many physicians consider colleagues their

most valued source of information. Understanding how physician networks are structured can provide insights about how social networks influence physicians' beliefs and behaviors and may point toward improved strategies for disseminating medical information and guidelines. We examined influential discussions among primary care physicians in a hospital-based academic practice.
METHODS: We surveyed all 38 primary care physicians in a hospital based academic practice about influential discussions they had with their colleagues regarding women's health issues. We applied methods of social network analysis to describe the network of discussions and examine factors predictive of physicians network position.
RESULTS: The Figure depicts the network of influential discussions among the 33 responding physicians (response rate = 87%). Arrows indicate citations from one physician to another. Five physicians (E1, E2, 22, 25, and E5) were cited more than 10 times by others as being influential regarding women's health issues. Physicians with panels of more than 80% women (large symbols) tended to be more centrally positioned in the network. Men (square symbols) and physicians serving panels with fewer than 50% women (small symbols) tended to be more peripheral. Clustering within clinics was also evident, particularly for physicians in the two clinics that operate like private practices and are staffed primarily by full-time clinicians (blue and yellow symbols). In adjusted analyses, the 5 self-described experts in women's health (E1-E5) were more likely than others to be cited as sources of influential information (odds ratio [OR] 6.81, 95% Bayesian confidence interval [CI] 2.25 to 23.81). Physicians caring for more women were also more often cited (OR 1.03, 95% CI 1.01 to 1.05 for each percentage-point increase in the proportion of women patients). Influential discussions were more frequent among physicians practicing in the same clinic within the practice than with those in other clinics (OR 5.03, 95% CI 3.10 to 8.33) and with physicians having more weekly clinical sessions (OR 1.33, 95% CI 1.15 to 1.54 per additional session).
CONCLUSIONS: In the primary care practice studied, physicians obtain information from colleagues with greater expertise and experience as well as those who are more accessible based on location and schedule. It may be possible to organize practices to promote more rapid dissemination of high-quality evidence-based medicine.



Physician Network

FACTORS ALTERING THE OPTIMAL RETURN VISIT INTERVAL FOR PATIENTS WITH SYSTOLIC HYPERTENSION. H. Vankayala[1]; A. Goel[1]; R. Quah[1]; J.M. Flack[1]. [1]Wayne State University, Detroit, MI. *(Tracking ID # 169924)*

BACKGROUND: There is no consensus on the optimal return visit interval for patients with systolic hypertension after their blood pressure is controlled. We used clinic records from an urban, hypertension clinic to understand factors associated with loss of systolic blood pressure (SBP) control once a patient's SBP was controlled.
METHODS: We reviewed charts of patients referred to the Wayne State University Hypertension Clinic for blood pressure management. We included patients whose initial SBP was above the JNC goal. Once the patients SBP reached the JNC goal, we began the study and followed their SBP until it was above the JNC goal again. We examined age, gender, race, diabetes, body-mass index (BMI), spot urine albumin: creatinine (SUAC) and estimated glomerular filatration rate (eGFR) as possible covariates. At study entry, we also measured each patient's antihypertensive regimen using a Therapeutic Intensity Score (TIS), a summation of the ratio of each antihypertensive agent at the patient's prescribed dose to the maximum recommended allowed dose. We used Cox-proportional hazards models to determine the variables associated with loss of SBP control. Each variable with a P-value of 0.2 or less in univariate analysis was included in the multivariate model. All two-way interactions were included and the final model was determined using backwards stepwise elimination.
RESULTS: We included 343 patients in our analysis. The median age at study entry was 56.6 years (interquartile range [IQR] 48.3–68.9 years) and 103 (30.0%) were male. Most patients were African-American (287 [83.7%]) and 105 (30.6%) had diabetes. At study entry, the median BMI, SUAC and eGFR were 30.9 (IQR 25.9–36.0), 12.8 (IQR 6.0–31.7) and 70.8 (IQR 52.0–84.7), respectively. The median antihypertensive TIS at study entry was 2.4 (IQR 1.4–3.4). The median time-to-failure was 84 days (IQR 49–132 days). In the univariate analyses, age, diabetes, antihypertensive TIS at study entry were significantly associated with time-to-failure. In the multivariate analysis, all three variables remained significant: age (HR 1.06, p = 0.006), diabetes (HR 1.52, p = 0.002), antihypertensive TIS at study entry (HR 4.20, p = 0.031). For the entire cohort, 25% lost SBP control at 76 days (95% CI 63–92 days). The table below lists the number of days until 25% of the patients in selected age/diabetes/antihypertensive TIS strata lost SBP control.
CONCLUSIONS: For any patient over 65 or any patient with diabetes, follow-up within two months seems prudent. Younger patients with moderate antihypertensive treatment could be followed every three months. Younger patients with minimal antihypertensive treatment could be followed at six-month intervals or longer. Further studies will be needed to replicate these results in other populations.

Time-to-loss of SBP control by age-diabetes-HTN TIS strata

Age	Diabetes	Antihypertensive TIS	Patients in stratum	Days until 25% fail (95% CI)
Under 65 years	No	1 or less	54	253 (140–363)
65 years or older	No	1 or less	16	72 (28–164)
Under 65 years	No	More than 1	120	91 (63–128)
65 years or older	No	More than 1	48	57 (41–92)
Under 65 years	Yes	More than 1	49	73 (35–69)
65 years or older	Yes	More than 1	45	55 (58–126)

FIGHTING CLINICAL INERTIA IN DIABETES MANAGEMENT: APPLICATION OF THE CHRONIC CARE MODEL IN FACULTY-RESIDENT PRACTICES. J. Kwiatt[1]; J. Hariharan[1]; I. O'Shaughnessy[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 172356)*

BACKGROUND: The rising disease burden of diabetes mellitus necessitates new approaches to healthcare delivery in the United States. This is especially crucial in academic medical centers. The 2002 Institute of Medicine reported that the current Healthcare Delivery System in the U.S. cannot care for patients with chronic illness. Inertia in both medical education and patient care needs to be overcome in order to transform outcomes. A new model of care, the Chronic Care Model, is used to improve both patient care outcomes and resident education. By applying ACGME competencies, particularly "Practice Based Learning and Improvement" and "Systems Based Practice", the model can help to improve patient outcomes and education.
METHODS: 151 patients with type II diabetes managed in 2 resident-based academic general medicine practices were selected to participate in the chronic care model system of healthcare delivery. 12 resident physicians responsible for their care were educated on the Chronic Care Model. This innovative model of care involved educating physicians about their patient panel via registry reports to identify high-risk patients and training them with patient self-management support strategies. Additionally, the residents received evidence based decision support on both outcome measures and the application of insulin therapy and oral hypoglycemic medication. Patients in the pilot panel were followed from August 2005 to present. Outcome measures such as glycosylated hemoglobin (A1C), LDL, systolic blood pressure, yearly eye exams and foot exams were tracked. Residents were surveyed on their perception of knowledge gained following the teaching sessions.
RESULTS: The residents were trained in the chronic care model in the ambulatory setting. They underwent a didactic session reviewing elements of the chronic care model and their use. Residents then applied their knowledge in the clinical setting with the pilot group patients. 100% of the residents answered "agree" or "strongly agree" in the post clinic survey stating that they gained new knowledge of the chronic care model and more comfort in instituting insulin therapy. Patients in the pilot group showed a trend towards lower A1C values after their enrollment in the model. Preliminary results showed a 9% increase in the number of patients with A1C values less than 7.0, and a 34% increase in the number of patients with an LDL < 100. Documentation of diabetic foot exams improved from 41% to 88%, and referral for retinal exams improved from 36% to 88% in this group as well.
CONCLUSIONS: The patients in the pilot group showed a trend towards better diabetes control over the one year period. Residents participating in the program reported new knowledge gained from the process. The multifaceted approach of the model focusing on changing both physician and patient approaches to healthcare delivery resulted in improved outcomes of the tracked measures. While academic internal medicine clinics face many challenges in both healthcare delivery and resident education, the Chronic Care Model can assist in improving not only patient care, but also competency based resident education.

FROM CANCER TREATMENT TO PRIMARY CARE: PREVENTIVE CARE FOR COLORECTAL CANCER SURVIVORS. C. Snyder[1]; C. Earle[2]; R. Herbert[1]; B. Neville[2]; K. Frick[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Dana-Farber Cancer Institute, Boston, MA. *(Tracking ID # 171021)*

BACKGROUND: The responsiblity of oncologists versus primary care providers (PCPs) for preventive care is unclear for cancer patients transitioning from treatment to survivorship. This study explored the types of physicians cancer survivors visit and how that relates to their receipt of preventive care.
METHODS: This was a retrospective cross-sectional study of five cohorts of cancer survivors in their first year of survivorship (defined as days 366 to 731 from diagnosis). Using the Surveillance, Epidemiology and End Results (SEER)-Medicare linked database, we assessed the mean number of visits to PCPs and oncologists and how receipt of preventive care relates to the mix of physician specialties visited. Stage 1–3 colorectal cancer survivors age 65+ diagnosed between 1997 and 2001 (n=20,068) were included in the analysis.
RESULTS: There was a trend over time of increased visits to all physician types, which was statistically significant for oncology visits ($p=.01$), borderline significant for other physician visits ($p=.06$), and not significant for PCP visits ($p=.31$). Survivors who visited both a PCP and oncologist were most likely to receive preventive care ($p<.001$).
CONCLUSIONS: Colorectal cancer survivors who were diagnosed most recently tended to have more visits to all provider types, particularly oncologists. Being seen by both PCPs and oncologists was associated with greater receipt of preventive care. Defining appropriate roles for PCPs and oncologists in the survivorship period can promote preventive care.

Mean (SD) Number and Pattern of Physician Visits for Each Diagnostic Cohort

	1997 Diagnostic Cohort (n=2602)	1998 Diagnostic Cohort (n=2582)	1999 Diagnostic Cohort (n=2641)	2000 Diagnostic Cohort (n=5963)	2001 Diagnostic Cohort (n=6280)	P-Value for Change over Time
Primary Care Providers	4.4 (4.5)	4.7 (5.3)	4.6 (4.7)	4.6 (4.7)	4.7 (4.7)	.31
Oncology Specialists	1.1 (2.2)	1.2 (2.1)	1.3 (2.2)	1.4 (2.4)	1.4 (3.1)	.01
Other Physicians	3.7 (5.2)	3.5 (4.6)	3.7 (4.4)	4.1 (5.0)	4.2 (5.3)	.06

Percentage of Patients Receiving Preventive Care by Physician Mix Seen: 1997–2001 Diagnostic Cohorts Combined

	Both PCP and Oncologist (n=7016)	PCP Only (n=9198)	Oncologist Only (n=1460)	Neither PCP Nor Oncologist (n=2394)	Chi-Square P-Value
Influenza Vaccination	58.2	52.5	42.8	28.1	<.001
Cholesterol Screening	36.8	34.6	27.5	18.6	<.001
Mammograms (Females Only)	50.5	33.9	37.0	14.7	<.001
Cervical Cancer Screening (Females Only)	22.6	16.3	10.8	5.6	<.001
Bone Densitometry (Females Only)	13.7	11.3	6.3	3.8	<.001

GENDER DIFFERENCES IN PAIN-SPECIFIC DISABILITY, BELIEFS AND BEHAVIOR AMONG PRIMARY CARE PATIENTS WITH CHRONIC PAIN. D.L. Stubbs[1]; E.E. Krebs[2]; M.J. Bair[3]; T. Damush[4]; J. Wu[5]; J. Sutherland[4]; K. Kroenke[2]. [1]Indiana University System, Indianapolis, IN; [2]Indiana University Purdue University Indianapolis, Indianapolis, IN; [3]Indiana University School of Medicine, Indianapolis, IN; [4]Roudebush VA HSR&D, Indianapolis, IN; [5]Regenstrief Institute, Inc., Indianapolis, IN. *(Tracking ID # 173557)*

BACKGROUND: Differences between men and women in reporting of pain are well established. Most studies show that women report more severe pain, demonstrate lower experimental pain threshold and tolerance, have more musculoskeletal pain symptoms, and seek clinical care for pain more often than men. The purpose of this study is to examine how men and women with chronic musculoskeletal pain differ in pain-related disability, quality of life, beliefs, self-efficacy, and self-management behaviors.
METHODS: Secondary data from all patients enrolled to date in the Stepped Care for Affective disorders and Musculoskeletal Pain (SCAMP) study, a randomized clinical trial nested within a prospective cohort study. SCAMP participants were primary care clinic patients who were identified through computerized medical records and clinic screening. Eligible patients were those with musculoskeletal pain of the low back, hip or knee of greater than 3 months duration and of moderate severity, defined by a Brief Pain Inventory score of 5 or greater. At time of enrollment, patients completed a questionnaire that included measures of pain intensity (Brief Pain Inventory), disability (Roland-Morris, Graded Chronic Pain Scale, number of disability days due to pain), overall quality of life (SF-36), pain beliefs (Survey of Pain Attitudes), self-efficacy (Arthritis Self-Efficacy Scale change), and pain self-management behaviors. T-tests and Chi-square tests were used for comparisons.
RESULTS: Of the 440 participants enrolled so far, 197 are men and 243 are women. Of these, 56% are white and 40% are black with 24% employed, 9% unemployed, 32% unable to work, and 34% retired. As expected women reported greater pain severity than men (6.2 vs. 5.2 on 0–10 scale: $p<0.001$). Women also had greater disability than men with higher scores on the Roland-Morris Disability Questionnaire ($p<0.001$) and Graded Chronic Pain Scale ($p<0.001$) and more pain-related disability days in the past 4 weeks (12.7 vs. 9.2 days). Additionally, women rated their quality of life worse than men on the SF-36 general health ($p<0.001$), social functioning ($p=0.02$) and vitality ($p=0.001$) domains. Survey of Pain Attitudes scores showed higher pain-related emotional impact and greater solicitude (needing sympathy) for women than men. However, no gender differences were found in beliefs about the ability to control pain ($p=0.165$) or belief in medical cure ($p=0.884$). Women had slightly lower self-efficacy scores ($p=0.007$). In looking at self-management behaviors (exercise, cognitive management and mental relaxation), the only significant finding was that women reported exercising 68 minutes per week less than men ($p=0.003$). There were no differences in the use of pain medications or hours of relief from medications.
CONCLUSIONS: Women reported more disability, worse quality of life, and had less favorable scores on some measures of pain-related beliefs and self-efficacy than men. Further exploration is needed to determine the impact of these findings on treatment outcomes for men and women.

GLUCOSE CONTROL AMONG VETERANS WITH POORLY CONTROLLED DIABETES: A GUIDE FOR POTENTIAL INTERVENTIONS. H.E. Shacter[1]; N. Iqbal[2]; E. Akhubue[3]; J.A. Long[1]. [1]Philadelphia Veterans Affairs Medical Center, CHERP, Philadelphia, PA; [2]Philadelphia Veterans Affairs Medical Center, Philadelphia, PA; [3]University of Pennsylvania, Philadelphia, PA. *(Tracking ID # 173085)*

BACKGROUND: Diabetes mellitus (DM) is epidemic in the United States and is a leading cause of morbidity and mortality. Complications from DM can be greatly reduced with proper glucose control. This study explores factors that lead to improved glucose control as measured by glycosylated hemoglobin (HbA1c.) It was conceived as a means to lay the foundation for future interventions to reduce racial disparities in glucose control.
METHODS: We collected baseline HbA1c levels from African American (AA) and white veterans at the Philadelphia Veterans Affairs Medical Center (PVAMC) with either poorly controlled DM (HbA1c > 8%), or in a high risk DM clinic or telemed program. At the time of enrollment, all participants were interviewed using a survey instrument designed to investigate factors related to DM control, including healthcare, knowledge, social support, self efficacy, resiliency, trust, general health status, and basic demographic information. A follow-up HbA1c was documented for each patient 11–13 months after the baseline value. We used bivariate and multivariate analyses to evaluate the change in HbA1c (baseline HbA1c - follow-up HbA1c) such that higher values indicate greater improvement.
RESULTS: We enrolled 169 participants and at present have follow-up data on 83. 57% were AA, 58% had a high school education or less, 47% had an annual income of less than 25,000, and 28% had no outside insurance. In multivariate analyses adjusting for baseline HbA1c, three factors were associated with improvement in HbA1c: not postponing care ($\beta=0.73$, $p=0.01$); taking action when treated unfairly ($\beta=0.94$, $p=0.01$); and having lived at the current address for less than one year ($\beta=0.89$, $p=0.02$). Being enrolled in a high-risk diabetes clinic also predicted improvement in HbA1c ($\beta=0.82$, $p=0.04$). Neither race, income, age, duration of disease, nor validated scales related to DM specific social support, self care, or self efficacy were associated with a change in HbA1c.
CONCLUSIONS: Not postponing care and taking action when treated unfairly were positively associated with improvements in HbA1c, suggesting that self-efficacy is important for effective glucose control. However, DM specific self-efficacy was not associated with change in HbA1c, implying that among people with poorly controlled DM, general self-efficacy may be more important for glucose control than disease specific self-efficacy. Further, having lived in one's current residence for less than one year predicted improved control, suggesting that, in this population, social support may not be strongly associated with glucose control. This is supported by the lack of an association between validated DM specific social support scales and changes in HbA1c. Finally, enrollment in a high-risk diabetes clinic was related to improved glucose control, showing the success of targeted multi-disciplinary care. The results of this study suggest that future interventions should include targeted multi-disciplinary care and aim to improve general, rather than disease specific, self-efficacy.

HEALTHCARE DELIVERY FOR SICKLE CELL DISEASE: CLINICAL AND PATIENT-REPORTED MEASURES OF QUALITY. M.C. Beach[1]; S. Lanzkron[2]; L. Lattimer[1]; N. Ratanawongsa[1]; C. Haywood[1]; P. Hill[1]; S.M. Bediako[3]; P.S. Duggan[1]; N.R. Powe[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Johns Hopkins University School of Medicine, Baltimore, MD; [3]University of Maryland Baltimore County, Baltimore, MD. *(Tracking ID # 173643)*

BACKGROUND: Patients with sickle cell disease (SCD) have reported problems receiving high quality care when seeking treatment for vaso-occlusive crisis (VOC), but no validated measures exist to evaluate how well pain during VOC is managed. The purpose of this study was to develop and test the reliability and validity of quality of care measures for Emergency Department (ED) management of VOC.

METHODS: We conducted a brief cohort study of adults with VOC seen in the ED. We used clinical practice guidelines to develop measures that could be abstracted from the medical record and reported by patients. Chart abstraction measures included administration of (1) IV fluids, (2) IV narcotics if pain on the visual analog scale (VAS) was $>=7$, (3) non-narcotics, (4) hourly reassessment if VAS $>=7$ (and if not hourly, whether the longest interval between observations was >2 hours), and (5) modification of ineffective treatment. Patients were asked if medications were (1) given as soon as needed, (2) changed if not working, and if (3) alternative strategies (besides narcotics) were offered. We assessed inter-rater and test-retest reliability of chart-abstracted measures and used logistic regression to assess predictive validity by determining the association between all measures and (a) pain improvement at 8 hours and (b) admission to the hospital (vs. discharge home).

RESULTS: In 54 ED visits by 32 patients, most patients reported improvement in pain at 8 hours (56%) and most were admitted to the hospital (72%). Almost all patients received IV fluids (96%) and narcotics (93%), 60% received non-narcotics, 20% were reassessed hourly (of those who were not, 79% had an interval >2 hours without reassessment), and 50% had ineffective treatments modified. Less than half reported (most or all of the time) that medications were given as soon as needed (18%), were changed if not working (44%), and that alternative strategies were offered (17%). Chart-abstracted measures had intermediate to excellent inter-rater (overall % agreement range 0.70–1.0, kappa range 0.44–1.0) and test-retest reliability (overall % agreement range 0.77–1.0, kappa range 0.50–1.0). Frequent reassessment had excellent predictive validity: patients who had intervals of >2 hours between reassessments were more likely to be admitted (OR 10.2, 95%CI 1.5–69.8, $p=0.02$) and patients who were reassessed hourly had greater improvement in pain (OR 7.9, 95%CI 0.9–72.2, $p=0.07$). Those who had treatments modified were slightly less likely to be admitted (OR 0.11, 95%CI 0.01–1.6, $p=0.10$). Administration of IV fluids, narcotics, and non-narcotics had no predictive validity. No patient-reported measures were associated with improvement in pain or hospital admission. All associations were similar for patients with and without frequent painful crises, and remained unchanged after adjustment for potentially-confounding patient characteristics.

CONCLUSIONS: Our study provides preliminary evidence that measures of pain management quality have good reliability and that frequent reassessment and possibly modification of ineffective treatments have predictive validity. However, it was difficult to establish predictive validity of patient experience measures. High quality of care was not uniformly attained in this sample of SCD patients with VOC. Larger studies are needed to corroborate these findings, so that providers can monitor and improve the quality of care for patients with SCD.

HEART FAILURE PATIENTS' DECISION MAKING PREFERENCES AND PERCEIVED INVOLVEMENT IN CARDIAC CARE. K.L. Rodriguez[1]; C.J. Appelt[1]; G.E. Switzer[2]; A.F. Sonel[1]; R.M. Arnold[2]. [1]VA Pittsburgh Healthcare System, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172306)*

BACKGROUND: Heart failure, which is increasing in prevalence and incidence, produces considerable morbidity and mortality. This study explored heart failure patients' preferred levels of involvement in medical decision making (i.e., role preference). The interrelationships among patients' preferred role in treatment decisions, perceived involvement in the patient-provider clinic interaction, and patients' sociodemographic characteristics also were examined.

METHODS: We conducted a cross-sectional telephone survey of adult heart failure patients who were being treated by a Veterans Affairs primary care and/or cardiology provider. Patients' preferred role in treatment decisions was assessed using the Control Preferences Scale and perceptions about involvement during their most recent clinic visit were measured using the Perceived Involvement in Care Scale. Descriptive and correlational analyses were conducted.

RESULTS: The 87 participants were mostly elderly (mean age, 70.4 years; range, 45–88), male (94 percent), white (86 percent), had New York Heart Association (NYHA) Class II disease (55 percent), and varied in B-type natriuretic peptide (BNP) levels (mean, 580.9 pg/mL; standard deviation, 788.6 pg/mL). Although 32 percent preferred to share decision making with their provider, most participants (47 percent) preferred roles that were less active. Less active role preferences were associated with greater patient age ($r=.279$; $p<.01$) and lower levels of education ($r=-.308$; $p<.01$). Higher levels of information exchange during the most recent clinic visit ($r=-.357$; $p=.001$) and greater involvement in decision making ($r=-.352$; $p=.001$) were both associated with preferences for less provider involvement in decisions.

CONCLUSIONS: Results suggest that older patients may prefer to play a less active decision-making role whereas patients with more education may prefer more collaborative involvement. Further, heart failure patients' preferences were associated with their perceptions of what happened during their last clinical visit. These findings suggest that while heart failure patients' preferences for decision making are varied, these preferences may be consistent with patients' perceptions of their interactions with cardiac care providers regarding levels of information exchange and their roles in decision making.

HOW DOES RECALL TIMEFRAME AFFECT PAIN SCREENING IN ROUTINE OUTPATIENT CARE? K. Lorenz[1]; C. Sherbourne[2]; A. Cohen[3]; E. Hagenmaier[4]; K. Kroenke[5]; L.V. Rubenstein[4]; B. Simon[6]; A. Lanto[7]; S. Asch[8]. [1]Veterans Administration Greater Los Angeles Healthcare System, Los Angeles, CA; [2]RAND Health, Santa Monica, CA; [3]Veterans Administration Greater Los Angeles, Los Angeles, CA; [4]University of California, Los Angeles, Los Angeles, CA; [5]Indiana University Purdue University Indianapolis, Indianapolis, IN; [6]VA Greater Los Angeles, Los Angeles, CA; [7]VA Greater Los Angeles HSR&D Center of Excellence, Sepulveda, CA; [8]Veterans Administration Greater West Los Angeles Healthcare System, Los Angeles, CA. *(Tracking ID # 169879)*

BACKGROUND: Routine pain screening (e.g., 'the 5th vital sign') is in widespread use, and limited evidence suggests that its implementation has not changed care. Because typical screening focuses on pain 'now', we examined the implications of 'now' vs. a longer timeframe in routine outpatient care. We compared these approaches and patient characteristics that might affect pain measure performance.

METHODS: We surveyed randomly sampled patients at 2 hospital and 6 community-based primary care, oncology, and cardiology clinics. After visits, patients stratified to select equal proportions with high and low health status (using SF-1) rated pain on single 0–10 items 'now'(e.g., '5th vital sign') and 'the last week'(BPI). We determined sensitivity and specificity of pain "now" by identifying discordance between presence or absence of moderate (4) or severe (7) pain using 'now' as the time frame compared to one week as the time frame. We evaluated associations between patient demographic, functional-prognostic, and health status characteristics and discordance using logistic regression.

RESULTS: Among 248 patients (62 years average age, 48% nonwhite, 37% with college or graduate degree, 37% PHQ2 >3, 4% mild cognitive impairment, 5% with bathing dependence, 47% shopping dependence, 50% difficulty walking several blocks or pushing large objects), 42% reported moderate or severe pain 'now' and 56% had pain on average in 'the last week'. Ratings were discordant in 53 cases (21%). Moderate to severe pain 'now' was rarely mild in 'the last week' (9 false positives, 4%), but mild pain 'now' was more often moderate or severe in 'the last week' (44 false negatives, 18%). Associations with any or false negative discordant ratings included African-American race (OR 2.955, $p=0.11$, 95% CI 1.282–6.810) and moderate prognostic risk (OR 3.475, $p=0.005$, 95% CI 1.445–8.356).

CONCLUSIONS: Pain 'now' is a highly specific, but insensitive signal of moderate to severe pain in the last week. Clinicians relying on the pain 'now' measure may miss or underestimate clinically significant pain, particularly among African American or those at higher risk of death. Increasing the recall timeframe should be considered to improve routine outpatient pain detection (e.g., 'the 5th vital sign').

HOW PREPARED ARE GENERALISTS TO ASSUME PRIMARY CARE FOR YOUNG ADULTS WITH CHILDHOOD-ONSET CHRONIC ILLNESSES? M.J. Okumura[1]; M. Heisler[2]; M.M. Davis[2]; M. Cabana[1]; E.A. Kerr[2]. [1]University of California, San Francisco, San Francisco, CA; [2]University of Michigan, Ann Arbor, MI. *(Tracking ID # 173068)*

BACKGROUND: The number of adults surviving severe childhood-onset chronic conditions has increased substantially because of clinical advances, but little is known about how prepared general internists feel to assume primary care for this population, compared to general pediatricians who traditionally have cared for these patients. Therefore we compared the comfort level general internists and general pediatricians report in managing treatment for these young adults. We also examined what physician and practice characteristics are associated with higher degrees of treatment comfort.

METHODS: We conducted a national, mailed survey of a random sample of general internists and pediatricians (total $N=3,000$) to assess level of comfort for treating young adult patients with sickle cell disease (SCD), cystic fibrosis (CF) and complex congenital heart disease (CCH). We assessed comfort treating each of these three conditions through three separate condition-specific questions asking "I am/would be comfortable being the primary care provider for young adult patients (17–25 years of age) with these chronic conditions:" Response categories ranged from 1–6 with 1 being very uncomfortable and 6 being most comfortable. We then dichotomized comfort to those being very comfortable and comfortable in treating and versus those who were not. We also assessed the association between treatment comfort and several self-reported physician and practice characteristics (disease familiarity, training, office resources, and subspecialty support) using multivariate lostistic regression.

RESULTS: Overall response rate to date is 51%. The proportion of general internists that were comfortable or very comfortable being the primary care provider for patients with CF and CCH was significantly lower than the pediatricians (16% vs. 39%, $p < .001$; 16% vs. 43%, $p < .001$), but there was no difference between the two fields when it came to treating SSD (33% vs. 35%). In multivariate analysis, greater treatment comfort for CF among both pediatricians and internists was associated with greater practice exposure to CF patients, but not with exposure in residency, resources, affiliation to a disease center or access to a specialist.
CONCLUSIONS: General internists are less likely than their general pediatrician colleagues to be comfortable treating young adults with childhood-onset chronic conditions. Greater exposure to these patients in practice, but not residency, was independently associated with greater treatment comfort. With the rapid growth of adults who have survived serious childhood-onset conditions, it is critical that we understand current attitudes toward and determinants of internists' comfort treating these patients and adopt necessary measures to better prepare internists to provide primary care for these patients.

IDENTIFYING AND IMPROVING CARE FOR PATIENTS AT HIGH RISK OF FREQUENT HOSPITALIZATION. M. Raven[1]; J. Billings[1]; M.N. Gourevitch[1]; E.D. Manheimer[1]. [1]New York University, New York, NY. *(Tracking ID # 172737)*

BACKGROUND: A logistic regression algorithm developed by Billings identifies patients, at the time of hospital admission, who are at high risk for readmission in the following 12 months. Claims analysis can provide valuable information about these patients' characteristics (prior use patterns, presence of chronic/multiple chronic disease, etc). However, more in-depth information is needed regarding underlying precipitants of frequent admission rates that might inform interventions to reduce or prevent future hospitalizations. In this multi-method study we sought to describe the personal and social context of these high-risk patients to define key elements requiring intervention.
METHODS: We obtained inpatient, Emergency Department, and clinic visit data for 36,457 patients with a visit to Bellevue Hospital from 2001 to 2006. These computerized records were analyzed to identify the frequency of and intervals between prior hospital and Emergency Department use, primary and specialty care use patterns, history of chronic medical conditions, types of specialists consulted, and other information. We developed a logistic regression algorithm that created a risk score of 1–100 for each patient, with patients with higher risk scores having higher predicted probability of future admissions. For admitted patients with risk scores of 50 or greater, an interview was conducted with the patient, his or her in-hospital providers, and where available, family, prior to discharge to obtain information on the patient's usual source of care, mental health and substance use history, medical health, social circumstances, and other factors that might have contributed to the current admission. Our study population consisted of all English or Spanish-speaking fee-for-service Medicaid patients aged 18–64 with a prior visit to Bellevue between January 1, 2001 and June 30, 2006 admitted to Bellevue from August 7-October 13, 2006. Patients with HIV infection, patients unable to communicate, and institutionalized patients were excluded.
RESULTS: Of 36,457 adult fee-for-service Medicaid patients seen at Bellevue over the previous 5 years, 2,618, or 7.18 percent, had an algorithm-based risk score of 50 or greater. 68 percent of interviewed patients had at least one chronic medical condition, and approximately half were admitted for substance use services or medical conditions related to chronic substance use. The majority lived alone, and 42 percent reported lacking adequate social support to cope with their conditions. 40 percent cited the ED as their usual source of care, and 16 percent had no usual source of care. 34 percent were homeless, another 24 percent were precariously housed with family or friends, and 50 percent had considered themselves homeless in the previous 2 years.
CONCLUSIONS: Social isolation, substance use, mental health, and housing issues were prevalent in our study population and cited by patients and their caregivers as contributing substantially to their hospital admissions. These data will inform design of a multi-dimensional intervention for similar high-risk patients at our hospital with the goal of improving the quality of their out-of-hospital care and reducing their rates of hospital readmission.

ILLICIT DRUG USE AND PAIN AMONG HIV-INFECTED PATIENTS. J.S. Josephs[1]; P. Lawrence[1]; P.T. Korthuis[2]; K.A. Gebo[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Oregon Health & Science University, Portland, OR. *(Tracking ID # 172764)*

BACKGROUND: Illicit drug use is common among HIV-infected patients. Illicit drug use can worsen adherence to HAART, increase the risk of comorbidities including hepatitis viruses, and be associated with chronic pain. We evaluated the prevalence of illicit drug use, hypothesizing that drug use would vary with self-reported pain and sociodemodemographic factors.
METHODS: During 2003, 951 patients participated in face-to-face interviews at 14 HIV primary care sites in the U.S. that are part of the HIV Research Network. Patients were questioned about use of illicit substances, including, marijuana, cocaine, heroin, sedatives, analgesics, amphetamines, LSD, and inhalants. Illicit drug use was defined as current (any drug use within 6 months), former ((any history of non-current drug use), and never (no use). Pain questions were taken from the MOS Short Form 36 and transformed onto a zero to one hundred scale. From that scale answers were divided into quartiles. Logistic regression was used to identify factors associated with current illicit drug use compared to never users.
RESULTS: The sample was 68% male, 52% Black, 14% Hispanic, median age = 46 years (range 20–85), HIV risk factors were 34% MSM 30% heterosexual, 16% IDU. 69% were on HAART. 33% of patients were currently using illicit drugs and 34% were former users. Of current users, 80% of patients used marijuana, 49% cocaine, 29% sedatives, 26% amphetamines, 26% analgesics, 23% hallucinogens, 21% used heroin, and 19% inhalants. In multivariate analysis factors related to current illicit substance use, compared to never users, were being male (AOR 2.14 [1.41–3.24]), younger than age 45 (AOR 2.22 [1.54–3.20]) moderate drinkers compared to none (AOR 1.93 [1.29–2.89]), hazardous or binge drinkers(AOR 3.38 [1.82–6.25]), the third quartile of pain (AOR 1.73 [1.02–2.91]), and the fourth quartile of pain (AOR 2.58 [1.55–4.30]). Hispanics were less likely than whites or Blacks to use illicit drugs. (AOR 0.56 [0.30–1.03]). Factors not associated with drug use included insurance, education, employment, and the number of visits to HIV care.
CONCLUSIONS: Illicit drug use remains common. HIV-infected patients, particularly those reporting pain, should be regularly screened for illicit drug use and referred for substance abuse treatment.

IMPACT OF HOME-BASED PRIMARY CARE ON HOSPITALIZATIONS AND SKILLED NURSING FACILITY ADMISSIONS. K. Wang[1]; A. Wajnberg[1]; R. Barreras[2]; M. Aniff[1]; H.V. Kunins[2]. [1]Montefiore Medical Center, Bronx, NY; [2]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 172882)*

BACKGROUND: Delivering home-based medical care to the elderly and chronically ill is an increasingly popular strategy to provide primary care to the homebound. Although home-based primary care is expected to decrease hospitalizations and skilled nursing facility (SNF) placements, few studies have assessed these outcomes. We performed a retrospective analysis of the impact of the Bronx-based House Calls Program (HCP) on rates of hospitalization and SNF placement.
METHODS: We performed a retrospective chart review of every managed care patient enrolled in the HCP between its inception in October 2004 and August 2006. The structured chart review instrument captured enrollees' demographics, medical diagnoses, baseline functional status using the Activities of Daily Living (ADL) scale (least functional defined as a score < 5), and the presence of a caregiver. Electronically linked billing data from the managed care organization captured all hospitalizations and SNF placements. We examined the number of hospitalizations and occurrence of SNF placements for each participant during the time when they were enrolled in HCP and during an equivalent amount of time prior to HCP enrollment. The post-HCP enrollment time period was calculated from each patient's date of enrollment to the date of data analysis. The pre-HCP period was calculated using an equivalent number of days dating back from their HCP enrollment date. All participants with 30 days or more of HCP enrollment were included in the analysis. Median number of hospitalizations and whether participants had SNF placements before and after HCP enrollment were compared using the Wilcoxon Signed Ranks test and the McNemar test, respectively.
RESULTS: In our sample of 179 patients, 125 (70%) were female, 87 (49%) were black, 46 (26%) were white and 21 (12%) were Hispanic. The mean age was 79 (range 39–100). The enrollment period ranged from 32 to 368 days (mean 192 days). The most common diagnoses were functional decline (121, 68%), arthritis (99, 55%), and diabetes (78, 44%). Forty-six patients (26%) had an ADL score < 5, 54 (30%) lived alone and 77 (43%) had no home heath services at time of enrollment. Seventy-six patients (42%) had fewer hospitalizations following HCP enrollment. The median number of hospitalizations per person decreased from 1 to 0 ($p = 0.001$). Sixty-three patients (35%) had a SNF placement prior to enrollment compared to 33 patients (18%) after enrollment in HCP ($p = 0.001$).
CONCLUSIONS: Our retrospective observational analysis of the Bronx-based House Calls Program suggests that medical care delivered in the home may decrease rates of hospitalization and SNF placement. Randomized trials are needed to confirm that home-based care can decrease hospitalization and SNF placements. Future research is also needed to evaluate the impact of the program on quality of care and cost.

IMPROVEMENTS IN SEXUAL SATISFACTION AFTER BARIATRIC SURGERY. D.M. Bravata[1]; J. Rose[2]; N. Kimbrough[2]; P. Cirangle[2]; G. Jossart[2]. [1]Stanford University, Stanford, CA; [2]California Pacific Medical Center (CPMC), San Francisco, CA. *(Tracking ID # 172648)*

BACKGROUND: Severe obesity has been associated with reduced quality of life. The effects of bariatric surgery on health-related quality of life have not been well characterized-especially quality of life associated with sexual satisfaction. The purpose

of this study is to evaluate the demographic and clinical factors associated with improvements in sexual satisfaction after bariatric surgery.
METHODS: We prospectively evaluated the preoperative and 6-month postoperative responses of a cohort of bariatric surgery recipients with the following instruments: the validated question "I am satisfied with my sex life," the International Physical Activity Questionnaire (IPAQ), the Epworth sleepiness scale (ESS), an alcohol use inventory, and two validated depression questions asking about symptoms during the past month ("Have you been bothered by feeling down, depressed, or hopeless?" and "Have you been bothered by little interest or pleasure in doing things?" We sought demographic, clinical, and quality of life characteristics associated with changes in sexual satisfaction after bariatric surgery using logistic regression.
RESULTS: 30 patients received either a vertical gastrectomy (77%) or Roux-enY gastric bypass (23%). Their mean preoperative age was 46.9 years (SD 10.7 years), 67% were women, their mean baseline BMI was 46.9 kg/m2 (SD 10.7 kg/m2), mean baseline IPAQ was 1116 (SD 1747), and mean baseline ESS was 7.8 (SD 4.6). Preoperatively, 20 patients (67%) reported consuming alcohol, 8 patients (27%) reported being satisfied with their sex lives, 12 patients (40%) reported feeling down, and 12 patients (40%) reported little interest or pleasure. At 6-months, patients experienced significant improvements in nearly all parameters evaluated including: weight loss (mean decline in BMI was 13.6 kg/m2, SD 4.9 kg/m2, $p < 0.0001$), increased physical activity (change in IPAQ was 1153, SD 2730, $p = 0.03$), and reduced daytime sleepiness (change in ESS was 2.8, SD 3.7, $p < 0.0001$). Postoperatively, fewer patients reported consuming alcohol (13 patients (43%), $p = 0.017$), little interest or pleasure (3 patients (10%), $p = 0.005$), or feeling down (8 patients (27%), $p = 0.26$). Postoperatively, significantly more patients reported being satisfied with their sex lives (18 patients (60%), $p = 0.005$). None of the demographic, clinical, or quality of life factors was significantly associated with improvements in sexual satisfaction.
CONCLUSIONS: Bariatric surgery is associated with dramatic weight loss and improvements physical activity, sleep, and quality of life parameters including sexual satisfaction. The specific predictors of improvements in sexual satisfaction among bariatric patients remain unknown.

IMPROVING DIABETIC FOOT SCREENING RATES IN AN ACADEMIC PRIMARY CARE CLINIC. S. Hata[1]; C.L. Roumie[1]; W.M. Gregg[1]; J. Scott[1]; K. Hall[1]; R. Follett[1]; P. Johnston[1]; C. Brown[1]; G.W. Garriss[1]. [1]Vanderbilt University, Nashville, TN. *(Tracking ID # 173481)*

BACKGROUND: The diabetic foot exam (DFE) is an important, recommended component of preventive care for patients with diabetes. Current recommendations are that the DFE should be performed annually for every patient with diabetes. However, the rate yearly DFE is variable among primary care providers. Our objectives were to measure our rate of DFE performance on patients with diabetes and to use quality improvement interventions to improve compliance with DFE performance and documentation.
METHODS: Patients were eligible for inclusion if they received primary care in our academic-affiliated primary care practice site and had a diagnosis of diabetes. We performed a chart review to measure our baseline rate of DFE. Based on criteria used by the American Board of Internal Medicine's Diabetes Practice Improvement Module, a complete DFE had to include four key elements: a visual inspection, a pulse exam, some test of sensation, and, specifically, a monofilament exam. A team of persons interested in improving chronic disease care, including primary care physicians, informatics experts, a pharmacist and nurses, used a series of Plan-Do-Study-Act cycles to improve the rate of DFE. We tested patient education posters, electronic medical record (EMR) reminders to prompt DFE, and a "team approach", which utilized patient care technicians, nurses, and physicians to accomplish the DFE. The outcome of interest was the appropriate documentation of the four-component DFE. The effects of each change were tracked using a run-chart method for a twelve-month intervention period.
RESULTS: We identified 337 patients who met the initial inclusion criteria. Our chart review revealed that our baseline rate of yearly four-component DFE was 17%. By the end of the twelve-month intervention period, the number of patient with diabetes who were cared for at our site had increased to 387. After implementation of the patient education posters the proportion of patients with a documented DFE increased minimally. In the first month that the EMR reminder was implemented, this intervention accounted for over half of the newly DFE. Use of the team approach initially yielded an additional 29% improvement in DFE completions and successfully overcame several identified barriers. The team DFE proved to be a very sustainable intervention and eventually became the primary means of DFE. In one year, the cumulative rate of DFE completion and documentation increased from 17% to 82%. Barriers that were identified when implementing these cycles of change included: the time constraints of the clinic visit, supply of monofilaments, and provider acceptance of their need to improve rates of DFE in their personal practice.
CONCLUSIONS: Our data demonstrate that applying rapid cycle tests of change and use of a team approach to deliver health care can improve the rates of diabetic foot exams. The long term impact of this is yet to be determined. The application of these methods, specifically, use of the team approach, for other chronic conditions, such as coronary artery disease or chronic lung disease, may provide future areas for research.

IMPROVING MEASUREMENT OF HEALTH CARE QUALITY BY IDENTIFYING PATIENTS UNLIKELY TO BENEFIT FROM CLINICAL GUIDELINES. R. Braithwaite[1]; J. Concato[1]; M.S. Roberts[2]; A.C. Justice[1]. [1]Yale University, West Haven, CT; [2]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172799)*

BACKGROUND: Health care quality is increasingly measured by providers' adherence with evidence-based clinical guidelines, yet a particular guideline may not benefit every patient. There are no systematic and objective methods to identify patients unlikely to benefit from clinical guidelines.
METHODS: We identify a subgroup of comorbid patients for which a guideline is unlikely to offer benefit using our previously reported payoff time method (the minimum elapsed time until the benefits of a guideline exceed its harms). We build upon our previous work by applying the method to new comorbid populations and by calculating payoff times from primary data sources rather than by inferring them from the decisions of expert panels. We investigate the appropriateness of a colorectal cancer screening guideline (colonoscopy once every 10 years) for two comorbid patient groups (50-year-old men with HIV, and 60-year-old women with congestive heart failure). We base colorectal cancer incidence data on SEER, and colonoscopy efficacy and risk on the primary data sources used by the United States Preventive Services Task Force. We based life expectancies on published validated models.
RESULTS: We estimated that colorectal cancer screening payoff times for 50-year-old men with HIV varied from 1.9 years to 5.0 years, and colorectal cancer screening payoff times for 60-year-old women with congestive heart failure varied from 0.7 years to 2.9 years. Because the payoff times for 50-year-old men with HIV were lower than their median life expectancies (10.2 years to 22.3 years), colorectal cancer screening may be beneficial for these patients. However, because payoff times for 60-year-old women with congestive heart failure were sometimes greater than their life expectancies (0.6 years to >5 years), colorectal cancer screening is likely to be harmful for some of these patients.
CONCLUSIONS: Use of a payoff time calculation may be a feasible strategy to identify patients who are unlikely to benefit from a particular clinical guideline. If such patients are excluded from measurements of guideline adherence, those measurements may offer a more accurate measurement of health care quality.

INFLUENCE OF PATIENT, PHYSICIAN AND SYSTEM FACTORS ON DURATION OF PRIMARY CARE VISITS FOR DEPRESSION: A RANDOMIZED CONTROLLED TRIAL USING STANDARDIZED PATIENTS. E.M. Geraghty[1]; R.L. Kravitz[1]; P. Franks[1]. [1]University of California, Davis, Sacramento, CA. *(Tracking ID # 172642)*

BACKGROUND: Previous research has shown wide variation in primary care visit duration even within similar health care settings. However, the relative contribution of patient, physician, and organizational characteristics to visit length remains uncertain. One problem is that it has been difficult to remove the effects of patient mix. We sought to elucidate the physician, practice setting, and contextual factors that affect visit length by controlling for patient mix through the use of standardized patients (SP) presenting with depressive symptoms and a musculoskeletal complaint. We also examined whether suicidal inquiry (a process-based measure of quality of care for depression) is associated with longer visits, and we explored the relationships among satisfaction, visit length and suicidal inquiry.
METHODS: Our data comes from a factorial experiment in which 152 primary care physicians in 3 cities (Sacramento CA, San Francisco CA and Rochester NY) completed 298 SP visits; complete data were available for 292 visits. SP roles were experimentally varied by condition (low back pain with symptoms of adjustment disorder or carpal tunnel syndrome with symptoms of major depression) and whether the SP made an explicit request for an antidepressant. Visit length was determined from surreptitiously obtained visit audiorecordings. Other key measures were derived from physician and SP report. Random effects regression analyses (accounting for the 2 visits to each physician) were performed for the multivariable models.
RESULTS: Mean visit length for 292 encounters was 24.8 minutes. Controlling for SP role and request type, there was significant physician variation in the amount of time spent with patients (range 5.8 to 81.5 min, $rho = 0.56$ [the physician intraclass correlation, a measure of the consistency of physician visit length]). Factors significantly associated with increased visit time were: physician age greater than 50 years (17% longer visits), physicians who had personal or vicarious experience with depression (11% longer) and physicians practicing in San Francisco (20% longer). Factors associated with significantly shorter visits included: physicians practicing within an HMO (80% as long), and "busyness" (physicians seeing >12 patients/half-day spent 32% less time per visit than those seeing <10 patients/half-day). Together, these factors explained 36% of the intraclass correlation. Suicidal inquiry was not associated with longer visits or SP satisfaction. However, longer visits were linearly associated with greater SP satisfaction ($p = 0.01$).
CONCLUSIONS: Visit duration for patients with similar conditions varied more than 10-fold among primary care physicians. The high rho reveals that visit length reflects a considerable physician style effect. While measured variables explained 36% of this physician style, the majority of physician-associated variance remained unexplained. Physicians may refrain from asking depressed patients whether they are suicidal - an important component of high-quality depression care - due to concerns about the time such inquiry consumes. In our study, we found no significant association between suicidal inquiry and visit length. On the other hand, SPs, essentially trained "connoisseurs" of care, preferred encounters that were longer, but were unmoved by suicide inquiry. A better understanding of the antecedents and consequences of visit duration may help inform policies related to practice organization and reimbursement.

INSURANCE RELATED DISPARITIES IN CORONARY ARTERY BYPASS GRAFT PROCEDURES. O.P. Patel[1]; A. Epstein[1]; M.A. Earnest[1]. [1]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 173450)*

BACKGROUND: Coronary artery bypass graft (CABG) procedures are one of the most common operations performed in the world and account for more resources expended than any other single procedure in cardiovascular medicine. In the United States, utilization of many health services varies with insurance status. Prior to age 65, insurance in the United States is highly variable while after age 65 Medicare provides nearly universal coverage. We evaluated the relationship between insurance status and utilization of CABG before and after age 65.
METHODS: We used the Healthcare Utilization Project (HCUP) National Inpatient Sample (NIS) dataset from 2001 through 2003 to identify patients with ICD-9 codes for CABG procedures. We first analyzed the total incidence of CABG procedures and then compared the insurance status of these patients before and after age 65 within the elective procedures and non-elective procedures groups. Identification of elective and non-elective groups was based on NIS dataset designation. Regression modeling was used to compare the trends of the two groups and to create predictive models of CABG incidence by age for the total population and the insured subgroup.
RESULTS: Prior to age 65, private insurance was the largest payer of CABG. After age 65, Medicare became the largest payer. At age 65, total CABG incidence increased by 24.5% and the subset of all elective procedures increased by 24.4%, with the insured elective component of CABG incidence increasing by 15.0%. Similarly, all non-elective CABG procedures increased by 24.5% at age 65, with the insured non-elective subgroup increasing by 13.8% at age 65. Regression modeling with trend variables demonstrated high predictive power, estimating a 23.3% increase in all elective CABG incidence at age 65 ($R2 = 0.974$). The regression model also predicted a 13.0% increase in the incidence of insured elective CABG procedures at age 65 ($R2 = 0.969$).
CONCLUSIONS: Our data show an increase in the utilization of CABG among all people after age 65 through age 72 and also within the elective and non-elective subgroups. The acquisition of insurance among previously uninsured people at the age of 65 accounts for a significant portion of the increased incidence. Thus, the disparity in CABG utilization appears to be related the age and insurance status. It is not possible in this study to say what did happen to those individuals who did not receive CABG procedures. Some may have had percutaneous interventions and still others may not have been revascularized at all. It is possible that other factors contribute. Some procedures may be delayed electively for patients awaiting retirement. Cultural barriers to utilization of CABG procedures have been demonstrated and may account for some of the difference. Nevertheless, our data suggest that if utilization of CABG procedures among the insured population is optimal, then a large number of Americans receive suboptimal care for a life-threatening disease for reasons of inadequate health insurance.

IS HEALTH RELATED QUALITY OF LIFE IN DIABETICS AFFECTED BY FATNESS AND FITNESS? W.L. Bennett[1]; P. Ouyang[1]; K.J. Stewart[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 173659)*

BACKGROUND: Although disease complications and comorbidities have been shown to reduce health-related quality of life (HRQOL) in people with diabetes mellitus (DM), less is known about how modifiable risk factors such as fatness and fitness mediate their HRQOL. Our hypothesis is that reduced fatness and increased fitness levels will be associated with higher HRQOL, mediating the effect of diabetes.
METHODS: This was a cross-sectional study using baseline data from two exercise training studies. Study 1 recruited older subjects with mild hypertension and excluded diabetics, while study 2 recruited subjects with both hypertension and uncomplicated diabetes. Subjects were sedentary, but without serious medical conditions that precluded exercise. Aerobic fitness was assessed by maximal oxygen uptake (V02max) during treadmill testing and fatness by dual-energy x-ray absorptiometry (total body fat percent). HRQOL was assessed by the Medical Outcomes Study SF-36. V02max is the gold standard for aerobic fitness measurement, and percent body fat, an important measure of body composition, has been shown to decrease as a result of exercise. Bivariate analyses compared SF-36 scales for diabetic and non-diabetic subjects, and correlations between fitness, fatness and HRQOL. General health perceptions and SF-36 physical component summary (PCS) score were selected as outcome variables for two multivariate linear regression models used to assess the extent of association between HRQOL scales, diabetes, fitness and fatness.
RESULTS: There were 121 non-diabetics and 71 diabetics in the combined sample (age range, 40–75 years). Diabetics were younger (mean age 57 vs. 64 years, $p < 0.01$), less likely to be women (47% vs. 56%, $p < 0.01$), and more frequently met criteria for metabolic syndrome (56% vs. 40%, $p = 0.03$). Diabetics had lower mean scores for general health perception (65 for DM vs. 80 for non-DM, $p < 0.01$) and physical component summary (49 for DM vs. 51 for non-DM, $p = 0.02$) scores. The physical component summary score was negatively correlated with percentage of body fat (Spearman's rho = -0.28, $p < 0.01$) and positively correlated with V02max (Spearman's rho = 0.36, $p < 0.01$). The first multivariate model used general health perceptions (GHP) as the outcome. Diabetes status ($p < 0.01$), V02max ($p = 0.01$) and age (0.03), but not percent body fat, were associated with GHP. The effect size was greatest for diabetes status (effect size = 3). The second model used the PCS as the outcome variable. Percent body fat ($p = 0.03$) and diabetes status ($p = 0.04$), but not V02max, were associated with the PCS, after adjustment for age and gender. The largest effect size was for percent body fat (effect size = 2.1).
CONCLUSIONS: Among uncomplicated diabetics, even small improvements in fatness and fitness mediate the association of diabetes with HRQOL. Improved HRQOL is an important patient-valued outcome. Therefore, the potential for higher levels of HRQOL may provide motivation for diabetics to engage in lifestyle changes focused on physical activity and weight reduction.

LIFESTYLE MODIFICATION COUNSELING FOR HYPERTENSIVE PATIENTS: RESULTS FROM THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY 1999–2004. L. Lopez[1]; M. Horng[2]; E. Cook[2]; L. Hicks[2]. [1]Institute for Health Policy and Department of Medicine, Massachusetts General Hospital, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 172934)*

BACKGROUND: Lifestyle modification has been shown to be a significant factor in improving blood pressure control and the seventh report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure recommends that all patients with the diagnosis of hypertension receive lifestyle recommendations with or without pharmacological treatment. To date however, little is known about how frequently hypertension patients receive appropriate lifestyle counseling or adhere to such advice when offered.
METHODS: Using data from the NHANES 1999–2004 survey, we examined adults aged >20 years who reported being told by a health care provider at least twice that they had hypertension. Among 3504 participants, we examined how frequently participants reported receiving counseling for dimensions of lifestyle modification. Among those reporting receipt of advice, we examined how frequently they reported adhering to the suggested lifestyle change. We assessed which demographic and clinical factors are associated with receipt of and adherence to lifestyle recommendations using the Chi squared statistic and multivariable logistic regression analysis.
RESULTS: Of 3504 hypertensive participants 2948 (85%) reported receiving lifestyle modification counseling. Of those receiving counseling, 2652 (90%) reported adhering to those recommendations. After adjustment for demographic and clinical characteristics, African-Americans were more likely to report receiving counseling (OR, 2.5; CI, 1.8–3.4) and were more likely to report adhering when advised (OR, 2.8; CI 1.8–4.5) when compared to whites. Men (OR, 1.4; CI, 1.1–2.0) reported receiving counseling more often than women. Participants with hypercholesterolemia (OR, 1.7; CI, 1.3–2.2), diabetics (OR, 3.5; CI, 2.3–5.3), or were overweight (BMI 26–29) (OR, 1.5; CI 1.2–2.0), or obese (BMI > 30) (OR 3.0; 2.2–4.1), reported receiving lifestyle counseling more often than their counterparts.
CONCLUSIONS: Contrary to some reports, our study demonstrates increased rates of lifestyle counseling by health care providers for hypertensive patients especially those with other cardiovascular comorbidities. Overweight and obese participants, men, African-Americans, and those with hypercholesterolemia or diabetes reported being more likely to receive lifestyle modification counseling. African-Americans were the only group to self-report higher rates of adherence to this counseling. Future work is needed to assess barriers to adherence of lifestyle counseling.

MAKING SENSE OF ORGANIZATIONAL INTERVENTIONS USING COMPLEXITY SCIENCE. L. Leykum[1]; J. Pugh[2]; V. Lawrence[1]; M. Parchman[1]; P. Noel[2]; J. Cornell[1]; R. Mcdaniel[3]. [1]University of Texas Health Science Center at San Antonio, San Antonio, TX; [2]South Texas Veterans Health Care System, San Antonio, TX; [3]University of Texas at Austin, Austin, TX. *(Tracking ID # 172567)*

BACKGROUND: The evidence regarding the impact of organizational interventions on clinical outcomes is mixed, especially for patients with chronic disease. Complexity science, or the science of complex adaptive systems (CAS), suggests that interventions leveraging the ability of participants to learn, interact, self-organize, and co-evolve will lead to improved patient outcomes. We examined the relationship between the presence of these CAS four characteristics in organizational interventions and outcomes of patients with Type II diabetes.
METHODS: We conducted a systematic review of the effect of organizational interventions on outcomes of patients with Type II diabetes. Eligible studies were randomized or controlled clinical trials identified by a search of Medline from 1989 to 2004 after testing a broad array of potential search terms. Eligible publications were independently reviewed and then abstracted by teams of reviewers with clinical and methodological expertise. Two raters then independently evaluated each study to assess the extent to which the intervention incorporated one or more of these characteristics of a CAS: individuals' capacity/ability to learn; the interconnections between individuals; the ability of participants to self-organize; and the tendency of participants to co-evolve. The kappa for these scores between reviewers was 0.8. The effectiveness of the outcomes of each study was assessed by two independent raters on a scale of 0 (no effect), 0.5 (mixed results), and 1 (intervention effective) based on the type (process versus outcome), number, and statistical significance. The kappa for these scores was 0.8. We used Fisher's exact test to test the significance of the relationship between each individual CAS characteristic, as well as total number of characteristics, and strength of outcomes.
RESULTS: 6251 potential studies were identified by the literature search, 169 were reviewed in detail and 31 met eligibility criteria. At least one characteristic of a complex adaptive system was utilized in 28 of the 31 studies. 3 studies reported no improvement in any endpoints, 17 reported significant improvement, and the remainder reported mixed results. There was a significant relationship between the number of characteristics and the strength of outcomes (Chi-square 32X, $p = 0.001$). Positive outcomes were significantly related to interventions affecting the interconnections between individuals and allowing participants to co-evolve ($p < 0.001$, $p = 0.01$, respectively. Interventions focusing on individuals' ability to learn were not significantly related to positive intervention effects.

CONCLUSIONS: Improved outcomes in Type II diabetes were significantly associated with organizational interventions that had characteristics of complex adaptive systems in their design. Those interventions incorporating a greater number of characteristics demonstrated the greatest improvement in diabetes-related outcomes. This study suggests that interventions which consider the health care delivery system as a complex adaptive system can significantly improve patient outcomes. Further research should address how best to translate the theoretical constructs of complex adaptive systems into interventions that improve the outcomes of chronically ill patients.

MEDICATION ADHERENCE AND RACIAL DIFFERENCES IN HBA1C CONTROL. A.S. Adams[1]; C. Mah Trinacty[1]; F. Zhang[1]; K.P. Kleinman[1]; R.W. Grant[2]; J.B. Meigs[2]; S.B. Soumerai[1]; D. Ross-Degnan[1]. [1]Harvard Medical School and Harvard Pilgrim Health Care, Boston, MA; [2]Harvard Medical School and Mass General Hospital, Boston, MA. *(Tracking ID # 173191)*

BACKGROUND: Black patients with diabetes are at elevated risk for poor glycemic control. This study assessed the relative importance of improving medication adherence as a strategy for reducing the black-white gap in HbA1c control.
METHODS: We used a retrospective, longitudinal repeated measures design to model the temporal relationship between medication adherence and racial differences in HbA1c in a managed care setting. We identified 2,099 (black = 564, white = 1535) insured adult diabetes patients newly treated on oral hypoglycemic therapy between 01/01/94 and 12/31/00. We used hierarchical mixed models with multiple imputation to estimate (1) the impact of medication adherence on the black-white gap in HbA1c control and (2) HbA1c by race.
RESULTS: At baseline, black patients had higher HbA1c values compared to whites (9.8 vs. 8.9; $p < 0.05$). Black patients were consistently 7% less adherent to oral medications over time. In stratified models, tighter medication adherence was associated with better HbA1c control among all patients [whites: −0.23 (−0.20, −0.16); blacks: (−0.18 (−0.32, −0.03)]. However, better adherence (> 75%) resulted in only a slight reduction (−0.02%) in the black-white gap. Frequent self-monitoring and insulin use had clinically and statistically significant impacts on HbA1c, particularly among black patients (SMBG: −0.65% (−1.04, −0.26); insulin: −0.18 (−0.32, −0.03)).
CONCLUSIONS: The black-white gap in HbA1c was largely determined by fixed (e.g., age) and unmeasured (e.g., biological) factors. However, better adherence, more frequent self-monitoring, and insulin use were all highly predictive of lower HbA1c levels. Improving medication adherence is an important goal for all patients, but is unlikely as a single strategy to reduce the black-white gap in glycemic control in this setting.

NATIONAL SURVEY OF NEPHROLOGISTS REGARDING CARE OF UNDOCUMENTED END STAGE RENAL DISEASE PATIENTS. L. Hurley[1]; T. Berl[2]; K. Pratte[3]; A. Kempe[4]; L. Crane[5]; S. Linas[6]. [1]Department of General Internal Medicine, Denver Health, Denver, CO; [2]Division of Nephrology, University of Colorado at Denver Health Sciences Center, Aurora, CO; [3]Colorado Health Outcomes Program, University of Colorado Health Sciences Center, Aurora, CO; [4]Department of Pediatrics, University of Colorado at Denver Health Sciences Center, Colorado Health Outcomes Program, Children's Outcome Research Program, Aurora, CO; [5]Department of Preventive Medicine and Biometrics, University of Colorado at Denver Health Sciences Center, Denver, CO; [6]Division of Nephrology, Denver Health, Denver, CO. *(Tracking ID # 173053)*

BACKGROUND: Medicare covers most dialysis care for U.S. citizens with end stage renal disease (ESRD). By contrast, there are no standard national provisions for covering costs for dialysis care for ESRD patients who are undocumented (i.e. immigrants with no green card or visa). Existing literature suggests that dialysis care for undocumented ESRD patients is often delayed, limited or not available. This is the first study to ascertain a national perspective on the scope of the problem.
METHODS: National mail or internet-based self-administered survey of a sample of American Society of Nephrology (ASN) member nephrologists regarding dialysis care for undocumented ESRD patients. Topics addressed included demographics and practice characteristics of respondents, perceptions of adequacy of care and reimbursement, involvement in providing dialysis care to undocumented patients and how that care is provided.
RESULTS: Response rate was 56% (964/1725). Forty-five percent of respondents disagreed, 40% agreed and 15% "did not know" whether undocumented patients with ESRD have access to adequate healthcare. Ninety-one percent agreed that undocumented patients have access to emergent dialysis in their state, whereas only 50% agreed and 14% "did not know" whether such patients have access to maintenance dialysis. Sixty-one percent agreed that there are an increasing number of undocumented ESRD patients in their state. In order to receive the necessary care, 24% had advised patients to relocate to another country and 8% had advised patients to relocate to another state in the past 12 months. Sixty-six percent of respondents representing 44 states reported that they had dialyzed undocumented ESRD patients in the last 12 months. Respondents who care for undocumented ESRD patients reported dialyzing these patients by the following means: outpatient hemodialysis (HD) 3 times a week (66%); emergent HD in the hospital (57%); peritoneal dialysis (14%); emergent HD in the emergency department (11%); and outpatient HD less than 3 times a week (3%). Twenty-five percent reported **only** dialyzing these patients emergently. Of respondents who were knowledgeable about reimbursement, the majority (52% for inpatient dialysis and 55% for outpatient dialysis) reported that it is inadequate and 35% reported that their outpatient dialysis units provide uncompensated dialysis care to this patient population.
CONCLUSIONS: The majority of surveyed U.S nephrologists provide care to undocumented ESRD patients and most of these providers perceive the care that they can offer is inadequate. The issue of providing dialysis care to undocumented patients is not confined to a few states known to have high numbers of undocumented residents and appears to be an increasing problem. Compared to emergent HD, outpatient HD is less expensive and better for patient care. However, inadequately compensated or uncompensated care may limit availability of outpatient HD in undocumented ESRD patients.

NON-LIVER-RELATED BARRIERS TO HEPATITIS C TREATMENT IN METHADONE CLINIC PATIENTS. A.Y. Walley[1]; J.I. Tsui[2]; Y. Song[2]; M.C. White[2]; J.P. Tulsky[2]. [1]Boston University, Boston, MA; [2]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172677)*

BACKGROUND: Up to 90% of opioid-dependent patients on methadone treatment are chronically infected with hepatitis C (HCV). Known non-liver-related barriers to HCV treatment include untreated major mental illness, ongoing alcohol and drug use, untreated medical co-morbidities, such as AIDS, and missed clinic appointments. Understanding more about these barriers, including their prevalence and factors which increase the risk for these barriers, will help clinicians and methadone programs determine how to address HCV infection in methadone clinic patients.
METHODS: We conducted a cross sectional survey of HCV-infected methadone patients between June and October 2003 at a publicly-funded opioid addiction treatment program in San Francisco. From a 30-minute study interview and chart review we described the following barriers to HCV treatment: HIV infection with CD4 cell count < 200, untreated mental illness, regular alcohol use (self-reported alcohol use on at least 15 of the last 30 days), regular drug use (urine positive for cocaine > 50% of the time or self-reported cocaine, heroin, or amphetamine use on at least 15 of the last 30 days), and missed methadone clinic visits (no show rate > 10% over the prior 6 months). We performed a multivariable logistic regression model that included age, gender, race/ ethnicity, marital status, education, homelessness, insurance status, maintenance versus detoxification status, to determine associations with having one or more barrier to treatment.
RESULTS: Of 204 subjects interviewed, 171 (84%) were HCV-infected and were included in the study cohort with the following characteristics: mean age 45.7; female 28%; white 48%; African-American 30%; Hispanic 12%; married 12%; high school graduates 68%; homeless 42%; lack of insurance 43%; maintenance patients 63%; and detoxification patients 37%. Eleven percent had been evaluated for HCV treatment and one subject reported receiving interferon-based treatment. The occurrence of barriers were: regular drug use 57%; untreated mental illness 35%; regular alcohol use 12%; missed methadone clinic visits 9%; and HIV positive with CD4 < 200 6%. No barriers were found in 26% and 66% had less than two barriers. Homelessness was associated with an increased odds of having one or more barriers (adjusted odd ratio: 3.29 95% confidence interval: 1.24–8.71).
CONCLUSIONS: Among HCV-infected patients at a publicly-funded methadone clinic with low rates of HCV treatment and evaluation for treatment, one quarter of patients had no non-liver barriers to HCV treatment and two thirds had less than two barriers. Efforts to increase access to HCV evaluation and treatment for methadone patients should include strategies to address ongoing drug and alcohol use, untreated mental illness, missed clinic visits, and AIDS. The impact of homelessness on these barriers warrants further research.

OFFERING AN ELECTRONIC PRESCRIBING SYSTEM TO COMMUNITY PHYSICIANS: DOES IT INCREASE THE RATE OF GENERIC PRESCRIBING? J. Pevnick[1]; S. Mattke[2]; J.L. Adams[3]; W. Shrank[4]; S. Asch[5]; S. Ettner[6]; D.S. Bell[3]. [1]Veterans Administration Greater Los Angeles Healthcare System, S, CA; [2]The RAND Corporation, Washington, DC; [3]The RAND Corporation, Santa Monica, CA; [4]Brigham and Women's Hospital, Boston, MA; [5]Veterans Administration Greater Los Angeles Healthcare System, Los Angeles, CA; [6]University of California, Los Angeles, Los Angeles, CA. *(Tracking ID # 173928)*

BACKGROUND: Compared with branded medications, generic medications cost less and are associated with improved patient adherence. An electronic prescribing system (EPS) with appropriate clinical decision support could potentially increase physicians' use of generic medications. However, prior studies have only shown an increase in generic use for an EPS applied within an integrated health system.
METHODS: In late 2004, a statewide Blue Cross Blue Shield insurance company began offering an EPS to all physicians who had generated 500 or more 2003 pharmacy claims. The EPS provides physicians with information about medication formulary status, and in some cases actively encourages the use of generic medications. We compared generic drug use by physicians who began using the EPS during 2005 (the EPS group) with generic use by physicians who were invited but did not enroll in the EPS program (the non-participant group). Pharmacy claims were retrieved for all of the patients with health maintenance organization and point of service insurance who were continuously enrolled with an EPS or non-participant primary care provider (PCP) from 1/1/05–6/30/06. ACE inhibitors (ACEi) were chosen for analysis because clinically interchangable generic and branded options existed within this class. We defined "new" ACEi prescription events based on ACEi claims that occurred with no previous ACEi claim in the preceeding year. We conducted multivariate logistic

regression, with correction for clustering at the physician and patient levels, to examine whether the probability of new ACEi prescriptions being generic (vs brand) was associated with having activated the EPS.
RESULTS: The EPS group consisted of 319 PCPs whose 28,364 patients had 0.4 million prescription claims; the non-participant group consisted of 2092 PCPs whose 175,623 patients had 2.2 million claims. Approximately 99% of the physicians in both groups were family physicians, internists, and pediatricians. The distribution of actual EPS use within the EPS group was bimodal, such that most used the EPS extensively or hardly at all. To account for these differences in use, participating physicians were categorized into groups of low (n = 167), medium (n = 91), and high (n = 61) EPS use. Results from multivariate logistic regression modeling showed that, controlling for an underlying association toward more generic use over time (OR = 1.001 for each later day), high users of EPS had a significant increase in their likelihood of prescribing a generic ACEi after EPS activation vs. before (OR = 2.1, p = 0.01), whereas no sigificant difference was found for low or medium EPS users. Generic drug use was also significantly associated with patient income (OR = 0.76 for each $50,000 increase in annual household income) and hispanic race as estimated by patient zip code data (OR = 0.69). Even when the model controlled for these significant factors, no significant association was found between generic pharmacy claims and patient age, patient gender, black patient race, or physician specialty.
CONCLUSIONS: Activation of an EPS was temporally associated with a jump in the rate of generic use for new ACEi prescriptions among community physicians who were high users of the system, but only a minority of EPS enrollees fell in this category. Further research should be directed toward understanding and addressing the barriers to physicians' use of EPS.

OPEN ACCESS: IMPACT ON PHYSICIANS AND PATIENTS. M. Linzer[1]; L.B. Manwell[1]; R.L. Brown[1]; J.A. Bobula[1]; E.S. Williams[2]. [1]University of Wisconsin-Madison, Madison, WI; [2]University of Alabama, Tuscaloosa, AL. *(Tracking ID # 173001)*

BACKGROUND: Open access (OA) appointment scheduling was developed to improve patient access to care. Theoretically, OA will increase physician stress while working off the backlog, and then improve stress and satisfaction thereafter. By facilitating access to same-day appointments, OA is also postulated to improve patient satisfaction. However, the impact of OA on physician stress and satisfaction, as well as patient satisfaction, has not been formally tested.
METHODS: MEMO (Minimizing Error, Maximizing Outcome) is a longitudinal study of working conditions in physician offices and their impact on physicians and patients. MEMO took place in 97 primary care offices in the upper Midwest and New York City with 422 physicians (response rate 59.2%, 84% of target sample) and 1794 of their patients with at least one of three target conditions (hypertension, diabetes, or congestive heart failure). Participating physicians were surveyed on their work environment, stress and satisfaction. Patients responded to questions querying satisfaction with the MD and clinic, and trust in the MD. Of the 422 physicians, 175 from 69 clinics specified that they had (n = 62) or didn't have (n = 113) OA. A total of 787 patients from these clinics were included in the analysis.
RESULTS: Sixty-two physicians from 28 clinics reported having OA; 48% were general internists, and 52% were family physicians. Duration of OA ranged from 1 to 60 months (mean = 17.60, SD = 13.22, mo.). Physician stress was significantly lower in OA clinics (3.09 vs. 3.44, scale 1–5, $p < .05$). Physicians from OA clinics reported more favorable work characteristics and outcomes including less time pressure ($p < .05$), more work control ($p < .05$) and less intent to leave within 2 years ($p < .05$). Physician satisfaction at OA and non-OA clinics was comparable. Patient satisfaction with the physician (1.58 vs. 1.51) and the clinic (1.58 vs. 1.61, both on scales 1–5, 1 = high) were similar among patients from OA and non-OA sites, as was trust in the MD (4.47 vs. 4.54, scale 1–5, 5 = high). Within the 28 OA clinics, after controlling for physician age, gender, and other predictors of physician stress and job satisfaction, the adjusted relationships between duration of OA and physician stress and satisfaction were negligible ($p > .05$), although the favorable impact of simply being in an OA clinic on physician stress and stressors was sustained.
CONCLUSIONS: Open access is beneficial to physician worklife (less time pressure, more work control, more job stability, and less stress), but appears to have little impact on satisfaction for patients with chronic conditions. The impact of OA on patient outcomes (quality, errors, and preventive care) remains to be determined, and may elucidate the benefits or pitfalls of this new method of care delivery.

ORGANIZATIONAL INTERVENTIONS TO IMPROVE OUTCOMES FOR PATIENTS WITH COPD. E. Mortensen[1]; L. Leykum[2]; P. Hitchcock Noel[1]; J. Zeber[1]; M. Pugh[1]; V. Lawrence[1]. [1]South Texas Veterans Health Care System, San Antonio, TX; [2]South Texas Veterans Health Care Sytem, San Antonio, TX. *(Tracking ID # 171778)*

BACKGROUND: In the United States, chronic obstructive pulmonary disease (COPD) is the 4th leading cause of death overall, and is complicated by acute exacerbations, which are responsible for >500,000 hospitalizations per year. In the VHA, 10% of patients receive care for COPD, with over $600 million in costs each year. Evidence suggests that organizational strategies that change the structure or processes of health care teams are more effective than strategies that target individual providers for many chronic diseases. Our purpose was to examine studies of organizational interventions that had the goal of improving chronic disease management for patients with COPD.
METHODS: We searched Medline for randomized or controlled clinical trials from 1998 to 2005, and identified all studies that used organizational strategies to attempt to improve outcomes for patients with COPD. Inclusion criteria were: randomized or controlled clinical trial, including at least 1 organizational improvement strategy, reporting disease-specific outcomes, and including subjects > 18 years of age. Articles were abstracted by 2 reviewers and entered into a computerized database.
RESULTS: We identified 11 articles that met the inclusion criteria. Sample sizes ranged between 60 and 1081 subjects (mean n = 225). Interventions included 1 to 6 organizational components (mean 3.2), and ranged in duration from 1 month to 1 year (mean 7.7 months). The most common organizational interventions included proactive non-physician follow-up (n = 6), improving and increasing primary care follow-up (n = 4), and proactive follow by phone (n = 4). Outcomes assessed varied between studies with 4 using the St. George's respiratory questionnaire, 8 assessing hospital readmissions, and 4 examining short-term mortality. Only 4 studies reported significant differences in clinically important outcomes such as respiratory symptoms, exercise tolerance, emergency department visits, or mortality.
CONCLUSIONS: There are only a small number of studies that have examined the impact of organizational interventions on clinical outcomes for patients with COPD, and there has been little consistency in the outcomes examined. Effective organizational interventions could conserve scarce resources by preventing hospitalizations, while simultaneously improving quality of life. Additional, well-designed randomized controlled trials of organizational interventions are needed to improve outcomes for this major chronic disease.

PATIENT ASSESSMENT OF CHRONIC ILLNESS CARE AMONG HISPANIC DIABETIC POPULATION. A. Aragones[1]; E. Schaefer[2]; D.L. Stevens[1]; N.R. Shah[1]. [1]New York University, New York, NY; [2]New York University School of Medicine, New York, NY. *(Tracking ID # 173189)*

BACKGROUND: The Chronic Care Model (CCM) identifies the essential elements of a health care system that encourage high-quality chronic disease care. The Patient Assessment of Chronic Illness Care (PACIC) is an instrument developed to assess the quality of patient-centered care consistent with the CCM. This study evaluates the PACIC in an urban Hispanic diabetic population.
METHODS: Hispanic diabetic patients completed the Spanish version of the 20-item PACIC questionnaire as well as a set of questions on socio-demographic and cultural factors. The PACIC consist of 5 scales (Patient Activation, Delivery System Design / Decision Support, Goal Setting / Tailoring, Problem-Solving / Contextual, and Follow-up / Coordination) as well as an overall score; it is scored on 5 point scale (1 equals patient perceives very little care was consistent with CCM and 5 equals patient perceived most of their care was consistent with the CCM). Patients were recruited at a primary care clinic of a large municipal hospital in New York City that has implemented the CCM since 2003. Hispanic diabetic patients that used this clinic as their regular source of care for more than 2 years and spoke Spanish as their primary language were enrolled.
RESULTS: Fifty patients completed the PACIC questionnaire as well as socio-demographic and cultural questionnaires. The mean overall PACIC score was 3.08 (SD 0.82), for Patient Activation was 2.94 (SD 1.2), for Delivery System Design / Decision Support was 3.81 (SD 1.0), for Goal Setting / Tailoring was 2.84 (SD 1.0), for Problem-Solving / Contextual scale was 3.43 (SD 1.25), and for Follow-up / Coordination scale was 2.4 (SD 0.83). Mean acculturation level, measured by the Marin scale, was 1.8. We found no association between the PACIC scores and level of acculturation, gender, age, marital status, level of education, country of birth, years since migrated to the United States or insurance status (all $P > 0.4$).
CONCLUSIONS: PACIC scores among Hispanic diabetic patients were consistent with previously published scores from patients of other ethnicities. The PACIC score showed no association with socio-demographic and cultural characteristics making it a useful tool to assess care consistent with the various dimensions of the CCM in a heterogeneous Hispanic population.

PATIENT-REPORTED DIFFICULTY IN CLINICAL COMMUNICATION WITH PHYSICIANS IN JAPAN. Y. Tokuda[1]; K. Hayano[2]; K. Motomura[3]. [1]St. Luke's Life Science Institute, Chuo City, Tokyo; [2]Kumamoto University, Kumamoto, Kumamoto; [3]North Tokyo Center for Family Practice, Oji, Tokyo. *(Tracking ID # 172442)*

BACKGROUND: Patient-physician communication is the key component of all health care services; however, many patients are not well informed about their conditions and the recommended treatments. Many factors interfere with the successful transfer of information from the physician to the patient, including patient anxiety, patient confusion, patient misunderstanding, and the physicians' use of technical language. In addition, many patients do not understand medical terminology. They are likely to be poorly informed about their conditions if this terminology is used during clinical communication. However, few studies have evaluated the prevalence of patients experiencing difficulty in communication with physicians; furthermore, few studies have examined which words are difficult for patients. We set out to interview a nationally representative sample of patients in Japan about patient-reported experiences of difficulty in clinical communication with physicians and the characteristics of the difficult words used by their physicians.
METHODS: We conducted a cross-sectional survey for community-dwelling adults (aged 15 years or older) of a nationally representative random sample in Japan. Consent to participate in the survey was voluntary and no financial incentives were

offered. Questionnaires were administered by personal interviews in October 2004. Information was collected on sociodemographic characteristics and on previous experiences with communication difficulties with physicians. To determine the prevalence of experiencing difficulty in clinical communication with physicians, participants were asked: "Have you ever had physicians explain using diagnosis or treatment words which were difficult to understand? They were then asked: "What kind of physician words do you think need further explanation or clarification?"
RESULTS: Of the total sample of 4,500, we obtained effective responses from 3,090 participants (response rate: 69%). Mean age of the participants was 50 years (range, 15–94); and, 46% were male. Of these 3,090, difficulty in clinical communication with physicians was reported by 1,117 participants (36%; 95% CI, 35–38%) overall. Patients aged 30–49 were associated with a higher likelihood for experiencing communication difficulty. This was identified with an odds ratio of 1.8 (95% CI, 1.2–2.7) for those aged 30–39 and 1.7 (95% CI, 1.1–2.5) for those aged 40–49 compared to those aged 15–29. According to occupational status, professionals (OR 2.9; 95% CI, 1.1–7.6), homemakers (OR 2.8; 95% CI, 1.1–7.0), and the jobless and others (OR 3.3; 95% CI, 1.3–8.3) were all associated with a higher likelihood for experiencing communication difficulty, compared to students; however, these experiences did not differ by income or educational attainment. Technical words (57% of the total participants) and foreign medical terminology (57%) were indicated as the most difficult words to understand.
CONCLUSIONS: Many Japanese patients, especially middle-aged adults, experienced difficulty in clinical communication with physicians. Effective communication strategies may need to include avoiding the use of technical words and using translations of foreign medical terminology in Japan.

PATTERNS AND PERSISTENCE OF INCIDENT DIABETES PRESCRIPTIONS. M. Huizinga[1]; C.L. Roumie[2]; R. Greevy[2]; T.A. Elasy[2]; R.L. Rothman[2]; T. Speroff[3]; R.S. Dittus[2]; M.R. Griffin[2]. [1]Vanderbilt University/VA TVHS, Nashville, TN; [2]Vanderbilt University, Nashville, TN; [3]Veterans Affairs Tennessee Valley Healthcare System, Vanderbilt University, Nashville, TN. *(Tracking ID # 172300)*

BACKGROUND: Adherence (medication taken as prescribed) and persistence (length of time on regimen) describe how closely a patient's medication self-administration aligns with their provider's instructions. Patients with increased adherence and persistence have better disease outcomes. This study describes the patterns and persistence of incident diabetes prescription in a large VA population.
METHODS: We have conducted a retrospective cohort constructed from the databases of the VA Mid-South Network from January 1, 1999 to June 30, 2005. Over sixty-five thousand patients receiving diabetes medications were identified. From this initial cohort, incident diabetes prescriptions were delineated. Incident prescriptions were defined as the first diabetes-related prescription in 365 days while actively using the VA pharmacy services. The five most common drug exposure categories were identified: Metformin, Sulfonylurea, Thiazolidinedione (TZD), Insulin and Metformin + Sulfonylurea. Approximately 98% of incident users were classified into these five categories. The outcomes were continued use, stop (90 days with no days supply in hand), switch (fill of another diabetes medication and 90 days with no days supply in hand) or addition (fill of second agent with continued use of incident drug). Survival analysis was performed for each drug category.
RESULTS: To date, 11,642 incident diabetes prescriptions were identified in metformin, sulfonylurea and TZD categories. The average age (±SD) of patients receiving incident prescriptions was 64 (±11). Thirteen percent (n = 1,308) were African-American and 3.4% (n = 397) were female. The average (±SD) A1c was 7.5 (±1.7) and the average BMI (±SD) was 31.6 (±6.4). Overall, 52% (n = 6,058) received metformin, 46% (n = 5,407) received a sulfonylurea and 1.6% (n = 180) received a TZD. From 2000 to 2005, there was a significant progression ($p < 0.0001$) towards incident prescriptions for metformin with a concurrent decrease in sulfonylureas (See Table 1). Seventy-three percent of sulfonylurea and TZD users and 76% of metformin users filled a second prescription. In the unadjusted survival analysis, patients persisted on metformin monotherapy longer than sulfonylurea or thiazolidinedione monotherapy (median 604 days versus 450 days and 362 days, $p < 0.0001$).
CONCLUSIONS: The use of metformin has largely replaced sulfonylurea use as the incident diabetes agent from 2000 to 2005. While all three drug classes had long duration of monotherapy, metformin was associated with the greatest persistence. There have been few studies that have directly compared incident diabetic therapies. Increased persistence suggests greater effectiveness. Next steps include the addition of two other exposure classifications (insulin and metformin + sulfonylurea), controlling for baseline characteristics and adherence analyses. Future study areas include comparing A1c changes, evaluating weight gain and assessing adverse events.

Table 1. Percent use of Incident Diabetes Prescription for each Year

Fill year	Metformin (%)	Sulfonylureas (%)	Thiazolidinediones (%)
2000	33	65	2
2001	35	63	2
2002	39	60	0.8
2003	50	49	0.7
2004	66	31	2
2005	73	24	2

POST-TRAUMATIC STRESS DISORDER: A MIS(SED) -DIAGNOSIS IN PRIMARY CARE? E.B. Cowen[1]; R. Saitz[1]; J.H. Samet[1]; T. Averbuch[2]; J. Liebschutz[1]. [1]Boston University, Boston, MA; [2]Boston Medical Center, Boston, MA. *(Tracking ID # 173461)*

BACKGROUND: Despite the availability of effective treatment strategies (including combined psychotherapy and pharmacotherapy), primary care physicians regularly under-diagnose post-traumatic stress disorder (PTSD) in the outpatient setting. We studied the diagnosis and treatment of PTSD in an urban primary care practice. We hypothesized that patients would be more likely to have received treatment if any mental health diagnosis was documented in the electronic medical record (EMR), even if not specifically PTSD.
METHODS: English-speaking adult (ages 18–65) patients awaiting primary care appointments at an urban, safety-net hospital were systematically recruited and interviewed. Current PTSD diagnosis was ascertained using the Composite International Diagnostic Interview PTSD module and major depression by the Patient Health Questionnaire. We audited the EMR for psychiatric diagnoses (depression, PTSD, anxiety, bipolar disorder), SSRI therapy, and mental health visits. Participants were classified as receiving evidence-based "Optimal" PTSD treatment (SSRI and >1visit with a mental health professional) or "Any" PTSD treatment (SSRI and/or >1visit with a mental health professional) in the prior 12 months. Logistic regression analyses controlling for age, gender, and employment status tested the association between interview diagnosis of PTSD and receipt of PTSD treatment, both with and without controlling for an EMR-recorded psychiatric diagnosis. All study participants had access to mental health care and medications via public or private insurance or an uncompensated care pool; therefore, health insurance status was not analyzed.
RESULTS: Of 607 participants interviewed, 135 (22%) met diagnostic criteria for PTSD by interview, of whom 11% had EMR-recorded PTSD and 50% had EMR-recorded depression. By interview, depression was a co-morbid diagnosis in 43% of participants with PTSD. Among the participants with PTSD, 17% received Optimal PTSD therapy, 18% received SSRI therapy only and 14% received mental health counseling only. Among participants with a research interview diagnosis of PTSD, having any EMR-psychiatric diagnosis was highly associated with treatment (aOR 17.4, 95% CI 10.6–28.4).
CONCLUSIONS: In the outpatient affiliated clinics of an academic safety-net urban medical center, PTSD is under-diagnosed, and frequently diagnosed as other psychiatric diagnoses, particularly depression. Due to therapeutic overlap in the management of PTSD with other psychiatric diagnoses, half of all patients with PTSD receives some sort of treatment, but only a small portion receive optimal PTSD treatment. Strategies to improve treatment of PTSD in primary care should focus on enhanced detection and proper diagnosis, and capitalize on primary care physicians' abilities to recognize psychiatric symptoms.

PREVALENCE AND CAUSES OF APPARENT CLINICAL INERTIA AMONG PATIENTS WITH DIABETES AND HYPERTENSION. E.A. Kerr[1]; B. Zikmund-Fisher[1]; M. Klamerus[1]; U. Subramanian[2]; T.P. Hofer[1]. [1]Veterans Affairs Health Services Research & Development Center of Excellence, Ann Arbor, MI; [2]Indiana University Purdue University Indianapolis, Indianapolis, IN. *(Tracking ID # 173613)*

BACKGROUND: Clinical inertia, the failure to initiate or intensify therapy when indicated, has been proposed as a main contributor of suboptimal blood pressure (BP) control. Little is known, however, about the causes of apparent clinical inertia, nor how competing demands such as patient comorbidities affect inertia. We examined causes for the failure to intensify BP medications among hypertensive diabetic patients and the role of competing demands on apparent clinical inertia.
METHODS: We enrolled 1169 diabetic patients of 92 primary care providers (PCPs) in nine Midwest VA facilities. Patients were enrolled if their triage BP prior to their PCP visit was >=140/90. After the visit, PCPs were asked whether they intensified BP therapy and provided reasons for not intensifying. PCPs also listed the conditions or issues they spent the most time on during the visit. PCPs returned this post-visit survey for 1164 patients. Electronic medical record review identified BPs retaken during the visit. We classified conditions that were related to diabetes and hypertension as concordant (e.g., coronary disease, renal failure) and other conditions as discordant (e.g., asthma, chronic pain, preventive care). Using two level models of patients within PCP and controlling for BP (both at triage and if retaken during the visit), we examined the association between various competing demands and BP medication intensification.
RESULTS: 637 (55%) patients with elevated BP at triage did not receive BP medication intensification. The most common reasons reported for not intensifying medications were: 1) PCP obtained a repeat acceptable BP (26%); 2) patient did not take medications prior to visit (20%); 3) BP is usually in good control (18%); 4) home BPs are lower (18%); 5) patient's adherence can be improved (16%); and 6) BP is close to good control (12%). Patients were less likely to receive intensification when at least one discordant competing demand was present (48% vs. 56%, $p = 0.01$) and much less likely to receive intensification when medication and/or compliance issues were discussed during the visit (30% vs. 56%, $p = 0.009$). Controlling for these factors, as well as visit blood pressure and patient specific treatment targets, there was substantial difference in average intensification rates across providers (32% vs 79% for a patient with systolic BP of 140/90 for +/−1 s.d. around the modal provider intensification rate)
CONCLUSIONS: Uncertainty around true BP measurement values, discordant competing demands and patient adherence issues were common reasons for lack of intensification and it may be possible to design clinical support systems for these

issues. Nevertheless substantial provider level variability in intensification remains unexplained and may also contribute to clinical inertia.

PTSD AND SUBSTANCE USE DISORDERS IN PATIENTS WITH CHRONIC PAIN IN PRIMARY CARE. J. Liebschutz[1]; R. Saitz[1]; T. Averbuch[2]; T. Keane[3]; R.D. Weiss[4]; J.H. Samet[5]. [1]Boston University, Boston, MA; [2]Boston Medical Center, Boston, MA; [3]VA Medical Center, Jamaica Plain, MA; [4]Harvard University, Belmont, MA; [5]Section of General Internal Medicine, Boston University School of Medicine, Boston, MA. *(Tracking ID # 172517)*

BACKGROUND: Substance use disorders (SUD), including prescription drug abuse, complicate treatment of chronic pain, as do underlying psychiatric conditions such as Post-Traumatic Stress Disorder (PTSD). Studies of the co-occurrence of these conditions derive from specialty pain, psychiatric and SUD treatment settings. We studied primary care patients with chronic pain to describe the use of opioid analgesics and the prevalence of substance use disorders, and to examine the association between PTSD and SUD.
METHODS: Patients awaiting a primary care appointment at an academic-affiliated safety-net urban hospital were systematically screened for study participation. Eligible patients were English speaking, 18–60 years old, and endorsed both pain for at least three months and analgesic use (including non-prescription) in that period. Trained research personnel administered the interview which included demographics, the Graded Chronic Pain Questionnaire (a measure of pain severity and disability), and Composite International Diagnostic Interview modules assessing PTSD, lifetime and current (past 12 month) drug use disorders (abuse and/or dependence) and current alcohol use disorders. We defined SUD as drug and/or alcohol disorder. We also asked about use of drugs and alcohol to treat pain, including "prescription drugs not prescribed for you". Prescription information was recorded from the electronic medical record. We report descriptive and bivariate analyses.
RESULTS: Of the 605 participants, 21% met diagnostic criteria for current SUD, including 10% with current prescription drug disorder, 15% current drug disorder, 40% lifetime drug disorder, and 12% current alcohol disorder. Demographic characteristics included 41% male, 61% African-American, mean age of 46 years, 36% receiving social security disability, 24% unemployed, and 61% with < $20,000 in annual income. Ninety percent had substantial pain disability (61% severely limiting, 29% moderately limiting). Opioid analgesic medications were prescribed to 40% at least once in the prior year. Of 126 participants with current SUD, 44% were prescribed opioids for pain compared to 39% of those without SUD, $p = 0.3$. Among participants with current SUD, 53% reported starting using illicit drugs and 30% reported starting misusing prescription drugs to treat pain. Current drug disorders were significantly more common in the 21% of participants with past year PTSD (drug abuse and/or dependence 25% in those with vs. 14% in those without PTSD, $p = 0.003$; prescription drug disorder 18% in those with vs. 8% in those without PTSD, $p < 0.005$). Alcohol dependence was more common but not significantly so in those with PTSD (15% in those with PTSD vs. 10% among those without PTSD, $p = 0.13$).
CONCLUSIONS: Among urban primary care patients with chronic pain, substance use disorders (SUD) and PTSD are important clinical considerations based on the following findings: prescription drug abuse occurs in a substantial portion of patients; SUD often begin with self-medicating pain symptoms; and SUDs are twice as common in those with PTSD. This constellation of symptoms, disorders, and behaviors may explain in part why management of chronic pain in primary care can be challenging. Integrated mental health, medical, and SUD treatment should be explored for patients with chronic pain, PTSD, and substance use disorders.

PTSD IN PRIMARY CARE: SYSTEM-LEVEL FACTORS ASSOCIATED WITH ITS MANAGEMENT. L.S. Meredith[1]; D.P. Eisenman[2]; B.L. Green[3]; J.N. Tobin[4]; A.N. Cassells[4]; R. Basurto[1]. [1]RAND Corporation, Santa Monica, CA; [2]University of California, Los Angeles, RAND Corporation, Los Angeles, CA; [3]Georgetown University, Washington, DC; [4]Clinical Directors Network, Inc., New York, NY. *(Tracking ID # 172877)*

BACKGROUND: Post-traumatic stress disorder (PTSD) is similar to depression in terms of prevalence and impact on functioning, and is common among patients in primary care practices (up to 35% prevalence). Yet, little is known about the determinants of primary care clinician (PCC) PTSD care. Social psychological and organizational theories suggest that structural factors in health care delivery may influence individual clinician practices. For example, Meredith (1999) demonstrated that level of mental health integration with primary care affects the delivery of depression care. We sought to identify how two system-level factors (degree of integration between primary care and mental health services; existence of linkages with other community social and legal services) affect PCC's self-confidence in managing PTSD, their perceived barriers to providing PTSD care, and their self-reported proclivity to use treatments for PTSD (e.g., psychotropic medications, psycho-education). We hypothesized that PCCs working in clinics with stronger mental health integration, such as on-site mental health specialty care, or established linkages with social and legal services would report greater confidence in their PTSD care, fewer perceived barriers to PTSD care, and higher proclivity to provide treatments and services for their patients with PTSD.
METHODS: We administered a survey to all Medical Directors and PCCs from 58 Community/Migrant Health Centers (C/MCHs) in New York and New Jersey that participate in the Clinical Directors Network (http://www.CDNetwork.org) a national practice-based research network devoted to providing primary care research opportunities to medically underserved populations. Potential participants were invited to complete either a mail survey or its equivalent web-based version and were entered into a raffle to win an iPod as an incentive. Respondents included 46 of the 58 Center directors (80% response rate) and we sampled at least 2–3 of the 348 eligible primary care clinicians (PCCs) working in the centers. We used bivariate and multivariate analyses to determine the relationship between system factors (reported by Medical Directors) and PCC reported self-confidence, perceived barriers, and reported treatment proclivity for their patients with PTSD. Multivariate analyses were adjusted for clustering within C/MHCs.
RESULTS: PCCs working in C/MHCs that reported linkages to external community services were less likely to report perceived barriers to treatment for patients suffering from PTSD, reported greater confidence in their ability to recognize and screen for PTSD, and to counsel and educate about PTSD ($p < .05$). PCCs in C/MHCs with better mental health integration reported greater confidence in ability to diagnose PTSD, and to identify the need for legal service referrals, and a higher proclivity to report assessment for substance abuseand referral for legal service for their patients with PTSD ($p < .05$).
CONCLUSIONS: System factors play an important role in managing PTSD. Having mental health specialty care available on-site and established relationships with social and legal services are associated with fewer perceived barriers, greater confidence in ability to provide services for PTSD and other mental health services. To address system-level barriers, interventions are needed that restructure primary care practices by making mental health services more integrated and strengthening community linkages.

QUALITY FOR PATIENTS WITH COMPLEX CONDITIONS DEFINED THROUGH A CARE MANAGEMENT SYSTEM. D.A. Dorr[1]; C.P. Brunker[2]. [1]Oregon Health & Science University, Portland, OR; [2]Intermountain Health Care, Salt Lake City, UT. *(Tracking ID # 173744)*

BACKGROUND: Pay-for-performance programs that tie measures of quality to reimbursement are prone to biases related to observation and heuristics. An example of an observation bias relates to a system's limited capacity to focus on quality issues; choosing a measure prioritizes it over other, non-selected aspects of quality. A heuristic bias is the oversimplification of quality related to the creation of specific measures; even within a concept of quality (e.g., high quality care for depression), a measure may define only a limited aspect of that concept (e.g., on antidepressants for 6 weeks continuously). In patients with complex conditions, observation and heuristic biases threaten to subvert quality without careful consideration of patient perceived value. In our program, Care Management Plus, we aim to create high quality care through use of trained care managers in primary care who assess the specific needs of complex patients. They are aided by information technology that embeds protocols around self-management and specific conditions, helps remind about complex care planning, and facilitates flexible communication. Our aim in this study was to better define what constituted quality of complex patients enrolled in the program.
METHODS: A mixed methodology was used. First, physicians, patients and care managers were asked what quality goals were most valued by patients with complex illness in 30 separate interviews divided by group. These results were analyzed qualitatively for theme and a conceptual model built through investigator consensus. Then, goals implied by standard quality measures (defined by AQA) in diabetes, depression, and cardiovascular disease were compared to goals recorded by those caring for complex patients. We tracked the number and percent of patients whose recorded goals conflicted with standard measures and those who had barriers to achievement of quality goals due to the complexity and cost of their illness.
RESULTS: Themes raised in the interviews by all groups included general quality of life ("being the very healthiest one can be"), coordination ("She was a life-saver in guiding us through [the exacerbation of illness]"), assessment and preference seeking ("anxiety about illnesses"), and prioritization. The 4,735 patients with complex illness seen (2.7% of total practice patients) had an average of 3.3 comorbidities, with 20.9% having complex social issues. Of all patients seen in the system, 35.9% had specific barriers to achievement of quality goals at the start of care management. Examples include inability to afford medications needed to lower blood pressure or glucose and inability to take medications as prescribed due to cognitive difficulties or adverse events. In addition, 9.2% had conflicting goals. These included end-of-life care (avoiding hypoglycemia and injections for diabetes), previous adverse events from treatment (falls from fluctuating blood pressure), and desire to prioritize and simplify health care.
CONCLUSIONS: For patients with complex illness, focus on specific quality measures may miss crucial aspects of what they seek from health care (observation bias) and may conflict with their definition of quality of health care (heuristic bias). Pay-for-performance should allow for systems that encourage patients to set well-informed goals that differ from the limited measures presented. In doing so, the danger of poor care to complex patients may be limited.

QUALITY OF WEIGHT LOSS ADVICE ON INTERNET FORUMS. K.O. Hwang[1]; K. Farheen[1]; C.W. Johnson[1]; E.J. Thomas[1]; A.S. Barnes[2]; E.V. Bernstam[1]. [1]University of Texas Health Science Center at Houston, Houston, TX; [2]Baylor College of Medicine, Houston, TX. *(Tracking ID # 173025)*

BACKGROUND: Adults use the Internet for weight loss information, sometimes by participating in discussion forums. The quality of advice delivered on these forums is

unknown. The objective of this study was to assess the quality of weight loss advice on Internet forums.
METHODS: This was a retrospective analysis of messages posted on 18 Internet weight loss forums during one month in 2006. Advice contained in the messages was evaluated for congruence with clinical guidelines; potential for causing harm; and subsequent correction when it was contradictory to guidelines (erroneous) or potentially harmful. Message- and forum-specific characteristics were evaluated as predictors of advice quality and self-correction.
RESULTS: Of 3368 initial messages, 266 (7.9%) were requests for advice. Of 654 provisions of advice, 56 (8.6%) were erroneous and 19 of 56 (34%) were subsequently corrected. Forty-three (6.6%) provisions of advice were harmful and 12 of 43 (28%) were subsequently corrected. Messages from low-activity forums were more likely than those from high-activity forums to be erroneous (10.6% vs. 2.4%, $p < 0.001$) or harmful (8.4% vs. 1.2%, $p < 0.001$). In high-activity forums, 2 of 4 (50%) erroneous provisions of advice and 2 of 2 (100%) potentially harmful provisions of advice were corrected by subsequent postings, but samples were too small for meaningful statistical comparison of correction rates. Compared to general weight loss advice, medication-related advice was more likely to be erroneous ($p = 0.02$) or harmful ($p = 0.01$).
CONCLUSIONS: Most advice posted on Internet weight loss forums is not erroneous or harmful. Clinicians should consider endorsing high-activity forums to patients trying to lose weight.

RACE, OBESITY, AND DIAGNOSIS AND CONTROL OF DIABETES AMONG US ADULTS. C.C. Wee[1]; M.B. Hamel[1]; A. Huang[1]; R.B. Davis[1]; M.A. Mittleman[1]; E.P. Mccarthy[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA. *(Tracking ID # 172391)*

BACKGROUND: The rise in obesity has led to an increased prevalence of diabetes mellitus (DM) in the US. National guidelines differ, however, on the merits of screening asymptomatic persons. Lack of uniform guidelines may lead to delays in the diagnosis and control of DM especially among racial/ethnic minorities and persons with obesity, who are at higher risk for DM and healthcare disparities.
METHODS: We examined the influence of race/ethnicity and body mass undex (BMI) on the diagnosis and control of DM in adult participants who underwent assessment for DM in the 1999–2002 National Health and Nutrition Examination Survey (NHANES), a US population-based study. We defined adults as having DM if they reported a prior diagnosis, were taking medications approved for the treatment of DM, or had laboratory findings indicating DM (fasting glucose > 126, nonfasting glucose > 200, or Hemoglobin A1C > 7.0). Among adults with DM, we classified as undiagnosed those who were unaware of a DM diagnosis and were not taking DM medications; those with a hemoglobin A1C > 7.0 were considered suboptimally controlled. We used logistic regression to examine the relationship between race/ethnicity and BMI and the likelihood of having undiagnosed DM and suboptimal control. We weighted analyses to reflect US population estimates and accounted for the complex clustered sampling using SUDAAN.
RESULTS: Of 8913 US adults aged 20 and above who had a BMI > = 18.5, 10.1% met our definition of having DM. Compared to 9.1% of Whites, 13.3% of African Americans(AAs) and 11.1% of Hispanics had DM, $p = 0.08$. Obese adults (BMI > = 30) were significantly more likely to have DM (15.8%) than normal weight adults (BMI 18.5–24.9)(5.7%), $p < 0.001$. Among adults with DM, 16.3% were undiagnosed and 43.8% had suboptimal control. After adjusting for age, sex, education, usual place of healthcare, number of healthcare visits, and health insurance, higher BMI was associated with having undiagnosed DM and poor control whereas race/ethnicity was associated with poor control but not delayed diagnosis (see Table).
CONCLUSIONS: Despite the recognition that obesity is a major risk factor for developing DM, obese adults are still less likely to be diagnosed than thinner adults with the condition. Greater efforts are needed to identify and manage DM in persons with obesity and improve DM control in racial and ethnic minorities.

Race, BMI and the Likelihood of Undiagnosed Diabetes and Suboptimal Control Among US Adults with Diabetes, n=1172 (*Models include terms for race/ethnicity, BMI, demographic factors, and healthcare access and utilization)

	Prevalence of Undiagnosed DM	AOR* for Undiagnosed DM	Prevalence of Suboptimal Control	AOR* for Suboptimal Control
Race				
White	17.1%	1.00	38.9%	1.00
AAs	14.2%	0.83 (0.51–1.36)	53.3%	1.70 (1.14–2.54)
Hispanic	16.0%	0.86 (0.47–1.58)	48.9%	1.53 (1.01–2.34)
BMI, kg/m2				
18.5–24.9	9.3%	1.00	33.6%	1.00
25.0–29.9	15.9%	2.00 (0.99–4.06)	44.2%	1.41 (0.76–2.60)
>=30	19.4%	2.77 (1.40–5.47)	47.5%	1.78 (1.02–3.10)

RACIAL DIFFERENCES IN LONG-TERM ADHERENCE TO HYPOGLYCEMIC THERAPY. C.M. Trinacty[1]; A.S. Adams[1]; S.B. Soumerai[1]; F. Zhang[1]; J.B. Meigs[2]; J.D. Piette[3]; D. Ross-Degnan[1]. [1]Harvard Medical School and Harvard Pilgrim Health Care, Boston, MA; [2]General Medicine Unit, Massachusetts General Hospital, Boston, MA; [3]University of Michigan, Ann Arbor, MI. *(Tracking ID # 172605)*

BACKGROUND: Despite the proven benefits of adhering to a prescribed medication regimen, adherence to hypoglycemic medications is often suboptimal. Adherence differences may contribute to health disparities for black diabetes patients, including higher complication rates, greater complication-related disability, and higher mortality. This retrospective, longitudinal cohort study assessed black-white differences in short- and long-term adherence to hypoglycemic therapy among newly diagnosed diabetes patients in a managed care setting in which all members have prescription drug coverage.
METHODS: Using 10 years of patient-level claims and clinical data (1/1/1992–12/31/2001), we used longitudinal survival methods and generalized estimating equations to examine black-white differences in: (1) time until first prescription of hypoglycemic therapy; (2) time from first prescription to prescription fill; (3) time until discontinuation of hypoglycemic therapy from first prescription; and (4) long-term adherence (amount dispensed versus amount prescribed) over a 24-month follow-up from first hypoglycemic prescription. Our study cohort included 1909 newly diagnosed adult diabetes patients (26% black and 74% white) who initiated hypoglycemic therapy and were continuously enrolled for at least 24 months in a large multi-specialty care group practice comprised of 14 health centers in the Boston area.
RESULTS: We found that black patients were as likely as whites to initiate oral therapy and fill their first prescription, but experienced higher rates of medication discontinuation (HR: 1.8, 95% CI: 1.2, 2.7) and were less adherent over time. These black-white differences increased over the first six months of therapy but stabilized thereafter for patients initiated on sulfonylureas. For patients initiated on metformin therapy, significant black-white differences in adherence levels remained constant throughout follow-up.
CONCLUSIONS: Racial differences in adherence to hypoglycemic therapy persist over time within a health system that provides equal access to services and high quality of care for diabetes patients. While differences do not appear in initiation of medication, racial gaps are quickly evident in discontinuation and adherence over time. Early and continued emphasis on sustaining medication use after initiation of medication may lead to improved adherence to hypoglycemic medication. Aggressive, culturally-specific promotion of adherence among blacks or implementation of a patient-centered approach to identify barriers to adherence and provide self-care supports during early treatment may potentially reduce persistent racial differences in self-management practice and clinical outcomes.

RISK OF SYMPTOMATIC CEREBRAL VASCULAR DISEASE IN HYPERTENSIVE PATIENTS WITH CONGESTIVE HEART FAILURE. A.L. Barbour[1]; G.L. Barbour[2]; B. Nagaraj[2]; A.L. Wolfson[2]. [1]George Washington University, Washington, DC; [2]Uniformed Services University of the Health Sciences, Bethesda, MD. *(Tracking ID # 172660)*

BACKGROUND: Congestive heart failure (CHF) and symptomatic cerebral vascular disease (SCVD) are well recognized complications of poorly controlled hypertension (HTN). Recent data have suggested that patients with CHF have an increased risk of developing SCVD though studies are often heterogeneous and thus difficult to compare. We sought to determine the incidence rates of new SCVD in patients with poorly controlled HTN as defined by a hospitalization for the primary diagnosis of HTN. In addition, we examined whether development of CHF significantly increased the rates of SCVD as compared to those without CHF and whether or not atrial fibrillation was a significant risk factor.
METHODS: Data were collected from a 5% random sample of Medicare claims from 1998–2000. Patients were included in the cohort for HTN if they filed a Medicare claim for hospitalization with a primary ICD-9 code of 401 during the one year run-in period immediately preceding the study period. Patients were included in the analysis only if they had Parts A and B Medicare coverage continuously throughout the study period. Within the HTN study cohort three groups were identified based on ICD-9 codes: No CHF, CHF with atrial fibrillaton and CHF without atrial fibrillation. We analyzed these cohorts over a 3 year follow up for incidence of new SCVD or death. Incidence rates/1000 patient -days were compared using Chi square analysis.
RESULTS: Overall incidence rates of SCVD were significantly higher in patients with a diagnosis of CHF compared to those without CHF, as were mortality rates. (Table 1). There were no disease burden, geographic, gender or racial disparities noted. In patients with CHF, atrial fibrillation also confered a significant increase in mortality. However, incident rates of new SCVD in patients with a prior/comorbid diagnosis of CHF were significantly higher in patients without atrial fibrillation (Table 2).
CONCLUSIONS: Congestive heart failure is a known complication of HTN and its prevalence is increasing as the population is aging. These data suggest that the risk of SCVD in patients with CHF is increased. Atrial fibrillation (a recognized risk factor for SCVD) increased mortality but did not increase new SCVD risk in this population.This finding is likely due to adherence to the recommendations for anticoagulation in patients with atrial fibrillation. Current therapeutic guidelines for stroke prevention in the presence of CHF are equivocal on the routine use of anticoagulation or antiplatelet therapy in patients without documented coronary artery disease or atrial fibrillation. Given the significant morbidity and mortality of SCVD in patients with CHF, further prospective studies are needed to determine the best preventative strategy.

Table 1. New SCVD or Death in Patients with and without CHF

	Rate/1000 patient-days	95% CI	p-value
New SCVD			
CHF	0.15	(0.09, 0.18)	0.001
No CHF	0.10	(0.08, 0.12)	
Death			
CHF	0.60	(0.50, 0.57)	<0.001
No CHF	0.29	(0.26, 0.32)	

Table 2. New SCVD or Death in Patients with CHF with and without A-FIB

	Rates/1000 patient-days	95% CI	p-value
New SCVD			
AFIB	0.12	(0.09, 0.15)	0.02
No AFIB	0.16	(0.14, 0.18)	
Death			
AFIB	0.77	(0.71, 0.84)	<0.001
No AFIB	0.53	(0.50, 0.57)	

SEEING IN 3-D: EXAMINING THE REACH OF DIABETES SELF-MANAGEMENT SUPPORT STRATEGIES IN A PUBLIC HEALTHCARE SYSTEM. D. Schillinger[1]; H. Hammer[1]; F. Wang[1]; J. Palacios[1]; I. Mclean[1]; A. Tang[1]; S. Youmans[1]; M. Handley[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172750)*

BACKGROUND: While efficacy studies demonstrate benefits of self-management support (SMS), there is little translational research on SMS implementation to guide planning, and little research on the reach of such programs for diverse clinics, providers, and populations in safety net systems.
METHODS: We implemented an effectiveness study of SMS nested within a randomized trial among diverse diabetes patients in a safety net system. We measured the extent to which tailored SMS strategies reach vulnerable patients and explored variation in reach by language, literacy, and insurance. English, Spanish and Cantonese-speaking diabetes patients were randomized to receive weekly automated telephone disease management (ATDM) or monthly group medical visits (GMV). ATDM employs technology to provide surveillance, education, and care management. GMVs employ a more collective approach to self-management support with roots in adult educational practice. The SMS programs employ distinct communication methods but share common theory and objectives, including behavioral 'action plans'. We measured reach using 3 complementary dimensions: 1) participation among clinics, clinicians, and patients, 2) representativeness of enrolled patients, and 3) patient engagement with SMS. For each SMS model, we calculated a series of engagement indices, such as (a) proportion of individuals who ever engaged (responded to ≥1 ATDM call, or attending ≥1 GMV), (b) proportion of SMS sessions attended among ever-users, (c) proportion that created ≥1 action plan, and (d) proportion of action plans achieved. Using the technique of Glasgow, we combined engagement indices to create a composite engagement product (CEP), a unit-less value that provides a comprehensive metric of engagement among enrolled patients. We separately calculated the CEP for ATDM and GMV and compared engagement across language and literacy using multivariate modeling.
RESULTS: Participation rates were high across clinic, clinician, and patient levels, and the programs preferentially attracted the uninsured and Medicaid recipients. While both programs engaged a significant proportion of participants in behavioral action planning, ATDM yielded higher engagement (CEP, 22.2), especially among those with limited English proficiency (CEP, 24.3) and limited literacy (CEP, 28.0). The GMV CEP was 4.8, with lower engagement for those with limited English proficiency (CEP, 2.7) and those with limited literacy (CEP, 3.6).
CONCLUSIONS: Socioeconomically vulnerable, diverse patients in a public sector delivery system appear especially interested in receiving diabetes SMS as adjuncts to care. For health system planners and practitioners in health promotion, the variation in engagement between SMS models suggests that the relative accessibility and tailoring inherent to ATDM technology, combined with its proactive nature and hierarchical logic, provides a strategy to reverse the 'inverse care law' and reduce disparities. These results provide important insights for health communication and translational research with respect to realizing the public health benefits of self-management support.

SELF-EFFICACY AS A MARKER OF CARDIAC FUNCTION AND PREDICTOR OF HOSPITALIZATION FOR HEART FAILURE: DATA FROM THE HEART AND SOUL STUDY. U. Sarkar[1]; S. Ali[1]; M.A. Whooley[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173932)*

BACKGROUND: Self-efficacy, or patients' confidence in their ability to manage their health, has been associated with self-reported health status among patients with coronary heart disease (CHD), but it is unclear whether self-efficacy is associated with objective measures of cardiac function or cardiovascular health outcomes. We sought to evaluate the association of self-efficacy with objective measures of cardiac function and subsequent hospitalization for heart failure (HF).
METHODS: In a longitudinal study of 1024 ambulatory patients with stable CHD, we examined the association of self-efficacy with baseline measures of cardiac function and future hospitalization for HF during 4 years of follow-up. We measured self-efficacy using a published, validated, 5-item summative scale, the Sullivan Self-Efficacy to Maintain Function Scale. Each item begins with the stem, "How confident are you that you know or can," and assesses an aspect of daily life-function, including social activities, regular exercise, sexual function, and usual activities at home and at work. Responses are coded on a 5-level Likert scale from "not at all confident" to "completely confident." We also performed a comprehensive cardiac assessment, including an exercise treadmill test with stress echocardiography, and followed participants for an average of 4 years. Hospitalizations for HF were determined by blinded review of medical records. We used linear regression to evaluate the association of self-efficacy with baseline measures of cardiac function and logistic regression to evaluate self-efficacy as a predictor of hospitalization for HF, adjusted for demographics, medical history, medication use, depression and social support.
RESULTS: Of the 1024 predominately male, older CHD patients, 1013 (99%) were available for follow-up, and 124 (12%) were hospitalized for HF during 4 years of follow-up. Mean self-efficacy score was 9.7 (SD 4.5, range 0–20), corresponding to responses between "not at all confident" and "somewhat confident" for ability to maintain function. At baseline, lower self-efficacy was associated with decreased left ventricular ejection fraction, decreased exercise capacity, and greater inducible ischemia (all p values < 0.0001). Lower self-efficacy also predicted subsequent hospitalization for HF (OR per SD decrease $= 1.4$, $p = 0.0007$), and this association persisted after adjustment for demographic characteristics, medical history, medication use, depression and social support (adjusted OR per SD decrease $= 1.3$, $p = 0.02$). After further adjustment for baseline cardiac function, self-efficacy was no longer predictive of future events.
CONCLUSIONS: Among patients with CHD, self-efficacy was associated with objective measures of cardiac function and predicted hospitalization for HF. The increased risk of HF associated with lower baseline self-efficacy was explained by worse cardiac function. These findings indicate that measuring self-efficacy may provide a rapid and accurate assessment of cardiac function among outpatients with CHD.

STRUCTURED EXERCISE TRAINING EARLY AFTER HOSPITALIZATION FOR CONGESTIVE HEART FAILURE: A QUALITY OF LIFE AND COST-EFFECTIVENESS ANALYSIS. M.P. Kossovsky[1]; M. Louis-Simonet[2]; M. Rabaeus[2]; M. Bettoni[3]; P. Sigaud[2]; T.V. Perneger[4]; J. Gaspoz[1]. [1]Division of Primary Care Medicine, Geneva University Hospitals, Geneva, ; [2]Department of Internal Medicine, Geneva University Hospitals, Geneva, ; [3]CardioTour, HÂpital de la Tour, Meyrin, ; [4]Quality of Care Service, Geneva University Hospitals, Geneva,. *(Tracking ID # 172470)*

BACKGROUND: Exercise training (ET) in patients with congestive heart failure (CHF) has been shown to reduce hospital readmissions for heart failure, to improve quality of life and to reduce all-cause mortality. However, prior studies only enrolled patients in stable condition for at least 3 months. We sought to determine if a structured exercise training program performed early after a hospital stay for CHF was safe, beneficial and cost-effective.
METHODS: Design: randomized clinical trial. Eligibility: all patients admitted for CHF with a left ventricular ejection fraction (LVEF) $< 45\%$, able to perform a moderate exercise and willing to participate. Intervention: random allocation to usual care or to a structured 7-month ambulatory exercise program consisting in at least 3 weekly sessions during the first month, followed by 2 weekly sessions for the remaining 6 months. Outcomes: time to readmission for any cause or CHF related during the 12 months after inclusion, survival, quality of life, exercise tolerance, direct medical costs (hospital and ambulatory) during follow-up. For hospital readmissions, patients' individual costs were extracted from the hospital accounting system; ambulatory costs were built from patients' report of their medication, the number of visits to their primary care physicians and the number of rehabilitation sessions followed. Because of skewed distribution, analyses were performed on log transformed costs.
RESULTS: From January 2002 to February 2005, 130 patients were randomly allocated to the control group (63) or to the ET group (67). Both groups were similar in terms of age (Mean age: 69±12 years), gender, CHF symptoms severity (NYHA class on admission: 3.5±0.6), comorbidity (Charlson comorbidity index: 2.3±1.8) and medications (admission and discharge). ET was started within a mean of 20 + 15 days after hospital discharge. The proportion of patients readmitted for any cause was not statistically different between groups [18/67 (26.9%) in the ET group vs. 19/63 (30.2%) in the control group) by differences in proportions ($p = 0.68$) or by log-rank test on the equality of survivor functions ($p = 0.67$). The same observation held true when only readmissions for CHF were considered [10/67 (14.9%) in the ET group vs. 10/63 (15.9%) in the control group; $p = 0.88$ by chi-square test and $p = 0.86$ by log rank test]. Direct medical costs during follow-up were significantly lower in the ET group (15,349±20,250 Swiss Francs) as compared with the control group (24,579±35,129; $p < 0.01$) Patients in the ET group having completed the program improved significantly more than patients in the control group for 2 of the 7 health domains explored by the Kansas City Cardiomyopathy Questionnaire (symptom change over time and quality of life). In addition, improvement in exercise tolerance (6 minute walk) was much higher among them than in the control group (test + 96.5 m±105.3 vs. + 32.7 m±73.0; $p = 0.008$).
CONCLUSIONS: Early exercise training among unselected, aged and polymorbid patients discharged from general internal medicine wards for systolic CHF is secure, beneficial in terms of exercise tolerance and quality of life and cost-effective.

SYSTEMATIC DIFFERENCES IN MEDICATION ADHERENCE AMONG DIABETIC PATIENTS AT LARGE FACILITIES IN A NATIONAL HEALTHCARE SYSTEM. C.L. Bryson[1]; M.L. Maciejewski[2]; M. Mary[1]; S.D. Fihn[1]; N.D. Sharp[1]; C. Liu[1]. [1]Health Services Research & Development, VA Puget Sound Health Care System, Seattle, WA; [2]Health Services Research & Development, Durham VAMC, Durham, NC. *(Tracking ID # 173597)*

BACKGROUND: Daily oral drug therapy is a cornerstone of medical treatment for most patients with diabetes. Medications are effective only if taken, and adherence among diabetic patients is often poor. Studies of patient-level adherence and risk factors have yielded few effective and affordable tailored interventions. Facility-level characteristics, such as ease of obtaining refills, might have a profound effect on adherence but have not been studied. If important differences in medication adherence exist among large facilities, it may be necessary to understand better the facility-level barriers to improving medication adherence.
METHODS: We examined adherence to oral diabetic medications among 3,721 patients from general internal medicine clinics at 7 Veterans Health Administration (VA) facilities, enrolled from 1997 through 2000 in the Ambulatory Care Quality Improvement Project (ACQUIP), an audit and feedback trial designed to improve quality of care. We selected patients who had two or more fills of an oral diabetic agent, were not switched to insulin, and remained alive during the year after their enrollment in the trial, which constituted the period of assessment. Refill adherence for 3 contiguous 90-day intervals was calculated from VA electronic pharmacy data using a validated pharmacy-based measure that is correlated with disease control. Values greater than 100% represent oversupply and values less than 100% represent nonadherence in the proportion of medication days available during that interval. We used regression analysis to account for repeated measures, using robust estimation of variance and adjusting for patient level factors such as age, number of medications, and coexisting chronic conditions.
RESULTS: Average age of patients was 62, and 98% were male. Patients were prescribed a mean of 1.7 oral diabetic agents; average patient level adherence was 77%. After adjusting for patient level characteristics, facility-level effects were highly significant both statistically ($p > 0.001$) and clinically (Figure 1). The highest adjusted adherence was above 90%, suggesting that patients at this facility had enough medication to last through each 90-day interval. In contrast, the lowest performing facility had an adherence average of just below 60%.
CONCLUSIONS: Within a large, national healthcare system, there were dramatic variations in adherence to oral hypoglycemic medication among facilities, even after accounting for patient differences. Discovery of key system level characteristics that lead to better adherence and identification of facility-level best practices may greatly improve patient adherence to medications.

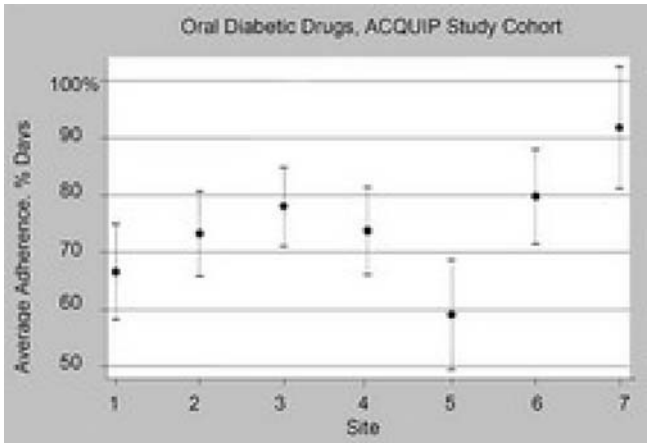


Figure 1. Adherence to oral Hypoglycemic Medications at 7 facilities within VA.

THE IMPACT OF PSYCHIATRIC COMORBIDITIES ON HOSPITAL OUTCOMES: DOES THE METHOD OF IDENTIFYING COMORBIDITIES MATTER? T.E. Abrams[1]; M.S. Vaughan Sarrazin[1]; G.E. Rosenthal[1]. [1]Iowa City Healthcare System and University of Iowa, Iowa City, IA. *(Tracking ID # 173692)*

BACKGROUND: Although prior studies suggest that psychiatric comorbidities may impact prognosis for a number of illnesses, few studies have examined the effects of psychiatric comorbidities on outcomes of acute hospitalizations. The goals of the current study were to determine: 1) relationships between psychiatric comorbidities and hospital mortality, using claims data, for patients with pneumonia and congestive heart failure (CHF); and 2) if relationships with mortality varied according to the method of identifying psychiatric comorbidities.
METHODS: The VA Patient Treatment File (PTF) identified 36,230 consecutive veterans admitted to all VA facilities in FY 2004 with a principle diagnosis of congestive heart failure (CHF; n = 16,945; mean age, 70.2 years) or pneumonia (n = 19,285; mean age, 69.8 years). Mortality 30 days after admission was ascertained from the PTF and the Beneficiary Identifier Record Locator System. Psychiatric comorbidities were identified using three different methods: 1) secondary ICD-9 diagnoses (for PTSD, depression, anxiety, and pyschosis) from the index hospitalization; 2) ICD-9 diagnoses from prior outpatient visits during the preceding 24 months; 3) and visits to a mental health clinic or provider in preceding 24 months. Hierarchical logistic regression was used to determine the independent effects of psychiatric comoribities, adjusting for socio-demographics and medical comorbidities.
RESULTS: Rates of psychiatric comorbidities, as determined by inpatient diagnoses, prior mental health clinic visits, and prior outpatient diagnoses were 9.2%, 26.2%, and 31.0%, respectively, for CHF and 14.2%, 31.6%, and 39.2% for pneumonia. The agreement between the identification of psychiatric comorbidities based on prior outpatient diagnoses and mental health clinic visits was substantially higher (kappa = 0.53) than the agreement between inpatient and outpatient diagnoses (kappa = 0.23) or between inpatient diagnoses and mental health visits (kappa = 0.25). The unadjusted 30-day mortality in all patients was 8.5% (6.1% for CHF and 10.6% for pneumonia). In multivariable analyses adjusting for diagnosis, demographics, and medical comorbidity, the adjusted odds of death for patients with psychiatric comorbidities were lower when psychiatric comorbidities were identified by ICD-9 codes from the index hospitalization (OR, 0.81; 95% CI, 0.71–0.93) or by prior outpatient mental health visits (OR, 0.84; 95% CI, 0.76–0.92), but were higher when psychiatric comorbidities were identified by prior outpatient diagnosis codes (OR, 1.14; 95% CI, 1.05–1.24). These results were generally similar in separate analyses of CHF and pneumonia.
CONCLUSIONS: Among patients hospitalized for CHF and pneumonia, the prevalence of psychiatric comorbidities within claims data varied, depending on the method used to identify such comorbidities. In addition, the prognostic effect of psychiatric comorbidities varied depending on the identification method, even for methods with moderate agreement for identifying patients. These findings have significant implications for analyses of the impact of psychiatric comorbidities using claims data.

THE ROLE OF RELIGION IN PATIENTS WITH NONMALIGNANT CHRONIC PAIN. L.J. Staton[1]; M. Panda[1]; I.A. Chen[2]; S. Cykert[3]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN; [2]Eastern Virginia Medical School, Norfolk, VA; [3]University of North Carolina at Chapel Hill, Chapel Hill, NC. *(Tracking ID # 172801)*

BACKGROUND: Previous studies suggest that when assessing patients with pain, it may be beneficial to assess patients' descriptions of how they use spiritual resources to cope with their pain. Few studies have evaluated the role of inquiring about religion practices in the management of patients with chronic nonmalignant pain. We evaluated the association of religiosity with pain level, self efficacy, quality of life and narcotic use in a primary care setting.
METHODS: We surveyed 463 patients with chronic non-malignant pain persisting for more than 3 months in 12 academic primary care centers. To estimate religiosity we examined the religious practices of patients by defining religiosity as believing in a higher power and following the teachings of single religions and asked patients to rate their religion on a scale of 0 (not religious at all) −10 (extremely religious). To measure pain intensity, we used an 11-point numeric rating scale (NRS-11) for which pain scores range from 0 (no pain) to 10 (unbearable pain). We measured health-related quality of life with the Medical Outcomes Short Form SF-36 questionnaire and self efficacy using the Patient Self-Efficacy Questionnaire (PSEQ). We compiled descriptive data and performed bivariate analyses then built regression models to control for potential confounders.
RESULTS: Of 601 patients approached, 463 (77%) completed the survey. Forty eight percent of the patients were white, 39.1% African Americans, and 12.8% other races. The majority of patients were female (67.6%) and the average age was 53.3 years old. Females (7.3 vs 6.0 $p = 0.0001$) were more likely to be religious than males. The older the patient the more likely he or she was to be religious.(Correlation coefficient = 0.13, $p = 0.005$). The religiosity of African Americans was self-reported as greater than whites (7.6 vs 6.3, respectively, $p < 0.0001$). Higher pain levels were associated with a higher religiosity rating in bivariate analysis ($p = 0.01$) but was not significant when we corrected for age, sex, race, pain level and narcotic use in linear regression. There was no relationship between self-efficacy and religiosity in the bivariate analysis. Physical functioning as measured by the SF-36 was not associated with religiosity in any analysis. Religiosity was not associated with narcotic use (6.7 on narcotics vs 6.6 not on narcotics). People who are religious tend to think that prayer makes their pain better (60%)
CONCLUSIONS: Although patients believe that prayer makes pain better, self perception of religiosity does not seem to influence pain level, self efficacy, quality of life measures or narcotic use. Incorporating spirituality as a tool to ameliorate the burden of chronic pain as part of a multidisiciplinary approach in primary care populations does not appear promising in this exploratory analysis although prospective interventions that involve religion and pain could be considered.

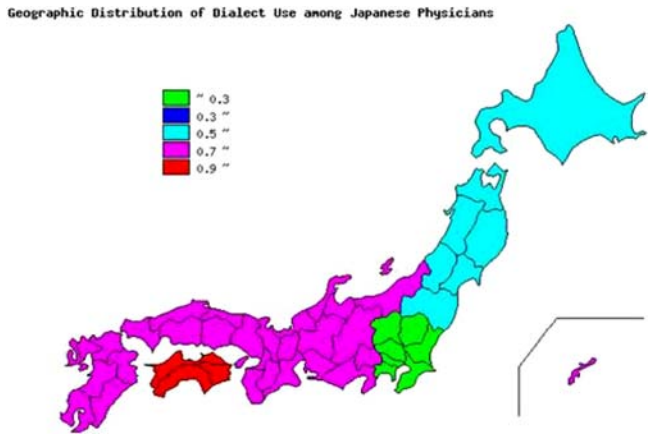
THE UNEXPECTED ASSOCIATIONS OF RELIGIOSITY AND SPIRITUALITY WITH COMPLEMENTARY AND ALTERNATIVE MEDICINE USE AMONG CANCER SURVIVORS. M.D. Wong[1]; A.H. Ambs[2]; M.S. Goldstein[1]; L. Becerra[1]; E. Cheng[3]; N.S. Wenger[1]; A. Hsiao[4]. [1]University of California, Los Angeles, Los Angeles, CA; [2]NCI, Bethesda, MD; [3]Greater Los Angeles Veterans Healthcare System, Los Angeles, CA; [4]Long Beach VA Healthcare System, Long Beach, CA. *(Tracking ID # 172876)*

BACKGROUND: Cancer survivors have increasingly turned to complementary and alternative medicine (CAM) to treat their illness or to reduce side effects of radiation

and chemotherapy. Since increased religiosity and spirituality have been found to be associated with higher CAM use in the general population, we hypothesized that these factors would be important predictors of CAM use in cancer survivors.
METHODS: We used the California Health Interview Survey of CAM, a cross-sectional survey of a population-based sample of 1844 people with a past or current history of cancer in California, conducted in 2003. Dependent variables included religious/spiritual forms of complementary and alternative medicine (R/S CAM), such as self-prayer, others pray for you, group prayer, and healing rituals, and non-religious/spiritual forms of CAM (non-R/S CAM) use. We compared prevalence and factors associated with R/S CAM use and non-R/S CAM use among cancer survivors. Religiosity was measured by a single-item with the following categories: very/moderately religious, slightly religious, or not at all religious. Similarly, spirituality was measured by another single-item with identical response categories.
RESULTS: Nearly two thirds reported using at least one type of R/S CAM, and 85% reported ever using non-R/S CAM. Nearly three fifths of cancer survivors reported that they were very/moderately religious or spiritual and one quarters reported that they were slightly religious or spiritual, whereas 10% reported that they were not at all religious or spiritual. Both religiosity and spirituality were strongly related to non-R/S CAM use, but in opposite directions. Very or moderately religious cancer survivors were less likely (OR = 0.30; 95% CI , 0.12–0.40) than non-religious cancer survivors to use non-R/S CAM. In contrast, very or moderately spiritual cancer survivors were more likely (OR = 2.42; 95% CI, 1.16–6.02) than non-spiritual cancer survivors to use non-R/S CAM. Access to conventional medical care was unrelated to use of R/S CAM or non-R/S CAM.
CONCLUSIONS: Cancer survivors commonly use R/S CAM and non-R/S CAM and selection of such treatments is related to religiosity and spirituality. To improve the quality of cancer care health care professionals may consider tapping into cancer survivors' reliance on religiosity and spirituality as sources of support and recognize that these factors are associated with different types of CAM use, which may affect integration with conventional therapy.

USE OF DIALECT AMONG JAPANESE PHYSICIANS DURING COMMUNICATION WITH PATIENTS. Y. Tokuda[1]; K. Motomura[2]; A. Naito[3]; K. Hayano[4]. [1]St. Luke's Life Science Institute, Chuo City, Tokyo; [2]North Tokyo Center for Family Practice, Kita City, Tokyo; [3]Imperial College of Science, Technology and Medicine, University of London, London; [4]Kumamoto University, Kumamoto, Kumamoto. *(Tracking ID # 172575)*

BACKGROUND: For good communication with patients, various strategies have been suggested. Despite of its possible importance, few studies have investigated the use of dialect among Japanese physicians during communication with patients. In this study, we aimed to determine the prevalence of Japanese physicians' dialect use and its relation to geographic location and to elucidate how they respond to dialect-using patients and whether this was a responsible factor for difficulty in communicating with patients.
METHODS: We conducted an anonymous web-based survey of physicians throughout Japan from April 4 to 28, 2005. A selection of respondent Japanese physicians was randomly included and used as a panel for the survey. We solicited the following information: 1) dialect use during clinical communication with patients; 2) perceptions for how to communicate with patients using dialect; and, 3) perceptions of responsible factors when they have difficulty in communicating with patients. For dialect use during clinical communication with patients, a dialect user was defined as physicians using a dialect either frequently or sometimes; likewise, a rare or non-user was defined as physicians using a dialect rarely or never. For response categories to perceptions on how to communicate with patients using dialect, we included two responses: 1) physicians should use the same dialect as the patient; or, 2) physicians should use standard Japanese. For response categories to perceptions on responsible factors when they have difficulty in communicating with patients using dialect, we included three responses: 1) patient factor is responsible; 2) physician factor is responsible; or, 3) both patient and physician factors are responsible. Patient factor indicated a low skill level of patients for communication with physicians. Physician factor indicated a low skill level of physicians for communication with patients.
RESULTS: Of 173 who participated in the survey, three physicians did not complete the survey questionnaire. Thus we analyzed the remaining 170 physicians. Mean age was 44 (range: 24–72) and 137 (81%) were men. The overall proportion of dialect use was 61% (95% CI, 53–69%) and the proportions differed in relation to geographic prefectures (ANOVA $F = 8.141$; $p < 0.001$). Physicians practicing in Shikoku and Chugoku used a dialect more frequently, while those practicing in Kanto and Hokkaido-Tohoku used it less frequently. There were no statistically significant differences between dialect users and rare or non-users in physicians in terms of age, gender, practice style (hospital or clinic) or specialty. Many dialect-using physicians believed that physicians should use the same dialect during clinical communication with dialect-using patients (59% of dialect users vs. 23% of rare or non-users; $p = 0.009$). Compared to rare or non-users of dialect, dialect-using physicians were more likely to believe that a physician factor was responsible when they were having difficulty in garnering clinical information (11% of dialect users vs. 6% of rare or non-users; $p = 0.026$).
CONCLUSIONS: Use of dialect is common among Japanese physicians during communication with patients. Notwithstanding the need to further investigate the patients' perceptions related to physicians' use of dialect, physicians use of dialect does appear to be an important element of effective clinical communication in Japan.



USE OF PLANNED VISITS TO IMPROVE DIABETES HEALTH OUTCOMES. G.W. Garriss[1]; W.M. Gregg[1]; S. Hata[1]; R. Follett[1]; P. Johnston[1]; J. Scott[1]; K. Hall[1]; J.P. Bracikowski[1]. [1]Vanderbilt University, Nashville, TN. *(Tracking ID # 173901)*

BACKGROUND: The health and economic burden of chronic illnesses in American is immense. Over 100 million Americans have a chronic illness; approximately 75% of health care cost in the U.S. is related to caring for patients with chronic illnesses. Despite this, recent studies indicate that the majority of patients with chronic illnesses do not receive the recommended care. This is true, even in Academic Health Centers (AHC). Only about 34% of patients with diabetes who are cared for in AHC have a hemoglobin A1c < 7%; the % of these patients with BP treated to the goal of < 130/ < 80 mm is only 30–38%. Similarly poor rates have been noted for annual diabetic foot exams (DFE) and eye exams. Our objectives were to measure our effectiveness at getting patients with diabetes to have A1c < 7%, BP below the recommended target, LDL cholesterol < 100, to have a documented annual DFE, and to use quality improvement interventions to increase our effectiveness for each of these outcomes.
METHODS: Patients were eligible for inclusion if they had diabetes and received primary care in our academic-affiliated primary care practice site. We performed a chart review to measure baseline rates of DFE and controlled A1c, BP, and lipids. We used a series of Plan-Do-Study-Act cycles to implement several interventions designed to decrease unnecessary practice variations and increase compliance in providing recommended care (planned diabetes visits = PDV). A PDV note template was developed for our electronic medical record (EMR to help direct providers to address the glycemic control, BP, lipids, and DFE during the visit. We developed patient education materials (targeted to a 3rd grade literacy level) which reviewed recommended diabetes care goals. Providers used these to review the plan of care with patients. Finally, we developed a "diabetes dashboard" EMR reminder to prompt providers to target needed care.
RESULTS: We initially identified 337 patients who met the inclusion criteria and who were included in our diabetes registry. After 18 months of intervention period, the number of patient with diabetes cared for at our site increased to 387. The cumulative effects of our PDV efforts (provider education, patient education materials, planned diabetes visit note template, and the diabetes dashboard) were followed. In 18 months, the DFE rates increased from 17% to 76%. Likewise, there was notable improvement in each of the 3 outcome measures examined: proportion of patients with A1c < 7% increased from 35% to 46%; percentage of patients with BP < 130/ < 80 increased from 33% to 39%; the percentage of patients with LDL cholesterol < 100 mg/dL increased from 52% to 65%.
CONCLUSIONS: Our data suggest that the use of PDV can greatly improve both process measures (such as DFE) and outcomes measures (A1c, BP, LDL) for patients with diabetes. The long term impact of these interventions is yet to be determined. The application of similar methods to decrease unnecessary variation in health care for medically complex patients and to communicate recommended health goals to patients in an understandable way may provide future areas for research.

USING UTILIZATION DATA TO ENHANCE CLINICAL TRIAL RECRUITMENT EFFICIENCY. C.A. Kuenneth[1]; D.M. Evans[1]; M.R. Lalchandani[1]; R.L. Kravitz[1]. [1]University of California, Davis, Sacramento, CA. *(Tracking ID # 173433)*

BACKGROUND: Recruitment of patients into clinical trials is critical for scientific progress but can be arduous and expensive. One common source of inefficiency derives from the need to screen large numbers of patients to identify the few who meet eligibility criteria. More efficient screening methods could minimize recruitment costs,

thus enhancing efficiency of the clinical research enterprise. In this study, we describe a simple approach for differentiating patients in follow up vs. active care and treatment as a way of selecting patients appropriate to a brief educational clinical intervention related to cancer pain.
METHODS: To address gaps in care of cancer-related pain, we developed a tailored education and coaching (TEC) intervention and planned a randomized controlled trial (RCT) comparing TEC to usual care. Patients were selected for the study based on having an ICD-9 code indicating prostate, breast, pancreatic, lung, or head and neck cancer and (initially) at least one visit at the Cancer Center within a three month period. During the initial 3 months of study recruitment, 861 patients were identified as possible candidates for the study based on > = 1 visit to the UCD Cancer Center within the past 3 months; of these, 90 met entry criteria based on a "worst pain" level of at least 4 on a 0–10 scale. We compared screening efficiency for three alternative criteria based on 1, 2, or 3 cancer-related visits in the past 3 months.
RESULTS: Of the 861 patients identified, 90 screened into the study, 571 screened out, and 200 are awaiting contact. Yield of eligible patients increased from 10.5% (1-visit criterion) to 15.0% (2-visit criterion) but reached a plateau after that (Table). If we assume that screening an eligible patient takes 10 minutes and an ineligible patient, 5 minutes, the 1-visit criterion will require 62.6 hours screening time; the 2-visit criterion, 34.8 hours; and the 3-visit criterion, 24.3 hours. When comparing the 1-visit criterion to the 3-visit criterion, 52 additional screening minutes are required to recruit the next eligible patient. Comparing the 2-visit to the 3-visit criterion, 42 additional screening minutes are required to recruit the next eligible patient.
CONCLUSIONS: By using a more specific screening criterion (2 Cancer Center visits within 3 months), fewer resources will be spent on mailings and screening phone calls to potentially ineligible subjects while advancing a project's recruitment goals.

Three Recruitment Criteria

Criterion	Eligible	Ineligible	Pending	Total	Yield
1-visit criterion	90	571	200	861	10.5%
2-visit criterion	61	295	50	406	15.0%
3-visit criterion	46	199	29	274	16.8%

WHAT DO ADOLESCENTS WITH INFLAMMATORY BOWEL DISEASE EXPECT REGARDING THEIR FUTURE HEALTHCARE? M.S. Yi[1]; T.S. Webb[1]; J. Tsevat[1]; L.M. Goldenhar[1]; M.S. Moyer[2]; D.L. Canfield[2]; R. Wise[1]; M.T. Britto[2]. [1]University of Cincinnati, Cincinnati, OH; [2]Cincinnati Children's Hospital Medical Center, Cincinnati, OH. *(Tracking ID # 172414)*

BACKGROUND: Preliminary qualitative research in youth with chronic illness has shown that their transitional period into adulthood is fraught with pitfalls. Our objective for this study was to survey adolescents with inflammatory bowel disease (IBD) to examine their future healthcare expectations and predictors of anticipating greater healthcare needs as an adult.
METHODS: We recruited patients from a large Midwestern medical center. The primary outcomes were measured by participants' responses to statements such as: "When you are an adult, how important do you think it will be to have [either a doctor or someone such as a nurse] at the doctor's office to: 1) help you with financial things; 2) help you with getting your job or working out problems with your job; and 3) help you with personal problems?" Answers were recorded on a 5-point Likert scale (1 = Not At All Important to 5 = Extremely Important). We also asked a single question: "If you begin to go to a doctor who takes care of adults, at what age do you think you should begin to see him or her?" Predictor variables included patients' health status; general health perceptions; health locus of control; self-esteem; positive and negative coping; spiritual well-being; family competence; and 7 IBD-related perceptions based on a theoretical model of illness beliefs: symptoms, understanding of IBD, anticipated disease duration, perceived life impact, perceived personal control, perceived treatment control, and emotional impact (measured with the Brief Illness Perception Questionnaire). We collected socio-demographic data such as race, gender, and parental education. We performed stepwise ordinal logistic regression for multivariable analyses.
RESULTS: Fifty-three subjects with IBD participated thus far in the ongoing study. Their mean (SD) age was 15.4 (2.0) and 24 (45.3%) were male. The median (25th, 75th percentile) age at which patients wanted their care to be transferred to a doctor for adults was 19 (18, 21). The percentage of respondents reporting that it is "somewhat important" or "extremely important" to have someone in the doctor's office to help with: financial issues was 34%; job-related issues was 30%; and personal problems was 49%. In multivariable analyses, placing greater importance on getting financial help was associated with having longer anticipated IBD chronicity and poorer understanding of IBD. Placing greater importance on getting help with one's job was associated with using negative coping mechanisms, having less personal control over IBD, and having poorer understanding of IBD. Placing greater importance on getting help for personal problems was associated with using negative coping mechanisms and suffering greater emotional impact from IBD.
CONCLUSIONS: Adolescents with IBD would like to transfer their care to a doctor for adults when in their late teens to early 20's. Among the variables, only greater use of negative coping mechanisms and poorer perceptions about IBD were significantly related to anticipating greater need for healthcare providers to help with financial, job, or personal problems. In adolescents with IBD, improving their coping skills and their understanding and perceptions of IBD may help them to improve their outcomes during their transition into adulthood.

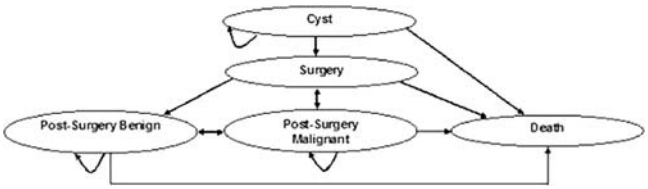
WHICH PATIENT CHARACTERISTICS PREDICT POST-DISASTER HEALTHCARE DELIVERY NEEDS? E. Howe[1]; D. Victor[1]; E.G. Price[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 172254)*

BACKGROUND: Post-Katrina, widespread flooding devastated the New Orleans healthcare system. Prior studies of post-hurricane healthcare do not consistently offer evidence-based recommendations for re-establishing patient care post-disaster. Our study objective is to examine associations between patient characteristics, chief complaints, final diagnoses and medications prescribed at a post-Katrina clinic to better inform strategic planning for post-disaster healthcare delivery (e.g.medication/ supply donations).
METHODS: We conducted a retrospective chart review of 465 patient visits from September 2, 2005 to October 22, 2005 at a post-Katrina clinic in New Orleans which was open for 7 weeks providing urgent care services in the central business district. Using logistic regression, we examined the relationship between patient characteristics (age, gender, relief worker/ evacuation status, date of visit), type of chief complaint (injury, illness, medication refills), final diagnosis, and type of medication prescribed.
RESULTS: Among 465 patients, 49.2% were age 40–60, 62.4% men, 35% relief workers & 33.3% evacuees; and 35% of visits occurred week five. Among 580 chief complaints, 71% were illness-related, 21% medication refill requests, & 8.5% injuries. Among 410 illness complaints, 25% were ENT/Dental, 17% Dermatologic, and 11% Cardiac. The most requested class of medication refills (n = 121) were Cardiac (52%) and Endocrine (24%). Among 400 diagnoses, 36.2% were infection related. Among 667 medications prescribed, 21% were Cardiac agents (ACE inhibitor, alpha/ beta/ calcium channel blockers, diuretics), 13% Pulmonary (inhalers, cough suppressants), 13% Neurologic/ Musculoskeletal/Pain (anti-convulsants, Tylenol/NSAIDs), 11% Antibiotics, 10% Endocrine (hypoglycemics, thyroid, lipid lowering), and 9.3% Anti-allergy (antihistamine/nasal steroids). There was no significant change in the adjusted odds ratio of chief complaints or final diagnoses by week of visit; however, odds of prescribing Neurologic/ Musculoskeletal/ Pain medications were lower for later visits versus earlier visits (adjusted OR, 95%CI: 0.67, [0.5–0.95]). Compared to men, women had lower odds of presenting with injury-related chief complaints (0.16, [.04−.73]), having dermatologic diagnoses (0.45, [0.21–0.96]) or being prescribed dermatologic medications (0.28, [0.10–0.76]); however, women had higher odds of being prescribed anti-allergy agents (2.4, [1.1–5.0]). Compared to younger patients, older patients had higher odds of requesting refills (1.05, [1.02–1.07]) and being diagnosed with cardiovascular conditions (1.03, [1.01–1.06]). Compared to non-relief workers, relief workers had lower odds of requesting refills (0.30, [0.13–0.7]) or being diagnosed with dermatologic conditions (0.45, [0.20–1.01]); however, they had higher odds of being prescribed anti-allergy agents (2.8, [1.1–7.0]). Finally, there was no significant change in the adjusted odds ratio of chief complaints or diagnoses by evacuation status; however, evacuees had higher odds of being prescribed pulmonary medications (3.4, [1.4–8.4]).
CONCLUSIONS: Variations in chief complaints, diagnoses, and medications by patient characteristics may reflect differences in prevalent co-morbidities & patient involvement in flood zone recovery activities. Among charitable donations, anti-hypertensives, lipid lowering/ thyroid, hypoglycemics, analgesics, antibiotics, respiratory and anti-allergy agents were most useful.

A MARKOV ECONOMIC MODEL FOR MANAGEMENT OF BENIGN-APPEARING INTRADUCTAL PAPILLARY MUCINOUS NEOPLASMS OF THE PANCREAS. D.A. Garrow[1]; C. Lawrence[2]. [1]Medical University of South Carolina, Mt. Pleasant, SC; [2]Medical University of South Carolina, Charleston, SC. *(Tracking ID # 173396)*

BACKGROUND: Management of benign intraductal papillary mucinous neoplasm (IPMN) of the pancreas is difficult because of the unpredictability of the lesion. Current practice often recommends aggressive surgery at time of diagnosis. This can lead to significant post-surgical comorbidities and potential peri-operative mortality. Many clinicians wonder whether expectant management involving no surgery and serial follow-up is comparable to up-front surgery. Furthermore, there is no information available in the literature concerning how cost and health utilities are correlated and distributed in this illness. Therefore, we sought to compare outcomes and costs associated with surgical versus non-surgical management of benign IPMNs using decision analysis tools.
METHODS: We used a Markov model to estimate progression of disease in both surgical and non-surgical interventions. We incorporated literature-derived data concerning survival, transition probabilities and cost per individual health state into the model. Transitions between benign and malignant cancer states and death were modeled in 1-year transitions, over a life-long time horizon. We incorporated a 3% annual discount rate to our cost analysis. Optimistic and skeptical

sensitivity analyses were performed by adjusting each parameter in the model appropriately.
RESULTS: Survival for benign-appearing IPMNs did not differ significantly between the surgical and non-surgical groups. Lifetime and interval costs were less expensive in the non-surgery group. These findings were not substantially affected by reasonable adjustments of transition probabilities or costs.
CONCLUSIONS: This is the first decision model to attempt to address management of IPMNs. There is no observed survival benefit for patients undergoing surgery for small, benign-appearing IPMNs. Furthermore, costs were less expensive in the observation group. Based on this model, conservative management with observation and regular follow-up results in equal survival and less interval and lifetime cost when compared to surgical intervention for benign-appearing IPMNs.



Markov model for IPMN.

ASSESSMENT IN A PREOPERATIVE CLINIC MAY LEAD TO MORE APPROPRIATE UTILIZATION OF STRESS TESTING. A. Aneja[1]; E. Hixson[1]; B. Harte[1]; A.K. Jaffer[1]. [1]Cleveland Clinic Foundation, Cleveland, OH. *(Tracking ID # 172586)*

BACKGROUND: The annual cost of perioperative cardiac care for non-cardiac surgery (NCS) may be as high as $20 billion. We undertook a retrospective study as part of a larger quality improvement project to determine whether patients being evaluated by hospitalists in a preoperative clinic at a large academic medical center were having stress tests ordered consistent with the American College of Cardiology (ACC)/American Heart Association (AHA) guidelines. It is not known whether these clinics lead to more appropriate resource utilization.
METHODS: A random cohort of 190 patients was selected from a sample of 11,985 consecutive patients having NCS who underwent cardiac risk assessment in a specialized preoperative clinic. Detailed chart review was performed on all patients, and those who underwent preoperative stress testing were identified. Baseline data regarding demographics, comorbidities, surgical risk, functional capacity, and departmental specialty of the physician ordering the test was collected (Table 1). The 2002 ACC/AHA Guidelines were used as reference to assess for appropriateness of stress testing.
RESULTS: 13 of the 190 patients (6.8%) underwent stress tests. Patients undergoing testing were more likely to be male, at higher surgical risk, diabetic, have renal insufficiency, heart failure, coronary artery disease, cerebrovascular disease, and peripheral vascular disease. Only 4 of the 13 tests were ordered by hospitalists performing the assessment, and all were considered appropriate (table 2). The other 9 tests were ordered by other physicians involved in the patients' care; only 2 of these were appropriate.
CONCLUSIONS: The overall rate of preoperative cardiac stress testing in patients undergoing NCS was low, but the rate of inappropriate testing was high. All inappropriate tests were ordered by physicians other than the hospitalist performing the preoperative assessment. Some of these physicians may not be familiar with latest guideline recommendations. It may be most appropriate for physicians in a preoperative clinic to order such testing because of the financial and patient safety implications.

Table 1. Baseline Characteristics

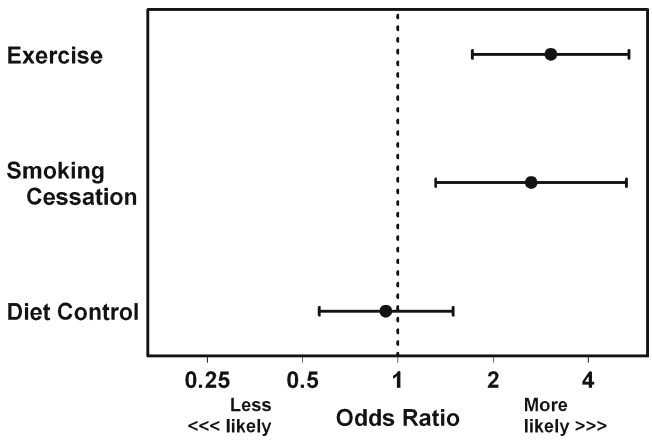
	No Stress Test	Stress Test
n	177	13
Male	41.8%	69.2%
High Surgical Risk	33.3%	61.5%
Diabetes Mellitus	13.6%	23.1%
Renal Disease	2.3%	15.4%
Heart Failure	3.4%	7.7%
Hypertension	7.3%	7.7%
Coronary Artery Disease	15.3%	30.8%
Peripheral Vascular Disease	2.8%	15.4%
Stroke/TIA	5.1%	38.5%

Table 2. Stress Test Appropriateness

	Stress Test Appropriate	Stress Test Inappropriate
N	6	7
Ordering Physician/Specialty		
Pre-Operative General Internal Medicine Clinic	4	0
External Physician	0	1
Primary Care Physician	0	1
Surgical Specialties	2	3
Cardiology	0	2

ASSOCIATION OF CARDIAC REHABILITATION AND HEALTHY LIFESTYLE AFTER ACUTE MYOCARDIAL INFARCTION. C.F. Jackson[1]; V. Vaccarino[1]; K. Reid[2]; P. Grow[1]; V. Bavikati[1]; L. Sperling[1]; N. Dawood[1]; S. Khizer[1]; J. Spertus[3]; S. Parashar[1]. [1]Emory University, Atlanta, GA; [2]Mid America Heart Institute, Kansas City, MO; [3]University of Missouri-Kansas City, Kansas City, MO. *(Tracking ID # 172886)*

BACKGROUND: Cardiac rehabilitation (CR) after myocardial infarction (MI) is known to improve morbidity and mortality. Limited information is available in a modern heterogeneous United States population on the association of CR and modifiable cardiovascular risk factors.
METHODS: A total of 2498 patients meeting clinical criteria of acute MI were enrolled from 19 US centers in the Prospective Registry Evaluating outcomes after Myocardial Infarction: Events and Recovery (PREMIER) registry. Participation in a CR program was assessed at 1 month after MI by self report. Primary endpoints were reported adherence to instructions regarding smoking cessation, exercise, and diet at 1-year after MI. Secondary outcome was a combined endpoint of mortality or rehospitalization at 1 year after MI.
RESULTS: The CR participation rate was only 20% at 1 month post-MI. Compared to non-participants, CR patients had 2.6 times the odds of quitting smoking and 3 times the odds of following exercise instructions (Figure). We found no improvement in compliance to diet control recommendations at 1 year follow-up. CR patients also had lower rates of rehospitalization or mortality, of borderline statistical significance (adjusted HR 0.87; 95% CI 0.76, 1.00).
CONCLUSIONS: Despite the practice guidelines for CR after MI, in a national sample of MI patients, only 1 in 5 patients participated in CR at 1 month. Post-MI patients who participated in CR had significant improvement in cardiovascular risk factors at 1 year. Our findings also suggest a benefit in rehospitalization or mortality. Based on these results, further efforts should be made to increase participation of the MI patients in CR programs.



Adherence to healthy lifestyle instructions in cardiac rehabilitation patients.

BALANCING RISKS IN THE CHOICE OF MEDICATIONS FOR DIABETES PATIENTS WITH ALCOHOL USE DISORDERS: PHYSICIANS PREFER INSULIN AND SULFONYLUREAS. P.C. Smith[1]; D.R. Miller[1]; V.V. Banks[1]; D.R. Berlowitz[1]. [1]VA Center for Health Quality, Outcomes, and Economic Research, Bedford, MA. *(Tracking ID # 172780)*

BACKGROUND: Diabetes patients with an alcohol use disorder often have poorer glycemic control, receive less recommended care, and are at higher risk for adverse outcomes. Deciding on a medical regimen for these patients is difficult since sulfonylureas and insulin can predispose patients with erratic carbohydrate intake to hypoglycemia while metformin and the thiazolidinediones (TZD) have rare but serious

side effects, lactic acidosis and liver failure respectively, that may be more likely with heavy alcohol intake. We describe the medical regimens of diabetics with and without an alcohol use disorder.
METHODS: We analyzed data from the Diabetes Epidemiology Cohorts, a national database containing pharmacy, laboratory, and other medical data of patients with diabetes served by the Veterans Health Administration (VA). We identified diabetes patients who had an elevated HbA1C (>8 mg/dL) between April, 2003 and September, 2003 and who were thus candidates for the addition of a new medication. We categorized subjects as having an alcohol use disorder if they had a coded diagnosis of either alcohol abuse or dependence during the two years prior to the index HbA1c or had a coded discharge diagnosis of an acute complication of alcohol use during this time. We examined the use, during the six months following the elevated HbA1C, of four classes of diabetes medications: sulfonylureas, metformin, thiazolidinediones, and insulin. We used multivariate logistic regression models to calculate the odds of having a class of medication added to a subject's medication regimen, after adjusting for age, diabetes complications, and co-morbidities such as liver disease, renal disease, and heart failure that might preclude the use of one or more medications.
RESULTS: Of the 124,654 patients who met our inclusion criteria, 4,818 (3.7%) were categorized as having an alcohol use disorder. Among those who were on no medications at baseline and who had an oral medication added following the elevated HbA1C (n=9,173), patients with an alcohol use disorder were 20% less likely to be started on metformin (OR 0.80, 95%CI 0.63–1.00) and 62% less likely to be started on a TZD (OR 0.38, 95% CI 0.12–1.22) than on a sulfonylurea, when compared to those without an alcohol use disorder and after controlling for age and co-morbidities. In subjects whose baseline regimen consisted of metformin and a sulfonylurea, and who had either insulin or a TZD added to their regimen (n=6,375), diabetes patients with an alcohol use disorder were 72% more likely to be started on insulin (OR 1.72, 95% CI 1.29–2.31).
CONCLUSIONS: When faced with the dilemma of choosing a medication regimen for diabetes patients with an alcohol use disorder, physicians are more likely to use insulin and sulfonylureas, and less likely to use TZD's and metformin, seeming to focus on the risks of liver toxicity and of lactic acidosis rather than on the risk of hypoglycemia. Future research should be done to determine whether these choices are appropriate.

CAN A UNIVERSITY HOSPITAL WELLNESS PROGRAM REDUCE DIRECT MEDICAL EXPENDITURES? W.P. Moran[1]; G. Chen[1]. [1]Medical University of South Carolina, Charleston, SC. *(Tracking ID # 173666)*

BACKGROUND: In 2002, a self-insured University Hospital in the Southeast initiated an employer-sponsored wellness program called the Health Incentive Program (HIP), focussed on lifestyle and behavior change and chronic disease identification and management. Enrollment was voluntary and included predominantly screening and educational interventions, including enrollee annual completion and feedback of a personal wellness profile. We compared direct medical expenditures for the HIP participants to non-HIP population over the subsequent four years.
METHODS: In this observational study, a longitudinal data set was constructed by linking the enrollment files and administrative claims of all employee who were primary holders of health insurance plan with the HIP enrollment file for a period of 2002–2005. The outcome variable of interest was measured as medical cost per person-year. Pharmacy costs (due to incomplete data) and costs related to pregnancy were excluded from the analysis. Participation of HIP and co-existing medical conditions were treated as time-dependent variables. The Consumer Price Index was used to adjust the cost to 2005 constant US dollar amount. Univariate and risk-adjusted multivariate longitudinal data analyses were performed.
RESULTS: Total direct medical costs for the combined groups excluding pharmacy and pregnancy related costs peaked in calendar years (CY) 2003 at $23.7 million, and fell to $20.8 million for CY 2005. For CY 2002, 2003, 2004, and 2005, the number and proportion of hospital employees participating in HIP were 2,279 (29.37%), 2,513 (31.65%), 2,322 (28.54%), and 2,346 (28.45%) respectively. Unadjusted comparisons showed that HIP enrollees were on average 1 year older, and had greater proportion of the employees with arthritis, hypertension and hyperlipidemia. However, over all 4 years of study, HIP participants consistently generated lower direct medical payments. The average differences of medical payment per person-year between HIP participants compared to non-participants were $228 in 2002, $560 in 2003, $664 in 2004 and $205 in 2005. The estimated saving due to participation in HIP was $510,851 in 2002, $1,180,853 in 2003, $1,751,018 in 2004, and $557,207 in 2005. After subtracting the average annual cost of the HIP program of $237,876, the net difference was $4 million over the period of 2002–2005. This yields a return on investment in the HIP of more than 4:1. The adjusted cost difference was $760 per person-year over the study period.
CONCLUSIONS: These results, consistently showing lower direct costs in HIP participants over four years, suggest that the HIP program not only offers health benefits to the employees but conveys economic benefits to the hospital by lowering direct medical expenditures. Savings are plausible since the preventive care, dietary and lifestyle interventions offered by HIP are targeted to chronic conditions. However, although adjusted for age, gender, diagnoses and risk factors from claims data, this non-randomized concurrent study design is susceptible to a number of biases which must be considered in interpreting the direct medical costs differences.

CONVEYING BREAST CANCER RISK ESTIMATE: USE OF PROBABILITY CHART AND FREQUENCY FORMAT. K. Ghosh[1]; B.J. Crawford[1]; S. Pruthi[1]; C.I. Williams[1]; L. Neal[1]; M.K. Britain[1]; R.E. Johnson[1]; D. Wahner-Roedler[1]; N. Sandhu[1]; R.L. Smith[1]; S. Cha[1]; A.K. Ghosh[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 172749)*

BACKGROUND: A woman's perception of her breast cancer risk is an integral component of her decision to undertake breast cancer screening as well as risk-reduction options. Hence, it is important that women be presented information regarding their estimated risk of breast cancer in a manner that is easily understandable to them. We conducted a prospective, randomized trial to study the communication of breast cancer risk information using a probability chart/ bar graph (standard of care) with or without a frequency format (pictorial depiction using highlighted human figures). The aim of the study was to determine whether patient education regarding their breast cancer risk using a bar graph (BG), with or without a frequency format diagram (FF) improves the accuracy of risk perception among women at increased risk of breast cancer.
METHODS: Women at increased risk of breast cancer (Gail probability>1.66, first degree relative with breast cancer; >2 second-degree relatives with breast cancer and/ or ovarian cancer, history of atypical hyperplasia or lobular carcinoma in-situ) were included in the study. We excluded women with prior breast cancer, prophylactic mastectomy, or those on chemoprevention. All patients completed questionnaires to assess their Gail model risk estimate, their breast cancer risk perception (pre- and post-visit), preference for communication format (post-visit to the group receiving BG+FF) and satisfaction with the information provided (post-visit). The women were randomized, stratified by age, to receive material regarding their breast cancer risk estimate using a BG, either with or without a FF (BG+FF, or BG alone). Risk perception was deemed accurate when it was concordant with the Gail model risk estimate. Statistical analyses were performed using the Pearson Chi-Square test between the two groups.
RESULTS: Of the 150 women enrolled in the study, 74 received the BG alone and 76 received BG+FF. There were no significant differences between the two groups based on education, Gail model 5-year risk of invasive breast cancer, or pre-visit risk perception. At the visit, 47% of the women were aged 40–59 years, and 53% aged>60 years. Overall, 71% women overestimated their risk of breast cancer. In the group receiving BG alone, accurate risk perception was noted in 19% of women before the visit and improved to 63% after the visit. In the BG+FF group, the accuracy of risk perception improved from 13% at pre-visit to 67%, post-visit. The difference between the 2 groups was borderline significant (p=0.08). In the BG+FF group, 34% preferred FF, 15% preferred BG and 51% had no preference. Although none of the women in the study had Gail model risk estimate>50%, 28% in the BG group and 22% in the BG+FF group reported such high risk. Following education, 16% in the BG group still reported risk >50%, while only 3% in the BG+FF group reported this risk (p=0.004).
CONCLUSIONS: Education regarding breast cancer risk estimate can help women understand their risk so that appropriate risk-reduction strategies can be utilized. This study demonstrates that using another tool such as the frequency format, can enhance the risk communication process. In addition, some women may prefer the frequency format to the bar graph/ probability estimates. Continued research on modalities to improve communicating risk estimates to patients is warranted.

COST-EFFECTIVENESS OF BREAST CANCER RISK ASSESSMENT IN PRIMARY CARE. J.A. Johnston[1]; E.S. Meadows[1]; J.L. Mershon[1]; R. Iskandar[2]; K. Delong[2]; D.C. Taylor[2]; K.M. Kerlikowske[3]; M.C. Weinstein[4]. [1]Eli Lilly, Indianapolis, IN; [2]i3 Innovus, Medford, MA; [3]University of California, San Francisco, San Francisco, CA; [4]Harvard School of Public Health, Boston, MA. *(Tracking ID # 169827)*

BACKGROUND: While the Gail score can be used to estimate a woman's risk of breast cancer, use of risk assessment in primary care is limited. We sought to establish the conditions under which the adoption of routine breast cancer risk assessment in a primary care setting, given existing treatment options, would provide clinical and economic value.
METHODS: We developed a state-transition decision-analytic model to simulate the clinical and economic outcomes associated with the routine use of breast cancer risk assessment (i.e., calculation of 5-year risk of breast cancer using the Gail score) for postmenopausal women in primary care practice. We considered 50, 55 and 60 year-old women and assumed that high-risk women (defined according to threshold risks ranging from 1.67% to 6%) would be offered chemoprevention with tamoxifen for 5 years. Acceptance of (70%) and compliance with (68%) chemoprevention were assumed to be imperfect. During 5 years of active treatment, women receiving tamoxifen were assumed to be at a decreased risk of incident estrogen-receptor positive invasive breast cancer (RR 0.31) and vertebral fracture (RR 0.74), and an increased risk for endometrial cancer (RR 2.4), stroke (RR 1.6) and venous thromboembolic events (RR 1.6 for deep venous thrombosis and 3.0 for pulmonary embolism). Risk of breast cancer was assumed to return to baseline gradually over the next 5 years. Age-specific incidence rates, and survival with invasive breast cancer, were based on SEER. Costs and utilities associated with cancer- and chemotherapy-related events were estimated from published literature and clinical trial data. We assumed a societal perspective and a lifetime horizon. We discounted costs in 2006 US dollars and effectiveness in quality-adjusted life years (QALYs) at 3%/year. Incremental cost-effectiveness ratios (ICERs) were calculated for successively lower treatment thresholds, and the effects of model parameters were examined in sensitivity analyses.
RESULTS: The cost-effectiveness of risk assessment depends upon the age of the population screened and the breast cancer risk threshold at which chemoprevention is recommended. For 50 year-old women, risk assessment and chemoprevention based

on 5-year cancer risk of 4% or greater results in an increase in both quality-adjusted survival and cost, with an ICER of $49,900 per QALY compared to no risk assessment. Expanding the criterion for chemoprevention to 3%, 2%, and 1.67% leads to ICERs of $54,400, $106,000, and $163,000 per QALY, respectively. Thresholds higher than 4% were dominated. At age 60, these ratios were all higher than at age 50. However, offering tamoxifen more selectively to 60 year-old women, based on a treatment threshold of 5%, has an ICER of $44,250 per QALY compared to no risk assessment. Results were sensitive to assumptions about the degree of treatment-associated breast cancer risk reduction during and following active treatment, change in quality of life during treatment, and the frequency of treatment-associated adverse events, especially stroke.
CONCLUSIONS: In defined populations, breast cancer risk assessment followed by chemoprevention for women at high risk compares favorably to other interventions generally considered cost-effective. Advances in risk assessment methods (e.g., inclusion of breast density) and the development of improved chemoprevention agents may improve the cost-effectiveness of breast cancer risk assessment.

DECISIONAL CONFLICT AMONG PATIENTS WHO ACCEPT OR DECLINE PARTICIPATION IN PHASE I CANCER CLINICAL TRIALS. K.E. Flynn[1]; K.P. Weinfurt[1]; D.M. Seils[1]; C.B. Burnett[2]; K.A. Schulman[1]; N.J. Meropol[3]. [1]Duke University, Durham, NC; [2]Georgetown University, Washington, DC; [3]Fox Chase Cancer Center, Philadelphia, PA. *(Tracking ID # 173403)*

BACKGROUND: There is concern that patients who agree to participate in phase I cancer clinical trials may not be making optimal decisions, perhaps due to insufficient understanding of potential benefits and risks, poorly formed personal values about benefits and risks, or vulnerability to undue influence by others. Our objective was to compare decisional conflict among patients who accepted or declined participation in phase I cancer clinical trials.
METHODS: Participants were adults with advanced cancer from 4 academic medical centers in the United States who had been offered an opportunity to enroll in a phase I trial and had made a decision about whether to enroll but had not yet started therapy. Participants completed a 121-item questionnaire in person or by telephone that included the 16-item Decisional Conflict Scale (DCS), which assesses self-reported understanding of options and outcomes, personal values about possible outcomes, perceptions of the influence of others, satisfaction, and other issues concerning the decision-making process. Response categories are measured on a 5-point scale from 1 = strongly agree to 5 = strongly disagree. Items are averaged into an overall score where 1 indicates low decisional conflict and 5 indicates high decisional conflict. In addition to the overall score, 5 subscales include: Informed, Values Clarity, Support, Uncertainty, and Effective Decision. We used standardized effect sizes (d) to compare DCS scores of patients who agreed to participate in a phase I trial with those who declined. Effect sizes around 0.2, 0.5, and 0.8 are considered small, medium, and large, respectively.
RESULTS: Of 328 respondents offered participation in phase I cancer clinical trials, 260 (79%) accepted participation and 68 (21%) declined. There were no observed differences in demographic or clinical characteristics between accepters and decliners. Accepters had lower decisional conflict than decliners overall (d = 0.42; 95% confidence interval, 0.17–0.68) and on all subscales, with moderate effects on the Informed (d = 0.68; 95% CI, 0.30–1.07), Values Clarity (d = 0.43; 95% CI, 0.19–0.66), and Support (d = 0.47; 95% CI, 0.17–0.78) subscales.
CONCLUSIONS: Patients who chose to participate in a phase I trial reported less decisional conflict than patients who declined. In particular, accepters reported feeling more informed, having greater clarity about their values, and feeling less pressure from others in the decision-making process. These results may pose an ethical concern about decliners, who may report higher DCS scores because they have not had optimal decision-making support. However, a different interpretation may relate to how decliners and acceptors differ in their experience of the substantial uncertainties regarding potential outcomes (risks and benefits) from participation. Whether higher decisional conflict among decliners of experimental therapy reflects a problem with the informed consent process is not clear, given the multiple possible reasons for our findings. Future empirical work is needed to understand the sources of decisional conflict in patients considering treatment options characterized by great uncertainty regarding potential benefits and risks.

DO CLINICAL PRACTICE GUIDELINES INCORPORATE EVIDENCE ON PATIENT PREFERENCES? C.A. Chong[1]; I. Chen[1]; G. Naglie[1]; M. Krahn[1]. [1]University of Toronto, Toronto, Ontario. *(Tracking ID # 172624)*

BACKGROUND: Clinical practice guidelines (CPGs) are meant to integrate evidence with values. The purpose of this study was to assess how well CPGs incorporate evidence on patient preferences compared to that on treatment effectiveness.
METHODS: Our database consisted of 65 high-quality CPGs that were externally judged to be the best in their field. We adapted two instruments originally constructed to evaluate the overall quality of CPGs to specifically assess the quality of integrating information on patient preference and treatment effectiveness. We also counted words and references in each CPG associated with patient preferences and treatment effectiveness.
RESULTS: The inter-rater reliability (intraclass correlation 0.81 to 0.92) and internal consistency (Cronbach's a 0.66 to 0.76) of our quality instruments were good. For construct validity, our outcomes measures correlated well with one another (rho = 0.24 to 0.86). For criterion validity, our measures correlated well with reviewers' overall subjective assessments (rho 0.50 to 0.87). Based on our adapted instruments, CPGs scored significantly higher ($p < 0.001$) on the quality of integrating treatment effectiveness compared to patient preferences evidence (mean instrument 1 scores on a scale of 0.25 to 1.00: 0.65 vs. 0.43; mean instrument 2 scores on a scale of 0 to 1: 0.58 to 0.18). The average percentage of the total word count of each CPG dedicated to treatment effectiveness was 24.2% compared to 4.6% for patient preferences. The average percentage of references citing treatment effectiveness evidence was 36.6% compared to 6.0% for patient preferences.
CONCLUSIONS: High quality CPGs fail to integrate data on patient preferences to the same degree as they do information on treatment effectiveness. This finding may reflect the view within the evidence-based medicine paradigm that published preference studies are of limited value, or the view that preference elicitation belongs primarily within the clinical encounter. Expanding the definition of evidence to include studies of patient preferences may increase the quality of CPGs.

EFFECT OF COMPUTERIZED ECG MISINTERPRETATION ON RESIDENT CLINICAL DECISION MAKING. W. Southern[1]; J.H. Arnsten[1]. [1]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 173598)*

BACKGROUND: The use of computerized ECG interpretations is widespread. However, computer errors or mis-interpretations are common and affect physicians' ECG interpretations. The effect of computer mis-interpretations on clinical decision-making is unknown.
METHODS: In routine teaching sessions, 105 medical residents (post graduate years 1, 2, and 3) were given sample ECGs some of which contained an erroneous computerized interpretation of "acute ischemia", and some of which contained no computerized interpretation. Residents were then asked to complete a self-administered survey that included a series of responses regarding their interpretation of the ECG ("Diagnostic of ischemia or infarct", "Non-Diagnostic", or "Normal") and the appropriate patient management ("Urgent Revascularization", "Maximal Medical Treatment for Ischemia", or "Minimal Medical Treatment for Ischemia".). ECG interpretations were dichotomized to "diagnostic" vs. "non-diagnostic" and recommended action to "revascularization" vs. "medical therapy." Comparison of dichotomous outcomes was tested using Chi-Square. Comparison of overall responses between groups was made using ordered logistic regression.
RESULTS: The presence of the erroneous computerized interpretation of ischemia did not significantly affect residents' interpretations of ECGs (p = 0.62 for overall difference). Residents given the erroneous computerized interpretation were more likely to recommend revascularization compared to residents given an ECG with no interpretation (30.4% vs. 10.2%, p = 0.01). Of residents who read the ECG as diagnostic of either ischemia or infarct, those with the erroneous computer interpretation were more likely to recommend revascularization than those without the computer interpretation (53.6% vs. 25.0%, p = 0.048).
CONCLUSIONS: Erroneous computer interpretations affected the decision-making in residents in the absence of an effect on the reported interpretation of the ECG. Measuring the effect of computer mis-interpretations on physician interpretations will underestimate the effect of computer mis-interpretations on clinical decision-making. Resident training should include awareness of the effect of computer mis-interpretation of ECGs on clinical decision making.

EMERGENCY MEDICINE ACTIVATION OF THE CATHETERIZATION LAB IMPROVES MYOCARDIAL DOOR-TO-BALLOON TIME IN A PREDOMINANTLY AFRICAN AMERICAN POPULATION. P. Ramappa[1]; M. Whitbeck[1]; T. Schreiber[1]. [1]Wayne State University, Detroit, MI. *(Tracking ID # 173839)*

BACKGROUND: For patients presenting with ST Elevation Myocardial Infarction (STEMI), promptness and successful intervention is measured by assessing the door-to-balloon time (DTBT). Recent surveys have shown only 20% of hospitals in the United States reach the 90-minute DTBT standard. One suggested strategy to improve DTBT includes activation of the cardiac catheterization lab directly by Emergency Department (ED). The purpose of this study was to determine whether the latter strategy effectively reduced door-to-balloon time (DTBT) in our inner-city tertiary care center.
METHODS: All patients presenting between 2003 and 2006 with a diagnosis of STEMI and subsequently undergoing coronary intervention were included in the study. Prior to 2005 the catheterization lab was activated after consultation with cardiology. In 2005 a policy change resulted in direct activation of the lab by the ED. Patients were divided into group A (those presenting after the policy change) and group B (those prior to the policy change). Clinically relevant data on time intervals including DTBT, EKG to catheterization lab were analyzed along with outcome data on hospital stay and In-hospital death rates.
RESULTS: A total of 136 STEMI patients were identified, of which 70% were male, and 82% were African Americans, with a mean age of 59 (+/−12) years and 56.6% were ambulance driven. Baseline characteristics of group A (n = 70) and group B (n = 66) were similar (Table 1). DTBT and time interval between EKG to catheterization lab were significantly lower by 34 minutes (p = 0.01) and 32 minutes (p = 0.01), respectively in group A (Table 2). Hospital stay (6 days vs 5 days; p 0.71) and peri-hospital death (5.7% Vs 3.0%; p = 0.44) were not different between the two groups.
CONCLUSIONS: Our study demonstrates improved door-to-balloon time by activation of the catheterization lab by emergency physicians, which has not been previously reported in a predominantly African American population. Since majority of the delay seems to occur from the point of diagnosis to the entry to

the catheterization lab, further strategies intervening at this time interval could be beneficial in achieving the 90-minute standard. We propose that this delay could be overcome by enforcing pre-hospital EKG while the patient is en route to the hospital.

Table 1. Baseline demographic and angiographic characteristics

	Group A N=70	Group B N=66	P value
Age (years)	60+/−12	58+/−13	0.39
Sex (Male) %	68.5	69.7	0.88
Race (African American)	61.4	59.0	0.28
Emergency Medical Service driven %	57.1	56.0	0.89
Chest Pain %	87.0	87.0	0.97
Killip Classification	1.7	1.5	NS
Ejection Fraction %	42.7	43.1	NS
LAD %	45.7	60.6	0.08
LCX %	15.7	12.1	0.54
RCA %	38.5	28.7	0.22

Table 2. DTBT and outcome data

	Group A	Group B	P value
Admit to EKG (minutes)	18	10.6	0.07
EKG to lab (minutes)	82	114	0.01
Lab to Needle (minutes)	17	13.8	0.007
Door to Balloon (minutes)	134	169	0.01
Hospital stay (days)	6+/−10	5+/−6	0.71
In-Hospital death %	5.7	3	0.44

FACTORS ASSOCIATED WITH INFORMED DECISION MAKING PROCESSES FOR PRIMARY BREAST CANCER TREATMENT. J.Y. Chen[1]; J. Malin[2]; K.Y. Clifford[1]; P. Ganz[1]; M. Tao[3]; J. Adams[4]; K. Kahn[1]. [1]University of California, Los Angeles, Los Angeles, CA; [2]Amgen, Thousand Oaks, CA; [3]St John's Health Center, Los Angeles, CA; [4]RAND, Santa Monica, CA. *(Tracking ID # 173060)*

BACKGROUND: Patient involvement in cancer treatment decisions enhances quality of cancer care and is particularly important in the decision for early breast cancer treatments where equally effective treatments are available. To determine who had opportunities for informed decision making in their primary breast cancer treatment, we examined factors which predict self-reported physician-patient discussions of breast cancer treatment alternatives and outcomes.
METHODS: We conducted a secondary data analysis of the Los Angeles Women's Study, a population-based study of women 50 years and older with breast cancer diagnosed from March through November of 2000. Our cohort was composed of women with stage I or II breast cancer; women with scleroderma, prior history of chest wall irradiation, or no surgery for breast cancer were excluded from the analyses. Our first dependent variable, physician-patient discussions of treatment alternatives (lumpectomy plus radiation versus mastectomy), was dichotomous. Our second dependent variable, discussion of outcomes (range 0 to 4), was constructed by tallying four items respondents discussed with their physicians prior to decision making about surgery: (1) the likelihood of breast cancer recurring over time, (2) how breast cancer might influence longevity, (3) the appearance of breast or chest wall after surgery, and (4) the possibility of arm swelling, pain, or difficulty with movement. We used multivariable logistic regression to estimate the impact of patient and hospital characteristics on the receipt of physician-patient discussions of treatment alternatives. We used ordered logistic regression to estimate the impact of the same factors on frequency of physician-patient discussion items.
RESULTS: Of 871 women, 56% reported having a discussion of treatment alternatives with their physicians. Regarding the frequency of outcome discussion items, 23% reported receiving no discussion of treatment outcome items, and 18% reported discussing all four outcome items. In adjusted analyses, advanced age and less education were significantly associated with no discussion of treatment alternatives (OR 0.4, 95% CI 0.2–0.5 for age > 70 compared to age 50–59; OR 0.6, 95% CI 0.4–0.9 for < high school compared to college graduates) and less frequency of outcome item discussion (OR 0.4, 95% CI 0.3–0.7 for age > 70 compared to age 50–59; OR 0.5, 95% CI 0.4–0.9 for < high school compared to college graduates). Women with annual income < $20,000 were significantly less likely to receive discussions of treatment alternatives than women with annual income > $40,000 (OR 0.5, 95% CI 0.3–0.8). Income was not a significant predictor of frequency of discussion of treatment outcome items.
CONCLUSIONS: Women with advanced age, less education, and lower income were at higher risk of not being included in the informed decision making process regarding their breast cancer treatment. Interventions to increase physician-patient discussion of treatment options and outcomes are particularly needed among these women.

HEART FAILURE DISEASE MANAGEMENT PROGRAMS: A COST-EFFECTIVENESS ANALYSIS. D.C. Chan[1]; P.A. Heidenreich[2]; M.C. Weinstein[3]; G.C. Fonarow[4]. [1]Brigham and Women's Hospital, Boston, MA; [2]Stanford University, Palo Alto, CA; [3]Harvard School of Public Health, Boston, MA; [4]UCLA Medical Center, Los Angeles, CA. *(Tracking ID # 172845)*

BACKGROUND: Disease management programs aim to bridge a 'quality chasm' in the treatment of heart failure. They have shown impressive reductions in hospitalizations and mortality, but studies have been limited to short time frames and high-risk patient populations. Lacking data, current guidelines recommend disease management only for high-risk heart failure patients.
METHODS: This study applied a new technique to infer the degree to which clinical trials have targeted patients by risk based on observed rates of hospitalization and death. Generalizing from known data, a Markov model was used to assess the incremental life expectancy and cost of providing disease management to lower-risk patients over longer time frames. In the base case, effectiveness was assumed to wane between the end of the first and fifth years. Sensitivity analyses consider the cases of no effectiveness after the first year, indefinite effectiveness, and indefinite enrollment with indefinite effectiveness but also yearly disease management costs. A time horizon of 15 years, when 99.9% of patients in the highest quintile of risk and 93.3% of all patients have died, was used to approximate lifetime values. Costs, in 2006 US dollars, and life-years were both discounted at 3% per annum.
RESULTS: Clinical trials on disease management have on average only studied the riskiest 22% of heart failure patients. For patients in the highest quintile of risk, disease management programs were cost-saving at the end of the first year; at 15 years they prolonged average life expectancy by 0.50 life-years for an additional cost of $4,600. For the average patient not targeted by risk, disease management programs saved 0.34 life-years and cost $3,200 at 15 years. The incremental cost-effectiveness ratio of extending coverage to all patients from patients targeted by risk was $10,000 per life-year gained at 15 years. In aggregate, covering all patients more than triples life-years saved at 15 years as compared to covering only the highest quintile of risk. For the scenario of no effectiveness after one year, the incremental cost-effectiveness ratio of covering all patients was $17,000 per life-year gained at 15 years. For the least favorable scenario of indefinite enrollment, the corresponding ratio was $18,000 per life-year gained at 15 years.
CONCLUSIONS: Disease management programs for heart failure are cost-effective along the whole spectrum of patient risk. Their health benefits remain significant in the long term even with the most temporary assumed effect. Aggregate benefits can be extended by enrolling all heart failure patients in disease management, not just the high-risk ones.

IMPACT OF ELECTRONIC PRESCRIBING ON MEDICATION USE AND COST IN COMMUNITY-BASED PRACTICES. M.A. Fischer[1]; T.G. Ferris[2]; C. Vogeli[2]; M. Stedman[1]; M.A. Brookhart[1]; J.S. Weissman[2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. *(Tracking ID # 172983)*

BACKGROUND: Healthcare information technology (HIT) has been proposed as a solution to rising healthcare costs. Electronic prescribing (eRx) with formulary decision support (FDS) prompts physicians to prescribe lower cost medication at the point of prescribing. In April 2004 two large Massachusetts insurers began providing eRx/FDS systems to community-based practices. This study compares proportions of filled prescriptions in each of 3 formulary tiers among physicians prescribing with and without an eRx/FDS system.
METHODS: We conducted a pre-post study with concurrent controls, using 18 months (Oct 1, 2003 -March 31, 2005) of administrative data, with the first 6 months serving as baseline (pre-intervention). The intervention group included 1,035 physicians who used the eRx/FDS system. Physicians who never used the eRx/FDS system were controls. The unit of analysis was the prescription. Our dependent variable was the likelihood of prescribing in a given tier. We first performed a difference in difference analysis, comparing the change in the proportion of prescriptions in each tier before and after the eRx program began. Then, we developed longitudinal models with controls, adjusting for correlation within patient and physician. Since intervention physicians did not write all prescriptions electronically, analyses were performed twice: first using all prescriptions written by intervention physicians, and second using only the prescriptions that were written by intervention physicians actually using the eRx/FDS system. Potential savings were estimated using average medication costs by formulary tier.
RESULTS: We studied over 15,000 community based physicians prescribing for over 1 million outpatients, who filled 12.8 million prescriptions during the study period. Among the intervention group, 54.8% of prescriptions were filled for Tier 1 drugs (generics), 35.8% for Tier 2 (preferred brand-name drugs), and 9.4% for Tier 3 (non-preferred brand-name drugs) during the baseline period; rates were similar in the controls. Among the controls, Tier 1 drugs increased by 3.0%, compared with 3.7% among the intervention group after initiation of the device. However, when only prescriptions written with the eRx/FDS system were considered, Tier 1 drugs for the intervention group increased by 6.8%, a difference in difference of 3.8% over the controls. Meanwhile, the proportion of Tier 2 drugs decreased by 4.3% among the controls, compared with decreases of 3.6% (all prescriptions) or 5.3% (eRx-only prescriptions) among the intervention group. The proportion of Tier 3 drugs increased by 1.3% among the controls, compared with decreases of 0.2% (all prescriptions) or 1.5% (eRx-only prescriptions) among the intervention group. All differences were significant at the $p < 0.001$ level. In multivariate models, physicians were 15% more likely to prescribe Tier 1 medications when they used the eRx/FDS system than when they did not ($p < 0.001$). Based on average costs for private

insurers, we estimate that the increase in Tier 1 prescribing could result in savings of $7.56 million per 100,000 patients.
CONCLUSIONS: Despite a secular trend toward increased Tier 1 prescribing, physicians prescribing using eRx/FDS were more likely to prescribe Tier 1 medications than control physicians who were not using the device. Although the change rate of Tier 1 drugs was modest, the potential savings represent millions of dollars. Widespread use of eRx/FDS systems could result in substantial savings on medications.

INFORMED DECISION MAKING AND COLORECTAL CANCER SCREENING: IS IT OCCURRING IN PRIMARY CARE AND WHAT IS THE IMPACT ON SCREENING RATES? B. Ling[1]; J.M. Trauth[2]; M.J. Fine[2]; M.K. Mor[3]; R. Abby[4]; C.H. Braddock[5]; S. Bereknyei[5]; J. Weissfeld[2]; R. Schoen[2]; J. Whittle[6]. [1]VA Pittsburgh Healthcare System and University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA; [3]Pittsburgh VA Health Care System and The University of Pittsburgh School of Medicine, Pittsburgh, PA; [4]VA Pittsburgh Healthcare System, Pittsburgh, PA; [5]Stanford University, Palo Alto, CA; [6]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173010)*

BACKGROUND: Nearly 50% of Americans are not up-to-date with colorectal cancer screening (CRCS) despite the availability of several different screening options. Current recommendations advise patients to participate with their provider in deciding which screening option is best for them. The degree to which providers communicate the necessary information to prepare patients to participate and the impact of informed decision making on CRCS rates is not known. This study's objective was to analyze audiotaped patient-provider interactions to address these issues.
METHODS: We audiotaped interactions between enrolled male patients (aged 50–74 years) and the primary care team during clinic visits to the VA Pittsburgh. These audiotaped encounters were coded and analyzed using the Informed Decision Making Model (IDM) framework. This framework identifies nine domains of communication that should occur to prepare patients for participation in decision making: (D1) patient's role in decision making, (D2) context of the decision, (D3) nature of the decision, (D4) alternatives, (D5) risks and potential benefits, (D6) uncertainties, (D7) patient understanding, (D8) desire for input from trusted others, and (D9) patient preferences. Summary statistics were used to describe how frequently each of the IDM domains were addressed with patients who were due for CRCS and had a test ordered. The association between the number of IDM domains addressed with completion of an ordered CRCS test was assessed using Wilcoxon Rank Sum tests. The association between occurrence of a particular IDM domain and completion of the ordered test was assessed using Fisher's exact tests. Significance was defined at the $p < .05$ level.
RESULTS: The analytic cohort consisted of 79 patients (out of 212 enrolled) due for CRCS during the study who had a test ordered. The following were the observed occurrence for each domain (#, %): D1 (0, 0%), D2 (21, 27%), D3 (37, 47%), D4 (22, 28%), D5 (13, 16%), D6 (4, 5%), D7 (6, 8%), D8 (1, 1%), D9 (13, 16%). There was no association between race, age, and education level with the occurrence of any particular IDM domain or the number of domains discussed. There was also no association between the number of IDM domains discussed and CRCS completion (median of 1 element discussed both for those completing and those not completing a CRCS test, $p = .50$). CRCS test completion occurred more frequently for those who discussed D7 than among those who did not (100% vs. 41%, $p = .007$) while CRCS test completion was less frequent for those discussing elements D5 (15% vs. 52%, $p = .03$) and D9 (8% vs. 53%, $p = .004$) compared to those who did not discuss those elements.
CONCLUSIONS: In contrast to current national recommendations, we found a lack of informed decision making occurring during CRCS discussions. The number of IDM domains addressed was not associated with CRCS test completion and only domain D7 (patient understanding) was positively associated with test completion. Furthermore, addressing particular IDM domains (D5 and D9) was negatively associated with completion of CRCS. It is not known from our data whether this finding was a result of providers incorporating more in-depth discussions with resistant patients or if there are detrimental effects of particular IDM domains on CRCS behavior. Further research is needed to better understand the effects of IDM on CRCS behavior.

INPATIENT USE OF LOW MOLECULAR WEIGHT HEPARIN (LMWH) REDUCES HOSPITAL-BASED TREATMENT COSTS ASSOCIATED WITH VENOUS THROMBOEMBOLISM (VTE) PROPHYLAXIS. C.P. Ferrufino[1]; J. Lin[2]; M.A. Hussein[1]. [1]ValueMedics Research, LLC, Falls Church, VA; [2]Sanofi Aventis, Bridgewater, NJ. *(Tracking ID # 173747)*

BACKGROUND: Deep vein thrombosis (DVT) and pulmonary embolism (PE) are components of venous thromboembolism (VTE), a disease that causes approximately 300,000 to 600,000 hospitalizations annually in the United States and is estimated to cost $1.5B annually. To improve quality of care, the American College of Chest Physicians has developed guidelines (7th Version, 2004) for the prevention of VTE in hospitalized patients. However, as institutions begin to implement VTE guidelines, one important and yet unresolved question relates to the treatment costs of different prophylaxis regimens. The objective of this study was to estimate and compare total direct medical costs associated with different anti-coagulation regimens used in VTE prophylaxis in the inpatient setting.
METHODS: Using the Premier Inc. Perspective™ database (2003–2005), we performed a retrospective analysis of all eligible VTE prophylaxis patients (N = 917,345) using transactional billing records from over 400 US hospitals. Patients had to be age ≥40y, and received prophylaxis for VTE during their index hospitalization. Patients were excluded if they had a prior diagnosis of VTE during the 12-month pre-index period, received >1 class of VTE prophylaxis or were discharged with co-morbid conditions considered to be a contraindication to anticoagulant therapy. VTE-related readmissions were surveyed for a period of 90 days following discharge from the index hospitalization and were considered VTE-related if a primary or secondary discharge diagnosis of DVT or PE was recorded. Differences in log transformed direct medical costs were estimated using generalized linear models (SAS 9.1 PROC GENMOD), adjusting for patient and hospital characteristics and excluding outliers (top 1%) in the cost distributions. Differences with a Chi-square p-value of < 0.05 were considered statistically significant.
RESULTS: Of the 908,170 VTE prophylaxis patients in the study, 397,453 received LMWH, 486,131 received unfractionated heparin (UFH), and 24,586 received other anticoagulants. Clinical and demographic characteristics were similar between both groups, including APR-DRG severity-of-illness scores and length of stay (mean: LMWH = 4.89d [SD = 4.88] vs. UFH = 4.86d [SD = 5.46]). The 90-day VTE-related readmission rate was 0.7% for both LMWH and UFH cohorts (95%CI = 0%–0.17%), and no significant differences were observed among several high-risk patient groups, including orthopedic surgery, CHF, lung disease and severe infectious disease. However, total direct medical costs for the index hospitalization were significantly lower for the LMWH cohort (mean: LMWH = $25,704 [95%CI = $18,900-$34,958] vs. UFH = $30,152 [95%CI = $22,110-$41,114]; $p < .0001$). Although cost of anticoagulation therapy were higher for LMWH (mean = $286.72 [95%CI = $167.18-$491.72] vs. UFH = $48.25 [95%CI = $28.01-$83.12]; $p < .0001$), other component hospital costs, including laboratory and radiology, were lower for LMWH.
CONCLUSIONS: VTE is common, costly and largely preventable, particularly in the hospital-based setting. These data suggest that hospital-based prophylaxis with LMWH is as effective as UFH in preventing post-hospital VTE events at 90 days. However, LMWH is associated with significantly lower total hospital and non-drug-related component costs. Although additional studies are necessary to substantiate these findings, these data suggest that LMWH is potentially a dominant strategy for VTE prophylaxis.

QUALITY OF LIFE FOR DRUG ELUTING STENT RECIPIENTS: ARE AVOIDED REVASCULARIZATIONS VALUED? P.W. Groeneveld[1]; M.A. Matta[2]; J.J. Suh[2]; J.F. Olah[2]; F. Yang[2]; J.A. Shea[2]. [1]Philadelphia VA Medical Center and the University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania Division of General Internal Medicine, Philadelphia, PA. *(Tracking ID # 172416)*

BACKGROUND: Clinical trials have consistently demonstrated that the benefit of drug-eluting coronary stents (DES), compared with bare metal stents, is in reducing the incidence of post-intervention restenosis and repeat target vessel revascularization procedures. Conversely, DES do not reduce mortality or myocardial infarction rates. The cost of DES exceeds that of bare metal stents by approximately $1500 per stent used. As such, the cost-effectiveness of DES critically depends on the quality-of-life (QOL) "decrement" experienced by patients who require repeat revascularizations, yet this has not been well quantified.
METHODS: We surveyed a random sample of adult patients who had undergone percutaneous coronary interventions within the University of Pennsylvania Health System from 2003–2005. Patients who had undergone repeat revascularization procedures were compared with those who had undergone only a single procedure. We performed quality-of-life assessment using the well-validated EuroQol and Seattle Angina Questionnaire (SAQ) instruments. In order to assess the value of an avoided target vessel revascularization, we also designed and administered a panel of six Likert-scale questions (the Repeat Revascularization QOL Assessment, or RRQA) measuring the emotional, physical, and social burdens of repeat revascularization either as experienced by repeat procedure recipients or as anticipated by single procedure recipients.
RESULTS: We interviewed 33 patients who had undergone repeat revascularization and 36 patients who had undergone a single revascularization procedure during 2003–2005. The RRQA had a Cronbach's alpha of 0.84, indicating high reliability. The results of the EuroQol (range 0–1), SAQ subscales (range 0–100), and RRQA (range 0–24) are tabulated below (data presented as median, interquartile range unless otherwise indicated).
CONCLUSIONS: Percutaneous coronary intervention patients reported (or anticipated) modest, short-term QOL decrements from repeat revascularization procedures. There was no evidence of any permanent decrease in QOL among the patients who had received more than one procedure compared to those patients who had been revascularized a single time. Since avoiding a QOL decrement from a repeat target vessel revascularization is the principal benefit of the DES, it is not clear that the higher cost of DES compared to more inexpensive bare metal stents is providing health benefits at reasonable value.

Characteristic	Repeat procedures (n=33)	Single procedure (n=36)	p value
EuroQOL	0.80 (0.80,1.0)	0.84 (0.80,0.90)	0.44
SAQ angina stability	50 (50,75)	50 (50,75)	0.74
SAQ angina frequency	100 (90,100)	100 (95,100)	0.64
SAQ treatment satsfctn.	94 (81,100)	100 (88,100)	0.22
SAQ disease perception	92 (75,100)	92 (83,100)	0.46
RRQA (mean, std)	10.9 (2.7)	11.0 (4.6)	0.92

RACIAL/ETHNIC DIFFERENCES IN PREFERENCES FOR SHARED DECISION-MAKING. M.E. Peek[1]; H. Tang[1]; A. Cargill[1]; M.H. Chin[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 173811)*

BACKGROUND: Research has consistently shown that African-Americans and Hispanics with diabetes have worse health outcomes than non-Hispanic whites. Although shared decision-making (SDM) and patient-centered care can improve diabetes outcomes, early studies have demonstrated that racial/ethnic minorities have less SDM and less patient-centered care. Whether lower rates of SDM among these populations are due to patient preference, differential physician behaviors, or other factors is currently not known. This study sought to explore racial/ethnic differences in patient preference for shared decision-making.
METHODS: We utilized data from a cross-sectional survey of patients in 34 health centers serving indigent populations in 17 Midwestern and West Central states. We conducted a series of mixed regression models in which the primary dependent variable was patient preference for shared decision-making, as measured by a 3-item subscale (Cronbach's alpha: 0.70) of the Patient-Practitioner Orientation Scale (PPOS), an instrument designed to measure attitudes towards the doctor-patient relationship. The primary independent variable was self-reported race/ethnicity, with categories coded as non-Hispanic white, black, Hispanic, or other. We controlled for age, gender, education, marital status and "how well the patient is known by their physician." Health status and the number of years at the community health center were not associated in bivariate analyses with patient preference for SDM, and were consequently not included in the regression models. SAS 9.0 was used for all analyses, and we defined statistical significance as a two-tailed $p < 0.05$.
RESULTS: There were 1320 persons in our study sample; approximately one-quarter were either African-American (26.1%) or Hispanic (26.2%), and nearly half were non-Hispanic whites (47.7%). Over half the sample was comprised of women (67.5%) and the majority of patients had a high school degree or less education (78.1%). In adjusted and unadjusted analyses, African-Americans had no significant differences in preference for shared decision-making in comparison to whites (mean score was 0.51 pts lower than whites from a possible 15 pt total score; [$p = 0.21$]), but Hispanics were less likely to prefer a shared decision-making role than their non-Hispanic white counterparts (mean score was 2.33 points lower than whites; [$p < 0.0001$]). Higher levels of education, age < 65 years, male gender and "knowing your physician" were also positive predictors of preferring a shared decision-making role, factors which have been demonstrated in prior studies.
CONCLUSIONS: Patient-centered care and shared decision-making are increasingly being recognized as important tenets of quality health care, and there is evidence that racial/ethnic minorities receive less such care than non-Hispanic whites. Our study suggests that African-Americans want to engage in shared decision-making with their physicians as much as whites; future research should investigate whether cultural discordance, provider bias or other factors account for lower rates of SDM among this population. Among Hispanics, we found that there was less preference for SDM in comparison to non-Hispanic whites; patients were more likely to prefer a more passive role in the decision-making process. Whether limited English literacy, cultural norms or other factors account for such preferences is an area of future investigation.

ROBUST MULTIVARIATE SENSITIVITY ANALYSIS FOR BAYESIAN DECISION MODELS. J.W. Norman[1]. [1]University of Michigan, Ann Arbor, MI. *(Tracking ID # 173767)*

BACKGROUND: Making good decisions in uncertain situations is essential to providing high quality medical care. Formal methods for decision analysis based on statistical decision theory and inference about probabilities using Bayes' rule have been employed in medicine for decades. However Bayesian decision analysis is underutilized in patient care and is often the province of specialized researchers and consultants who have months to model each decision rather than general physicians and patients who have minutes for each clinical encounter. The methods and tools available to build and analyze decision models are not powerful enough to meet our requirements for near real-time decision support, largely because they do not enable robust sensitivity analysis that shows how action recommendations change as a function of unknown probabilities and utilities in the decision model. Traditional methods of sensitivity analysis, including graphical methods, sampling, and manual calculation of algebraic formulas, are limited; none simultaneously performs true multivariate analysis, computes symbolic or bounded answers in closed form, and scales to handle decision problems with many possible decision strategies and many unknown probabilities and utilities.
METHODS: I have developed a mathematical method for sensitivity analysis in Bayesian decision models that performs true multivariate analysis and computes symbolic and rigorously bounded results. Optimizing Multivariate Sensitivity Analysis begins with an influence diagram in which unknown probabilities and utilities are specified as functions of symbolic variables subject to constraints. The symbolic expected utilities of the possible decision strategies can be computed and compared. The basic comparison is an optimization problem whose objective function is the difference in expected utility between a strategy and its best competitor (utility gain). Each optimization problem is nonlinear and nonconvex but interval bounds on the true maximum utility gain can be computed by a linearization and reformulation method for global optimization. Using maximum utility gain a strategy comparison profile can be built that describes the best- and worst-case performance of each competing decision strategy. It is possible to select strategies that have the maximum expected utility for some feasible combination of unknown probabilities and utilities, or strategies that have the best worst-case performance. Additionally, closed form descriptions of preference regions (the sets of variable values for which a strategy has the maximum expected utility) can be calculated; this is a generalization of the one-variable threshold analysis traditionally employed. Textual summaries and graphical plots of the results are generated.
RESULTS: Optimizing Multivariate Sensitivity Analysis computes correct and useful results when applied to decision models. It allows the user to control computation and explicitly trade the tightness of the interval bounds that are generated against the time required to compute them.
CONCLUSIONS: Optimizing Multivariate Sensitivity Analysis provides a robust method to analyze Bayesian influence diagrams and decision trees in which the probabilities and utilities are specified with symbolic variables and functions rather than precise numbers. This method makes it easier for users to build and analyze formal decision models in situations in which human and computer resources are limited, as in routine patient care.

THE INFLUENCE OF A PHYSICIAN'S USE OF A DIAGNOSTIC DECISION AID ON THE MALPRACTICE VERDICTS OF MOCK JURORS. H.R. Arkes[1]; V.A. Shaffer[2]; M.A. Medow[1]. [1]Ohio State University, Columbus, OH; [2]Wichita State University, Wichita, KS. *(Tracking ID # 173106)*

BACKGROUND: Physicians may be reluctant to use diagnostic decision aids because they fear such usage might increase their malpractice risk. We wanted to determine the effect of using a diagnostic decision aid on (a) medical malpractice verdicts and (b) deservedness of punishment.
METHODS: We asked a national sample of jury-eligible adults to render a verdict and assess culpability in a mock medical malpractice trial involving acute appendicitis. Subjects were sent DVD's of the trial that varied on three experimental variables: (1) the decision aid (the Alvarado Score for acute appendicitis) was either used or not used (decision-aid-use), (2) the symptoms were either consistent or not consistent with "probable appendicitis" (symptom-complex) and (3) irrespective of aid use, the physician's decision either was consistent or not consistent with what the aid would have recommended (aid-consistent-behavior). An adverse outcome occurred in each case. Mock jurors rendered a verdict and, if they found the physician liable for malpractice, they indicated "how deserving of punishment" the physician was on a 9-point Likert scale. (a) We used forward selection in a logistic regression model to identify the significant independent correlates of a verdict of malpractice. (b) We used analysis of variance to identify the significant correlates on the deservedness of punishment measure.
RESULTS: One-thousand persons were solicited; 655 agreed to participate and provided usable data. Two-hundred-fifty mock jurors deemed the physician liable for medical malpractice. (a) Mock juror older age ($P = 0.0015$) and higher educational level ($P < 0.0001$), as well as physician aid-consistent-behavior ($P = 0.0062$) were protective against a finding for malpractice. Decision-aid-use had no influence on the malpractice verdict. When the decision was consistent with what the aid would have recommended, a mock juror was approximately two-thirds (OR 0.63, 95% CI 0.46 to 0.88) as likely to find the physician liable for malpractice. (b) Among the mock jurors finding for malpractice, only the interaction between decision-aid-use and aid-consistent-behavior was a significant correlate of deservedness of punishment ($P = 0.043$, $Eta^2 = 0.017$). Using the diagnostic aid and then defying its recommendation resulted in heightened punishment.
CONCLUSIONS: Contrary to many physicians' fears, simply using a diagnostic decision aid did not increase the likelihood of an adverse malpractice verdict. Using a decision aid and heeding the aid's recommendation provided a measure of protection against jurors' punishment for those deemed liable for malpractice, relative to using the aid and defying its recommendations.

THE MORE THE BETTER? A COMPARISON OF ORAL DIABETES MEDICATION COSTS IN RELATION TO THEIR EFFECTS ON HEMOGLOBIN A1C. C.N. Wiley[1]; S. Bolin[1]; L. Wilson[1]; R. Wilson[1]; J. Yeh[1]; J. Vassy[2]; L.S. Feldman[1]; S.S. Marinopoulos[3]; E. Selvin[1]; E.B. Bass[1]; F.L. Brancati[1]. [1]Johns Hopkins University, Baltimore, MD; [2]University of Minnesota, Twin Cities, MN; [3]Johns Hopkins University, Lutherville, MD. *(Tracking ID # 173261)*

BACKGROUND: Despite their greater cost, newer classes of oral diabetes medications (thiazolidinediones and meglitinides) are rising in use, compared to older, less expensive classes (sulfonylureas and metformin). We hypothesized that older classes would appear more favorable than newer classes in a cost-benefit analysis related to glycemic control.
METHODS: We conducted a systematic review and meta-analysis of English language articles from 1966 to 2006 using PubMed, EMBASE, Cochrane Library, hand searches, and a query of experts. Studies were eligible if they were randomized controlled trials that contained original data pertinent to the effects of oral diabetes medications on hemoglobin A1c (HbA1c). Random effects models were used to pool estimates of the mean differences in HbA1c reduction post treatment between drug

and placebo. The average wholesale price for each drug was determined based on data from 2006 Drug Topics Red Book.
RESULTS: Out of 7563 citations, 55 articles comparing drug with placebo evaluated HbA1c. The absolute reduction in HbA1c was similar (about 1%) among medications used as monotherapy, except for nateglinide, miglitol, and acarbose which each had lesser effects compared to the other medications. The cost for thiazolidinediones and meglitinides was hundreds of dollars higher even though their effects on reducing HbA1c were no better than those metformin and sulfonylureas (see table).
CONCLUSIONS: Older diabetes medications, particularly sulfonylureas and metformin are superior to newer classes in terms of cost-to-benefit ratio. In the absence of compelling evidence to the contrary, older agents should remain first-line choices where cost is an issue.

Cost of Drugs Per 1% Decrease in HbA1c

Drug vs. Placebo	Average Wholesale Price (AWP) for 100 day supply ($)	Weighted mean absolute difference (WMD) in HbA1c (95% CI) (%)	Cost for 100 day supply of drug per 1% decrease in HbA1c (95% CI) ($)
Sulfonylureas†	40.60	−1.52 (−1.75, −1.28)	27 (23, 32)
Metformin	38.63	−1.14 (−1.4, −0.87)	34 (28, 44)
Rosiglitazone	330.08	−1.16 (−1.39, −0.92)	285 (237, 359)
Repaglinide‡	417.36	−1.32 (−1.9, −0.8)	316 (220, 522)
Miglitol‡	247.62	−0.68 (−0.93, −0.44)	364 (266, 563)
Acarbose‡	282.27	−0.77 (−0.9, 0.64)	367 (314, 441)
Pioglitazone	601.62	−0.97 (−1.18, −0.75)	620 (510, 802)
Nateglinide‡	608.72	−0.54 (−0.8, −0.27)	1127 (761, 2255)

A PROSPECTIVE STUDY OF PHYSICAL ACTIVITY AND BODY MASS INDEX ON THE RISK OF TYPE 2 DIABETES IN MEN. L.C. Siegel[1]; H.D. Sesso[1]; T.S. Bowman[1]; J.M. Gaziano[1]. [1]VA Boston Healthcare System, Boston, MA. *(Tracking ID # 172776)*

BACKGROUND: Physical activity is associated with decreased risk of type 2 diabetes in both men and women. However, a recent prospective study in women found that physical activity only slightly attenuated the diabetes risk attributable to high BMI. Therefore, we investigated whether these observations for the joint effects of physical activity and BMI on the risk of type 2 diabetes also extended to men.
METHODS: The Physicians' Health Study is a 2x2 clinical trial of aspirin and beta-carotene for the primary prevention of cardiovascular disease and cancer among middle-aged and older male physicians followed since 1982. Among men without diabetes at baseline (n = 21,420), we evaluated BMI, exercise frequency, and risk of incident type 2 diabetes, all from self-reported data. To classify exposure, we examined BMI categories using World Health Organization definitions (normal [18.5 to < 25 kg/m2], overweight [25 to < 30 kg/m2], or obese [> or = 30 kg/m2]) and physical activity using frequency of vigorous exercise (rarely/never, 1–3×/month, once/wk, 2–4×/wk, and > or = 5×/week). We created a dichotomous physical activity variable, defining exercise at least weekly as active and less than weekly as inactive. We then created a joint variable combining activity status (active/inactive) with BMI category (normal/overweight/obese). We used Cox proportional hazards models to calculate hazard ratios (HR) and 95% confidence intervals (CI) of diabetes for BMI and activity levels separately and then jointly with the 6-category variable. Multivariable models adjusted for age, history of high cholesterol, smoking, alcohol intake, and blood pressure.
RESULTS: After a median follow-up of 23.1 years, there were 1,903 incident cases of type 2 diabetes. Incidence decreased in a linear fashion with increased frequency of physical activity, with a multivariable-adjusted HR of 0.57 (95% CI: 0.47, 0.70) in the most active group compared with the least active group. The overweight and obese BMI categories were each associated with increased risk of diabetes, with multivariable-adjusted HRs of 2.14 (95% CI: 1.91, 2.40) and 4.92 (95% CI: 4.11, 5.89), respectively. For the 6-category joint model combining activity and BMI, the physically active participants with normal BMIs were used as the reference group for all comparisons. Participants with a normal BMI who were also inactive had a HR of 1.34 (95% CI: 1.11, 1.63). For the overweight active group, the HR was 2.15 (95% CI: 1.87, 2.47) compared with 2.92 (95% CI: 2.49, 3.42) for the overweight inactive group. For the obese active group, the HR was 5.30 (95% CI: 4.23, 6.64) compared with 6.12 (4.72, 7.93) for the obese inactive group.
CONCLUSIONS: These data suggest that the excess risk of type 2 diabetes conferred by elevated BMI is greater than the protective effects of regular physical activity in men. Our findings support the idea that physical activity alone may not be sufficient in reducing the additional diabetes risk attributable to excess weight and highlight the clinical importance of maintaining a normal BMI for optimal diabetes prevention.

A RETROSPECTIVE STUDY TO EVALUATE RISK FACTORS FOR FLUOROQUINOLONE RESISTANCE AMONG URINARY ESCHERICHIA COLI ISOLATES IN ADULTS. L. Johnson[1]; A.L. Sabel[1]; W.J. Burman[2]; T.D. Mackenzie[1]; M.E. Rome[1]; P.S. Mehler[1]; C.S. Price[1]. [1]Denver Health and Hospital Authority, Denver, CO; [2]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 172342)*

BACKGROUND: The antibiotic resistance of Escherichia coli (E.coli) to treatment with fluoroquinolones in urinary tract infections is an increasing problem nationwide. While this phenomenon is well-documented, further analysis of the risk factors leading to resistance in the outpatient setting is necessary in order to both determine the optimal treatment method for outpatients, as well as to attempt to control the spread of the resistant E. coli strains. Therefore, the significant predictors of resistance to fluoroquinolones in E. coli were evaluated in a large, urban, public health care system in Denver, Colorado.
METHODS: A retrospective, case-control study design was implemented to evaluate risk factors for urinary tract infection with a fluoroquinolone-resistant E. coli strain. Microbiology records were reviewed from 2005 to identify adult, non-pregnant outpatients presenting to outpatient clinics at Denver Health who had urine cultures growing greater than 100,000 E. coli colonies per mL. Individuals with levofloxacin-resistant cultures were matched with a control group with levofloxacin-sensitive cultures by sex, clinic site, and age in a 2:1 ratio. Medical records and electronic databases were analyzed for each individual; the presence of possible risk factors for levofloxacin resistance, in the 12 months prior to the first levofloxacin-resistant urinary tract infection, were documented. These risk factors included a past history of clinically diagnosed urinary tract infections, previous antibiotic use, hospitalizations or surgical procedures, urinary catheterization, residence in a long-term care facility, and an underlying diagnosis of diabetes or other chronic illnesses. Bivariate and multivariate conditional logistic regression models were used to determine the significant predictors.
RESULTS: Forty-one outpatients treated during 2005 met the case definition and were matched to the 82 controls. In the multivariate statistical analysis, fluoroquinolone-resistant E. coli urinary tract infection was determined to be more prevalent among outpatients with each week of prior hospitalization (odds ratio 2.1, 95% confidence interval, 1.0–4.2) and with each week of previous antibiotic use (odds ratio 1.8, 95% confidence interval, 1.2–2.6) in the twelve months prior to their first levofloxacin-resistant urinary tract infection.
CONCLUSIONS: Previous antibiotic use and recent hospitalizations are potent predictors of fluoroquinolone-resistant E. coli urinary tract infection among adult outpatients in our urban, public health care system. The presence of these risk factors should be documented and considered before initiating empiric treatment with a fluoroquinolone. Future studies should focus on curtailing the rise of antibiotic resistance rates with knowledge of the above predictors in mind, as well as evaluating alternative antimicrobials if the aforementioned risk factors are present.

ACCULTURATION AND RISK FACTOR LEVELS AMONG HISPANIC ADULTS WITH HYPERTENSION, HYPERCHOLESTEROLEMIA, OR DIABETES: THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS. P.P. Eamranond[1]; A.T. Legedza[1]; A.V. Diez-Roux[2]; K. Namratha[3]; W. Palmas[4]; D. Siscovick[5]; K.J. Mukamal[1]. [1]Beth Israel Deaconess Medical Center, Brookline, MA; [2]University of Michigan, Ann Arbor, MI; [3]Northwestern University, Chicago, IL; [4]Columbia University, New York, NY; [5]University of Washington, Seattle, WA. *(Tracking ID # 171851)*

BACKGROUND: Control of cardiovascular risk factors has been shown to be worse for Hispanics than non-Hispanic whites. Although acculturation status may explain some variation in health outcomes, the association of acculturation and cardiovascular risk factor control among Hispanics has not been well-studied.
METHODS: We studied 1492 Hispanic participants in the Multi-Ethnic Study of Atherosclerosis (MESA), without clinical cardiovascular disease and with at least one of the following risk factors: hypertension, hyperlipidemia, or diabetes. Measures of acculturation were language spoken at home and proportion of life spent in the U.S. Outcome measures included systolic blood pressure (mmHg), difference of measured LDL-cholesterol and goal LDL-cholesterol (mg/dL), and fasting blood glucose (mg/dL). We used linear regression to examine the cross-sectional relationships between acculturation variables and cardiovascular risk factor levels, before and after adjustment for education, income, health insurance, physical activity, dietary factors, and BMI.
RESULTS: Of 1492 Hispanic participants, the mean age was and 53% were female. There were 57% who spoke Spanish at home, and 71% were foreign-born. There were 580 Hispanics with hypertension, 539 with hyperlipidemia, and 248 with diabetes. After adjustment for age and sex, Spanish-speaking Hispanics with cardiovascular risk factors had higher systolic blood pressure, LDL-cholesterol difference, and fasting blood glucose compared to English-speaking Hispanics, as shown in Table. Additional adjustment for education attenuated most of the differences in blood pressure, whereas adjustment for lipid-lowering medication use attenuated nearly all of the differences in LDL-cholesterol. Differences in fasting glucose were attenuated by socioeconomic variables but were augmented after adjustment for dietary factors. Similar associations were observed between proportion of life in the U.S. and risk factor levels. Physical activity and BMI did not have significant effects on these estimates.
CONCLUSIONS: Among those with cardiovascular risk factors, Hispanics with lower levels of acculturation based on language and proportion of life in the U.S. have worse control of cardiovascular risk factors. Further preventive strategies that focus on

Hispanics with low levels of acculturation may improve cardiovascular risk factor control in this population.

Table: Multivariable analysis of cardiovascular risk factor level differences for Hispanics based on language spoken at home and proportion of life in U.S. among patients with diagnosed risk factors

	Model 1 adjusted for age, gender		Model 2 adjusted for age, gender, education		Model 2 + insurance, income		Model 2 + dietary factors		Model 2 + risk factor-specific medication use	
CVRF comparing Spanish to English*	β ± SE	p	β ± SE	p	β ± SE	p	β ± SE	p	β ± SE	p
Systolic blood pressure (mmHg)	4.7±1.8	.01	1.7±2.0	.38	1.1±2.1	.59	2.6±2.0	.20	1.6±2.0	.42
Mean LDL-goal LDL (mg/dL)	7.9±3.4	.02	8.3±3.7	.02	7.6±3.9	.05	7.3±3.9	.06	2.8±3.4	.42
Fasting glucose (mg/dL)	18.8±8.1	.02	15.6±8.9	.08	10.2±9.5	.28	21.0±9.1	.02	15.5±8.9	.08
CVRF by proportion of life in U.S.†										
Systolic blood pressure (mmHg)	6.5±3.1	.03	2.5±3.2	.44	0.7±3.4	.83	3.8±3.3	.24	1.6±3.2	.61
Mean LDL-goal LDL (mg/dL)	7.5±6.2	.23	6.9±6.4	.29	5.6±6.8	.41	4.6±6.8	.51	-0.4±6.1	.95
Fasting glucose (mg/dL)	36.1±13.9	.01	34.9±15.1	.02	27.4±15.7	.08	47.1±15.6	.003	35.8±15.1	.27

* Cardiovascular risk factor level comparing Spanish vs. English spoken at home
† Cardiovascular risk factor level comparing newly-arrived immigrant to U.S.-born

ADMINISTRATIVE DATABASE SCREENING FOR SOMATIZATION. R.C. Smith[1]; J. Gardiner[1]; Z. Luo[1]. [1]Michigan State University, East Lansing, MI. *(Tracking ID # 173300)*

BACKGROUND: Somatization is defined as those physical symptoms having little or no basis in underlying organic disease, and its prevalence ranges from 33% upwards in outpatient settings. Comorbid organic diseases are common, and psychological dysfunction and psychiatric diagnoses greatly increase as somatization becomes more severe. Although evidence suggests that treatment is effective, somatizing patients seldom receive it because they are not recognized. Poor recognition also fosters high costs and iatrogenic complications. We hypothesized that we would confirm the value of our recently developed administrative database (ADB) screener to identify somatizing patients, where the c-statistic was 0.78 in a validation set using a different population. Screening uses number of visits, gender, and ICD-9 primary diagnosis codes with "somatization potential." The latter represents all codes in musculoskeletal, nervous, gastrointestinal, and ill-defined body systems.
METHODS: Using a prospective observational design, staff model HMO patients from 18–65 years with 8 or more visits/year for two years were identified from the ADB. For 1646 high-utilizing patients identified from the ADB, five trained and reliable clinician chart raters used a specific chart-rating method to identify patients as somatization or not; 246 charts had obvious organic diseases and were not further rated. Of the 1400 fully rated charts, 1364 had complete data. Randomly selected from these 1364 patients, 689 subjects represented the derivation set for logistic regression. It evaluated the contribution of ADB predictors (age, gender, all encounters, primary diagnosis codes [ICD-9], revenue codes, and charges) to a diagnosis of somatization. This prediction rule was then applied to the remaining 675 subjects, the validation set.
RESULTS: Chart raters had 97.6% agreement with gold standard ratings of somatization and 92–96% interrater agreement for the critical rating categories of somatization. Patients averaged 47.1 years, 12.8 visits per year, and 71.6% were female; 319 had somatization (19.4% prevalence). In the derivation set, younger age, female gender, greater number of visits, and higher somatization potential predicted somatization; c-statistic = 0.725. In the validation set, c-statistic = 0.683. There was no improvement in the c-statistic by selectively removing diagnoses suggesting organic diseases, such as cancer. We also investigated the contribution of each body system to somatization potential and found that all 4 systems combined produced the best prediction.
CONCLUSIONS: These data corroborate our earlier findings that ICD-9 diagnoses with somatization potential are useful predictors of somatization. More work is needed to demonstrate continued stability of the scoring rule in yet another population. Because ADB screening lends itself to population-based screening, a stable scoring rule could identify these common, costly patients and target them for treatment.

ALCOHOL AND FOLATE INTAKE AND RISK OF OVARIAN CANCER IN POSTMENOPAUSAL WOMEN. C.M. Duffy[1]; V.K. Chetty[2]; M.B. Roberts[3]; C. Elizabeth[4]; A.R. Assaf[5]; M.G. Cyr[1]. [1]Brown University, Providence, RI; [2]Boston University, Boston, MA; [3]Brown University, Pawtucket, RI; [4]Memorial Hospital of RI, Pawtuckett, RI; [5]Brown University, Pawtuckett, RI. *(Tracking ID # 173864)*

BACKGROUND: Ovarian cancer is the most lethal of the gynecologic malignancies with nearly 15,000 deaths annually. Diet may represent one of the few modifiable risk factors. Research evaluating whether alcohol consumption affects the risk of ovarian cancer has been inconsistent with some studies indicating decreased risk while others have shown no effect. Folate intake has been shown to modulate the effect of alcohol on cancer risk and may explain some of the inconsistent findings of previous epidemiologic studies. We sought to evaluate the risk of ovarian cancer in relation to alcohol and folate consumption in a large prospective cohort study conducted in the US.
METHODS: 93,720 postmenopausal women aged 55–79 enrolled between 1993–1998 in the Women's Health Initiative (WHI) Observational Study. The WHI-OS is a large on-going prospective cohort study in the US designed to examine associations among a variety of risk factors and diseases common in older women. Information on alcohol intake and dietary folate was obtained from a validated, self-administered food frequency questionnaire (FFQ) completed at the time of enrollment into the study. Information on supplemental folic acid intake was obtained and recorded by study personnel also at time of enrollment. Cases of ovarian cancer were self-reported by subjects yearly and centrally adjudicated by trained study personnel. Cox proportional hazards analysis was performed to examine the relationship between incidence of ovarian cancer and self-reported baseline alcohol and folate intake. Women were excluded from analysis prior to WHI enrollment if they had a history of ovarian cancer, or a history of bilateral oophorectomy.
RESULTS: There were 266 cases of ovarian cancer during 7 years of follow-up. In the unadjusted analysis, ovarian cancer incidence was significantly higher in Caucasian women, and women with higher folate consumption, higher alcohol consumption, a family history of ovarian cancer, and previous hormone use. In the Cox proportional hazards analysis adjusted for race/ethnicity, education, parity, hormone replacement therapy, oral contraceptives, tobacco use, family history of ovarian cancer, and energy intake, women who were in the upper tertile of folate intake had significantly increased risk of ovarian cancer (HR = 1.42 p = 0.03) compared to women in the lowest tertile. Alcohol was not significantly associated with ovarian cancer risk. Formal testing for an interaction between alcohol and folate was NS (p = .28).
CONCLUSIONS: High folate intake was significantly associated with ovarian cancer incidence in this cohort of postmenopausal women after adjustment for potential confounders. This is in agreement with a recent study by Stolzenberg-Solomon (2006), but in contrast to previous reports by Keleman (2005) and Larsson (2004), which found a decreased risk of ovarian cancer among high folate consumers. Strengths of the current study include the large number of ovarian cancer cases, the diversity of the WHI population, and ability to control for many of the known risk factors for ovarian cancer. Limitations include the lack of information on folate and alcohol intake over time, and the inability to examine ovarian cancer risk by histological type. Discrepancies in findings among studies may relate to the different populations of women studied, differences in measurement of alcohol or folate, or other methodological differences among studies.

ARE MORE EXPENSIVE, NEWER ORAL DIABETES MEDICATIONS BETTER THAN LESS EXPENSIVE, OLDER ONES? S. Bolen[1]; J. Vassy[2]; L. Wilson[1]; H.C. Yeh[1]; S.S. Marinopoulos[1]; L. Feldman[1]; C.N. Wiley[1]; R.F. Wilson[1]; E. Selvin[1]; E.B. Bass[1]; F.L. Brancati[1]. [1]Johns Hopkins University, Baltimore, MD; [2]University of Minnesota, Twin Cities, MN. *(Tracking ID # 171972)*

BACKGROUND: Although several reviews have compared the effects of some oral diabetes medications on selected short-term outcomes like hemoglobin A1c, comprehensive reviews are lacking. We hypothesized that a comprehensive review would reflect favorably on older, less expensive agents (2nd generation sulfonylureas and metformin) in comparison to newer, more expensive agents (meglitinides and thiazolidinediones).
METHODS: We conducted a systematic review and meta-analysis of English language articles identified from 1966 to 2006 using PubMed, EMBASE, Cochrane Library, handsearches, and an expert panel. Articles were eligible if they were randomized controlled trials containing original data on any of the following short-term outcomes: HbA1c, body weight, systolic BP, or lipids. We abstracted the data using standardized forms and conducted two independent reviews. Random effects models were used to pool the mean differences between-groups. Using the DerSimonian and Laird method, pooled effects were weighted based on the inverse variance of individual studies. When direct comparisons were lacking, indirect comparisons were calculated by taking the difference in the weighted mean differences in the placebo-controlled trials, and adding the variance to calculate 95% confidence intervals (CI).
RESULTS: Of 7563 citations, 130 articles met our inclusion criteria. HbA1c reduction was similar (~1%) among the oral diabetes medications when used as monotherapy, except for nateglinide which had lesser effects. The weighted mean absolute differences (WMD) in HbA1c for nateglinide (Nateg) using indirect comparisons were: sulfonylurea (SU) vs Nateg −1.0% [95% CI −0.6 to −1.3%], metformin (Met) vs Nateg −0.6% [−0.2 to −0.7%], pioglitazone (Pio) vs Nateg −0.4% [−0.1 to −0.8%], and rosiglitazone vs Nateg −0.6% [−0.3 to −0.9%]. SUs and thiazolidinediones (TZD) increased weight when compared with Met which maintained or decreased weight (WMD between-groups for SU vs Met in studies < 24 weeks: 1.9 kg [1.4 to 2.4 kg], for SU vs Met in studies > 24 weeks: 3.5 kg [3 to 4 kg], and for TZD vs Met: 1.9 kg [0.5 to 3.3 kg]). Meglitinides had similar weight effects when compared with SU, WMD 0.03 kg [−1 to 1 kg]. Oral diabetes medications had similarly minimal effects on systolic BP, but differing effects on lipids. Although TZDs increased HDL (~3 mg/dL), they also increased LDL-cholesterol (e.g. WMD for Pio vs Met and Pio vs SU were 12.5 mg/dL [8.8 to 16.2 mg/dL] and 10.4 mg/dL [7.3 to 13.6 mg/dL] respectively). Most oral diabetes medications decreased triglycerides (TG) except for rosiglitazone which increased TG (~8 mg/dL).
CONCLUSIONS: Compared to newer, more expensive medications such as TZDs and meglitinides, metformin had similar or superior effects on a range of clinically relevant short-term outcomes. SUs were comparable to TZDs and meglitinides. Absent compelling contradictory evidence from long-term trials with cardiovascular end-points, physicians may continue to rely on older medications, especially where cost is a factor.

ARE NEWER ORAL DIABETES MEDICATIONS SAFER THAN OLDER AGENTS? L.S. Feldman[1]; S. Bolen[1]; S.S. Marinopoulos[2]; L. Wilson[1]; C.N. Wiley[1]; H. Yeh[1]; J. Vassy[3]; R.F. Wilson[1]; E. Selvin[1]; F.L. Brancati[1]; E.B. Bass[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Johns Hopkins University, Lutherville, MD; [3]University of Minnesota, Twin Cities, MN. *(Tracking ID # 172897)*

BACKGROUND: Although several reviews have compared the effects of several oral diabetes medications on selected adverse events such as hypoglycemia and congestive

heart failure, comprehensive reviews are lacking. We hypothesized that a comprehensive review and meta-analysis would show that newer agents (meglitinides and thiazolidinediones (TZD)) are no safer than older agents (2nd generation sulfonylureas (SU) and metformin (met)).
METHODS: We conducted a systematic review of English language articles identified from 1966 to 2006 using PubMed, EMBASE, Cochrane Library, hand searches, query of experts, and a review of FDA data. Articles were eligible if they were randomized trials or observational studies that contained original data on adverse events including: hypoglycemia, lactic acidosis, congestive heart failure (CHF), transaminitis, liver failure, edema, gastrointestinal (GI) problems, or other serious adverse events. We abstracted data using standardized forms and conducted two independent reviews. We used random effects models to pool results when there were sufficient trials of specific comparisons.
RESULTS: Of 7563 citations, 170 eligible articles were identified. Hypoglycemia and serious hypoglycemia occurred in a greater proportion of patients taking SU compared with TZD (pooled absolute risk difference (RD) 9%; 95% confidence interval (CI) 3 to 15%) or compared with Met (RD 4%; CI 0.3 to 9%), but the proportion was similar for SU compared with repaglinide (RD 2%; CI −2 to 5%). Combination therapy compared to monotherapy yielded a higher proportion of patients with hypoglycemia, except for TZD plus Met vs Met (RD 0%; CI −1 to 1%). TZD had a greater proportion of patients with CHF compared with Met or SU (2 randomized trials showing 1–2% in the TZD group vs 0% in SU group; 4 cohort studies and 1 case-control study showed a range in odds ratios (OR) of 1.06 to 2.27 favoring Met or SU significantly in 4 of the 5 studies). Edema was more common with a TZD although very few cases of edema were considered serious. TZD, SU, and Met had similarly low rates (<1%) of clinically relevant serum aminotransferase elevations, while insufficient studies evaluated or reported on the effects of meglitinides. The low rate of lactic acidosis was similar between Met and other oral diabetes medications (8.4 vs 9 cases per 100,000 patient-years, respectively). Met was associated with more frequent GI adverse events, between-group differences of 1–35%, as compared with TZD and SU. FDA reported a pooled analysis with a higher rate of hospitalization for acute cholecystitis with pioglitazone than with placebo.
CONCLUSIONS: Newer oral diabetes medications are not safer than older agents. When evaluating serious adverse effects, metformin has the safest profile when prescribed to patients without contraindications. Physicians should not feel obligated to prescribe newer medications due to perceived safety benefits.

ASKING THE RIGHT QUESTIONS: VIEWS ON GENETIC VARIATION RESEARCH AMONG PARTICIPANTS IN A COLORECTAL CANCER GENETIC EPIDEMIOLOGY STUDY. J. Bussey-Jones[1]; G.E. Henderson[2]; J.M. Garrett[2]; M. Maloney[3]; G.M. Corbie-Smith[2]. [1]Emory University, Atlanta, GA; [2]University of North Carolina at Chapel Hill, Chapel Hill, NC; [3]University of North Carolina, Chapel Hill, NC. *(Tracking ID # 173386)*

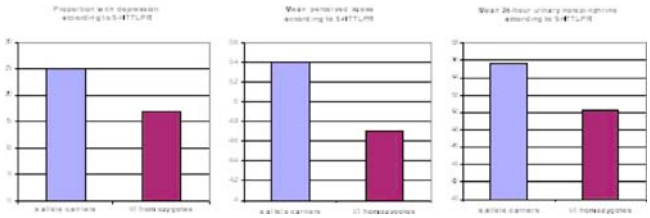
BACKGROUND: Genetic variations research (GVR), genetic research examining racial differences in disease, may raise concerns among minorities about misuse of genetic information, inequities in research benefits and discrimination of those at genetic risk. Increased racism has been documented when lay audiences are given racially-linked genetic information. However, seemingly contradictory and largely positive views about GVR have also been reported. We used a mixed method approach to provide a more comprehensive and nuanced examination of views of GVR among black and white participants in a genetic study.
METHODS: We surveyed cases and controls, ages 40–80 years, who participated in the North Carolina Colorectal Cancer(CRC) Study. We analyzed quantitative responses of the sample (N = 725) to assess views about GVR by race. Qualitative methods were used to examine responses of a race-matched sub-sample (N = 194) to questions of good and bad things about GVR for themselves, families, and society.
RESULTS: In the overall sample, the mean age was 64, 58% were male and 82% were white. Blacks and whites reported similar perceived health, cancer history and age. However, blacks were more likely than whites to report less education, lower income, be more religious, and have heard less about genetic research. When given a list of potential implications of GVR, blacks were more likely than whites to feel that such research would: not benefit minorities (26% vs. 14%, $p = 0.002$); result in higher insurance premiums (43% vs. 30%, $p = 0.006$); reinforce racism (32% vs. 19%, $p = 0.001$); and use minorities as guinea pigs (30% vs. 6%, $p < 0.001$). Overall, blacks were less likely than whites to feel very positive about GVR (46% vs. 57%, $p = 0.03$). In the qualitative analysis, several themes emerged. Respondents were positive about the potential for GVR to contribute to knowledge, determine causes, prevent and find cures for diseases. Some felt that GVR might help explain group risk, identify culturally/racially specific lifestyle risks, and allow researchers to prioritize research on certain groups to address inequalities. In contrast, some stated that "race is not the issue". While few could voice negatives of GVR, those who did raised misuse of information, discrimination, stereotyping, and increased anxiety among those at risk. While frequencies of these responses did not vary by race, blacks and whites articulated their responses differently in some cases. When discussing "race is not the issue", both whites and blacks mentioned other explanations for disease disparities such as food, culture, and environment. Blacks, however, offered additional alternatives to race's significance, e.g. that money and research are central issues, or that GVR could minimize relevance of race by dispelling "myths" about the role genetics in race.
CONCLUSIONS: When asked open-ended questions about their views of GVR, participants don't spontaneously generate "negative" responses; in contrast, when presented specific examples of potential negatives, more respondents agreed, and minorities were significantly more likely to express concerns. While participants appear to be generally positive about GVR, these complex concepts may require that researchers engage with lay audiences using novel approaches to ensure accurate understanding of risks and benefits, and providing them with the language to express their concerns.

ASSOCIATION OF LIPOPHILIC AND HYDROPHILIC ACE INHIBITOR USE WITH PNEUMONIA-RELATED MORTALITY. E. Mortensen[1]; M. Restrepo[2]; L. Copeland[1]; A. Anzueto[2]; J. Pugh[1]. [1]South Texas Veterans Health Care System, San Antonio, TX; [2]Audie L. Murphy VA Hospital and The University of Texas Health Science Center at San Antonio, San Antonio, TX. *(Tracking ID # 170050)*

BACKGROUND: Recent studies suggest that angiotensin-converting enzyme inhibitors (ACEI) may have beneficial effects for patients with, or at risk for, pneumonia. Other studies have not shown a survival benefit. Research suggests that lipophilic ACEIs (e.g., fosinopril) may be superior to hydrophilic ACEI (e.g., lisinopril) in terms of penetration and systemic effects. Therefore, we examined the effect of prior outpatient use of lipophilic and hydrophilic ACEI on mortality for patients hospitalized with community-acquired pneumonia (CAP).
METHODS: A retrospective cohort study conducted at two tertiary teaching hospitals. Eligible subjects had an admission diagnosis, discharge ICD-9 diagnosis, and chest x-ray consistent with CAP. Subjects were excluded if they received "comfort measures only" or were transferred from another acute care hospital. Subjects were considered to be on a medication if they were taking it at hospital admission. We created two dichotomous variables for the use of hydrophilic or lipophilic ACEI, and examined whether these variables were associated with 30-day mortality in a multivariable logistic regression model that adjusted for potential confounders using propensity scores
RESULTS: Data was abstracted on 787 subjects at the two hospitals. Mortality was 9.2% at 30-days. At presentation, 52% of subjects were low risk, 34% were moderate risk, and 14% were high risk as classified by the pneumonia severity index. In our cohort, 24% (n = 186) were on ACEI at presentation: 111 lipophilic and 74 hydrophilic. In the multivariable regression analysis, after adjusting for potential confounders, lipophilic ACEI use (odds ratio 0.27, 95% confidence interval 0.1–0.8), but not hydrophilic ACEI use (0.70, 0.3–1.7), was significantly associated with 30-day mortality.
CONCLUSIONS: Prior outpatient use of a lipophilic ACEI, but not a hydrophilic ACEI, was associated with decreased mortality in patients hospitalized with CAP despite their use being associated with comorbid illnesses likely to contribute to increased mortality. Confirmatory studies are needed, as well as research to determine the mechanism(s) of this protective effect.

ASSOCIATION OF SEROTONIN TRANSPORTER POLYMORPHISM (5-HTTLPR) WITH DEPRESSION, PERCEIVED STRESS, AND NOREPINEPHRINE IN PATIENTS WITH CHRONIC CORONARY HEART DISEASE: THE HEART AND SOUL STUDY. M.A. Whooley[1]; J. Mccaffery[2]; S. Ali[1]; C. Otte[3]. [1]University of California, San Francisco, San Francisco, CA; [2]Brown University, Providence, RI; [3]University Hospital Hamburg-Eppendorf, Germany, Hamburg,. *(Tracking ID # 172359)*

BACKGROUND: The short allele of a polymorphism in the promoter region of the serotonin transporter gene (5-HTTLPR) interacts with stressful life events to predict depression in otherwise healthy individuals. Whether this allele increases the risk of depression associated with the stress of a chronic illness is unknown.
METHODS: We examined the association of 5-HTTLPR with depression, perceived stress and 24-hour urinary norepinephrine in a cross-sectional study of 557 Caucasian outpatients with chronic coronary heart disease (CHD). Subjects completed a structured interview for depression, the Perceived Stress Scale, and a 24-hour urine collection. We used logistic regression to calculate odds ratios (OR) with 95% Confidence Intervals (CI), adjusted for age and gender.
RESULTS: Among participants carrying a short allele (SS or SL), 25% (97/383) had current (past month) depression, compared with 17% (29/174) of LL homozygotes (OR 1.6, 95% CI 1.0–2.6, $p = .04$) (Figure). Participants carrying a short allele had greater mean perceived stress scores compared with LL homozygotes (5.4 +/− 3.4 vs. 4.7 +/− 2.9, $p = .02$) (Figure) and a greater odds of high perceived stress (OR 1.6 (1.1–2.3), $p = .02$). Mean 24-hour urinary norepinephrine was higher in S allele carriers (55.6 +/− 24.0 vs. 50.2 +/− 23.8 μg/day, $p = .04$) (Figure) who were also more likely to have norepinephrine values in the highest quartile (OR 1.7 (1.0–2.3), $p = .05$).
CONCLUSIONS: Among patients with chronic CHD, carriers of the short allele of 5-HTTLPR are more vulnerable to depression, perceived stress and greater norepinephrine secretion. These factors may contribute to worse cardiovascular outcomes in these patients.



Differences between s allele carriers and l/l homozygotes in the prevalence of current major depression (p = .04), mean perceived stress score (p = .01), and mean μg/day of urinary norepinephrine (p = .04).

ASTHMA FIRST FILL PRESCRIPTIONS: MORE DISEASE = LESS LIKELY TO FILL. N.R. Shah[1]; A. Hirsch[2]; S. Yoder[2]; A. Wingate[2]; J. Ober[3]; W.F. Stewart[2]. [1]New York University, New York, NY; [2]Geisinger Health, Danville, PA; [3]Glaxo-SmithKline, Research Triangle Park, NC. *(Tracking ID # 173805)*

BACKGROUND: Much of the distance between the promise of evidence-based medicine and reality of improved patient outcomes can be attributed to problems in the 'last mile,' or patient adherence-the "extent to which a person's behavior coincides with medical or health advice." Research on medication adherence has largely focused on patients who obtain their first prescription for a defined condition. Much of this research is possible using insurance or pharmacy claims data. Yet, the first step in the last mile of medication adherence is actually filling the very first prescription for a medication, about which relatively little is known. Insurance claims data alone cannot be used to assess first fill rates. We used a unique combination of electronic health record data from clinics and prescription claims data to understand first fill rates for diabetes care and factors associated with first fill behavior.
METHODS: We conducted a retrospective cohort study and linked individual patient data for new (i.e. first-time) prescriptions of medications for asthma (as defined by ordering ICD9 code) from Electronic Health Records (EHR), with pharmacy claims data obtained from an insurance plan. EHR data were obtained from the Geisinger Clinic, a large group practice serving a 31-county area of central and northeastern Pennsylvania. The Clinic includes 41 community practice sites with primary and multi-specialty care, all of which have used an EHR since 2001. Adult patients were included in the analysis if enrolled in the insurance plan for at least 12 months prior to the initial prescription ("Index Date"), and were continuous members of the plan during the 2 year period of study. A first prescription qualified as a "fill" if a claim was generated for it within 30 days of the index date.
RESULTS: Of 1,566 patients written a new, first-time prescription for any asthma medication, 1,101 (70.3%) generated a corresponding claim within 30 days, and 74% by 90 days. There was no difference between fill and non-fill patients in terms of gender (p = 0.32), race (p = 0.99), age (median age 51, p = 0.12), type of drug prescribed (symptomatic relief drugs i.e. albuterol vs. other, p = 0.198), blood pressure (p = 0.76), or number of office visits in the 6 months before the index prescription (median 3, p = 0.17). Patients who were more likely to fill a prescription had a lower Charlson co-morbidity score (p = 0.001), i.e. were healthier than non-fill patients at the time of the index prescription.
CONCLUSIONS: Medication adherence for first fills of new prescriptions for asthma is low (70%). Adherence is associated with fewer comorbidities, but not with gender, race, age, type of drug prescribed, blood pressure, or number of office visits in the 6 months prior to the prescription of a new medication.

CAN STATINS PREVENT LUNG CANCER? W.R. Farwell[1]; R. Scranton[1]; E. Lawler[2]; R. Lew[1]; J. Gaziano[1]. [1]VA Boston Healthcare System, Boston, MA; [2]Boston University, Boston, MA. *(Tracking ID # 166939)*

BACKGROUND: Lung cancer is the second most commonly diagnosed cancer among both men and women. Besides smoking cessation and avoidance, no clear methods exist for lung cancer prevention. Previous observational studies have found statins to be associated with total cancer prevention but few studies have investigated statins for lung cancer prevention. Therefore, we examined the relationship between statins and lung cancer prevention.
METHODS: A retrospective cohort was assembled from patients within the VA New England Healthcare System between 1997 and 2005. We identified active patients in our pharmacoepidemiology database aged ≥18 years who took a statin or anti-hypertensive medication, referent group, and were cancer free upon starting a medication of interest. We further restricted our database to those patients who had at least two years of cancer-free follow-up while taking a medication of interest. Our outcome of interest was the first ICD-9 diagnosis of any lung cancer identified in a veteran's electronic medical record. To validate our outcome, we reviewed 80 random cases that were blinded to exposure group assignment. Potential confounders were identified from our pharmacoepidemiology database including age, sex, weight, history of diabetes mellitus, renal failure, mental illness, heart disease, colorectal imaging, aspirin use, substance abuse, non-cancerous lung disease, smoking and serum cholesterol. We constructed age and multivariate adjusted Cox proportional hazard models to calculate the hazard ratio (HR) and 95% confidence interval (CI) for statin users compared to our referent group for lung cancer incidence.
RESULTS: Among our cohort of 52,035 patients, we identified 28,832 statin users and 23,203 patients for our referent group. Statin users were more likely to have a history of diabetes mellitus and heart disease and be taking aspirin than veterans in the referant group. Among patients with information on smoking, no statistical difference was found between the frequency of smokers among statin users and our referent group. Among patients in our referent group, 462 (2%) developed lung cancer compared to 412 (1.4%) among statin users. After blinded review, we did not find a significant difference in the percentage of cases validated among statin users, 82%, and our referent group, 77%, (p = 0.61). After controlling for age, the HR (95% CI) of lung cancer was 0.77 (0.68, 0.88) among statin users compared to our referent group. After multivariate adjustment for smoking, non-cancerous lung disease, and other potential confounders, the HR (95% CI) was 0.74 (0.64, 0.86).
CONCLUSIONS: Statins appear to be associated with lung cancer prevention even after controlling for tobacco and non-cancerous lung disease. Statins may provide a safe and affordable means of lung cancer prevention.

CHRONIC CONDITIONS ARE LESS PREDICTIVE OF MORTALITY AMONG THE OLDEST OLD. S.J. Lee[1]; K.E. Covinsky[1]. [1]San Francisco VA Medical Center, San Francisco, CA. *(Tracking ID # 173462)*

BACKGROUND: Previous studies have shown that age, gender, chronic conditions and functional limitations are all important predictors of mortality. However, it is unclear whether these risk factors are equally important across age groups.
METHODS: We examined the ability of age, gender, chronic conditions and functional limitations to predict 4-year mortality among 19796 subjects enrolled in the 1998 wave of the Health and Retirement Study (HRS), a nationally representative population-based study of community-dwelling US adults between ages 50–99. Patients self reported their age, gender, chronic conditions and functional limitations. We divided subjects into groups by decades of age and used multivariate logistic regression to calculate the predictive accuracy of each set of risk factors, as measures by the ROC area. We considered 10 chronic conditions: hypertension, diabetes mellitus, coronary artery disease, chronic obstructive lung disease, congestive heart failure, cancer, cerebrovascular disease, dementia, arthritis and psychiatric disease. For functional ability, we considered the ability to walk and the sum of ADL (activities of daily living) difficulties and IADL (instrumental ADL) difficulties. The outcome of death by 2002 was determined through the National Death Index.
RESULTS: The ability of chronic conditions to predict mortality weakened with increasing age (test for trend, p = 0.017). (See Table) In contrast, the ability of functional limitations to predict mortality was constant across the age spectrum.
CONCLUSIONS: In this population-based study, we found that chronic conditions are less important in predicting mortality among older subjects.

ROC Areas of Models Including Different Types of Risk Factors (95% CI)

Age Group	Base (age and gender)	Base + Chronic Conditions	Base + Functional Limitations	Base + Chronic Conditions + Functional Limitations
50–59	0.62 (0.58–0.66)	0.79 (0.75–0.82)	0.73 (0.69–0.77)	0.80 (0.76–0.83)
60–69	0.60 (0.57–0.62)	0.74 (0.71–0.76)	0.72 (0.70–0.74)	0.77 (0.74–0.79)
70–79	0.63 (0.61–0.65)	0.73 (0.71–0.75)	0.73 (0.71–0.75)	0.77 (0.75–0.79)
80–89	0.62 (0.59–0.64)	0.68 (0.66–0.70)	0.71 (0.68–0.73)	0.73 (0.70–0.75)
90–99	0.61 (0.54–0.68)	0.65 (0.60–0.71)	0.76 (0.71–0.81)	0.78 (0.73–0.83)
Test for trend*	p=1.0	p=0.017	p=0.48	p=0.40

***Permutation test of whether slope of regression between age group and ROC = 0**

CLASS MATTERS: SOCIOECONOMIC STATUS AND EXERCISE CAPACITY IN THE HEART AND SOUL STUDY. B.E. Cohen[1]; E. Vittinghoff[2]; M.A. Whooley[2]. [1]Department of Veterans Affairs Medical Center, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172872)*

BACKGROUND: Lower socioeconomic status (SES) is associated with reduced treadmill exercise capacity and predicts adverse outcomes in patients with coronary heart disease (CHD). We sought to determine whether the association of low SES with reduced exercise capacity is explained by differences in demographics, comorbidities, cardiovascular risk factors, or health related behaviors in a socioeconomically diverse group of outpatients with stable CHD.
METHODS: We performed a cross-sectional study of 943 ambulatory men and women with stable CHD. Ordinal measures of four SES variables (household income, education, housing status, and occupation) were assessed by self-report. All participants completed a symptom-limited exercise treadmill test according to a standard Bruce protocol. Treadmill exercise capacity was defined as metabolic equivalent tasks (METs) achieved at peak exercise. We used multivariable linear regression to examine the association between SES and exercise capacity before and after adjustment for demographic variables (age, sex, race), comorbidities (diabetes, hypertension, heart

failure, pulmonary disease, dyslipidemia, depression), medication use (aspirin, statins, beta blockers, angiotensin receptor blockers), and health-related behaviors (smoking, alcohol use, body mass index, physical activity, medication adherence).
RESULTS: We observed a graded increase in exercise capacity over nearly all levels of the four SES variables (all p-values for linear trend ≤.0001). In models comparing the lowest with the highest category of SES, all four SES variables were strongly associated with exercise capacity ($p < .0001$). This relationship was not explained by differences in demographics, comorbidities, or medication use (Table). Similarly, adjustment for differences in health-related behaviors did not substantially change this association. In fully adjusted models with all four SES variables entered simultaneously, occupation was no longer a predictor of exercise capacity ($p = .14$), but low income, education, and housing remained independent predictors of exercise capacity ($p < .02$).

	Adjusted for confounders	Adjusted for confounders + health behaviors
SES variable	Mean Difference in METs (95%CI)	Mean Difference in METs (95%CI)
Income	2.5 (1.8-3.3)	2.3 (1.6-3.1)
Education	2.0 (1.3-2.7)	1.7 (1.0-2.4)
Housing	2.5 (1.7-3.3)	2.2 (1.5-3.0)
Occupation	1.6 (0.9-2.2)	1.2 (0.6-1.8)

Difference in mean exercise capacity between highest and lowest category of SES

CONCLUSIONS: Four indicators of low SES (lower income, education, housing, and occupation) are strongly associated with decreased exercise capacity, a well-established predictor of cardiovascular mortality. Differences in demographic factors, comorbidities, and health-related behaviors do not explain the association of low SES with exercise capacity, suggesting additional psychosocial or environmental factors may be responsible.

CLINICAL DECISION SUPPORT TOOLS FOR DISEASE MANAGEMENT IN OSTEOPOROSIS: A SYSTEMATIC REVIEW OF RANDOMIZED CONTROLLED TRIALS. M. Kastner[1]; S.E. Straus[2]. [1]University of Toronto, Toronto, Ontario; [2]University of Calgary, Calgary, Alberta. *(Tracking ID # 173497)*

BACKGROUND: Osteoporosis is a major public health concern, affecting over 200 million people worldwide and 1.4 million people in Canada. The cost of treating osteoporosis in Canada is estimated to be $1.3 billion each year. Fragility fractures are the most common clinical consequence of osteoporosis and hip fractures have the most devastating prognosis. Although there are valid Canadian clinical practice guidelines for osteoporosis, studies indicate a gap between evidence and clinical practice, particularly in the appropriate screening and treatment of patients. Tools that facilitate clinical decision making at the point of care are promising strategies for closing these practice gaps. Our objective was to systematically review the literature for randomized controlled trials (RCTs) to identify and describe the effectiveness of tools that support clinical decision making in osteoporosis disease management (DM).
METHODS: Our search included MEDLINE, EMBASE, CINAHL, and EBM Reviews (CDSR, DARE, CCTR, and ACP J Club); BMJ Updates, and contact with experts. RCTs were included if they investigated patients at risk for osteoporosis (age > 65 years, postmenopausal women, > 3 month systematic use of glucocorticoids) or with established high risk (low bone mineral density [BMD], a confirmed diagnosis of osteoporosis, or an existing or previous fragility fracture). Outcomes of interest included fragility fractures, BMD testing, and initiation of any osteoporosis therapy. Interventions had to be characterized by a set of pre-defined terms for DM and DM tools; evaluate tools that investigated live patients; and were in any format (ie. paper-, electronic-, or program-based) as long as they involved an aspect of coordination of care. Studies were excluded if they evaluated pharmacological interventions or outcomes related to major trauma fractures, primary prevention of osteoporosis, or falls prevention. Two investigators independently assessed potentially relevant articles and extracted relevant data. Study quality was assessed according to method of randomization, allocation concealment, blinding, and completeness of follow-up.
RESULTS: Of 1246 potentially relevant articles, 14 RCTs met the inclusion criteria and were included in the review. Interventions were educational interventions alone (3 studies), and risk assessment strategies (6 studies) or reminder systems (5 studies) with or without an educational component. None of the interventions incorporated all 3 components of osteoporosis DM (risk assessment, diagnosis, and treatment). Study quality appeared poor with only 3 studies reporting on method of randomization, allocation concealment, or blinding. Meta-analysis was not done because of study heterogeneity. One study comparing a risk-assessment strategy with control showed reduced fracture rates (relative risk [RR] 0.57, 95% CI 0.37–0.84). 3 studies showed that education plus a reminder system increased the initiation of osteoporosis therapy or BMD testing (RR range 1.43–8.67); and in 2 studies, risk assessment combined with education increased the investigation for osteoporosis or initiation of any osteoporosis therapy (RR range 1.27–5.70).
CONCLUSIONS: Tools that support clinical decision making in osteoporosis DM may be effective for improving patient outcomes. However, the lack of rigorously evaluated DM tools for the management of osteoporosis suggest the need for further development and evaluation of comprehensive tools that bridge the gap between evidence and practice.

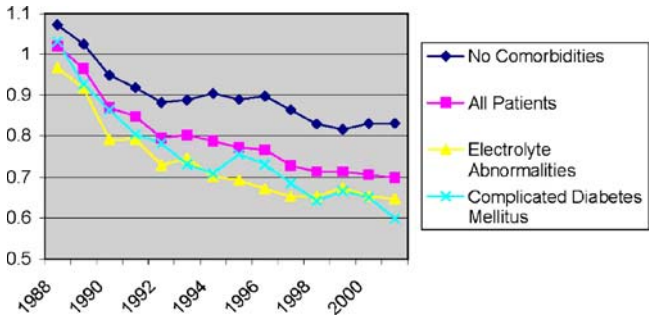
CLINICIAN PERCEPTIONS OF PHARMACEUTICAL MARKETING AND PATIENT INFLUENCES ON PRESCRIBING. R.J. Fortuna[1]; D. Ross-Degnan[1]; J. Finkelstein[1]; F. Zhang[1]; F.X. Campion[2]; S.R. Simon[1]. [1]Harvard Medical School and Harvard Pilgrim Health Care, Boston, MA; [2]Harvard Vanguard Medical Associates (HVMA), Boston, MA. *(Tracking ID # 173083)*

BACKGROUND: The pharmaceutical industry spends approximately 4.2 billion dollars per year on direct-to-consumer (DTC) advertising, influencing patient requests for medications and potentially leading to clinically unnecessary or overly expensive treatments. We surveyed clinicians' attitudes about pharmaceutical marketing, costs, and patients' requests for advertised medications.
METHODS: A 21-item survey was sent to 605 prescribing clinicians (physicians, physician assistants, and nurse practitioners) at Harvard Vanguard Medical Associates (HVMA), a multi-site, multi-specialty group practice in greater Boston. The survey contained 15 four-point Likert-type questions assessing clinicians' attitudes towards pharmaceutical marketing, their awareness of medication costs, and perceptions about patients' request for advertised medications. Logistic regression was used to identify predictors (clinician age, sex, specialty, practice location, number sessions per week, and years at HVMA) of difficulty declining inappropriate patient requests for advertised medications.
RESULTS: Surveys were returned from 399 clinicians (66% response rate). The majority, 63.5% (95% CI 58.1–68.1%), reported feeling that the pharmaceutical industry acts unethically in marketing drugs to prescribers and 81.5% (95% CI 77.2–85.4%) reported that DTC advertising does not help patients to be better informed about their health problems and medications. Although 92.8% (95% CI 89.8–95.3%) of clinicians felt they have ready access to the information needed to guide prescribing decisions, only about half (53.4%; 95% CI 48.3–58.5%) reported they are aware of how much patients pay for prescription medications and nearly one in four (23.4%; 95% CI 19.2–28.0%) indicated that they infrequently consider the amount of a patient's co-payment when prescribing. The majority of providers (78.0%; 95% CI 73.4–82.1%) stated that computerized prescribing alerts are a clinically useful source of information. Most respondents (86.8%; 95% CI 82.9–90.0%) felt that DTC advertising prompts many patients to request medications that are inappropriate for their conditions and 22.7% (95% CI 18.6–27.3%) reported difficulty saying "no" (when appropriate) to patients who request advertised medications. Age, sex, gender, specialty, location, and years in practice were not independently associated with perceived difficulty declining inappropriate requests. However, clinicians with more than one session per week were more likely than clinicians with one or fewer sessions per week to report difficulty in declining patient requests for heavily marketed medications (OR 3.2; 95% CI 1.1–9.3). This relationship persisted after adjusting for clinician age, sex, and specialty in a multivariable model (OR 3.3; 95% CI 1.1–9.6).
CONCLUSIONS: The majority of clinicians reported feeling that the pharmaceutical industry acts unethically in marketing drugs to providers and that DTC advertising may adversely influence prescribing decisions. A concerning number of clinicians report difficulty declining inappropriate requests for medications seen advertised and providers with more clinical sessions per week report greater difficulty. In the setting of rapidly rising pharmaceutical costs and abundant DTC advertising, readily accessible resources are needed to better support unbiased patient-provider communications regarding heavily marketed medications.

COMMUNITY-ACQUIRED PNEUMONIA IN THE ELDERLY: EVIDENCE FOR MARKED IMPROVEMENT IN 30-DAY MORTALITY. G.W. Ruhnke[1]; D.M. Norton[2]; D.M. Cutler[3]. [1]Massachusetts General Hospital, Boston, MA; [2]National Bureau of Economic Research, Cambridge, MA; [3]Harvard University, Cambridge, MA. *(Tracking ID # 173684)*

BACKGROUND: Community-acquired pneumonia (CAP) is the most common infectious cause of death in the United States, prompting national initiatives and hospital-based pathways to improve treatment. Our objective is to quantify 30-day mortality trends in elderly Medicare patients diagnosed with community-acquired pneumonia (CAP). We hypothesize decreasing mortality over time with the largest changes in patients with severe CAP and comorbidities.
METHODS: Our analyses used all claims (1987–2001) of a random 20% patient sample from the Centers for Medicare and Medicaid Services' Research Identifiable

Files, restricted to those beneficiaries over age 64. Cases of CAP were identified by ICD-9 codes shown to have a diagnostic sensitivity of 84% and specificity of 86%. These groups were combined to eliminate the impact of shifts to outpatient care in recent years. Logistic regression was performed with 30-day mortality as the dependent variable and the following independent variables: dummy variables for each year (1987 is the reference year), age by 5-year category, gender, and 25 of the 29 comorbidity variables defined by the AHRQ Comorbidity Software. Four were excluded from the final model due to likely coding biases. Due to incomplete comorbidity information, inpatients admitted from nursing homes were excluded from the analysis. The same regression was also performed on subsets of patients with (a) no comorbidities to isolate changes due solely to the care of CAP; (b) complicated diabetes mellitus (DM) to estimate the effect of treatment of a major comorbidity on the mortality trends (complicated DM chosen to limit diagnostic and coding changes over time); and (c) electrolyte abnormalities (EA) as a marker of severe CAP to assess the contribution of severely ill patients to the overall trends. Our primary result was the odds ratio (OR) of death in each year relative to 1987.
RESULTS: The CAP subjects included 775,936 outpatients (annual mean 51,729) and 1,519,052 inpatients (annual mean 101,270). The figure shows that, compared to 1987, the adjusted OR of dying within 30 days of CAP decreased annually throughout this period such that the OR was 0.699 (95% CI 0.682–0.716) in 2001. The OR for the no-comorbidity subset decreased to 0.831 (95% CI 0.799–0.865) in 2001. The OR for the DM subset decreased to 0.599 (95% CI 0.526–0.683) in 2001. The OR for the EA subset decreased to 0.647 (95% CI 0.612–0.683) in 2001.
CONCLUSIONS: These findings show an overall adjusted 27.3% decrease in 30-day mortality of elderly patients with CAP from 1987 to 2001. The effect appears greater in patients with complicated DM and EA relative to those without comorbidities, suggesting that the overall improvements are partially attributable to improved treatment of comorbid conditions and the subset of severely ill CAP patients. Our findings suggest that changes in the care of pneumonia patients, which may include assessment of oxygenation, early antibiotics, and other aspects of pneumonia pathways, have decreased mortality in CAP patients. Policy efforts should be directed at implementation of these measures. Improved treatment of common comorbidities will improve outcomes in pneumonia patients. Shift to outpatient treatment has not adversely affected outcomes and should be the object of initiatives to reduce costs.



COMPARATIVE EFFECTIVENESS OF PERCUTANEOUS CORONARY INTERVENTIONS AND CORONARY ARTERY BYPASS GRAFTING FOR CORONARY ARTERY DISEASE. D.M. Bravata[1]; K. Mcdonald[1]; A. Gienger[1]; V. Sundaram[2]; D.K. Owens[2]; M.A. Hlatky[1]. [1]Stanford University, Stanford, CA; [2]VA Palo Alto Healthcare System, Palo Alto, CA. *(Tracking ID # 172636)*

BACKGROUND: Their comparative effectiveness of coronary artery bypass grafting surgery (CABG) and percutaneous coronary interventions (PCI) is an open question for those patients in which both procedures are technically feasible and whose coronary artery disease (CAD) is neither too limited nor too extensive (e.g., single-vessel disease of the proximal left anterior descending (LAD) artery, most forms of double-vessel CAD, and less extensive forms of triple-vessel CAD). The purpose of this study is to evaluate the evidence for the comparative effectiveness of PCI and CABG in this group of patients.
METHODS: We sought RCTs that compared survival and other health outcomes for PCI and CABG patients with angiographically-proven CAD. We performed individualized searches of relevant databases (Medline, Embase, and Cochrane from 1966 to 2006). We reviewed bibliographies of retrieved articles and relevant conference proceedings to obtain additional citations. We excluded trials that compared either PCI with medical therapy or CABG with medical therapy, unless the trial involved a three-way randomization to PCI, CABG, and medical therapy and reported a randomized comparison of PCI with CABG. We calculated weighted mean differences and odds ratios using random effects models.
RESULTS: We identified 22 RCTs that enrolled a total of 9,640 patients. The baseline clinical characteristics of trial participants were typical of patients with CAD. The absolute risk difference in procedural mortality was not statistically significant (0.1%; 95% CI: −0.3% to +0.6%). There were no significant differences in procedural mortality when trials were sub-divided into balloon-era and stent-era studies, or into single-vessel disease and multivessel disease patient populations. Procedural strokes were significantly more common after CABG than after PCI (risk difference 0.6%; 95% CI: +0.2% to +1%; p = 0.01). Long-term survival across all randomized trials between one and five years of follow-up was similar in CABG-assigned and PCI-assigned patients, with less than 1% absolute risk difference at each time point (not statistically significant). There was no difference in the comparative survival benefit when RCTs were sub-divided into those enrolling patients with single-vessel proximal LAD disease and those enrolling patients with multi-vessel disease. There was also no difference in comparative effectiveness between balloon-era trials or stent-era trials. Survival in patients with diabetes was reported by six trials: the pooled risk difference was 0.8% at five years (95%CI: +8.3% to −6.6%). Similarly, there was no evidence of an interaction with treatment assignment for hypertension, tobacco use, renal dysfunction or vascular disease. Angina relief was significantly greater after CABG than after PCI at all intervals post-procedure (risk difference ranges from 5% to 8%; p value < 0.0001 at 1-, 3-, and 5-years).Repeat coronary revascularization was needed much more frequently after PCI than after CABG (risk differences ranges from 24% to 33%, p < 0.0001 at one and five years).
CONCLUSIONS: Although survival was not significantly different between procedures, CABG recipients had more procedural strokes, less angina, and fewer revascularization procedures. The extent to which these results vary according to patient characteristics has not been adequately addressed by RCTs.

COMPARISON OF CORONARY RESTENOSIS RATES IN DRUG ELUTING STENTS VERSUS BARE METAL STENTS IN COMMUNITY HOSPITAL. L. Luo[1]; A.B. Choudry[2]; N.A. Yamusah[2]; S. Hamann[3]; J. Eudy[3]; L. Calhoun[4]; J. Pino[2]. [1]Coast AHEC (New Hanover Reginal Medical Center), Wilmington, NC; [2]New Hanover Regional Medical Center, Wilmington, NC; [3]Coastal Area Health Education Center, Wilmington, NC; [4]Wilmington Cardiology, Wilmington, NC. *(Tracking ID # 172225)*

BACKGROUND: Currently, more than 1 million percutaneous coronary interventions (PCI) are performed annually in the United States. Of these, approximately 90% involve the deployment of a coronary artery stent. However, long-term success of this intervention remains problematic due to restenosis. Drug eluting stents (DES) have recently been approved for use, promising a substantial reduction in restenosis rates. There are multiple studies that have been done using different stent platforms in the past few years. Most of these studies are well-designed, randomized controlled trials. Even though DESs have been rapidly accepted by the interventional community, by searching MEDLINE (1966 - present), no study has been done in a community hospital setting to evaluate the restenosis rate of DES. The purpose of our study is to compare the restenosis rate of bare metal stent (BMS) with the DES at a 700-bed community hospital. Its cardiac catheterization laboratory performs more than 7,000 procedures each year and DES was deployed in patients beginning in 2004.
METHODS: 165 patients received DES in the first quarter of 2004 and 77 patients received BMS in the 4th quarter of 2003 were identified from the records of the cardiac catheterization laboratory. A retrospective chart review was performed on all 242 patients. Baseline clinical characteristics including patient's demographics, history of prior myocardial infarction (MI), prior PCI, prior coronary artery bypass graft (CABG) and other co-morbidities were collected. Angiographic characteristics are also identified by reviewing cardiologist interventional records. Restenosis is defined as an event requiring recatheterization and the discovery of 70% or greater stenosis within 6 month period after intervention. Fisher's extract t-tests, chi-square, and probability test were used for data analysis.
RESULTS: Two (1.2%) patients in DES group and eight (10.4%) patients in BMS group had restenosis within six months. There were no statistical differences between two groups with respect to demographic characteristics (age, race and gender). Average age of DES group was 61.3 years old vs. 63.4 years old in BMS group, 91% were Caucasian in DES group vs, 84% in BMS group. There were no statistical differences in the two groups with regard to the number of stents deployed during the intervention. In DES group, 62% patients received one stent, 29% patients received two stents, 7% patients received three stents and 2% patients received four stents. In BMS group, 68% patients received one stent, 26% patients received two stents, 4% patients received three stents and 3% patients received four stents. There were no statistical differences in two groups with regard to the number of target vessel been stented. In DES group, 30% of stents were deployed in the right coronary artery (RCA), 31% were in left anterior descending coronary artery (LAD) and 14% were in left circumflex coronary artery (LCX). In BMS group, 34% of stents were deployed in RCA, 30% were in LAD and 25% were in LCX. There were no statistical differences in two groups with regard to medical history of diabetes, prior MI, or history of CABG. There were more patients in the BMS group had hypertension (87% vs, 68%) and more patients in the DES group had hyperlipidemia (69% vs. 44%).
CONCLUSIONS: The data from this study suggests that the DES has lower restenosis rate compared to BMS in a community hospital setting. Overall, there were no substantial differences in baseline characteristics.

COPING SELF-EFFICACY AND HIGH RISK SEXUAL BEHAVIORS IN A CLINIC-BASED COHORT OF HIV-POSITIVE MEN. M.A. Tello[1]; H.C. Yeh[1]; S.N. Patel[2]; C. Golin[3]; E.J. Erbelding[1]. [1]Johns Hopkins University, Baltimore, MD; [2]University of North Carolina at Chapel Hill, Durham, NC; [3]University of North Carolina at Chapel Hill, Chapel Hill, NC. *(Tracking ID # 173056)*

BACKGROUND: A substantial minority of people living with HIV/AIDS (PLWHAs) in the United States engage in high risk behaviors after diagnosis. Recently, efforts have been made to develop and test behavioral interventions to

reduce risky behavior among PLWHAs. Coping self-efficacy (an individual's confidence in his or her abilities to cope with stressful situations) may be an important target for developing such an intervention because it has been shown to be associated with risky sexual behavior among HIV-positive men who have sex with men (MSM). However, few studies have evaluated this relationship among clinic-based populations, or among men who have sex with women (MSW).
METHODS: We conducted a secondary data analysis of the baseline survey data from 594 HIV-positive men receiving care at one of two clinics sites (in MD and NC) participating in an HIV prevention program between 5/04 to 10/06. Participants answered questions about their demographic characteristics, coping self-efficacy, and HIV transmission risk behaviors using audio-computer assisted interviews (ACASI). Coping self-efficacy was measured using a 9-item 7-point scale adapted from a previously validated scale. Domains assessed included confidence in one's ability to problem-solve, use emotional regulation, and social support as means of coping with stressful situations. Sexual behavior was assessed using questions adapted from the HIV Network of Prevention Trials (HIVNET) risk assessment. HIV transmission risk behavior was defined as oral, vaginal or anal sex without a condom with HIV-negative or unknown status partners in the last 6 months. Results were stratified by MSW and MSM, and two-tailed t-tests were conducted to compare means of total coping self-efficacy scores across protected vs. unprotected sexual behaviors with HIV-negative or unknown status partners. Multivariate logistic regression was performed to assess associations between coping self-efficacy and risk behaviors after adjustments for confounding variables.
RESULTS: Coping self-efficacy was not associated with any HIV transmission risk behaviors for MSW. However, low coping self-efficacy was associated with insertive oral sex (N = 181, unprotected mean(sd) = 39(13), protected = 48(11), p = 0.008); receptive anal sex (N = 110, unprotected mean(sd) = 44(11), protected = 49(9), p = 0.008); and insertive anal sex (N = 82, unprotected mean(sd) = 39(13), protected = 50(10), p = 0.0001). Multivariate logistic regression models adjusting for ethnicity, education level, income, age, relationship status, and illicit substance use showed that every 1 SD increase in coping self-efficacy was associated with a decreased likelihood of engaging in unprotected insertive oral sex (OR = 0.39, 95% CI: 0.19–0.76), receptive anal sex (OR = 0.56, 95% CI: 0.34–0.92), and insertive anal sex (OR = 0.38, 95% CI: 0.21–0.70).
CONCLUSIONS: Coping self-efficacy is associated with sexual HIV transmission risk-taking, though it may be more important for MSM than for other risk groups. Clinic-based behavioral interventions should target coping self-efficacy, particularly among MSM.

COSTS AND OUTCOMES OF DRUG ELUTING CORONARY STENTS VERSUS BARE METAL STENTS AMONG THE ELDERLY. P.W. Groeneveld[1]; F. Yang[2]; M.A. Matta[2]. [1]Philadelphia VA Medical Center and the University of Pennsylvania, Philadelphia, PA; [2]University of Pennsylvania Division of General Internal Medicine, Philadelphia, PA. *(Tracking ID # 172425)*

BACKGROUND: Since 2003, most percutaneous coronary interventions in the United States have involved the use of drug-eluting stents (DES), which have replaced less expensive bare metal stents (BMS) that had been in common clinical use prior to Food and Drug Administration (FDA) DES approval in April, 2003. Clinical trials have demonstrated that DES confer no mortality benefit or reduction in clinical events other than decreasing the necessity for repeat revascularization procedures. The clinical and economic outcomes of drug eluting stents in routine clinical practice among the elderly are uncertain.
METHODS: Using Medicare hospital claims, we identified patients emergently or urgently hospitalized during 2002–2003 with acute coronary syndromes who had no prior percutaneous coronary intervention, encompassing the time immediately before and immediately after FDA approval of DES. A propensity score logistic regression model including patient demographics, clinical diagnoses, and comorbidities was used to match patients receiving DES to similar patients receiving BMS during the 9 months immediately following FDA approval. A separate propensity score model was used to match DES patients to BMS patients hospitalized during the 9 months immediately prior to FDA approval of DES. Medicare enrollment data were used to ascertain subsequent mortality. Multivariable Cox proportional hazards models were fitted to the two independently matched cohorts of DES recipients and controls. Inpatient and outpatient claims were examined to quantify health care utilization costs during the year after stent receipt. A generalized linear model with a log link was fitted, with cost as the dependent variable, to ascertain the adjusted cost of DES receipt. Bootstrap replications generated a 95% probability interval for the 12-month cost of DES.
RESULTS: We identified 3,332 Medicare beneficiaries who received DES between April and December of 2003. Eighty-three percent of these patients were matchable to contemporaneous BMS controls, while 98 percent of the DES recipients were matchable to BMS controls hospitalized during the preceding 9 months. DES patients had reduced mortality when compared to contemporaneous controls-hazard ratio = 0.70, 95% confidence interval (CI) 0.56–0.88-as well as compared to prior-year controls-hazard ratio = 0.81, 95% CI 0.65–1.02. Drug-eluting stents averaged $1,361 dollars in additional costs (95 percent probability interval $167 to $2,508) during the 12 months following percutaneous coronary intervention.
CONCLUSIONS: In this non-experimental setting, and in contrast to clinical trials, DES appeared to reduce mortality among elderly patients with acute coronary syndromes when compared to BMS. While these findings could have resulted from unmeasured comorbidity or from healthier patients being selected for DES, they were consistent across comparisons using two distinct control groups. The higher initial implantation costs of DES were not entirely offset by lower health care costs during the subsequent year. Drug eluting stents have substantially increased the average cost of percutaneous coronary intervention, yet they also appear to provide a significant survival benefit when used among the elderly.

CYSTATIN C AS A MARKER OF KIDNEY FUNCTION IN HIV INFECTION: THE FAT REDISTRIBUTION AND METABOLIC CHANGE IN HIV INFECTION STUDY. M.C. Odden[1]; R. Scherzer[1]; P. Bacchetti[2]; L. Szczech[3]; S. Sidney[4]; C. Grunfeld[2]; M.G. Shlipak[2]. [1]San Francisco VA Medical Center, San Francisco, CA; [2]San Francisco VA Medical Center, University of California -San Francisco, San Francisco, CA; [3]Duke University Medical Center, Durham, NC; [4]Kaiser Permanente Northern California Division of Research, Oakland, CA. *(Tracking ID # 172545)*

BACKGROUND: Kidney disease has been identified as an important complication of human immunodeficiency virus (HIV) infection, but the majority of studies of HIV and kidney function have focused on severe kidney disease or HIV-associated nephropathy. Cystatin C is an alternative measure of kidney function that may be more sensitive compared with creatinine in the setting of chronic disease.
METHODS: We compared kidney function in the Fat Redistribution and Metabolic Change in HIV Infection (FRAM) cohort, a nationally representative sample in the United States, studying 1,008 HIV infected participants and 290 population based controls from the CARDIA study. Analyses comparing HIV infected participants with controls were restricted to 519 HIV infected participants in the same age-range as the controls. Kidney function was measured using cystatin C, creatinine, and estimated glomerular filtration rate (eGFR) by the abbreviated MDRD equation. Elevated cystatin C was defined as >1.0 mg/L, a threshold demonstrated to be associated with increased risk for kidney and cardiovascular disease and death. A comparable creatinine-based endpoint was an eGFR <75 ml/min/1.73 m2, which also corresponded to the 4th percentile in the control population.
RESULTS: Cystatin C was higher in HIV infected individuals; mean cystatin C was 0.92±0.22 mg/L in HIV infected and 0.76±0.15 mg/L in controls, p < 0.0001. In contrast, mean creatinine levels and eGFR were similar in HIV infected and controls (0.87±0.21 vs. 0.85±0.19, p = 0.35 and 110±26 vs. 106±23, p = 0.06, respectively). In HIV infected participants, cystatin C was not correlated with lean body mass (r = −0.01, 95% CI: −0.08, 0.06, p = 0.87), whereas creatinine was positively correlated (r = 0.34, 95% CI: 0.28, 0.40, p < 0.0001). After adjustment for demographic characteristics and clinical factors, HIV infection was associated with a greater odds for cystatin C >1.0 mg/dL (odds ratio = 9.8, 95% CI: 4.4, 22.0, p < 0.0001). HIV infection was not associated with significantly increased odds for lower eGFR (odds ratio = 1.28, 95% CI: 0.56, 2.92, p = 0.55).
CONCLUSIONS: Despite similar mean creatinine levels in HIV infected persons and controls, HIV infection was associated with elevated cystatin C, a sensitive marker of impaired kidney function. Cystatin C could be a useful clinical tool to identify HIV infected persons at increased risk for kidney and cardiovascular disease.

DIRECT ESTIMATION OF ADJUSTED RISK MEASURES FROM LOGISTIC REGRESSION: A NOVEL METHOD WITH VALIDATION. L.C. Kleinman[1]; E.C. Norton[2]. [1]Mount Sinai School of Medicine, New York, NY; [2]University of North Carolina at Chapel Hill, Chapel Hill, NC. *(Tracking ID # 173391)*

BACKGROUND: Adjusting risk measures for confounding remains a challenge. For example, the popular logistic regression yields an adjusted odds ratio (AOR), which diverges from the risk ratio when outcomes are common. A popular equation to convert AOR to adjusted risk ratios has been found to be biased. Other multivariate methods, such as Poisson and log binomial regression, are both less intuitive and less likely to produce meaningful estimates. Stratified methods are limited to cases with relatively few categorical explanatory variables. We develop and validate a general method to estimate adjusted risk measures with standard errors directly from logistic regression.
METHODS: We employed maximum likelihood theory to derive a method (termed logistic risk analysis) for estimating adjusted risk measures using a logistic model. The equation for the adjusted risk ratio (ARR) is displayed in Equation 1. Standard errors are readily calculated using the Delta Method. Monte Carlo simulations generated data sets with which we validated logistic risk analysis and compared it to the internal standards from the simulations, Mantel-Haenzel estimates, Poisson and log-binomial regressions, and the proposed equation to convert adjusted odds ratios to adjusted risk ratios. We also demonstrated the capacity for this method to estimate adjusted risk differences. A simple SAS program performed the calculations.

$$\mathbf{ARR} = \frac{\frac{1}{N}\sum_{i=1}^{N} risk_i(X_i \mid \textbf{as if exposed})}{\frac{1}{N}\sum_{i=1}^{N} risk_i(X_i \mid \textbf{as if exposed})}$$

Equation 1

RESULTS: When all confounders were categorical, logistic risk analysis and Mantel-Haenzel estimates of risk ratio and difference measures were nearly identical. For one

simulation consisting of 15 data sets with various baseline risks and risk ratios, the maximum difference between the Mantel-Haenzel and logistic risk analysis estimates was less than 0.025 percent of the estimate. For data sets that included continuous variables and skewed distributions, logistic risk analysis generally was preferable to existing methods, particularly when outcomes were common or effect size was large. Precision slightly exceeded that of the Poisson estimate. One data set was designed to exhibit ceiling effects: the baseline risk was used to limit the possible effect size. Of all the methods, only our proposed logistic risk analysis ARR did not exceed the ceiling. Other methods produced illogical results.
CONCLUSIONS: Logistic risk analysis is statistically sound, intuitive, and accurate. It can estimate adjusted risk ratios and differences directly from logistic regression. Logistic risk analysis should be the new standard for multivariate analysis of dichotomous outcomes for cross-sectional, cohort, and population based case-control studies, particularly when outcomes are common.

DO PATIENTS WITH WORSE MENTAL HEALTH REPORT MORE PHYSICAL LIMITATION AFTER ADJUSTMENT FOR PHYSICAL PERFORMANCE? B. Ruo[1]; D. Baker[1]; J. Thompson[1]; P.K. Murray[2]; G. Huber[1]; J.J. Sudano[2]. [1]Northwestern University, Chicago, IL; [2]Case Western Reserve University, Cleveland, OH. *(Tracking ID # 171430)*

BACKGROUND: Clinicians often use patient-reported physical limitation as a method to assess disease severity or the impact of disease. Self-reported mental health is known to correlate with self-reported physical health. Thus, patients with depressive symptoms may over-report physical limitations. Our goal was to determine whether mental health scores are independently associated with self-reported physical limitation after adjustment for measured physical performance.
METHODS: To address this research question, we performed a cross-sectional study of 725 patients. Participants (aged 45–64) were recruited from two academic general internal medicine practices and two community clinics in Chicago and Cleveland. Mental health was measured using the SF-36 mental health domain score. Our outcome variable, physical limitation, was measured using the SF-36 physical functioning domain score. Scaled mental health and physical functioning scores range from 0 to 100, with lower scores representing worse mental health and physical functioning, respectively. We categorized mental health in quartiles (<65, 65–79, 80–89, 90–100). We measured physical performance using seven tests which included measures of upper and lower extremity strength, repeated arm curls, repeated chair rise, a dexterity test, and two measures of musculoskeletal flexibility. Scores for each test were entered in analyses as continuous variables. We performed multivariable linear regression to examine the relationship between mental health and physical limitation adjusting for age, gender, race/ethnicity, and performance-based measures.
RESULTS: The mean age of participants was 53 years (SD = 7); 55% were female. The mean mental health score was 75 (SD = 19). The mean physical functioning score was 85 (SD = 19). These score distributions for mental health and physical functioning are similar to that the US population in this age range. In unadjusted analyses, the self-reported physical functioning of participants with mental health scores in the 2nd and 3rd quartile did not differ significantly from that of participants with mental health scores in the highest quartile. However, participants with mental health scores in the lowest quartile reported significantly worse self-reported physical functioning compared with participants with mental health scores in the highest quartile (beta-coefficient = -16.0, $p<0.001$). This finding persisted in multivariable analyses. After adjusting for age, gender, race/ethnicity, and performance-based measures, those with mental health scores in the lowest quartile had a 12 point lower physical functioning score compared with that of participants with mental health scores in the highest quartile (p value <0.001).
CONCLUSIONS: Mental health scores less than 65 are independently associated with self-reported physical limitation after adjustment for measured physical performance. People with mental health scores in the lowest quartile appear to over-report physical limitations when measured physical performance is used as the gold standard. When comparing self-reported physical limitations between groups, it is important to take into account mental health.

DOES MANAGED CARE AFFECT QUALITY? APPROPRIATENESS, REFERRAL PATTERNS, AND OUTCOMES OF CAROTID ENDARTERECTOMY. E.A. Halm[1]; M. Press[1]; S. Tuhrim[1]; J. Wang[1]; M. Rojas[1]; M. Chassin[1]. [1]Mount Sinai School of Medicine, New York, NY. *(Tracking ID # 173800)*

BACKGROUND: Managed care (MC) plans have financial and quality incentives to prevent overuse of procedures, steer patients to high quality providers, and prevent poor outcomes. This study sought to assess the impact of MC on several dimensions of quality of surgical care among Medicare beneficiaries with MC and Fee-For-Service (FFS) insurance undergoing carotid endarterectomy (CEA). CEA is an apt tracer procedure because it is a common type of major vascular surgery, almost always elective, and there is a strong evidence base of RCTs and national practice guidelines.
METHODS: This was a population-based, observational cohort study of all CEAs (ICD-9 38.12) performed on Medicare MC and FFS beneficiaries between January 1998 and June 1999 in NY State. Cases were identified using Medicare Part A claims and NY State hospital discharge databases. Insurance status was based on Medicare eligibility files and hospital admission records. Clinical data were abstracted from medical charts to assess appropriateness and outcomes. Appropriateness was based on a national RAND appropriateness expert panel. Deaths and strokes within 30 days of surgery were confirmed by 2 physicians. Differences in patients, appropriateness, provider volume, complication rates, and outcomes were compared using chi square tests. Differences in risk-adjusted rates of death or stroke were compared using multivariate logistic GEE regression and a validated CEA-specific risk model.
RESULTS: A total of 9588 cases were performed by 488 surgeons in 166 hospitals. MC (N = 897) and FFS (N = 8691) patients were similar in age, sex, indications for surgery, disease severity, perioperative risk, and most major comorbidities. There were no differences in inappropriateness between MC and FFS (8.4% v. 8.6%, p = .55) or reasons for inappropriateness. MC patients were less likely to have CEA performed by a high volume surgeon (20.1% v. 13.5%), high volume hospital (20.5% v. 13.0%), or low complication rate surgeon (63.3% v. 54.8%;$p<.05$ for all). There was no difference in the likelihood of being operated on by a vascular or general surgeon, the 2 most common types of surgeons performing CEA, or at a teaching hospital. There were no differences in unadjusted 30 day rates of death or stroke between MC and FFS cases (4.4% v. 4.2%,p = .81). Nor were there differences in 30 day risk-adjusted rates of death or stroke (Adjusted OR = 0.97;95% CI, 0.69–1.37) even after accounting for differences in surgeon and hospital volume or geographic location.
CONCLUSIONS: While Medicare MC plans had the time, opportunity, evidence-based guidelines, and financial and quality incentives to rationalize the use of CEA, they did not appear to have any impact on overuse, referral to high quality providers, or clinical outcomes for this common, elective vascular surgical procedure. These results suggest a lack of alignment between theoretical MC plan financial and quality incentives and actual plan behavior. Improving the quality of elective, surgical care for Medicare beneficiaries will likely require stronger procedure-specific management controls or economic incentives to prevent overuse and steer patients to high quality providers.

DOES MY DIABETIC PATIENT HAVE LOWER EXTREMITY OSTEOMYELITIS? A RATIONAL CLINICAL EXAMINATION. S. Butalia[1]; V.A. Palda[1]; R.J. Sargeant[1]; A.S. Detsky[1]; O. Mourad[1]. [1]University of Toronto, Toronto, Ontario. *(Tracking ID # 173235)*

BACKGROUND: Osteomyelitis of the foot is a commonly encountered problem in diabetic patients and is an important cause of amputation and admission to hospital. The diagnosis of lower limb osteomyelitis in patients with diabetes remains a challenge. Our aim was to determine the accuracy of historical features, physical examination, laboratory, and basic x-ray testing in the diagnosis of lower extremity osteomyelitis in patients with diabetes.
METHODS: A MEDLINE search was conducted of English-language articles published between 1966 and August 2006 related to osteomyelitis in patients with diabetes. Additional articles were identified through a hand search of references from retrieved articles, previous reviews, and polling experts. Original studies were selected if they (1) described historical features, physical examination, laboratory investigations, or plain x-ray in the objectively confirmed diagnosis of lower extremity osteomyelitis in patients with diabetes mellitus, (2) data could be extracted to construct 2×2 tables or had reported operating characteristics of the diagnostic measure, and (3) the diagnostic test was compared to a reference standard. Two authors independently assigned each study a quality grade using previously published criteria, and abstracted operating characteristic data using a standardized instrument.
RESULTS: Of 268 articles retrieved, 20 form the basis of this review. No studies were identified that addressed the utility of the history in the diagnosis of osteomyelitis. Five studies reported on six physical examination findings and maneuvers. A Wagner grade above 2 (summary positive LR 4.9; 95% CI 1.4–17), an ulcer area greater than 2cm2 (positive LR 7.2; 95% CI 1.1–49), and a positive "probe to bone" test (summary positive LR 4.4; 95% CI 2.3–8.4,) increase the likelihood of osteomyelitis. The presence or absence of ulcer inflammation is unhelpful (positive LR 1.5; 95% CI 0.51–4.7; negative LR 0.84; 95% CI 0.56–1.3). An ESR of greater than 70 mm/h increases the probability of a diagnosis of osteomyelitis (summary positive LR 11; 95% CI 1.6–79) while an ESR that is not elevated is unhelpful (summary negative LR 0.34; 95% CI 0.06–1.9). An abnormal plain radiograph has a summary positive likelihood ratio of 2.3 (95% CI 1.6–3.3). An elevated white blood cell count and swab culture results have no diagnostic utility. None of the testing modalities displayed clinically useful negative likelihood ratios for ruling out osteomyelitis.
CONCLUSIONS: Wagner grade, ulcer area greater than 2cm2, a positive "probe to bone" test, an ESR > 70 mm/h, and an abnormal plain x-ray are helpful in diagnosing the presence of lower extremity osteomyelitis in diabetic patients. No single historical feature or physical examination reliably excludes osteomyelitis. The diagnostic utility of a combination of findings is unknown.

EVALUATING COMPARATIVE EFFECTIVENESS OF DRUGS FOR DIABETES WITH OBSERVATIONAL DATA. J.B. Segal[1]; S.M. Dy[1]; C. Frangakis[1]; M. Griswold[1]; A. Achy-Brou[1]; A. Millman[1]; E.B. Bass[1]; A.W. Wu[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 170021)*

BACKGROUND: The FDA approved 80 new drugs last year. Methodology is needed to evaluate a new drug promptly to assure it is effective and safe when used in the general rather than clinical trial population. Observational data are a quickly-

accessible source of information on a large number of new drug users; however, available methods may not adequately incorporate the unique clinical features of new-drug users and variable adherence to the drug over time. We aimed to develop new methodology to evaluate outcomes associated with a recently approved drug for treatment of diabetes mellitus (DM), exenatide, which is an incretin-mimetic approved in April 2005.
METHODS: We assembled a retrospective cohort of patients with DM from among a population of employed, commercially-insured persons and their dependents. The data, from i3Innovus, included claims for utilization of inpatient and outpatient services as well as prescription medications. We requested data from all patients with International Classification of Disease (ICD-9) codes for DM or claims for use of medications for DM, between June 2005 and December 2005. To attribute outcomes to medication use, we estimated propensity score models to estimate the propensity of a patient to receive each medication, at 3 time points during these 6 months. Patients were subclassified based on their propensity scores at each time point, and transitions between these subclasses were modeled with logistic regression. With generalized linear models, we estimated 2 outcomes as surrogates for the overall safety and effectiveness of the drug; we estimated the probability of hospitalization (as a measure of serious adverse events) and monthly total health care charges (as a measure of the use of outpatient or inpatient healthcare services), and then calculated a weighted average of outcomes for users of exenatide and users of other drugs for DM.
RESULTS: We had complete data from 131,714 patients with DM, including 3,225 using exenatide. Patients using exenatide had fewer comorbid illnesses than did patients recently begun on insulin, and were more likely to have seen an endocrinologist and to have received recommended screening tests. The propensity score models resulted in well-balanced covariates between drug groups, within propensity score quintiles. Patients modeled to have been continually on exenatide for 6 months had minimally higher monthly health care charges than those continually on insulin, with a mean monthly difference of $397 [95% confidence interval (CI)$-218 to $1,054]. The odds of hospitalization were also comparable between groups (relative odds 1.02 [95% CI 0.33 to 1.98]. The results should be interpreted as the upper limit of the drug's effect in the population, because we modeled complete adherence over 6 months.
CONCLUSIONS: We developed a novel method for reducing the multidimensionality of observational data, including transitions between drugs over time. In our example, using exenatide and estimating the upper limit of effectiveness, there were no demonstrable differences in outcomes relative to existing therapies, although we do not know if 6 months is a sufficient time interval in which to see differences in these outcomes.

FISH OIL SUPPLEMENTATION FOR THE TREATMENT OF AFFECTIVE DISORDERS: A META-ANALYSIS OF CLINICAL TRIALS. S. Bertisch[1]; P. Gardiner[1]; W.J. Burke[2]. [1]Division of Research and Education in Complementary and Integrative Medical Therapies, Harvard Medical School, Boston, MA; [2]3Department of Psychiatry, University of Nebraska Medical Center, Omaha, NE. *(Tracking ID # 172929)*

BACKGROUND: Epidemiologic studies have suggested that consumption of omega-3 fatty acids decreases the risk of affective disorders, and results from clinical trials are becoming available. In this context, we performed a meta-analysis to evaluate the effectiveness of fish oil supplementation for the treatment of affective disorders.
METHODS: We identified studies using Medline, EMBASE, the Cochrane Central Registry of Controlled Trials, and PsycINFO (January 1966 to July 2006) using the Medical Subject Headings: omega-3 fatty acids, fish oils, depression, depressive disorder, major depressive disorder, bipolar disorder, and postpartum depression. References of all retrieved studies were hand searched, and experts in the field were contacted to identify other studies. Of the 107 articles identified, 14 clinical trials evaluated fish oil supplementation (EPA, DHA, or in combination) for the treatment of depression and used standard depression outcome measurements. Given the relative small number of studies, we included both randomized and unblinded trials, of varying quality, in our analyses. Information on study design, sample size, population characteristics, supplement constituents, blinding techniques, follow-up duration and mean change in depression scores from baseline to endpoint were independently extracted by two investigators using a standardized protocol, and Hedges' g effect sizes (range 0–1, with 0 = no effect and 1 = strong effect) and Jadad quality scores were calculated. A total of 14 studies including 690 subjects with unipolar, bipolar, or pregnancy-related depression, were analyzed using a random-effects model. We explored heterogeneity (variation in study outcomes between studies) by performing predefined stratified analyses by diagnostic category (unipolar, bipolar, and postpartum depression) and use of intent to treat analyses. We further examined the relationship between effect size and Jadad quality score using meta-regression. Lastly, we assessed potential publication bias using the Duval and Tweedle funnel plot trim and fill method. In the future, we plan to limit our analyses to include only high quality studies, as determined by standard screening criteria.
RESULTS: The random-effects estimate of Hedges' g effect size of fish oil supplementation for the treatment of affective disorders was 0.80 (95% Confidence Intervals 0.40, 1.19), suggesting a strong effect. There was evidence of considerable between-trial heterogeneity ($I2 = 82\%$, $p = < 0.001$). No heterogeneity between diagnostic categories was detected, but studies utilizing intent to treat analysis yielded a significantly ($p = 0.01$) lower pooled estimate effect size of 0.29 (95% C.I. −0.02, .59) compared to our overall estimate. Additionally, there was a strong inverse relationship between Hedges' g effect size and Jadad quality score ($p = < .00001$) and evidence of publication bias based on examination of the funnel plot.
CONCLUSIONS: Fish oil supplementation may be beneficial for the treatment of affective disorders. However, given the large degree of variation in the results of currently published studies, there is a clear need for more definitive, larger, high quality, randomized, double blind placebo-controlled trials.

HOW OFTEN DO GENERAL PRACTITIONERS MISS A CORONARY HEART DISEASE DIAGNOSIS IN PATIENTS PRESENTING WITH CHEST PAIN? B. Favrat[1]; E. Pelet[1]; B. Burnand[2]; L. Herzig[3]; M. Junod[3]; A. Pecoud[1]; F. Verdon[3]. [1]University of Lausanne, Lausanne; [2]University of Lausanne, Lausanne, Vaud; [3]Unit of General Medicine, Lausanne,. *(Tracking ID # 173006)*

BACKGROUND: Chest pain is a frequent complaint in ambulatory care, and while well described in emergency settings, it is less well studied in general practice. The purpose of this study was to analyse the ability of general practitioners (GPs) to rule out coronary heart disease (CHD), a potentially life-threatening affection, in patients presenting with chest pain.
METHODS: Prospective, observational, cohort study of patients attending 58 private practices over a five-week period with undifferentiated chest pain. During a one-year follow-up, questionnaires including detailed history and physical exam, were filled out at 3 and 12 months. The diagnostic description was grouped in 5 clusters: thoracic wall, CHD, psychogenic, respiration, digestion. The specific diagnosis retained at the end of the initial encounter was compared with the 12-month diagnosis (or when missing the 3-month diagnosis).
RESULTS: Among 24 620 consultations, we observed 672 cases of chest pain (3.1%). Follow-up amounted to 100% and 96%, at 3 and 12 months, respectively. Long term follow-up diagnostic groups were: musculoskeletal (43.6%) , CHD (12.6%/n = 85), psychiatry (11.5%), pulmonary (10.6%), digestive (8.2%), no diagnosis (3.1%). At one year, the percentage of patients suffering from CHD who were not suspected after the first encounter is low (2,3%). No patient suffered from a missed CHD diagnosis.
CONCLUSIONS: Chest pain is not an uncommon symptom in general practice, attributed to CHD in one out of 8 patients. GPs are able to identify accurately CHD among a lot of benign affections; only a few cases were missed during the initial encounter.

IF YOU PUT STATINS IN THE WATER, WILL PEOPLE DRINK IT? PATTERNS AND PREDICTORS OF STATIN ADHERENCE. D.M. Mann[1]; J. Allegrante[2]; E.A. Halm[1]; S. Natarajan[3]; M.E. Charlson[4]. [1]Mount Sinai School of Medicine, New York, NY; [2]Columbia University, New York, NY; [3]New York University, New York, NY; [4]Cornell University, New York, NY. *(Tracking ID # 171448)*

BACKGROUND: Statins represent a potent intervention for reducing cholesterol and cardiovascular disease; however, their effectiveness is significantly limited by poor adherence. The objective of this prospective cohort study was to identify potentially modifiable patient predictors of statin non-adherence.
METHODS: The cohort was comprised of 71 patients from a VA medical clinic given their first prescription for a statin for primary prevention (patients with established cardiovascular disease or diabetes were excluded). Patient interviews at baseline, 3 months, and 6 months elicited details on decision-making about statins, socioeconomic status, clinical factors, disease, diet and medication beliefs, and medication adherence. The primary outcome was self-reported adherence at 6 months measured by the revised Morisky adherence scale. Multivariate regression incorporating repeated measures design was performed to identify independent predictors of adherence at 6 months.
RESULTS: At 6-month follow-up, 55% of the cohort was non-adherent with 27% stopping their statin and 10% never having started their prescription despite access to low cost VA medications. The median duration of use prior to discontinuation was 2 months. Half of the cohort reported misconceptions about the expected duration of treatment with 70% stating that they did not expect to be taking the statin for more than 6 months. Most (88%) patients thought that they would not need to take the statin for the rest of their lives. At baseline, 79% of patients preferred to try changing their diet before starting a statin but only half reported being given this opportunity before statin initiation. Significant univariate predictors of poor adherence at 6 months included younger age, no comorbidity, not taking blood pressure pills, low perceived risk of an MI, no cholesterol testing since statin initiation, a belief that statins are curative, concerns about potential harm from statins, and new attempts to change their diet. Independent predictors of non-adherence were short treatment duration expectation (OR = 3.6, 1.4–9.4), low perceived risk of myocardial infarction (OR = 3.1, 1.1–8.7), concern about potential harm from statins (OR = 2.5, 1.0–6.3), being Hispanic (OR = 3.9, 1.0–15.2), and younger age (OR = 4.2, 1.1–15.8).
CONCLUSIONS: Poor adherence to statins was common in this primary prevention population with a substantial rate of early discontinuation despite access to low-cost medicines. Most patients did not think they would need to take the statin for the rest of their lives and preferred a trial of diet prior to statin initiation although it was frequently omitted. Patient factors regarding the perception of risk, toxic effects of medication, treatment duration as well as socio-demographic factors were significant predictors of poor adherence. Patient beliefs and preferences contributing to poor adherence warrant further exploration.

IMPROVING RISK ADJUSTMENT FOR ILLNESS BURDEN. A.C. Kronman[1]; J. Speckman[2]; A. Hanchate[3]; A. Ash[1]. [1]Boston University, Boston, MA; [2]Boston Medical Center, Boston, MA; [3]Boston University Medical Center, Boston, MA. *(Tracking ID # 173887)*

BACKGROUND: Health care utilization is strongly related to a population's overall illness burden (case-mix). Understanding non-medical factors that influence health care utilization requires risk adjustment for illness. Several risk adjustment systems have been developed for extracting illness burden profiles from administrative data, and used extensively for research, management, and quality improvement. We compared the ability of the familiar Charlson Index and the Diagnostic Cost Groups (DCG) relative risk score to discriminate among Medicare beneficiaries with different levels of future hospital use. While DCGs have been shown to predict costs accurately, many researchers are skeptical of their value for predicting utilization.
METHODS: Retrospective analysis of a national sample of 480,258 Medicare beneficiaries over 65 years of age, continuously enrolled in the fee-for-service system 2000–2001. The Charlson Index and DCG were each used with FY 2000 diagnoses (ICD-9-CM codes), age and sex to predict total hospital days for the first 6 months of 2001. We measured how well the predictions fit the outcomes by calculating the R2 of each model. We examined discriminatory power by looking at mean actual hospital days within quantiles of model-predicted risk. Good models have low mean hospital utilization in the lowest decile of predicted risk and high mean hospital utilization in the highest decile (or percentile) of predicted risk. We compared risk adjustment models by calculating the ratio of the mean actual hospital days of the highest percentile to the lowest decile.
RESULTS: The average Charlson score was 0.80 (range 0–18), while the average DCG score was 0.71 (range 0.23–11.2). Average hospital days were 1.1 (range 0–158). The R2 was 0.03 for the Charlson model, and 0.06 for the DCG model. For the Charlson model, average hospital days were 0.40 in the lowest decile, 3.04 in the highest decile, and 4.72 in the highest percentile. Analogous numbers for the DCG model are 0.33, 3.65, and 8.08. Thus, the highest percentile of Charlson-predicted risk spent, on average, 11.8 times as many days in the hospital as the bottom decile; while, for the DCG model, this ratio is 24.5.
CONCLUSIONS: Despite modest R2 values, both the Charlson Index and DCG score effectively predicts future hospital use from ICD-9-CM codes, and discriminates low hospital use from high hospital use. However, the DCG score discriminated even more powerfully, by identifying a subset of patients whose high levels of illness burden predictably lead to higher levels of hospital utilization. Whether risk adjustment models are used as tools in research to identify healthcare disparities, in management to compare healthcare providers, or in quality improvement to evaluate healthcare institutions, it is important to implement risk adjustment models with discriminatory power to effectively characterize high illness burden.

INCREASING PHYSICAL ACTIVITY: DO PEDOMETERS WORK? C. Smith-Spangler[1]; A. Gienger[1]; V. Sundaram[2]; N. Lin[1]; I. Olkin[1]; J. Sirard[3]; D.M. Bravata[1]. [1]Stanford University, Stanford, CA; [2]VA Palo Alto Healthcare System, Palo Alto, CA; [3]University of Minnesota, Minneapolis, MN. *(Tracking ID # 172625)*

BACKGROUND: Pedometers have recently experienced a surge in popularity as a tool for motivating and monitoring physical activity without detailed evidence of their effectiveness. The purpose of this study was to evaluate the effect of pedometer use on physical activity among adults in the outpatient setting and to evaluate the relationship between number of steps per day and improvements in body mass index (BMI), serum lipids, fasting serum glucose and insulin, and blood pressure.
METHODS: We performed searches of seven relevant databases (Medline, Embase, Sport Discus, PsychInfo, Cochrane, ISI, and ERIC from January 1966 to May 2006) with search terms such as pedometer, activity monitor, and step counter. We reviewed bibliographies of retrieved articles and relevant conference proceedings to obtain additional citations. We considered studies eligible for inclusion if they reported an assessment of pedometer use among adult outpatients of at least three days duration, included more than five subjects, and reported a change in number of steps per day. We excluded studies that sealed the pedometer so that subjects could not see the number of steps taken per day. Two investigators reviewed all titles and abstracts to identify potentially relevant articles and independently abstracted study data. We calculated weighted mean differences using a random effects model and used weighted least-squares regression to calculate the effect of the physical activity on change in health outcomes.
RESULTS: Our searches identified 2059 citations. Of these, 29 studies (with 1912 subjects) met inclusion criteria-9 RCTs and 20 observational studies reporting before-after data. The included studies were highly heterogeneous with respect to exercise interventions provided, subjects enrolled, and duration of follow up. The mean age of the included subjects was 56.3 years (S.D. 8.6 years) and 21.8% were male (S.D. 32.4%). The mean duration of the intervention was 18 weeks (S.D. 24 weeks). Intervention subjects significantly increased their physical activity by 2547 steps/day (95%CI: 2145 to 2949 steps/day, $p < 0.00001$). The most significant predictor of increased physical activity was the baseline number of steps per day ($p = 0.03$) (subject age, gender, and study duration were not significant predictors ($p > 0.05$ for each). Intervention subjects' BMI decreased by 0.3 kg/m2 (S.D. 0.6 kg/m2); however this decrease was not significantly associated with change in physical activity. Too few studies reported on the other health outcomes to synthesize their results quantitatively.
CONCLUSIONS: This is the first published quantitative synthesis of the literature on the effectiveness of pedometers to change physical activity. The results from these relatively short studies suggest that the use of pedometers is associated with significant increases in physical activity-however, whether this change is durable over time or associated with significant improvements in health outcomes is undetermined.

INDEPENDENT ASSOCIATION OF PHYSICIAN AND INFORMATION CONTINUITY ON NON-ELECTIVE READMISSION OR DEATH. C. Van Walraven[1]; I.G. Stiell[2]; E. Etchells[3]; C. Bell[4]; K. O'Rourke[1]; K. Asmat[2]; K. Zarnke[5]; A. Forster[1]. [1]Ottawa Health Research Institute, Ottawa, Ontario; [2]University of Ottawa, Ottawa, Ontario; [3]Sunnybrook Health Sciences Center, Toronto, Ontario; [4]University of Toronto, Toronto, Ontario; [5]London Health Sciences Center, London, Ontario. *(Tracking ID # 173801)*

BACKGROUND: Continuity of care occurs when separate elements of patient treatment are connected. Continuity of care is made up primarily of physician continuity and information continuity. The independent effect of physician and information continuity on patient outcomes is unknown.
METHODS: We conducted a prospective observational cohort study of consenting patients discharged to the community after surgical or medical hospitalization. We excluded nursing home patients or those with cognitive compromise. Baseline data collection included physicians who treated the patient prior to and during the hospitalization. We telephoned patients or their families at 1, 3, and 6 months post discharge to record all study outcomes and post-discharge physician visits. Post-discharge physicians completed surveys indicating whether they had a discharge summary from the index admission or information about previous post-discharge visits. We calculated physician continuity at each post-discharge visit as the proportion of post-discharge visits with physicians who had previously treated the patient. We calculated information continuity at each post-discharge visit as the proportion of post-discharge visits having a discharge summary or information about previous post-discharge visits. The primary outcome was time to non-elective readmission or death. Cox models were used to determine the association of physician and information continuity with time to non-elective hospital readmission or death. All continuity measures in the model were expressed as time-dependent covariates.
RESULTS: 5041 patients (mean age 61.2 yrs; 52.8% female, 45.2% from medical services) were recruited between Oct. 2002 and July 2006 from 11 hospitals in Ontario (7 academic, 4 community). Patients were followed for a mean of 142 days (sd 64.7) with 252 patients (5.0%) being lost to follow up. The mean proportion of visits with physicians who had previously treated the patient was 73.1%. The mean proportion of post-discharge visits having a discharge summary was 44.9%. The mean proportion of previous post-discharge visits for which information was available was 39.2%. The primary outcome occurred in 17.1% of patients (15.2% readmission, 1.9% death). After adjusting for patient factors (age; sex; comorbidity index; number of emergency department visits and hospital admissions in prior 6 months; functional status; number of medications at discharge; and living status) and index admission factors (hospital; length of stay; admission urgency; service; number of consultations with other services; and number of complications), increased physician continuity was independently associated with a decreased risk of non-elective readmission or death (Table). This was also true for each component of overall provider continuity (Table). Neither measure of information continuity was associated with the outcome (Table).
CONCLUSIONS: After discharge from hospital, increased physician continuity, but not information continuity, was independently associated with a decreased risk of non-elective hospital readmission or death. Randomized trials that measure physician continuity over time are required to determine if increased continuity causes improved patient outcomes.

Association of Physician and Information Continuity on Time to Readmission or Death Stratified by Percentage of Post-Hospital Visits

	0 to 25%	25% to <50%	50 to <75%	75% to 100%
% OF VISITS WITH:		HR (95% CI)	HR (95% CI)	HR (95% CI)
Any prior MD	ref	0.92 (0.62–1.36)	0.73 (0.55–0.96)	0.59 (0.46–0.76)
- **pre-hospital MD**	ref	1.10 (0.81–1.50)	0.78 (0.59–1.02)	0.69 (0.54–0.89)
- **hospital MD**	ref	0.74 (0.52–1.06)	0.86 (0.62–1.20)	0.66 (0.46–0.95)
- **post-hospital MD**	ref	0.71 (0.52–0.97)	0.78 (0.58–1.06)	0.77 (0.55–1.08)
discharge summaries	ref	1.02 (0.72–1.43)	0.96 (0.73–1.25)	0.98 (0.79–1.23)
prior hospitalization info	ref	0.85 (0.57–1.27)	0.90 (0.57–1.42)	1.09 (0.86–1.38)

INPATIENT DIABETES EDUCATION PROGRAMS—A SYSTEMATIC REVIEW. A. Necochea[1]; C. Umscheid[1]; K. Williams[1]. [1]Hospital of the Univ. of Pennsylvania, Dept. Internal Medicine, Philadelphia, PA. *(Tracking ID # 172679)*

BACKGROUND: The prevalence of diabetes mellitus (DM) diagnoses in the United States (US), as well as the number of hospitalizations with DM listed as a diagnosis, more than doubled between 1980 and 2003. Patient education and timely preventive practices can reduce the occurrence of DM complications. Hospitalized diabetic patients form a captive audience for inpatient DM education programs, and several studies have been published on the effectiveness of such programs. As part of a health system review on best practices for discharging inpatients, we conducted a systematic

review of the literature to evaluate the impact of inpatient DM education on hospital length of stay (LOS) and readmission rates.
METHODS: We searched the Medline, EMBASE and Cochrane Library databases using the terms (diabetes OR diabetes mellitus) AND (education OR teaching OR patient education OR health education) AND (discharge OR hospital OR hospitalization OR readmission OR re-hospitalization OR inpatient), and performed manual reference checks on selected articles. Inclusion criteria were English language, controlled trials in adults published prior to November 2006 that addressed the outcomes LOS or readmission rate. We excluded trials evaluating hospital admissions exclusively to perform DM education and those involving gestational diabetes. For randomized controlled trials (RCTs), study quality was rated using a 7-point modified Jadad score. Using the high quality studies (modified Jadad > 3), we estimated a combined relative risk (RR) with 95% confidence interval (CI) using random effects meta-analysis on studies evaluating readmission rates, and qualitatively summarized studies evaluating LOS. Heterogeneity was calculated using the Q statistic.
RESULTS: 706 articles were obtained of which 7 satisfied the inclusion and exclusion criteria. Publication dates ranged from 1980 to 2006. 5 studies were conducted in the US, 1 in Thailand and 1 in Wales. Total number of participants ranged from 65 to 300 per study. Interventions ranged from education by a certified nurse educator, to a team consisting of a nurse and an endocrinologist, to scheduled classes. 5 studies evaluated readmission rates. The follow-up period ranged from 3–12 months. 4 studies (80%) showed a significant decrease in the readmission rate in the education group and one showed no difference between the groups. Meta-analysis of the 4 high quality studies produced a combined RR of 0.48 (95% CI 0.24–0.95), Q statistic = 12.2 (p = 0.007). Five studies evaluated LOS. Though all studies showed a reduction in LOS in the education group, only 3 (60%) showed a statistically significant decrease. LOS in the 3 high quality studies ranged from 3.9–12.9 days in the education group, and from 6.4–14.1 days in the control group. The reduction in LOS ranged from 1.2–2.5 days.
CONCLUSIONS: DM education of hospitalized patients decreases readmission rates and LOS. Hospitals should consider incorporating inpatient DM education as part of their plan of care for diabetic patients.

IS REFERRAL FROM GATEKEEPER PHYSICIANS EFFECTIVE IN DETERMINING THE APPROPRIATE USE OF BRAIN MRI/MRA TESTS FOR OUTPATIENTS?

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BACKGROUND: The Japanese universal health insurance system for outpatient services adopts a fee-for-service in which overuse of unnecessary expensive diagnostic tests or procedures are not discouraged. Primary care physicians who work as gatekeepers for common health problems may reduce the number of expensive tests such as brain MRI scans for headache patients. The objective of the present study is to examine whether there was a significant difference in proportion of clinically significant abnormal findings of brain MRI or MRA scan tests between patintes with headache who received the test with referrel from primary care physicians and the patients without referrel.
METHODS: We conducted a case-control study on the setting of six teaching hospitals in Japan. The participants were screened from the radiology records in each hospital. Cases and controls were selected from first-visit patients with neurological symptoms and from those who had undergone MRI/MRA scans in the past year. We collected the variable measures retrospectively from medical records and radiology records. We indicated that the participants had or did not have significant abnormal findings on the basis of certain explicit criteria listed in radiation reports prepared by the radiology department of each hospital. We also collected clinical data independently from medical records, including patient characteristics, main symptoms, and whether the patients had visited the hospitals after referral from primary care physicians.
RESULTS: The findings of 156 cases and 721 controls were collected for an analysis. Multivariate analysis adjusted by age group, sex, and the number of comorbidity factors showed that those who had visited the hospitals after referral were more likely to have significant abnormal findings in their MRI/MRA scan results (odds ratio [OR] = 1.6, 95% CI: 1.1 to 2.4).
CONCLUSIONS: The present study suggests that referral from gatekeepers such as primary care physicians may be effective in selecting appropriate patietns for brain MRI/MRA tests at hospital outpatients setting. Outpatient health services under a fee-for-service health system should encourage the provision of primary care services for the appropriate use of expensive health resources.

IS THE INCREASE IN AMBULATORY OPIOID PRESCRIBING IN THE US DRIVEN BY PHYSICIAN PRESCRIBING BEHAVIOR OR PATIENT VISIT RATES?

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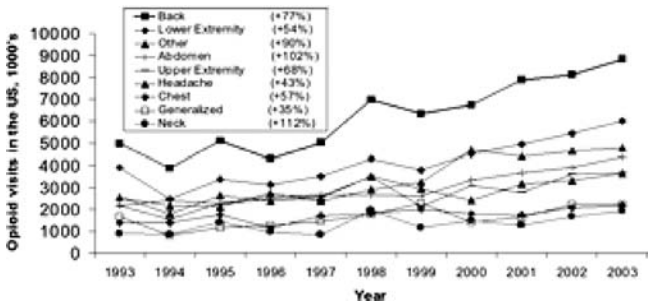
BACKGROUND: The quantity of opioid medications prescribed and the prevalence of prescription opioid abuse have both increased markedly in the US over the past decade. It is unclear, however, whether this increase is attributable to an increase in physicians' propensity to prescribe opioids for a given condition, an increase in patient visit rates for pain, or both.
METHODS: We used nationally-representative survey data collected on nearly one million ambulatory care visits over 11 years (1993–2003) in the National Ambulatory Medical Care Survey (NAMCS) and the National Hospital Ambulatory Medical Survey Outpatient Department (NHAMCS-OPD) and Emergency Department (NHAMCS-ED) to find ambulatory visits resulting in administration or prescription of an opioid. Visits were categorized based on the type of painful complaint recorded (the first, if any) among three reason-for-visit codes. Totals, proportions, and linear time trends were estimated taking into account the clustered survey design.
RESULTS: The number of ambulatory care visits at which an opioid was prescribed increased 73% from 4.1 million in 1993 (.19/person-year) to 7.1 million in 2003 (.29/person-year, p < .001 for trend). This increase appears to be attributable to a change in physician prescribing behavior, rather than a change in patient visit rates for pain or injury, which increased only 4% from 1993 (1.09/person-year) to 2003 (1.14/person-year, p = .41). In contrast, the likelihood that a physician will prescribe an opioid increased about 40% for patients presenting with pain or injury (from 12% in 1993 to 17% in 2003, p < .001), and also when no pain or injury complaint was recorded (from 2.7% in 1993 to 3.8% in 2003, p = .026). Opioid visits for all types of pain increased (Figure). Opioid prescribing propensity was highest for back pain visits (27% of back pain visits in 2003) than for any other type of pain (range 9%–22% in 2003), and back pain was the most common reason for an opioid visit in both 1993 (11% of all opioid visits) as well as in 2003 (12%). Opioid prescribing propensity for back pain visits increased more in the emergency department (from 34% in 1993 to 52% in 2003) than other settings (17 to 23%).
CONCLUSIONS: A general increase in physicians' propensity to prescribe opioids, rather than an increase in patient visit rates, explains higher rates of ambulatory opioid prescribing in the US. Back pain remains the most common reason for an opioid prescription.



Number of ambulatory care visits at which an opioid was prescribed, by year and type of patient complaint

KIDNEY FUNCTION LOSS IN BLACK AND WHITE ELDERLY PERSONS – A COMPARISON USING CREATININE AND CYSTATIN C.

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BACKGROUND: Serum creatinine levels are determined by the competing influences of kidney function and muscle mass. Prior work from the Cardiovascular Health Study (CHS) has suggested that creatinine-based estimates of glomerular filtration rate (eGFR-Cr) may be insensitive for detecting kidney dysfunction in the elderly relative to cystatin C, an alternative serum measure of kidney function - to estimate GFR. Prior studies using eGFR-Cr have found a two-fold greater rate of decline in kidney function in elderly Blacks compared with Whites. This analysis from CHS examined longitudinal declines in kidney function among older Blacks and Whites comparing GFR estimates by creatinine and cystatin C.
METHODS: CHS is a NIH-sponsored, population-based cohort study of community-dwelling elderly. Creatinine and cystatin C were measured at the baseline visit, and at 3 and 7 years of follow-up. The 4-variable (age, sex, race, creatinine) Modification of Diet in Renal Disease equation was used for eGFR-Cr; a validated single variable equation (eGFR-Cys = 76.7 x cys^(-1.18)) was used to estimate GFR from cystatin C. Participants with at least two measures of each test were included in this analysis (N = 4,380). Slopes of change in eGFR were calculated for each participant and presented as an annual rate of decline among Black men, Black women, White men, and White women.
RESULTS: At baseline, the average age was 72; 60% were women, 87% were White and 13% were Black. The mean eGFR-Cr was 70 and eGFR-Cys was 79 ml/min/1.73 m^2. Average annual eGFR decline was significantly lower when measured by eGFR-Cr than by eGFR-Cys (-0.32 vs. -1.82/year, p < 0.001). When using eGFR-Cr, White men and White women had no significant change, whereas Black men and Black women experienced annual eGFR declines of 1 ml/min/1.73 m^2 and 2 ml/min/1.73 m^2, respectively (Figure). In contrast, using eGFR-Cys, we observed no significant differences in eGFR decline across the four subgroups (Figure). In multivariate analysis, race and sex were not significant predictors of eGFR-Cys decline, but were strongly predictive of eGFR-Cr decline.
CONCLUSIONS: In elderly persons, the use of cystatin C to estimate GFR predicted a greater rate of kidney function decline in elderly persons, and much less

variation by sex and race than observed with creatinine. Creatinine may be insensitive for detecting kidney function decline in elderly persons, particularly among Whites.

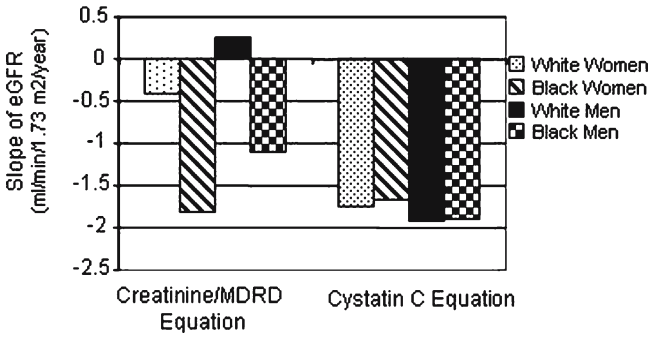


Figure Mean Annual Loss of Kidney Function by Race/Gender

MID ATLANTIC 2007 REGIONAL RESIDENT AWARD WINNER. S. Garten[1]. [1]Society of General Internal Medicine, Washington, DC. *(Tracking ID # 178591)*

BACKGROUND: place
METHODS: holder
RESULTS: for
CONCLUSIONS: poster session

MORE COMMON THAN WE THINK: CHRONIC MEDICAL RISKS IN A REPRESENTATIVE OBSTETRIC POPULATION. D. Ehrenthal[1]; C. Jurkovitz[1]; M. Hoffman[1]; W. Weintraub[1]. [1]Christiana Care Health System, Newark, DE. *(Tracking ID # 169966)*

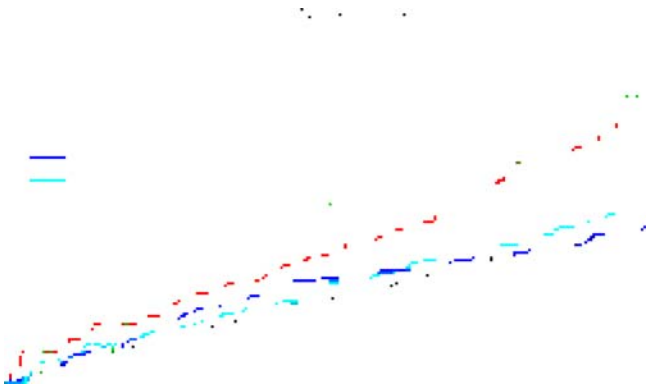
BACKGROUND: The presence of obesity, tobacco use, hypertension, and diabetes during pregnancy increases the risk of maternal complications as well as adverse fetal outcomes. Population-based measures of the prevalence of these risks in the obstetrical population are needed to assess their role in adverse fetal outcomes as well as to guide efforts to target high risk women for preconception care
METHODS: Clinical data from the obstetrical registry of a dominant regional obstetrical provider were analyzed for all women who delivered between May 2003 and September 2006. Clinical diagnoses and demographics were derived from physician admission records and hospital charts. Preconception body mass index (BMI) was calculated using self-reported preconception weight and height. Data were analyzed using chi-square and logistic regression.
RESULTS: Complete data were available for 20,305 women including 62.3% white, 22.3% black, 10.1% Hispanic and 4.6% Asian women. The average age was 29 years, the average BMI was 26 kg/m2. Overall, obesity (BMI 30+) was present in 20.8%, tobacco use in 17.2%, chronic hypertension in 3.2% and diabetes in 0.8% of the population. The prevalence of obesity, tobacco use, hypertension and diabetes varied significantly by race and ethnicity (Table) and the rates were significantly higher than reported in National Vital Statistics. Overall, 35.7% of the population carried at least one risk factor. Compared to whites, blacks were significantly more likely to have at least one risk factor, odds ratio (OR) = 1.5 (95% CI = 1.4–1.6); Hispanic women were less likely than whites, OR = 0.70 (0.63–0.78); and Asian women the least likely, OR = 0.20 (0.16–0.25).
CONCLUSIONS: Obesity, tobacco use, hypertension and diabetes are prevalent in the obstetrical population and show significant variation by race and ethnicity. More than one third of all women, and almost half of black women, carried at least one of these risk factors for an adverse pregnancy outcome. Risk factors were most common among black women, who have the highest infant mortality rates, and lowest among Asians, who have the lowest infant mortality rates. Improvement in preconception health care has the potential to impact large numbers of women and their families.

Maternal Risk Factors:

	White (%)	Black (%)	Hispanic (%)	Asian (%)	p-value
Obesity (BMI 30+)	18.4	30.8	21.1	6.5	<0.0001
Smoking	19.8	17.8	7.7	2.1	<0.0001
Chronic Hypertension	2.9	5.4	1.7	1.1	<0.0001
Diabetes	0.7	1.0	1.3	0.8	0.05
At least 1 risk factor	35.7	45.1	28.0	10.0	<0.0001

NON ASPIRIN NSAIDS, CYCLO-OXYGENASE 2 INHIBITORS AND THE RISK FOR STROKE. C.L. Roumie[1]; E. Mitchel[2]; L. Kaltenbach[2]; P. Arbogast[2]; P. Gideon[2]; M.R. Griffin[1]. [1]Vanderbilt University; VA Tennessee Valley Healthcare System, Nashville, TN; [2]Vanderbilt University, Nashville, TN. *(Tracking ID # 173184)*

BACKGROUND: Questions remain regarding the cerebrovascular safety of cyclo-oxygenase 2 inhibitors (coxibs) and non-coxib nonsteroidal anti-inflammatory drugs (NSAIDs). Our aim was to determine whether specific NSAIDs, including coxibs, are associated with increased risk of ischemic or hemorrhagic stroke
METHODS: We conducted a retrospective cohort study among Tennessee Medicaid (TennCare) enrollees between January 1, 1999 and December 31, 2004. Persons were included if they had demographics in the enrollment file, did not reside in a nursing home, and did not have stroke or other serious medical illness in the year prior to cohort entry. The 7 most commonly prescribed NSAIDs were examined. These included: celecoxib, rofecoxib, and valdecoxib and four NSAIDs ibuprofen, naproxen, diclofenac and indomethacin. Non-use of NSAIDs was the reference group for analyses. Because new users are less susceptible to bias we conducted a similar analysis for new users. The outcome was hospitalization with a diagnosis indicating an incident cerebrovascular event including ischemic stroke, intracerebral hemorrhage and subarachnoid hemorrhage. A systematic sample of 250 charts was reviewed to verify the accuracy of the incident stroke diagnoses.
RESULTS: There were 336,906 unique persons included in the cohort, with 989,826 person-years and 4354 stroke events. There were 4.51 stroke hospitalizations per 1000 person years in the nonuser group. There were 5.15 strokes per 1000 person years (adjusted HR 1.28, 95% CI 1.06, 1.53) among rofecoxib users and 5.95 (adjusted HR 1.41, 95% CI 1.04, 1.91) among current valdecoxib users respectively. Among new users of rofecoxib and valdecoxib there were 6.86 and 6.69 strokes per 1000 person years respectively. When adjusted for all covariates the HR for new users was 1.69 (95% CI 1.34, 2.11) for rofecoxib and 1.60 (95% CI 1.06, 2.41) for valdecoxib. No other NSAIDs significantly increased the risk of incident stroke.
CONCLUSIONS: Our results confirm an increased risk of stroke among current users of two highly selective coxibs, rofecoxib and valdecoxib, and provide some reassurance about specific other NSAIDs regarding stroke risk.



Risk of Stroke among new users of NSAIDs and Coxibs

NON-MEDICAL USE, ABUSE AND DEPENDENCE ON SEDATIVES AND TRANQUILIZERS AMONG U.S. ADULTS: CORRELATION WITH ANXIETY. W.C. Becker[1]; D.A. Fiellin[1]; R.A. Desai[2]. [1]Yale University, New Haven, CT; [2]Yale University, West Haven, CT. *(Tracking ID # 173423)*

BACKGROUND: Non-medical use of sedatives and tranquilizers (e.g benzodiazepines), classes of medications commonly prescribed by primary care physicians, puts individuals at risk for abuse and dependence on these medications. Such misuse may also signal inadequately treated psychiatric symptoms.
METHODS: We performed a secondary data analysis of the 2002–2004 National Survey on Drug Use and Health, limited to respondents who were 18 years and older (n = 92,020). Non-medical use was defined as using a sedative or tranquilizer for the feeling or experience it caused or using someone else's prescription. Psychiatric symptoms were assessed using questions based on the World Health Organization's Composite Interview Diagnostic Interview-Short Form (CIDI-SF). Respondents met criteria for abuse/dependence based on DSM-IV questions contained in the survey. We employed multivariable logistic regression models predicting (1) past-year non-medical use of sedatives and tranquilizers among the entire sample and (2) past-year abuse/dependence among those with past-year non-medical use of sedatives and tranquilizers.
RESULTS: The prevalence of past-year non-medical use of sedatives and tranquilizers was 2.3%. Of those with past-year non-medical use, 9.8% met criteria for abuse or dependence on these substances. On multivariable analysis, panic symptoms (OR 1.3; 1.0–1.6) and elevated serious mental illness score (OR 1.4; 1.1–1.7) were associated with past-year non-medical use of sedatives and tranquilizers. In addition, female sex (OR 1.4; 1.3–1.6), white (OR 3.2; 2.1–4.9), Hispanic (OR 1.8; 1.0–3.1), other ethnicity (OR 2.0; 1.1–3.7), urban residence (OR 1.2; 1.0–1.5), criminal arrest (OR 1.3; 1.0–1.7), uninsurance (OR 1.2; 1.0–1.4), work absenteeism (OR 1.3; 1.0–1.8), unemployment (OR 1.6; 1.1–2.3), alcohol abuse or dependence (OR 1.6; 1.1–2.2), cigarette use (OR 1.3; 1.0–1.5), illicit drug use (OR 7.9; 6.2–10.1), younger age of initiating illicit substance use (OR 3.1; 2.1–4.8 for initiating younger than 13), and any history of

intravenous drug use (OR 1.6; 1.2–2.1) were also associated with past-year non-medical use. Among those with past-year non-medical use of sedatives and tranquilizers, those with abuse or dependence were more likely to be older, unmarried (OR 2.0; 1.7–2.5), have a low education level and have been arrested (OR 1.9; 1.0–3.3) and have agoraphobic symptoms (OR 2.0; 1.1–3.7) on multivariable analysis.
CONCLUSIONS: Along with medical use of sedatives and tranquilizers, non-medical use of these medications is common. Furthermore, nearly 10% of those with non-medical use meet criteria for abuse or dependence. The clinical characteristics associated with non-medical use of sedatives and tranquilizers (panic symptoms) and abuse or dependence (agoraphobia) should alert primary care physicians to screen for these problems and consider alternate treatment or referral.

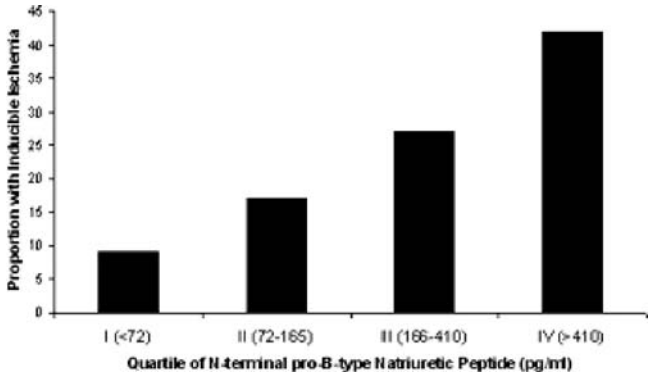
NOSOCOMIAL INFECTIONS IN PATIENTS AFTER UNDERGOING BARIATRIC SURGERY AT OUR INSTITUTION. R. Sahni[1]; P. Sharma[2]; N. Rohatgi[1]. [1]St Vincent Charity Hospital (Case Western reserve University), Cleveland, OH; [2]Cleveland Clinic Foundation, Cleveland, OH. *(Tracking ID # 173879)*

BACKGROUND: Post-operative bariatric surgery (BS) infection rates (IR) of 1–16.5% have been reported with a mortality of up to 21.7%. This study reports the 30-day post-operative IR and mortality at our institution. It also examines epidemiologic risk factors for post operative bariatric surgery infections.
METHODS: Retrospective review of nosocomial infections within 30-day post-BS over 6 years was done (one month follow-up rates of at least 95.4%). Surgical site infection was defined per National Nosocomial Infections Surveillance System (NNIS) criteria. Data was collected on all patients with culture positive infections. A case-control study with 70 cases and 280 randomly selected controls was conducted to assess the association between post-BS infections, and age, gender, race/ethnicity, diabetes mellitus (DM), hypertension (HTN), and smoking.
RESULTS: 4704 BS were performed, of which 74.6% were open gastric bypass (GB) and 25.4% were laparoscopic (LB). 70 (1.5%) cases with infection were reported - 30 (42.9%) superficial abdominal, 12 (17.1%) deep abdominal, and 28 (40.1%) intra-abdominal. Our cases had a mean age of 49.6±8.9 years, 64.3% females, 84.3% Caucasians, mean BMI was 52.6±7.9, 30% were diabetics, 60% hypertensive, and 15.8% smokers. 88.6% cases had NNIS risk score 1 and 11.4% had a risk score 2. Among uninfected, 58.9% had NNIS risk score 1 and 16.6% had risk score 2 ($P = 0.03$). Only 2 cases underwent LB. All patients received local and systemic antibiotics prior to BS. Most commonly cultured organisms were Staphylococcus aureus (52.9%), Streptococcus (21.4%), Corynebacterium (14.3%), Enterococcus (11.4%), and Proteus mirabilis (11.4%). 41 (58.6%) cases had incision and drainage, 25 (35.7%) exploratory laparotomy and 2 (2.9%) acute respiratory distress syndrome. Infection-related mortality was 2.9% ($N = 2$), overall mortality being 0.04%. Mean length of hospital stay for cases was 6.71 days versus 3.09 days for uninfected patients. There was significant association between length of stay with age ($P = 0.04$) and HTN ($P = 0.01$) in linear regression model. In a multiple logistic regression model, elderly [adjusted OR = 1.08 (95% CI = 1.04–1.11, $P < 0.0001$)] and males [adjusted OR = 0.45 (95% CI = 0.25–0.80, $P = 0.006$)] were significantly more likely to develop post-BS infections.
CONCLUSIONS: Hospitalists play a key role in the peri-operative management of BS, hence knowledge of factors involved in post-operative infections is imperative. 30-day IR (1.5%) and infection-related mortality (2.9%) after BS were low at our institution possibly due to low NNIS risk scores (58.9% score 1), compliance with pre-operative local and systemic antibiotics, no-shave policy, and surgical expertise. In our case-control analysis, only age and gender had a statistically significant association with post-BS infections, while history of DM, HTN, and smoking did not.

N-TERMINAL PRO-B-TYPE NATRIURETIC PEPTIDE AND INDUCIBLE ISCHEMIA IN PATIENTS WITH CORONARY HEART DISEASE FROM THE HEART AND SOUL STUDY. H.S. Singh[1]; K. Bibbins-Domingo[1]; A. Sadia[2]; M.A. Whooley[2]. [1]University of California, San Francisco, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA. *(Tracking ID # 172460)*

BACKGROUND: N-terminal pro-B-type natriuretic peptide (NT-proBNP) is a novel biomarker that predicts adverse cardiovascular outcomes, independent of traditional risk factors and standard echocardiographic measurements. The cardiac abnormalities that lead to elevations of NT-proBNP are not fully understood. We sought to determine whether NT-proBNP is associated with inducible ischemia in patients with stable coronary heart disease (CHD).
METHODS: We performed a cross-sectional study of 901 outpatients with stable CHD enrolled in the Heart and Soul Study. Plasma NT-proBNP levels were measured from fasting serum drawn prior to exercise treadmill testing and stress echocardiography. We used logistic regression to examine the association of NT-proBNP quartiles with inducible ischemia, defined as the presence of one or more echocardiographic wall motion abnormalities present at peak exercise but not at rest.
RESULTS: Of the 901 study participants, 216 (24%) had inducible ischemia. The proportion with inducible ischemia ranged from 42% (95/225) in the highest quartile of NT-proBNP levels (>410 pg/ml) to 9% (21/226) in the lowest quartile of NT-proBNP levels (0 to 72 pg/ml) (see Figure). Participants in the highest quartile had a 7-fold greater odds of inducible ischemia than those in the lowest quartile (odds ratio 7.1, 95% CI, 4.2–12; $p < .0001$). This association remained strong after adjustment for traditional cardiovascular risk factors, medical comorbidities, medication use, left ventricular ejection fraction, and diastolic dysfunction (adjusted OR 3.9, 95% CI, 2.0–7.5; $p < .0001$). The association of NT-proBNP with ischemia did not vary by age, sex, history of myocardial infarction, diabetes, or revascularization (all p values for interaction >0.20). However, NT-proBNP was more strongly associated with ischemia in patients with normal systolic and diastolic function (OR 2.9, 95% CI, 1.9–4.4; $p < .0001$), than in those with systolic (OR 1.1, $p = .91$) or diastolic dysfunction (OR 1.4, $p = .46$) (p value for interaction $< .05$).
CONCLUSIONS: Resting NT-proBNP levels are independently associated with inducible ischemia in outpatients with stable CHD, suggesting that cardiac neurohormones are activated in patients who develop stress-induced ischemia, especially in the absence of left ventricular dysfunction. These results contribute to our understanding of the pathophysiology of myocardial ischemia and have implications for diagnostic algorithms in patients with CHD.

Figure 1. Proportion of participants with inducible ischerria by quartile of N T-proB NP (p value < 0.001)



OF STEAKS AND STATINS: DOES STATIN INITIATION LEAD TO DIETARY INDISCRETION? D.M. Mann[1]; J. Allegrante[2]; E.A. Halm[1]; S. Natarajan[3]; M. Charlson[4]. [1]Mount Sinai School of Medicine, New York, NY; [2]Columbia University, New York, NY; [3]VA New York Harbor Healthcare System, New York, NY; [4]Cornell University, New York, NY. *(Tracking ID # 173012)*

BACKGROUND: Dietary modification has traditionally been the mainstay of lipid lowering in primary prevention patients with moderately elevated cholesterol. Increasingly aggressive national cholesterol guidelines and pharmaceutical marketing has lead to the increasing use of drug therapy with statins in these lower risk primary prevention patients. The effect of statin initiation on concurrent dietary modification is unknown. This longitudinal cohort study was designed to examine the impact of statin initiation on heart healthy dietary nutrient consumption.
METHODS: A cohort of 71 patients newly prescribed a statin for primary prevention in a VA general medicine clinic were interviewed at baseline, 3 months and 6 months regarding diet and related medication beliefs along with self-reported statin adherence. Diet beliefs were measured using a new survey tool adapted from Bennet's Beliefs about Dietary Compliance Scale. Patient readiness for following a low-fat diet was measured according to the Stage of Change model. Dietary nutrient intake was assessed using multiple self-reported 24 hour recalls according to the validated USDA multiple pass methodology. The primary outcomes were changes in intake of dietary fat, saturated fat, calories, fiber, fruit and vegetables analyzed using paired t-tests stratified by statin adherence.
RESULTS: The cohort had a mean age of 61 years and was diverse (35% African American, 23% Hispanic). At baseline, 76% of new statin initiators were motivated to reduce dietary fat, 83% thought that diet control was effective and 70% believed that dietary changes could cure hyperlipidemia. Most patients believed that high-fat food was unhealthy (98%) and that a low-fat diet would keep their heart healthy (94%). Half (51%) reported difficulty going to restaurants when on a low-fat diet, and 41% felt that low-fat food tasted bad. In the 6 months after statin initiation, the belief in the efficacy of diet ($p = .05$) and in the healthfulness of their current diet increased ($p = .002$). When analyzed according to the Stages of Change paradigm, there was an increase in the number of patients in the Action or Maintenance stages for following a low-fat diet after 6 months on a statin ($p = .002$) At month six, there was no overall significant change in dietary fat, calories, fiber or fruit and vegetable intake. However, among patients poorly adherent to their statin there was a decline in total calorie intake ($p = .04$) and an increase in fiber intake ($p = .03$). Only 13% of patients reported believing that taking their statin would allow them to consume more fat in their diet.
CONCLUSIONS: Contrary to widespread concerns, statin initiation did not lead to increased dietary fat intake and was associated with some improvement in dietary behavior among patients poorly adherent to their statin. Most patients had favorable impressions towards dietary modification with increasing motivation for dietary change and little belief that their statin was a license to consume more dietary fat. These findings provide reassurance to practitioners concerned about patients consuming unhealthy diets after starting them on a statin.

PANIC DISORDER IN THE VETERAN POPULATION. K.M. Stoner[1]; J. Whittle[1]; N. Lu[1]; M. Schapira[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173395)*

BACKGROUND: Panic disorder affects 1.1–3.7% of the general population and is associated with significant morbidity. Panic disorder has not been well described in the veteran population among whom post traumatic stress has been the anxiety disorder of research focus. Given the morbidity of the condition and the availability of effective treatments, we set out to investigate panic disorder in this novel patient population. Our objective is to describe the demographic characteristics, the prevalence of depression and problematic alcohol consumption (PAC), and the mortality of veterans with panic disorder.
METHODS: We performed a secondary data analysis of the veterans affairs (VA) Medical SAS datasets outpatient file using a retrospective cohort design. Using ICD-9 codes for panic disorder, a study group of subjects aged 18–74, with 2 or more primary care visits in fiscal year 2000 was generated and compared to a control group of veteran patients without panic disorder fulfilling the same eligibility requirements. Six control subjects were generated for every one case in order to provide an adequate sample for women. The case and control groups were also evaluated for the prevalence of ICD-9 codes for depression and alcohol related conditions using codes from the Veteran Aging Cohort Study. The data was linked using scrambled social security numbers to the VA vital status mini file to determine mortality at 5 years. Chi-squared tests were used to compare age, gender, depression and PAC among cases and controls. Logistic models were used to evaluate the effect of panic disorder on 5-year mortality controlling for age, gender, dichotomized Charlson score, PAC and depression.
RESULTS: We identified 13,630 patients with panic disorder and 77,334 controls. Panic disorder patients were more likely to be female (13% vs. 4.3%, $p < 0.0001$). Panic disorder patients were also younger compared to controls: 22% vs. 8.9% were <45 years old, 63.5% vs. 48.9% were 45–64 years old, and 14.4% vs. 42.1% were 65–74 years old ($p < 0.0001$ for all age comparisons). The prevalence of PAC and depression were greater in those with panic disorder than controls 18.2% vs. 7%, $p < 0.0001$ for PAC; and 66% vs. 16.8%, $p < 0.0001$ for depression. The overall 5-year mortality rate was 12.6% and was lower for panic disorder cases compared to controls (8.9% vs.13.2%). When multivariable logistic regression analysis was used to control for age, gender, dichotomized Charlson score, depression and PAC, there was no significant difference in mortality at the $p < 0.01$ level between cases and controls. The odds ratio for mortality among controls compared to cases with panic disorder was 1.095 (95%CL = 1.020 to 1.176, $p = 0.0124$).
CONCLUSIONS: Panic disorder is more common among younger female veterans. Panic disorder is strongly associated with depression and problematic alcohol consumption. Several studies have reported increased mortality among panic disorder patients; however, in our study the mortality of veterans with panic disorder was not significantly different than controls at the $p < 0.01$ level. Limitations of our study are the inclusion of only diagnosed panic disorder patients and inability to adjust mortality for race due to a high percentage of unknowns for this variable. Future studies to investigate how health care utilization and treatment with appropriate medications may influence the mortality of panic disorder patients should be conducted.

PERCEIVED AND ACTUAL RISK OF STROKE AMONG VETERANS WITH HYPERTENSION. B.J. Powers[1]; J.M. Grubber[1]; M. Olsen[1]; E.Z. Oddone[1]; H.B. Bosworth[1]. [1]Durham VA Medical Center and Duke Division of General Internal Medicine, Durham, NC. *(Tracking ID # 173567)*

BACKGROUND: Stroke is the third leading cause of death and a major cause of long term disability. Accurate patient perception of stroke risk is required in motivating patients to adopt behaviors that reduce their risk. The purposes of this study are: 1.) Determine the correlation between perceived and actual stroke risk and 2.) Identify the patient characteristics associated with poor recognition of high stroke risk.
METHODS: Data are from the baseline assessment of patients enrolled in the Veterans Study to Improve the Control of Hypertension (V-STITCH) randomized controlled trial. All patients had hypertension treated with medication and no history of stroke at the time of interview. Perceived risk was assessed by asking each patient, "How would you rate your likelihood of having a stroke as a result of high blood pressure? Rate on a scale from 1 to 10 where 1 = not going to have a stroke as a result of having high blood pressure and 10 = definitely going to have a stroke as a result of high blood pressure". Actual ten-year stroke risk was calculated using the Framingham stroke risk score which incorporates the following eight stroke risk factors: gender, age, systolic blood pressure, smoking, diabetes, cardiovascular disease, atrial fibrillation, and left ventricular hypertrophy. We calculated the Spearman's rank-order correlation coefficient for the association between perceived and actual risk and tested to see if this correlation was significantly different from zero. Patients who underestimated their stroke risk were defined as having a perceived risk score of $<=$ 4 out of 10 and a Framingham ten-year stroke probability of $>20\%$. Differences in patient characteristics between those who underestimated their stroke risk and all other patients were examined using t-tests for continuous and chi-square tests for categorical variables. Blood pressure control was defined as blood pressure $<130/80$ for patients with diabetes and $<140/90$ for all others.
RESULTS: There were 296 individuals included in the analyses. All of the patients were male; 59% were white, 38% were black, and 3% were other/unknown races. The mean age of the sample was 63.9yrs (SD $+/-10.9$). Forty-six percent of patients had their blood pressure under control. The median ten-year Framingham stroke risk was 16% (IQR = 10% to 26%) and the median perceived risk score was 5 (IQR = 2 to 6). There was no evidence of a correlation between patients' perceived risk of stroke and their calculated Framingham ten-year stroke probability ($= -0.08$ $p = 0.15$). Sixty-nine patients (23%) underestimated their stroke risk according to our classification. Patients who underestimated their risk were more likely to be older (mean age difference: 8.0 years, $p < 0.0001$), however there was no difference in their racial characteristics. Patients who underestimated their risk of having a stroke in the next ten years also had a significantly higher odds of poor blood pressure control compared to other patients in our sample (OR = 2.1; 95% CI = 1.2–3.7).
CONCLUSIONS: In patients at high risk for stoke, perceived risk is not correlated with actual risk. This is the first study to compare patient perception with an objective estimate of stroke risk. Underestimation of stroke risk was associated with older age and poor blood pressure control. Understanding factors related to inaccurate perception of stroke risk may improve the effectiveness interventions that motivate patients to initiate and maintain healthy behaviors.

PERSONALIZED MEDICINE AND MODERATORS OF TREATMENT EFFECTS: IS THE LITERATURE UP TO THE CHALLENGE? R.L. Kravitz[1]; N. Duan[2]; N. Bloser[1]; D. Liao[2]; E. Yakes[1]; K. Nikkhou[2]. [1]University of California, Davis, Sacramento, CA; [2]University of California, Los Angeles, Los Angeles, CA. *(Tracking ID # 172558)*

BACKGROUND: Randomized controlled trials (RCTs) generate average treatment effects, but patients want to know which treatments will work for them. Individualizing care for the complex patient requires knowledge of treatment impact in similar individuals or subgroups, which in turn depends on identifying moderators of treatment effects (MTEs). In an effort to avoid the appearance of "data dredging," clinical investigators may be missing opportunities to explore MTEs, thus slowing accrual of evidence for treating "patients like me."
METHODS: To determine current practice in evaluating MTEs and to elucidate trends, we examined a probability sample of 227 RCTs published in 5 journals (Ann Intern Med, BMJ, JAMA, Lancet, and NEJM) during odd numbered months of 1994, 1999, and 2004. Articles were independently reviewed and coded by 2 investigators with adjudication by a third. Studies were classified as having: a) MTE analysis utilizing a formal test for heterogeneity or interaction; b) subgroup analysis only, involving no formal test for heterogeneity or interaction, or c) no subgroup or MTE analysis. Chi-square tests and multiple logistic regression analysis were used to identify study characteristics predictive of MTE reporting.
RESULTS: Of the 227 RCTs, 101 (44%) performed no subgroup or MTE analysis, 62 (27%) examined subgroups but without MTE analysis, and 64 (28%) performed MTE analysis. MTE analysis gained currency with time (18%, 29%, and 34% of studies in 1994, 1999, and 2004, respectively). Among the 64 studies reporting MTE analysis, major covariates examined included age (30%), sex (28%), study site or center (17%), and race/ethnicity (8%). Using multiple logistic regression to examine study year, journal, clinical condition, and sample size, only sample size was a significant predictor of whether MTE analysis was performed; comparing the top quintile of studies (median n = 1649) to the bottom quintile (median n = 36), the adjusted odds ratio was 4.9 (95% CI 1.6–15.1, $p = .0045$). However, MTE analysis was performed less than half the time (49%) even in the top quintile.
CONCLUSIONS: Missed opportunities for MTE analysis abound. Accepting Kraemer et al.'s argument (JAMA, 2006) that exploratory moderator analysis is critical for designing appropriate future confirmatory studies, standards are needed to assure that exploratory moderator analysis and reporting become rigorous and routine. Such standards are essential for developing practice guidelines that are appropriate to the needs of the complex patient. In the face of broad NIH mandates for inclusion of subjects by race/ethnicity, the low proportion of studies testing race/ethnicity as a treatment effect moderator is both puzzling and disappointing.

PRESS RELEASES BY ACADEMIC MEDICAL CENTERS: NOT SO ACADEMIC? R.J. Larson[1]; A.T. Kennedy[2]; S. Woloshin[1]; L. Schwartz[1]. [1]VA Outcomes Group, White River Junction, VT; [2]Dartmouth Medical School, Hanover, NH. *(Tracking ID # 173753)*

BACKGROUND: Academic medical centers (AMCs) set the standard for medical care, research and education in American medicine. To see whether these high standards are reflected in how the centers promote their research to the media, we examined their process for issuing press releases and characterized their content.
METHODS: We identified the top 10 and bottom 10 AMCs on the US News &World Report's research ranking and conducted telephone interviews with the person in charge of media relations at each institution. We searched EurekaAlert (a repository for press releases) for all unique "health and medical" research press releases issued by the 20 AMCs and their academic affiliates during the year 2005 (N = 999). Using an explicit coding scheme, two researchers independently analyzed the content of 10 randomly selected press releases from each AMC (N = 200).
RESULTS: Top tier AMCs employed more writers than bottom tier AMCs (average of 6.6 vs. 3.7), issued more press releases (751 vs. 248 over 1 year) and were less likely to promote unpublished research from scientific meeting presentations (9% vs. 21%). Most AMCs (8 top tier, 9 bottom tier) do not train writers in research methods or how to present results (expecting writers to come prepared with these skills and hone them on the job). All 20 AMCs reported that investigators routinely request press releases and are regularly involved in editing and approving the releases. Only 2 (1 top tier, 1 bottom tier) involved independent reviewers in the process. All 20 AMCs reported that

media coverage was an important measure of a press release's success. Clinical and bench research were nearly equally represented in the randomly selected sample of releases. Among the 109 press releases covering clinical research, important facts and caveats were often missing. For example, study size was often not provided (25% of top tier vs. 36% of bottom tier); the preliminary nature of unpublished research was not acknowledged (60% vs. 90%), and when surrogate outcomes were studied, readers were not cautioned that the findings might not translate into clinically meaningful results (100% vs. 100%). Nearly all releases included investigator quotes (95% of top tier vs. 96% bottom tier), many of which overstated the findings of the research (59% vs. 33%, respectively).
CONCLUSIONS: Academic medical centers put substantial effort into promoting their research to the news media-but less effort into training their employees. Press releases are often missing important study facts and limitations, and often contain investigator quotes that overstate findings. Both academic centers - and their investigators - could do more to responsibly translate research into news.

PREVALENCE AND SEVERITY OF RESTLESS LEGS SYNDROME IN PATIENTS IDENTIFIED WITH DEPRESSION OR SLEEP DISORDERS. L. Gelb[1]; T.G. Curtice[2]; H. Shah[2]; C.W. Atwood[3]. [1]HealthCore, Inc., Wilmington, DE; [2]Boehringer Ingelheim Pharmaceuticals, Ridgefield, CT; [3]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173482)*

BACKGROUND: Restless Legs Syndrome (RLS) is underdiagnosed. One of the main reasons for this is that many RLS patients present with complaints other than leg symptoms. This study sought to identify the prevalence and severity of RLS in patients with insurance claims reflecting depression or sleep disorders.
METHODS: Insurance claims from a national private health network were used to identify adult patients diagnosed with depression or a sleep disorder, as well as those filling prescriptions for antidepressants and/or sleep aids from 10/04–9/05. Presence or absence of an RLS diagnosis was not used to select patients. A retrospective analysis of this cohort (N = 94,206) was conducted. A randomly-selected sub-sample (N = 2,952) was screened by phone for RLS. Those who screened positive were invited to participate in the full interview, which included the IRLS scale for severity. Patients with claims or self-reports reflecting ESRD, iron deficiency, cognitive impairment or current pregnancy were not interviewed.
RESULTS: 424/2,952 (14.4%) of patients screened by telephone met the International RLS Study Group (IRLSSG) criteria for RLS and qualified for the full interview. Among the interviewed RLS screen positives (N = 406), mean and median RLS severity on the IRLS scale was 20 out of a possible 40 points, with 3% categorized as mild, 50% moderate, 41% severe and 5% very severe. The insurance claims of those screening positive for RLS were more likely to reflect sleep disorders than those who screened negative (24.0% vs. 19.2%), but the percentage reflecting a diagnosis of depression was similar (32.5 vs. 32.3%). Of patients self-reporting an RLS diagnosis, only 22.3% had an ICD-9 code for RLS. 47% of RLS positives reported using pharmaceuticals for depression and 23% reported using pharmaceuticals for RLS. Patients reportedly using prescription medication for leg symptoms most often identified analgesics (27%), non-benzodiazepine sleep aids (20%) and SNRIs (18%) as their most recent pharmacologic approach to leg symptoms. 6% of RLS positives filled a dopaminergic agent prescription over the study period.
CONCLUSIONS: This study provides further evidence that RLS is underdiagnosed within the population of patients whose claims indicate depression and/or sleep disorders, and also suggests that significant RLS severity exists within this group. More focus on screening and diagnosis in such patients may provide sufferers with earlier and more appropriate treatment.

PREVALENCE OF REFRACTORY HYPERTENSION AMONG PRIMARY CARE PATIENTS WITH DIABETES. G.L. Jackson[1]; D. Edelman[1]; M. Weinberger[1]. [1]Durham Veterans Affairs Medical Center, Durham, NC. *(Tracking ID # 173611)*

BACKGROUND: While the issue of hypertension refractory to intensive pharmaceutical treatment is commonly recognized, little data are available on its prevalence outside the setting of clinical trials. We estimate prevalence of refractory hypertension among Veterans Affairs (VA) primary care patients with diabetes.
METHODS: We established a nationally representative cohort of 224,221 VA healthcare users with diabetes who: 1) filled > = 1 prescription for a diabetes related medication and 2) had > = 2 outpatient and/or > = 1 inpatient encounter with a diabetes diagnosis in fiscal year 1999. In this analysis, we included patients who were: 1) > = 18 years old; 2) alive in 2001; 3) had VA primary care encounters in both 2000 and 2001; 4) were on > = 3 classes of anti-hypertensive medication in 2000 and 2001; and 5) had BP measures recorded in both 2000 and 2001. Information is available on the mean of the last 3 blood pressure (BP) measurements and classes of antihypertensive medications filled at a VA during both 2000 and 2001. Using 2007 American Diabetes Association BP control practice guidelines, refractory hypertension for diabetes is defined as: BP > = 130/80 mmHg despite being on > = 3 separate classes of antihypertensive medications over the course of 2 consecutive years. Results are also presented using the 1997 VA diabetes practice guideline definition of BP control (> = 140/90 mm Hg). Multivariate logistic regression was used to identify patient characteristics associated with refractory hypertension, including gender, age, body mass index (BMI), race/ethnicity, VA means test (proxy for socioeconomic status), and number of primary care encounters in 2000. Results were risk-adjusted using the Johns Hopkins ACG Case-Mix System. We present odds ratios (OR) and 95% confidence intervals (CI).
RESULTS: The overall prevalence of refractory hypertension among diabetes patients with out of control hypertension in 2000 was 17.8% (> = 140/90 mm Hg) to 19.2% (BP > = 130/80 mm Hg). 28,194 patients meeting inclusion criteria were on > = 3 classes of antihypertensive medication in 2000 and 2001. The prevalence of refractory hypertension among these patients was 68.5% when using the 2007 ADA threshold (BP > = 130/80 mm Hg) despite being on > = 3 classes of antihypertensive medication in both 2000 and 2001. Even when applying the less stringent 1997 VA diabetes practice guideline (> = 140/90 mm Hg), the prevalence remained high (43.6%). Greater BMI (OR for BMI > 40 kg/m2 vs. < 25 kg/m2 = 1.4; 95% CI = 1.2–1.5), African American race (OR vs. white = 1.9; 95% CI = 1.7–2.0), and unknown race (OR vs. white = 1.3; 95% CI = 1.2–1.4) were associated with higher odds of refractory hypertension among patients on > = 3 classes of antihypertensive medication during 2000 and 2001.
CONCLUSIONS: Regardless of the definition, refractory hypertension among patients with diabetes is highly prevalent. Being African American and having a greater BMI are associated with higher odds of remaining out of control despite being prescribed at least three classes of antihypertensive medication. Treatment of hypertension for patients with diabetes already on three or more classes of medication does not lead to adequate BP control for the majority of these patients, suggesting the need for a more intensive treatment approach.

PRIMARY CARE PHYSICIANS TREAT SOMATIZATION. R.C. Smith[1]; J. Gardiner[1]; Z. Luo[1]. [1]Michigan State University, East Lansing, MI. *(Tracking ID # 173313)*

BACKGROUND: We recently demonstrated in a RCT that nurse practitioners could successfully manage chronic, high-utilizing somatizing patients. In this pilot study at a new HMO and using primary care physicians (PCP) to treat, we hypothesized improved mental function and decreased depression and pain from an intervention by PCPs with severe somatizing patients.
METHODS: We conducted a RCT at the Detroit Northwest site of Henry Ford Health Systems. Our primary endpoint was the Mental Component Summary (MCS) of the SF-36. Four experienced PCPs were trained for 24 hours over 6 weeks to provide cognitive-behavioral treatment (CBT) and pharmacological treatment and to establish the provider-patient relationship (PPR) and communication. Using both our administrative database (ABD) screener and our chart rating procedure, we identified subjects as primary somatization. Study PCPs had 5 scheduled visits in the first 3 months and visits every 1–3 months thereafter. At baseline, 3–6 months, and 6–12 months, we evaluated the MCS of the SF-36; Center for Epidemiological Studies Inventory (CES-D), the Body Pain (BP) subscale of the SF-36 and the pain subscale of the PHQ-15 (PHQ-P); the Spielberger State Anxiety scale (SSAS); the Physical Component Summary (PCS) of the SF-36, physical symptoms (PHQ-15), and satisfaction with the PPR (SQ-1). We corrected for baseline variation by using a net difference-of-differences method for analysis. We also dichotomized the MCS data and defined improvement as a change of 4 or more on the MCS, a clinically significant change.
RESULTS: With a 52% prevalence of somatization in the rated population, 31 subjects were randomized to Treatment or Usual Care status. There was a tendency towards greater baseline severity in treatment patients for the psychological measures: MCS (P = .05), CESD (P = .166), SSAS (P = .101) which raises concerns about equal allocation. Measures of physical status (PCS, PHQ-15, PHQ-P, BP) and patient age and sex, however, were balanced between treatment and control groups (mean age 51 years in the treatment and 50 years in the control group, p = 0.668; 12 females in the treatment and 14 females in the control group, p = 0.333 Fisher's exact test). None of the changes in the table below is statistically significant, as expected with a small number of subjects. Improvement in Treatment for CESD, SSAS, PHQ-15, PHQ-P is indicated in the table by a negative score. Improvement in Treatment on the SF-36-derived measures (MCS, PCS, BP), and SQ-1 (satisfaction) is indicated by a positive score. *P = 0.20 or less. Changes are greater at 6–12 months for the psychological measures and for satisfaction, and the measures relating to physical function and symptoms were minimally affected. Dichotomizing the MCS, at 3–6 months, 7/11 (63.6%) Treatment patients had improved compared to 3/9 (33.3%) Controls; at 6–12 months, 5/9 (55.6%) Treatment subjects and 3/9 (33.3%) Controls had improved.
CONCLUSIONS: Although preliminary, we have demonstrated clinically significant changes in the direction predicted for improved mental function and depression. We also demonstrated decreased anxiety and improved satisfaction with the PPR. The latter is a measure of an improved relationship, a central dimension of our treatment.

Net Difference of Difference Scores from Baseline to Follow-up

	CES-D	SSAS	MCS	PCS	PHQ-15	PHQ-P	BP	SQ-1
3–6 mo (11T, 9 C)	−5.7	−8.2*	4.5	−6.4	0.2	−0.4	−1.2	4.0
6–12 mo (9T, 9 C)	−11.7*	−9.4*	14.1*	−3.4	−1.8*	0.0	5.3	10.4*

QUALITY OF PATIENT-PROVIDER COMMUNICATION ASSOCIATED WITH ADHERENCE IN A MULTI-CENTER COHORT OF HIV-INFECTED PATIENTS. P.T. Korthuis[1]; K. Gebo[2]; J. Josephs[2]; S. Saha[1]; J. Hellinger[3]; M.C. Beach[2]. [1]Oregon Health & Science University, Portland, OR; [2]Johns Hopkins University, Baltimore, MD; [3]Community Medical Alliance, Boston, MA. *(Tracking ID # 173382)*

BACKGROUND: HIV-infected patients reporting their provider knows them "as a person" are more likely to adhere to antiretroviral therapy. The objective of this study

was to assess the relationship between communication and antiretroviral adherence. We hypothesized that patients reporting specific high quality provider communication behaviors would have better adherence.
METHODS: In 2003, we interviewed 951 randomly selected adults at 14 HIV primary care community and academic HIV Research Network sites. Patients taking antiretrovirals were asked how often their HIV provider a) listens carefully to you? ("listens"), b) explains things in a way you could understand ("explains")?, c) shows respect for what you had to say ("respects")?, and spends enough time with you ("spends enough time")? We also combined these 4 items into a scale, dichotomized as "optimal" when patients reported their provider always achieved all 4 items. Our outcome measure was > 95% self-reported antiretroviral adherence. Associations between communication items and adherence were assessed in bivariate, and multivariate logistic regression adjusting for age, race, gender, education, outpatient visits, CD4 nadir, substance abuse, and site.
RESULTS: 68% of interviewees were male, 52% Black, and 14% Hispanic. Median age was 46 (range 20–85). HIV risk factors 39% MSM, 27% heterosexual, and 14% IDU. The majority of participants reported their HIV provider always listened (87%), explained (85%), respected (88%), spent enough time with them (75%), and provided "optimal" communication (67%). Internal consistency among items was high (alpha = 0.77) with a mean scale score of 3.35(SD 1.10).
CONCLUSIONS: HIV-infected patients' perceptions that their provider spends enough time with them were associated with antiretroviral adherence whereas non time-dependent components of patient-provider communication were not. As providers face increasing productivity and performance demands, protecting the amount of time providers spend with each patient may offer a mechanism for improving critical aspects of HIV care.

Associations between communication and adherence (OR, 95% CI)

My Provider Always	Bivariate	Multivariate
Listens	.99 (.60–1.6)	.81 (.48–1.4)
Explains	1.3 (.80–2.1)	1.2 (.74–2.1)
Respects	1.2 (.75–2.1)	1.5 (.85–2.5)
Spends Enough Time	1.5 (1.0–2.2)	1.6 (1.1–2.4)
Optimal	1.4 (.99–2.0)	1.5 (1.0–2.2)

QUALITY OF REPORTING OF MULTIVARIABLE MODELS IN THE MEDICAL LITERATURE. J.M. Tetrault[1]; C.K. Wells[2]; J. Concato[3]. [1]VA Connecticut Healthcare System/Yale University, West Haven, CT; [2]Yale University, New Haven, CT; [3]VA Connecticut Healthcare System, Yale University, West Haven, CT. *(Tracking ID # 173491)*

BACKGROUND: Both "traditional" and "obscure" multivariable models are encountered frequently in the medical literature. Yet, many physicians have limited training in the proper application or interpretation of multivariable statistical methods. The objectives of this research were to: assess the frequency of multivariable methods appearing in the general medical literature; quantify reporting of methodologic criteria universal to multivariable models; and determine if assumptions specific to logistic regression or Cox proportional hazards regression were evaluated.
METHODS: We manually reviewed original research articles in five general medical journals from January 2006-June 2006. Manuscripts underwent complete review (for type of analytic method; reporting of common criteria; confirmation of model assumptions) if a multivariable model was mentioned as part of the statistical analysis. Data was extracted onto a standardized extraction form and a 10% random review is being performed for data quality assurance. Results were based on the primary analysis in each article.
RESULTS: We identified 452 original articles in Annals of Internal Medicine, BMJ, JAMA, The Lancet, and The New England Journal of Medicine; 265 (59%) reported the use of multivariable methods. The most commonly reported methods (N = 265) included logistic regression (33%), Cox proportional hazards regression (29%), mixed models analysis (7%), linear regression (7%), analysis of covariance (6%), Poisson regression (5%), generalized estimating equations (3%), and unspecified method (3%). Other multivariable methods, not commonly encountered in medical literature (e.g., accelerated failure time models, Weibull regression), were also found (7% combined). Adequate reporting of methodologic criteria included (N = 265, except where indicated) description of variable coding (83%), number of events per variable (79%, n/N = 153/193 with discrete outcome events), testing for interactions (45%), model variable selection (15%), model validation (11%), testing independent variables for collinearity (8%), and method for dealing with influential observations (5%). Overall, 13 articles (5%) did not mention any of the methdologic criteria. Lack of discussion of the rare disease assumption occurred in 85% (76/89) of articles reporting logistic regression as the primary method, and the proportional hazards assumption wasn't mentioned in 75% (57/76) of articles reporting Cox proportional hazards as the primary method.
CONCLUSIONS: Multivariable models are important analytic methods used to explain complex exposure-outcome relationships frequently encountered in medical research, but inadequate reporting of these methods may lead to inaccurate inferences. The most common multivariable methods encountered in our review were logistic regression and Cox proportional hazards regression, yet non-traditional statistical techniques were also found. Explicit mention of generally accepted methodologic criteria for multivariable methods varied widely. This review suggests some improvement in, but also a continued need for, appropriate implementation and reporting of multivariable models in medical research.

RELATIVE RISK, ABSOLUTE RISK, OR BOTH: A STUDY OF FRAMING BIAS AMONG FORMER PATIENTS. T.V. Perneger[1]; T. Agoritsas[1]; L. Schiesari[1]; G. Haller[1]. [1]University Hospitals of Geneva, Geneva,. *(Tracking ID # 172963)*

BACKGROUND: Framing clinical risk information in terms of absolute or relative risk influences users' perceptions. For example, if a new treatment reduces mortality compared with the old treatment, reporting the relative risk reduction accentuates the contrast between groups and strengthens the perception of effectiveness. Some consider the relative risk format to lead to excessive optimism, but it would be just as legitimate to conclude that presenting absolute risk causes excessive pessimism. Studies of framing bias have typically not included a "fully informed" condition where all risk formats are provided in an attempt to neutralize these biases. In this study, we sought to compare the impact of risk presentation formats, including a fully informed condition, on the interpretation of study results by former inpatients.
METHODS: Mail survey of former hospital inpatients (65% response rate) that presented mortality results of a hypothetical randomised trial of a new drug compared with the usual treatment. Risk information was shown in one of four formats: a) absolute proportions of survivors (usual treatment 94% vs new drug 96%), b) absolute proportions of deceased (6% vs 4%), c) relative risk reduction (one third), or d) all three risk presentations. To dampen enthusiasm for the new drug, it was described as causing more digestive side effects. We compared the proportion of respondents who described the new drug as "much better" than the usual treatment.
RESULTS: In total 1121 patients answered the risk scenario. The proportions of respondents who rated the new drug as much better were 14.7% for the survival proportion format, 20.8% for the mortality proportion format, 48.0% for the relative risk reduction format, and 23.5% for the fully informed format. Compared to the fully informed format, the odds ratio of a "much better" rating was 3.00 (95% confidence interval 2.07–4.35, $p < 0.001$) for relative risk reduction, 0.86 (95% CI 0.57–1.28, $p = 0.45$) for absolute mortality proportions, and 0.56 (0.36–0.84, $p < 0.001$) for absolute survival proportions. This response pattern was similar across subgroups of respondents.
CONCLUSIONS: If the fully informed format is considered as the reference, i.e. the display that leads to the best level of patient information, a relative risk reduction format causes a strong optimistic bias, the absolute survival format a pessimistic bias, and the absolute risk presentation a modest pessimistic but statistically non-significant bias. A combined presentation of risk formats to patients is advisable, but the absolute risk presentation is the next best option.

RISK OF CLOSTRIDIUM DIFFICILE ASSOCIATED DIARRHEA WITH USE OF PROTON PUMP INHIBITORS AND H2-BLOCKERS. M. Ghamloush[1]; H.H. Nguyen[1]. [1]University of California, Davis, Sacramento, CA. *(Tracking ID # 172947)*

BACKGROUND: Studies investigating Clostridium difficile Associated Diarrhea (CDAD) have identified age, length of hospital stay, exposure to chemotherapeutic agents, immunosuppression, severity of underlying illness and most importantly antibiotic use as major risk factors for acquiring CDAD. Inpatient and population-based studies have shown conflicting results with regard to the association between CDAD and anti-acids. It has been suggested that gastric acid prevents growth of the Clostridial spores and that the increase in gastric pH with use of anti-acids may promote colonization by Clostridium difficile (C diff). In this study we attempted to assess whether inpatient or outpatient use of either PPIs or H2-Blockers on the General Medicine Services at our institution increases the risk of acquiring CDAD during hospitalization.
METHODS: We conducted a retrospective case-control study comparing the rate of exposure to PPIs and/or H2-Blockers in hospitalized adult patients with CDAD (case patients) to the rate of exposure in those without CDAD (controls). We used a positive C diff toxin as the definitive criterion for diagnosing CDAD and excluded any patients diagnosed with CDAD prior to admission. We matched cases and controls by length of stay, admit date, and age. We collected data on exposure to antibiotics, PPIs and H2-Blockers in the 3 months prior to the index date, defined for controls as the date of discharge and defined for cases as the date a patient first tests positive for C diff toxin. We also collected data on prior hospitalizations, institutionalization status, immunosuppression, NSAID use, and steroid exposure.
RESULTS: We analyzed data from 200 patients including 53 cases and 147 matched-controls. Case patients were more likely than controls to have been hospitalized in the 3 months prior to the studied admission date (odds ratio [OR] 3.23, 95% confidence interval [CI] 1.69–6.20), more likely to have been living at a long-term facility or institution (OR 2.36, CI 1.11–5.04), and more likely to be immunosuppressed (OR 3.55, CI 1.29–9.76). There were no significant differences in the proportion of cases versus controls exposed to antibiotics (88.68% vs 76.87% respectively [$p = 0.0661$]), PPIs (62.26% vs 67.35% respectively [$p = 0.5041$]) or H2-Blockers (24.53% vs 29.25% respectively [$p = 0.5125$]). However, case patients with CDAD were significantly more likely to be taking PPIs prior to admission as compared to their matched controls (OR 2.48, CI 1.23–5.0). Factors associated with CDAD in the multivariate analysis included previous hospitalization (adjusted OR 3.04, CI 1.5–6.2), institutionalization (adjusted OR 2.63, CI 1.1–6.2) and immunosuppression (adjusted OR 6.7, CI 2.1–

21.4). PPI use prior to admission remained significant in the multivariate analysis as well (adjusted OR 5.2, CI 1.2–22.4).
CONCLUSIONS: Antibiotic use and PPI use are very prevalent at our institution. Our study is consistent with prior studies showing that hospitalization, institutionalization and immunosuppression are significant risk factors for CDAD. In addition, our study finds that PPI use as outpatient is associated with CDAD on both univariate and multivariate analyses. More studies are needed to further examine the impact of long-term PPI use on C diff colonization patterns and disease.

SELECTIVE SEROTONIN REUPTAKE INHIBITORS FOR PREMENSTRUAL SYNDROME AND PREMENSTRUAL DYSPHORIC DISORDER: A SYSTEMATIC REVIEW AND META-ANALYSIS. N.R. Shah[1]; J.B. Jones[2]; J. Aperi[1]; R. Shemtov[1]; A. Karne[3]; J. Borenstein[4]. [1]New York University School of Medicine, New York, NY; [2]Geisinger Health, Danville, PA; [3]Yale University, New Haven, CT; [4]Cedars-Sinai & Health Services Research, Los Angeles, CA. *(Tracking ID # 172933)*

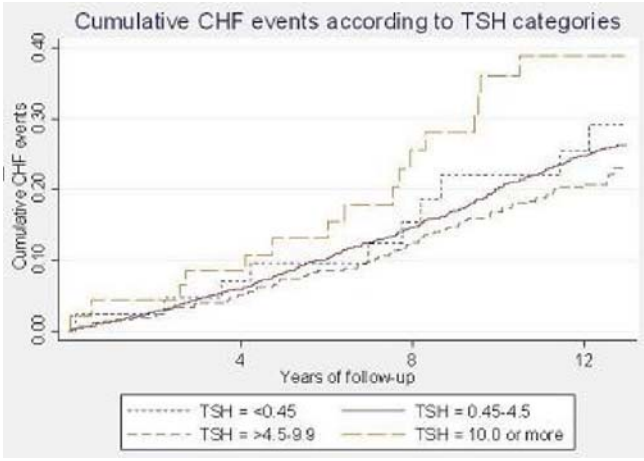
BACKGROUND: Moderate to severe premenstrual syndrome (PMS) affects up to 18% of women of reproductive age. Selective Serotonin Reuptake Inhibitors (SSRIs) were the first class of agents approved for the treatment of premenstrual dysphoric disorder (PMDD). Despite earlier systematic reviews, questions remain regarding optimal dosing strategies, comparative effectiveness of different medications, and the actual magnitude of their beneficial effect.
METHODS: We searched electronic databases, pertinent journals, and reference lists of reviews for relevant studies. All studies included in the review were double-blind, randomized, controlled trials that reported a change in a validated score of premenstrual symptomatology comparing an SSRI versus placebo, and reported follow-up for any duration longer than one menstrual cycle among premenopausal women who met clinical diagnostic criteria for PMS or PMDD. Editorials, letters, and results not presented in peer-reviewed journals were excluded. Two authors reviewed all titles, abstracts, and full text citations and conducted parallel independent data abstractions for all studies. Standardized mean differences for continuous outcomes were estimated from the data and pooled across studies using a random effects model, with meta-regression conducted for all clinically relevant or potentially significant sources of heterogeneity. Main outcome measures included Odds Ratios for intermittent vs. continuous dosing, in-tervention drug, and PMS vs. PMDD.
RESULTS: Twenty-four randomized controlled trials from an initial sample of 2,013 titles met the inclusion criteria. Meta-analysis of these 24 studies including 2,537 women resulted in a significant reduction in symptomatology (OR = 0.39). This effect size is smaller than that reported in the 2002 Cochrane report (OR 0.22). Intermittent dosing regimens were found to be less effective (OR 0.56) than continuous dosing regimens (OR 0.29). Fluoxetine, sertraline, and paroxetine were the most common SSRIs studied for PMS/PMDD. No SSRI was demonstrably better than another. The treatment effect was lower in studies that reported outcomes related to PMS than studies that reported outcomes related to PMDD (OR 0.31 and 0.43 respectively). All included studies received a Jadad score of 3 or higher. Studies with a score of "3" showed evidence of heterogeneity (OR 0.27) in the pooled analysis, while studies with a score of "5" showed no evidence of statistical heterogeneity (OR 0.51).
CONCLUSIONS: The clinical implications of this report are three-fold: 1) SSRIs (specifically, citalopram, fluoxetine, paroxetine, and sertraline) are effective for treatment of PMS/PMDD, 2) continuous dosing regimens may be more effective than intermittent dosing regimens, and 3) the observed effect size is smaller than previously reported. Future research should focus on the relative effect size observed with different SSRIs, a better understanding of duration of treatment required, the relative effects on behavioral vs. psychological vs. physical symptoms, and a comprehensive look at adverse effects.

STATIN EFFECTIVENESS IN THE NATIONAL REGISTRY OF ATRIAL FIBRILLATION. B.F. Gage[1]; E. Deych[1]; J. Cooper[1]; D. Nilasena[2]; M.J. Radford[3]. [1]Washington University in St. Louis, St. Louis, MO; [2]New York University, Dallas, TX; [3]New York University, New York, NY. *(Tracking ID # 173921)*

BACKGROUND: 3-hydroxy-3-methylglutaryl-coenzyme-A reductase inhibitors (statins) decrease the incidence of ischemic stroke, myocardial infarction, and/or death in patients with hypercholesterolemia, diabetes mellitus, and acute coronary syndrome. The effect of statins in patients with atrial fibrillation is unknown.
METHODS: The study cohort was the National Registry of Atrial Fibrillation (NRAF) II dataset of 23,657 Medicare beneficiaries discharged in 1998 or 1999 from hospitals in all 50 US states. We used Medicare Part A and B records and structured chart abstraction to identify clinical data. The primary outcome was incident hospitalization for ischemic stroke based on validated ICD-9-CM codes. The secondary outcome was a composite endpoint of death or hospitalization for stroke or myocardial infarction.
RESULTS: Nine percent (N = 1517) of included patients had a statin listed on their discharge medication list. In a Cox model that controlled for other medications, age, sex, stroke risk factors, and other comorbidities, statins were not associated with a significant reduction in stroke (HR, 0.84; 95% CI 0.62–1.13) but they were associated with a significant reduction in the composite endpoint (HR, 0.74; 95% CI 0.64–0.85).
CONCLUSIONS: In this large observational study of Medicare patients with atrial fibrillation, statins were not associated with significant reduction in stroke risk but were associated with a 26% relative risk reduction in a composite endpoint of death or of hospitalization for stroke or myocardial infarction.

SUBCLINICAL THYROID DYSFUNCTION, CARDIAC FUNCTION AND THE RISK OF CONGESTIVE HEART FAILURE: THE CARDIOVASCULAR HEALTH STUDY. N. Rodondi[1]; A. Cappola[2]; J. Cornuz[1]; J.A. Robbins[3]; L.P. Fried[4]; P.W. Ladenson[4]; D.C. Bauer[5]; J. Gottdiener[6]; A. Newman[7]. [1]University of Lausanne, Lausanne, Vaud; [2]University of Pennsylvania, Philadelphia, PA; [3]University of California, Davis, Sacramento, CA; [4]Johns Hopkins University, Baltimore, MD; [5]University of California, San Francisco, San Francisco, CA; [6]University of Maryland, Baltimore, MD; [7]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 171463)*

BACKGROUND: Controversy persists as to whether screening and treatment of subclinical thyroid dysfunction is warranted, as current evidence about the risks is limited. Subclinical hypothyroidism and hyperthyroidism have been associated with cardiac dysfunction, but only in small studies. Moreover, long term data on the risk of congestive heart failure (CHF) are limited.
METHODS: To determine whether subclinical thyroid dysfunction was associated with CHF events and cardiac dysfunction, we studied 3065 adults ≥65 years initially free of CHF. We compared adjudicated incident CHF events over 12-year follow-up and changes in cardiac function over 6 years between participants with subclinical hypothyroidism (subdivided according to TSH levels: 4.5–9.9, ≥10 mU/L), subclinical hyperthyroidism (TSH < 0.45) and those with euthyroidism.
RESULTS: Subclinical hypothyroidism was present in 16% participants, and subclinical hyperthyroidism in 1.4% participants. Over 12 years, 660 participants (22%) developed CHF events. Participants with a TSH ≥10.0 mU/L had a greater incidence of CHF events compared to euthyroid participants (37.9 vs. 22.6/1,000 person-years, p = 0.03), but not those with subclinical hyperthyroidism or those with TSH between 4.5 and 9.9 (Figure). In multivariate analysis, the risk of CHF was moderately increased among those with a TSH ≥10.0 (hazard ratio: 1.67, 95%CI: 1.01–2.74). Compared to euthyroid participants, those with a TSH ≥10.0 hada higher peak E velocity (0.80 vs 0.72 m/sec, p = 0.002), a sign of decreased left ventricular (LV) compliance, that was associated with incident CHF in the overall cohort (p < 0.001). Over time, those with a TSH ≥10.0 had a larger increase in LV mass (+21 vs. +4 g, p = 0.04).
CONCLUSIONS: Subclinical hypothyroidism is associated with a moderately elevated risk of CHF among older adults with a TSH ≥10.0 mU/L, with demonstrated differences in cardiac function, but not among those with TSH < 10. Clinical trials should assess whether the risk of CHF might be ameliorated by thyroid hormone therapy.



FigTSHcatCHF

SUBSTANCE ABUSE SCREENING STRATEGIES AND PREVALENCE IN AN URBAN SAFETY NET PRIMARY CARE POPULATION. J. Lee[1]; B. Delbanco[2]; M.N. Gourevitch[1]. [1]New York University, New York, NY; [2]Drexel University, Philadelphia, PA. *(Tracking ID # 173665)*

BACKGROUND: Optimal strategies for integrating substance abuse screening into general primary care practice depend on local substance abuse prevalence and screening algorithm effectiveness. We compared two brief screening strategies and a problem list-based case finding to the lengthier Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) in an urban safety net adult primary care population.
METHODS: Consecutive adult primary care patients were interviewed in English or Spanish. Screening [ASSIST, two-item conjoint screen (TICS), NIAAA daily limit question, and electronic medical record (EMR) audit], current treatment, and demographic data were recorded. ASSIST scores were categorized as low, moderate and high risk.
RESULTS: 236 adults completed questionnaires: mean age 53 yrs (18–87), 63% female, 78% foreign- or Puerto Rico-born, 72% Hispanic. Moderate or high risk (risky) substance use prevalence was: tobacco, 15.3%; alcohol, 8.5%; cannabis

5.1%; cocaine, 2.5%; opioids, 2.5%; and sedative-hypnotics, 2.1%. Among risky users, treatment rates were: smoking, 2.9%; alcohol, 10%; cannabis, 17%; cocaine, 17%; opioids, 50%, and sedatives, 20%. Compared to ASSIST scores, a TICS positive for one or both items was 45% (27–64%) sensitive and 99% specific. The single-item NIAAA screening question was 80% (56–94%) sensitive and 87% (82–91%) specific for risky alcohol use. EMR audit was 33% sensitive for risky alcohol or drug use.
CONCLUSIONS: While tobacco and alcohol use in this urban primary care sample approximate national rates, rates of cocaine, opioid, and sedative-hypnotic use disorders appear higher. Compared to the ASSIST, the 2-item TICS and EMR were insensitive, while the NIAAA 1-item question performed favorably. Few eligible persons reported receiving treatment. Effective streamlined strategies for substance abuse screening and treatment in primary care are needed.

THE ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND SUBCLINICAL ATHEROSCLEROSIS: THE MULTI- ETHNIC STUDY OF ATHEROSCLEROSIS (MESA). A.G. Bertoni[1]; H. Chung[2]; M. Whitt-Glover[1]; K.Y. Le[1]; R.G. Barr[3]; M. Mahesh[4]; N.S. Jenny[5]; G.L. Burke[1]; D.R. Jacobs[6]. [1]Wake Forest University, Winston-Salem, NC; [2]University of Washington, Seattle, WA; [3]Columbia University, New York, NY; [4]Johns Hopkins University, Baltimore, MD; [5]University of Vermont, Colchester, VT; [6]University of Minnesota, Minneapolis, MN. *(Tracking ID # 169900)*

BACKGROUND: Beneficial effects of physical activity (PA) on prevention of clinical cardiovascular disease (CVD) are well documented. However, effects of PA on subclinical atherosclerosis are less consistent.
METHODS: We assessed these associations in 6,795 participants in MESA, a multicenter cohort of adults aged 45–84 without prior clinical CVD (52.8% female; 38.5% white, 11.8% Chinese, 27.7% black, 22.0% Hispanic). Atherosclerosis measurements were ankle-brachial index (ABI), coronary artery calcium (CAC) by CT scan, and internal and common carotid intima-media thickness (IC or CC IMT) by ultrasound). Time spent in a typical week doing PA was assessed via questionnaire; MET-hours/week doing intentional exercise (INT EX, walking for exercise, sports and conditioning activities) were calculated. Typical walking pace was also reported (0–2, 2–3, and 3+ miles per hour). Data were categorized and multivariable linear or relative prevalence regression was used to analyze the association of PA with IMT, ABI, or presence of CAC. Models were adjusted as follows: model 1 (age, gender, race, site, education, income) and model 2 (model 1 + lipids, hypertension, diabetes, smoking and body mass index).
RESULTS: In this sample 77.0% reported some intentional exercise. In model 1, increasing INT EX was associated with a lower IC IMT ($p = 0.06$) and increased ABI ($p < 0.001$). Except for ABI, these associations were no longer significant after adjusting for model 2. Walking pace (table) was associated favorably with atherosclerosis after adjustment for model 1. These associations were attenuated, and for IMT were not significant, after further adjustment for model 2.
CONCLUSIONS: These cross-sectional data suggest INT EX and walking pace are associated with less subclinical atherosclerosis; however these associations were modified by demographic and socio-economic factors and perhaps mediated by CVD risk factors.

Walking Pace and Subclinical Atherosclerosis

Walking Pace	CC IMT (mm)	IC IMT (mm)	ABI	CAC>0
Up to 2 mph (28%)	0.903	1.159	1.09	56%
2–3 mph (50%)	0.863	1.059	1.12	49%
>3 mph (22%)	0.844	0.998	1.14	44%
Model 1 trend p-value	<0.001	<0.001	<0.001	<0.001
Model 2 trend p-value	0.22	0.07	<0.001	<0.01

THE EFFECT OF PHYSICIAN YEARS OF EXPERIENCE ON LENGTH-OF-STAY, READMISSION, AND MORTALITY ON AN INPATIENT MEDICAL TEACHING SERVICE. W. Southern[1]; E. Bellin[1]; J.H. Arnsten[1]. [1]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 173560).*

BACKGROUND: Under pressure to reduce costs associated with inpatient care, hospital administrators closely follow length-of-stay, and patient readmission. The effect of physician years of experience on these measures of care is unknown. We undertook this analysis to examine the effect of physician experience on length-of-stay, readmission rate, and mortality on an inpatient teaching service in an urban academic medical center.
METHODS: Data was extracted on all admissions over a 2-year period (7/1/02 to 6/30/04). To minimize bias, we included only patients without a private physician at the time of admission who were assigned to a physician. Patients were assigned to physicians without preference. Years of experience was defined as the number of years that the assigned physician held a New York State Medical License and was obtained from the New York State Department of Health Website Physician years of experience was grouped as 0–5, 6–10, 11–20, and >20. The association between physician-experience group and length-of-stay, readmission rate, and mortality rate was examined using Kruskal-Wallis and ANOVA tests for bivariate analyses and linear and logistic multivariate regression models.
RESULTS: Data on 6,572 admissions and 64 physicians were analyzed. Patient groups were defined by their attending physician's group, and were similar with respect to age, sex, race, insurance, diabetes, admission albumin, DRG-weight and diagnosis mix. Using 0–5 years as reference, the mean LOS was significantly longer among patients of physicians with 6–10 years (0.38 days, 95% CI: 0.09–0.68), 11–20 years (0.68 days, 95% CI: 0.30–1.07) and >20 years of experience (0.69 days, 95% CI: 0.38–1.01), after adjustment for insurance, DRG-weight, admission albumin, and number of prior admissions. Readmission rate did not differ in the four physician groups ($p = 0.72$). After adjustment for physician characteristics (hospitalist vs. not hospitalist) and patient characteristics (age, sex, race, DRG-weight, diabetes, albumin, and number of prior admissions) the >20yr. physician group had significantly higher in-hospital mortality (ORadj = 1.73; 95% CI: 1.07–2.81) and 30-day mortality (ORadj = 1.49; 95% CI: 1.05–2.13).
CONCLUSIONS: Increased years of physician experience is associated with longer length of stay and greater mortality. These findings have important implications for continuing education and recertification practices. Carefully controlled studies are needed to better understand the effect of years of experience on disease-specific practice patterns.

THE ELECTRONIC PRIMARY CARE RESEARCH NETWORK: A GRID-BASED COMPUTING INFRASTRUCTURE FOR COMMUNITY-BASED CLINICAL TRIALS IN PRIMARY CARE. I. Sim[1]; K. Peterson[2]; S.M. Speedie[2]; P.L. Fontaine[2]; J. Weissman[2]; B. Delaney[3]; T.N. Arvanitis[3]; A. Taweel[3]; L. Zhao[3]; C. Lange[2]; M. Janowiec[2]; J. Stone[2]; A. Wolff[2]. [1]University of California, San Francisco, San Francisco, CA; [2]University of Minnesota, Minneapolis, MN; [3]University of Birmingham, Birmingham,. *(Tracking ID # 173476)*

BACKGROUND: Clinical trials in primary care are ideally conducted in community clinics that reflect the population for which the trial results will be used. However, the logistics of running trials in many small, geographically dispersed practices are daunting and have limited the number of community-based studies. The Electronic Primary Care Research Network (ePCRN) is developing an electronic infrastructure to facilitate the recruitment of subjects and the performance of randomized trials in any primary care practice with web access. ePCRN is part of the NIH's National Electronic Clinical Trials and Research (NECTAR) Roadmap project.
METHODS: The ePCRN consists of two main components: (1) a trialist workbench for designing and registering clinical trials, and (2) a clinical trials management system (CTMS) for conducting and managing ongoing trials. Included in the trialist workbench is an online tool for investigators to formulate their trial eligibility criteria and to run those criteria against an electronic database of patients from participating practices. The tool allows investigators to simulate patient eligibility searches across wide geographic areas to determine trial feasibility and optimize trial design. When the trial design is finalized, the trialist workbench can screen patients from participating practices for eligibility, and can notify practices of which patients to target for recruitment. Trial investigators can then use the CTMS to manage the patients according to the study protocol. CTMS components handle data gathering, administrative oversight, and statistical processing. Technical details of ePCRN include the following. The trialist workbench's eligibility criteria tool uses the National Cancer Institute's caBIG Enterprise Vocabulary Services as the source for a common, UMLS-compliant terminology. The CTMS software is based on open interchange standards to interface with multiple, heterogeneous systems. All communications are HIPAA-compliant using a highly secure Citrix computing environment and RSA tokens for access. All web services will eventually be open source and based on Internet2 (Grid) connectivity.
RESULTS: ePCRN now includes 12 participating practice-based research networks covering over 46 states and 4 Canadian provinces and totaling over 760 practices and 2100 primary care clinicians. We have established a registry containing visit, lab, and procedure data from 45,000 patients from these practices, with 37,000 of these records available in a secure gateway database in the Continuity Care Record (CCR) format. This registry can be used for simulating patient eligibility searches. The CTMS was tested successfully in supporting the execution of the MOCC trial (J Am Board Fam Med, in press) involving 100 physician-subjects from 10 geographically dispersed practice-based research networks. Physician-subjects were recruited to test various CTMS system features. Recruitment, data entry, and data download were all completed in less than 7 weeks.
CONCLUSIONS: The ePCRN has demonstrated initial feasibility for a national electronic infrastructure for efficiently conducting large national collaborative studies in community-based primary care settings. Small practices of even solo practitioners can become research study sites with only web access. By making community-based pragmatic and other trials easier and cheaper to conduct, ePCRN may help to improve the relevance and generalizability of primary care trials.

THE IMPACT OF USING AN ELECTRONIC MEDICAL RECORD SYSTEM TO IDENTIFY POTENTIAL SUBJECTS FOR ENROLLMENT INTO A CLINICAL TRIAL. B.L. Rollman[1]; G.S. Fischer[1]; F. Zhu[1]; B. Herbeck Belnap[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173266)*

BACKGROUND: Recruiting patients into clinical research protocols is challenging. Electronic medical record (EMR) systems capable of prompting clinicians when specific disorders or symptoms are present in their patients may facilitate study enrollment, but the effectiveness and impact of this recruitment strategy compared to more traditional methods of subject recruitment is unknown.

METHODS: We compared an EMR-based clinician prompt to a wait-room-based case-finding strategy for enrolling study subjects into two NIMH-funded clinical trials to treat panic and generalized anxiety disorders (PD/GAD) in primary care. The two studies employed similar enrollment criteria and the same four primary care practices linked by a common EMR (EpicCare®). Our case-finding approach (recruited 7/2000–4/2002) employed 2.3 FTE research assistants who approached patients in practice waiting rooms, obtained their informed consent to administer the PRIME-MD to identify the presence of PD/GAD, and enrolled them into the trial if they met preliminary eligibility criteria. Later, another research assistant telephoned the patient to confirm he/she met our protocol's anxiety severity and other eligibility criteria (3.5 total FTE). Our EMR-based strategy (recruited 1/2004–10/2006) relied on PCPs who electronically referred their patients to our study team in response to an EMR prompt displayed at the time of the patient encounter. We programmed the EMR to trigger the message for patients aged 18–64 with: (a) a diagnosis of depression, anxiety, or panic disorder entered their electronic medical record; and (b) no report of bipolar or schizophrenia in the EMR. A research assistant telephoned referred patients to screen for study eligibility criteria, administer the PRIME-MD, and if potentially protocol-eligible, schedule a mutually convenient time to meet in the clinic to obtain their signed informed consent and administer our severity screen (1.75 total FTE). For both trials, we required that protocol-eligible patients have at least a moderate level of anxiety symptoms (Panic Disorder Severity Scale (PDSS) score >6 or a Hamilton Rating Scale for Anxiety (HRS-A) score >13), and we defined a high level of anxiety symptoms as either a PDSS >11 or a HRS-A >19.
RESULTS: Over the first 22-months of recruitment for both trials, wait room-based research assistants approached 8,095 patients of whom 193 (2.4%) met study inclusion criteria and enrolled, while EMR-prompted PCPs referred 794 patients and 176 (22%) were enrolled. Compared to subjects recruited by wait-room recruiters, those enrolled by EMR-prompted PCPs were more likely to be non-Caucasian (23% vs. 5%; $p<0.001$), male (28% vs. 18%; $P=0.03$), and have higher levels of anxiety (88% vs. 53%; $P<0.0001$).
CONCLUSIONS: Utilizing an EMR system to prompt clinicians to refer patients with specific clinical characteristics is an effective and highly efficient strategy for enrolling study subjects compared to deploying research assistants in practice wait-rooms. Moreover, differences in the composition of the cohort by recruitment strategy has critical implications for increasing minority participation in clinical research. While our findings require replication for other EMR systems and clinical conditions, heightened appreciation of the EMR's potential to support clinical research may further stimulate its adoption into routine clinical care.

TREATMENTS FOR INSOMNIA: SYSTEMATIC REVIEW AND META-ANALYSIS OF EFFICACY OF NONBENZODIAZEPINE HYPNOTICS. N.R. Shah[1]; A. Karne[2]; J.B. Jones[3]; J. Aperi[1]; D. Mann[4]; R. Shemtov[1]. [1]New York University School of Medicine, New York, NY; [2]Yale University, New Haven, CT; [3]Geisinger Health, Danville, PA; [4]Mount Sinai School of Medicine, New York, NY. *(Tracking ID # 172913)*

BACKGROUND: Insomnia is a unique disorder as well as a symptom of other disease states. Although benzodiazepines have been the preferred treatment for insomnia, their popularity is waning in favor of non-benzodiazepine hypnotic agents (NBH). Earlier systematic reviews on insomnia treatments included search terms that reflected only the therapeutic interventions, without mention of the health outcomes of interest or the study designs of interest. The Cochrane Manual on Systematic Reviews recommends the inclusion of all three types of search terms in order to perform the most rigorous search. We sought to identify whether a more comprehensive search strategy might have influenced results and quantify the effect size for NBH versus placebo.
METHODS: Studies and review articles relating to treatment of sleep initiation and maintenance disorders with NBH were identified in six electronic databases. All trials of adults with a history of insomnia of any duration, including transient insomnia and stimulus-induced insomnia, were included. Case reports, case series reports, editorials, letters, and non-systematic (qualitative) reviews were excluded. All full text citations were independently abstracted by five reviewers. Standardized mean differences (SMD) for continuous outcomes were estimated from the data and pooled across studies using a random effects model, with meta-regression conducted for all clinically relevant or potentially significant sources of heterogeneity. Main outcome measures include SMD for health outcome measures for placebo vs. NBH.
RESULTS: Of the 2,028 identified citations, 154 met inclusion criteria. The results indicate that objective and subjective measures of sleep latency (SMD -0.92, SMD -0.83) and wake time after sleep onset (SMD -1.02, SMD -0.26) are improved using NBH versus placebo. We also found that both objective and subjective measures of sleep duration (SMD 0.37, SMD 0.39), measured as total sleep time or time in bed, are greater using NBH versus placebo. Measures of daytime performance are similar between placebo and NBH intervention groups. Sensitivity analysis showed that there were no significant differences in the direction of the SMD based on various intervention drugs used. Jadad scores were used to assess whether study quality accounted for heterogeneity in the pooled analysis. The majority of studies received a Jadad score of "3" out of a possible "5". Pooling studies with a score of "4" or "5" significantly reduced heterogeneity as measured by Q-test and I-squared test while resulting in little variation from the overall pooled SMD. For measures of subjective sleep latency, duration, and wake time after sleep onset, there is slightly greater heterogeneity between studies.
CONCLUSIONS: The results of this review confirm earlier findings that the NBH zolpidem, zaleplon, zopiclone, and eszopiclone improve the outcomes of sleep latency and duration as compared to placebo. Future research should focus on additional head-to-head comparisons of drugs within the NBH class for efficacy, as well as review safety and adverse events for these agents.

TRENDS IN LUMBAR FUSION SURGERY IN NORTH CAROLINA 2000–2004. J.D. Joines[1]. [1]University of North Carolina at Chapel Hill and the Moses Cone Health System, Greensboro, NC. *(Tracking ID # 173892)*

BACKGROUND: Lumbar fusion rates in the United States, and the associated costs, have increased for more than a decade. The goal of this study was to examine recent trends in the use of lumbar fusion, and associated costs, in North Carolina, and to compare these to national estimates.
METHODS: Data on the number of hospitalizations, average length of stay, and average hospital costs for lumbar fusion (ICD-9-CM principal procedure codes 81.06, 81.07, and 81.08) for adults in North Carolina for the 5-year period 2000–2004 were obtained from the Healthcare Cost and Utilization Project (HCUP) State Inpatient Database (maintained by the Agency for Healthcare Research and Quality) using the HCUPnet online tool. For comparison, weighted national estimates for the same time period were obtained from the HCUP Nationwide Inpatient Sample using HCUPnet.
RESULTS: The number of lumbar fusions in North Carolina increased from 3,435 in the year 2000 to 4,755 in 2004, a relative increase of 38% over the 5-year period. Mean hospital charges increased from $25,826 in 2000 to $50,689 in 2004, and corresponding total hospital charges increased from $88.7 million to $241 million. Nationally, the number of lumbar fusions increased from 94,253 in 2000 to 132,269 in 2004; corresponding mean hospital charges increased from $34,849 to $61,797, and total hospital charges increased from $3.3 billion to $8.2 billion. The mean length of stay in North Carolina decreased from 4.6 to 4.4 days over the 5-year period, and decreased nationally from 4.8 to 4.6 days. The leading payer in North Carolina was private insurance, which represented about 46% of discharges in 2000 and in 2004; Medicare covered 29% of North Carolina discharges in 2000 and 33% in 2004.
CONCLUSIONS: The use of lumbar fusion, and the associated costs, increased substantially in North Carolina from 2000 to 2004; national trends were similar over the same time period. Given the impact on health care costs, better evidence is needed from randomized clinical trials to clarify the efficacy of, and appropriate indications for, this procedure.

TRENDS IN PSYCHOLOGICAL DISTRESS AND MEDICAL EXPENDITURES IN THE U.S. P.A. Pirraglia[1]; J. Mcguire[2]; A.B. Rosen[3]; W. Witt[4]. [1]Providence VA Medical Center/Brown University, Providence, RI; [2]None, Chicago, IL; [3]University of Michigan, Ann Arbor, MI; [4]University of Wisconsin-Madison, Madison, WI. *(Tracking ID # 173302)*

BACKGROUND: There has been an increase in the treatment of mental illness in the U.S, and the overall prevalence of mental illness has remained the same. It is unknown whether the value of care for mental illness has changed is unknown. We sought to examine how change psychological distress, a reflection of mental health, related to subsequent overall medical spending and outpatient medical spending in the U.S.
METHODS: We used serial linked data from the National Health and Illness Study (NHIS) and Medical Expenditures Panel Survey (MEPS), both of which provide nationally representative data. We examined the K6, a validated measure of psychological distress, from the NHIS in the years 1997, 1998, and 1999. K6 scores range from 0 to 24, with a higher score representing worse psychological distress. We defined K6 scores of 7 and greater as representing at least mild-moderate psychological distress. Baseline data from each year in the NHIS was linked to the following two years of MEPS data for those who participated in both surveys, giving per person expenditures for a subsequent two year period. We limited our analysis to adults (age 18 and older). Weighting was applied based on the survey sample design to yield nationally representative estimates.
RESULTS: The mean K6 score was 2.70 (SE 0.090) in 1997, 2.51 (SE 0.086) in 1998, and 2.29 (SE 0.116) in 1999, and the proportion of the adult U.S. population with K6 score $>=7$ was 13.9% in 1997, 11.7% in 1998, and 10.7% in 1999. The table shows the trends in subsequent two-year total and outpatient medical expenditures for those with K6 score <7 and those $>=7$ in 1997, 1998, and 1999.
CONCLUSIONS: From 1997 to 1999, psychological distress in the U.S. appears to have decreased while subsequent expenditures in those with greater psychological distress did not rise. Health care for mental illness in appears to have good value, as distress decreased, which reflects benefit, and subsequent spending did not increase. Future work will more closely examine how benefits, treatment, and spending relate to one another for those with mental illness in the U.S.

	Total Expenditure K6<7	Total Expenditure K6>=7	Outpatient Expenditure K6<7	Outpatient Expenditure K6>=7
1998–1999	$5476 (SE $225)	$8792 (SE $934)	$1105 (SE $42)	$1528 (SE $117)
1999–2000	$5421 SE $248)	$8398 (SE $840)	$1144 (SE $47)	$1486 (SE $138)
2000–2001	$6267 (SE $358)	$8217 (SE $676)	$1252 (SE $80)	$1499 (SE $118)

USEFULNESS OF A RUN-IN PERIOD TO REDUCE DROPOUTS IN A RANDOMIZED CLINICAL TRIAL OF A BEHAVIORAL INTERVENTION TO IMPROVE BLOOD PRESSURE CONTROL. M. Ulmer[1]; S. Li[1]; A. Kipper[1]; J. Vaca[1]; C. Dorantes[1]; S. Natarajan[2]. [1]New York Harbor Healthcare System, Department of Veterans Affairs, New York, NY; [2]VA New York Harbor Healthcare System and New York University, New York, NY. *(Tracking ID # 174344)*

BACKGROUND: Dropouts in randomized clinical trials (RCT) reduce the validity of results obtained. Thus it is critical to retain patients once randomized. In our blinded RCT we wanted to evaluate the usefulness of a run-in period to reduce the number of dropouts in a behavioral intervention to improve blood pressure (BP). In the pilot study, where a run-in period was not used, we had a 29% dropout rate.
METHODS: We performed a prospective evaluation in the context of a blinded 3-arm RCT. Our overall recruitment goal is to randomize 528 veterans with uncontrolled hypertension from 2 VA outpatient clinics. Patients are eligible if their BP from their last visit falls between the ranges of 140–169/90–110 mm Hg. In patients with diabetes or chronic kidney disease the BP criteria are 130–169/80–110 mm Hg. In addition, patients must meet certain inclusion/exclusion criteria in order to be eligible. Patients are approached during a routine visit, informed about the study, and invited to participate if eligible. After a 1 month run-in period, patients return for a baseline visit. During the run-in period they are required to follow study-similar procedures and receive a phone call at which time the study is explained again, they are informed about the responsibilities of being a study participant and they receive basic diet, exercise and medication advice. Following the baseline visit they are then randomly assigned 1:1:1 to usual care, a phone-delivered health education intervention, or to a phone-delivered stage of change matched intervention. Patients are followed for 1 year (they make return visits at 3, 6 and 12 months).
RESULTS: Thus far, we have identified 2518 potential participants by medical record review of whom 1912 made the actual routine clinic visit. Of these 1912, 861 were interested enough to get detailed information about the study; the remaining were not interested (60), had no time (105), were missed (435), or were found ineligible (451). Of the 861 informed, 227 consented to participate, then had BP measured and if BP was not under control they were invited to participate in the study. Of the 227 consented, 159 were enrolled. During the run-in period 26 withdrew consent (cancelled). Approximately 1 week after completing the run-in period and the baseline visit, 81 patients were randomized and 2 dropped out. There was not a significant difference in age, education, race, comorbidities or number of medications in those who canceled and those who remained on the study. The number of dropouts are too small to make bivariate comparisons.
CONCLUSIONS: In our study to date, while our cancellation rate has been 15%, our dropout rate has only been 2.5%. This is much better than most behavioral trials. We believe that the run-in period has allowed us to reduce the number of dropouts after randomization. Though the run-in period is useful, in order to obtain valid results, it is still critical to make all effort to retain patients in the study. Finally, it is important to make comparisons of patients who remain in the study and those that cancel, and incorporate that in generalizing from the study results.

VA POST-DEPLOYMENT SCREENING FOR MENTAL HEALTH DISORDERS AMONG VETERANS RETURNING FROM IRAQ AND AFGHANISTAN -ARE WE DOING A GOOD JOB? K.H. Seal[1]; D. Bertenthal[2]; A. Chu[2]; K.S. Gima[2]; C. Marmar[1]. [1]University of California, San Francisco, San Francisco, CA; [2]San Francisco VA Medical Center, San Francisco, CA. *(Tracking ID # 171917)*

BACKGROUND: The VA has instituted a national post-deployment screening campaign to screen for symptoms of mental health disorders among veterans returning from Iraq and Afghanistan. This study evaluates the predictors, clinical outcomes and effectiveness of VA post-deployment mental health screening.
METHODS: In response to a national directive, in June 2004, the San Francisco VA Medical Center (SFVAMC) and its 5 associated Community-Based Outpatient Clinics (CBOCs) instituted the VA "Afghan and Iraq Post-Deployment Screen". The post- deployment screen consists of brief, previously validated instruments to screen for PTSD, depression, and high-risk alcohol use. VA clinicians are required to complete the 10–15 minute screen which appears as a computerized "clinical reminder" for veterans returning from Iraq and Afghanistan and to refer those screening positive to VA mental health clinics. This study included veterans returning from Iraq and Afghanistan presenting for care between 10/2001 and 7/2006. Data were derived from local SFVAMC databases and the national VA Operation Enduring Freedom [OEF (Afghanistan)]/Operation Iraqi Freedom (OIF) Roster. We describe the proportion of veterans screening positive for symptoms of mental health disorders and among screen-positive veterans, the proportion of follow-up VA mental health visits scheduled within 30 days and kept within 90 days of post-deployment screening. Bivariate and multivariate logistic regression models were used to evaluate predictors and clinical outcomes of screening.
RESULTS: Of 771 veterans of Iraq and Afghanistan; 85% were seen at the SFVAMC; 15% at a CBOC; 89% were male; 65% white, 14% Hispanic, 11% black and 11% other race/ethnicities; the median age was 27 years (range: 19–60 years). Of 771 veterans, 342 (44%) received post-deployment screening; most (73%) during a primary care clinic visit. Independent predictors of receiving post-deployment screening were having had a primary care visit (AOR = 13.7, 95% CI = 8.76–21.4) and receiving care at a VA community clinic rather than at the medical center (AOR = 3.33, 95% CI = 1.73–6.39), while self-identifying as black was associated with a lower likelihood of receiving screening (OR = 0.45, 95% CI = 0.22–0.91). Of 342 screened, 237 (69%) screened positive for symptoms of one or more mental health disorders: 173 (51%) for PTSD, 141 (43%) for depression and 110 (41%) for high-risk drinking; 42% screening positive for co-morbid symptoms. After excluding veterans with mental health visits prior to post-deployment screening, we found no association between having been screened and subsequent mental health visits (OR = 1.09, 95% CI = 0.63–1.87). Of 237 screen-positive veterans, a minority, 109 (46%) received a scheduled appointment for a follow-up VA mental health visit yet of these, a high proportion, 88 (81%) kept their appointment. Veterans were significantly more likely to have &ge 1 mental health visit (s) if they screened positive for PTSD (OR = 21.9, 95% CI = 6.26–76.5) and/or depression (OR = 11.3, 95% CI = 3.11–40.9), but there was no association with high-risk drinking (OR = 0.57, 95% CI = 0.17–1.90).
CONCLUSIONS: The majority of veterans of Iraq and Afghanistan seen at VA facilities screened positive for symptoms of one or more mental health disorders. Post-deployment screening may be more effective in preventing chronic mental illness if a greater proportion of returning veterans are screened and mental health appointments scheduled for screen-positive veterans.

VALIDATION OF A DERIVED INDICATOR OF HEALTH LITERACY. M. Paasche-Orlow[1]; A. Hanchate[1]. [1]Boston University, Boston, MA. *(Tracking ID # 172951)*

BACKGROUND: Current research on the role of limited health literacy for healthcare utilization and health outcomes is limited to datasets with an in-person assessment of health literacy. Here we present the comparative performance of a derived indicator of limited health literacy, based only on demographic characteristics, and a test-based (Test of Funcational Health Literacy in Adults, TOFHLA) indicator in predicting selected health outcomes. The underlying support for this derived measure is the finding of a strong association between tests of health literacy and socio-demographic information routinely measured in survey data.
METHODS: The derived indicator used in this study is obtained from a logistic regression model of health literacy as defined by the TOFHLA ("marginal" and "inadequate" versus "adequate") on the selected socio-demographic measures. Sensitivity and specificity were also estimated. Using data from a 1998 survey of 3,260 Medicare beneficiaries, aged 65 or older, enrolled in the Prudential Healthcare managed care program in four US geographic areas (Cleveland, OH; Houston, TX; south Florida and Tampa, FL) who participated in a survey which included the Short Test of Functional Health Literacy in Adults (S-TOFHLA), we examined the performance of the derived literacy indicator as a covariate in models of two health outcomes: 1) self reported general health (binary indicator, modeling poor/fair); and 2) SF12 physical health score (continuous)). A series of parallel regression models were estimated, using either the TOFHLA-based indicator or the derived indicator (ensuring that the latter series excluded the underlying socio-demographic indicators), for each outcome.
RESULTS: The derived indicator of limited literacy from a logistic model of literacy as defined by the TOFHLA had a sensitivity of 74% and specificity of 77% with 76% correctly classified (and area under curve of ROC of 0.82). A linear regression approach yielded 79% correct classification rate. In the regressions (both logistic and linear) of the two health outcomes, the odds ratios exhibited by the TOFHLA-based indicator were well approximated by the derived indicator. The odds ratio (OR) of reporting poor/fair health was the same (OR = 1.6) regardless of the choice of limited literacy indicator (TOHFLA or derived). In the linear regression of SF12 physical score, the coefficient for limited literacy as defined by the TOFHLA was −1.3 and that for the derived indicator was -1.7. Note that while the regression using TOHFLA-based measure included the underlying socio-economic measures as covariates, the regression using the derived indicator excluded these.
CONCLUSIONS: Socio-demographic characteristics can predict limited health literacy and a derived indicator of limited health literacy has similar predictive capacity as a direct measure of health literacy for the outcomes evaluated. Since the underlying measures for the derived limited health literacy indicator are readily available in a variety of rich existing datasets, by using the derived indicator model a much wider array of health outcomes as well as health utilization indicators become available for investigation. Also, as information on these underlying measures can be collected via telephone, the model provides a novel and useful mechanism for identifying people likely to have limited literacy for future research.

WHO COMPLETES A FIRST FILL FOR A DIABETES-RELATED PRESCRIPTION? N.R. Shah[1]; A. Hirsch[2]; S. Yoder[2]; A. Wingate[2]; C. Zacker[3]; W. Stewart[2]. [1]New York University, New York, NY; [2]Geisinger Health, Danville, PA; [3]Novartis Pharmaceuticals Corporation, East Hanover, NJ. *(Tracking ID # 173558)*

BACKGROUND: Much of the distance between the promise of evidence-based medicine and reality of improved patient outcomes can be attributed to problems in the 'last mile,' or patient adherence-the "extent to which a person's behavior coincides

with medical or health advice." Research on medication adherence has largely focused on patients who have already obtained their first prescription for a defined condition. Much of this research is possible using insurance or pharmacy claims data. Yet, the first step in the last mile of medication adherence is actually filling the very first prescription for a medication, about which little is known. Insurance claims data do not reveal first fill rates. We linked electronic health record data from clinics and prescription claims data to understand first fill rates for diabetes care and factors associated with first fill behavior.
METHODS: We conducted a retrospective cohort study linking individual patient data for new (i.e. first-time) prescriptions of medications for diabetes (as defined by ordering ICD9 code) from Electronic Health Records (EHR), with claims data obtained from an insurance plan. EHR data were obtained from the Geisinger Clinic, a large group practice serving a 31-county area of central and northeastern Pennsylvania. The Clinic includes 41 community practice sites with primary and multi-specialty care, all of which have used an EHR since 2001. Adult patients had to be enrolled in the insurance plan for at least 12 months prior to the first prescribing date (i.e., denoted as the "Index Date"), as well as continuous members of the plan during the 2 year period of study. A first prescription qualified as a "fill" if a claim was generated for it within 30 days of the index date.
RESULTS: Of 491 patients written a new, first-time prescription for any diabetes medication, 326 (66.4%) generated a corresponding claim within 30 days, and 72.7% by 90 days. There was no difference between fill and non-fill patients in gender ($p = 0.85$), Charlson co-morbidity score ($p = 0.18$), blood pressure ($p = 0.77$) or baseline A1c (mean 7.9 vs. 7.2). Fill patients improved their A1c in the 3 months following the index date (7.9 at baseline to 6.8 afterwards, vs. 7.2 at baseline to 7.4 afterwards, $p < 0.0001$), had more office visits in the 6 months before the index prescription (3.2 vs. 2.6, $p = 0.01$), were younger (median age 48 vs. 55, $p < 0.001$), and were written for more refills on the initial script (median 5 vs. 4). Patients were more likely to fill a prescription for oral agents (70%) than for subcutaneous insulin (48%), $p < 0.001$.
CONCLUSIONS: One-third of patients with diabetes did not fill their prescription for a new medication, while those who did improved their A1c by 1 point in 3 months. First-fill is associated with more office visits in the prior 6 months, younger patient age, more refills given, and oral rather than subq medications.

AMPATH: "LIVING PROOF THAT NO ONE HAS TO DIE FROM HIV." T.S. Inui[1]; W. Nyandiko[2]; S. Kimaiyo[2]; R.M. Frankel[3]; T. Muriuki[3]; J.J. Mamlin[3]; R. Einterz[4]; J. Sidle[3]. [1]Regenstrief Institute, Inc., Indianapolis, IN; [2]Moi University School of Medicine, Eldoret, ; [3]Indiana University Purdue University Indianapolis, Indianapolis, IN; [4]Indiana University School of Medicine, Indianapolis, IN. *(Tracking ID # 172753)*

BACKGROUND: The HIV/AIDS epidemic in sub-Saharan Africa is decimating populations, deteriorating struggling economies, deepening poverty, and destabilizing traditional social orders and ministries. The advent of the U.S, President's Emergency Plan for AIDS Relief (PEPFAR) and mobilization of other funding from other nations and foundations have made significant international resources available as supplementary funding to Sub-Saharan national programs for the prevention and treatment of HIV/AIDS, but few programs have demonstrated the capacity to use these resources to increase rapidly in size and scope. In this context, AMPATH, a collaboration of Indiana University School of Medicine, the Moi University School of Medicine, and the Moi Teaching and Referral Hospital in Eldoret, Kenya, is a stunning exception. In the five years since its inception in November 2001, the program grew from 1 site to 18, and from 1 patient to serving more than 37,000. An evaluation of AMPATH has been initiated to uncover the determinants of the program's remarkable success. This report summarizes a first, qualitative assessment of AMPATH staff perceptions of how and why they have been able to work effectively.
METHODS: English-language, semi-structured, in-depth, individual interviews of 26 AMPATH workers were conducted and recorded. The interviews were approximately 60 minutes in length (ranging from 50 minutes to 85 minutes) and were conducted in office settings. Field notes from these interviews were generated by paired, independent reviewers and subjected to close-reading qualitative analysis for themes.
RESULTS: Themes independently identified from field notes revealed a high degree of concurrence between reviewers. Of all themes identified by either reviewer in an analyst pair, 90.1% were identified by both members. The identified themes were as follows: creating effectively, connecting with others, making a difference, serving those in great need, providing comprehensive care to restore healthy lives, and growing as a person and a professional. After consensus themes were codified, narratives from the interviews were identified as illustrative of the themes. Condensed versions of these narratives were developed (to shorten them and preserve appropriate degrees of confidentiality) and were reviewed by the analysts to ensure that the meaning and natural language of each story had been adequately preserved. These condensed stories are being used to present research results, to illuminate the themes, and to inform program leaders and policy makers.
CONCLUSIONS: Inspired personnel are among the critical assets of an effective program. Among the key reasons for the success of this HIV/AIDS program are a set of work values and motivations that would be helpful in any setting, but perhaps nowhere more critical than in the grueling work of making a complex program work spectacularly well in the challenging setting of a resource-poor developing country. Sometimes, even in the face of long odds, the human spirit prevails.

DOES HERBAL PRODUCT USE DEPEND ON THE QUALITY OF HEALTHCARE? THE CASE OF BOSNIA AND HERZEGOVINA. M. Kuburic[1]. [1]Faculty of Pharmacy, University of Banja Luka, Banja Luka,. *(Tracking ID # 173253)*

BACKGROUND: Herbal products are in widespread use worldwide, though levels of adoption and knowledge of the products vary according to cultural, social and regulatory norms. This study explores the extent of use and knowledge of herbal products among the residents of Bosnia and Herzegovina, a country with a social, cultural and regulatory environment similar to that of other European countries, but with a lower overall quality of healthcare.
METHODS: Notices describing the purpose of the study and inviting eligible patients to participate were posted in a pharmacy in Banja Luka, in Bosnia and Herzegovina over the period of three months in 2006. The pharmacist and the primary investigator were available to answer questions about the study. Twenty participants of both sexes and different ages agreed to participate. Participants were interviewed individually about herbal products they used, health problems they sought to address, as well as their knowledge of and opinion of these products. Topics of discussion were adapted from a similar study conducted in Italy. All interviews were audio-recorded and subsequently transcribed. The transcripts were analyzed using qualitative data analysis software.
RESULTS: Most participants used herbal products in order to treat or alleviate health problems and to prevent illness. Products were used to address a wider range of diseases and ailments than those in other European studies, including common colds and flus, diarrhea, urinary tract infections, problems with the digestive system, wounds and hemorrhoids. Most participants thought that there is no need to visit their physicians for these conditions, as they are 'minor'. Participants also assumed that herbal products are safer and healthier than synthetic drugs 'because they come from nature'. Several female patients noted that they collect herbs and make products from them. The sources of information about herbal products included family, friends, newspapers and TV. Only in a small number of cases, physicians or pharmacists recommended these products or informed patients about possible harmful side effects. The analysis of the transcripts further revealed that patients know very little about side effects of these products and possible drug interactions.
CONCLUSIONS: Participants from Bosnia and Herzegovina relied on herbal products to a greater extent and for a wider range of health problems than patients from other European countries. They also consulted physicians and pharmacists less than other Europeans. Participants had little knowledge of the products' safety and possible side effects and did not consult physicians for health problems they perceived as minor.

INFORMATION IMPROVES HEALTH AND SOCIAL SERVICES DELIVERY IN INDIAN VILLAGES: A RANDOMIZED CONTROLLED TRIAL. M. Goyal[1]; M. Riboud[2]; A. Sehgal[3]; D.M. Levine[1]; P. Pandey[2]. [1]Johns Hopkins Medical Institutions, Baltimore, MD; [2]World Bank, Washington, DC; [3]Case Western Reserve University, Cleveland, OH. *(Tracking ID # 173104)*

BACKGROUND: People in rural India are among the poorest and most dependent on free government services, but often don't receive them. A lack of public awareness about entitled health and social services may contribute to poor delivery of services in developing countries. We sought to determine to what extent informing villagers of their rights in health, education, and local village governance helps them to obtain their guaranteed benefits.
METHODS: We performed a community based randomized controlled trial of 105 villages in Uttar Pradesh, India, randomly allocated to receive or not receive information about guaranteed services in three areas: 1) Health 2) Primary education 3) Local Village governance. Information on entitled services and citizen rights were obtained from the respective government offices. Information was then disseminated by audio and written messages to each treatment village in public gatherings. Two rounds of information dissemination were conducted, separated by two weeks. A random start systematic sample of 10 households (5 untouchable, 5 higher caste) from each village were approached to obtain baseline information. The same sample was interviewed at 12 months to assess outcomes, with 98% followup. Outcomes measured included whether specific health and social services were delivered, such as whether pregnant women received a prenatal exam. Analysis is at the household level using OLS regression, clustering standard errors at the village level.
RESULTS: At baseline, there were no significant differences in self-reported delivery of health and social services. After one year, intervention villages reported several improved outcomes compared to control villages (Table 1). On average, there was a 16% improvement over all outcomes from baseline in treatment (range 6 to 23%), and 0% improvement in control (range −16 to +27%). These results were most impressive for villages with the highest proportion of disadvantaged households ("low caste"). They showed on average a 23% improvement over all outcomes from baseline in treatment (range 14 to 29%), and 3% improvement in control villages (range -7 to +26%). Villages in the lowest tertile of disadvantaged households showed no treatment effect.
CONCLUSIONS: While there was a global treatment effect, villages with the highest proportion of disadvantaged households were the most likely to benefit. Government and health agencies should give repeated and clear information to impoverished and low literacy populations on their rights and controls.

Health, Education, and Governance Outcomes at 12 months (p values adjusted for nesting of villagers within village groups)

Outcome	Intervention households (n=546)	Control households (n=501)	P value
Pregnant woman received prenatal exam, %	70	44	<.001
pregnant woman received tetanus shot, %	66	43	.003
pregnant woman received iron tablets, %	64	45	.01
infants received atleast 1 vaccination, %	73	48	.002
Development work in school, %	78	65	.045
Development work in village, %	66	58	.18
Village council meeting occurred, %	37	22	.009

NEW ENGLAND 2007 REGIONAL RESIDENT AWARD WINNER. S. Garten[1]. [1]Society of General Internal Medicine, Washington, DC. *(Tracking ID # 178594)*

BACKGROUND: place
METHODS: holder
RESULTS: for
CONCLUSIONS: poster session

TOBACCO USE AMONG GIRLS BY SOCIOECONOMIC STATUS IN JUJUY, ARGENTINA. R. Mejia[1]; E. Alderete[1]; S. Gregorich[2]; C.P. Kaplan[2]; E.J. Perez-Stable[2]. [1]Universidad de Buenos Aires, Buenos Aires, ; [2]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173223)*

BACKGROUND: The tobacco epidemic is peaking in the Southern Cone and in Argentina 42% of high school graduates are current smokers. The association of socioeconomic status (SES) and smoking behavior varied by stage of the tobacco epidemic in developed countries, but there is limited information from middle-income countries. In order to address this association, we evaluated the smoking behavior in a multiethnic sample of Argentinean adolescent girls by SES.
METHODS: Data were obtained from a self-administered survey of 8th graders in the province of Jujuy in northwest Argentina in 2004. Participants were nested within 27 schools selected randomly to be representative of Jujuy public and private schools. The survey was pre-tested for cultural appropriateness and included questions on ethnic identity, smoking behavior, SES and cultural and psychosocial factors. Participants were classified as ever smokers (experimenters, current smokers, and former smokers) or never smokers. Current smokers were defined as having smoked in the previous 30 days. The SES predictor described parental or primary caretaker educational attainment: none, less than high school, high school graduate (HS), technical education, or college degree. Logistic regression models were used to examine the relationship between tobacco consumption and SES adjusted for parental smoking at home.
RESULTS: 1941 girls, median age 14 years, completed the questionnaire (85% response rate). The distribution of parental educational included 187 (10%) with no formal education. 712 (37%) with elementary, 636 (33%) with high school, 250 (13%) with technical, and 131 (7%) with a college education. Overall, 50.2% of girls reported ever smoking and 22.5% were current smokers. The association of parental education and adolescent smoking behavior is shown in the table. (See Table 1) There were significant, negative linear trends for the effect of parental education on daughters' ever smoking (OR = 4.68, 95% CI 1.12–19.48) and current smoking (OR = 11.93, 95% CI 2.00–71.04). Stratified by parental education, girls' rates of ever smoking ranged from 62.5% (no formal education) to 45.3% (college education). Corresponding rates of girls' current smoking equaled 30.7% and 13.5%.
CONCLUSIONS: Among adolescent girls from a diverse Latin American population, low SES may be an important predictor of cigarette smoking. These findings are similar to those reported in multi-ethnic US populations even though the stage of the tobacco epidemic and economic development differ markedly.

Table 1

Parental Education	Ever Smokers OR (95% CI)	Current Smokers OR (95% CI)
None vs. Elementary	1.59 (1.14–2.22)	1.43 (1.02–1.99)
None vs. High School	1.69 (1.14–2.50)	1.63 (1.17–2.25)
None vs. Technical	1.96 (1.21–3.18)	1.99 (1.16–3.41)
None vs. College	1.94 (1.10–3.43)	1.19 (1.32–6.50)

ACCEPTABILITY OF PAY FOR PERFORMANCE FOR PATIENTS. J.A. Long[1]; M. Helweg-Larsen[2]; K. Volpp[1]. [1]Philadelphia VA Center for Health Equity Research and Promotion, Philadelphia, PA; [2]Dickinson College, Carlisle, PA. *(Tracking ID # 172819)*

BACKGROUND: Pay for Performance for providers (P4P) has garnered much attention nationally. There has been relatively little discussion about paying patients to change their health behaviors, though patient health behaviors such as smoking greatly affect health care costs and outcomes and are unlikely to be addressed successfully through P4P. Pay for performance for patients (P4PP) is controversial and the acceptability among the general public is unknown. Our objective was to determine patients' attitudes toward P4PP in the areas of smoking cessation, weight loss, blood pressure control, and blood sugar control.
METHODS: We surveyed a convenience sample of 458 primary care patients in two medical office waiting rooms. We asked patients about their attitudes regarding paying people to achieve certain health goals.
RESULTS: The population surveyed was 52% female, the mean age was 50, 31% had completed high school or less, 20% smoked, 25% were obese, 42% had hypertension, and 13% had diabetes. 40–44% of the sample thought it a bad/somewhat bad idea to pay people to quit smoking, lose weight, control their blood pressure, or control their blood sugar while 36–42% thought this was a good/excellent idea. Respondents also felt it was a good/excellent idea to charge non-smokers less (67%) and smokers more for health insurance (54%), but less enthusiastically endorsed charging non-obese patients less (43%) or charging obese patients more (32%). With the exception of smoking (24%), respondents largely disagreed/strongly disagreed with the notion that either obese people (55%), people with hypertension (76%) or people with diabetes (79%) had themselves to blame for their illness. When asked how much money would be appropriate to pay patients to quit smoking, lose weight, control their blood pressure, or control their blood sugar 50–53% responded $0, 35–39% responded $50-$500, and 10%-13% responded $1,000 or more. Statistical differences (t-test $p < 0.05$) between attitudes as a function of disease state were as follows. Compared to non-smokers, smokers were more likely to think it a good idea to pay smokers to quit smoking (mean score 3.4 vs 2.7), that paying smokers to quit will lower health care costs for everyone (mean score 3.4 vs 3.0), and that paying people might be the only effective means to get people to quit smoking (mean score 3.2 vs 2.6). Compared to non-smokers, smokers were less likely to think it a good idea to charge smokers more for health insurance (mean score 3.2 vs 3.9) and charge non-smokers less (mean score 2.8 vs 3.6). Compared to non-obese people, obese people felt it was a good idea to pay obese people to lose weight (mean score 3.2 vs 2.9) and that it might be the only effective means to get people to lose weight (mean score 3.3 vs 3.0). There were no differences in attitudes among patients with hypertension and diabetes compared to those without these diseases.
CONCLUSIONS: About 50% of respondents support P4PP. Differences in opinions were greatest between smokers and non-smokers, the only disease for which the majority felt that individuals had themselves to blame for the problem. P4PP could be more widely used to reduce the rate of unhealthy behavior within the US population; however, acceptance of such practices by the general population is equivocal.

ATTITUDES ABOUT GENERIC MEDICATIONS AMONG LOW-INCOME, ELDERLY ADULTS. A. Federman[1]; A. Iosifescu[1]; T. Mcginn[1]; A.L. Siu[1]; E. Halm[1]. [1]Mount Sinai School of Medicine, New York, NY. *(Tracking ID # 172473)*

BACKGROUND: Generic drugs offer cost-saving opportunities for low-income seniors yet brand name versions are often preferred. To understand why generic medications remain underutilized, we examined attitudes toward generics among low-income elderly adults and sought to identify correlates of negative attitudes towards generics.
METHODS: We conducted a cross-sectional analysis of data from a survey on medication decision making among 310 adults ≥65 years without dementia in 2 hospital-based primary care practices in East Harlem, New York. Attitudes toward generics was measured in 4 domains: efficacy, safety, tolerability (side effects), and ease of use. Each domain was represented by a single question that assessed belief about the equivalence of generic and brand name drugs on a 5-point Likert scale (strongly agree to strongly disagree). A composite score was then created by adding responses for each item (range, 4–20). Higher scores indicated more negative attitudes toward generics. Independent variables included demographics, health status, prescription medication use, health literacy (assessed with the Short Test of Functional Health Literacy in Adults, s-TOFHLA) and patients' perceptions of physicians' communication skills (assessed with a previously validated 5-item instrument, range 5–25). Multivariable linear regression was used to identify predictors of negative attitudes toward generics as measured with the composite score.
RESULTS: Of the 310 seniors, 74% were female, 52% Latino, 51% had below poverty level household income, and 49% had inadequate health literacy. Twenty-four percent were uncertain or did not believe that generics are less expensive than brand drugs. Among the 76% who agreed that generics are less expensive, the majority (70%) preferred brand agents and 18% had requested a brand name drug from their physician in place of a generic. Responses to the individual measures of generic drug attitudes indicated commonly held negative views: 24% strongly or somewhat agreed that generics are less effective than brand drugs; 11% considered generics more difficult to use than brand; 20% considered them less safe; and 12% thought they had more side effects. Additionally, 26% to 41% were uncertain whether generics differed from brand name drugs in these 4 areas. In multivariate analysis of the composite measure of attitudes about generics, 2 variables were significantly associated with more

negative attitude: inadequate health literacy (P = .0006) and poorer physician communication skills (P = .009). Education, income, insurance, number of medications, and total out-of-pocket drug costs, among others, were not significantly associated with attitude towards generics.
CONCLUSIONS: Preference for brand name drugs and negative attitude towards generics are common in this sample of low-income seniors, and 24% are unaware that generics are less expensive. Negative opinions about generics were associated with low health literacy and patient's perception of poor physician communication skills. Communication between patients and physicians may be important in forming impressions of generic medications. Further, educational efforts to promote generic medication use should consider focused messages on safety and efficacy, account for potential literacy problems for target audiences, and encourage physicians to openly discuss generics with their patients.

CHANGES IN PRESCRIPTION USE AND OUT-OF POCKET COSTS AMONG MEDICARE ELIGIBLE ADULTS, 2005–2006. W. Yin[1]; A. Basu[1]; J.X. Zhang[1]; S.X. Sun[2]; K.Y. Lee[2]; D.O. Meltzer[1]; G.C. Alexander[1]. [1]University of Chicago, Chicago, IL; [2]Walgreens Health Services, Deerfield, IL. *(Tracking ID # 172755)*

BACKGROUND: The Medicare Modernization Act Prescription Drug Benefit (Part D) represents the single largest change to Medicare since the program began several decades ago. The Part D benefit is an extraordinarily complex piece of legislation and has not been implemented without controversy. Although more than a year has passed since the inception of the Part D, little is known about how it has impacted drug utilization and expenditures. We examined this impact among a large diverse group of Medicare beneficiaries, whether or not they enrolled in the Part D benefit.
METHODS: We used pharmacy claims data from a large national pharmacy accounting for nearly 15% of the market share of prescription drugs to compare drug utilization and out-of-pocket expenditures of Medicare eligible seniors in 2005 to their outcomes in 2006. We used pharmacy customers aged 60–64 during the same period as a control group. This "difference-in-difference" approach allowed for us to capture non-Medicare related trends in drug utilization and costs occurring during the study period. The sample represented approximately 5.1 million unique Medicare beneficiaries aged 65–90 and 1.8 million unique subjects in the control group who filled and obtained at least one prescription in the pre-benefit 2005 period.
RESULTS: After adjusting for individual characteristics and socio-economic characteristics of subjects' zip code of residence, preliminary analyses suggest subjects' annual drug utilization increased by 5.5% (95% confidence interval [CI] 4.7%–6.2%) and subjects' annual out-of-pocket expenditures decreased by 10.6% (CI 9.6%–11.9%) in 2006 as compared to 2005, net of non-Part D related effects. Dual eligible beneficiaries, defined as those who had Medicaid coverage during part or all of 2005, had little to no increase in drug utilization. However, they had similar declines in out-of-pocket expenditures as the broader beneficiary population. Sensitivity analyses demonstrated that the measured impact was not due to trend differences among different age groups over the study period.
CONCLUSIONS: Average annual prescription drug utilization increased and out-of-pocket expenditures decreased for these Medicare seniors following the implementation of the Medicare Part D Prescription Benefit, whether or not uptake of the benefit took place. Further work is needed to examine these patterns among other beneficiaries and to evaluate the impact of these changes on health outcomes.

CHARACTERISTICS OF PATIENTS RECEIVING PHARMACEUTICAL SAMPLES AND ASSOCIATION BETWEEN SAMPLE USE AND OUT-OF-POCKET PRESCRIPTION COSTS. G.C. Alexander[1]; J.X. Zhang[1]; A. Basu[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 172829)*

BACKGROUND: Pharmaceutical samples are widely used for promotion and marketing. For example, nearly $8 billion was spent on the provision of samples during 2000, twice that spent on direct office detailing to physicians and more than three-fold the amount spent on direct-to-consumer advertising. Whether sample use should be encouraged or discouraged has been contentiously debated, and extensive commentary, and some research, both supports and argues against the routine use of pharmaceutical samples in the office setting. However, few of these studies have examined the association between sample use and out-of-pocket prescription costs. We sought to examine the characteristics of patients receiving samples and to describe the association between sample receipt and prescription costs.
METHODS: We divided the 2002–2003 Medical Expenditure Panel Survey, a nationally representative, panel-design longitudinal study, into a baseline period (the first two interview rounds) and an analysis period (the remaining three rounds). We conducted logistic and generalized linear regression analysis of 5,881 individuals receiving no sample during the baseline period. We defined our main outcome measures as: (1) sample receipt, (2) out-of-pocket prescription expenditures, and (3) total prescription expenditures. We also conducted several analyses to explore whether observed associations between sample use and expenditures appeared due to "pent-up demand" (greater unobserved illness among sample recipients than sample non-recipients).
RESULTS: On preliminary analyses, a total of 781 (14%) individuals received at least one pharmaceutical sample during the analysis period. On multivariate analyses sample receipt was greater among those who were younger and those not on Medicaid. In generalized linear regressions controlling for demographic characteristics and health care utilization, the 180-day out-of-pocket prescription expenditures were $178 (standard error [SE] $3.9) for those never receiving samples. Among those receiving samples, the corresponding out-of-pocket prescription expenditures were $166 (SE $8.9) for periods before sample receipt, $244 (SE $9.2) for periods during sample receipt, and $212 (SE $12.4) for periods following sample receipt. Results were similar when total prescription costs were examined. Analyses that: (1) stratified by baseline health care utilization, (2) stratified by sample use for acute vs. chronic conditions, and (3) compared the number of diagnoses during periods prior to, during, or subsequent to sample receipt suggested that the observed associations were not likely to be driven by "pent-up demand".
CONCLUSIONS: Individuals receiving samples have higher prescription expenditures than their counterparts. These findings suggest that sample recipients remain disproportionately burdened by prescription costs even after sample receipt. Our results highlight the importance of designing sample policies to minimize burden of out-of-pocket costs while maximizing patient welfare.

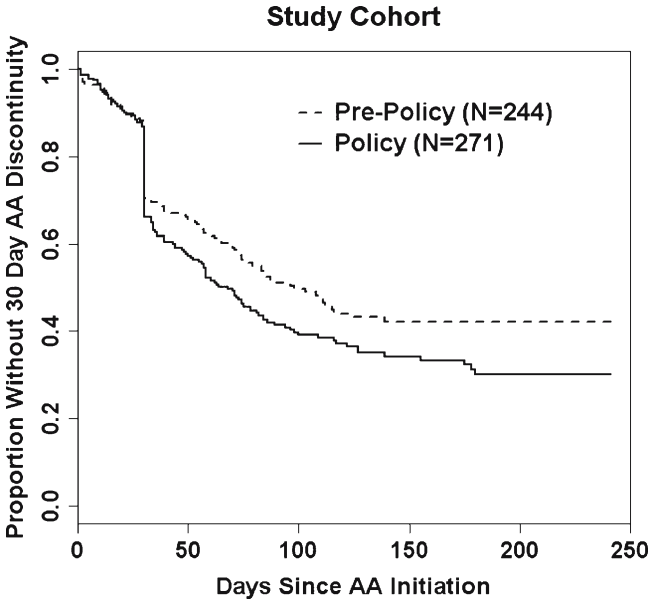
CONTROLLING PRESCRIPTION DRUG EXPENDITURES: A CASE REPORT OF SUCCESS. D.P. Miller[1]; C.D. Furberg[1]; R.H. Small[2]; F.M. Millman[1]; W.T. Ambrosius[1]; J.S. Harshbarger[3]; C.A. Ohl[1]. [1]Wake Forest University, Winston-Salem, NC; [2]North Carolina Baptist Hospital, Winston-Salem, NC; [3]Catalyst Rx, Rockville, MD. *(Tracking ID # 173535)*

BACKGROUND: The United States spends over $700 per capita on prescription drugs yearly, a figure nearly twice as high as any other country. Since the year 2000, national spending on prescription drugs has increased between 8% and 15% annually and currently exceeds $200 billion. Faced with these rising costs, employers and health benefit plans have introduced several cost-containment strategies including cost-sharing, restrictive formularies, and quantity limits. Prior studies examining the impact of these strategies on expenditures and quality of care have reported mixed results. We sought to determine whether a university-based health plan could control prescription drug expenditures while preserving access to needed medications by using a multi-interventional approach.
METHODS: The multi-interventional program included formulary changes, quantity limits, and mandatory pill splitting for select drugs implemented in phases over 2 years. We used a quasi-experimental, pre-post design to assess the short-term and long-term effects of the interventions. We assessed the short-term effects of each intervention by comparing class specific drug spending and generic medication use before and after benefit changes. To determine the long-term effects, we compared overall spending to projected spending estimates, and we examined changes in the plan-wide use of generic medications over time. Effects on medication access were assessed by examining members' use of selected classes of chronic medications (angiotensin converting enzyme inhibitors, beta-blockers, calcium-channel blockers, and serotonin specific reuptake inhibitors) before and after the policy changes.
RESULTS: Over three years, the plan and members have saved an estimated $6.6 million attributed to the interventions. Most of the savings was due to the reclassification of select brand-name drugs to non-preferred status (estimated annual savings $941,000; $p < 0.0001$), followed by the removal of non-sedating antihistamines from the formulary (annual savings $565,000; $p < 0.0001$), and the introduction of pill-splitting (savings $342,000; $p < 0.0001$). Limiting quantities of select medications had the smallest impact (savings $135,000; $p < 0.0001$). Since implementing the interventions, use of generic medications has steadily increased from 40% to 57%. Members' share of total drug expenditures has remained constant, with co-payments accounting for 30% to 32% of total spending. Although 17.5% of members stopped using at least one class of selected medications, members' total use of chronic medications remained constant (3812 utilizing members before changes versus 3845 utilizing members after changes).
CONCLUSIONS: A combination of interventions can successfully control prescription drug spending while preserving access to chronic medications. Encouraging the use of cost-effective alternatives to brand name drugs through formulary changes yielded the most savings. Given current rising prescription drug spending, health plans should incorporate a variety of strategies to encourage cost-effective medication use and protect members' access to needed medications.

DISCONTINUITIES IN ATYPICAL ANTIPSYCHOTIC THERAPY FOLLOWING PRIOR AUTHORIZATION AND STEP THERAPY AMONG MEDICAID BENEFICIARIES WITH SCHIZOPHRENIA. S.B. Soumerai[1]; F. Zhang[1]; D. Ross-Degnan[1]; D.E. Ball[2]; R.F. Lecates[1]; M.R. Law[1]; T.E. Hughes[2]; D. Chapman[3]; A.S. Adams[1]. [1]Harvard Medical School and Harvard Pilgrim Health Care, Boston, MA; [2]Eli Lilly and Company, Indianapolis, IN; [3]Centers for Disease Control and Prevention (CDC), Atlanta, GA. *(Tracking ID # 173031)*

BACKGROUND: Prior authorization (PA) and step therapy policies are increasingly used by Medicaid and Medicare to control expenditures for costly atypical antipsychotics agents (AA). Little is known about whether these policies affect continuity of medication use among mentally ill patients. We investigated the impact of a combined step therapy and PA policy in Maine on AA use, AA discontinuities, and AA expenditures among non-elderly Medicaid patients with schizophrenia.
METHODS: We used strong quasi-experimental designs, the interrupted time-series with comparison series design and survival analysis, to evaluate the effects of the policy. We obtained Maine (policy) and New Hampshire (control) Medicare and Medicaid utilization data for 2001–2004. The policy ran from July, 2003 through

February, 2004. We used time-series segmented regression analysis to measure overall changes in AA use and AA expenditures among continuously enrolled schizophrenia patients in both states (N = 4,600). We used survival analysis to analyze policy effects on treatment discontinuities (AA treatment gaps of > 30 days or switching/augmentation of initial AA) among newly treated patients (N = 683) before (7/02–2/03) and during the policy (7/03–2/04).
RESULTS: The proportion of patients newly treated with non-preferred agents declined from 40.7% (95%CI: 35.2%, 46.3%) to 28.9% (95%CI: 23.6%, 34.3%) during the policy. Use of the first-preferred agent increased from 29.0% (95%CI: 23.8%, 34.1%) to 39.2% (95%CI: 33.4%, 45.0%). The policy cohort had a 1.33 [95% CI: (1.04, 1.70)] greater hazard of treatment discontinuity relative to the pre-policy cohort (Figure). Medication gaps accounted for 70.8% of discontinuities; augmentations, 23.2%; and switching, 6.0%. No similar changes in market share of AA medications or rates of treatment discontinuities were observed in the comparison state. There was a $2.33 per patient per month decrease in trend of AA expenditures (95%CI:-3.56, -1.10) during the policy; however, a similar decrease occurred in the comparison state.
CONCLUSIONS: In this study of a combined step therapy and PA policy for AAs we observed a 33% increase in AA treatment discontinuities and minimal drug savings. The most frequent adverse outcome was AA treatment discontinuation, a strong predictor of acute psychotic episodes and hospitalization, as well as other negative clinical and economic outcomes. At least ten Medicaid and several Medicare drug plans have instituted PA and/or required trials of preferred AA agents. These empirical data suggest further consideration of the need to exempt antipsychotic medications and populations with chronic mental illness from PA and step therapy requirements in Medicaid and Medicare until more is known about the clinical and economic consequences of such policies.



Time to Treatment Discontinuity Among Newly Treated Members of the Study Cohort during the Pre-policy and Policy Observation Periods

DO HIGH COST HOSPITALS PROVIDE BETTER QUALITY: EVIDENCE FROM THE U.S. MEDICARE PROGRAM. L. Yasaitis[1]; J. Skinner[1]; A. Chandra[2]; E. Fisher[1]. [1]Dartmouth College, Lebanon, NH; [2]Harvard University, Cambridge, MA. *(Tracking ID # 173552)*

BACKGROUND: U.S. hospitals differ dramatically in their costs, largely due to differences in the overall intensity with which they treat their patients. Previous research found a negative association at the regional level between selected quality measures and average price-adjusted Medicare spending, and a weaker - but still negative - association across academic medical centers. Whether these findings can be generalized to other acute care hospitals, however, remains unknown.
METHODS: We analyzed 2004 data from Medicare's Hospital Compare database for ten quality measures specific to three conditions: acute myocardial infarction, congestive heart failure, and pneumonia. Average performance was calculated for each condition, and for all 10 measures for hospitals with at least 25 observations on each measure. Hospital-specific measures of spending, care intensity, and the ratio of medical specialist to primary care physician visits were obtained from the Dartmouth Atlas of Healthcare, which reported these measures for seriously ill Medicare beneficiaries cared for by each U.S. hospital over the period 1999–2003. All expenditure measures were adjusted for regional price differences using a state-level price index. We estimated the correlations among the spending, quality and physician workforce measures, weighted by the number of seriously ill beneficiaries cared for by each hospital over the study period. (Alternative approaches yielded similar results.) We then examined correlations between spending, intensity, and quality within four selected U.S. hospital referral regions: Los Angeles, New York, Chicago, and Miami.
RESULTS: 1,862 hospitals had at least 25 observations for each quality measure. Among these hospitals, the price-adjusted, weighted correlation between total inpatient and Part B (physician) spending and the composite quality score was −0.16 ($p < 0.0001$). Similar negative associations were found between other measures of spending or intensity and average quality scores. The correlation between the ratio of specialist to primary care visits and hospitals' quality scores was −0.08 ($p=0.0009$), while the correlation between this ratio and price-adjusted spending was 0.38 ($p < 0.0001$). Examination of spending and average quality scores within the four hospital referral regions found no evidence that higher spending was associated with better quality.
CONCLUSIONS: Hospitals with higher per beneficiary spending and higher intensity practice patterns do not appear to provide higher quality inpatient care as measured by CMS quality scores. This lack of association appears to hold even within the selected regions, suggesting that it may be possible to identify "efficient" - high quality, low cost - providers in many markets. Hospitals where primary care physicians provide a higher proportion of care have lower costs with no decrement in quality. These findings suggest that it may be possible to reduce costs without adversely affecting quality.

DOES THE VA PROVIDE VETERANS WITH BETTER QUALITY PREVENTIVE CARE COMPARED TO MEDICARE HMO PLANS? S. Keyhani[1]; J. Ross[1]; P. Hebert[2]; C. Dellenbaugh[3]; J. Penrod[4]; A.L. Siu[1]. [1]Mount Sinai School of Medicine/James J Peters VAMC, New York, NY; [2]Mount Sinai School of Medicine, New York, NY; [3]James J Peters VAMC, Bronx, NY; [4]Mount Sinai School of Medicine/James J Peters VAMC, Bronx, NY. *(Tracking ID # 173200)*

BACKGROUND: Some policy makers have advocated greater use of free-market mechanisms to improve the quality of care for Medicare beneficiaries. We compared the quality of preventive care of veterans cared for within the Veterans Health Administration (a government run system of care), to veterans cared for by Medicare HMO plans (privately administered plans subject to government regulation) and Medicare fee for service (a government funded plan subject to free market forces).
METHODS: We merged the Medicare Current Beneficiary Survey (MCBS) Costs and Use files between 2000–2002 and performed a cross sectional analysis of receipt of four self-reported preventive measures in the prior year:1) influenza vaccination 2) pneumococcal vaccination 3) serum cholesterol screening 4) and serum prostate-specific antigen (PSA) measurement among 3997 male elderly (> 65) veterans. We compared the care of veterans who accessed care through 1) both the VHA and Medicare (dual users) 2) Medicare HMOs 3) Medicare FFS and 4) the VHA only using multivariate logistic regression analysis, adjusting for age, race, marital status, education, income, additional private insurance coverage, having a usual source of care, tobacco use, health status, service connected disability status, and an MCBS adapted Charlson Comorbidity Index.
RESULTS: Veterans who received care within the VHA (N = 143) had lower incomes and less education, were more commonly active smokers with service related disabilities and more commonly reported fair or poor health when compared with dual using veterans (N = 691), veterans who received care through Medicare HMOs (N = 500) and veterans who received care through FFS Medicare (N = 2663). Rates of self-reported excellent or very good health status were 42% among VHA only users, 37% among dual users, 57% among Medicare HMO participants, and 47% among Medicare FFS participants ($p < 0.001$) and mean Charlson Comorbidity Indexes were 1.4, 1.6, 1.1, and 1.2, respectively ($p < 0.001$). Self-reported rates of influenza vaccination ranged from 71% to 84%, pneumococcal vaccination ranged from 72% to 87%, cholesterol screening ranged from 80% to 91% and PSA measurement ranged from 67% to 77%. Compared to VHA only users, patients who received care through Medicare HMOs were less likely to receive influenza vaccination (OR = 0.62, $p < 0.05$), pneumococcal vaccination (OR = 0.37, $p < 0.001$), serum cholesterol screening (OR = 0.56, $p = 0.1$) and prostate cancer screening (OR = 0.64, $p < 0.05$). Similarly patients who received care through Medicare FFS were less likely to receive influenza vaccination (OR = 0.40, $p < 0.001$), pneumococcal vaccination (OR 0.23, $p < 0.001$) serum cholesterol screening (OR = 0.43, $p < 0.01$) and prostate cancer screening (OR = 0.61, $p < 0.05$) compared to veterans who received care within the VHA. Dual users of VHA and Medicare FFS had no statistically significant difference in receipt of any of the four preventive measures compared to veterans cared for within the VHA.
CONCLUSIONS: Veterans who received care through the VHA were more likely to receive preventive measures compared to veterans who received care through HMO and FFS Medicare, suggesting that VHA provides higher quality preventive care despite serving a population who is sicker and whose socioeconomic characteristics are typically associated with worse preventive behaviors. We found that the government

run VHA was superior to both Medicare HMOs and FFS Medicare in delivering preventive care to veterans.

EFFECT OF A HIGH DEDUCTIBLE HEALTH PLAN ON CANCER SCREENING. J.F. Wharam[1]; D. Ross-Degnan[1]; B.E. Landon[1]. [1]Harvard University, Boston, MA. *(Tracking ID # 173436)*

BACKGROUND: Proponents of high deductible health plans argue that increased cost-sharing motivates consumers to maintain their health in order to avoid future costs. Advocates have therefore promoted such plans as a key component of the healthcare quality movement. Others are concerned, however, that plan members may avoid essential services such as preventive screening if tests are subject to the deductible or if members visit their primary care providers less frequently. No published studies have examined the effect of a high deductible health plan on cancer screening. We sought to determine the effect of the switch to high deductible coverage on rates of breast, cervical, and colorectal cancer screening.
METHODS: We studied cancer screening rates among members of a Massachusetts health plan insured between March 1, 2001 and June 30, 2005. Our study cohort consisted of 3,717 age-eligible members of a high deductible health plan that fully covered mammography, Pap smears, and fecal occult blood testing without a copayment but subjected colonoscopy, flexible sigmoidoscopy, and double-contrast barium enema to the deductible. We analyzed breast, cervical, and colorectal cancer screening rates for one year before and after their switch from a traditional health maintenance organization plan to a high deductible plan, comparing them to rates among 26,989 contemporaneous controls who remained enrolled in the traditional health maintenance organization plan that fully covered all tests. To minimize selection bias, we included only members who were not offered a choice of health plan during the follow up period. We used logistic regression to adjust for member characteristics including age, gender, morbidity, individual versus family plan, and socioeconomic status.
RESULTS: After adjustment, breast and cervical cancer screening rates in the high deductible group showed relative increases of 12.1 percent (95 percent C.I., −4.9 to +32.0) and 2.8 percent (95 percent C.I., −7.4 to +4.2) respectively, while colorectal cancer screening showed a 1.8 percent relative decline (95 percent C.I., −13.1 to +11.0). Fecal occult blood testing increased by 10.8 percent (95 percent C.I., −2.5 to +26.0), while colonoscopy, flexible sigmoidoscopy, and double-contrast barium enema declined by 26.7 percent (95 percent C.I., −42.5 to −6.5) compared to controls. In aggregate analyses, there was a 6.8 percent relative increase (95 percent C.I., −1.3 to +15.5) in screening with fully covered tests (mammography, Pap smears, and fecal occult blood testing) compared to the 26.7 percent decline (95 percent C.I., −42.5 to −6.5) in the colorectal cancer screening procedures subject to the deductible.
CONCLUSIONS: Population rates of breast, cervical, and colorectal cancer screening were not affected by the switch to a high deductible plan that fully covered most screening tests. Analysis of colorectal cancer screening indicates that high deductible plan members may be substituting fully covered screening tests (fecal occult blood testing) for those subject to the deductible. Health plans should attempt to combine such value-seeking behavior by consumers with coverage and education that encourages appropriate utilization.

EFFECT OF COST-SHARING ON SCREENING MAMMOGRAPHY IN MEDICARE MANAGED CARE PLANS. A.N. Trivedi[1]; W. Rakowski[1]; J.Z. Ayanian[2]. [1]Brown University, Providence, RI; [2]Harvard University, Boston, MA. *(Tracking ID # 171823)*

BACKGROUND: Increasing patients' share of health care expenses decreases discretionary health services use but also can reduce use of important preventive care. We examined the impact of modest cost-sharing on biennial breast cancer screening among women in Medicare managed care.
METHODS: We reviewed coverage for mammography within 174 Medicare health plans from 2001–04. In a sample of 550,082 individual-level observations from women ages 65–69, we compared rates of biennial breast cancer screening within plans requiring > $10 copayment or >10% coinsurance for mammography with screening rates in plans with full coverage for this service. Using linear regression with GEE, we adjusted for race, area-level income, area-level education, Medicaid eligibility, census region, plan size, plan age, tax status, model type, year, and clustering by plan. We assessed whether the impact of copayments varied by income, education, Medicaid eligibility and race by assessing the significance of interaction terms with cost-sharing. We compared the change in mammography rates of 7 health plans that instituted cost-sharing in 2003 to a control group of plans with continuous participation in Medicare from 2002–04 that did not institute cost-sharing.
RESULTS: The number of Medicare plans with cost-sharing for mammography increased from 3 in 2001 (representing 0.5% of women) to 21 in 2004 (11.4% of women). The median copayment was $20(range $13–$35). Across all study years, rates of breast cancer screening were 77.5% in plans with full coverage and 69.2% in plans with cost-sharing. Differences in screening rates between full coverage and cost-sharing plans ranged from 8% to 11% during each year. In multivariate analyses, the presence of cost-sharing was associated with a 7.2% (95%CI 4.6%–9.7%) lower adjusted rate of screening, an effect that was greater in magnitude than any other plan-level covariate in the model. The negative effect of cost-sharing on mammography rates was significantly greater for enrollees residing in less affluent and less educated areas and for enrollees with Medicaid eligibility (all $p < 0.001$). Trends in mammography rates for plans that instituted cost-sharing in 2003 compared to plans that retained full coverage are shown in the Table.
CONCLUSIONS: Relatively small copayments for mammography are associated with significantly lower biennial mammography rates among woman who should receive breast cancer screening according to accepted clinical guidelines. For important preventive services such as mammography, exempting the elderly from cost-sharing may be warranted.

Table. Screening Mammography Rates in Medicare Plans that Instituted Cost-sharing in 2003 Compared to Plans that Retained Full Coverage

	2002	2004	Δ	Δ−Δ	Δ−Δ*(95% CI)
Instituted cost-sharing (n=8732)	74.8%	69.3%	−5.5%	−7.2%	−7.0% (−2.7%, −11.3%)
Retained full coverage (n=335,410)	76.7%	78.4%	+1.7%		

*Adjusted for individual and plan-level covariates and for clustering within health plans; $p < 0.01$

GEOGRAPHIC REMOTENESS OF HOSPITALS AND 30-DAY MORTALITY FOR ACUTE MYOCARDIAL INFARCTION, HEART FAILURE, AND PNEUMONIA. J.S. Ross[1]; Y. Wang[2]; B.K. Nallamothu[3]; S.M. Bernheim[2]; J.H. Lichtman[2]; A. Epstein[2]; S. Normand[4]; H.M. Krumholz[2]. [1]Mount Sinai School of Medicine, New York, NY; [2]Yale University, New Haven, CT; [3]University of Michigan, Ann Arbor, MI; [4]Harvard University, Boston, MA. *(Tracking ID # 173652)*

BACKGROUND: Studies of the association between hospital-specific mortality and geographic remoteness are often limited by small sample sizes of remote hospitals and unvalidated risk models. We used three years of pooled national Medicare data and validated risk-standardization models to determine whether hospital-specific 30-day mortality for Medicare beneficiaries hospitalized for acute myocardial infarction (AMI), heart failure (HF), or pneumonia varied by hospital geographic remoteness.
METHODS: We performed a cross-sectional analysis of Medicare Provider Analysis and Review (MEDPAR) claims data from all Medicare fee-for-service beneficiaries hospitalized between 2001 and 2003 in U.S. acute-care hospitals. Medicare beneficiaries hospitalized for AMI, HF, or pneumonia were identified using International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) codes. Our outcome measure was hospital-specific risk-standardized all-cause mortality within 30 days of hospitalization. Geographic remoteness was determined using criteria developed by the University of Washington Rural Health Research Center and hospitals were categorized by zip code as being located in an urban area, large rural area, small rural area, or remote small rural area. We used two-level (patient and hospital) hierarchical linear models to examine hospital-specific risk-standardized 30-day mortality by hospital geographic remoteness for patients admitted for AMI, HF, and pneumonia. First-level modeling adjusted for patient socio-demographic characteristics and co-morbid conditions and included hospital-level random effects. Second-level modeling included state-level random effects.
RESULTS: Between 2001 and 2003, 790,246 Medicare beneficiaries were hospitalized for AMI in 3,840 hospitals; 1,230,034 for HF in 4,181 hospitals; and 1,364,494 for pneumonia in 4,285 hospitals. The distribution of beneficiary hospitalizations in urban, large rural, small rural, and remote small rural hospitals was 81%, 14%, 4%, and 1% for AMI; 76%, 15%, 7%, and 2% for HF; and 70%, 18%, 9%, and 3% for pneumonia, respectively. Beneficiaries admitted to urban hospitals were older, more likely to be female, and more like to have a past medical history including hypertension, stroke, and renal disease. The risk-standardized 30-day mortality after admission for AMI was 17.6% (95% Confidence Interval (CI), 17.2%–18.0%) in urban hospitals, 18.3% (95% CI, 17.9%–18.7%) in large rural hospitals, 18.5% (95% CI, 18.1%–18.8%) in small rural hospitals, and 18.4% (95% CI, 18.1%–18.6%) in remote small rural hospitals (p-value < 0.001). The risk-standardized 30-day mortality after admission for HF was 11.9% (95% CI, 11.5%–12.2%) in urban hospitals, 11.9% (95% CI, 11.5%–12.3%) in large rural hospitals, 11.8% (95% CI, 11.6%–12.1%) in small rural hospitals, and 11.6% (95% CI, 11.4%–11.9%) in remote small rural hospitals (p-value = 0.07). The risk-standardized 30-day mortality after admission for pneumonia was 14.8% (95% CI, 14.6%–15.1%) in urban hospitals, 14.8% (95% CI, 14.6%–15.0) in large rural hospitals, 14.5% (95% CI, 14.3–14.8%) in small rural hospitals, and 13.9% (95% CI, 13.6%–14.3%) in remote small rural hospitals (p-value = 0.003).
CONCLUSIONS: Risk-standardized 30-day all-cause mortality for Medicare fee-for-service beneficiaries admitted for AMI was modestly higher for more geographically remote hospitals, no different for HF, and modestly lower for pneumonia.

HAS INCREASED PLAN COMPETITION REDUCED PRICES FOR MEDICARE PART D PATIENTS? J. Hayes[1]; A.V. Prochazka[2]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 171668)*

BACKGROUND: The Medicare Modernization Act (MMA) prescription drug benefit is now one year old and it has been claimed that there has been notably improved pricing due to the competition offered by multiple completing plans. Our goal is to estimate the current cost for these regimens and the degree to which competition has reduced costs after approximately 1 year of the MMA.
METHODS: We chose two equipotent evidence-based regimens, one brand-name and one generic, typical of a cardiovascular patient. The brand name regimen was Lipitor 10 mg qd, Toprol 100 mg qd, Altace 10 mg qd, and the generic regimen was lovastatin 40 mg qd, metoprolol 50 mg bid, lisinopril 20 mg qd. We then accessed the Medicare website plans for the zip code 80220 for a non-married patient determined to be above 150% of the poverty level income threshold for 2006 and reviewed previously obtain results from November 2005 for the same regimens. We used pharmacychecker.com to obtain the least expensive Canadian costs. Lastly, we obtained the generic regimen prices from two "big box" pharmacies under recently changed pricing schedules.
RESULTS: There was an increase of 24% in the number of plans from 40 to 53 from 2005 to 2006. The brand name regimen in December 2006 cost $1724 (range $897 to $2977, sd $424), an increase in average price of $6 (0.3%, $p = 0.470$) from the November 2005 cost ($1718, range $767 to $2378, sd $337). The least expensive Canadian based pharmacy sold the same regimen for an annual cost of $888, which was less than all of the MMA plans. For the generic regimen in December 2006, the average annual cost was $689 (range $246 to $2096, sd $330) which was a reduction of $135 (24%, $p = 0.067$) in price from the November 2005 cost ($824, range $317 to $1986, sd $366). The least expensive Canadian based pharmacy sold the same regimen for an annual cost of $605. The "big box" pharmacy generic regimen annual cost was $312 which was less than all but two of the MMA plans.
CONCLUSIONS: After approximately one year, the MMA plan competition is associated with only a moderate reduction in average generic price for Part D patients on a typical cardiac regimen, but no effect on brand name pricing. The value with the typical MMA plan for the average cardiovascular patient is minimal when compared with Canadian brand name options and new U.S. retail generic options.

IMPACTS OF TENNCARE REFORM ON THOSE WHO LOST COVERAGE AND THOSE WHO REMAINED INSURED. S. Connelly[1]; J. Bailey[1]; D.M. Mirvis[1]; C.F. Chang[2]. [1]University of Tennessee, Memphis, TN; [2]University of Memphis, Memphis, TN. *(Tracking ID # 173457)*

BACKGROUND: TennCare, Tennessee's Medicaid managed care program, dramatically expanded coverage to 1.3 million Tennesseans in 1994. However, in August 2005, budget shortfalls and escalating medical costs forced a disenrollment of about 200,000 uninsured and uninsurable adults as well as a reduction in enrollees' benefits. This large and sudden disenrollment of Medicaid population and reduction of benefits offers a unique opportunity to study the health consequences of losing insurance coverage on this vulnerable population. Objectives: To study: (1) the ability of TennCare disenrollees to obtain other health insurance; (2) the impacts of loss of TennCare on access to health care services and out-of-pocket expenses; and (3) disenrollees' satisfaction with their health care.
METHODS: The research design includes 3 rounds of telephone surveys of recently disenrolled and continually enrolled TennCare adults. Each group was selected by age, gender, and region of Tennessee to represent the overall population of disenrollees and enrollees. The results reported here are based on the first statewide telephone survey conducted 6 months after TennCare disenrollment on a total of 513 disenrolled persons and 244 continually enrolled persons.
RESULTS: After six months, 72% of disenrollees remained without health care coverage and only 14% obtained non-federally funded health care coverage. Six months after disenrollment, the disenrolled reported a significant 21% decrease in having a personal doctor while those who remained enrolled saw no change. Median outpatient visits decreased by one visit in both groups. The disenrolled reported a significant decrease of 25% in being able to seek medical care without delay while the continually enrolled experienced no change. There was an increase in median out-of-pocket expenses in the disenrollees of $111 per six months compared to no change in the continually enrolled. The number of disenrollees reporting no difficultly in affording prescription medication decreased by 31% with only a 3% decrease in the continually enrolled. Emergency room visits by the disenrolled decreased by almost in half from 0.62 visits per person over six months to 0.31 visits per person over six months with a similar trend in the continually enrolled. The majority of those disenrolled from TennCare reported being "very dissatisfied" with the healthcare they received after losing their coverage while the majority of those who remained on the program reported being "very satisfied" after the benefit reduction.
CONCLUSIONS: We observed that a majority (72%) of disenrollees remained without health care coverage six months after disenrollment. We have also observed that disenrollees experienced significant decreases in outpatient visits, essential prescriptions filled, access to a "personal doctor," increases in out of pocket expenses and satisfaction. However, these changes have not yet been associated with an increase in emergency or hospital visits at the six-month endpoint. Additional follow-up currently underway will more clearly determine whether loss of insurance results in further decrements in access to care and health status or whether those disenrolled regain access to essential health services. We fully expect to incorporate the results of our second round of survey by June 2007.

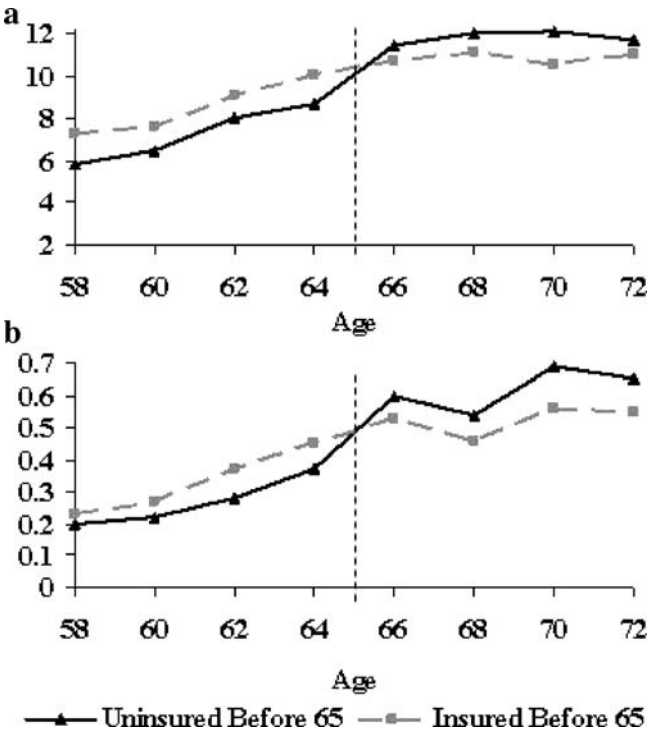
INSURANCE STATUS OF PATIENTS ADMITTED TO SPECIALTY CARDIAC HOSPITALS AND COMPETING GENERAL HOSPITALS: ARE ACCUSATIONS OF CHERRY PICKING JUSTIFIED? P. Cram[1]; L. Bayman[1]; M.S. Vaughan Sarrazin[2]. [1]University of Iowa, Iowa City, IA; [2]Iowa City VA Medical Center, Iowa City, IA. *(Tracking ID # 173096)*

BACKGROUND: A primary criticism of specialty hospitals is that they "cherry pick" patients with generous insurance plans while avoiding financially vulnerable populations, yet empiric data are lacking. We used all-payor data to examine the insurance status of patients admitted to specialty cardiac and competing general hospitals for acute myocardial infarction (AMI), congestive heart failure (CHF) and coronary artery bypass grafting (CABG) surgery. We then assessed whether specialty cardiac hospitals were more likely to transfer financially vulnerable patients (defined as those with either Medicaid insurance or self-pay) to another acute care hospital than competing general hospitals.
METHODS: We used State Inpatient Data (SID) from Texas and Arizona to identify physician owned specialty cardiac hospitals ($N = 8$) and competing general hospitals ($N = 188$). We selected all patients admitted to these hospitals with AMI ($N = 8{,}312$ patients in specialty hospitals; 131,441 in general hospitals), CHF ($N = 5{,}365$ patients in specialty hospitals; 156,942 in general hospitals), or CABG ($N = 6{,}555$ and 57,390) using ICD-9-CM codes. We compared demographics and insurance status of patients in specialty cardiac and competing general hospitals. We used logistic regression models with hospital random effects to account for clustering of patients within hospitals to compare the odds of patients hospitalized in specialty hospitals being transferred to another acute care hospital when compared with patients hospitalized in general hospitals after adjusting for patient demographics and comorbidity. Interaction terms were used to examine whether financially vulnerable patients (Medicaid or self-pay) in specialty hospitals were more likely to be transferred compared with patients insured by Medicare.
RESULTS: Patients admitted to specialty hospitals for each condition were significantly less likely to be female, black or hispanic, and more likely to be white when compared to patients admitted to competing general hospitals ($P < .001$ for each). A smaller percentage of patients who were admitted to specialty hospitals were classified as financially vulnerable (defined as having either Medicaid or self-pay) as compared to general hospitals for AMI (9.1% vs. 10.2%; $P = .001$), CHF (5.4% vs. 10.3%; $P < .001$), and CABG (5.7% vs. 8.1%; $P < .001$). In logistic regression adjusting for patient demographics and comorbid conditions, patients' odds of being transferred out of specialty hospitals (as compared with patients in general hospitals) was lower for AMI (OR = 0.32; 95% CI 0.27–0.37), CHF (OR = 0.30; 95% CI 0.23–0.38) and the three diagnoses in aggregate (OR = 0.28; 95% CI 0.25–0.31) but higher for CABG (OR = 1.64; 95% CI 1.18–2.29). In analyses of the interaction terms, there was no evidence that specialty hospitals were more likely to transfer financially vulnerable patients ($P > 0.5$ for all).
CONCLUSIONS: Specialty cardiac hospitals admit a lower proportion of financially vulnerable patients than competing general hospitals. Specialty hospitals also transfer a smaller proportion of admitted patients to another acute care hospital than competing general hospitals after adjusting for demographics and comorbidity. Finally, we found no evidence that financially vulnerable patients in specialty hospitals were more likely to be transferred when compared with patients with more generous insurance, calling into question accusations of cherry picking by specialty hospitals.

INTENSITY OF HEALTH SERVICES AND COSTS OF CARE FOR PREVIOUSLY UNINSURED MEDICARE BENEFICIARIES. J.M. Mcwilliams[1]; E. Meara[2]; A.M. Zaslavsky[2]; J.Z. Ayanian[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard University, Boston, MA. *(Tracking ID # 170231)*

BACKGROUND: Previously uninsured adults who enroll in the Medicare program at age 65 may have greater morbidity, requiring more intensive and costly care over subsequent years than they would need if previously insured.
METHODS: We longitudinally assessed self-reported health-care utilization and expenditures from 1992–2004 among 5158 adults in the nationally representative Health and Retirement Study who were privately insured or uninsured before gaining Medicare coverage at age 65. We used propensity-score methods to compare health-care utilization and expenditures between previously insured and uninsured beneficiaries who were similar across numerous characteristics at age 59–60 and adjusted for differences in supplemental and prescription drug coverage after age 65.
RESULTS: Among 2951 adults diagnosed with hypertension, diabetes, heart disease, or stroke before age 65, gaining Medicare coverage was associated with significantly greater increases in the numbers of self-reported doctor visits ($P < 0.001$) and hospitalizations ($P = 0.001$) and in self-reported total medical expenditures ($P = 0.02$) for previously uninsured adults than for previously insured adults (Figure). Significant differential increases were not evident among 2207 adults without these conditions. In adjusted analyses, previously uninsured adults with these conditions reported 13% more doctor visits ($P = 0.04$), 20% more hospitalizations ($P = 0.04$),

and 51% higher total medical expenditures (P = 0.09) from age 65 to 72 than previously insured adults.



Self-Reported Biennial Doctor Visits (A) and Hospital Admissions (B) by Age and Health Insurance Coverage Prior to Age 65 Among Adults with Hypertension, Diabetes, Heart Disease, or Stroke

CONCLUSIONS: The costs of expanding health insurance coverage for uninsured near-elderly adults may be partially offset by subsequent reductions in health-care utilization and spending after age 65, particularly for those with cardiovascular disease or diabetes before age 65.

MEDICAID PRIOR AUTHORIZATION POLICIES AND CONTROLLED-RELEASE OCYCODONE. J.T. Zerzan[1]; N.E. Morden[2]; T.C. Rue[3]; P.J. Heagerty[3]; S.D. Sullivan[3]. [1]Seattle HSR&D, Puget Sound VA, Seattle, WA; [2]Dartmouth College, Lebanon, NH; [3]University of Washington, Seattle, WA. *(Tracking ID # 172505)*

BACKGROUND: Since its introduction in 1996, use of controlled-release (CR) oxycodone has increased steadily despite its high cost relative to other long acting opiate analgesics. To control use and expenditures, many state Medicaid programs have implemented a prior authorization (PA) requirement for this drug. We estimate the impact of such policies on the use of CR oxycodone by fee-for-service Medicaid beneficiaries.

METHODS: Aggregate Medicaid prescription dispensing records for CR oxycodone and all other opiates were obtained for each state from 1996 through 2004. Medicaid PA policy details were obtained from publications and telephone interviews. Prior authorization policies were classified as more restrictive or less restrictive based on pre-specified criteria. Using regression and random effects meta-analyses, we estimated the impact of PA requirements on each state's CR oxycodone use, long acting opiate use, all opiate use and average expenditures per opiate dose.

RESULTS: CR oxycodone accounted for 12.4% of all opiates and 32.2% of long acting opiates dispensed to Medicaid beneficiaries in 2004. Between 2001 and 2004, 21 states implemented a PA requirement for CR oxycodone. The impact of these policies on controlled-release oxycodone use varied by state, from a 58% decrease to a 162% increase (median: 15% decrease). In aggregate, PA was associated with a small, statistically non-significant decrease in use of CR oxycodone and a significant 9% decrease in the proportion of long acting (LA) opiate doses made up by CR oxycodone. Overall PA was not associated with a change in average cost per LA opiate dose. Only five of the ten states who demonstrated a decrease in controlled-release oxycodone use following prior authorization had a more restrictive policy.

CONCLUSIONS: The impact of PA policies varied by state and was less dramatic than previously described effects of Medicaid PA on other drugs. States had no associated change in expenditures per dose of long acting opiates. Decreased controlled-release oxycodone use was not consistently predicted by the presence of a more restrictive prior authorization policy. A more refined measure of PA policies and their impact is needed to understand the variable impact of PA and to identify the most effective prescription management policies.

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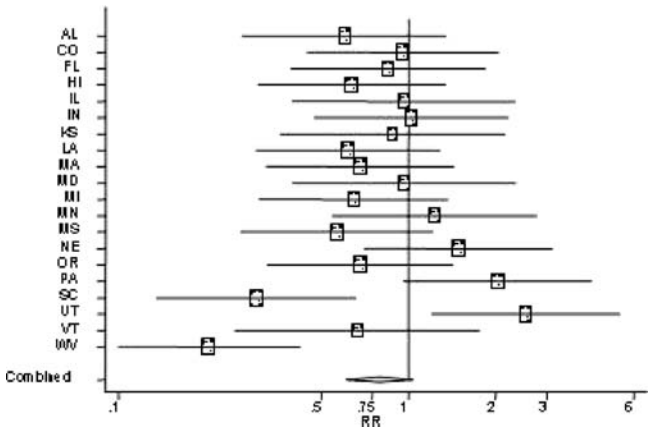


Adjusted state specific estimates of PA impact on CR oxycodone use

OPIOID USE DISORDER IN THE UNITED STATES: INSURANCE STATUS AND TREATMENT ACCESS. W.C. Becker[1]; D.A. Fiellin[1]; J.O. Merrill[2]; B. Schulman[2]; R. Finkelstein[3]; Y. Olsen[4]; S.H. Busch[1]. [1]Yale University, New Haven, CT; [2]University of Washington, Seattle, WA; [3]New York Academy of Medicine, New York, NY; [4]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 173441)*

BACKGROUND: In the United States, the prevalence of opioid use disorder, defined as heroin or prescription opioid abuse or dependence, is increasing. Effective medication exists for opioid use disorder that can be prescribed by primary care physicians. Because insurance status may serve as a barrier to access for this vulnerable population, we sought to determine the impact of insurance status on treatment use in opioid dependent patients.

METHODS: We performed a secondary analysis of household surveys conducted in 2002–2004, the National Survey on Drug Use and Health (n = 164,911). Respondents met criteria for substance use disorder based on DSM-IV questions contained in the survey. We created three mutually exclusive sub-groups of the population: individuals with opioid use disorder, individuals without substance use disorder and individuals with non-opioid substance use disorder (SUD). Bivariate associations between these groups' treatment and insurance status, as well as sources of payment and treatment location, were investigated.

RESULTS: 1736 respondents met criteria for past-year opioid use disorder (0.6% of the sample). Respondents with past-year opioid use disorder were younger than respondents compared to those with no SUD ($p < .0001$) and respondents with non-opioid SUD ($p < .0001$). Respondents with past-year opioid use disorder had higher rates of unemployment (10.5%) than respondents with non-opioid SUD (7.1%; $p < .0001$) and those without SUD (3.3%; $p = .0001$); greater than two times the rates of Medicaid coverage (15.4% vs. 5.8%) and uninsurance (26.4% vs. 13.2%) than respondents without SUD ($p < .0001$ for both comparisons) and higher rates of both Medicaid coverage (15.4% vs. 6.7%) and uninsurance (26.4% vs. 23.6%) compared to those with non-opioid SUD. Only 15.2% of those with past-year opioid use disorder received formal treatment or counseling in the past year and receipt of treatment did not vary by insurance status. Respondents treated for opioid use had higher rates of Medicaid (33.7% vs. 17.0%; $p = .0013$), Medicare (26.5% vs. 14.0%; $p = .0065$) and other public assistance (34.3% vs. 21.3%; $p = .0126$) compared with those treated for other substances. Treatments for opioid use were more likely to be inpatient (9.2% vs. 2.9%; $p = .0399$) and inpatient rehabilitation (23.0% vs. 14.1%; $p = .0220$) settings.

CONCLUSIONS: In the U.S., those with opioid use disorder are a particularly vulnerable group, with higher rates of unemployment, uninsurance, reliance on public funding for treatment, and need for intensive services than those with other substance use disorders. We did not find that insurance status impacted receipt of treatment, but this may be due to the unexpectedly low rate of treatment across all insurance statuses. The demographics of those with opioid use disorder, along with low rates of treatment use, suggest the need for policies designed to increase access to publicly funded treatments, including those available in primary care offices.

STATUTORY IMPEDIMENTS TO IMPLEMENTATION OF THE 2006 CDC RECOMMENDATIONS FOR HIV TESTING IN HEALTHCARE SETTINGS. A.P. Mahajan[1]. [1]University of California, Los Angeles, Los Angeles, CA. *(Tracking ID # 173141)*

BACKGROUND: About 300,000 persons in the U.S. are unaware of their HIV seropositivity. The existing paradigm for HIV testing has hampered uptake of testing and early detection. As a result, the CDC in September 2006 recommended a major revision to testing policy - 'opt-out' HIV screening of all patients in all health-care settings. In 'opt-out' testing, the provider notifies the patient that HIV testing will be performed and offers the patient the opportunity to decline. Existing state-level law regarding HIV testing may limit implementation of the new CDC recommendations.
METHODS: Novel provisions of the 2006 CDC Revised Recommendations for HIV Testing were analyzed for relevance to existing state-level HIV statutes. Utilizing data on HIV law from the AHA's Health Research and Education Trust, criteria for three categories of state-level statutory environments - 'Minor,' 'Moderate,' and 'Severe' Statutory Impediments' - were developed. Each state was assigned to one of these three categories. Also, for each category, strategies to optimally implement the new recommendations within the current statutory restrictions were developed.
RESULTS: The following provisions of the 2006 Recommendations pertain most significantly to existing HIV law: 1) 'separate written consent should not be required and that general consent for medical care should be sufficient for HIV testing' and 2) pre/post test 'prevention counseling should not be required.' Numerous states mandate informed consent for HIV testing and the specific elements for constituting consent in their statutes varies. Some states specifically require signed written consent, some are less stringent, requiring verbal or written consent, and others are less specific, not specifying written vs. verbal. Many states also legally stipulate prevention counseling when performing an HIV test. Criteria for the overall legal permissibility of the 2006 Recommendations are based on a composite characterization of statutory requirements for consent and counseling (see table). Seven states fall in the 'Severe' impediment category, where meaningful implementation of the new testing policy is not possible without substantive legislative amendment. Twenty-four states fall into the 'Moderate' impediment category, where partial implementation utilizing either modified informed consent or counseling procedures is possible. Twenty states fall into the 'Minor' impediment category, where the statutory environment is most amenable to full implementation of the new testing guidelines.
CONCLUSIONS: There are numerous state-level statutory impediments to implementation of the 2006 CDC recommendations for HIV testing. Currently, comprehensive implementation is not legally permissible in 31 of the 50 states. Public health officials should 1) develop partial implementation plans that are legally permissible and 2) work closely with legislators to amend obstructive laws.

Statutory Environments and Permissibility of 2006 CDC Recommendations

Degree of Statutory Impediment	States	Total
Severe Impediments (Lower Permissibility)	IL, ME, MD, MI, MT, PA, RI	7
Moderate Impediments (Equivocal Permissibility)	AL, AZ, CA, CO, CT, DE, FL, GA, HI, IN, IA, LA, MA, MO, NE, NH, NM, NY, ND, OH, OR, WA WV, WI	24
Minor Impediments (Higher Permissibility)	AK, AR, DC, ID, KS, KY, MN, MI, NV, NJ, NC, OK, SC, SD, TN, TX, UT, VT, VA, WY	20

THE IMPACT OF THE ACGME DUTY HOUR RULES ON MORTALITY RATES IN TEACHING HOSPITALS. K. Volpp[1]; A. Rosen[2]; P. Rosenbaum[3]; P.S. Romano[4]; O. Even-Shoshan[5]; A. Canamucio[6]; L.M. Bellini[7]; T. Behringer[7]; J.H. Silber[8]. [1]Philadelphia VA Medical Center, University of Pennsylvania School of Medicine, the Wharton School, Leonard Davis Institute of Health Economics, Philadelphia, PA; [2]Bedford VA and Boston University, Boston, MA; [3]The Wharton School, Philadelphia, PA; [4]University of California, Davis, Sacramento, CA; [5]Children's Hospital of Philadelphia, Philadelphia, PA; [6]Philadelphia VA Medical Center, Philadelphia, PA; [7]University of Pennsylvania, Philadelphia, PA; [8]Children's Hospital of Philadelphia; The Wharton School; Leonard Davis Institute of Health Economics, Philadelphia, PA. *(Tracking ID # 173015)*

BACKGROUND: In response to concern about deaths in American hospitals from medical errors, the Accreditation Council for Graduate Medical Education (ACGME) released rules effective July 1, 2003 that restricted duty hours for all ACGME-accredited residency programs. The objective of this study was to determine the impact of the duty hour regulations, one of the largest interventions ever undertaken to improve patient safety in teaching hospitals nationwide, on mortality in VA hospitals. VA hospitals are the largest single training site for resident physicians in the United States.
METHODS: This was an observational study using interrupted time series analysis. We included all unique patients (n = 339,020) admitted to acute-care VA hospitals from July 1, 2000 to June 30, 2005 with a principal diagnosis of acute myocardial infarction (AMI), congestive heart failure, gastrointestinal bleeding, or stroke, or a DRG classification of general, orthopedic or vascular surgery. Logistic regression was used to examine the change in mortality for patients in more versus less teaching-intensive hospitals before and after duty hour reform, adjusting for patient comorbidities, common time trends, and hospital site. Data were obtained from the VA Patient Treatment File, the VA Beneficiary Identification and Record Locator Subsystem file, and the VA Office of Academic Affiliations.
RESULTS: In post-reform year 1, there were no significant relative changes in mortality for either medical or surgical patients. In post-reform year 2, the odds of mortality declined significantly in more teaching-intensive hospitals for medical patients only. Comparing a hospital with a resident to bed ratio of 1.0 to one with a resident to bed ratio of 0, the odds of mortality were significantly reduced for AMI patients (OR 0.49, p-value < 0.0001, 95% CI [0.33 0.71]), for the 4 medical conditions together (OR 0.74, p-value < 0.002, 95% CI [0.61 0.89]), and for the 3 medical conditions besides AMI (OR 0.79, p-value = 0.03, 95% CI [0.63, 0.98]). Compared to the average patient in a hospital in the 25th percentile of teaching intensity, mortality improved from pre-reform year 1 to post-reform year 2 by 0.70 percentage points for patients in hospitals in the 75th percentile of teaching intensity and by 0.88 percentage points in hospitals at the 90th percentile of teaching intensity, a relative improvement of 11–14%.
CONCLUSIONS: The ACGME duty hour regulations were associated with large-scale improvement in mortality rates for patients with 4 common medical conditions but not among surgical patients in more vs. less teaching intensive VA hospitals in post-reform year 2. A single duty hour standard may affect trainees in different specialties differently, and experimentation is needed to test the relative cost effectiveness of different approaches.

THE RELATIONSHIP BETWEEN THE COSTS AND QUALITY OF HOSPITAL CARE IN THE U.S. A.K. Jha[1]; J. Orav[2]; A. Dobson[3]; R. Book[4]; A.M. Epstein[1]. [1]Harvard University, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA; [3]Lewin Group, Falls Church, VA; [4]Industrial College of the Armed Forces, National Defense University, Washington, DC. *(Tracking ID # 172469)*

BACKGROUND: The U.S. healthcare system is facing challenges on two competing fronts: rising costs and inconsistent quality. The relationship between an organization's risk-adjusted costs of care, sometimes described as its "efficiency," and its quality of care is largely unknown. We sought to determine whether U.S. hospitals with low risk-adjusted costs provide higher quality care.
METHODS: We estimated each hospital's expected costs based on their case mix and other structural characteristics including teaching status and local wage index. We then calculated "risk-adjusted costs" as the ratio of observed to predicted costs for each hospital. We examined the relationship of a hospital's risk-adjusted costs to its profit status and the fraction of patients with Medicare insurance. We also examined the relationship between a hospital's risk-adjusted costs and its nursing to census ratio, performance on process quality indicators for acute myocardial infarction, congestive heart failure, and pneumonia as assessed from the Hospital Quality Alliance data base, and risk-adjusted mortality for these three common conditions.
RESULTS: We were able to calculate risk-adjusted costs for 3,814 general medical and surgical hospitals. Compared to hospitals in the highest quartile of costs, those in the lowest quartile of risk-adjusted costs were more likely to be for-profit (25% vs. 12%, $p < 0.001$) with a higher fraction of patients with Medicare (48% vs. 44%, $p < 0.001$). Hospitals in the lowest quartile of costs had substantially lower nursing to census ratio (5.3 vs. 6.5 per 1,000 patient days, $p < 0.001$) and lower performance on quality indicators for acute myocardial infarction (89.1 vs.90.8, $p < 0.001$) and congestive heart failure (75.5 versus 82.7, $p < 0.001$) compared to hospitals in the highest quartile of costs. Patients admitted to low cost hospitals had 5% higher odds of risk-adjusted mortality for acute myocardial infarction ($p = 0.12$), 5% higher odds of risk-adjusted mortality for congestive heart failure ($p = 0.06$), and 6% higher odds of risk-adjusted mortality for pneumonia ($p = 0.03$).
CONCLUSIONS: Hospitals with lower risk-adjusted costs, often described as "efficient" hospitals, were more often for-profit and had fewer nurses. Hospitals with lower costs had marginally worse quality and outcomes of care. As we seek to improve care, it is important to determine whether these relationships are causal and to take into account quality when rewarding low-cost care.

WAITING TIME TO SEE AN EMERGENCY DEPARTMENT PHYSICIAN, AN ANALYSIS OF NATIONAL TRENDS. A. Wilper[1]; S. Woolhandler[2]; K. Lasser[2]; D. Mccormick[3]; D. Bor[4]; D.U. Himmelstein[5]. [1]The Cambridge Health Alliance/Harvard Medical School, Cambridge, MA; [2]Cambridge Hospital, Cambridge, MA; [3]Cambridge Hospital/Harvard Medical School, Cambridge, MA; [4]Harvard University, Cambridge, MA; [5]Cambridge Health Alliance and Harvard University, Cambridge, MA. *(Tracking ID # 172709)*

BACKGROUND: As the number of emergency departments (EDs) in the United States has fallen, ED patient volumes have increased nationwide. The impact of this trend on ED wait time to see a physician has not been established.

METHODS: We analyzed patients using EDs in the United States in 1997, 1998, 1999, 2000, 2003 and 2004, using data from the National Hospital Ambulatory Care Survey (NHAMCS). We included all patients age 18 years and over who had wait times recorded in the NHAMCS. We examined time from ED arrival to evaluation by a physician; we also evaluated the change in wait times during this period both for all ED patients and for patients diagnosed with acute myocardial infarction (AMI). We performed bivariate and multivariate linear regression analyses to determine correlates of longer wait time. In multivariate analysis we controlled for patient age, race/ethnicity, gender, anticipated source of payment, initial triage status, presenting complaint of chest pain, ultimate ED diagnosis of AMI, hospital admission, region of the country, urban versus non-urban hospital location, evaluation by a resident physician and year of visit. Prior to statistical testing we log transformed wait times to avoid distortions (skewing) from patients with very long wait times.
RESULTS: Between 1997 and 2004, the median wait time to see an ED physician increased for all patients from 22 minutes in 1997 to 30 minutes in 2004 (linear regression +4.2%/yr, $p < 0.0001$). Median wait time for patients diagnosed in the ED with AMI also increased, from 8 minutes to 20 minutes (linear regression +11%/yr, $p < 0.0001$). Median wait time for patients presenting with a chief complaint of chest pain, who were ultimately diagnosed in the ED with AMI increased from 7 to 20 minutes (linear regression +12%/yr, $p < 0.0001$). Patients recognized at triage as needing emergent attention had shorter waits than other patients. Nonetheless their median wait times increased from 10 minutes in 1997 to 14 minutes in 2004 (linear regression +3.6%/yr, $p = 0.02$). Among adults, the median wait time for whites was 40.7 minutes, interquartile range (IQR)(10,50). Median wait time for blacks was 54.5 minutes, IQR (14,70). Hispanics had a median wait of 56.3 minutes, IQR (14,72). Patients seen in urban EDs median wait was 49.8 minutes, IQR (14,62). Patients seen in non-urban EDs median wait was 26.6 minutes, IQR (6,30). In multivariate analysis, controlling for all other factors, blacks waited 13.0% (95% confidence interval [CI], 8.2,18.1) longer and Hispanics waited 13.7% (95% CI, 7.2,20.7) longer than did non-Hispanic whites. Patients at urban hospitals waited 63.6% longer (95% CI, 49.4,79.1) than those at non-urban hospitals. Wait times increased by 1.5% per year between 1997 and 2004 (95% CI, 0.1,2.8). Males experienced waits 5.3% shorter (95% CI, −7.4,−3.3) than females.
CONCLUSIONS: Patients in U.S EDs have faced progressively longer wait times for physician care, even when presenting with AMI. Blacks, Hispanics, women and patients seen in urban EDs wait even longer than do other patients. Unless resources are allocated to EDs and primary care sites to decrease overcrowding, the benefits of early intervention for time sensitive conditions such as AMI will be less attainable for all Americans, and particularly for women and minorities.

WHAT IF THE FEDERAL SUPPLY SCHEDULE SET PHARMACEUTICAL PRICES FOR SENIORS? W.F. Gellad[1]; S. Schneeweiss[2]; P. Brawarsky[1]; J.S. Haas[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard University, Boston, MA. *(Tracking ID # 172632)*

BACKGROUND: The Medicare Modernization Act (MMA) explicitly ruled out the possibility that the federal government could directly negotiate drug prices as an effective way to contain costs for Part D. Recent changes in the leadership of congress have led to a reemergence of debate on this issue. Drug prices from the Federal Supply Schedule (FSS) represent the maximum price paid for pharmaceuticals by Federal agencies that are authorized to use the schedule, which is negotiated by the federal government. Taking a societal perspective, we sought to quantify how much money for prescription drugs could be saved among the elderly if prices nationwide were equivalent to 2006 FSS prices for several of the top selling prescription drug classes.
METHODS: Cross-sectional analysis of the nationally representative Medical Expenditure Panel Survey, 2004. Adults > 64 years old who filled a prescription for any drug within the following classes were included: Angiotensin Receptor Blockers, ACE inhibitors, HMG-CoA Reductase Inhibitors (Statins), Proton Pump Inhibitors, Non-Steroidal Anti-inflammatory, Histamine-2 Receptor Antagonists, Dihydropyridine Calcium Channel Blockers, and Steroid Inhalers (n = 2,198 individuals with 28,377 prescriptions). NDC numbers for specific drugs were used to abstract data on total expenditures for all prescriptions in 8 drug classes in 2004. The average price/pill for each drug-dose combination was calculated in 2006 dollars. This price/pill was compared to prices available through the November 2006 FSS. A savings/pill was calculated, and then summed across pills and across individuals and weighted, to calculate a nationally representative estimate of societal savings that could be achieved if medications were obtained for FSS prices instead of current pricing systems.
RESULTS: 67% of seniors in the sample had supplemental insurance in addition to Medicare. Substitution of the FSS price could result in a median annual per person savings in drug expenditures of $308 (interquartile range, $124 to $637) for the Medicare population, age 65 and above. The potential national savings among these 8 classes over one year is $10.7 billion (95% CI $10.0 billion to $11.4 billion). Among Statin medications alone, the annual savings could be $5.9 billion (95% CI $5.4 billion to $6.4 billion) in this age group.
CONCLUSIONS: Prices available on the Federal Supply Schedule for the 8 classes of medications studied are considerably lower than calculated prices currently paid by the health care system. Substantial savings in drug expenditures, in the tens of billions of dollars, would result if FSS prices were used by Medicare Part D in place of these commercially available prices. While all prices may not reach FSS levels, even in a national system, the above estimate is conservative, considering only 8 classes of medications were studied, and in reality many prices paid by the federal government are even lower than what is scheduled on the FSS.

A COMPARISON OF HOSPITALIST CARE AND NON-HOSPITALIST CARE WITHIN A VA MEDICAL CENTER. P.W. Helgerson[1]; G. Chia[1]; J. Breckenridge[1]; L. Osterberg[1]. [1]Veteran's Affairs Palo Alto Medical Center, Palo Alto, CA. *(Tracking ID # 172881)*

BACKGROUND: Previous studies have reported mixed results on the effect of hospitalists on cost of care, length of stay, and various measures of quality of care. Most have drawn upon data from public or private academic or community hospitals. The Veterans Administration has increasingly employed hospitalists to deliver a substantial portion of inpatient care. As a system with different incentives surrounding patient flow, reimbursement, and unique performance measures related to inpatient care, the effect of hospitalist care may be different in this setting. We seek to examine the effect of a hospitalist service on cost of care, length of stay (LOS), and adherence to national VA performance measures related to inpatient care in a single VA Hospital.
METHODS: Data was collected for consecutive medical admissions for a one year period from 7/1/05 to 6/30/06 (n = 2130) at the Palo Alto VAMC. Hospitalists (n = 5) were defined as those who attended at least three months on inpatient medicine, and were employed within the hospitalist section. Non-hospitalists (n = 19) attend no greater than two months on the inpatient service. Patients were randomized to hospitalist vs. non-hospitalist care based upon day of admission. Cost and LOS data was obtained from the VA decision support system and analyzed using a two sample t -test to compare the two groups. Costs examined included total cost of care as well as nursing/bed costs, laboratory, radiology, procedure, physician, and ancillary service costs. Quality of care was compared using VA performance measures that are nationally monitored. These assess adherence to specified processes related to care of patients with congestive heart failure (6 unique measures), pneumonia (10 measures) and acute coronary syndrome (17 measures). Quality data was compiled from hospital quality management chart audit of all patients discharged with primary or secondary diagnosis of congestive heart failure (CHF), pneumonia, or acute coronary syndrome (ACS) based upon related diagnostic codes. Adherence to these multiple performance measures was assessed as a binary all-or-none measure and compared using a two sample test of proportion.
RESULTS: No significant difference was observed in length of stay, total or fractionated costs of care, or rates of adherence to performance criteria. Average LOS was 5.15 days on the hospitalist service, 5.30 for non-hospitalists ($p = 0.72$). Total cost of care was $9614 per admission ($1867/d) on the hospitalist service and $9717/admission ($1833/d) on the non-hospitalist service ($p = 0.9$). All or none adherence to the diagnosis-related performance measures for hospitalists vs. non-hospitalists was as follows: for CHF, 93% vs. 88% percent (z statistic 1.03, NS); for pneumonia, 56% vs. 50%, ($z = 0.54$, NS); for ACS, 52% vs. 49% ($z = 0.27$, NS). Overall, hospitalists met all criteria on 67% of cases vs. 60% for non-hospitalists ($z = 1.34$, NS).
CONCLUSIONS: No difference was identified between the cost of care, length of stay, or quality of care for patients cared for by hospitalists vs. non-hospitalists. Further research is needed to determine whether these results are replicable across VA institutions and if important differences within hospitalist vs. non-hospitalist practice at VA exist, such as those related to patient satisfaction or education. In addition, other indicators of quality of care are needed to provide finer resolution of any potential differences in hospitalist vs. non-hospitalist care.

ADVERSE DRUG EVENTS IN HOSPITALISED PATIENTS WITH RENAL INSUFFICIENCY. R. Kaw[1]; J. Ketz[1]; D. Rolston[1]; M. Wyman[1]; C. Phillips[1]; A. Kumar[1]; S. Suri[1]. [1]Cleveland Clinic Foundation, Cleveland, OH. *(Tracking ID # 173814)*

BACKGROUND: Actual adverse drug events (ADEs) occur in approximately 6.5% of acutely hospitalized patients. Renal insufficiency (RI) has been suggested as a predisposing factor but this has not been well studied. We sought to investigate the incidence of ADEs and/or medication prescribing errors in patients with RI.
METHODS: We performed a retrospective chart review of patients with renal insufficiency who were acutely hospitalized during a 30-day period on medical-surgical units in a large tertiary care center. Renal insufficiency was defined by GFR ¡Ü50 ml/min for at least 72 hours and calculated using methods suggested by Levey et al since ideal body weights are hard to assess in retrospective chart analysis and anthroprometric data may sometimes be insufficiently documented. Charts were reviewed independently by 2 investigators for ADEs and medication prescription errors (including wrong drug, dose and frequency) during the study period. ADEs were classified as actual or potential (defined as those where a medication prescription error did not result in an adverse event). The main outcome measure

was the proportion of ADEs associated with medication prescription errors in patients with renal insufficiency.
RESULTS: Among the 243 patients studied, 38% were male, 75% were Caucasian with a mean age of 67.7 ¡¡ 0.93 years, and average CrCl of 24.7 ¡¡ 0.95. The prevalence of actual ADEs in this cohort was 39.6% [95% confidence interval 33.1%–46.5%]). Medication prescription errors were 135/243 (56% [49%–62%]) and the major categories were wrong frequency (59%), wrong dose (21%) and wrong drug (14%). Up to 10% of medication prescription errors were associated with actual ADEs.
CONCLUSIONS: Medication prescribing errors are substantial in acutely hospitalized patients with RI, with up to 10% of such errors resulting in an actual ADE.

ASSESSING THE QUALITY OF COMMUNICATION BETWEEN HOSPITALIZED PATIENTS AND THEIR HEALTH CARE PROVIDERS: CAN INPATIENTS IDENTIFY THEIR ATTENDINGS? D.D. ÚLveczky[1]; W.C. Hwang[1]; B.B. Taylor[1]; D. Feinbloom[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA. *(Tracking ID # 172622)*

BACKGROUND: Poor communication is a common patient complaint, associated with patient dissatisfaction, and may influence patients' decisions to pursue malpractice litigation. As part of our hospital's on-going quality improvement, a recent survey of 1000 patients revealed that 'poor communication or explanations' was the most common reason patients did not rate their care as 'excellent' or 'very good'. To explore this further, we posited that patients' ability to identify their attending physician may be a readily attainable marker for the quality of communication between doctors and patients.
METHODS: As part of a resident quality improvement project we conducted a brief cross-sectional convenience sample survey of general medicine and surgical patients admitted to a Boston teaching hospital. Inpatients were asked: (1) to identify their attending physician and nurse (2) if they had been informed of their care plan for the day and (3) if they had been told conflicting care plans. Patient responses were recorded, coded, and then verified with the medical record where appropriate. Socio-demographic and clinical variables such as age, length of stay, attending type, number of medications, and number of previous admissions were also collected in an effort to identify other factors associated with patients' ability to correctly identify their care team. Patients interviewed during their hospitalization were also targeted for post-discharge satisfaction surveys to determine if successful recognition of their attending was associated with improved patient satisfaction.
RESULTS: The study sample consisted of 100 patients. 48% were male, 77% were white, and the mean age was 61 years. Patients had a mean length of stay of 4.5 days and were prescribed a mean of 12.5 medications. 68% had at least one previous admission in the last six months. Approximately half (47%) of all of the patients interviewed could not identify their attending physician. Patients who incorrectly identified their attending most often cited house officers and consultants. Medical patients were more likely to be unable to identify their attending than surgical patients (60% vs 23%; $p < 0.01$). Age, length of stay, number of medications, patient gender, or previous admission was not significantly associated with patients' ability to identify their attending. Patients who could identify their attending were also more likely to report being told their care plan for the day (79% vs. 54%; $p = 0.02$).
CONCLUSIONS: In this cross-sectional survey of inpatients, nearly half of all patients could not identify their attending of record. Patients who were able to identify their attending were more likely to report being told their care plan for the day. Patient care involves multidisciplinary teams of doctors, nurses, consultants, students and physicians in training, which may unintentionally result in lapses in communication. Assessing if patients know basic information about their care may be a useful measure for identifying underlying communication deficiencies which may impact overall patient satisfaction.

CALIFORNIA 2007 REGIONAL RESIDENT AWARD WINNER. S. Garten[1]. [1]Society of General Internal Medicine, Washington, DC. *(Tracking ID # 178595)*

BACKGROUND: place
METHODS: holder
RESULTS: for
CONCLUSIONS: poster session

CARDIAC ARREST TEAM DEBRIEFING: A NOVEL METHOD FOR IMPROVING CPR QUALITY DURING IN-HOSPITAL CARDIAC ARREST. D.P. Edelson[1]; B. Litzinger[1]; S. Kim[2]; D. Walsh[1]; A.M. Barry[1]; J. Poston[1]; D.G. Beiser[1]; T.L. Vanden Hoek[1]; L.B. Becker[2]; B.S. Abella[2]. [1]University of Chicago, Chicago, IL; [2]University of Pennsylvania, Philadelphia, PA. *(Tracking ID # 171723)*

BACKGROUND: Despite the widespread availability of defibrillators and Advanced Cardiovascular Life Support (ACLS) trained personnel, survival from in-hospital cardiac arrest remains poor. We have previously shown that cardiopulmonary resuscitation (CPR) quality is highly variable and often not in compliance with published ACLS guidelines. Furthermore, we have demonstrated that the use of real-time audiovisual feedback, alone, provides only modest improvement in CPR quality without effect on patient outcomes. We hypothesized that the addition of a debriefing educational intervention, aimed at resuscitators, would improve CPR quality and patient outcomes during in-hospital cardiac arrest.
METHODS: Resuscitation team members at a tertiary care hospital underwent weekly debriefing sessions between March 2006 and November 2006. A commercially available defibrillator with CPR-sensing and real-time audiovisual feedback capabilities was used. Chest compression and ventilation characteristics were recorded and compared to a historical control cohort (which utilized an investigational prototype of the same device without debriefing), from December 2004 to December 2005. Data was prospectively collected from adult in-patients who suffered a cardiac arrest during the study period and underwent CPR with the study device.
RESULTS: A total of 100 patients met inclusion criteria for the intervention period, compared with 101 in the control period. There were no statistically significant differences in baseline characteristics. Compared to the control period, mean ventilation rate was decreased (12±7 vs. 17±9 /min, $p = 0.01$), compression rate and compression depth were increased (rate: 105±8 vs. 101±10 /min, $p < 0.001$; depth: 50±9 vs. 44±9 mm, $p < 0.001$), and a smaller fraction of time was spent without compressions (0.11±0.09 vs. 0.22±0.15, $p < 0.001$). Furthermore, a significantly smaller fraction of arrest time was spent outside of ACLS guideline recommended range for compression rate and depth as well as ventilation rate. These changes correlated with an increase in the rate of return of spontaneous circulation (ROSC) in the intervention group (59% vs. 45%, $p = 0.04$). There was no statistically significant difference between the groups in terms of survival to discharge.
CONCLUSIONS: The combination of team debriefing and real-time audiovisual feedback improved CPR quality over feedback alone. These changes were associated with an increased rate of ROSC. The results are somewhat confounded by the release of the 2005 ACLS guidelines in November 2005, which decreased the recommended ventilation rate and increased the amount of CPR recommended between pulse checks. However, this study provides further evidence that CPR quality affects patient outcomes and argues that current training, which only requires ACLS recertification every two years, is insufficient.

CLOSTRIDIUM DIFFICILE ASSOCIATED DIARRHEA WITHOUT PRIOR ANTIBIOTIC EXPOSURE: INCIDENCE AND RISK FACTORS. P. Bellamkonda[1]; R. Sankula[2]; S.C. Reddymasu[3]; J. O'Brien[1]. [1]Creighton University, Omaha, NE; [2]Genome Technologies, Madison, WI; [3]Louisiana State University Medical Center at Shreveport, Shreveport, LA. *(Tracking ID # 173040)*

BACKGROUND: Clostridium difficile associated diarrhea (CDAD) is the commonest cause of hospital acquired diarrhea in the US. It increases length of stay (LOS) for hospitalized patients and is a frequent cause of mortality and morbidity. Antibiotic use is the most important risk factor for developing CDAD. We recently observed a pattern of CDAD onset without prior administration of antimicrobial agents. Aims of this research study were to measure the incidence and identify the possible risk factors for CDAD not associated with antibiotic use.
METHODS: 91 consecutive patients who developed CDAD over a 2 year period in a tertiary care hospital were identified. Demographic data, Inpatient LOS, medication use, data regarding readmission, history of co-morbid chronic diseases such as diabetes mellitus (DM), congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), and human immunodeficiency virus (HIV) infection were recorded. Students T-test was used to analyze linear variables and logistic regression was used to calculate odds ratios (OR) for possible risk factors.
RESULTS: Results are summarized in table. 19/91 (20%) patients developed CDAD without prior antibiotic exposure. CDAD in this scenario was numerically more likely in females, patients who were readmitted, a glomerular filtration rate < 60 ml/min, admission to medical wards, and HIV infection. 95% confidence levels for all the OR calculated included 1 and hence not statistically significant.
CONCLUSIONS: Clinicians should recognize that CDAD can occur without antecedent antibiotic administration and accounts for a significant number of CDAD cases. No definite risk factors for this entity could be identified from our study. CDAD testing should be done in all hospitalized patients with diarrhea associated with or without prior antibiotic exposure. Future prospective trials are warranted to better define the risk factors associated with this entity.

OR's for risk factors of CDAD without prior antibiotic exposure.

Variable	C.diff without antibiotic use n=19 (%)	C.diff in antibiotic use n=72 (%)	OR / P value
Age (years)	51	52	p=0.891
Female Sex	12 (63)	35 (49)	1.76
LOS (days)	13	14	p=0.684
Readmission	10 (53)	33 (46)	1.28
CHF	4 (21)	17 (24)	0.85
DM	4 (21)	22 (31)	0.59
COPD	3 (16)	11 (15)	1.02
Cancer	5 (26)	26 (36)	0.5
GFR <60 ml/min	8 (42)	22 (31)	1.62
Medical ward	18 (95)	52 (72)	6.4
ICU	1 (5)	20 (28)	0.15
HIV	2 (11)	6 (8)	1.27

DOES MONTHLY CHANGE OF SERVICE ON MEDICAL WARDS ADVERSELY AFFECT PATIENT CARE? B.M. Smith[1]. [1]McGill University, Montreal, Quebec. *(Tracking ID # 172548)*

BACKGROUND: Physician cross-coverage is associated with a significant increase in preventable adverse events relating to patient care. Inadequate communication at the time of transfer of care results in lack of familiarity with patient disease status leading to a greater number of in-hospital complications and delays in diagnostic testing. The objective of this study was to evaluate whether in-patient care is affected by the monthly change of attending staff and residents in teaching hospitals.
METHODS: A retrospective cohort analysis was performed using patient discharge data from a Canadian tertiary teaching hospital. Physician scheduling and major adverse patient outcomes (unexpected death, ICU transfer, and non-elective readmission) were compiled from clinical teaching units at the McGill University Health Centre between 2000 and 2005. Comparison was made between adverse patient outcomes during i) the week following change of service and ii) the week following no change of service.
RESULTS: Review of staffing schedules identified 64 weeks that followed a change of both attending staff and residents (cohort 1), and 311 weeks during which the care team did not change from the preceding week (cohort 2). Fifty-eight weeks were not included in the analysis because there was a partial change of service (e.g. new attending staff but same residents). Patient characteristics were similar between the two cohorts (Table 1). Review of 4864 patient discharge summaries from the same period revealed 55 unexpected deaths, 251 ICU transfers and 140 non-elective readmissions. There was no statistically significant difference ($p = 0.56$, Table 2) between the rates of unexpected deaths, ICU transfers and non-elective readmissions expressed as a percentage of all discharges during weeks following change of service (8.54%), compared to weeks following no change of service (9.32%).
CONCLUSIONS: The monthly change of attending staff and residents on internal medicine wards at an urban teaching hospital did not significantly affect the rates of major adverse patient outcomes.

Table 1: Patient characteristics.

	Cohort 1	Cohort 2
Age (years)	67.5	68.8
Female (%)	49	47
Mean length of stay (days)	12.4	12.5

Table 2: Major adverse patient outcomes, APO, expressed as a percentage of total discharges from the ward during the same period.

	Cohort 1	Cohort 2
n	64	311
APO	8.54%	9.32%

EFFICACY OF CLINICAL GUIDELINE IMPLEMENTATION TO IMPROVE THE APPROPRIATENESS OF CHEST PHYSIOTHERAPY PRESCRIPTION AMONG INPATIENTS WITH COMMUNITY-ACQUIRED PNEUMONIA. I. Guessous[1]; J. Cornuz[1]; R. Stoianov[1]; B. Burnand[1]; J. Fitting[1]; B.R. Yersin[1]; O. Lamy[1]. [1]University of Lausanne, Lausanne *(Tracking ID # 172758)*

BACKGROUND: Chest physiotherapy (CP) is overused among patients hospitalised for community-acquired pneumonia (CAP) resulting in an increase in hospitalisation costs and workload. Studies evaluating the efficacy of different intervention to improve the appropriateness of CP prescription are lacking. We therefore developed an evidence based guideline for the clinical management of inpatients with CAP aiming to improve the appropriateness of CP prescription (e.g., the guideline recommended to reserve CP prescription for patients with severe pulmonary pathology (COPD), neuromuscular pathology, important bronchial secretions and to revaluate the prescription every 3 days) and compared the efficacy of two modalities of implementation on the appropriateness of CP prescription.
METHODS: We measured the CP prescription rate and duration in all consecutive CAP inpatients admitted in a division of general internal medicine at an urban teaching community hospital during three consecutive one-year time period: 1) before any guideline implementation (phase I, i.e., baseline); 2) after a passive implementation by medical grand rounds and guideline diffusion through mailing (phase II: passive implementation); 3) after adding a one-page reminder in CAP patient's medical chart highlighting our recommendations (Phase III: active implementation). Death and recurrent hospitalisation rates within one year after hospitalisation were recorded to assess whether CP prescription reduction, if any, impaired patients outcomes.
RESULTS: During the 3 successive phases, 127, 157, 147 patients with similar characteristics (mean age, sex, severe CAP prognostic score index IV/V, COPD diagnosis) were included during phase I, II, III, respectively. Among all CAP inpatients, CP prescription rate decreased from 68% (86/127), to 51% (80/157) and to 48% (71/147), respectively ($p < 0.01$). A significative reduction in CP duration was particularly observed after the active guideline implementation (12.0, 11.0, 7.0 days, respectively) and persisted after the adjustment for length of stay, which decreased during the 3 phases of study period (median length of stay: 9.0, 8.0, and 7.5 days, respectively). Reduction in CP prescription rate and duration were also observed among CAP patients with COPD (CP prescription rate: 97% (30/31), 67% (24/36), 75% (35/47), respectively ($p < 0.01$)). Death rate among all patients was similar between the three phases: 4.6%, 6.4%, 5.4%, respectively ($p = 0.7$). Neither the one-year overall recurrent hospitalisation (27%, 22%, 28%, $p = 0.6$) nor the one-year CAP specific recurrent hospitalisation (25%, 37% and 36%, $p = 0.4$) significantly differed between the three phases.
CONCLUSIONS: Both passive and active implementations of guideline appear to improve the appropriateness of CP prescription among inpatients with CAP without impairing their outcomes. Restricting CP use to the patients who benefit from this treatment might be an opportunity to decrease CAP medical cost and workload.

EMERGENCY ROOM TRIAGE OF PATIENTS WITH UPPER GASTROINTESTINAL HEMORRHAGE: IS EARLY ENDOSCOPY FEASIBLE? P.J. Kaboli[1]; C.C. Wyatt[1]; A.D. Auerbach[2]; J.L. Schnipper[3]; T.B. Wetterneck[4]; D. Meltzer[5]. [1]University of Iowa, Iowa City, IA; [2]University of California, San Francisco, San Francisco, CA; [3]Brigham and Women's Hospital, Boston, MA; [4]University of Wisconsin-Madison, Madison, WI; [5]University of Chicago, Chicago, IL. *(Tracking ID # 173729)*

BACKGROUND: Upper gastrointestinal hemorrhage (UGIH) is a common reason for emergency department (ED) evaluation and hospital admission. In spite of validated risk-assessment methods, it is not known how risk-stratification is used to influence early endoscopy (EGD) and subsequent triage. We evaluated risk-stratified clinical outcomes, resource utilization, and time of presentation for UGIH patients over two years.
METHODS: Analyses included 417 consecutive UGIH patients evaluated in the ED and admitted to 6 academic medical centers that did not have open-access endoscopy services available to the ED. Outcomes included time to EGD, inpatient death, 30-day readmission, and in-hospital complications related to UGIH. Resource utilization was assessed by hospital LOS and costs. Data were obtained from chart abstraction and administrative files.
RESULTS: Mean age of subjects was 59.3 years; 60% were male, 36% white, and 41% had Medicare. The most common diagnoses were erosive disease (54%), PUD (48%), and varices (15%). Mean LOS was 4.8 days with a mean hospital cost of $12,052. Overall, 72% of patients presented to the ED during weekdays, of which 29% presented between 0800 and 1200, 43% between 0000 and 1200, and 52% between 0800 and 1600; low-risk patients were more likely to present after hours ($P = .04$). Based on a validated re-bleeding risk score (Rockall), 13.0% were low-risk pre-EGD and 42.7% were low-risk post-EGD. EGDs were performed during business hours in 85.6% of patients, yet only 23.5% received EGD within 12 hours and only 48% had EGD within 24 hours, with no difference by risk score. Hospital LOS was more than 2 days shorter if EGD was performed within one day of admission (4.06 vs. 6.74 days; $P < .001$), but was not related to risk score. For clinical outcomes, 1.2% died in hospital (0.0% low-risk vs. 2.1% high-risk; $P = .05$), 10.3% experienced a complication (5.1% low-risk vs. 14.2% moderate/high risk; $P < .01$), and 5% were re-admitted within 30 days (3.4% low-risk vs. 6.3% high risk; $P = .18$). Discharge within 1 day of EGD did not lead to higher re-admission rate, regardless of re-bleed risk.
CONCLUSIONS: UGIH risk scores did not predict timing of EGD nor early discharge post-EGD, suggesting patients were not appropriately risk-stratified. In addition, 13% of patients were considered low-risk pre-EGD, for which endoscopy is not necessary, yet still received EGD and admission. Our findings suggest that 30–50% of UGIH patients present before mid-day during the week making same day open-access EGD feasible. Of these, 30–40% could potentially be discharged from the ED or after 24-hour observation. Emergency departments and hospitalists should work with GI services to develop innovative strategies to maximize the availability of endoscopy services for UGIH. Early EGD and appropriate triage is a critical factor to reduce resource utilization yet maintain excellent clinical outcomes for UGIH.

FAMILIARITY BREEDS CONTENT: THE EFFECT OF ASSIGNING RESIDENTS TO UNITS ON NURSE PERCEPTION OF TEAMWORK. D. Souzdalnitski[1]; C.T. Grimm[1]. [1]Good Samaritan Hospital of Baltimore, Baltimore, MD. *(Tracking ID # 173853)*

BACKGROUND: Collaboration and communication between members of the patient care team affects quality of care and can reduce medical errors. We studied

how reorganizing the inpatient teaching service in a community teaching hospital changed resident and nurse attitudes towards the quality of interdisciplinary teamwork.
METHODS: In the pre-intervention period, residents on the teaching service admitted new patients every fourth day, and followed patients throughout the hospital. Senior residents were expected to attend management rounds with case managers (CMs) and nurses (RNs) on each unit where their teams had patients; all rounds were scheduled at the same time. We reorganized the teaching service into a unit-based system where residents followed patients on assigned units, and each team accepted new patients every day. The entire team made daily rounds with the unit-based CMs and RNs. We surveyed residents, CMs, and RNs a month before the change, and a year later. The anonymous questionnaire included 12 Likert-type questions scored from 1 to 5 (low to high). 4 questions were on instrumental aspects of the work environment (e.g.; time to find charts), and 5 were on interpersonal aspects. There was one question each on the competence of the entire health care team, job satisfaction, and work load. We surveyed staff on the 3 teaching units, and on non-teaching units as controls.
RESULTS: After the reorganization, 74% of patients were admitted to the appropriate units, with the remaining 26% scattered over the hospital. Pre-intervention surveys were returned by 23/62 RNs and 5/6 CMs on the teaching units (41%), and 29 RNs and 2 CMs from other units (from over 100 RNs and 10 CMs). Surveys were returned by 22/40 residents (55%). Post-intervention surveys were returned by 22/63 RNs and 6/6 CMs on teaching units (40%), 29 RNs and 3 CMs on other units, and 30/40 residents (75%). We combined the RN and CM surveys for analysis (designated RN). The reliability of the survey was acceptable with Cronbach's alpha of 0.84 pre-intervention, and 0.85 post-intervention. Factor analysis (Principal Component Analysis; rotation method: Varimax with Kaiser normalization) showed that two main factors, the predicted interpersonal and instrumental aspects, explained 60% of survey content before, and 67% after, the reorganization. All respondents were positive about teamwork and communication, with scores between 3.1–4.4/5 on all items. After the reorganization, teaching unit RNs were more satisfied with the interpersonal aspects of teamwork; the overall score improved 11% (3.5 to 4.1, $p < 0.01$). In addition, they felt that the staff were more competent (3.8 to 4.4, $p < 0.02$). Attitudes of RNs on non-teaching units did not change. Surprisingly, neither did the attitudes of residents; the slight improvement in attitude towards teamwork was not significant. There were fewer changes in attitudes towards instrumental aspects of care, and no change in job satisfaction or perception of workload among any group surveyed.
CONCLUSIONS: Nurses generally have lower perceptions of the quality of teamwork than do doctors, and feel constrained in their ability to speak up and contribute to decision making. We showed that bringing the doctors into the unit-based system of care significantly improved nurse perception of teamwork. Well functioning teams reduce errors in aviation and the ICU, and may also improve care on the medical inpatient service.

HOSPITALIZED WOMEN WITH EXCESSIVE ORAL ANTICOAGULATION HAD A HIGHER BLEEDING RISK THAN MEN. M. Cosma-Rochat[1]; K. Nakov[1]; G. Waeber[1]; D. Aujesky[1]. [1]University of Lausanne, Lausanne,. *(Tracking ID # 172610)*

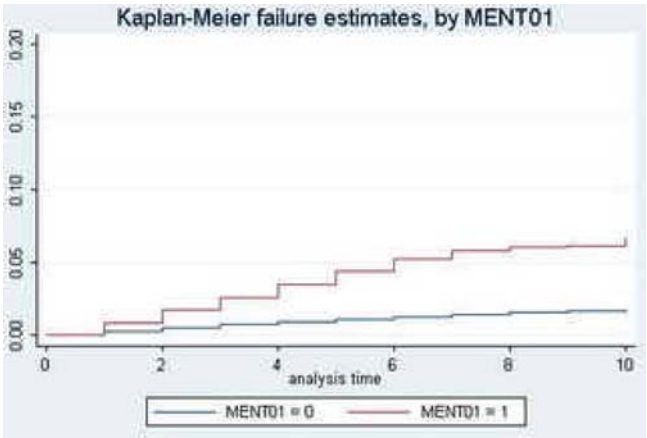
BACKGROUND: Excessive oral anticoagulation (AC) increases the risk of bleeding. Medical inpatients receiving oral AC are typically elderly and polymorbid and often receive concomitant treatments with platelet inhibitors or heparins. Thus, over-anticoagulated medical inpatients may be particularly prone to bleeding complications. Among medical inpatients with excessive oral AC, we sought to determine the risk of bleeding and to identify patient and treatment factors associated with this complication.
METHODS: We prospectively identified consecutive patients receiving oral AC who were admitted to the division of general internal medicine of a Swiss university hospital from February to July 2006. Patients had to have an international normalized ratio (INR) target range from 2.0–3.0. From this cohort, we identified patients with at least one INR >3 during the hospital stay. For patients who had more than one INR >3, only the first measurement (index INR) was considered. For each patient, we prospectively recorded the indication for AC and patient factors (age, gender, weight, history of major bleeding, and severity of illness measured using the Charlson Comorbidity Index score) and treatment-related factors (begin of AC in the hospital or before admission, value of the index INR, and concomitant treatments with platelet inhibitors and heparins) that potentially increase the risk of bleeding. The study outcome was overall bleeding, defined as the occurrence of major or minor bleeding in the hospital. Major bleeding was defined as intracranial, retroperitoneal, or gastrointestinal bleeding, or bleeding with a reduction of hemoglobin of ≥ 2 g/dL or bleeding leading to transfusion of ≥ 2 units of packed red blood cells. All other bleeding was considered minor. We used backward stepwise logistic regression to explore patient and treatment-related factors (see above) that were independently associated with bleeding, using P-values of ≥ 0.2 as a criterion for variable elimination and P-values of <0.15 as a criterion for variable addition.
RESULTS: Out of 283 inpatients treated with oral AC, 145 (51%) had an index INR value of >3 and comprised our study sample. Atrial fibrillation (59%) and venous thromboembolism (28%) were the most common indications for AC. Overall, 115 (79%) patients were aged >65 years and 72 (50%) were women. Forty patients (28%) had an index INR ≥ 5, 35 (24%) received concomitant treatment with platelet inhibitors, and 56 (39%) received concomitant treatment with heparins. Twelve patients (8.3%) experienced a bleeding event. Of these, 8 had major bleeding and one bleeding event was fatal. Women had a somewhat higher risk of major bleeding than men (12.5 vs 4.1%; $P = 0.08$). Multivariable analysis demonstrated that female gender was independently associated with bleeding (OR 4.3, 95% CI: 1.1 to 17.8). Age, weight, severity of illness, history of major bleeding, begin of AC in the hospital, the magnitude of the index INR, and concomitant treatment with platelet inhibitors or heparins were not independent predictors of bleeding.
CONCLUSIONS: Medical inpatients with excessive oral AC had a substantial risk of bleeding. After adjustment for patient factors and treatments, female gender was significantly associated with bleeding, with a 4-fold increased risk of bleeding compared to men. Our results suggest that hospitalized women with excessive oral AC may be at high risk of bleeding and may need more aggressive measures of AC reversal than men.

HOW ARE U.S. HOSPITALS PREVENTING INFECTIONS DUE TO CENTRAL VENOUS AND URINARY CATHETERS?: A NATIONAL MIXED-METHODS STUDY. S. Saint[1]; T.P. Hofer[2]; C. Kowalski[3]; R. Olmsted[4]; C.A. Kauffman[1]; J. Forman[1]; L. Damschroder[1]; S. Kaufman[2]; J.C. Banaszak-Holl[2]; S.L. Krein[5]. [1]Ann Arbor VAMC and University of Michigan, Ann Arbor, MI; [2]University of Michigan, Ann Arbor, MI; [3]Ann Arbor VAMC, Ann Arbor, MI; [4]Saint Joseph Mercy Hospital, Ann Arbor, MI; [5]VA Ann Arbor Healthcare System, Ann Arbor, MI. *(Tracking ID # 171975)*

BACKGROUND: Infections due to catheters - either central venous or urinary - are common, costly, and potentially lethal. Central venous catheter-associated bloodstream infection (CVC-BSI) and catheter-associated urinary tract infection (CA-UTI) are the most frequent hospital-acquired infections in the U.S. Yet, there are no national data describing how American hospitals are preventing these infections, nor are there data assessing the facilitators of - or barriers to - using proven preventive practices. The effect of centralization (exemplified by the Department of Veterans Affairs [VA] facilities) on the adoption of such practices is also poorly understood.
METHODS: We conducted a national mixed-methods study, employing both quantitative and qualitative evaluation. The initial phase entailed mailing a written survey to infection control coordinators at a national random sample of non-federal hospitals with an ICU and more than 50 hospital beds ($n = 600$) and all VA hospitals ($n = 119$). The survey asked about practices to prevent CVC-BSI and CA-UTI and about organizational factors that might be associated with implementing these practices. The qualitative phase consisted of 38 semi-structured phone interviews and site visits to several hospitals in order to elucidate factors facilitating or preventing the use of various practices. Survey results were weighted to be nationally representative; phone and in-person interviews were transcribed, coded, and analyzed.
RESULTS: The survey response rate was 72%. To prevent CVC-BSI, VA hospitals were significantly more likely than non-VA hospitals to report regular use of maximal sterile barriers (84% vs. 71%, $p = .01$), chlorhexidine for insertion site antisepsis (91% vs. 69%, $p < .001$), and a composite approach (62% vs. 44%, $p = .003$) involving concurrent use of maximum barriers, chlorhexidine, and avoiding routine central line changes. CA-UTI prevention practices were regularly used only by a minority of hospitals. VA hospitals were significantly more likely than non-VA hospitals to use portable bladder scanners (49% vs. 29%, $p < .001$) and condom catheters in men (46% vs. 12%, $p < .001$); non-VA hospitals were significantly more likely to use antimicrobial urinary catheters (30% vs. 14%, $p < .01$). Urinary catheter reminders were used in a minority (9%) of both types of hospitals. In multivariable analysis, hospitals reporting regular use of antimicrobial central venous catheters were significantly more likely to report using antimicrobial urinary catheters (OR = 3.0; 95% CI: 1.7–5.4). From our qualitative evaluation, factors facilitating the use of proven practices included participation in an infection prevention collaborative and practicing in a hospital environment conducive to change coupled with a champion (who need not be a physician). Barriers included cost silos and the presence of organizational "constipators" (mid- to high-level managers resistant to change).
CONCLUSIONS: Though the majority of hospitals nationwide are using two of the most strongly recommended practices to prevent CVC-BSI - maximal barriers and chlorhexidine - less than half of non-VA hospitals are concurrently using three widely recommended practices. For UTI, urinary catheter reminders are used in less than 10% of U.S. hospitals despite evidence of benefit. Collaboratives appear to be a promising strategy for encouraging the use of evidence-based practices.

INCREASED SHORT-TERM MORTALITY ASSOCIATED WITH MILDLY ELEVATED NON-RISING TROPONIN T IN PATIENTS WITH UNDERLYING RENAL DISEASE SUSPECTED OF ACUTE MYOCARDIAL ISCHEMIA. W. Southern[1]; J.H. Arnsten[1]. [1]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 173581)*

BACKGROUND: Cardiac Troponin T is commonly used as a marker for acute myocardial ischemia in patients with symptoms consistent with ischemia. Elevated Troponin T is common in asymptomatic outpatients with chronic kidney disease, and is associated with increased mortality. The prognostic value of serial measurements of Troponin T to rule out myocardial ischemia in patients with chronic Kidney disease is not clear. In this analysis we define the entity of mildly elevated non-rising Troponin (MENT) in patients suspected of acute myocardial ischemia and describe its prognostic value.
METHODS: Data were extracted from Montefiore Medical Center's clinical information system on all admissions to an urban teaching hospital who had at least 2 Troponin T tests). Mortality information was obtained from the social security death registry. MENT was defined as an initial Troponin T measurement of >0.11 ng/mL (the hospital laboratory definition of an acute MI) but <1.0 ng/mL, and a subsequent Troponin T, drawn at least 6 hours later, that did not change by more than 0.20 ng/mL. Patients were considered as having end-stage renal disease (ESRD) if they were assigned an ICD-9 code for ESRD or a procedure code for hemodialysis. Renal insufficiency was defined as an admission creatinine >1.4 mg/dL. Frequencies of MENT were compared among patients with normal renal function, renal insufficiency, and end stage renal disease. Survival curves for MENT vs. normal Troponin T were constructed using the Kaplan-Meier method. Equality of survivor functions was tested using the log-rank test. A Cox Proportional Hazards model was constructed to assess the independent association between MENT and mortality.
RESULTS: 20,226 admissions were examined. MENT was found to be more common in patients with ESRD ($139/484 = 28.7\%$), and patients with renal insufficiency ($472/4417 = 10.7\%$), compared to patients without renal impairment ($312/15339 = 2.0\%$). MENT was associated with a significantly increased risk of 10-day mortality when compared with patients with normal serial Troponin T (Figure; $p < 0.0001$). After adjustment for age, sex, race, diabetes, creatinine, and presence of ESRD, MENT was associated with a significantly increased risk for 10-day mortality when compared with normal Troponin T (HR = 3.99, 95% CI: 2.86–5.57).
CONCLUSIONS: In the setting of suspected ischemia, the syndrome of mildly elevated non-rising Troponin T (MENT) is common in patients with renal insufficiency and ESRD. MENT is associated with markedly increased risk of short-term mortality in patients with renal insufficiency. Further study is warranted to characterize the increased risk of death associated with MENT.



10-day Mortality for MENT vs. Normal Troponin T

INFORMED CONSENT IN THE CRITICALLY ILL: A 2-STEP APPROACH. S. Shahid[1]; E. Fan[2]; P. Kondreddi[3]; O. Bienvenu[3]; P.A. Mendez-Teller[3]; P.J. Pronovost[3]; D. Needham[3]. [1]Temple University, Philadelphia, PA; [2]University of Toronto, Toronto, Ontario; [3]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 173930)*

BACKGROUND: Critically ill patients represent a population with unique challenges with regard to obtaining informed consent. Due to the nature of their illnesses and the associated life-sustaining treatments (e.g., mechanical ventilation), patients in intensive care units (ICUs) may not be capable of communicating verbally or participating directly in the consent process. The integrity of their ability to make informed decisions is further complicated by the ubiquitous use of sedative and analgesic medications, as well as the frequency of delirium in critically ill patients. Prior studies have suggested that 26–66% of ICU patients may be able to provide informed consent, but these studies did not evaluate the natural history of patients' recovery of competency for consent. Our study has 2 objectives: to describe a 2-step process for obtaining informed consent using objective assessments for sedation-agitation and delirium, followed by a traditional assessment of competency for consent; and to evaluate the natural history of patients' competency by repeated application of this 2-step process during their hospitalization.
METHODS: This was an observational study of 150 patients with acute lung injury in 9 ICUs in 3 teaching hospitals in Baltimore, MD. The intervention was a 2-step consent process involving objective evaluation with the Richmond Agitation-Sedation Scale (RASS) and the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) (Step 1), followed by a traditional assessment for competency (Step 2) in those passing Step 1. The main outcomes measured were RASS and CAM-ICU assessments throughout patients' ICU stay, at consent and hospital discharge; cumulative proportion of patients providing consent at extubation, ICU discharge and hospital discharge.
RESULTS: Of 150 patients, 86 (57%) survived and 77 (90% of survivors) provided consent. Of daily assessments during mechanical ventilation, patients were not sedated-agitated in 27% and not delirious in 11%. By extubation, 31 (44%) patients passed Step 1 and 8 (11%) passed Step 2 and were consented. By ICU discharge and hospital discharge, these numbers were 50 (58%) and 18 (21%), and 81 (94%) and 67 (78%), respectively. The median (interquartile range) time to consent after ALI diagnosis was 15 (9–28) days.
CONCLUSIONS: More than three-quarters of critically ill patients are unable to provide informed consent during their ICU stay, even after extubation. Sedation-agitation and delirium are common barriers to consent. A 2-step consent process provides a means of rapidly screening patients for the absence of sedation-agitation and delirium before a more detailed traditional assessment of competency in critically ill patients.

INITIATION OF BENZODIAZEPINES IN THE ELDERLY AFTER HOSPITALIZATION. C.M. Bell[1]; H.D. Fischer[2]; S.S. Gill[3]; B. Zagorski[2]; K. Sykora[2]; W. Wodchis[4]; N. Herrmann[5]; S. Bronskill[2]; P. Lee[6]; G.M. Anderson[1]; P.A. Rochon[1]. [1]University of Toronto, Toronto, Ontario; [2]Institute for Clinical Evaluative Sciences, Toronto, Ontario; [3]Queen's University, Kingston, Ontario; [4]Toronto Rehabilitation Institute, Toronto, Ontario; [5]Sunnybrook Health Sciences Centre, Toronto, Ontario; [6]University of British Columbia, Vancouver, British Columbia. *(Tracking ID # 172529)*

BACKGROUND: The use of benzodiazepine drugs is associated with serious adverse events, particularly in older adults. Benzodiazepines are commonly prescribed to hospitalized patients for sleep-related complaints and anxiety. Thus, hospitalization may be a risk for long-term benzodiazepine prescription. We sought to estimate the rate of new long-term benzodiazepine use following hospitalization in older adults not previously prescribed benzodiazepines.
METHODS: We conducted a retrospective cohort study using linked, population-based administrative data from Ontario, Canada between April 1, 1992 and March 31, 2005. Community-dwelling seniors who had not been prescribed benzodiazepine drugs in the year prior to an acute-care hospitalization were selected from all 1.4 million Ontario residents aged 66 years and older. Our main outcome was to identify new Repeat Benzodiazepine Users, defined as initiation of benzodiazepines within 7 days following hospital discharge and an additional claim within 8 days to 6 months. We used multivariate logistic regression to examine for the effect of hospitalization on the primary outcome after adjusting for confounders.
RESULTS: There were 375,181 patient hospitalizations for included in the cohort. Benzodiazepines were prescribed to 10,989 (2.9%) patients within 7 days of being discharged from hospital. A total of 5,369 (1.4%) patients were identified as new Repeat Benzodiazepine Users. The rate of new Repeat Benzodiazepine Users decreased over the study period from 1.7% in the first year to 1.2% in the final year ($P < 0.001$). Multivariate logistic regression found that females, patients admitted to the Intensive Care Unit or non-surgical wards, those with longer hospital stays, higher overall comorbidity, and those prescribed more medications had significantly elevated adjusted odds ratios for new Repeat Benzodiazepine Users. Older individuals had a lower risk for the primary outcome.
CONCLUSIONS: New benzodiazepine prescription after hospitalization occurs frequently in older adults and may result in long-term use. A systemic effort to address this risky practice should be considered.

INTRATHORACIC CENTRAL LINE CATHETERIZATION: RATES OF PNEUMOTHORAX AMONG PATIENTS OF AN EXPERIENCED PROCEDURAL GROUP. A. Desai[1]; D. Hackner[2]; P.K. Ng[1]. [1]Cedars-Sinai Medical Center, Los Angeles, CA; [2]University of California, Los Angeles, Los Angeles, CA. *(Tracking ID # 173780)*

BACKGROUND: Intrathoracic central line catheterization is a common procedure for central venous access and hemodynamic monitoring. Placement of these lines can lead to a variety of complications including pneumothorax, bleeding, arterial pucture, infection, and hydrothorax. In academic medical centers in the setting of training, one of the most common complications, pneumothorax, has been reported at ~5%, as diagnosed by chest x-ray after line placement. In most cases, complication rates reported refer to lines placed by resident trainees. Less is known about rates among high volume procedural specialist physicians who directly provide these services. We undertook a review of all intrathoracic central venous catheter placements by a procedure group in an academic center and the rates of pneumothorax.
METHODS: Retrospective review identified 1662 serial intrathoracic central lines placed by the procedure center at Cedars-Sinai Medical Center between 11/2001 and 12/2006. In all cases, wide, sterile barrier techniques, standardized positioning, and continuous ultrasound were applied. The series included two types of catheters: tunneled catheters (n = 405) and non-tunneled catheters (n = 1257). The diagnosis of pneumothorax was obtained or excluded by chest X-ray or by fluoroscopy after the line was placed.
RESULTS: Imaging together with clinical follow-up identified only two pneumothoraces. The pneumothoraces were diagnosed via chest X-ray (0.1%) but were clinically insignificant (PTX size ~5%) with spontaneous resolution. Both cases involved non-tunneled catheters placed in the internal jugular vein. In both cases a trainee was involved.
CONCLUSIONS: In the hands of an experienced procedural group, the pneumothorax rate (0.1%) for intrathoracic central venous catheterization is well below the quoted 5% in the literature. Although this finding deserves further controlled study and corroboration, the low complication may prompt further review of risk reduction opportunities outside high volume procedure centers. The low pneumothorax rate also raises questions about the value and cost-effectiveness of routine radiographic imaging after line placement by experienced procedural physicians.

MORTALITY TRENDS AND PROGNOSTIC FACTORS ASSOCIATED WITH PNEUMOCYSTIS CARINII(JIROVECI) PNEUMONIA AMONG HIV PATIENTS IN THE HAART ERA. U.K. Ohuabunwa[1]; C.J. Ohuabunwo[2]; O. Oluwole[2]; G. Westney[2]. [1]Emory University, Atlanta, GA; [2]Morehouse School of Medicine, Atlanta, GA. *(Tracking ID # 173959)*

BACKGROUND: Pneumocystis carinii (jiroveci) pneumonia(PCP) is the most common opportunistic infection and reason for respiratory failure encountered in patients with AIDS. Mortality rates due to PCP range from 10 to 60%. Several clinical and laboratory parameters were evaluated as possible predictors of mortality in the preHAART era. With the development of potentially more efficacious therapies for the treatment of patients with acute PCP, methods for predicting the outcome of a specific episode will be important for decision making. We therefore sought to determine mortality trends and the prognostic significance of these parameters in the light of current management modalities.
METHODS: Design: A cross sectional study of all HIV patients with respiratory symptoms and broncho-alveolar lavage (BAL)-confirmed PCP between January 1994 and January 2003. Standard chart abstraction sheet was used to obtain data on patients age, sex, use of antiretrovirals and PCP prophylaxis, CD4+ count, PaO2, A-a gradient, LDH level, and chest x-ray findings. Setting: A 953-bed, inner-city, public hospital serving a largely indigent population that is 75% African-American. Measurements: The study period was sub divided into 3; 1994–96, 1997–99, 2000–03. The outcome measures considered were; in-hospital mortality, presence of any one of the following complications - pneumothorax, respiratory failure and multi-organ failure. Statistical analysis: Univariate analysis of demographic and clinical variables including mortality were expressed as percentages and mean +/− 2SD as appropriate. Bivariate analyses were done using Chi square and Fischer's exact tests to determine association of prognostic variables with outcomes. Multivariate logistic regression was performed to ascertain factors predicting outcomes among these patients. All analyses were done using SAS version 8.2.
RESULTS: Of 184 HIV patients who had bronchoscopy done, 79 had PCP confirmed by BAL, 77% of whom were male, with overall mean age of 39 years. Only 14 (22.6%) of 62 patients received PCP prophylaxis while 9(14%) of 63 patients were on HAART. The overall mortality rate of 26.6% increased to 87% among those with respiratory failure. Though mortality rate did not vary significantly over the years, it was higher in the years with less prophylaxis and HAART use. Mortality rates were higher in patients who did not receive prophylaxis, 30.6% versus 14.3% in patients who received. Rates were also higher in patients who did not receive HAART, 29.6% versus 22.2% in patients on HAART, OR 0.56 (95% CI 0.18–1.74). LDH level > 650 was the only prognostic variable significantly associated with mortality OR 1.7(95% CI 1.07–2.56). About 34% of the patients had complications, often multiple. The commonest complication was respiratory failure, occurring in 81% of patients. The use of prophylaxis or HAART was not significantly associated with a reduction in complications. Patients with LDH > 650 were more likely to develop complications OR 1.67(95% CI 1.05–2.4). CD4 count, PAO2 and A-a gradient were not significantly associated with complications.
CONCLUSIONS: Mortality rates from PCP were high with low prophylaxis and HAART use in this largely indigent minority population. Encouragement of PCP prophylaxis and HAART use might support the national goal of eliminating disparities. LDH appears an important predictor of mortality and complications, closer monitoring of which might enhance early intervention to improve outcome.

NON-TEACHING ACADEMIC HOSPITALIST SERVICES: DO THEY IMPROVE MORTALITY? N.J. O'Dorisio[1]. [1]Ohio State University, Columbus, OH. *(Tracking ID # 172577)*

BACKGROUND: While there is some data on the effect of Hospitalist run teaching services at academic institutions there is very little data regarding the effect of non-teaching hospitalist services compared to traditional housestaff associated teaching services at academic medical centers. Many academic centers across the country have employed and/or are starting to employ an increasing number of non-teaching hospitalist services in response to increased patient volumes. We wanted to compare the care on non-teaching Hospitalist general medicine services with the traditional housestaff covered General Medicine model.
METHODS: For the academic years 2003–2006 all patient encounters on the Hospitalist service and General Medicine teaching service were collected and compared by institutionally observed and University Health Consortium (UHC) expected cost per case, length of stay, in hospital mortality, readmission rate and case mix index. The results were compared with a t-test.
RESULTS: Results: For the 3 year period there were 4173 patient encounters by the Hospitalist division and 5032 encounters by the housestaff services. Tabel 1.
CONCLUSIONS: Over this 3 year period the Hospitalist run general medicine service showed a significantly decreased in-hospital mortality compared with both the resident teaching service and the UHC expected values for severity of illness. The non-teaching Hospitalist service also showed a decreased length of stay and decreased cost per case. There was no differnce between re-admission rates between the two groups. The experience at our institution would support the notion that non- teaching Hospitalists in academic centers are a justifiable and quality added resource in terms of cost and most importantly patient care.

Table 1

Measure	Observed			Expected		
	Hospialist	Gen Med	P-value	Hospialist	Gen Med	P-value
Cost per case	$7405.96	$11162.15	<0.001	$8644.73	$10718.87	<0.0001
Length of Stay (days)	4.11	5.97	<0.001	5.044	6.116	<0.0001
Mortality	0.53%	3.6%	<0.001	3.6%	5.3%	<0.0001
90 day readmission	31%	30%	0.28			
Case Mix Index	1.11	1.22	0.001			

PATIENT PERSPECTIVES ON MEDICATION USE AFTER HOSPITAL DISCHARGE. S. Kripalani[1]; L. Henderson[1]; T.A. Jacobson[1]; V. Vaccarino[1]. [1]Emory University, Atlanta, GA. *(Tracking ID # 171964)*

BACKGROUND: Patients often have trouble managing their medications after hospital discharge, and adults with limited literacy skills may face added difficulties. These problems and their potential solutions are not well characterized.
METHODS: Patients admitted to an inner-city hospital with acute coronary syndromes completed a questionnaire which included the Rapid Estimate of Adult Literacy in Medicine. They were interviewed by phone 1–2 weeks after discharge to report if and when they had filled their discharge prescriptions. Patients also described their understanding of the regimen, medication adherence (using a 10-item scale), barriers to adherence, and enablers of proper medication use.
RESULTS: Of the 100 patients interviewed in the hospital, 84 were successfully contacted after discharge. Most were male (58%) and African-American (88%). The mean age was 54.5, and 44% read below the 7th grade level. Only 79% of patients had filled their discharge prescriptions before the follow-up phone call. Among them, 51% filled prescriptions on the day of discharge, 25% did so within 2 days, and 24% waited more than 2 days. Many patients reported it was somewhat or very difficult to understand the purpose of the medications (20%), how to take new medications (11%), or reconcile the new prescriptions with the medications they were taking before hospitalization (16%). Literacy was significantly associated with understanding the purpose of the medications ($p < .05$) but not with the prescription fill date, understanding of how to take the medications,

or self-reported adherence. Transportation, cost, and waiting in line at the pharmacy were cited as the main barriers to adherence. Patients reported that several forms of assistance could improve medication use after discharge, including lower medication costs (75%), a follow-up phone call to review medications (68%), transportation to the pharmacy (65%), pharmacist counseling before discharge (64%), additional information about new medications (59%) and which medications to stop (61%), and a pill box (54%).
CONCLUSIONS: Patients commonly delay in filling prescriptions and have difficulty understanding medication regimens after hospital discharge. Interventions should focus on reducing medication costs, providing transportation, improving medication counseling, and providing organizing aids such as pill boxes.

PERIOPERATIVE BETA-BLOCKERS, BUT NOT STATINS, ARE ASSOCIATED WITH DECREASED SHORT TERM MORTALITY AFTER VASCULAR SURGERY. T.W. Barrett[1]; M. Mori[2]; C. Koudelka[2]. [1]Portland VA Medical Center and Oregon Health & Science University, Portland, OR; [2]Oregon Health & Science University, Portland, OR. *(Tracking ID # 173162)*

BACKGROUND: The use of perioperative drugs to improve postoperative outcomes has focused on beta-blockers. Emerging evidence suggests statins may also improve postoperative outcomes. As a recent clinical trial of revascularization before vascular surgery did not demonstrate an advantage over medical management, the identification of which perioperative medicines improve postoperative outcomes and in what combinations becomes even more important. We sought to ascertain if the use of statins and/or beta-blockers was associated with a reduction in mortality at 6 months and 1 year after surgery.
METHODS: We conducted a retrospective cohort study of patients presenting for vascular surgery between January 1998 and March 2005. The patients were identified using a regional Department of Veterans Affairs database, and survival status was ascertained using a national death index. Patients were categorized as using statins or beta-blockers if they were discharged with a prescription for the study drug. The propensity score methods were used for bias reduction. The effects of perioperative drugs on 6 month and 1 year mortality were examined using Mantel-Haenszel analysis stratified either by the propensity scores or Revised Cardiac Risk Index (RCRI).
RESULTS: Patients that survived to discharge after vascular surgery and had appropriate length of follow-up were included for analysis. The analysis set included 2,944 patients for the 6 month outcome and 2,744 patients for the 1 year outcome. Surgery occurred at five Veterans Affairs medical centers. The perioperative use of beta-blockers were associated with a reduction in both 6 month and 1 year mortality, compared to non-users, propensity adjusted relative risk (aRR) 0.71 (95% CI: 0.55–0.91), NNT 25, and aRR 0.76 (95%CI: 0.63–0.93), NNT 17, respectively. The use of perioperative statins was not significantly associated with decreased mortality at 6 months or one year after surgery, $p = 0.40$ and $p = 0.59$, respectively. A combination use of both study drugs was associated with decreased mortality at 6 months and one year after surgery, aRR 0.42 (95%CI: 0.23–0.77), NNT 18, and aRR 0.60 (0.40–0.88), NNT 14, respectively. The stratified analysis by RCRI yielded similar results and confirmed the benefits of statins and beta-blockers at all levels of risk.
CONCLUSIONS: The use of perioperative beta-blockers used alone or in combination with statins, but not statins alone, were associated with a reduction in short term mortality for vascular surgery patients and benefited patients at all levels of risk. This study was powered to detect an absolute risk difference of 4–6%. As the combination use of the study drugs were associated with a greater decrease in mortality compared to the single use of beta-blockers, the use of statins may be synergistic with beta-blockers. These results are in contrast to our prior work that associated the use of ambulatory statins with decreased long term (median 2.7 years) mortality after vascular surgery. Similarly, a recent meta-analysis of the acute use of statins for acute coronary syndrome showed no effect on death for up to 4 months. Until the results of two randomized controlled trials become available that may further clarify the use of perioperative statins and beta-blockers in non-cardiac, and non-cardiac vascular surgery, the perioperative use of combination statins and beta-blockers should be considered for all patients undergoing vascular surgery.

PHARMACIST FACILITATED DISCHARGE: A PROSPECTIVE STUDY OF MEDICATION DISCREPANCIES. S.A. Flanders[1]; P.C. Walker[1]; J. Tucker Jones[1]; J. Piersma[1]; S.J. Bernstein[2]. [1]University of Michigan, Ann Arbor, MI; [2]Ann Arbor VAMC, Ann Arbor, MI. *(Tracking ID # 173603)*

BACKGROUND: Medical patients frequently experience medication changes during hospitalization. This increases the risk of medication related errors at discharge which may cause adverse events resulting in increased mortality, readmission, and costs. As a result JCAHO now requires medication reconciliation at discharge to prevent errors. We prospectively studied the impact of a pharmacist facilitated discharge program on identifying medication discrepancies at discharge and compared discrepancies on a non-resident faculty hospitalist service to those on a traditional resident service.
METHODS: Over a 10 month period, a clinical pharmacist alternated monthly between a non-resident faculty hospitalist service (FH) and a traditional resident service (RS). The pharmacist screened patients meeting the following inclusion criteria: discharge to home, prescribed > 5 medications with at least one high risk medicine, English speaking, and active telephone service. During weekdays the pharmacist identified and communicated discrepancies to clinicians, counseled patients and families, and contacted patients by phone within 72 hours after discharge and again at 30 days to identify and address medication related problems.
RESULTS: A total of 1122 patients were discharged home from both services and 958 were assessed. Of those assessed, 76% (358/469) on FH and 74% (363/489) on RS met inclusion criteria. Only 135 (38%) of eligible patients on FH and 113 (31%) on RS were able to be counseled at discharge. Time constraints and non-communicative patients were the most common reasons for failure to counsel. Medication discrepancies occurred less often on FH compared to RS (58% (78/135) vs. 70% (79/113) respectively, $p = 0.048$) with an average of 2.9 per patient on FH and 3.3 per patient on RS. Of all discrepancies, missing medications (41% (200/486)), failure to discontinue a medicine (24% (115/486)), and wrong dose / frequency (16% (79/486)) were most common. There were no significant differences in types of discrepancies between services ($p = 0.08$). Follow-up phone calls within 72 hours and at 30 days were completed respectively in 73 (29%) and 29 (12%) of patients counseled at discharge. A total of 145 problems were identified and resolved by the clinical pharmacist after discharge.
CONCLUSIONS: At a major academic medical center, medication discrepancies as identified by a clinical pharmacist were disturbingly common, but occurred less frequently on a faculty hospitalist service compared to a traditional resident service. Even when discrepancies were resolved at discharge, follow-up phone calls identified frequent medication problems. A clinical pharmacist was able to identify and resolve most discharge medication issues. The impact of a clinical pharmacist on mortality, readmissions and overall costs warrants further investigation.

PHYSICIAN DISCUSSION OF ADVANCE DIRECTIVES IN AN ETHNICALLY AND LINGUISTICALLY DIVERSE HOSPITALIZED POPULATION. S. Kulkarni[1]; L.S. Karliner[1]; A.D. Auerbach[1]; E.J. Perez-Stable[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173737)*

BACKGROUND: Despite a JCAHO mandate that hospitals offer all patients the opportunity to indicate advance directives, it is unknown how often physicians actually discuss advance directives with their hospitalized patients. We set out to investigate patient report of advance directive discussion in a multi-ethnic, multilingual safety net hospitalized population.
METHODS: This is a cross-sectional communication study of hospitalized patients on a general medical-surgical ward in an urban county hospital recruited between January and August of 2005. Participants were interviewed by a bilingual research assistant in Spanish or English according to patient preference. We asked patients at a baseline inpatient interview, and again at a two-week post-discharge interview, whether hospital physicians had discussed 1) what type of treatment they would want if they could not make decisions for themselves, and 2) whether they would want CPR if needed. We categorized patients as having discussed advanced directives if the reply was 'yes' to either question at either time-point. Spanish-speaking patients were asked about language interpretation for the discussion. We examined the association of the following patient factors with advance directive discussion: age, gender, self-reported ethnicity, education, co-morbidity (self-report scale), principal diagnosis (chart review), and English proficiency. Patients were categorized as having limited English proficiency (LEP) if they answered the question "How well do you speak English?" either with "not at all" or "not well", or if they answered 'well', but stated a preference to receive their medical care in Spanish.
RESULTS: Of the 150 participants, 92 (62%) were LEP. Mean age was 39 years (±14, range 18–82), 89 (60%) were women, 113 (76%) Latino, 29 (19%) African American, 4 (3%) Caucasian, and 3 (2%) Asian. Only 71 (47%) patients reported physician discussion of advance directives during their hospitalization. There was no association of gender, education, ethnicity or English proficiency with advance directive discussion. There was no difference in discussion of advance directives for patients 50 years old age compared to younger patients (51% vs. 46%; $p = 0.6$), and for those with more co-morbidities. There was a suggested trend toward more discussion among patients with principal diagnoses associated with surgery (trauma, orthopedic, vascular and neurosurgical) as compared to those associated with medical admission (54% vs. 44%; $p = 0.3$). Among LEP patients who reported advance directive discussion, only half had an interpreter present during the conversation; the majority of interpreters (55%) were family members or non-interpreter hospital staff.
CONCLUSIONS: Fewer than half of the patients in our study reported having discussed advance directives with their physicians during their hospitalization. This was true, regardless of age, ethnicity, primary language, or education. Our data suggests that surgeons may be more likely to have these discussions than internists; future research should investigate this finding further.

QUALITY OF CARE IN HOSPITALIZED PATIENTS WITH CONGESTIVE HEART FAILURE: ARE HOSPITALISTS THE SOLUTION? E.E. Vasilevskis[1]; D.O. Melzter[2]; J.L. Schnipper[3]; P. Kaboli[4]; T.B. Wetterneck[5]; D.V. Gonzales[6]; V. Arora[2]; A.D. Auerbach[1]. [1]University of California, San Francisco, San Francisco, CA; [2]University of Chicago, Chicago, IL; [3]Brigham and Women's Hospital, Boston, MA; [4]University of Iowa, Iowa City, IA; [5]University of Wisconsin-Madison, Madison, WI; [6]University of New Mexico, Albuquerque, NM. *(Tracking ID # 173683)*

BACKGROUND: Over 1 million patients are hospitalized for exacerbations of congestive heart failure (CHF) each year, and improving quality of care for these patients is a growing priority. Despite the fact that many of these patients are cared for by generalists, and hospitalists specifically, there are few data examining how these physicians impact the quality of CHF care.
METHODS: The Multicenter Hospitalist Trial was a prospective trial of adult general medicine patients admitted between July 2001 and June 2003 at 6 academic medical centers. Patients were randomized by day of the week to hospitalist or non-hospitalist (generally outpatient-based generalist faculty) attendings. Patients were eligible if CHF was their principal admission diagnosis. We excluded patients with severe COPD, sepsis, fluid overload secondary to renal failure, constrictive pericardial disease, cardiac surgery within 24 hours, or a recent thoracotomy. Key outcomes included hospital length of stay, readmission by 30 days, and quality of care measures. Quality measures included: (1) measurement of left ventricular ejection fraction (EF) before hospital discharge, (2) angiotensin-converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) at discharge for patients with an EF 40%, and (3) beta blocker at discharge for patients with an EF 40%. We also summed how many patients received all 3 measures above. Finally, we examined whether or not follow up had been scheduled, but did not include this in the composite score given inadequate data linking follow up with improved outcomes. Each study outcome was analyzed using generalized estimating models to account for physician level clustering and adjust for site, patient demographics, co-morbidities, and physiologic factors (e.g. creatinine) important in CHF care.
RESULTS: 367 patients with a primary diagnosis of CHF were eligible for this study. Hospitalists cared for 118 (31.3%) and non-hospitalists 249 (68.6%). There were no statistically significant differences between the groups in terms of demographic factors, co-morbid illnesses, New York Heart Association Class, or physiologic measures. While quality of care for several individual measures was good, the number of patients who received all 3 measures was poor, and not different between hospitalist and non-hospitalist (Table). Hospitalists' patients had higher adjusted odds of having scheduled follow up appointments, OR 2.05 (1.25–3.37); however there were no differences in adjusted readmission rates or length of stay.
CONCLUSIONS: In an academic setting, quality of CHF care has room for substantial improvement and the hospitalist model may not provide a ready solution. Other system level efforts must be made to improve performance regardless of physician type.

Comparison of CHF Process Measures

CHF Process Measure	Number of Eligible Patients	Non-hospitalist Cases, No. (%)	Hospitalist Cases, No. (%)	P-Value
Ejection Fraction Measured	367	211 (84.7)	103 (87.3)	0.52
ACE-inhibitor and/or ARB Prescribed	242	120 (73.6)	64 (81.0)	0.21
Beta-Blocker Prescribed	234	73 (47.1)	34 (43.0)	0.56
Three of Three Process Measures	234	48 (31.0)	26 (32.9)	0.76

RECENT SWITCH DAY AND WEEKEND EFFECTS ON PATIENT OUTCOMES IN AN ACADEMIC GENERAL INTERNAL MEDICINE INPATIENT SERVICE. M.K. Ong[1]; A.R. Vidyarthi[2]; A. Bostrom[2]; C.E. Mcculloch[2]; A.D. Auerbach[2]. [1]University of California, Los Angeles, Los Angeles, CA; [2]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173336)*

BACKGROUND: Team workload on a patient's day of admission has been shown to increase length of stay, total costs, and inpatient mortality. Recent team personnel switches could also affect patient outcomes, due to additional workload generated by learning about inherited patients. Recent studies have also demonstrated that patients admitted on weekends have higher rates of inpatient mortality than patients admitted on weekdays, and a suggested explanation is due to reduced staffing. We examined the effect of recent team personnel switches and weekend admission after controlling for team workload, staffing, and organization.
METHODS: We conducted a retrospective cohort analysis of 5742 adults initially admitted to an academic medical center general medical service between July 1998 and June 2001. Two-level mixed model analyses examined patient outcomes of inpatient mortality, 30-day readmission, lengths of stay, and total costs. Team structure and personnel information were merged with patient-level data. Intern physicians switched on different days than the resident and attending physicians; we isolated switch day spillover effects by examining the difference between a patient's day of admission and the prior intern physician switch day, and the difference between a patient's day of admission and the prior resident/attending physician switch day. Key adjusters included patient sociodemographic factors, severity adjustment by DRG weights and ICU stays, team workload and staffing, service organization structures, and hospitalist supervision. Additional controls included service census effects, the academic quarter, and the year of admission.
RESULTS: Univariate analyses of length of stay, total costs, inpatient mortality, and 30-day readmission found that intern switch days only significantly reduced the likelihood of 30-day readmission (OR: 0.99, 95% CI: 0.98 to 1.00), that resident/attending switch days only significantly reduced total costs (0.3%, 95% CI: 0.0% to 0.6%), and that weekend admission only significantly reduced the likelihood of 30-day readmission (OR: 0.71, 95% CI: 0.56 to 0.91). Multivariate analyses found that recent intern physician switch days and recent resident/attending physician switch days did not have a significant effect on inpatient mortality, 30-day readmission, length of stay, or total costs. Multivariate analyses found that weekend admission did not have a significant effect on inpatient mortality, length of stay or total costs, but reduced the likelihood of 30-day readmission (OR: 0.73, 95% CI: 0.55 to 0.97).
CONCLUSIONS: Recent switch days do not appear to have an effect on patient outcomes, although our data does not allow us to determine if team personnel were able to mitigate the effect by working longer hours. Although we did not find that weekend admission increased inpatient mortality in unadjusted or adjusted analyses, many of the specific associated diagnoses in prior studies, such as cardiologic diagnoses, were not admitted to this institution's general medical service. The reduced likelihood of 30-day readmission with weekend admission may be due to teams having more time to spend working up their patients than on weekdays.

THE PREPAREDNESS OF HOSPITALIZED PATIENTS TO QUIT SMOKING. L.M. Shah[1]; A. King[1]; A. Basu[1]; W. Borden[1]; D. Meltzer[1]; V. Arora[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 171684)*

BACKGROUND: Although "smoking cessation counseling" for all hospitalized smokers with cardiac disease is a hospital quality measure, this approach does not take into account a patients' preparedness to quit, a known predictor of quitting behaviors in outpatients. The aim of this study is to assess the preparedness of hospitalized patients to quit smoking, and whether patient preparedness to quit predicts participation in quit behaviors after discharge.
METHODS: Inpatients on a cardiac service at a single hospital were approached for an interview, using standard questions originally developed for the National Health Interview Survey to identify lifetime (current and former) and current smokers. Current smokers were asked to rate their preparedness to quit using the 10-step Contemplation Ladder, a tool validated in outpatients. A response of 6 ("I definitely plan to quit smoking in the next 6 months") or higher identifies patients who are considered prepared to quit (i.e. planning to or participating in quit behaviors). One-month post-discharge telephone interviews were used to assess patients' smoking status, recall of advice given in-hospital, and any type of quit attempts made (i.e. cold turkey, nicotine replacement or other pharmacologic therapy, quit lines, formal programs, etc.). Chi square tests were used to assess the effect of preparedness (Ladder score6) on any quit attempt, recall of advice, and self-reported abstinence at follow-up. Chi square tests were also used to assess if advice had any effect on quit attempts or self-reported abstinence. Statistical significance was defined as $p < 0.05$.
RESULTS: From February 2006 through November 2006, 75% (1766/2364) of all cardiac inpatients were interviewed. 59% (1038/1766) of patients interviewed were lifetime smokers. One quarter of these (255/1038) patients were current smokers. Although 76% of these patients had Ladder Scores of 6 or greater, a heterogeneity of preparedness existed with less than one third of all smokers at any single step on the Ladder. Of the 60% (150/255) of current smokers that completed the follow-up interview, 59 (41%) stated that they were no longer smoking. While a smaller proportion of prepared patients (Ladder score > 6) were still smoking at follow- up [64 (57%)] compared to patients who are not prepared, [21 (67%)], this difference was not statistically significant [$p = 0.27$]. However, prepared patients were significantly more likely to make a quit attempt after discharge [47(58%) prepared vs. 6 (25%) not prepared, $p = 0.004$]. The most frequently reported quit attempt [81% (43/53)] was "cold turkey or on their own," while use of more successful methods (i.e. formal programs, groups, or pharmacologic therapy) was much lower [30% (16/53)]. There was no relationship between patient preparedness and recall of advice [56 (70%) prepared vs. 19(79%) not prepared, $p = .380$]. Interestingly, patients that reported not smoking at follow-up were more likely to recall receiving advice in the hospital [18 (23%) not still smoking vs. 2 (7%) still smoking, $p = 0.049$].
CONCLUSIONS: Many smoking cardiac inpatients are prepared to quit. Although these patients are more likely to make a quit attempt after discharge, the overwhelming majority are using the least effective quit attempt, quitting on their own. This suggests that current inpatient counseling efforts should be augmented with more effective interventions tailored for those hospitalized smokers prepared to quit.

THROMBOTIC COMPLICATIONS OF PERIPHERALLY INSERTED CENTRAL CATHETERS: A SYSTEMATIC REVIEW. F. Ariza[1]; S. Singh[1]; J.L. Wofford[1]. [1]Wake Forest University, Winston-Salem, NC. *(Tracking ID # 171359)*

BACKGROUND: The peripherally inserted central catheter is routinely used for administering intravenous medication in U.S. hospitals. Despite reported concerns

over catheter-associated thrombosis, the incidence of thrombotic complications from PICC catheters is not well defined.
METHODS: We searched the MEDLINE, EMBASE, OVID and Google Scholar databases (last search November 2006) using the terms "thrombosis" and "catheter" and "peripherally". After this initial search yielded 77 citations, we excluded studies that targeted pediatric patients; patients on oncology services, dialysis or parenteral nutrition; or in an intensive care unit. After consensus review of 18 abstracts, we identified six articles that reported the incidence of thrombotic complications associated with PICC catheters among adult patients.
RESULTS: A total of six cohort studies reported data on 4,336 patients. The number of catheters studied ranged from 26 to 2063. Five studies were retrospective and only one study was prospective. Two studies included case-control strategies. PICC-associated thrombosis was diagnosed by venography in three studies and by duplex ultrasound in two studies. The incidence of thrombosis ranged from as low as 2.5% to as high as 38.5%. Only one study reported on the incidence of pulmonary embolism (3.8%).Studies were of different designs, lacked a clear consensus definition of catheter associated thrombosis and used varying techniques to diagnose PICC associated thrombosis.
CONCLUSIONS: The reported incidence rate of PICC-associated thrombosis varies greatly among available cohort studies.Prospective studies that use consistent criteria and diagnostic techniques to measure rates of catheter-associated venous thromboembolism, and catheter dysfunction secondary to thrombosis are needed to help clinicians weigh the benefits and risks of PICC catheters.

WHAT PHYSICIAN BEHAVIORS ARE PREFERRED AT THE BEDSIDE? A SURVEY OF HOSPITALIZED PATIENTS. S. Harris[1]; H.V. Naina[2]; T.J. Beckman[2]. [1]Mayo Clinic, Rochester, MN; [2]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 173820)*

BACKGROUND: Immediacy is the principle that welcoming postures and physical proximity between physicians and patients increase patient comfort. Experts have proposed that greater immediacy enhances the quality of medical interviews. However, we are unaware of studies on patient preferences regarding patient-physician proximity and physical contact at the bedside. The purpose of this study was to determine hospitalized patients' attitudes regarding the nonverbal behaviors of physicians at the bedside.
METHODS: We obtained a convenience sample of 127 patients (response rate 100%) admitted to an academic internal medicine hospital service. These patients were surveyed at discharge using a 14-item questionnaire comprised of checklists and scaled responses, which solicited patient demographic characteristics and attitudes regarding physicians' non-verbal behaviors at the bedside. Patient agreement with instrument items was reported. Associations between patient characteristics and survey responses were determined using ANOVA and chi square statistics where appropriate.
RESULTS: Of the 127 respondents, the mean age was 58 years (range 17 to 95) and 89 (70%) were men. Seventy-one (56%) patients were retired or not working, 49 (39%) were employed and 7 (1%) were students. One hundred and one (80%) patients had never observed a physician sitting on their bed without asking for permission, while 26 (20%) patients had seen this happen. Only 20 (16%) patients believed that physicians could transmit diseases by sitting on their beds. When asked about physicians exhibiting empathy by patting patients on the back when they appear discouraged or concerned, 75 (59%) favored this behavior, 39 (31%) said they had no preference, and 14 (11%) were in disfavor. Regarding the physician posture which makes patients the most comfortable, 55 (43%) preferred physicians sitting on a chair, 51 (40%) standing, 21 (17%) sitting on the patient's bed. There were no associations between patient age, gender, level-of-education or religion and physician postures preferred by patients. When asked about physicians holding the patient's hands when they look sad or concerned, 51 (40%) agreed, 40 (31%) did not mind, 25 (20%) disagreed. However, significantly more male than female patients disagreed with physicians holding patients hands ($p < 0.01$).
CONCLUSIONS: The vast majority of surveyed patients preferred physicians standing or sitting on chairs, versus sitting on their beds. Male patients expressed that physician-patient hand-holding is disagreeable. Asking patients about their preferences regarding physician posture at the bedside demonstrates respect, and honoring patients' wishes should improve physician-patient communication. Our findings suggest that physicians should avoid holding male patients' hands. However, research is needed to determine the impact of physician-patient gender interactions on patient preferences regarding physician bedside behaviors.

A GERIATRIC MEDICINE WORKSHOP INCREASES KNOWLEDGE AND IMPROVES CLINICAL SKILLS: A RANDOMIZED, CONTROLLED, TRIAL. A.R. Hoellein[1]; D.W. Rudy[1]; M. Lineberry[1]; J.F. Wilson[1]; S.A. Haist[1]. [1]University of Kentucky, Lexington, KY. *(Tracking ID # 173373)*

BACKGROUND: Since 1950, Americans over age 65 have grown in number double that of the overall population. Currently, geriatric patients account for about 40% of internists' office visits and there is an expected 115% increase for geriatric services by 2030. The care of older patients is different in that they tend to have multiple conditions, polypharmacy, altered physiology, and slower rate of recovery. Therefore, effective Geriatric Medicine (GM) curriculum should be incorporated in medical student education. The purpose of this study is to determine the impact of a GM workshop (WS) using standardized patients (SP) on knowledge and clinical skills of third-year medical students.
METHODS: A four-hour GM WS was developed as part of a new curriculum for a required third-year four-week primary care internal medicine clerkship. The GM WS and three other novel WS were randomized for delivery to one-half of the rotational groups at the beginning of the clerkship. The GM WS utilizes four SP cases representing different clinical challenges (dementia, depression, incontinence, and syncope). A faculty preceptor facilitates group discussion of sensitive approaches to the problems. Participating students are also provided a 11-page GM reference. All students in every rotational group are assigned GM readings. At the end of the four weeks, all students take a 100-item written exam (seven GM questions, e.g., "pharmacokinetic changes associated with aging include:") and nine-station SP exam (one GM station, 70 year-old forgetful woman presenting for check-up on diabetes) including a post-SP encounter open-ended written exercise ("Please write an assessment and plan for this patient."). Scores on the written exam GM items, GM-specific SP checklist items, and GM open-ended written exercise of WS participants and non-participants were analyzed with simple means, standard deviations, and multiple regression approaches controlling for USMLE Step 1 scores and Preventive Medicine SP station checklist scores.
RESULTS: The GM WS was delivered to 12 of the 24 rotational groups during the 2004–2006 academic years. Ninety-one students participated in the WS and 95 did not. WS participants performed significantly better than non-participants on the GM-specific SP checklist items ($n = 41$) (14.9±13.6 vs. 9.8±11.0, $F = 10.0$, $p = .002$) and post-encounter written exercise (3.5±1.8 vs.3.0±1.6, $F = 4.8$, $p = .0.3$). There was no difference in scores on the seven written exam GM items (5.3±.8 vs. 5.2±.9, $F = 1.3$, $p = .248$ There were no significant differences in the performance of WS participants and non-particpants on the 26 checklist items non-specific to GM ($p = .45$).
CONCLUSIONS: Students randomized to participation in a four-hour SP WS display superior GM clinical skills as assessed by a SP clinical exam and written assessment and plan. These findings lend additional support to the theory that the unique aspects to caring for older patients might be better taught using an interactive pedagogy. Practice with SPs appears to be an ideal and validated medium for teaching the clinical skills necessary for identification of atypical disease presentations, geriatric syndromes, and "hidden illnesses" critical to the care of older adults.

ABSTRACTS AND TITLES OF RESEARCH REPORTS IN MEDICAL EDUCATION OMIT ESSENTIAL INFORMATION: A SYSTEMATIC REVIEW. D.A. Cook[1]; T.J. Beckman[1]; G. Bordage[2]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN; [2]University of Illinois at Chicago, Chicago, IL. *(Tracking ID # 173663)*

BACKGROUND: Titles and abstracts are the most frequently read element in a research report, and informative abstracts have been advocated by clinical journals for nearly 20 years. The purpose of this study was to quantify the strengths and deficiencies of the titles and abstracts of published education research. Specifically, we sought to determine the types of titles and the prevalence of essential elements of informative abstracts for experimental education studies in medical education and clinical journals.
METHODS: An abstraction form was developed to rate the presence of the elements of a "more informative abstract": rationale or background, objective, design, setting, participants, interventions, outcomes, results, and conclusions. Abstracts were classified as structured (headings for most elements), IMRAD (Introduction-Methods-Results-and-Discussion), or unstructured (no headings). We also classified article titles as informative (communicating what the results found), indicative (what was done in the study), both, or neither. The form was piloted and refined using a sample of articles published in 2002. We then identified all full-length reports of education experiments, including evaluation studies, published in 2003 and 2004 in the journals Academic Medicine, Advances in Health Sciences Education, American Journal of Surgery, Journal of General Internal Medicine, Medical Education, and Teaching and Learning in Medicine. From these articles we selected a weighted random sample of 105 articles for full review. Each article was rated independently by two authors, who then reached consensus on final ratings.
RESULTS: Titles were indicative for 86 (82%) articles, informative for 2 (2%), and both indicative and informative for 10 (10%). Sixty-six abstracts (63%) had a rationale, 84 (80%) an objective, 20 (19%) a statement of study design, 29 (28%) the setting, and 42 (40%) the number and stage of training of participants. The study intervention was fully defined in 55 (52%) abstracts and partially defined in another 47 (45%). Among the 48 studies with a control or comparison group, this group's exposure was fully defined in only 21 abstracts (44%) and vaguely defined in another 19 (18%). Sixty-four abstracts (61%) clearly defined study outcomes. Data were presented in 48 (46%) abstracts. Nearly all abstracts (97; 92%) stated conclusions. All abstract elements were present more frequently for IMRAD abstracts than for unstructured abstracts, and all except rationale, study intervention definition, and results were present more frequently for structured abstracts than for IMRAD. These differences were statistically significant (chi-square test) for objective ($p = .024$), design ($p = .004$), and conclusions ($p < .001$).
CONCLUSIONS: Abstracts of reports of experiments in medical education frequently omit essential information. The frequency with which information about the study design, comparison or control group, and results is absent is particularly troubling. Titles of these reports are nearly always indicative (describing what was done in the study), rather than informative (telling what was found). More informative reporting should be encouraged. Requiring structured abstracts may help.

AMBULATORY TRAINING AND THE CONTINUITY CLINIC EXPERIENCE IN THE ERA OF DUTY HOUR REGULATIONS. S. Cohen[1]; K. Lupton[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173327)*

BACKGROUND: In light of new duty hour regulations and evolving priorities in internal medicine training, many residency programs are reevaluating the structure

and goals of the continuity clinic experience. Traditionally, the focus of internal medicine training has been on the inpatient setting; however, as more medical care shifts to the ambulatory setting residents need to develop proficiency in providing care in the outpatient clinic. Issues of primary concern in ambulatory training include: quality of care provided in resident clinics; training in a basic body of outpatient general medical knowledge; balancing responsibilities to a primary care panel of patients with inpatient duties; and resident satisfaction with the ambulatory experience. Multiple strategies for accomplishing these goals exist, such as creating teams of resident providers sharing outpatient clinic panels; shifting on-call and post-call clinics during inpatient months to maintain a once-weekly continuity clinic experience; and decreasing the number of clinics during months on inpatient rotations with a corresponding increase in the number of continuity clinics during outpatient and elective months. We surveyed internal medicine residents to identify: 1) Of the proposed models of ambulatory training, which would residents prefer? 2) How do primary care and categorical internal medicine residents differ in their perspectives on ambulatory training?
METHODS: An 8-question survey was distributed by email to all PGY-2 and PGY-3 internal medicine residents at UCSF in the categorical and primary care programs.
RESULTS: In total, 58/105 (55.0%) residents responded to the survey; there was no significant difference between the percentage of primary care and categorical residents responding. For the structure of resident continuity patient panels: 55.2% of all residents prefer the traditional model of one resident maintaining a panel of patients; 37.9% prefer a team-based system; and 6.9% expressed no preference. For resident continuity clinic scheduling: 69.0% of all residents prefer shifting on and/or post-call resident clinics to maintain approximately one continuity clinic per week; 12.1% prefer maintaining the current system of once-weekly clinic with post-call clinics cancelled during inpatient months; 12.1% of residents prefer a system in which continuity clinic sessions are eliminated during inpatient training months; and 6.9% prefer other models. There was no significant difference between primary care and categorical resident preference for any of these proposals. 34% of all residents (40% of categorical vs. 22% of primary care, $p < 0.001$) feel they currently receive adequate training to be a good provider in the ambulatory setting.
CONCLUSIONS: Duty hour regulations have reduced the amount of time residents spend in continuity clinic, limiting residents' exposure to ambulatory training and reducing patients' access to their primary providers. Residents at this institution prefer to maintain a weekly presence in the ambulatory setting. Innovative models of care, such as team-based practices, must be developed to better meet residents' educational needs. Further study is needed to explore these models and their impact on resident education, patient care and patient satisfaction.

ARE CASE REPORTS RESEARCH? M. Panda[1]; G. Heath[2]; N.A. Desbiens[1]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN; [2]University of Tennessee, Chattanooga - Department of Health and Human Performance, Chattanooga, TN. *(Tracking ID # 172743)*

BACKGROUND: The role of case reports in the generation of medical knowledge has been debated. Some consider them to be research while others consider them to be scholarly activity but not research. Educational organizations have their own views about case reports and research that are not entirely consonant. The US Department of Health and Human Services requires that all research be reviewed by the IRB to assure protection of human subjects. It defines research as "a systematic investigation designed to develop or contribute to generalizable knowledge" but does not list specific activities. In addition, new HIPAA regulations allow IRBs to be used to assure that its privacy requirements are met, potentially leading to confusion about whether case reports are being reviewed by IRBs because they are research or to meet privacy demands. We sought to discover whether medical institutions in the U.S. require IRB review for a single case report, and whether institutions that require it do so because they consider a case report to be research or to meet the privacy requirements of the institution. We thought that the latter would be the case.
METHODS: A questionnaire was developed and administered to IRB representatives from the 124 continental U.S. medical schools.
RESULTS: Of the 124 medical schools, we obtained information from 116 (94%). Of the responders, ninety-one (78%) IRBs did not require IRB approval for a single case report prior to presentation or publication. Of the 25 (22%) schools that required IRB approval, none required full IRB board review. Seventeen schools required notification to the IRB or expedited review by a representative of the IRB board prior to the presentation or publication of a case report, while 8 stated that they did not have a fixed policy. Ten of the committees functioned only as an IRB while 15 functioned both as the IRB and Privacy Board. Six schools considered case reports to be research requiring IRB approval, 8 to meet the privacy requirement and 11 because they considered a case report to be research and also to meet the privacy requirement.
CONCLUSIONS: Most medical school IRBs ((91 + 8)/116; 85%) do not consider case reports to be research. Of the minority who require IRB review, most (17 of 25; 68%) consider case reports to be research. Confusion could be lessened by a statement about whether case reports are research under the CFR 46.102 definition by the federal government or the American Association of Medical Colleges. In addition, IRBs need to make it explicit whether they are reviewing studies for human subject research protection, or because they also serve as an institutional Privacy Board or to meet institutional privacy requirements under HIPAA.

ASSESSING PHYSICIANS' KNOWLEDGE AND ATTITUDE TOWARDS OSTEOPOROSIS SCREENING AMONG PHYSICIANS AT ACADEMIC MEDICAL CENTERS. J. Zuleta[1]; F. Homayounrooz[2]; K. Jain[3]; S. Cykert[4]. [1]University of Miami, Miami, FL; [2]Yale University, New Haven, CT; [3]George Washington University, Washington, DC; [4]University of North Carolina at Chapel Hill, Chapel Hill, NC. *(Tracking ID # 172580)*

BACKGROUND: Persons with osteopenia or osteoporosis have a high risk for fractures. Osteoporosis-related fractures extol a considerable cost on both society (via direct and indirect care expenditures) and individuals (by compromising quality of life). These costs will continue to rise as our population ages unless healthcare providers remain committed to screening and treating osteoporosis. Increasing knowledge about osteoporosis and maintaining a positive attitude toward screening may help create an atmosphere that improves identification of patients at-risk for an osteoporosis-related fracture. The physician-arm of the BONES (Better Osteoporosis Knowledge, Education, and Screening) study aimed to discover whether there was a significant relationship between the following: (1) physician gender and general osteoporosis knowledge, (2) physician gender and general attitude towards osteoporosis screening, (3) general osteoporosis knowledge and attitude towards osteoporosis screening.
METHODS: The BONES study is a multi-institutional prospective cohort quality improvement study conducted in academic outpatient settings. The physician-arm of the study includes 5 sites to date; at each of these sites a 45 component physician questionnaire was administered to a systematic random sample of Internal Medicine physicians (residents and attendings). Once the data were collected and de-identified, a knowledge score was generated (maximum score 14) based on correct vs. incorrect answers. Additionally, an attitude score was generated (maximum score 23) based on positive vs. negative attitudes toward osteoporosis screening.
RESULTS: Analysis of our preliminary physician survey revealed a gender distribution of 38.5% females and 61.5% males. The calculation of knowledge scores revealed that 0.95% of 105 physicians surveyed obtained a maximum score of 14; the majority (20%) scored in the 9–11 range. There was no statistically significant association between physicians' gender and knowledge scores ($p = 0.21$). Analysis of the attitude score yielded only 93 complete responses and the highest positive score towards screening was 20 (1.08% of the answering physicians). The mean attitude score was 12.98. Using a t-test, there was no statistically significant association noted between physician gender and attitude scores ($p = 0.74$).
CONCLUSIONS: Osteoporosis is a common medical condition with significant health and financial burdens on our aging society. On the basis of this study, it appears that physicians' knowledge about osteoporosis is limited and attitudes toward screening are often not supportive. More emphasis should be placed on this important women's health issue in medical school and residency curricula.

ASSESSING SUPERVISION IN INTERNAL MEDICINE RESIDENCY TRAINING. J.M. Farnan[1]; J.K. Johnson[1]; D.O. Meltzer[1]; H.J. Humphrey[1]; V.M. Arora[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 171571)*

BACKGROUND: Although supervision during residency aims to ensure resident education and patient safety, there is little to guide the nature and extent of this supervision. The aims of this study are to describe attending and resident preferences for supervision during critical clinical decision making.
METHODS: All residents and attendings completing inpatient general medicine between January and November of 2006 at a single academic institution were privately interviewed using critical incident and appreciative inquiry techniques to elicit near miss events due to ineffective supervision and identify characteristics of effective supervisors. Participants also completed a survey describing 17 clinical situations in areas of communication, transfer of care, diagnostics, therapeutics and adverse events. For each item, residents rated their likelihood of soliciting supervision, and attendings rated their desire to supervise, using a 5 point Likert-type scale (Always, Very Often, Sometimes, Rarely, Never). For example, a 'diagnostics' item on the attending survey states "For a standard General Medicine month, how often would you expect your resident to contact you prior to ordering an invasive diagnostic test?"; the resident corollary states "For a standard General Medicine month, how often would you contact your attending prior to ordering an invasive diagnostic test?". Descriptive statistics and two-sample Wilcoxon rank-sum tests were performed to compare attending and resident preferences of supervision on individual items. Interview transcripts were analyzed using constant comparative method, an inductive approach with no a priori hypotheses.
RESULTS: 90[44 attendings; 46 residents] of 100 eligible physicians completed surveys and 82 of 100 [40 attendings; 42 residents] participated in qualitative interviews. Although attendings stated they personally evaluated >80% of patients on the night of admission, the perception this input contributed significantly to the patients' plan of care varied significantly between residents and attendings (21% v. 10%, $p = 0.001$). Residents and attendings agreed that notification is required for transfer of patients to the ICU and cardiac arrest, however preferences for supervision differed significantly with greater attending desire for contact than residents' desire to contact for the following: receiving a transfer patient from the ICU ($p = 0.001$); receiving a transfer patient from an outside facility ($p = 0.001$); initiation of IV antibiotics ($p = 0.003$) or inotropic medications ($p = 0.024$); initiation of anticoagulation ($p = 0.049$); change in patient code status ($p = 0.042$) and patient leaving against medical advice ($p = 0.027$). Finally, attendings wished that they were contacted earlier than residents wished to contact them ($p = 0.004$). Qualitative analysis yielded extremes of attending supervision, both with negative effects on residents. Residents

perceived attendings who dictated the plan of care, referred to as "the micromanager," as lacking faith in their clinical competence resulting in resident apathy and a passive role in patient management. Meanwhile, residents left to their own devices, with little input from their "absentee" attending, felt abandoned and uncertain about their decision making.
CONCLUSIONS: The extent of supervision received, and desired, by an individual resident is variable. Although formal attending evaluations do not often change the plan of care, attendings wish to be contacted earlier, and more often, than residents' desire.

ASSOCIATED FACTORS AND IMPACTS OF RESIDENT TEACHING TIME IN THE ERA OF DUTY HOUR LIMITATION. L.A. Mazotti[1]; A.R. Vidyarthi[1]; R.M. Wachter[1]; A.D. Auerbach[1]; P. Katz[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 171721)*

BACKGROUND: Some residents report spending less time teaching since the implementation of duty hour restrictions. This study aims to assess factors associated with spending less time teaching and to determine the impact of time spent teaching on resident emotional exhaustion and satisfaction with quality of patient care provided.
METHODS: We surveyed 164 Internal Medicine residents at the University of California, San Francisco. Residents reported the amount of time spent teaching and completing non-physician administrative tasks before and after duty hour restriction. They also reported the frequency of feeling overwhelmed and worn out, their satisfaction with the quality of patient care they provided, and the self-perceived value of teaching others to their own educational experience. Multivariate logistic regression analyses were performed to identify factors associated with self-reported decreased time spent teaching as well as the relationship between decreased teaching time, emotional exhaustion and satisfaction with quality of patient care.
RESULTS: One hundred twenty-five residents (76%) responded. Nearly one quarter (23%) reported spending less time teaching after duty hour restriction. In multivariable models, PGY-2 and PGY-3 residents [OR 9.84, CI (2.26, 42.91), and OR 14.88, CI (2.76, 80.22), respectively] and those who reported spending more time on non-physician administrative tasks [OR 1.03, CI (1.00 to 1.06)] reported spending less time teaching. Residents who spent less time teaching, though, reported less emotional exhaustion ($p = 0.03$) and more satisfaction with quality of patient care ($p = 0.06$). Those residents also reported similar value of teaching to their educational experience as the residents who spent the same or more time teaching after duty hours were reduced.
CONCLUSIONS: Our results show that spending less time teaching may be beneficial to resident well-being and patient care. Efforts should be made to optimize the time spent teaching, including limiting non-physician administrative tasks and considering strategies to improve effective and efficient teaching modalities.

BECOMING THE DOCTOR I WANT TO BE: EVALUATING THE PROFESSIONAL DEVELOPMENT OF INTERNS. M. Evans[1]; E. Holmboe[1]; J.G. Wong[2]; J.R. Rosenbaum[1]. [1]Yale University, New Haven, CT; [2]Medical University of South Carolina, Charleston, SC. *(Tracking ID # 173288)*

BACKGROUND: Several studies have suggested that the current medical training environment may include experiences that compromise trainees' professional development. Little is published exploring professional development of interns.
METHODS: Interns in the Yale University Internal Medicine Residency Programs were asked to evaluate their professional development during internship through a qualitative study involving two open-ended written surveys and a focus group interview. Participants were identified in June 2003 during the annual Professionalism Workshop that occurs during internship orientation. Participanting interns completed an initial survey asking them to describe the physician each aspired to be. In February 2004, interns attended a follow-up Professionalism Workshop. Prior to the Workshop, participating interns completed a second survey, which asked them to evaluate their progress toward achieving their previously stated aspirations. Following this Workshop, interns were divided into three groups for a focus group interview. Each facilitator followed the same script, probing the personal and professional changes interns noticed in themselves during internship. Interviews were taped and transcribed. Data were analyzed using the constant comparison method by at least two investigators, who achieved consensus regarding the extracted themes. Twenty-three interns from the primary care, traditional, and medicine/pediatrics residencies participated, and nineteen completed all parts of the study.
RESULTS: On the initial surveys, interns demonstrated great concordance in describing physician characteristics to which they aspire, such as being compassionate ($N = 19$), competent ($N = 19$), and an effective communicator ($N = 10$). On the follow-up survey and in the focus groups, none of the interns said they were failing to become the doctor they would like to be. In the focus group discussion, interns believed they were on track to attain their professional ideals, although the constraints of internship forced them to delay focusing on certain aspirations, with more emphasis on developing certain competencies (e.g, technical proficiency and medical knowledge) instead of others (such as interpersonal skills). Themes that emerged from the interns' descriptions of how they struggled to sustain their professional development included: acceptance of the role of intern (as distinct from an ideal of physician), the necessity of constricting their responsibilities to their patients given the limitations of internship, increased emphasis on self-care and self-awareness, and pride in the skills they mastered.
CONCLUSIONS: Our interns entered residency with professional ideals consistent with most professionalism statements. Although interns were frustrated by parts of their educational experience, they still believed they were on track to become the doctors they wanted to be. However, they felt that they postponed development of interpersonal skills while emphasizing technical and knowledge aspects of care. Further research should evaluate more senior physicians to see if they still delay attainment of certain ideals, achieved their ideals, or altered them in favor of more attainable ones. If professional development remains compromised, the factors preventing physicians from achieving their ideals should be clarified and modified.

CHANGING PHYSICIAN COMMUNICATION BEHAVIOR: A CONTROLLED INTERVENTION STUDY. H.P. Rodriguez[1]; M.P. Anastario[1]; R.M. Frankel[2]; E.G. Odigie[1]; W.H. Rogers[1]; T. Von Glahn[3]; D.G. Safran[4]. [1]Tufts-New England Medical Center, Boston, MA; [2]Indiana University Purdue University Indianapolis, Indianapolis, IN; [3]Pacific Business Group on Health, San Francisco, CA; [4]Tufts University, Boston, MA. *(Tracking ID # 172857)*

BACKGROUND: Evidence that communication training can significantly improve the quality of physician-patient interactions is limited. We conducted a controlled intervention study to evaluate the effect of a brief training program (single-evening workshop followed by two group teleconferences) on physician-patient interaction quality.
METHODS: The intervention employed in this study is adapted from the first habit of Kaiser Permanente's Four Habits of Effective Clinical Communications Model. The workshop focused on developing skills to effectively initiate a patient encounter. Follow-up teleconferences provided an opportunity to gain additional information and insights regarding these techniques through group discussion. Ten physicians with baseline patient survey scores below the statewide 25th percentile were invited by their medical group (a large multispecialty physician organization in California) to participate in the training. Eleven physicians matched on baseline scores, geography, specialty, and practice size were selected as controls. The quality of physician-patient interactions was measured using the short-form Ambulatory Care Experiences Survey (ACES), a validated instrument that evaluates patients' experiences with a specific, named physician and that physician's practice. Analyses considered changes in physician-patient interaction quality from pre-intervention (patient visits from January 2004-September 2005) to post-intervention (patient visits from October 2005-April 2006). For each physician, sufficient pre/post surveys were obtained to achieve reliable performance estimates for each time period. Generalized Linear Latent and Mixed Models (GLLAMM) including random effects to account for the clustering of patients within physician practices were used to compare score changes in the experimental groups. These models accounted for patient age, gender, education, race, self-rated physical health and physician-patient relationship duration for estimating the effect of the intervention on survey scores.
RESULTS: The final analytic sample included 1,493 patients from the panels of 21 physicians (average patients per $MD = 71.1$). In adjusted analyses, the quality of physician-patient interaction scores of intervention physicians improved by 3.2 points post-intervention (from 86.2 to 89.4), but the difference was not significantly different from changes observed in the control group ($p = 0.19$). Of the 8 intervention physicians who participated in the full intervention (workshop and teleconferences), 6 improved their physician-patient relationship quality scores by more than 4.0 points from baseline to post-intervention. By contrast, 2 of the 11 control physicians improved by that amount.
CONCLUSIONS: A simple and brief behavioral training intervention for practicing physicians appears to have potential for improving the quality of clinical interactions. It will be important to evaluate whether more extensive trainings, including those that focus on a broader set of communication techniques over a longer time period, are worth the additional time and resources in terms of performance gains achieved. A change of this modest amount, however, is of enormous practical significance to organizations in the context of public reporting and pay-for-performance, such as those in California, where the intervention occurred. A 3-point gain in organizational scores on this measure corresponds to gain of 40-points in statewide percentile rank, e.g., from the 40th to 80th percentile.

COMPARING RESIDENT ASSESSMENT BY INDIVIDUALS AND GROUPS OF FACULTY: DIFFERENCES IN RELIABILITY, HALO ERROR, AND FACULTY PERCEPTIONS. K.G. Thomas[1]; M.R. Thomas[1]; T.J. Beckman[1]; K.F. Mauck[1]; S. Cha[1]; J.C. Kolars[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 173168)*

BACKGROUND: Studies involving medical students have demonstrated that assessments completed by faculty groups are more accurate than those completed by individual faculty preceptors. However, little is known about the added value of group assessment in graduate medical training. We aimed to determine whether assessments of residents in an ambulatory clinic by groups of faculty, versus individual faculty preceptors, show better reliability and reduced halo error. We also sought to determine faculty perceptions regarding effects of the group assessment process.
METHODS: Our institution's Internal Medicine Resident Continuity Clinics are comprised of 6 firms, each with approximately 24 residents and 8 faculty preceptors. We prospectively collected faculty-on-resident assessment forms ($n = 815$) completed during the 2005–06 academic year. Prior to participating in group assessment sessions, faculty preceptors independently completed faculty-on-resident assessment forms for those residents to be discussed by the group. During group sessions, faculty preceptors discussed each resident; firm leaders then assigned final scores reflecting group

consensus. Group and individual faculty-on-resident assessment forms contained 7 identical items structured on 5-point Likert scales (1 = strongly disagree; 5 = strongly agree). Immediately after the group sessions, faculty preceptors completed surveys (n = 87) constructed on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree) regarding their attitudes toward the group assessment method. Interrater reliability for individual and group assessments was determined by calculating intraclass correlation coefficients (ICC). Using a previously described method, halo error was determined by calculating inter-item correlations. Lastly, the Wilcoxon rank sum test was used to compare mean scores, for each item and overall, for assessments by groups and individual raters. Mean scores were determined for faculty survey responses.
RESULTS: 679 individual assessments and 136 group assessments were completed and analyzed. Mean scores were higher for group (3.92) than individual (3.83) assessments (p = 0.0001). Interrater reliability increased when combining group and individual assessments (ICC 0.83; 95%CI 0.79, 0.87) versus individual assessments alone (0.75; 95%CI 0.69, 0.80). Halo error was less for group (0.49) versus individual (0.68) assessments. Preceptors reported that the group assessment method improved their understanding of residents' strengths, weaknesses, and learning plans (mean scores 4.43, 4.49, and 3.93, respectively). Preceptors also reported that the group method improved resident assessment in the ambulatory setting (mean score 4.56), enhanced their understanding of resident assessment (mean score 3.79) and increased confidence in their assessment skills (mean score 3.65).
CONCLUSIONS: Group assessment of residents in an ambulatory setting was associated with increased interrater reliability and reduced range restriction (halo error) compared with individual faculty assessments. Moreover, faculty preceptors reported that the group method improved their understanding of residents' skills, enhanced their understanding of resident assessment, increased their confidence in their assessment skills, and improved resident assessment in the ambulatory setting. Additional research assessing qualitative differences in written feedback between group and individual assessments is ongoing.

COMPARING RESIDENT QUALITY OF LIFE ACROSS SPECIALTY. A.S. Tackett[1]; J.F. Wilson[1]; C.H. Griffith[1]; C.M. Bingcang[1]. [1]University of Kentucky, Lexington, KY. *(Tracking ID # 172719)*

BACKGROUND: The Accreditation Council for Graduate Medical Education (ACGME) recognizes the importance of monitoring resident well being, or quality of life, during residency training. Indeed, the ACGME- mandated work hour limitations were part of a broad approach to promote not only patient safety, but also resident well-being. Few studies have focused on resident quality of life and how it is influenced by specialty. The purpose of this study was to examine resident's attitudes towards their quality of life in comparison to others, and to explore how specialty type influences quality of life ratings.
METHODS: A voluntary survey was given to all resident physicians at the University of Kentucky. Residents were asked to rate the quality of life of the average person, the average resident, their current quality of life, their quality of life last year, and their anticipated quality of life for the next year on a nine point Likert scale (one being the worst, nine the best). Residents were also asked to respond to two open-ended statements, "The best thing about my life is" and "The worst thing about my life is" Data was analyzed using means and t-tests.
RESULTS: Overall, our results showed that residents perceived their current quality of life (5.2) as better than the average resident (4.5), but lower than the average person (6.0). Regarding differences in specialty, Pediatrics and Family Medicine rated their quality of life as worse than the average resident. Comparing themselves to the average person, Psychiatry and Pathology rated their quality of life as higher. Similar to the general population, residents rated themselves with an optimistic bias for the next year. However, they also rated their current quality of life as worse than the previous year. In analyzing the open-ended responses, family was the most frequently identified response to "The best thing about my life is " (44 responses). References to career or job satisfaction were less frequently identified with 11 responses. The most frequent response to "The worst thing about my life is " regarded time limitations (27 responses).
CONCLUSIONS: Perhaps surprisingly, residents in Pediatrics and Family Medicine rated their quality of life as significantly lower than residents in other specialties. Although this data is from one institution and should be interpreted with caution, this finding was not anticipated, as Pediatrics and Family Medicine are specialties less strained by the work hour limitations (compared to other specialties, such as surgery).

CRYING, STRESS AND SADNESS: THE EXPERIENCE AND ATTITUDES OF 3RD YEAR MEDICAL STUDENTS AND INTERNS. A.D. Sung[1]; M.E. Collins[1]; A.K. Smith[2]; A.M. Sanders[3]; S.D. Block[4]; R.M. Arnold[3]. [1]Harvard University, Boston, MA; [2]Beth Israel Deaconess Medical Center and Dana-Farber Cancer Institute, Brookline, MA; [3]University of Pittsburgh, Pittsburgh, PA; [4]Dana-Farber Cancer Institute and Brigham & Womens' Hospital, Boston, MA. *(Tracking ID # 172869)*

BACKGROUND: Little is known about crying among medical trainees. We assessed the epidemiology and attitudes toward crying in medical settings among third-year medical students and interns.
METHODS: We distributed a survey to all third-year medical students and interns at two medical schools and associated internal medicine residency programs in Boston and Pittsburgh. We asked questions about the frequency and circumstances in which trainees cried, attitudes toward crying, perceptions of institutional attitudes and behaviors surrounding crying, and the prevalence and adequacy of institutional support and training regarding crying. We developed the survey using focus groups and literature review and field-tested with 4th year medical students. We report responses to these questions with proportions and descriptive statistics, using bivariable logistic regression with year of training (student vs. intern) and gender (male vs. female) as predictor variables. We distinguished between crying out of sadness (i.e. empathy, concern, or sadness associated with the patient's or family's situation), and crying out of stress (i.e. burnout, frustration, shame, anger, or guilt).
RESULTS: Participation rates were 208/307 (68%) for students and 93/126 (74%) for interns. Participants were more likely to be women (56% students, 54% interns) and white (62% students, 57% interns). Sixty-nine percent of students and 74% of interns reported having cried in a medical setting during the past year. The most common reported cause for both students and interns was burnout. Overall, 59% of students cried out of stress during the past year and 51% out of sadness; 62% of interns cried out of stress and 61% out of sadness. While there were no significant differences in crying between students and interns (p = 0.38), more than twice as many women cried as men (93% vs. 44%, OR = 16.53, 95% CI = 8.39–32.59). While men were equally as likely to cry out of sadness as stress, women were significantly more likely to cry out of stress than sadness (OR = 2.38, 95% CI = 1.37–4.16). While students and interns thought that crying out of stress (88% and 92% respectively) in front of patients is unprofessional, fewer thought that crying out of sadness (37% and 38% respectively) is unprofessional. Seventy-three percent of students and 68% of interns (p = 0.34) thought discussion of physicians' crying experiences is inadequate. Students and interns reported missed opportunities for talking about crying in their interactions with attendings: 69% of students and 67% of interns reported that when attendings cry, the attendings left the room or returned to work without saying anything to trainees.
CONCLUSIONS: Crying was common among both students and interns, with women crying more often then men. Participants reported crying as the result of both stress and sadness. High proportions of trainees felt that crying out of stress in front of patients is unprofessional. By failing to talk about their own crying, attendings are missing an opportunity to normalize crying and discuss how they deal with strong emotions. More frequent discussion of crying in medical training may redress the stigma associated with crying, and encourage the healthy emotional development of physicians.

CULTURAL ISSUES IN ACADEMIC MEDICINE LINKED TO THE LACK OF WOMEN, MINORITY AND GENERALIST FACULTY IN LEADERSHIP AND SENIOR ROLES IN MEDICAL SCHOOLS: THE C - CHANGE PROJECT. L.H. Pololi[1]; D. Kern[2]; A. Ash[3]; P. Carr[3]; P. Conrad[1]; S.M. Knight[4]. [1]Brandeis University, Waltham, MA; [2]Johns Hopkins University, Baltimore, MD; [3]Boston University, Boston, MA; [4]East Carolina University, Greenville, NC. *(Tracking ID # 173093)*

BACKGROUND: The National Initiative on Gender, Culture and Leadership in Medicine (C - Change), a Josiah Macy, Jr., Foundation funded partnership of five medical schools, Brandeis University and the AAMC, seeks to explore and address the intransigent under-representation of women, minority and generalist faculty in senior and leadership roles in academic medicine. This situation results in a failure to realize the potential contributions and benefits of these groups in academic medical centers. The five-year action research project aims to change the culture of academic medicine so that it can better support the advancement and productivity of all faculty. Our strategy for change engages senior leaders in academic medicine in a collaborative learning network so that they can better understand their own organizational approach and facilitate change. An innovative Learning Action Network (LAN) links our five participating medical schools and deans in a group process to drive change within these demonstration sites.
METHODS: This action research project uses qualitative and quantitative research methods, and facilitated collaborative learning to foster change in the culture of academic medicine at medical schools with diverse regional and organizational characterisitics. Research activities include: 1. The interview study, whose early findings we report here, is a qualitative, hypothesis-generating research study to explore the experiences of faculty and the organizational approach at each of the five medical schools. Participating faculty (N = 100) included men and women at various career stages, who were research scientists, generalists, and medical and surgical subspecialists. Minority and generalist faculty were over-represented. Hour-long interviews probed for aspirations and challenges to a career in academic medicine, perceptions of discrimination, work-family integration, and the use of authority in the work environment. Data was analyzed in aggregate. 2. A national quantitative survey of faculty in collaboration with the AAMC, building on themes generated in the qualitative research project. 3. Identification of promising practices nationally. 4. Establishment of an active change process at the five medical schools by involving senior leadership in a collaborative learning group that will generate site specific interventions to support the advancement of women and minority faculty. 5. An integrated evaluation of the project's processes and outcomes. 6. Dissemination of recommendations and successful demonstration models.
RESULTS: Early findings from faculty in-depth interviews identify a variety of themes, and document the aspirations and experience of medical school faculty across gender, race and specialty. Issues of academic medical institutional culture, such as hierarchical structures, transparency in decision making, barriers to collaboration, and lack of community partnerships were frequently named as factors related to faculty retention and vitality.
CONCLUSIONS: Cultural issues that create barriers for the advancement of women and minority members in academic medicine were identified as affecting the retention, satisfaction and the ability to realize their full potential for all faculty. A national survey will assess the generalizability of these themes and an action research project

attempt to institute appropriate cultural change in five demonstration medical schools.

DEVELOPING AND ASSESSING A FACULTY DEVELOPMENT PROGRAM IN GERIATRICS FOR NON-PRIMARY CARE PHYSICIAN EDUCATORS. B.C. Williams[1]; A. Schigelone[1]; J.T. Fitzgerald[1]; J.B. Halter[1]. [1]University of Michigan, Ann Arbor, MI. *(Tracking ID # 173568)*

BACKGROUND: Professional and non-profit organizations have advocated increased training in the care of older patients among all physicians who care for adults. We implemented a four-year faculty development program with the goal of developing geriatrics curricula for house officers (residents and fellows) in surgical and related disciplines and medical subspecialties.
METHODS: One faculty participant was selected through negotiations with each of 7 departments in surgical and related specialties and 5 internal medicine subspecialties, based on career aspirations and interest and expertise in teaching. Three sets of seminars were held for 4–6 faculty each, with weekly two-hour meetings over nine months. Sessions included didactics, interactive discussions, role-playing, and presentations by participants. Content focused on clinical geriatrics, clinical teaching, and curriculum development and implementation. Ancillary resources included a web-based teaching resources "warehouse", nine faculty consultants for one-on-one and group mentoring, learner assessment tools, and a geriatrics standardized patient instructor. Evaluation consisted of: a) pre- and post-seminar written surveys of knowledge and attitudes, self-rated skills improvement, and estimates of the seminars' relevance and usefulness; b) focus groups for each of the three sets of participants; c) enumeration of new lectures, clinical teaching, and clinical rotations developed by participants; and d) description of the impact of the program on the careers of faculty participants.
RESULTS: Faculty participants showed significant pre- to post-seminar improvement in knowledge (17 items, 40% vs. 60% correct, $p < .001$) and self-rated ability to do (14 items, mean 2.37 vs. 3.40, $p < .001$) and teach (14 items, mean 2.15 vs. 3.31, $p < .001$) geriatrics. The seminars were perceived by participants as effective in increasing their geriatrics clinical knowledge, ability to teach geriatrics, and access to geriatrics-related teaching resources and people. All 12 participants implemented 2–6 new lectures or seminars per year in standing teaching settings that are ongoing, and incorporated geriatrics into their clinical teaching, affecting an estimated 175 residents per year. Three programs developed entirely new clinical rotations in geriatrics. Two programs hold annual 1/2 day retreats in geriatrics for incoming fellows. Geriatrics has become a career focus and part of the professional identity of eight of the twelve faculty participants.
CONCLUSIONS: Key elements accounting for the success of our program likely relate to: a)involvement of academic leadership to achieve shared goals and funding, b) aligning individual career and institutional goals, c) protection of lead faculty in time and space to work on program objectives, and d) providing a "safe" environment for faculty to explore old assumptions and develop new skills and knowledge. This study was sponsored by the Donald W. Reynolds Foundation.

DO INTERNAL MEDICINE RESIDENTS FEEL COMFORTABLE PROVIDING PALLIATIVE CARE? IMPACT OF A MEDICAL ONCOLOGY ROTATION AND CURRICULUM ON RESIDENT CONFIDENCE. K.M. Swetz[1]; T.J. Moynihan[1]; D.M. Dupras[1]; T.J. Beckman[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 171804)*

BACKGROUND: Residencies have recently emphasized palliative care curricula, but we are unaware of studies regarding the impact of these curricula on resident physician confidence. We thus studied the impact of a palliative care curriculum on resident physician confidence with caring for oncology patients. We also determined whether this curriculum added value to a traditional oncology rotation.
METHODS: First year medicine residents rotating on oncology from July 2005 to November 2006 were invited to participate in an electronic palliative care curriculum. Thirty-four residents participated and completed curriculum evaluations. The curriculum consisted of 4 modules (pain management, end-of-life care, dyspnea and psychiatric issues, and gastrointestinal issues). The curriculum was reviewed by 3 experienced oncology faculty members and complemented an existing lecture series, which was attended by all rotating residents. After the rotation, residents completed post and retro-pre attitude surveys with items structured on five-point scales (0 = very uncomfortable, 5 = very comfortable). The Wilcoxon rank sum test was used to compare mean post and retro-pre test scores for each item and to compare residents that did and did not participate in the electronic palliative care curriculum.
RESULTS: Retro-pre and post scores for each of the questions were as follows: (1) How comfortable are you with caring for terminally ill patients? (retro-pre 2.9; post 4.0; $p < 0.0001$); (2) How adequate is your knowledge of pain management? (retro-pre 2.4; post 4.1; $p < 0.0001$), (3) How comfortable do you feel talking to a patient or family about death and dying? (retro-pre 3.1; post 4.0; $p < 0.0001$), (4) How comfortable are you with symptom assessment in patients with terminal illness? (retro-pre 3.1; post 4.1; $p < 0.0001$), and (5) How do you respond to the statement "Referring patients to palliative care is equivalent to giving up all hope?" (retro-pre 0.8; post 0.9; $p = 0.19$). Mean post scores were also compared for residents that completed the curriculum ($n = 21$) versus residents who did not ($n = 13$). For question 1, the mean post score of curriculum completers vs. non-completers was 4 versus 4 ($p = 0.90$); for question 2 (4.2 vs 4, $p = 0.92$), for question 3 (4 vs. 3.9, $p = 0.90$), for question 4 (4.1 vs 4.0, $p = 0.96$), and for question 5 (0.9 vs. 1.1, $p = 0.67$).
CONCLUSIONS: This study showed that resident physicians participating in a combined oncology rotation and palliative care curriculum experienced improved confidence with providing palliative care. The results suggest that the curriculum did not increase resident confidence beyond what would be gained from a required rotation in oncology. The results also show that residents do not equate palliative care with "hopelessness." Given that our curriculum had no apparent impact beyond standard educational practice, teachers should carefully consider the benefit of adding expensive, time-consuming curricula to busy hospital rotations

DOES PATIENT-CENTERED INTERVIEWING CORRELATE WITH GLOBAL STUDENT PERFORMANCE IN A CLINICAL SKILLS EXAMINATION? E. Rouf[1]; H. Chumley[2]. [1]University of Missouri - Kansas city School of Medicine, Kansas City, MO; [2]University of Kansas, Kansas City, KS. *(Tracking ID # 173378)*

BACKGROUND: Competence in communication skills has become a major priority for educational, licensing and policy organizations in the U.S. An ideal doctor-patient communication should be patient-centered and should include the following tasks in a clinical encounter: understanding the patient's perspective, sharing information with patient, reaching agreement on problems and plans, and providing closure. Patient-Centered Interviewing (PCI) can improve diagnostic accuracy, treatment adherence, patient satisfaction and health outcomes. It is unknown whether patient-centered interviewing correlates with overall clinical performance or CIS scores in a standardized Clinical Skills Assessment (CSA) examination.
METHODS: Using a single-group correlation design, we have reviewed 32 videotaped clinical encounters of 3rd year medical students (class of 2006 at University of Kansas SOM, Kansas City) with Standardized Patients (SPs), as part of their comprehensive clinical skills assessment examination. We observed a single clinical encounter (a 49-year-old AA female with depression) to determine a global PCI score using a validated interview checklist. The instrument included 23 items in a Likert-type scale, and was obtained from the Four Habits Model: invest in the beginning, elicit patient perspective, demonstrate empathy and invest in the end. Two faculty reviewed videotaped encounters together to establish inter-rater agreement of 0.70 before each of them individually scored the study encounters. For each student, we assessed PCI global and sub-scores from a single encounter and collected global CSA and CIS scores, as assessed by SPs from a 10-station CSA examination, We planned non-parametric correlation (Spearman's Rho). Power calculation was based on CSA global to CIS score correlation (power of 0.80 to detect significance at 0.05).
RESULTS: We found no significant correlation between global PCI and CSA scores (correlation coefficient 0.229, two tailed significance 0.207). In addition, there was no significant correlation between global PCI and CIS scores (correlation coefficient 0.039, two tailed significance 0.833). Overall, PCI scores were lower than CSA scores (57% vs. 75%, Wilcoxon $Z = 4.75$, $p < 0.0001$). Lowest scores were noted on eliciting patient perspective. Table 1 includes raw scores (percentage of correct items) of CSA, CIS and PCI domains.
CONCLUSIONS: In our single-group correlation study, PCI was not correlated with overall student performance. Of note, medical students performed poorly in eliciting patient agenda. We do acknowledge that standardized comprehensive clinical examinations, as developed at our institution and other medical schools, may not have been constructed to adequately assess patient-centered communication. An experimental study design (pre-post control group) may determine if PCI impacts clinical reasoning. SP checklist in high-stakes examinations may need to include more domains of patient-centered communication.

Raw Scores (Percentage of Correct Items) of CSA, CIS and PCI Domains

Score(N = 32)	Mean	Standard Dev.
CSA Global	75%	4.47
CSA CIS	85%	4.64
PCI Global	57%	12.67
PCI - Invest in the begginning	52%	16.86
PCI - Elicit the patient's perspective	30%	25.66
PCI - Demonstrate empathy	63%	26.36
PCI - Invest in the end	65%	14.37

DOES PERFORMANCE OF PHYSICAL EXAM SKILLS DURING MEDICAL SCHOOL IMPROVE WITH CLINICAL EXPERIENCE? F. Massie[1]; A. Castiglioni[2]; J.A. Caldwell[1]; A. Wood[1]; C.A. Estrada[1]. [1]University of Alabama at Birmingham, Birmingham, AL; [2]Birmingham Veterans Affairs Medical Center, Birmingham, AL. *(Tracking ID # 171580)*

BACKGROUND: Using standardized patients (SP) for teaching and assessing clinical skills has gained widespread acceptance. We compared performance of physical exam skills by a single cohort of medical students at two different stages of their training using a standardized patient encounter.
METHODS: We administered an Objective Structured Clinical Examination (OSCE) station to all second year medical students (MS2) at the end of the academic year in 2004. The same station was administered to this group of students upon completion of their clinical clerkships in 2006 (MS4). The station simulated a patient presenting with symptoms suggestive of pneumonia. Students were asked to perform a focused physical examination. Trained SP's assessed performance using an eleven item checklist.

RESULTS: 150 students completed the station in 2004 as MS2s and 151 students completed it as MS4s. MS2 performance was superior on most components of the lung exam (see table, $p < 0.001$) except for two items: "placed stethoscope against my skin" ($p = 0.48$) and "allowed for a full cycle of breathing" ($p = 0.092$).
CONCLUSIONS: When examining a standardized patient with symptoms of pneumonia, performance of physical exam skills by a single cohort of medical students was worse during their MS4 year as compared to their MS2 year. Whether the difference reflects better "test taking" skills by MS2s, better efficiency by MS4s, or erosion of clinical skills by experiences during the clerkships is unknown.

Checklist Item	MS2 (n=150) % Correct	MS4 (n=151) % Correct
Inspection		
•Watched my breathing	90.7	66.0
Palpation		
•Checked Tactile Fremitus	82.7	57.0
Percussion		
•Tapped chest 4 or more paired locations	90.7	60.0
•Compared side-to-side	93.3	70.0
Auscultation		
•Asked me to breath thru mouth or deeply	92.7	48.0
•Listened to back in 4 paired locations	96.0	68.0
•Checked for altered voice transmission	57.3	36.0

EFFECTIVENESS OF SIMULATION IN MEDICAL EDUCATION. R. Qayyum[1]; P.A. Thomas[2]; T. Dorman[1]; N. Ratanawongsa[1]; L. Wilson[1]; E.B. Bass[1]; S.S. Marinopoulos[3]. [1]Johns Hopkins University, Baltimore, MD; [2]Johns Hopkins University, Glen Arm, MD; [3]Johns Hopkins University, Lutherville, MD. *(Tracking ID # 171956)*

BACKGROUND: Simulation is an attractive learning technique that offers the ability to learn new skills and repeat complex tasks without endangering patients. Several systematic reviews that have evaluated the role of simulation as a learning tool in medical education have done so in a limited spectrum of situations. We conducted a systematic review to evaluate the totality of evidence on the effectiveness of simulation as a learning tool in medical education, by systematically reviewing and assessing the quality of the systematic reviews that have addressed it
METHODS: We searched the electronic databases MEDLINE®, EMBASE®, the Cochrane Database of Systematic Reviews, The Cochrane Central Register of Controlled Trials (CENTRAL), the Cochrane Database of Abstracts of Reviews of Effects (DARE), PsycINFO, and the Educational Resource Information Center (ERIC®) from 1990 to February 2006. We also scanned the references of included articles and the table of contents of selected journals from February 2005 through February 2006. Reviews were included if they were published in English and presented data on the effectiveness of simulation. Each article was abstracted by at least 2 reviewers using standardized forms, and quality of the review was assessed using QUORUM criteria.
RESULTS: Nine systematic reviews met inclusion criteria. Eight reviews evaluated the role of simulation in skill acquisition, and two reviews evaluated the role of simulators in knowledge acquisition. No systematic review evaluated the effectiveness of simulation as a learning tool on clinical outcomes. Overall the direction of evidence points to the effectiveness of simulation training, especially in psychomotor (e.g., procedures or physical examination techniques) and communication skills. The strength of the evidence was considered low, due to the small number of appropriate studies, the scarcity of quantitative data, and a number of limitations. The quality of systematic reviews that met inclusion criteria was, in general, inadequate.
CONCLUSIONS: While the sophistication and popularity of simulation for both teaching and assessment in medical education has continued to grow, there is little quality evidence to date supporting its efficacy. Future research should focus on the effect on clinical outcomes of training by simulation.

Quantity and Direction of Evidence for Effectiveness of Simulation

Learning Objective	Number of reviews which addressed learning objective	Number of studies which addressed effectiveness of simulation	Direction of evidence
Psychomotor Skills	6	63	Favors simulation
Communication Skills	2	14	Favors simulation
Cognitive Skills	2	37	Mixed results

EFFECTS OF THE HIDDEN CURRICULUM ON THIRD YEAR MEDICAL STUDENT PARTICIPATION IN AND PERCEPTIONS OF UNPROFESSIONAL BEHAVIORS. S. Reddy[1]; J.M. Farnan[1]; J. Yoon[1]; T. Leo[1]; G. Upadhyay[2]; M. Young[3]; C. Roberts[4]; L. Kondapalli[1]; H.J. Humphrey[1]; V. Arora[1]. [1]University of Chicago, Chicago, IL; [2]Massachusetts General Hospital, Boston, MA; [3]Boston University, Boston, MA; [4]Columbia University, New York, NY. *(Tracking ID # 172360)*

BACKGROUND: Evidence suggests that non-curricular elements (the "hidden curriculum") contribute to an erosion of professionalism; few quantitative studies document how perceptions of unprofessional behaviors change during the third year of medical school. We examine the impact of clinical experiences on student perceptions of, and participation in unprofessional behaviors.
METHODS: 5 medical students and 2 faculty created a 27 item survey to assess views on behaviors considered unprofessional by generally accepted norms (e.g. making deregotory remarks about patients), institutional policy (e.g. wearing scrubs out of hospital), national regulations (e.g. discussing patients in public places), and student opinion (e.g. arriving late to rounds). For each behavior, students were asked to report if they observed or participated and if they considered the behavior an issue of professionalism. Pre-surveys were administered immediately prior to the start of clinical clerkships; post-surveys were given five months later. Post-surveys had a constructed response section for comments. To facilitate truthful reporting, surveys were anonymous. Descriptive statistics were used to summarize results. Chi square tests were used to detect significant differences between pre and post groups. The relationship between participation in a behavior and views regarding professionalism was tested using chi square tests for the post period. Open-ended comments were coded using constant comparative method.
RESULTS: Response rates for the pre and post surveys were 100 (n = 106) and 62% (n = 61) respectively. After clinical clerkships, there was a significant increase in observation for 21 of the 27 behaviors and a significant increase in participation for 17 behaviors. For 15 of the 17 behaviors, students were 5% less likely to view the behavior as an issue of professionalism. For 6 of these behaviors (taking patient (pt) food, not correcting someone who mistakes you for a doctor, non-clinical use of workrooms, absence from lectures, personal conversations in pt care areas, arriving late to rounds), students were significantly less likely to perceive the behavior as an issue of professionalism. In the post-period, participants in 9 behaviors were significantly less likely to view these behaviors as issues of professionalism than non-participants (absence from lectures, being introduced as doctor, attending a pharma event, eating/drinking in pt corridors, taking food from lectures not attending, taking pt food, inebriation at school events, discussing with pts information beyond level of knowledge, consenting pts without supervision). Major themes from analysis of comments confirmed professionalism breaches (poor student/role model behavior, lack of patient care focus, and disregard for student needs) and an overt hostility towards professionalism education (e.g. "I feel harassed by all of this professionalism talk").
CONCLUSIONS: Within five months of starting clinical clerkships, students were more likely to observe and participate in unprofessional behaviors, and less likely to view certain behaviors as issues of professionalism. Specifically, students who participated in unprofessional behaviors were less likely to view those behaviors as professionalism issues. These findings confirm an erosion of the perceptions of professionalism during the clinical clerkships, possibly fueled by elements in the learning environment that promote unprofessional behaviors.

EXPERIENCE, SELF-CONFIDENCE, AND PERCEIVED IMPORTANCE OF PROCEDURAL AND INTERPRETIVE SKILLS IN MEDICAL STUDENTS: A COMPARISON OF SENIOR US AND DOMINICAN STUDENTS. E.H. Wu[1]; D. Sears[1]; M.J. Fagan[1]; J. Vasquez Morel[2]; E.J. Alper[3]; J.E. Bost[4]; E.C. Corbett[5]; D.M. Elnicki[4]; A.J. Mechaber[6]; P. Ogden[7]; J.L. Sebastian[8]; D. Torre[8]. [1]Brown University, Providence, RI; [2]Pontificia Universidad Catolica Madre y Maestra, Santiago, ; [3]University of Massachusetts Medical School (Worcester), Worcester, MA; [4]University of Pittsburgh, Pittsburgh, PA; [5]University of Virginia, Charlottesville, VA; [6]University of Miami, Miami, FL; [7]Texas A&M University, Temple, TX; [8]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 170631)*

BACKGROUND: Recent studies suggest that US medical students have little experience and low self-confidence with a number of procedural and interpretive skills that medical educators deem important. It is unknown how US students compare in this regard to students in resource-scarce countries where the educational and clinical experiences may be different. We sought to compare frequency of performance, self-confidence, and perceived importance for 22 procedural and interpretive skills between final-year US and Dominican Republic (DR) medical students.
METHODS: From February to April 2006, we surveyed 122 4th-year students from 7 US medical schools and 129 6th-year students from 1 DR medical school. We assessed 22 procedural and interpretive skills from the Association of American Medical Colleges' 1998 Medical School Objectives Project Report I and a 2002 national survey of Clerkship Directors in Internal Medicine members. We asked students to report their estimated frequency in performing each skill since entering medical school. Students used a 5-point Likert scale to indicate their self-confidence in performance (1 = Not at all Confident; 5 = Very Confident) and perceived importance of competence (1 = Not at all Important; 5 = Very Important) in these skills. We compared students' responses using t-test, Wilcoxon rank-sum test, and 2-sample test of proportions.
RESULTS: The overall response rate was 74% (186/251; US 79%, DR 70%). US students were older than DR students (mean age 28 vs. 24, $p < .05$), but the difference in proportion of female students was not significant (US 56% vs. DR 68%, $p = .11$). DR students performed 10 skills with higher frequency: arterial blood sampling, phlebotomy, blood culture, nasogastric tube insertion, urinalysis, urethral catheter insertion in

both males and females, CPR, suturing a laceration, and chest X-ray interpretation (all $p < .05$). For example, DR students performed a median of 17.5 arterial blood samplings, compared to a median of 3 for US students ($p < .05$). US students performed a greater number of 7 skills: peripheral IV catheter insertion, throat culture, PPD placement, lumbar puncture, paracentesis, EKG interpretation, and spirometry interpretation (all $p < .05$). For example, US students performed a median of 30 EKG interpretations, compared to a median of 10 for DR students ($p < .05$). For 10 of the skills surveyed, more US than DR students had performed them at least once, while for 5 skills, more DR students performed them at least once (all $p < .05$). Greater self-confidence was reported by DR students in 7 skills and by US students in 5 skills (all $p < .05$). Both student groups deemed competence in all skills to be important, with PPD placement having the lowest mean perceived importance rating for both groups (DR 3.6; US 3.3) and chest X-ray interpretation having the highest rating (DR 4.9; US 4.8). DR students reported greater perceived importance in 12 skills (all $p < .05$).
CONCLUSIONS: The DR students we surveyed, compared to US students, performed a greater number of procedural skills with greater frequency and expressed higher confidence in performance in more skills. US students performed a greater range of procedural skills at least once. US medical educators who seek to enhance their students' experiences with and attitudes toward procedural and interpretive skills may benefit from examining the clinical experiences of medical students in resource-scarce settings such as the DR.

GENDER DIFFERENCES IN FERTILITY AWARENESS AND INTENTIONS TOWARD CHILDBEARING DURING RESIDENCY. L.L. Willett[1]; M.F. Wellons[1]; L. Roenigk[1]; J. Hartig[1]; T.K. Houston[1]. [1]University of Alabama at Birmingham, Birmingham, AL. *(Tracking ID # 172885)*

BACKGROUND: Residency training spans prime childbearing years for women. A slight decrease in female fertility occurs in the late 20s and a marked decrease occurs after age 35. Postponing pregnancy until residency training is complete may result in unintentional childlessness or fewer number of children than desired. We sought to determine gender differences in 1) intent of pregnancy 2) fertility awareness and 3) reasons for postponement of pregnancy in residents at our institution.
METHODS: We administered an anonymous cross-sectional survey to internal medicine (IM)($n = 105$), pediatric ($n = 53$), and combined medicine-pediatric (MP) ($n = 14$) residents at the University of Alabama at Birmingham on issues related to fertility awareness and intentions toward childbearing. We used 5-point Likert scales (1 = completely disagree, 3 = neutral, 5 = completely agree) to assess agreement with four reasons for postponing pregnancy (extending residency, not obtaining fellowship, concern about pregnancy complications, and interference with career in general). Using factor analysis, we combined these four postponement reasons into a summary scale, and found them to be a single dominant factor (eigenvalue = 2.6). Differences in males and females were assessed using t-tests, and fisher's exact tests. We used logistic regression to assess the effect of the postponement reasons, marital status and age on gender differences.
RESULTS: 104 (99%) IM, 37 (70%) pediatric, and 14 (100%) MP residents completed surveys. Overall, 44% of respondents were female, 58% were married, 15% had children, and 6% had experienced subfertility. There was no difference in females and males in desiring children (86%, 92%, $p = 0.12$) and number of children desired(2.7, 2.8). Females reported significantly lower age than males regarding the age at which a woman's fertility decreases slightly (30.3, 32.1, $p = 0.004$) and decreases markedly (36.1, 38.1, $p = 0.001$). Females were significantly less likely than males to plan a pregnancy during residency (13%, 36%, $p = 0.002$). Female residents agreed more often about postponing pregnancy because of concerns of 1) extending residency (mean = 3.2 vs. 2.2, $p < 0.001$, score > 3: female 54%, male 17%), 2) not obtaining a fellowship position (2.4 vs. 2.0, $p = 0.059$, score > 3: female 18% vs male 9%), 3) concern about increased pregnancy complications (2.8 vs. 2.0, $p = 0.002$, score > 3: female 38% vs male 9%), and 4) interference with career plans (3.1 vs. 2.4, $p = 0.009$, score > 3: female 44% vs male 22%). After adjustment for marital status and age, females were still less likely to plan pregnancy during residency [odds ratio = 0.31 (95% CI = 0.12–0.78)]. After further adjustment for postponement reasons, gender differences in planning pregnancy during residency were no longer significant ($p = 0.1$).
CONCLUSIONS: We found that despite more accurate knowledge of age of fertility decline, female residents are more likely than males to plan to postpone pregnancy until after residency. Differences by gender were somewhat moderated by career plans and concerns of pregnancy complications. To date, no clear evidence exists that residency training increases the risk of pregnancy complications while ample evidence exists that advancing maternal age increases the risk of infertility and pregnancy complications. Graduate medical education should consider supportive efforts for female residents who desire children to decrease their subsequent risk of unintentional childlessness and pregnancy complications.

HAVE WE MOVED BEYOND ASSESSING MEDICAL KNOWLEDGE? RESIDENT IDENTIFIED LEARNING GOALS AFTER SELF-ASSESSMENT. K.J. Caverzagie[1]; J.R. Kogan[2]; J.A. Shea[3]. [1]Philadelphia VA Medical Center, Philadelphia, PA; [2]University of Pennsylvania, Huntingdon Valley, PA; [3]Society of Directors of Research in Medical Education, Philadelphia, PA. *(Tracking ID # 173536)*

BACKGROUND: Resident evaluation is now focused on the six ACGME Core Competencies, however little is known about which core competencies residents believe they need to improve upon. Self assessment (SA) is one potential process whereby residents can reflect on their strengths and weaknesses to subsequently develop learning objectives and action plans for improvement. The purpose of this study was to characterize the types of learning objectives and action plans residents self-identify after completing one of two novel formalized SA instruments.
METHODS: In June 2006, 76 internal medicine residents (PGY1 = 41; PGY2 = 35) completing their first and second year of training were randomized to complete either a highly structured or minimally structured SA tool. Both tools were based upon the six ACGME Core Competencies. The final page of both instruments was identical and asked residents to describe a maximum of three learning objectives for the upcoming year and their action plans to accomplish them. Qualitative analysis was used to determine the content of the learning objectives and action plans. Chi-square analysis was used to determine the effect of gender, level of training, and type of SA tool completed on identified learning objectives and action plans.
RESULTS: Seventy-six residents completed a SA tool (39 completed highly structured forms, 37 completed minimally structured forms). A total of 178 learning objectives were identified. Residents identified a mean of 2.3 learning objectives. The majority of residents (72.4%) provided at least one learning objective related to Medical Knowledge. In fact, residents often listed two or three objectives focusing on this competency (9.2% and 5.3% residents respectively). Patient Care was the next most common objective identified (47.4% of residents). Residents infrequently listed at least one objective related to Practice Based Learning & Improvement, Interpersonal Communication Skills, Systems Based Practice, or Professionalism (26.3%, 19.7%, 15.8%, and 10.5% of residents respectively). Learning objectives were more frequently general rather than specific (71% vs. 29% of objectives respectively). Reading the literature was the most common action plan mentioned (plan for 37% of identified learning objectives). Gender, level of training, and the type of SA completed were not significantly related to the types of learning objectives or action plans identified (all $p > .01$).
CONCLUSIONS: After completing a formalized self-assessment including all six ACGME Core Competencies, internal medicine residents at our institution primarily focused their learning objectives on Medical Knowledge and their action plans on "reading more." Learning objectives tended to be general, not specific. Despite the need to develop skills in six competency domains, residents continue to focus on Medical Knowledge as the competency requiring the most improvement. If self-assessment and reflection continue to be valued, medical educators should consider strategies to encourage residents to develop more specific learning objectives that also represent more of the core competencies. Helping residents develop action plans beyond "read more" may also be valuable. Given this is a single institution study focusing on one graduate medical education training program, additional research will be needed to validate the findings.

HOUSESTAFF VIEWS ON SUCCESSFUL ATTENDING ROUNDS. A MULTI-INSTITUTIONAL STUDY. A.H. Salanitro[1]; A. Castiglioni[2]; L.L. Willett[1]; R.M. Shewchuk[1]; G.R. Heudebert[1]; C. Milne[3]; P. Watson[4]; L. Capps[5]; K.J. Caverzagie[6]; R.M. Centor[1]. [1]University of Alabama at Birmingham, Birmingham, AL; [2]Birmingham VAMC, Birmingham, AL; [3]University of Utah, Salt Lake City, UT; [4]Henry Ford Hospital, Detroit, MI; [5]Columbia University, New York, NY; [6]Philadelphia VAMC, Philadelphia, PA. *(Tracking ID # 173427)*

BACKGROUND: Ward Attending Rounds (AR) are a fundamental component of residency training. Prior work at our institution suggests that housestaff consider elements related to learning climate and control of session as most important for the success of ward AR. We sought to determine interns' and residents' perceptions on successful AR across different internal medicine programs in the country.
METHODS: Nominal Group Technique (NGT) is a multi-step, structured group process used to elicit and prioritize answers to a specific question. We convened three separate internet/conference call-based NGT sessions with two groups of medical interns and one group of medical residents (representing a total of 4 residency programs) to elicit their perceptions on ward AR. We asked both groups to identify factors that contribute to "successful" ward AR. We then had them prioritize these factors with respect to their importance.
RESULTS: The two groups of interns ($n = 13$) identified a total of 65 factors that contribute to successful rounding experiences. These groups expressed consensus in ranking giving feedback to all members of the team, ensure attendings have a comprehensive knowledge base and discussing expectations of the rotation with all team members prior to the rotation as the three factors most important for successful ward AR. Residents ($n = 9$) identified 54 factors that contribute to successful AR. The results from the resident's prioritization task indicated general agreement that approachability of the attending physician, require attending to dedicate time to teaching and rounding, and ensure that no one talks or interrupts until presentations are finished are the most significant successful factors.
CONCLUSIONS: Similarly to our local results, the results of this multi-institutional study shows that internal medicine interns and residents across different residency programs mostly endorsed factors related to the process of running a team and learning climate as most important in contributing to the success of ward AR. These results suggest that the managerial function of conducting rounds, which included issues related to feedback, attention to time and learning climate, rather than the attending related rounding styles, dominate how housestaff value rounds.

HOW WELL DO RESIDENTS UNDERSTAND THE STATISTICAL METHODS AND RESULTS REPORTED IN THE MEDICAL LITERATURE? D.M. Windish[1]; S.J. Huot[1]; M.L. Green[1]. [1]Yale University, New Haven, CT. *(Tracking ID # 169949)*

BACKGROUND: As part of practice-based learning and improvement, the ACGME requires residents to demonstrate competence in "applying knowledge of study designs

and statistical methods to the appraisal of clinical studies." To assess trainee knowledge in this area, we developed an instrument and evaluated residents' understanding of biostatistics and interpretation of research results in a multiprogram study.
METHODS: We conducted a cross-sectional survey of residents in 11 Internal Medicine residency programs. Our instrument assessed knowledge, attitudes, and confidence in appraising clinical research studies and understanding the statistical techniques commonly presented in contemporary articles published in 6 high ranking journals. The multiple choice statistical knowledge questions were case-based and required no calculations. These addressed research variable types, study designs, statistical tests, confidence intervals, p-values, diagnostic test characteristics, power/sample size, and interpretation of study results. Attitudes regarding statistics were rated on a 5-point Likert scale. Confidence questions were assessed using a 5-point scale, where 1 = none and 5 = complete confidence. We used the Student t-test or a one-way analysis of variance (ANOVA) to compare knowledge scores based on respondent characteristics.
RESULTS: 277 (89.6%) of 309 residents completed the survey. The instrument showed good internal consistency (Cronbach alpha = 0.81). The overall mean score on statistical knowledge and interpretation of results was 41.4%±15.2%, compared to 71.5%±19.6% for general medicine faculty with research training. Scores were higher for residents: 1) with additional advanced degrees (50.0% vs. 40.1% with none); 2) with prior biostatistics training (43.5% vs. 37.2% with none); 3) currently enrolled in a university-based training program (43.0% vs. 36.3% in a community-based program); and 4) of male gender (44.0% vs. 38.8% for females), all $p < 0.05$. On individual knowledge questions, 87.4% of residents understood the purpose of double blind studies and 81.6% correctly interpreted a relative risk. Residents were less likely to know how to interpret an adjusted odds ratio from a multivariable regression analysis or the results of a Kaplan-Meier analysis, with 37.4% and 10.5% correctly answering respective questions. Seventy-five percent of residents reported they did not understand all of the statistics they encountered in the literature. The majority of residents (88%) reported fair to complete confidence in understanding p-values, while fewer felt they could determine if a correct statistical procedure was used (38%).
CONCLUSIONS: Residents lack the knowledge in biostatistics and critical appraisal needed to interpret many of the results in published clinical research. Residency programs should include more biostatistics training in their curricula to successfully meet the goal of preparing residents for this important life-long learning skill.

IDENTIFICATION OF CHALLENGES TO OPTIMAL PREPAREDNESS FOR INTERNSHIP: A QUALITATIVE ANALYSIS. S. Reddy[1]; J.M. Farnan[1]; H.B. Fromme[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 170242)*

BACKGROUND: Successful transition in one's academic career is characteristically facilitated through careful preparation and guidance. As students embark upon their journey into the profession of medicine, they are ceremoniously welcomed with white coats. Sadly, formal mechanisms for easing the transition to internship training, arguably the most critical transition in a student's academic life, are often minimal. Students are entering a physically and emotionally demanding workforce with an impressive fund of knowledge but perhaps insufficient practical skills to address the challenges at hand. The goals and objectives of this project are to: examine graduating fourth-year medical students' perceived preparedness for internship training and the adequacy of an existing medical school curriculum in readying them for their professional role; and to analyze residency program directors' perceptions of interns' preparedness for internship.
METHODS: All fourth year medical students and the directors of core U of C residency training programs were invited to participate in focus groups in spring 2006 to discuss preparedness for residency training. The residency program directors were asked to identify challenges interns face during internships. Students were asked to anticipate challenges presented by their impending internship. Qualitative analyses of the focus group transcripts were performed using the constant comparative method; 100% coder agreement was achieved. Additionally, as a convenience sample, all graduating fourth year students who matched at a UC residency program were invited to partake in a longitudinal survey in their first, fourth and seventh months of internship as an ongoing assessment of perceived weaknesses. Data collection is ongoing and descriptive statistics to date are reported here.
RESULTS: Basic procedural skills, familiarity with systems-based practice and the structure of health care systems, organization and time management skills were identified by program directors as the main challenges encountered by interns. Students perceived areas of weakness included the following: procedural skills, time management, systems-based practice and overall life preparedness/self-care. Initial survey results completed by alumni who are interns at U of C hospitals one month into internship yielded a response rate of 15/23 (65%) and revealed that, once beginning internship, students described themselves as not prepared for: performing procedures (60%), interpreting diagnostic studies (40%) and managing the logistics of healthcare delivery (46%).
CONCLUSIONS: As the time spent training to become a competent physician becomes increasingly abbreviated, it is critical that interns arrive for their first day of residency equipped with skills that previously have not been systematically and universally addressed in medical school curricula. The areas of weakness and challenges identified by program directors and students include topics that could readily be added to the fourth year curriculum in order to better prepare students for internship. The fourth year of medical school is becoming an increasing critical transition point in the preparation of competent graduates ready to "hit the ground running" and should be utilized to its fullest potential.

IDENTIFYING MEDICAL STUDENTS LIKELY TO EXHIBIT POOR PROFESSIONALISM AND POOR COGNITIVE EXPERTISE DURING INTERNSHIP. D.L. Greenburg[1]; J.L. Jackson[1]; S. Durning[1]. [1]Uniformed Services University of the Health Sciences, Bethesda, MD. *(Tracking ID # 172374)*

BACKGROUND: Markers that would predict low performance during internship would be useful to program directors. Currently, it is difficult to track students as they transition from undergraduate to graduate medical education. USUHS is unique because our medical school graduates enter our residency training programs, providing an opportunity to assess student outcomes. In this analysis, our goal was to assess whether markers of medical school performance predict poor performance during internship.
METHODS: Our sample was 1037 graduates of USUHS between 1993 and 2003. Program Directors completed an 18-item survey assessing intern performance, using a modification of the ABIM resident rating form. A factor analysis of these 18 questions revealed two domains, expertise and professionalism. Based on a scored factor analysis, we dichotomized intern performance in these domains at the 10th decile. Logistic regression models were built assessing the relationship between poor performance and a number of indicators hypothesized to predict either professionalism or cognitive expertise: medical schools grades, USMLE Step 1 and 2 scores, undergraduate GPA, MCAT scores, medical school interview scores, having an advanced degree, experiencing a major life crisis during medical school, or having to decelerate.
RESULTS: The clinical GPA predicted poor performance ratings in both professionalism and cognitive expertise but the preclinical GPA did not (Table). USMLE step 1 & 2 scores were highly correlated with each other and predicted poor cognitive expertise but not poor professionalism. Examples of variables which did not contribute to either model included age, sex, undergraduate GPA, MCAT scores, medical school interview scores, having an advanced degree, experiencing a major life-crisis during medical school, or having to decelerate. The predictive ability for the cognitive expertise and professionalism models was modest (respective area under ROC curves: 0.75 and 0.71)
CONCLUSIONS: There is a strong association between the clinical GPA and poor ratings as interns by their program directors in both professionalism and cognitive expertise. USMLE Step 1 and 2 scores predict poor ratings in cognitive expertise but not professionalism. Preclinical GPA was not associated with intern year performance. Despite a wealth of available markers, including information on pre-medical school and medical school performance, there were no other predictors of poor performance. Our models are applicable to medical schools for identifying students at-risk for poor professionalism or poor cognitive expertise. Early identification of at-risk students may allow for interventions to improve the future performance of these students. These models are also useful to program directors for selection of candidates least likely to exhibit poor professionalism or cognitive expertise during internship. The modest predictive ability suggests that predicting poor intern performance remains elusive.

Predictors of Poor Internship Performance

	Cognitive Expertise	Professionalism
USMLE Step 1	1.03 (1.01–1.05)	.99 (.96–1.01)
Preclinical GPA	1.1 (0.5–2.3)	1.6 (0.7–3.6)
Clinical GPA	9.0 (3.4–20.5)	13.9 (5.7–33.6)

IMPACT OF A MULTIFACETED CURRICULUM IN MULTI-CULTURAL PRACTICE ON MEDICAL STUDENT ATTITUDES. C.H. Braddock[1]; S. Bereknyei[1]; M. Medrano[2]. [1]Stanford University, Stanford, CA; [2]University of Texas Health Science Center at San Antonio, San Antonio, TX. *(Tracking ID # 173944)*

BACKGROUND: To provide effective and compassionate care in a multi-cultural society, physicians must develop insight into personal biases, demonstrate openness to learning about alternate health beliefs, and possess effective interpersonal communication skills. There are many approaches to evaluation of knowledge and skills in this area, but assessment of attitudinal shifts remains challenging. We developed an integrated curriculum in multi-cultural practice, and conducted an evaluation of this curriculum on students' cross-cultural attitudes.
METHODS: All first-year medical students participate in the required program, the "Practice of Medicine," in which they learn clinical skills, ethics, health policy, evidence-based medicine, and nutrition. Within this course, we implemented a curriculum in multi-cultural practice, including: patient-centered communication skills, strategies to explore the patient's perspective on illness, awareness of health disparities, reflective practice, and effective use of interpreters. Students complete an on-line tutorial and a standardized patient station incorporating Kleinman's explanatory model into the medical interview. Another web-based module teaches working effectively with interpreters, which is reinforced through use of fish-bowl style role-plays with professional interpreters. Students read Anne Fadiman's, "The Spirit Catches You and You Fall Down," which chronicles a Hmong family interactions with the health care system, then write reflective essays and participate in discussion groups. They also view "World's Apart," a series of four film vignettes that examine the real experiences of diverse patients through their illness experience. The films are followed by facilitated small group discussion. We explored the impact of this curriculum on students' cross-cultural attitudes using the Health BELIEFTM Attitudes Survey Instrument (HBAS), a valid and reliable instrument that measures

cross-cultural attitudes in four domains: Opinion (importance of assessing the patient's perspective of opinion), Belief (importance of determining the patient's beliefs), Context (importance of assessing the patient's cultural context), and Quality (importance of knowledge of patient's beliefs to providing quality care), all measured on a six-point Likert scale. We compared baseline data for each student to retrospective pre-intervention and post-intervention measures. The retrospective pre-/post- evaluation approach is believed to be a desirable method to assess change in attitudinal learning objectives.
RESULTS: All students (n = 85) completed the required curriculum in multi-cultural practice in a series of session from October 2005 through April 2006. Fifty-six percent of students (n = 47) completed both the pre-intervention and retro-pre and post-intervention assessments. We found significant increases between retrospective pre-intervention and post-intervention scores on all four HBAS domains: "Opinion," which measures the, increased from 4.9 to 5.3 ($p < .001$); Belief 4.7 to 5.2 ($p < .001$); Context 5.2 to 5.6 ($p < .001$); and Quality 3.9 to 4.4 ($p < .001$).
CONCLUSIONS: An integrated curriculum in multi-cultural practice can have a positive impact on the attitudes of pre-clinical medical students. Further study is needed to determine if these attitudinal changes are durable over time, and if they translate into measurable changes in behavior during the clinical years of training and beyond.

IMPACT OF EDUCATIONAL INTERVENTION ON HOSPITALISTS' KNOWLEDGE AND ATTITUDES REGARDING NURSE PRACTITIONER SCOPE OF PRACTICE AND COLLABORATION. T.E. Cardin[1]; F.M. Meggan[1]; C.T. Whelan[2]. [1]University of Chicago, Chicago, IL; [2]University of Chicago, Oak Park, IL. *(Tracking ID # 173009)*

BACKGROUND: Nurse practitioners (NP) are increasingly utilized in the acute care setting. Prior qualitative studies suggest physician knowledge and attitude deficits create barriers to effective NP/physician collaboration. Little is known about hospitalists' knowledge and attitudes towards NP collaboration. Effective methods to overcome these barriers have not been reported.
METHODS: Baseline knowledge and attitudes were assessed using a30-item instrument addressing knowledge and attitudes in four areas: scope of practice, supervision, collaboration and patient outcomes. Respondents rated their agreement using a 5-point Likert-type scale. Constructed response items addressed specific knowledge questions of NP practice requirements and physician demographics. A 1-hour educational lecture was administered immediately following initial survey. This intervention primarily focused on the intersection of collaboration, supervision and scope of practice. A post-educational intervention survey was completed immediately following the lecture. Descriptive statistics and paired 2 sided t tests were used to evaluate for changes in hospitalists' knowledge and attitudes following the educational session.
RESULTS: 11 of the 13 (85%) eligible hospitalists completed the pre-educational and immediate post-educational survey. The respondents had a mean of 1.9 years of attending experience; 6 of 11 (55%) were female, 6 of 11 (55%) had no or minimal experience working with NP's. Pre-education knowledge questions indicated hospitalists have limited knowledge of the NP role and scope of practice, Of the 15 knowledge based questions, the following detected statistically significant changes immediately following the educational lecture intervention; physician authorization for sub-specialty consultation ($p = 0.03$), NP supervision for inpatient management of service ($p = 0.03$) and supervision requirements for procedures ($p = 0.04$). In addition, significant differences were detected with respect to physician understanding of supervision in NP collaboration ($p = 0.001$), knowledge of NP required training hours ($p < 0.001$) and the prescriptive rights for NP's ($p = 0.004$). 2 of the 11 (18%) attitudinal questions addressing comfort with NPs independently admitting new patients ($p = 0.03$) and the scholarship of nursing research ($p = 0.03$) had significant differences following the educational intervention.
CONCLUSIONS: Baseline hospitalists' knowledge and attitudes are consistent with patterns that have led to barriers of effective collaboration in other settings. A simple one hour educational program, describing the NP role, scope of practice, and impact of NP care on patient outcomes in the acute care setting, significantly affected hospitalists' knowledge and attitudes. Future work aims to assess the impact of time and experience on hospitalists attitudes of NPs in acute care.

IMPLEMENTING THE COMMUNICATION ASSESSMENT TOOL IN AN INTERNAL MEDICINE RESIDENCY PROGRAM. D.B. Wayne[1]; G. Hollis[1]; E. Cohen[1]; J. Choi[1]; G. Makoul[1]. [1]Northwestern University, Chicago, IL. *(Tracking ID # 173208)*

BACKGROUND: Residency programs are required to assess trainees in the competency of interpersonal and communication skills. We report the first implementation in a residency program of the Communication Assessment Tool (CAT), a reliable and valid instrument approved by the American Board of Medical Specialties to measure patient perceptions of physician communication.
METHODS: The CAT for residents is composed of 14 items coupled with a 5-point response scale (1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent). Items on age, sex, race/ethnicity, and self-reported health are also collected. All items are targeted at or below a 4th-grade reading level based on a Lexile analysis for readability and focus groups of people with low literacy. For two consecutive months, residency staff administered the CAT to inpatients on the general internal medicine teaching service at our major hospital affiliate. Patients were excluded if they were unavailable, in contact isolation, did not understand English, or declined to participate. Our goal was to collect 20 CATs for each of the 20 (11 PGY2 and 9 PGY3) residents on the service during the study period. Residents were informed of this IRB-approved initiative prior to their rotation and received feedback on their performance through a summary memo from the program director.
RESULTS: Patients required less than 5 minutes to complete the CAT. Four hundred surveys were obtained. Just over half (51.3%) of the patient sample was female. Most patients were in the 45–64 (32.5%) or 65–84 (39.0%) age categories. More than half (54.8%) of the patients reported their race/ethnicity as White or Caucasian and 35.6% as Black or African American. Self-reported health tended to be fair (26.0%) or good (45.2%). Extensive pilot testing of the CAT indicated that reporting the proportion "excellent" ratings given by patients in response to the 14 items is more useful than summarizing scores in other ways (e.g., means, which are highly skewed). At the individual item level, CAT scores ranged from 40–95% excellent. Across all items, 3 of the 20 residents received CAT scores below 60% and 3 received scores above 80% ($M = 69.3\%$, $SD = 9.0$). No significant differences in CAT scores were associated with post-graduate year or resident sex.
CONCLUSIONS: The CAT can be easily implemented to collect information and provide feedback on the interpersonal and communication skills of residents. It is feasible to use in an inpatient setting and meets core competency requirements. We have combined the CAT with a half-day communication skills workshop for residents. Further work is needed to determine the level below which CAT scores require further intervention.

IMPROVING CLINICAL PRACTICES THROUGH ONLINE EDUCATION. C. Weston[1]; C.N. Sciamanna[2]; M. Feldman[3]; D.B. Nash[2]. [1]Johns Hopkins University, Baltimore, MD; [2]Thomas Jefferson University, Philadelphia, PA; [3]Drexel University, Philadelphia, PA. *(Tracking ID # 173122)*

BACKGROUND: Continuing medical education (CME) holds enormous promise for improving patient outcomes by improving the quality of care delivered by providers. Whether CME is effective in changing clinical behavior, and what factors contribute to the most effective CME programs are questions of great importance to providers of continuing medical education and health services researchers. The recent growth of the Internet and related technologies have created new avenues for delivering self-paced CME instruction at a distance, but data on the effectiveness of this approach on physician behavior, and ultimately the quality of care for patients, has been limited. A randomized controlled trial was conducted to examine the potential for two online continuing medical education seminars (Type 2 Diabetes and Systolic Heart Failure) to improve the quality of care provided by physicians.
METHODS: 113 primary care physicians from PA, NJ, DE, and MD were identified through a national medical association membership list and recruited via a broadcast email. Physicians who chose to participate were randomly assigned through a computer generated program to either a Type 2 Diabetes or SHF seminar (64 and 49, respectively) drawn from an online CME lecture series CMElectures.org, developed by the Graduate Education Foundation. Following the seminar, physicians were presented with four clinical vignettes about both chronic conditions and asked to describe what tests, treatments, prescriptions, advice, counseling, or referrals, they would recommend for the patients within each vignette. Responses to the clinical vignettes were read and scored by two independent raters who were blinded to the study condition of the respondent. Raters read though each clinical vignette to identify how many quality of care measures the respondent recommended for the patient. Physicians were assigned one point for each correct action taken. A web-based survey also contained questions about physician characteristics, practice information and asked respondents to evaluate the seminar.
RESULTS: Physicians who viewed the SHF seminar were significantly more likely to recommend guideline-consistent care (measure LV function, start Coumadin, and start a Beta blocker) to patients in the SHF vignettes compared to the control group. Physicians who viewed the Diabetes seminar were significantly more likely to order an eye exam for Diabetes patients (63%) compared to physicians in the control group (27%); however, they were no more likely to correctly manage meds, or offer smoking cessation counseling. There was no significant difference in physician characteristics (e.g., level of training, specialty, geographic location) between study cohorts. 92% of respondents said they had a better understanding of physiological processes as a result of the course; 85% said they feel better prepared to formulate a management plan; 78% felt better prepared to evaluate the advantages and disadvantages different treatments; 82% said they would be able to improve their delivery of patient care. Overall, 88% of respondents described the course as 'Excellent' or 'Very good.'
CONCLUSIONS: These results provide partial evidence of the effectiveness of online CME programs to improve physician clinical practices. Evaluation of additional seminars is recommended in order to gain a fuller understanding of the potential impact of these seminars in promoting the application of evidence-based clinical guidelines.

INTERNAL MEDICINE RESIDENTS' COMFORT WITH AND FREQUENCY OF PROVIDING PATIENT COUNSELING FOR CHRONIC DISEASES. J. Tang[1]; K. Tartaglia[1]; J. Kleczek[1]; T. Baker[1]; B. Freed[1]; M. Schwartz[1]; V. Arora[1]. [1]University of Chicago, Chicago, IL. (Tracking ID # 171249)

BACKGROUND: Studies confirm that residents infrequently counsel patients regarding diet and exercise. The impact of prior education in these areas is unknown. In this study, we aimed to assess resident comfort, frequency, perceived effectiveness, and barriers with counseling patients in management of hypertension and diabetes, and the impact of prior education in these areas.

METHODS: A 36-item survey was offered to 118 internal medicine residents at one academic center. Survey items were modified from the Preventive Medicine Attitudes and Activities Questionnaire (PMAAQ) and Community Tracking Survey to assess counseling for diabetes and hypertension management. Residents rated their level of comfort on a 5-point scale ranging from 1(very uncomfortable) to 5(very comfortable) with counseling diabetic patients on administration of insulin shots, and an appropriate diabetic diet. Comfort was defined as somewhat or very comfortable. Residents estimated their frequency of counseling using a 7-point scale ranging from 0 (never) to 7(always). Frequent counseling was defined as often, usually, or always. Perceived effectiveness of counseling was rated on a 4-point scale ranging from 1 (minimially effective) to 4(very effective). Effectiveness was defined as moderately or very effective. Barriers to counseling were rated on a 5-point scale from 1(not important) to 5(very important). Prior education in patient counseling was defined by resident self-report. No formal educational sessions were offered through the residency program. Descriptive statistics were used to assess levels of comfort with and frequency of patient counseling on specific items, with specific comparisons made using chi square tests. Wilcoxon rank-sum tests and multivariate regressions, adjusting for level of training, were used to test the effect of prior education on comfort with and frequency of counseling. Statistical significance was defined as $p < 0.05$.
RESULTS: 75% (88/118) of residents completed the survey. More than 80% of responders were comfortable with counseling on symptoms of angina and high or low blood sugar. Comfort with diet counseling was significantly lower (diabetic diet 57% and DASH diet 53%, $p < 0.001$ compared to angina). Resident comfort was lowest (34%) for counseling on the administration of insulin shots ($p < 0.002$ when compared to DASH diet). 90% of residents reported frequent counseling for diabetic and hypertensive medication adherence. Counseling for diet (salt reduction 54% or diabetic diet 65%) was significantly lower ($p < 0.001$ compared to medication adherence). For the 25% of residents with formal education, comfort was significantly higher for counseling regarding diabetic (80% vs. 46%, $p = 0.002$) and DASH diets (72% vs. 47%, $p = 0.004$). Despite this, perceived effectiveness of their diet and exercise counseling was low ($< 15\%$ effective for both) irregardless of prior education. Although prior education was not associated with increased frequency or effectiveness of counseling, residents who felt more effective counseled more frequently regarding diet. Important barriers cited by residents included lack of time (80%) and lack of patient interest (53%), with only 14% citing personal lack of interest.
CONCLUSIONS: Although residents who receive formal education are more comfortable with patient counseling, they do not counsel more frequently and do not feel more effective. Future educational efforts should attempt to boost resident perceived effectiveness and address barriers to counseling.

INTRODUCING COMPLEXITY IN AMBULATORY MEDICINE EDUCATION: A RANDOMIZED PILOT STUDY. D.A. Cook[1]; W.G. Thompson[1]; K.G. Thomas[1]; T.J. Beckman[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 173499)*

BACKGROUND: Complexity is ubiquitous in clinical practice. The ill-defined and often unpredictable interactions among diseases, treatments, and healthcare systems make it inappropriate to apply a single solution to most clinical problems. Yet little is known about how to effectively teach management of complex patients and situations. The intent of this study was to develop and evaluate an intervention to help internal medicine residents become more comfortable and competent in managing patients for whom diverse management approaches could be considered "correct."
METHODS: For each of four Web-based modules in ambulatory internal medicine (diabetes mellitus, hyperlipidemia, asthma, and depression) we developed three complex cases. Based on Jonassen's problem-design framework, cases were intended to be complex (numerous variables, including psychosocial and economic barriers) and ill-structured (multiple acceptable management strategies). Three or four faculty members ("experts"), including at least one generalist and one subspecialist, were asked to describe how they would manage each case. Residents were asked the same questions the experts had addressed. After residents typed their responses, the next screen presented these responses alongside expert responses and encouraged residents to compare their plan to that of the experts. Participants were randomized to complete complex cases for either the first two modules or the last two modules. Knowledge test scores were analyzed using mixed effects ANOVA. Preference was analyzed using the Wilcoxon signed-rank test. Resident comments were analyzed qualitatively.
RESULTS: 124 residents consented and 76 (61%) completed at least one complex case. There was no difference in posttest scores between modules in which residents used complex cases (mean ± standard error of the mean, 76.0±0.9) versus no cases (77.8±0.9, $p = .09$; 95% confidence interval (CI) for difference, −4.0 to 0.31). Twenty-seven residents (48% of 56 survey respondents) preferred the cases and 29 (52%) preferred no cases (mean 3.5±0.2 [where 1 = strongly favor no cases and 6 = strongly favor cases], $p = .72$). Residents felt the cases were useful (4.1±0.1), enhanced their appreciation for the diversity of "correct" options in complex cases (4.6±0.1), and helped integrate learning (4.1±0.1, all $p < .001$). Qualitative analysis revealed that residents believed the complex cases took too much time. Many learners found the ambiguity and diversity of expert responses "frustrating" and "confusing," although an equal number found the diversity refreshing and reflective of "real life."
CONCLUSIONS: Although this intervention to engender comfort with complexity did not affect test scores and preference was neutral, residents felt the cases made a valuable contribution to their learning. Some residents disliked the diversity of solutions while others valued this aspect. Time required seemed to be a significant shortcoming. Methods and frameworks to facilitate trainee comfort and competence in managing medically complex patients should be further explored.

LEVEL OF RESIDENT TRAINING AND OSTEOPOROSIS KNOWLEDGE SCORE. B.M. Goodman[1]; J.D. Myers[2]. [1]Eastern Virginia Medical School, Norfolk, VA; [2]Texas A&M University, Temple, TX. *(Tracking ID # 173604)*

BACKGROUND: Osteoporosis leads to more than 1.5 million fractures each year in the United States. In 1995, the annual cost of osteoporotic fractures in the U.S. was $13.8 billion. Screening for osteoporosis may improve outcomes, but screening rates are recognized to be low. Physician knowledge of screening guidelines is one of many factors which may affect screening rates.
METHODS: The BONES study is a thirteen-center prospective study of patients presenting for outpatient visits and the physicians caring for them. The primary aim of the study is to evaluate the effect of physician and patient education on osteoporosis screening rates. Women over age 65 with at least one visit to the clinic in the last two years were eligible. Eligible patients were administered a questionnaire evaluating demographics, knowledge concerning osteoporosis, and general health beliefs. Participating physicians were provided a short questionnaire addressing demographics and osteoporosis knowledge. Fourteen "yes/no" or "true/false" items presented different clinical scenarios and questions regarding screening guidelines. A knowledge score was obtained by assigning a value of one point for each correct answer.
RESULTS: Preliminary results from 105 physicians at the participating institutions are presented here. Knowledge scores ranged from 0 to 14 with a mean score of 10.3 and median of 11. Among resident physicians, there was no significant difference in the knowledge score between interns (PGY 1) and upper level (PGY 2–4) residents (10.4 vs 10.1, t-test, $p = 0.55$). There were also no significant differences by cohort sites (kwallis $p = 0.32$). Questions that were most likely to be answered incorrectly were related to: 1) Reimbursement of DEXA screening, 2) Defining osteoporosis as a non-traumatic fracture, 3) Screening guidelines based on patient race.
CONCLUSIONS: These results demonstrate a lack of advancement of medical knowledge concerning osteoporosis through residency training. The interns responding to this questionnaire had been in training less than four months, suggesting that the knowledge score reflects their education prior to enrollment in residency training. Our study suggests a need for improved education regarding screening guidelines for osteoporosis during residency training.

MEDICAL STUDENT SATISFACTION WITH FACULTY ADVISING AND THE INFLUENCE OF GENDER AND RACE CONCORDANCE. R. Levine[1]; B. Ashar[1]; R.B. Shochet[1]; M. Hughes[1]; R. Stewart[1]; S. Wright[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 172445)*

BACKGROUND: Successful advising of medical students is instrumental for their personal and professional development. Gender and race concordance between student and advisor may have relevance for advising relationships and is of increasing interest as more women and minorities enter medical school. We sought to describe the nature of student/faculty advising relationships and determine whether gender and race concordance influence student satisfaction.
METHODS: As part of a needs assessment for developing a formalized, longitudinal advising system, graduating students at the Johns Hopkins School of Medicine were surveyed in May of 2006 about their advising experiences during medical school. The web-based instrument collected information on student demographics, career choice, advising experiences, and overall satisfaction with the advising process. Comparisons were made between students who had a primary advisor (a faculty member whom they identified on their own and with whom they met regularly to discuss their ambitions and goals) and those who did not. Multivariate logistic regression was used to identify factors associated with being highly satisfied with advising among all students and among students with a primary advisor.
RESULTS: The response rate was 81% (96/119). Thirty-five percent (34/96) of students reported having a primary advisor. There were no significant differences between students with and those without an advisor in terms of age, gender, race, having an advanced degree and interest in an academic career (all $p > 0.05$). Students with a primary advisor were more likely to pursue a surgical specialty compared to students without an advisor (65% vs 37%, $p = 0.01$). Compared to students without an advisor, those with one were more satisfied with advising during their clinical years (91% vs 24%, $p < 0.001$), advising about academic matters (56% vs 24%, $p = 0.002$), research (82% vs 40%, $p < 0.001$), career planning (94% vs 29%, $p < 0.001$), work/life balance (62% vs 23%, $p = 0.001$), and stress management (44% vs 17%, $p = 0.005$). Students who identified a primary advisor more often reported that medical school faculty with whom they had interacted served as role models for professionalism (94% vs 73%, $p = 0.01$), humanism (79% vs 55%, $p = 0.01$), and the doctor-patient relationship (88% vs 50%, $p < 0.001$). Among all students, multivariate regression analysis demonstrated that students with a primary advisor were more likely to report greater satisfaction overall with the advising process during medical school (OR 6.5, 95% CI 2.03–20.81), while minority students were less satisfied (OR 0.27, 95% CI 0.07–0.97). Forty-one percent (14/34) of student/faculty advising pairs demonstrated gender concordance, of these 21% (3/14) were female. Sixty-two percent of pairs were concordant for race. Seventy-six percent of the race concordant pairs were identified as white and 24% of pairs were between nonwhite students and faculty. In multivariate regression analysis, among students with a primary advisor, gender concordance was negatively associated with overall student satisfaction with their advising experience (OR 0.14, 95% CI 0.03–0.71).
CONCLUSIONS: Medical students with a primary advisor report greater satisfaction with their advising and more exposure to valuable role models. Efforts to promote longitudinal advising relationships between faculty and students should be a priority for medical schools. The role of race and gender in advising relationships may be important and requires further study.

MEDICAL STUDENTS RETAIN PAIN ASSESMENT AND MANAGEMENT (PAM) SKILLS LONG AFTER AN EXPERIENTIAL CURRICULUM: A CONTROLLED STUDY. D.L. Stevens[1]; D. King[1]; R. Laponis[2]; K. Hanley[1]; S. Waldman[1]; C. Gillespie[1]; S. Zabar[1]; A.L. Kalet[1]. [1]New York University, New York, NY; [2]New York University School of Medicine, New York, NY. *(Tracking ID # 173493)*

BACKGROUND: While PAM curricula have been shown to enhance knowledge and attitudes, long-term retention of PAM skills has not been demonstrated. We implemented a multi-method, experiential, interdisciplinary PAM curriculum for second year medical students in the Class of 2007 (intervention group). We assessed the impact of the curriculum on PAM skills in a quasi-experimental design 1.5 years later through comparison with the Class of 2006 (a historical control group).
METHODS: The curriculum contained 4 lectures on the pathophysiology, assessment and treatment of pain and 2 seminars that employed videotaped real patient interviews to teach PAM. Students practiced PAM, emotion handling and counseling skills with Standardized Patients (SP) and then received individualized feedback. After completing their 3rd medical school year, the intervention group underwent a required, annually administered Observed Structured Clinical Examination (OSCE) that contained 3 cases (acute chest, abdominal, and metastatic bone pain) requiring students to demonstrate PAM skills and write a patient encounter note. To prevent a training effect in the intervention group's OSCE performance, the SPs and cases used in the OSCE were different from those used in the curriculum. To assess the long term retention of PAM skills, performance data from the OSCE for the intervention group was compared to data from the control group on 3 pain cases presented to both class years. Scores on behaviorally anchored communication, history gathering, and counseling items were generated by SPs rated either not done, done, or well done and summarized as % well done across subsets of items. A faculty rater, blinded to intervention exposure, assessed all patient encounter notes from both classes for organization/content and differential diagnosis (3 point scale, 1 = poor, 3 = excellent), two assessments expected to reflect clinical reasoning skills.
RESULTS: Compared to the control group (N = 155, 90.6% consented), the intervention group (N = 128, 79.0% consented) elicited a complete history ($p < .001$) and obtained a basic description of the pain ($p < .05$) more often across the pain cases. In the metastatic cancer case, the intervention group more often adequately assessed (100% vs. 48.9% well done, $p < .001$) and managed (100% vs. 48.9% well done, $p < .001$) the pain. Specifically, they more often asked the patient about coping, assessed impact of pain on function, suggested more potent pain medication, and counseled about break through pain and medication side effects. On the patient note, the intervention group similarly demonstrated higher quality differential diagnosis (2.2 vs. 2.0, $p < .01$) and organization/content (2.3 vs. 2.2, $p < .01$) abilities. Interestingly, the intervention cohort received lower overall communication skill scores than the control (53.9% vs. 61.5% well done, $p < .001$), however the significant differences cited above persisted even after controlling for differences in communication skills.
CONCLUSIONS: Students who engaged in an intensive PAM curriculum demonstrated retention of these skills 1.5 years later. We will need to establish whether this effect, which in the context of a timed exam may come at the expense of demonstrating generic communication skill, leads to better patient outcomes.

PANEL MENTORING: A PILOT PROJECT OF FEASIBILITY AND SUCCESS COMPARED TO TRADITIONAL ONE-ON-ONE MENTORING E.D. Brownfield[1]; E.L. Brownfield[2]. [1]Emory University, Atlanta, GA; [2]Medical University of South Carolina, Charleston, SC. *(Tracking ID # 172497)*

BACKGROUND: The Society of General Internal Medicine (SGIM) offers one-on-one mentoring opportunities for its members at the national and some regional meetings. The Southern region offered innovative "panel mentoring" sessions at its 2006 meeting as an alternative in order to establish feasibility and acceptability.
METHODS: Registrants of the Southern SGIM meeting interested in a panel mentoring opportunity participated in mentoring sessions comprised of one mentee and four mentors. Mentors were recruited based on varying expertise and interests. All participation was voluntary. The 30 minute sessions were tape recorded for content. At the end of each session, mentees and mentors filled out a brief questionnaire about the experience. Using Likert scales and free text, questionnaires contained both quantitative and qualitative information on the feasibility and acceptability of the panel mentoring session.
RESULTS: Nine mentees and eleven mentors participated in the sessions. 100% of the mentees either strongly agreed or agreed that the sessions were useful, enjoyable, had well-matched mentors, and feasible. 100% of mentees would recommend the sessions to others, and 67% preferred panel mentoring over traditional one-on-one mentoring even though only 33% had participated in traditional mentoring sessions at SGIM meetings. Overall, the sessions were rated a 1.2 (with 1 being excellent and 5 being poor). 97% of mentors either strongly agreed or agreed that the sessions were feasible, 65% strongly agreed or agreed that they helped the mentee, 85% strongly agreed or agreed that they enjoyed the sessions, and 79% strongly agreed or agreed that the mentee was a good match for the panel mentors. Overall, the sessions were rated a 1.3 using the same scale as above.
CONCLUSIONS: Based on our pilot data, the evidence would support further research into the innovative panel mentoring concept using more volunteers as mentees and mentors. Panel mentoring might be attractive to many as an alternative, or in addition to traditional one-on-one mentoring offered by SGIM at its meetings. The Southern SGIM region has decided to continue this endeavor based on the feedback and will again collect data at the 2007 Southern regional meeting.

PERCEPTION OF THE HOSPITALIST ROLE IN MEDICAL STUDENT EDUCATION BY JUNIOR MEDICINE CLERKSHIP DIRECTORS J.J. Glasheen[1]; D. Levin[2]; B.G. Dwinnell[3]; G. Guiton[2]; C. Hodgson[2]. [1]University of Colorado at Denver and Health Sciences Center, Aurora, CO; [2]University of Colorado at Denver and Health Sciences Center, Denver, CO; [3]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 173668)*

BACKGROUND: The role of hospitalists in medical student education and their impact on students' career choices remains poorly defined. The purpose of this study was to describe internal medicine (IM) clerkship directors' attitudes about the role of hospitalists in medical student education.
METHODS: We surveyed junior IM clerkship directors at U.S. allopathic teaching hospitals. The postcard survey included questions about medical students' exposure to hospitalists during the third-year clerkship and clerkship directors' perceptions of the hospitalists' impact on quality of medical student education, and on the students' decision to pursue a career in IM as a whole, and in particular in primary care and hospital medicine.
RESULTS: Of the 193 surveys, 107 (55%) were returned. Among responding clerkship directors, 76% were primary care physicians, 15% were subspecialists, and 9% were hospitalists. Seventy-five percent of sites surveyed utilized hospitalists on student services with 35% of programs having more than 50% of their students rotate with hospitalists. Overall, 91% of respondents felt the quality of education with hospitalist attendings was the same (56%) or better/much better (35%) than with non-hospitalist attendings. Sixty-eight percent of directors felt that hospitalist involvement in medical student education would increase at their institution over the next five years. No schools felt that there would be less hospitalist involvement in student education. The hospitalist movement was felt to have no influence on the students' decision to go into IM in the opinion of 61% of responders, while 31% felt it had a positive influence. In terms of impact on students' interest in primary care internal medicine, 49% of responders believed the hospital medicine movement had no effect, while 38% felt it was detrimental. Exposure to hospitalists was believed to have a positive impact on students' interest in hospital medicine by 31% of responders, while 59% thought it had no effect.
CONCLUSIONS: Medical students have significant exposure to hospitalists in their third-year IM clerkship. Three quarters of the clerkship sites utilize hospitalists as educators for inpatient medical student rotations and greater than 50% of students rotate with hospitalists at more than a third of the sites. The vast majority of clerkship directors in IM feel the educational experience is as at least as good with hospitalist as with non-hospitalist faculty and most are projecting an increase in hospitalist faculty involvement in the coming five years. The clerkship directors believed that the effect of the hospital medicine movement on student interest in IM careers is generally favorable but potentially threatening to student interest in primary care medicine.

PHYSICIAN FACTORS ASSOCIATED WITH RESIDENT PHYSICIANS' PERCEPTIONS OF THEIR PREPAREDNESS TO DELIVER CROSS-CULTURAL CARE. L. Lopez[1]; A. Vranceanu[2]; J. Betancourt[1]; J. Weissman[1]. [1]Institute for Health Policy and Department of Medicine, Massachusetts General Hospital, Boston, MA; [2]Massachusetts General Hospital, Boston, MA. *(Tracking ID # 172941)*

BACKGROUND: Recent reports from the Institute of Medicine emphasize patient-centered care and cross-cultural training as a means of improving the quality of medical care and eliminating racial and ethnic disparities. The objective of this study was to determine whether, controlling for training received in medical school or during residency, resident physician socio-cultural characteristics influence self-perceived preparedness and skill in delivering cross-cultural care.
METHODS: We analyzed a national survey of 2047 residents in 7 specialties (emergency medicine, family practice, internal medicine, obstetrics/gynecology, pediatrics, psychiatry and general surgery) in their final year of training at US academic health centers (response rate of 60%). 9 resident characteristics were analyzed (gender, importance to practice in a diverse patient mix, race, multilingualism, born in US, US medical school graduate, medical training or provision of medical care outside the US, specialty, and whether additional instruction in cross-cultural care was given during residency). We assessed: (1) self-reported preparedness to treat specific types of patients, manage specific issues and situations, or to provide certain services; and (2) self-assessment of skills in delivering cross-cultural care. Differences in preparedness and skill were assessed using the Chi squared statistic and multivariate logistic regression.
RESULTS: Residents who felt it was important to practice in a setting that has a diverse racial and ethnic patient mix felt better prepared in five categories. Multilingualism is associated with being more prepared to deal with patients with limited English proficiency (OR 1.76) and new immigrants (OR 1.73). African American (OR 10.75) and Latino (OR 5.0) resident physicians reported being very prepared to deal with racial or ethnic minorities. African American resident physicians were best prepared to deal with patients who had distrust in the healthcare system (OR 2.29). Asian resident physicians were more prepared to care for patients with health beliefs or practices at odds with Western medicine (OR 2.0). Any training outside the US confers more preparedness in dealing with new immigrants (OR 1.61). The most important factor associated with improved skill level in performing selected tasks or services believed to be useful in treating culturally diverse patients was having received skills training in residency (ORs 2.80–5.60).
CONCLUSIONS: Our findings highlight the importance of resident physicians' personal and cultural backgrounds in informing their sense of preparedness for cross-cultural care. It underscores the need for including medical residents from diverse backgrounds in all training programs because of the invaluable personal experiences

that enrich patient care. In addition, the results suggest that cross-cultural care is not unidimensional, and that selected resident characteristics may be associated with being more or less prepared for different aspects of cross cultural care. Importantly, receiving further cross-cultural training in residency improved perceived preparedness and skill. Thus, cross-cultural training is an important intervention in improving not only the doctor-patient relationship but also in potentially reducing healthcare disparities.

PREDICTING ADVERSE EFFECTS FOLLOWING A MAJOR LIFE CRISIS DURING MEDICAL SCHOOL. D.L. Greenburg[1]; S. Durning[1]; J.L. Jackson[1]. [1]Uniformed Services University of the Health Sciences, Bethesda, MD. *(Tracking ID # 173761)*

BACKGROUND: Experiencing a major life crisis during medical school may adversely effect a student's performance. The prevalence and significance of experiencing a major life crises during medical school is unknown. Identifying students likely to experience adverse consequences as a result of a life crisis may facilitate development and implementation of beneficial interventions.
METHODS: Our sample was 1807 USU medical school graduates from the classes of 1981 to 2000 who responded to a survey evaluating their experiences during medical school. Questions were asked about the presence and significance of a major life crisis during medical school. Logistic regression models were built assessing the relationship between experiencing a major life crisis and adverse consequences related to the crisis. Indicators we hypothesized would predict adverse consequences included: age, marital and dependency status, financial significance of attending USUHS, support provided by the university, appearance before the student promotion committee, grades and class rank.
RESULTS: 22% of all respondants reported experiencing a major life crisis during medical school. About 92% of all those who experienced a crisis reported that it had a significant adverse effects on their performance. Factors predictive of experiencing adverse consequences after a major life crisis include: having dependent children, reporting the financial benefits of matriculating at USU as "very important", appearing before the student promotion committee and lacking prior military service (Table). Variables not contributing to our model include: gender, perception of the amount of support received from the medical school, marital status, grades, class rank, advanced degrees, academic deceleration, and test scores. The area under ROC curve for our model was 0.78.
CONCLUSIONS: Experiencing a major life crisis during medical school is very common. Most students who experience a crisis report that it adversely effects their performance. Factors predicting adverse effects after a crisis include having dependent children at matriculation, reporting the financial benefits of matriculating at USU as being "very important", being younger, and lacking prior military service. Students with these factors may have less resources to rely upon during times of crisis. Appearance at the student promotion committee is a consequence of poor performance and likely contributes to our model as a marker for the severity of the adverse consequences rather than a risk factor for them. Students who reported receiving a great deal of support from the university were no less likely to experience adverse consequences than those who reported receiving little or no support. This suggests that research into new techniques to assist a student during a crisis should be sought. The predictive ability of our model was modest.

Predictors of Adverse Effects from Major Life Crises During Medical School

Markers	Odds Ratio
Dependent children at matriculation	4.7 (1.6–13.8)
Prior military service	0.42 (.2–.96)
Reporting financial aspects of attending USU were "very important"	3.5 (1.6–7.8)
Appearance before student promotion committee	10.2 (1.4–76.8)
Age at matriculation	0.85 (.7–1.0)

PREDICTORS OF FATIGUE FOR INTERNS IN COGNITIVE SPECIALTIES. L.D. Friesen[1]; A.R. Vidyarthi[1]; R.B. Baron[1]; P.P. Katz[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172717)*

BACKGROUND: ACGME duty hour limitations were intended, in part, to reduce resident fatigue and decrease its many negative consequences. Prior data suggest fatigue-related reductions in patient safety and resident well-being. We aimed to assess the factors associated with fatigue in interns in cognitive specialties following implementation of duty hour limitations. We hypothesized that factors other than duty hours were more strongly associated with intern fatigue.
METHODS: We distributed an anonymous survey to all interns at UCSF in the spring of 2004 by campus mail, postal mail, and at conferences. Surveys contained validated questions related to fatigue (Chalder Fatigue Scale), sleep (Medical Outcomes Study Sleep Scale), and stress (Cohen Perceived Stress Scale), as well as questions developed by authors through expert opinion, focus groups, and pilot testing regarding the number of hours worked, teamwork, and work life satisfaction. Interns in cognitive specialties (Internal Medicine, Family Medicine, Pediatrics, and Psychiatry) were selected as a group for analysis because they exhibit similar patient care practices and training goals. Univariate statistics characterized the distribution of responses. Pearson correlations elucidated bivariate relationships between fatigue and other variables. Multivariate linear regression models identified factors that were independently associated with fatigue.
RESULTS: 117 interns in cognitive specialties were eligible for the study and 85 responded to the survey (73%). In a regression analysis including working greater than 80 hours per week, sleep quality, perceived stress, work life satisfaction, and teamwork, only quality of sleep was significantly associated with fatigue ($p < 0.0001$). To explore the potential mediating effect of sleep, a secondary model including the same factors was constructed. This analysis revealed that only perceived stress was significantly associated with quality of sleep ($P = 0.02$). Working greater than 80 hours was not associated with quality of sleep or fatigue.
CONCLUSIONS: In this cross-sectional study of interns across cognitive specialties at an academic health center, we found that working long hours was not associated with stress or fatigue. Rather, we found that quality of sleep was associated with fatigue, and perceived stress was associated with quality of sleep. These results suggest that decreasing the number of duty hours alone may not be effective in reducing intern fatigue. Residency programs may need to make more far-reaching changes to reduce stress in order to improve interns' quality of sleep, and lessen intern fatigue.

PREDICTORS OF INTERNAL MEDICINE INTERNSHIP BURNOUT: IMPORTANCE OF COGNITIVE FACTORS. R.K. Gopal[1]; P. Radhakrishnan[2]; A. Gateley[3]; J.J. Glasheen[4]; A.V. Prochazka[1]. [1]United States Department of Veterans Affairs, Denver, CO; [2]St. Joseph's Medical Center, Phoenix, AZ; [3]University of New Mexico, Albuquerque, NM; [4]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 172823)*

BACKGROUND: Burnout has been recognized as a common problem in medical interns and has been associated with long work-hours and self-reported medical errors. We examined predictors of internship burnout in a cohort of fourth year medical students
METHODS: Graduating medical students accepted to three internal medicine residency programs (two university affiliated and one community) were surveyed in May prior to the start of their internship year and then re-surveyed in May of their internship year. We used the Stress Profile in the medical student survey to assess Stress Level, a 6 item questionnaire measuring daily annoyances and frustrations; Cognitive Hardiness, a 30 item questionnaire measuring life's challenges and opportunities for growth or threats to well-being; Coping Style, a 20 item questionnaire measuring coping strategies used by the individual, Type A Behavior, a 10 item questionnaire measuring degree of competitiveness and hard driving behavior, Psychological Well-Being, a 12 item questionnaire measuring overall satisfaction with life. The Maslach Burnout Inventory (30 questions) was used to assess the three components of burnout: emotional exhaustion (EE), depersonalization (DP), and personal achievement (PA) in the internship survey. We categorize burnout as high EE ($> = 27$) or high DP ($> = 10$). We used linear regression to assess the independent contributions of predictor variables from the Stress Profile and demographic variables.
RESULTS: A total of 204 surveys were mailed to incoming interns, with 95 (47%) subjects returned the initial questionnaire and 64 (67%) returned the follow-up survey. Of those interns that returned both surveys: 78% were from University of Colorado; 47% were male; 80% were between ages 26 and 30 years old; and 67% were categorical residents, 19% preliminary and 14% primary care. Mean burnout scores were EE 23.9 (sd 8.5, range 3–41), DP 11.5 (sd 11.5, range 1–24), PA 37.6 (sd 5.9, range 21–48). Overall 70% (95% CI 55%–82%) were burned out towards the end of their internship. The rates of burnout was not significantly different across programs ($p = 0.30$). In a stepwise linear regression, the two independent predictors of high EE were Type A Behavior ($b = .540$, $p = 0.028$) and Psychological Well-Being ($b = -.482$, $p = 0.011$). The only independent predictor of high DP was Positive Appraisal Coping Style ($b = -0.698$, $p = 0.013$). The predictors of low PA were Hardiness ($b = 0.204$, $p = 0.006$), Stress Level ($b = 0.597$, $p = 0.010$), Threat Minimization Coping Style ($b = -0.894$, $p = 0.005$), and Problem Focus Coping Style ($b = 0.499$, $p = 0.075$). Importantly hours worked, age and gender were not associated with any of the burnout subscales.
CONCLUSIONS: Several cognitive factors present at the end of medical school are strongly associated with subsequent emotional exhaustion, depersonalization, and burnout. Cognitive behavioral interventions may be useful to prevent burnout among medical interns and subsequently improve quality of care and education.

RECOGNITION AND INTERPRETATION OF ABNORMAL CLINICAL FINDINGS DURING A STANDARDIZED PATIENT ENCOUNTER: DOES CLINICAL EXPERIENCE MATTER? F. Massie[1]; A. Castiglioni[2]; J.A. Caldwell[1]; A. Wood[1]; C.A. Estrada[1]. [1]University of Alabama at Birmingham, Birmingham, AL; [2]Birmingham Veteran Affairs Medical Center, Birmingham, AL. *(Tracking ID # 172327)*

BACKGROUND: Teaching and assessing clinical skills competence using standardized patients (SP) has gained widespread acceptance. SP encounters are limited in their ability to simulate abnormal clinical findings. Using computer technology to simulate physical exam findings could enhance SP encounters. We sought to: 1) incorporate computer technology during an SP encounter to simulate abnormal lung sounds and facilitate analysis of clinical reasoning 2) determine whether students at different levels of training differ in their ability to detect and interpret abnormal clinical findings.
METHODS: We designed an OSCE station that included a computer activity and administered it to all 2nd and 4th year medical students (MS2 and MS4) during the 2004–05 academic year. Students were asked to perform a focused physical exam on a patient presenting with symptoms suggestive of pneumonia. They were then asked to listen to audio clips of normal and abnormal breath sounds, characterize the type of sounds, provide a differential diagnosis, and recommend tests and treatment options.
RESULTS: Most students correctly determined that an abnormality was present and the lung zone where it was heard ($> 80\%$). Few students in either group were able to accurately identify the abnormal sounds (Crackles 51–67%, Bronchial breath sounds 22–27%).

Pneumonia was chosen as the most likely diagnosis by 65% of MS2's and 94% of MS4's. Chest X ray was the first test ordered by 60% of MS2's and 83% of MS4's.
CONCLUSIONS: Medical student detection and interpretation of clinical findings of pneumonia can be effectively evaluated by a computer-enhanced standardized patient encounter. Both MS2s and MS4s struggled to accurately identify and characterize the abnormal lung sounds. Despite this, MS4's demonstrated superior clinical reasoning compared with MS2's.

Item (correct answer)	MS2 (n = 153) %Correct	MS4 (n = 71) %Correct	p value
Abnormality heard (yes)	80%	97%	< 0.05
Correct location (LLL)	78%	97%	< 0.05
Sounds Identified:			
•Bronchial breath sounds	22%	27%	< 0.05
•Crackles	51%	67%	< 0.05
Pneumonia as top Dx	65%	94%	< 0.05
CXR first test ordered	60%	83%	< 0.05

RELIABILITY OF A METHOD FOR MEASURING MEDICAL EDUCATION RESEARCH STUDY QUALITY. D.A. Reed[1]; D.A. Cook[1]; T.J. Beckman[1]; R.B. Levine[2]; D.E. Kern[2]; S.M. Wright[2]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN; [2]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 173798)*

BACKGROUND: Reviewers and journal editors attempt to evaluate the quality of medical education research studies to judge the validity of results and make publication decisions. However, no standard approach exists for measuring the quality of medical education research across diverse study types. The objective of this study was to develop an instrument to assess the quality of medical education research studies across a broad range of study designs (experimental, quasi-experimental, and observational) and evaluate the reliability of scores.
METHODS: We developed the Medical Education Research Study Quality Instrument (MERSQI) to measure the quality of medical education research studies. Six methodological domains (study design, sampling, type of data [subjective versus objective], validity of evaluation instruments, appropriateness and sophistication of data analysis, and outcomes) were identified from published guidelines for conducting and reporting research. Items to quantify these domains were developed by a team of investigators with expertise in instrument development and education research, and iteratively refined using articles not included in the study sample. Each item was assigned a maximum of 3 points with a total MERSQI maximum score of 18. Six investigators, working in pairs, applied the instrument to 80 studies randomly selected from among 211 original medical education research studies published in 13 peer reviewed journals between September 1, 2002 and December 31, 2003. Intra-class correlations coefficients (ICCs) were used to determine inter-rater reliability of scores.
RESULTS: Two-thirds of studies (68%) used cross-sectional or single group post-test only designs. Fourteen percent included a control group and 4% were randomized. One-third of studies were multi-institutional. The outcome measures for less than half (46%) of studies were based on objective data. Few studies reported behavior (36%) or healthcare related (3%) outcomes. The average MERSQI score from the sample of 80 studies was 10 (range 5–16). Mean scores were highest for data analysis (2.61), type of data (1.93) and sampling (1.83) and lowest for validity of evaluation instruments' scores (0.61). Inter-rater reliability on all items was excellent, ICC's ranged from 0.792 (95%CI 0.697–0.854) to 0.996 (95%CI 0.995–0.997).
CONCLUSIONS: We present evidence for content validity and reliability of MERSQI scores as a measure of the quality of medical education research studies. Evaluation of all 211 studies and further analyses to determine criterion validity will be conducted. Future education studies should pay greater attention to the validity of instrument scores. The MERSQI may assist educators, reviewers, and journal editors in assessing the quality of medical education research studies.

RESEARCH TRAINING IN CLINICAL EFFECTIVENESS: DOES ACADEMIC STATUS IN A COHORT OF TRAINEES IMPACT TIME TO NIH GRANT FUNDING? M.E. Goldhamer[1]; D.W. Bates[2]; E. Cook[3]; R. Davis[4]; A. Cohen[5]; D. Singer[6]; S.R. Simon[4]. [1]Massachusetts General Hospital, Willington, CT; [2]Brigham and Women's Hospital, Watertown, MA; [3]Harvard School of Public Health, Boston, MA; [4]Harvard University, Boston, MA; [5]Harvard University, Brookline, MA; [6]Massachusetts General Hospital, Boston, MA. *(Tracking ID # 173632)*

BACKGROUND: The AAMC has identified clinician investigators as a vulnerable population. The rise in average age of first R01 funding to 43 years has been identified as a major deterrent to pursuing a career in research. Simultaneous or closely linked research and clinical training has been proposed to better position physician-scientists for productive research careers. The Harvard Program in Clinical Effectiveness (PCE) is a daily 7-week intensive summer program designed for physicians seeking rigorous training in clinical research. All students submit a grant proposal as a final project. The aim of this study was to determine if academic status at the time of PCE enrollment influenced the time to first NIH grant funding.
METHODS: All graduates (n = 1,489) from 1986–2005 were identified using Google Scholar, PubMed, and the AMA Physician Masterfile. An internet-based survey was sent to 1,189 graduates and 300 surveys were sent by post. The purpose of the survey was to evaluate the impact of the PCE program on graduates' careers and research activities. All respondents who reported federal grant funding were verified on the NIH Computer Retrieval of Information on Scientific Products (CRISP) website. Respondents were excluded if they were not residents, fellows or faculty during enrollment, were not U.S. Citizens, had received federal funding prior to enrollment, or if funding could not be verified on CRISP. The exposure of interest was academic status (resident/fellow or faculty) at the time of PCE enrollment. The outcome was time to disbursement of the first NIH grant after program completion. The following variables were examined using Cox proportional hazards univariate regression: age, ethnicity, gender, academic status, completion of the epidemiology grant proposal as an actual project, subsequent publication, and completion of an advanced degree. Based on these results and the literature, all variables were included in the final model. SAS 9.1 statistical software was used for the analysis.
RESULTS: The email response rate is currently 67%. Of the 565 eligible U.S. respondents, 25% (n = 137) had verified NIH grant funding. This sub-set of respondents was diverse and included women (35%) and non-whites (21%). The majority of funded respondents enrolled in the program as residents or fellows (74%) and conducted the epidemiology proposal as an actual project (64%) with subsequent publication (56%). Overall, 82% of funded respondents completed an advanced degree in research methods. Age greater than 39 years (HR 0.47, CI 0.23, 0.95) and completion of the epidemiology grant proposal as an actual project (HR 1.48, CI 1.03, 2.14) correlated significantly with federal grant funding in the Cox model; academic status, gender, ethnicity, publication of the project, and completion of an advanced degree were not significantly correlated.
CONCLUSIONS: Our findings support the AAMC proposal to institute research methods early in physician training. While academic status was not significantly correlated with federal grant funding, attendees age 20–39 years obtained federal grant funding at twice the rate of older participants. Completion of the epidemiology proposal as an actual project was associated with a 50% greater rate of federal funding. Research training that incorporates real-world practical projects, such as grant proposals, provides a skill set that may better position clinician investigators to compete successfully for NIH grant funding.

RESIDENT PHYSICIANS' KNOWLEDGE AND ATTITUDES ABOUT HEALTH DISPARITIES. R. Manchanda[1]; A.P. Mahajan[2]; H. Fernandez[1]; A. Kuo[1]; M.F. Shapiro[1]. [1]University of California, Los Angeles, Los Angeles, CA; [2]Robert Wood Johnson Clinical Scholars Program, Los Angeles, CA. *(Tracking ID # 173829)*

BACKGROUND: The SGIM's Reforming Residency Task Force and other organizations emphasize the need to incorporate training in health disparities. To date, programs largely emphasize cultural competency training as a mechanism of addressing disparities but few reported studies have examined residents' knowledge and attitudes regarding other societal and health system factors that contribute to health disparities.
METHODS: Objectives: To determine Los Angeles County (LAC) resident physicians' 1) knowledge and attitudes regarding health disparities and 2) perceptions of their preparedness, training, and willingness to address health disparities and to care for the underserved. Methods: From December 2005 through November 2006, a confidential and voluntary survey was distributed without incentive during didactic conferences or retreats to all Internal Medicine, Pediatric, and Family Medicine residents in two large academic medical centers in LAC. The survey consists of 90 multiple choice questions.
RESULTS: Data from 168 respondents are presented. Averaged across 5 programs, the mean response rate was 62%, mean age was 28.5 years, 62% were female, and each level of training was nearly equally represented. The large majority of respondents felt that it is 'important' to 'very important' for residents planning to work in either primary care (98%) or subspecialties (85%) to understand health disparities. However, the majority of respondents felt only 'somewhat prepared' or 'not prepared' to care for patients who are unable to speak or understand English well (52%), who are uninsured (52%), or who have limited health literacy (54%). Only 55% of respondents felt 'prepared or very prepared' to care for patients who have income below the poverty line. While a large majority of respondents felt that systems based practice skills such as understanding the features and eligibility requirements of public health insurance programs (85%) are important to their future plans for medical practice, only 36% reported receiving at least some training on this topic; 91% of respondents were willing to replace one noon conference (or similar didactic session) per month that usually focuses on a traditional clinical topic with one that focuses on a health disparities issue; 50% of respondents were willing to accept at least a $10,000 reduction in their future annual salary to absorb the cost of caring for underserved patients (such as the uninsured or Medicaid patients) in their clinical practice. Only one-third of respondents could correctly answer at least 7 out of 10 basic questions regarding the health care system and health disparities.
CONCLUSIONS: Despite resident physicians' beliefs that specific skills in reducing health disparities are important to their training and future plans, their self-perceived preparedness to care for the underserved is limited. This in part may be a reflection of limited educational experiences related to health disparities and the underserved. Residents' willingness to substitute portions of the clinical curriculum

with health disparities training and to contribute a substantial portion of future earnings to help care for underserved patients reflect a previously undocumented commitment to these topics. Residency programs should make greater efforts to develop curricular innovations in caring for the underserved. Research will be needed on the impact of such innovations in residency training on the trainees and on health disparities

RESIDENT PHYSICIANS' KNOWLEDGE AND ATTITUDES ABOUT U.S. HEALTHCARE SYSTEM AND UNIVERSAL COVERAGE. R. Manchanda[1]; A.P. Mahajan[2]; H. Fernandez[1]; A. Kuo[1]; M.F. Shapiro[1]. [1]University of California, Los Angeles, Los Angeles, CA; [2]Robert Wood Johnson Clinical Scholars Program, Los Angeles, CA. *(Tracking ID # 173927)*

BACKGROUND: A single-payer system with universal coverage has been proposed to address rising U.S. healthcare costs and the growing number of uninsured Americans. Little is known about resident physicians' knowledge and attitudes about the U.S. health care system and universal coverage.
METHODS: Objective: To determine Los Angeles County (LAC) resident physicians' knowledge and attitudes regarding the health care system and universal coverage. From December 2005 through November 2006, a confidential and voluntary survey was offered to all Internal Medicine, Pediatric, and Family Medicine residents in two large academic medical centers in LAC. The survey consists of 90 multiple choice questions.
RESULTS: Data from 168 respondents are presented. Averaged across 5 programs, the mean response rate was 62%, mean age was 28.5 years, 62% were female, and each level of training was nearly equally represented. When compared to a fee-for-service or a managed care system in a competitive marketplace, 63% of respondents felt that a government-administered system with universal coverage would provide the best health care to the greatest number of people for a fixed amount of money. 24% of respondents were not sure which system would be best. While 72% of respondents 'agreed' or 'strongly agreed' that physician salaries are likely to decline if health care reform results in government mandated universal health coverage, 58% of respondents were willing to accept at least a $20,000 reduction in their future annual salary if it would help assure that all US residents had health insurance. The percentage of respondents who were not willing to care for the uninsured after residency increased with stage of training (PGY-1, 2, 3: 15%,19%,31%) While 95% of respondents 'agreed' or 'strongly agreed' that all physicians should have a basic understanding of the U.S. health system and 87% believed it is government's responsibility to ensure provision of health care to all Americans, only 33% of respondents could correctly answer at least 7 out of 10 basic questions regarding the health care system and health disparities. 24% of respondents had a curriculum specifically focused on health disparities in medical school and 75% of respondents would have liked more exposure to social sciences in medical school. 67% report 'little' or 'no' training during residency in developing advocacy skills to address health disparities. 70% of respondents 'disagree' or 'strongly disagree' with the statement "I am optimistic about the future of the U.S. health care system.
CONCLUSIONS: Resident physicians' believed that universal coverage would be the best option for providing health care but were pessimistic about the future of U.S. health care. Contrasting with their belief that their future earnings would decrease in a universal coverage system, residents' stated willingness to contribute a substantial portion of future earnings to ensure universal coverage reflects a previously undocumented level of altruism. Residents' poor knowledge regarding basic aspects of the U.S. health care system as well a declining commitment to care for underserved populations as they progress in training is concerning and should prompt residency programs to make greater efforts to develop curricular innovations in caring for underserved populations to address these issues.

SIMILARITIES AND DIFFERENCES BETWEEN INTERNATIONAL MEDICAL GRADUATES AND US MEDICAL GRADUATES AT 6 MARYLAND RESIDENCY PROGRAMS. A. Gozu[1]; D.E. Kern[1]; S. Wright[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 171818)*

BACKGROUND: Approximately 25% of practicing physicians in the United States graduated from medical schools in other countries. International medical graduates (IMGs) bring their diverse socio-cultural backgrounds to American post-graduate training programs. Residency training is difficult and challenging for all physicians. The transition and acculturation for IMGs to the American healthcare system adds another layer of complexity. The goal of this study was to identify the similarities and differences among IMGs and US medical graduates (USMGs) working together in residency training programs.
METHODS: In 2006, we conducted a cross sectional study of 226 house officers at the six internal medicine residency training programs in Maryland wherein IMGs comprised >25% of the trainees. The survey asked questions about demographics, relocation for residency training, and career plans. It also included 5 previously validated instruments: a. perceived stress scale, b. Iowa fatigue scale, c. Rosenberg's self-esteem scale, d. personal growth scale, and e. inventory for assessing the process of cultural competence among healthcare professionals (IAPCC). Bivariate analysis was followed by modeling and multivariable analysis to identify differences between IMGs and USMGs.
RESULTS: 176 house officers (78%) responded. There were no statistically significant differences between responders and non-responders in gender or year of training. In multivariable modeling, independent characteristics that differentiated IMGs from USMGs were (i) having a first language other than English (OR = 7.7, 95% CI: 1.9–33.1), (ii) the intent to work in a rural setting after completion of training (OR = 8.0, 95% CI: 1.8–36.1), and (iii) having less debt [< $50K] upon graduation from medical school (OR = 50.0, 95% CI: 11.1–333), With modeling to control for the above-mentioned differences, IMGs were found to have lower fatigue scores (3.6; 1.8–7.3), higher self-esteem scores (2.1; 1.1–4.1), and higher levels of personal growth (2.2; 1.1–4.4). There were no appreciable differences in the house officers perceptions of stress (p = ns), but IMGs scored lower for cultural competence (0.4; 0.2–0.8).
CONCLUSIONS: In this population of house officers, there were differences in both personal characteristics and self-assessed perceptions between IMGs and USMGs. Understanding these differences may help educators and training programs that are trying to support and encourage their diverse cadre of trainees.

TEACHING CLINICAL SKILLS TO THIRD-YEAR MEDICAL STUDENTS: A METHODOLOGY THAT IMPROVES SKILLS AND INCREASES KNOWLEDGE. S.A. Haist[1]; A. Hoellein[1]; C. Griffith[1]; M.J. Lineberry[1]; J.F. Wilson[1]. [1]University of Kentucky, Lexington, KY. *(Tracking ID # 173169)*

BACKGROUND: An effective methodology to teach medical students specific clinical skills is essential. However, the quality of most current clinical skill pedagogies are unproven. The purpose of our study was to develop new curriculum for a four-week third-year primary care internal medicine clerkship and prospectively assess its efficacy.
METHODS: Over six years, eleven workshops were developed to teach clinical skills. Common ambulatory problems addressing Healthy People's Objectives 2010 were selected: Preventive Care (PC), Chronic Pain, Depression, Domestic Violence (DV), Ethanol Use and Abuse, Sexual History and HIV Counseling (SHHIV), Smoking Cessation, Adolescent Medicine (AM), Geriatric Medicine (GM), Nutritional and Physical Well-being (NPWB) and Complementary and Alternative Medicine (CAM). At the beginning of the rotation, each six to ten-student rotational group received the PC Workshop and was randomized to participate in two or three intervention workshops. All students were assigned course textbook readings on each topic. The 3.5–4 hour workshops were introduced by four standardized patient (SP) cases of various demographics and presenting problems. One or two students interviewed the SP in front of the group and the faculty preceptor and other students provided feedback. The faculty preceptor facilitated discussion of the topic and sensitive approaches to each scenario. At the end of the clerkship, all students underwent a nine-station SP exam including one station representing each of the intervention workshops that year. Following each SP, the students completed an open-ended written exercise (OEWE) related to the station. Finally, students took a multiple-choice test (MCT) containing several questions on each workshop topic. Data were analyzed with simple means, standard deviations, and multiple regression approaches solving the SP checklist for clinical performance on the PC station and the post-encounter written exercise and MCT exam for USMLE Step 1 score.
RESULTS: Students participating in six of the ten workshops demonstrated better clinical skills as assessed by a standardized patient station and/or better knowledge as assessed by the written examination and the post-standardized-patient open-ended written exercise than students not participating. For the four other workshops there were no differences between workshop participating students and non-participating students in any of the three outcomes.
CONCLUSIONS: Our findings suggest that focused instruction on specific clinical skills delivered in an adult-centered interactive fashion using SPs results in better skills and greater knowledge than can be acquired by spontaneous patient encounters. Therefore, we encourage the use of a similar methodology to teach medical students specific skills.

Results

Workshop	Checklist Score	Post-SP OEWE	MCT Questions
DV	p < .0001	p < .0001	p < .001
SHHIV	p < .0001	p = .024	p < .001
GM	p = .002	p = .030	p = .25
AM	p < .0001	p < .0001	p = .003
CAM	p < .0001	p < .0001	p < .0001
NPWB	p = .066	p < .0001	p < .001

TEACHING EVIDENCE-BASED PRACTICE TO IMPROVE PATIENT CARE: A SYSTEMATIC REVIEW. D.A. Feldstein[1]; K.D. Baum[2]. [1]University of Wisconsin-Madison, Madison, WI; [2]University of Minnesota, Minneapolis, MN. *(Tracking ID # 172945)*

BACKGROUND: Evidence-based practice (EBP) education is a required component of medical student and resident curricula and is rapidly becoming a part of most allied health education. There has been a push for increased evidence use in patient care supported by the Institute of Medicine. Although evidence shows that teaching EBP increases learners' knowledge and skills, there is little evidence that it changes clinicians' behaviors and its effect on patient care is still unclear. We systematically reviewed the evidence to determine whether teaching EBP improves patient outcomes or clinicians' patient care behaviors.

METHODS: We searched MEDLINE, CINAHL, PsycINFO, ERIC, Cochrane Library and Science Citation Index from 1980 to October 2006 limited to English language. Bibliographies of included articles were also searched. Articles were included if they: 1) described randomized controlled trials (RCT), controlled trials, crossover studies, or before and after studies; 2) reported an EBP educational intervention that targeted health care practitioners who were able to directly affect patient care; 3) measured patients' clinical outcomes or clinicians' patient care behaviors. Two independent reviewers evaluated articles for inclusion and abstracted included articles. Disagreements were resolved by consensus. Inter-rater reliability for inclusion was evaluated with Cohen's kappa.
RESULTS: The search yielded 3316 unique articles. One hundred and two of these articles appeared potentially relevant and were retrieved for review. Three of these 102 articles met inclusion criteria. Inter-rater reliability for article inclusion was substantial ($\kappa = 0.66$). One RCT and two before and after studies were included. Two studies including the RCT evaluated patient outcomes. The RCT evaluated primary care teams which included a physician, nurse, practice manager and receptionist. The teams were cluster randomized to four educational intervention groups: 1) information; 2) EBP; 3) information plus EBP; 4) generic training. The trial looked at risk factor evaluation and control for cardiovascular disease. The EBP versus no EBP groups did not show any differences in physician behaviors, but did show a 9.7% improvement in cholesterol control. The before and after study that evaluated patient outcomes showed a benefit in the two patient outcomes measured. There was a 23% improvement in adequate hemoglobin A1C control and an 18% improvement in adequate blood pressure control after the intervention. The educational interventions of the included trials varied dramatically and included workshops, guideline development and availability of EBP electronic resources.
CONCLUSIONS: Teaching EBP has become an integral part of medical training in an attempt to decrease the gap between research evidence and practice. Only one RCT has evaluated the impact of teaching EBP on physician practice or patient clinical outcomes. This small study showed a modest benefit in patient outcomes. A lower quality before and after study also showed a benefit in patient outcomes. The educational interventions and learners varied dramatically in these studies. Further evidence is necessary to determine whether teaching EBP will improve physician practice and patient health, and which educational aspects are important. If teaching EBP is not an effective way of improving patient outcomes, the resources could be used to implement educational activities that have been shown to change clinicians' behaviors.

TEACHING OF HEALTH AND HUMAN RIGHTS IN U.S. MEDICAL SCHOOLS. K.E. Roth[1]; D. Olson[1]. [1]George Washington University, Washington, DC. *(Tracking ID # 173825)*

BACKGROUND: Are medical schools paying increased attention to issues of health and human rights (HHR)? We compare current curricula to that of 1996 [Sonis et al. JAMA. 276:1676–8].
METHODS: We surveyed the 125 U.S. medical schools. Surveys were returned from 102 [82%] of US medical schools.
RESULTS: Regarding specific historical examples of HHR violations, 77% of schools include instruction on Tuskegee , 46% address the role of physicians in the Holocaust, 46% address HIV drug trials in Africa, and 9% address involvement of physicians in torture. 84% address ethics of research on human subjects in the United States, but only 39% of schools offer similar instruction on research in the third world. Questions about HHR are not currently included as part of the United States USMLE exams, but 64% of respondents thought HHR questions should be included. 85% of schools responded that they now teach about cultural competency Significant geographic differences were noted among schools. Table 1. Our results can be compared to those of Sonis et al. from 1996. Table 2.
CONCLUSIONS: Conclusion: There is a wide range among medical schools in teaching HHR. Significant geographic differences exist, with schools in the Northeast showing the most HHR teaching , and the Southeast showing the least. Most respondents supported the inclusion of HHR questions in USMLE. Our results show that HHR instruction has recently increased slightly, but as compared to Sonis et al, percentage increase of HHR has not changed significantly since 1996.

Table 1. Significant Differences in Teaching Topics Based on US Region

Topic	US Overall	Outlier Region	P value
Role of Doctors in Prsions	8%	Southeast 17%	0.037
Dual Loyalty	24%	West 0%, NE 45%	0.038, 0.014
Refugees	37%	NE 60%	0.017
Immigrants	53%	NE 75%	0.023
Homeless	66%	NE 85%	0.032
Low Literacy	64%	NE 85%	0.020
Disabled	77%	West 50%	0.031
Tuskegee Study	75%	West 42%	0.004
PTSD	78%	SE 67%	0.008
HHR in Third World	40%	SE 23%, NE 60%	0.031, 0.005
USMLE	64%	MW 74%, SE 43%	0.044, 0.022

Table 2. Comparison to Sonis, 1996

Topic	Sonis et al 1996	Our Results 2006
Homosexuals	78%	84%
Minorities	82%	85%
Disabled Persons	75%	77%
MDs & Torture	17%	9%
Informed Consent in Research	87%	95%
Definition of Human Rights	26%	49%

TEACHING QUALITY IMPROVEMENT TO HEALTHCARE PROVIDERS: IS IT EFFECTIVE? R.T. Boonyasai[1]; D.M. Windish[2]; C. Chakraborti[1]; L.S. Feldman[1]; H. Rubin[3]; E.B. Bass[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Yale University, Waterbury, CT; [3]Palo Alto Medical Foundation Research Institute, Palo Alto, CA. *(Tracking ID # 173222)*

BACKGROUND: ACGME accreditation mandates teaching Quality Improvement (QI) concepts to medical trainees. We performed a systematic review to 1) evaluate the effectiveness of published QI curricula for healthcare providers and 2) determine whether teaching methods influence the effectiveness of such curricula.
METHODS: We searched Medline, EMBASE, CINAHL and ERIC for articles published between 1980 and Sept. 2005. Two independent reviewers read each citation, abstract or article. Inclusion criteria included: 1) curriculum that taught QI theory to healthcare providers and 2) evaluation that used a pre/post or controlled design. We extracted data on learners, teaching methods, content, and results. We also created an educational index ranging from 0–9 to assess how many of nine adult teaching principles were used. Inter-rater reliability for the index was moderate (kappa = 0.51). The outcomes of curricula with specific educational features were pooled and compared with Wilcoxon Rank Sum tests.
RESULTS: Of 13,323 citations, 27 articles met eligibility criteria. Curriculum features, evaluation design and outcome types varied greatly. Learners were physicians or their trainees in 10 articles, nurses or their trainees in 2 articles, and both in 15 articles. Learners also included other healthcare providers in 13 articles. 19 curricula organized learners in teams and 8 taught them as individuals. 26 curricula combined didactics and experiential learning, while 1 used only didactic instruction. Median score on the educational index was 7 (range 2–8). Evaluations included 7 randomized controlled trials (RCT), 8 non-randomized controlled trials (NRCT) and 12 pre/post (PP) or time-series designs. The articles reported on 8 knowledge, 8 attitude, 1 skill, 18 process and 13 patient outcomes (18 reported more than one outcome). Most knowledge evaluations showed improvement in tested (4/5) or perceived knowledge (3/3), however only 1 study described the reliability/validity of the assessment tool. Attitudinal outcomes showed learners' confidence to teach QI or participate in QI projects improved, but found no change in their belief that QI can produce sustained benefits. 1 RCT found improved team skills using a validated scale. 2 RCTs and 1 PP study showed improved healthcare processes, but 4 NRCTs found mixed or no effect. 3 RCTs and 2 NRCTs found no change in patient outcomes. In evaluating the effectiveness of teaching methods, we found an association between curricula that allow learners to design their own QI projects and positive effect on pooled outcomes ($p = 0.01$). There was also a trend toward statistical significance for curricula that organized learners into teams ($p = 0.11$). We found no association between positive outcomes and score on the educational index.
CONCLUSIONS: Published QI curricula apply many sound adult teaching principles and demonstrate improvement in learners' knowledge or confidence to engage in QI activities. However, the heterogeneity in content and evaluation methods and lack of validated assessment tools limit the strength of the evidence. Studies reporting little or no effect on process or patient outcomes should not dissuade the teaching of QI, as clinical outcomes are the product of complex systems that may be beyond the control of learners. Future QI curricula would benefit from development of standardized assessment tools and allowing learners to direct their own QI projects.

TEAMWORK TRAINING IN MEDICAL EDUCATION. C. Chakraborti[1]; R.T. Boonyasai[1]; S. Wright[1]; D.E. Kern[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 173144)*

BACKGROUND: Although teamwork is an integral part of medical practice and professionalism, training in teamwork skills is limited. We performed a systematic review of the literature describing teamwork training in medical student and resident education.
METHODS: We searched Medline, ERIC, EMBASE, PsycInfo, CINAHL, and Scopus for articles published after 1980 that reported the results of an educational intervention involving teamwork training. Inclusion criteria included a description of a curriculum that included teamwork training, learners who were medical students or residents, and interventions that used a pre/post or a controlled design. Two reviewers abstracted information pertaining to the context in which the curriculum occurred, characteristics of the targeted learners, clarity of objectives, the types of education and evaluation methods used, outcomes measured, and evaluation results. We assessed the teamwork principles described

in each article based on the competency framework proposed by Baker. Data from each article was pooled to synthesize the quality of teamwork curricula. Calculations of median effect size (Cohen's d) were used to compare heterogeneous educational outcomes. We used Spearman's correlations to assess relationships between outcome effect sizes and proportion of teamwork principles described in each article.
RESULTS: Of 956 citations, thirteen studies met the inclusion criteria. All studies employed active learning and ten (77%) used multidisciplinary simulation-based training. Five of the curricula (38%) used facilitated reflection, and seven (54%) used structured feedback. Nine (69%) used a referenced teamwork model or group development framework. Five (38%) studies were multi-institutional. Three (23%) used a non-randomized concurrently controlled evaluation design; ten (77%) used a pre-post design. In terms of educational outcomes, four (31%) of the curricula assessed knowledge outcomes, while seven (54%) assessed attitudes. Twelve (92%) curricula assessed skill attainment, and of these, 11 included self- and 5 included observer-assessments. Three curricula assessed long-term impact of the educational intervention. Of the eight distinct instruments used to assess teamwork skills, six had been previously validated. Patients were involved in only 3 (23%) of the curricula; only one examined patient outcomes. The median proportion of Baker's eight teamwork principles described in these articles was 0.38 (IQR = 0.25, 0.75). The median overall effect size for the curricular outcomes was 0.39 (IQR = 0.30, 0.48). The relationship between the fraction of teamwork principles described in each article and overall effect size had a Spearman correlation of 0.68 ($p = 0.015$). The number of teamwork principles described did not significantly correlate with individual knowledge, skill, or attitude effect sizes.
CONCLUSIONS: All teamwork curricula reviewed employed active learning strategies, and most used reflection or structured feedback on performance, appropriate educational strategies for skills training. The outcome effect sizes were moderate, but evaluation methodologies were generally weak. The observed relationship between the number of teamwork principles taught and overall effect size may indicate that the optimal approach for enhancing teamwork skills among medical trainees is to combine sound educational principles with comprehensive teamwork content.

THE ARTHUR VINING DAVIS FOUNDATIONS FACULTY DEVELOPMENT WORKSHOPS FOR TEACHING THE HUMAN DIMENSIONS OF CARE: LONGITUDINAL FACULTY DEVELOPMENT ENHANCES THE EFFECTIVENESS OF CLINICAL TEACHERS. W.T. Branch[1]; R.M. Frankel[2]; C. Gracey[3]; P.M. Haidet[4]; P. Weissmann[5]; P. Cantey[6]; G.A. Mitchell[2]; T. Inui[2]. [1]Emory Healthcare, Atlanta, GA; [2]Indiana University Purdue University Indianapolis, Indianapolis, IN; [3]Houston VA Medical Center, Rochester, NY; [4]Houston VA Medical Center, Houston, TX; [5]Hennepin County Medical Center, Minneapolis, MN; [6]Emory University School of Medicine, Atlanta, GA. *(Tracking ID # 171002)*

BACKGROUND: Inadequate teaching contributes to a "hidden" curriculum that undermines the learning climate in clinical settings. We hypothesized that a longitudinal faculty development process would be a practical method to improve humanistic teaching.
METHODS: With funding from the Arthur Vining Davis Foundations, we recruited groups of 8–12 clinical educators at each of five medical schools (Emory, Rochester, Baylor, Indiana, and Minnesota). These groups participated in an 18-month intervention that included weekly or bi-weekly facilitated training using reflective learning and experiential skills teaching. We used a variety of pedagogical methods including appreciative inquiry, critical incident reports, and Balint groups to foster reflective learning. Experiential skills sessions focused on a variety of topics that included giving feedback, dealing with difficult learners, teaching humanism at the bedside, being a more effective role model, and critical reflection at the bedside. All 5 groups completed a 6-month standardized curriculum addressing the topics listed above, followed by 12 months of educational meetings, in which each group chose its own topics and methods for learning. A majority of groups adopted discussion, reflective learning and Balint group-type formats for this latter portion of the curriculum. Using narratives from a) a previous project focused on humanistic teaching behaviors and b) the current project's early faculty development sessions, we developed a 10-item teaching effectiveness instrument that measures the quality of humanistic teaching from the learner's perspective. We piloted and refined the items with groups of faculty and medical residents to ensure clarity. We used this instrument in a prospective-cohort study comparing intervention faculty and 1–2 matched control faculty peers. Learners eligible to complete the survey included residents and medical students who had worked for at least 1 week on an inpatient or an outpatient teaching service with intervention or control faculty.
RESULTS: 33 participants (72%) who began the program completed the full 18 months. Of the 5 groups, those that were more homogeneous in age and specialty, met at more convenient times and locations, and consisted of participants engaged in a similar educational efforts were more successful at achieving sustained participation. Sixty-nine evaluation surveys were collected to-date on participants and 113 on controls from 4 of the 5 schools. Results reveal that participants achieved a 6–14% higher ratings on all ten survey items (p values ranging from .0065 to .0001). Work comparing the 'case' and 'control' physicians is proceeding. Standard teaching evaluations from Emory's faculty prior to the onset of the project revealed no differences between participants and controls in overall teaching performance or teaching performance related to humanism on Emory's standard teaching effectiveness instrument.
CONCLUSIONS: Our data indicate that an 18-month longitudinal faculty development process incorporating critical reflection and learner-centered skills has a positive impact on humanistic teaching by participants, as perceived by their learners. Future work should focus on the application and success of such programs in broad groups of faculty with diverse interests and attitudes.

THE EFFECT OF ACGME DUTY HOURS ON INPATIENT GENERAL MEDICINE ATTENDING TEACHING AND SATISFACTION. V. Arora[1]; D. Meltzer[1]. [1]University of Chicago, Chicago, IL. (Tracking ID # 172158)

BACKGROUND: Concerns remain regarding the effect of the ACGME duty hours on residency training. The effect of duty hours on inpatient attendings is uncertain. This study aims to assess the effect of ACGME duty hours on inpatient attending teaching and satisfaction.
METHODS: Inpatient attendings on general medicine services at one institution between June 2001 and June 2006 were asked to complete an end-of-month survey regarding teaching processes and satisfaction with various elements of their inpatient attending experience. Quantitative survey items were used to assess teaching processes (e.g., number of hours/week spent doing didactic teaching). Attendings were asked to rate their satisfaction or agreement using 5 point Likert-type responses (Very Satisfied to Very Dissatisfied; Strongly Agree to Strongly Disagree) on elements such as time for teaching, relevant relationships (i.e. nurses, consults, resident, etc.), their ability to provide high quality care, etc. In July 2003, general medicine services were restructured to comply with the ACGME duty hours through the introduction of a night float service to care for patients between midnight and 7am and early departure of the post-call general medicine teams at the end of their call period. Unadjusted analyses, to assess the effect of duty hours on Likert-type items, were performed using 2 sided Wilcoxon rank-sum tests. Responses to quantitative survey items were analyzed using 2 sided t-tests. Because attendings were surveyed several times through these five years, fixed effects regression models, controlling for attending subject, were used to determine the effect of duty hours on teaching processes and satisfaction. Statistical significance defined as $p < 0.05$.
RESULTS: 96/113 (85%) distinct attendings provided 314/465 (68%) surveys. 92 attendings filled out at least one survey before and after duty hours, yielding 300 (65%) surveys for multivariate analyses. In unadjusted analyses, after duty hours, attendings reported fewer weekly hours of didactic teaching (3.8 h vs 3.2 h, $p < 0.01$), a higher number of weekly conferences missed due to rounds (1.7 vs. 1.3, $p < 0.03$), fewer feedback sessions with residents (2.5 vs. 3.5, $p < 0.03$), and a smaller percentage of patients seen on the day of admission (28% vs 37%, $p < 0.003$). Attendings were also less satisfied with the amount of time to teach, their ability to involve their team in management decisions, the relationships with their residents and medical students, their ability to determine patient length of stay and influence hospital policy, and the degree to which the work was related to professional growth and development and educationally stimulating. Multivariate fixed effects regression models also suggested fewer hours of didactic teaching; and decreased satisfaction with the ability to determine patient length of stay, influence hospital policy, professional growth and development, and the educational nature of the work. Interestingly, after duty hours, both unadjusted and adjusted analyses demonstrated that attendings were better able to use hospital resources effectively and were more satisfied with relations with primary care physicians, suggesting more direct involvement with routine patient care.
CONCLUSIONS: The ACGME duty hours can have negative effects on inpatient attending teaching and satisfaction, and possibly result in greater direct provision of care by attendings. The impact of these effects on learning and patient care requires careful examination.

THE IMPACT OF THE INTERNAL MEDICINE SUB-INTERNSHIP ON MEDICAL STUDENT CAREER CHOICE. F.A. Ciminiello[1]; J.A. Shea[2]; E. O'Grady[1]; L.M. Bellini[1]; J.R. Kogan[3]. [1]University of Pennsylvania, Philadelphia, PA; [2]Society of Directors of Research in Medical Education, Philadelphia, PA; [3]University of Pennsylvania, Huntingdon Valley, PA. *(Tracking ID # 173782)*

BACKGROUND: The number of medical students entering internal medicine has been decreasing. Controllable lifestyle has been shown to be one of the major factors associated with medical student career choice. Given the rigor of the internal medicine (IM) sub-internship (sub-I), it is unknown if it affects medical student career choice.
METHODS: In 2006, all 84 students enrolled in the IM sub-I at our institution were asked to complete a survey at the sub-I orientation. Students were asked to rate how likely they were to apply for a residency position in each of 15 different disciplines using a five point Likert scale (1 = definitely not, 2 = probably not, 3 = unsure, 4 = probably, and 5 = definitely). After completing the sub-I, they were asked to complete a web-based survey that repeated the initial question, and also asked their general perception regarding how the medicine sub-I impacted their decision to apply for an IM residency. All survey responses were confidential. We examined the change in reported likelihood of applying in IM, looking at the cross tabulated data, computing chi-square for pre-post changes, and a Spearmen correlation between the direction of the observed change and overall perception.
RESULTS: 63 students (75%) completed both surveys. Table 1 shows the likelihood ratings of applying in internal medicine pre and post sub-I. Overall,

the distributions are different (chi-square = 76.57, p < .0001). 37 responses (59%) showed no change in likelihood of applying to an IM residency whereas 31% showed a negative change and 11% indicated a positive change. Most of the negative changes (14 of 18) were one-step to the adjacent worse category. Of the 34 students who reported they would definitely or probably enter medicine prior to the sub-I, nine students (26%) reported they either were not interested or unsure about entering medicine post sub-I. Students' general perception of how the sub-I impacted their decisions to apply for an IM residency was somewhat more positive than the observed pre-post changes in likelihood: 43% reported a positive impact, 37% reported no impact and 21% reported a negative impact. The correlation between the direction of observed pre-post changes and general perception was .33 (p = .009).

CONCLUSIONS: The IM sub-I has a moderate impact on medical student career choice. It is concerning that some students who were probably or definitely going to apply in IM before the sub-I became unsure or unlikely to apply after the sub-I. This is a single institution study, which limits generalizability. With the diminishing number of students choosing IM, more research is needed to understand the characteristics of the IM sub-I that impact medical student career choice.

Table 1: Likelihood of Applying in Internal Medicine (n = number of students)

		Definitely Not	POST	SUB-	INTERNSHIP	
			Probably Not	Unsure	Probably	Definitely
	Definitely Not	11	0	0	1	1
PRE	Probably Not	3	2	1	0	0
SUB-	Unsure	0	4	2	2	2
INTERNSHIP	Probably	3	1	4	8	0
	Definitely	1	0	0	3	14

THE INFLUENCE OF MEDICAL STUDENT VALUES ON INTERNAL MEDICINE CAREER CHOICES: A COMPARISON OF TWO METHODOLOGIES. M.S. Grayson[1]; L. Thompson[2]; D.A. Newton[3]. [1]New York Medical College, Valhalla, NY; [2]North Carolina State University, Raleigh, NC; [3]East Carolina University, Greenville, NC. *(Tracking ID # 172193)*

BACKGROUND: With shortages in the number of students pursuing some internal medicine (IM) careers, there is a need to understand the factors influencing specialty decisions. Although medical students' values are assumed to play a role in their career choices, little attention has been paid to the assessment of these values. This study compared 2 measurement methods to determine whether they lead to equivalent conclusions about the values held by students interested in IM careers.

METHODS: 1795 (76%) of the medical students graduating from ECU SOM and NYMC between 1998 and 2006 completed surveys immediately prior to graduation. The 350 students with complete data and an IM career goal were included in the present study. Two measurement scales were used to indicate career values. The 1st was a Likert-type (LT) rating where students used a 1 (no influence) to 4 (major influence) scale to rate the degree to which their career decisions were affected by various items, e.g., "provides an income that will allow me to live comfortably." Factor analysis found that the 15 items relevant to this study clustered into 4 career values: Income, Prestige, Lifestyle, and Helping Others. Rated responses were averaged so each student received one LT score per value. A 2nd measurement utilized a Forced Choice (FC) scale where each of the 4 values described above was paired with each other. For each pair of values presented (e.g., Income vs. Prestige) students selected the option that had the greatest influence on their specialty choice. The proportion of times a student chose an option over its alternative was computed. Each student received one FC score per value, ranging from 0 (never chosen as most important) to 1 (chosen as most important over its alternative 100% of the time).

RESULTS: Career values expressed on the LT scale significantly (p < .01) but imperfectly corresponded to the same values expressed on the FC scale. The correlation (r) between the 2 measurement scales was .19 for Income, .44 for Lifestyle, .24 for Helping Others, and .34 for Prestige. Of the 87 students who scored at or above the 75th percentile on the LT Income scale, only 30 (34%) also scored at or above the 75th percentile on the FC scale. Similar analyses indicated 46%, 72%, and 50% overlap in the rosters of individuals scoring at the top of the Lifestyle, Helping, and Prestige dimensions respectively. When those intending to pursue general (GIM; N = 150) vs. subspecialty (SS; N = 200) IM careers were compared, the 2 scale types led to different conclusions for 1 of the 4 values studied. Whereas the LT rating scale indicated that SS placed a significantly (p < .01) higher value on Prestige, the FC scale did not reveal a significant difference. Additional analyses showed that conclusions about factor intercorrelations (e.g., whether those who value Lifestyle are particularly unlikely to value Helping) also depend upon the scale type used to measure career values.

CONCLUSIONS: This study indicates that the type of measurement scale employed can affect conclusions about career values held by students pursing GIM vs. SS. For instance, identifying the individuals who place the greatest (e.g., 75th percentile or higher) value on a given career factor can produce dramatically different rosters of individuals depending on whether the values of interest are measured with a LT or FC scale. This highlights the need for greater attention to measurement issues in medical student careers research.

THE ORAL CASE PRESENTATION: WHAT TEACHING ATTENDINGS WANT TO HEAR FROM CLINICAL CLERKS. E.H. Green[1]; W. Hershman[2]; L. Decherrie[3]; M.J. Fagan[4]; B. Sharpe[5]. [1]Albert Einstein College of Medicine, Bronx, NY; [2]Boston University, Boston, MA; [3]Mount Sinai School of Medicine, New York, NY; [4]Brown University, Providence, RI; [5]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 171884)*

BACKGROUND: The oral case presentation is an important tool for the evaluation of trainees by their teachers. However, little is known about the expectations of clinical teachers for case presentations by third year medical students.

METHODS: We surveyed 136 teaching faculty from 5 medical schools. They completed a 42 item survey derived from the literature and author input. We asked about the relative importance to the faculty of 14 potential attributes of a third year medical student oral case presentation using a 6 point Likert scale (1 = not important, 6 = very important) as well as their expectations for the length of a new patient presentation. Analysis was done using ANOVA, chi-squared, and t-testing as appropriate.

RESULTS: We received 106 responses (78% response rate). 45% of our respondents were hospitalists, and 75% self-identified as clinician-educators. They reported teaching medical students for an average of 8.5 years, and heard a median of 24 student new patient presentations during the last academic year. Some aspects of the oral presentation were more important than other (p < .001) (see table) No differences were seen across years of experience in medical school teaching, gender, or job description (hospitalist vs non-hospitalist), and few differences were seen between different institutions. Faculty expected that student oral presentations should take 9.9±5.4 minutes, with faculty at one institution having significantly different expectations than all others (15.9±6.4 min vs 7.8±2.8, p < .001)

CONCLUSIONS: A diverse group of teaching physicians share similar expectations for third year medical student oral case presentations in the inpatient setting. They believe that it is most important for third year students to present a history of present illness in an organized manner. This may reflect a growing expectation that third year students should master these "reporter" skills. Although there is institutional variability, most educators expect medical student presentations to be 8 minutes long. Future research can help verify these findings and assess the impact of de-emphasis other aspects of a clinical case (such as social history) on student learning and patient care.

Importance of Oral Presentation Attributes

Attribute	Mean (1–6)	St Dev
Accurate description of the symptoms	5.6	0.6
Identifies a chief complaint	5.5	0.7
Organized according to usual standards	5.5	0.7
Describes events that preceded the current hospitalization	5.4	0.8
Includes all facts that are needed	5.0	1.0
Structured to make a case	4.9	1.0
Clearly spoken	4.4	0.9
Detailed social history	4.1	1.1
Excludes all facts that are NOT needed	4.0	1.1
Description of the impact of the medical illness on the patient	4.0	1.1
Detailed plan for major & minor issues	3.9	1.3
Minimal reading from notes	3.6	1.4
Detailed family history	3.2	1.0
Full review of systems	2.7	1.2

THE USE OF LEARNING PORTFOLIOS TO ENHANCE FACULTY TEACHING. G.C. Lamb[1]; M. Bonner[2]; T. Mohyuddin[1]; K. Novoa-Takara[1]; J. Petkova[1]; D. Rosielle[1]; K.M. Stoner[1]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]VAMC Milwaukee, Milwaukee, WI. *(Tracking ID # 173851)*

BACKGROUND: Many physicians who are involved in resident and student education lack formal training in teaching techniques. Thus, methods to improve teaching expertise should be pursued. Learning portfolios are emerging as a tool to guide practice-based learning and improvement in a variety of educational settings and may be particularly useful for adult learners such as physician-educators. They provide a semi-structured format by which learners can identify their own learning needs, outline their plans to meet those needs, and then document and reflect upon their progress towards their goals. We sought to evaluate the effectiveness of a learning portfolio focused on teaching skills for primary care physicians enrolled in a faculty development course.

METHODS: As part of a 5 session, 20-hour faculty development module on teaching, enrollees (n = 17) created a "teacher's learning portfolio" (TLP). Each participant established personal goals for teaching improvement, had opportunities to practice while being observed, obtained feedback from experienced educators and reflected on these activities in a continuous improvement cycle. The goals and associated activity artifacts (e.g., reflections, evaluations, interviews, readings) were assembled into the TLP. The value of the portfolio was rated following each session on a 7 point scale with 7 = strong positive impact, 4 = no impact and 1 = strong adverse impact. At the conclusion of the module, each faculty member presented their portfolio and associated artifacts to classmates. Following the presentations, strengths, weaknesses, and potential applications of learning portfolios were discussed in small group sessions and then summarized for the group at large.
RESULTS: Portfolios were perceived to be a useful component of the learning experience. The rating of the value of the portfolio improved from a mean of 4.7 after the introductory session to 5.9 following the final session. Strengths included the ability to track progress over time, the opportunity to reflect on the learning process, and the act of synthesizing the portfolio prior to presentation. The use of structured forms was not popular; most participants preferred flexibility in selecting artifacts. Motivation to maintain the portfolio was sustained via "coaching", periodic presentation to peers and deadlines.
CONCLUSIONS: Creation and use of a learning portfolio can be an effective tool to guide faculty in identifying strengths and gaps in teaching skills. The process of documenting plans, goals, successes and failures helped faculty to improve specific aspects of their teaching. Although perceived as useful, the learning portfolio was most effective when associated with "coaching" and deadlines.

UNDERSTANDING AND PROMOTING DIVERSITY: A NEEDS ASSESSMENT OF UNDERREPRESENTED MINORITY STUDENTS AT THE UCSF SCHOOL OF MEDICINE. K. Lupton[1]; S. Jain[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173332)*

BACKGROUND: Since the 1970s, the percentage of underrepresented minority (URM) students attending US allopathic medical schools has remained relatively constant. While URMs currently make up 25% of the US population, they comprise only 14% of US medical students. To ensure that the population of practicing physicians in the US accurately reflects the US population at large, it is important that more URM students be recruited to and succeed at US medical schools. Factors affecting the well-being and success of URM medical students are of interest in creating institutional support systems to facilitate the academic achievement of URM students. We conducted a needs assessment of medical students at the University of California, San Francisco examining whether needs expressed by URM students differ from those of non-URM students in three main areas: academics, career development/mentorship, and social development.
METHODS: A 21-question, anonymous, web-based survey was distributed to all self-identified URM (African American, Latino and Native American) medical students enrolled at UCSF School of Medicine in 2004–2005, and to a control group of non-URM medical students which was matched by MCAT scores.
RESULTS: A total of 101 students completed the online questionnaire (49.5% response rate); 48/101 respondents were non-URM, and 53/101 were URM. A statistically significantly greater number of non-URM students agreed with the statement, "My academic needs have been met at UCSF" ($p = 0.016$). There was no statistically significant difference in response to the statement, "I currently have a mentor at UCSF who has helped me in my career development;" 58.3% of non-URM and 47% of URM students agreed that they have a mentor ($p = 0.262$). There was no significant difference in the perceived usefulness of resources available to help students find mentors, with the exception of clinical faculty; non-URM students found clinical faculty more useful than did URM students ($p = 0.048$). In selecting mentors, URM students found the race/ethnicity of the mentor significantly more important than did non-URM students ($p < 0.001$). There was no significant difference between URM and non-URM students in agreement with the statement, "My social development needs have been met at UCSF" ($p = 0.359$).
CONCLUSIONS: Medical schools must recognize that there exist needs specific to URM students and establish programs to address these needs. Academic support and mentorship are areas in which significant differences exist between URM and non-URM students; further research is needed to better delineate these differences and develop strategies to address them. Focus groups will be conducted with URM students at UCSF in order to better define their mentorship and academic needs in medical school.

VALIDITY AND RELIABILITY OF CONTINUING MEDICAL EDUCATION EVALUATION METHODS: A SYSTEMATIC REVIEW. N. Ratanawongsa[1]; P.A. Thomas[1]; S.S. Marinopoulos[1]; T. Dorman[1]; L.M. Wilson[1]; B.H. Ashar[1]; J.L. Magaziner[1]; R.G. Miller[1]; G.P. Prokopowicz[1]; R. Qayyum[1]; E.B. Bass[1]. [1]Johns Hopkins University, Baltimore, MD. (Tracking ID # 170129)

BACKGROUND: Trials to establish the effectiveness of different CME media and techniques require the use of valid and reliable evaluation methods. We conducted a systematic review to appraise and summarize the reported validity and reliability of evaluation methods used in high quality trials of CME.
METHODS: We conducted a systematic review of the literature (Jan 1981-Feb 2006) using electronic searching of MEDLINE and five other databases, as well as hand-searching of 13 journals for the last 12 months. Eligible articles studied the effectiveness of CME using a randomized controlled trial or historic/concurrent comparison study design, were conducted in the U.S. or Canada, were written in English, and involved at least 15 fully trained physicians. Two independent reviewers conducted title scans, abstract reviews, and article reviews to identify eligible studies. We conducted sequential double review for data abstraction.
RESULTS: Of 136 articles that met eligibility, 46 (34%) reported the validity or reliability of one or more evaluation methods, for a total of 61 methods. Thirty methods were drawn from previous sources. 28 were created for the current study, and the sources for 3 methods were not clearly described. The most common types of outcomes assessed by these 61 methods were practice behaviors (20 methods) and knowledge / cognitive skills (15 methods). Table 1 describes the types of validity and reliability reported for the 61 methods. (Because methods may target multiple types of outcomes, numbers do not sum to the total of 61.) Validity was reported for 31 methods, and reliability was reported for 43 methods. When included, statistical tests yielded primarily modest evidence of reliability based on Cronbach-alpha, Kappa, or correlation statistics.
CONCLUSIONS: The overall evidence for effectiveness of CME is limited by weaknesses in the reported validity and reliability of evaluation methods. Greater resources should be devoted to the development and reporting of high quality CME evaluation methods, especially for key outcomes such as practice behaviors and clinical outcomes.

Table 1. Number of Evaluation Methods Sorted by Type of Validity / Reliability and Type of Learning Outcome

	Knowledge	Attitudes	Skills	Practice Behaviors	Clinical Outcomes
VALIDITY:					
Content	15	3	0	2	0
Concurrent criterion	1	1	1	6	2
Predictive criterion	0	0	0	1	0
Construct	3	0	0	2	0
Not specified	0	1	3	3	1
RELIABILITY:					
Internal consistency	12	8	2	6	3
Inter-rater	1	0	6	13	2
Intra-rater	0	0	0	2	0
Equivalence	3	0	0	1	0
Test-retest	3	2	0	3	0
Not specified	1	0	1	2	1

WHAT DO RESIDENTS KNOW AND HOW ARE THEY TRAINED IN HIV CARE? K.A. Phillips[1]; J. Cofrancesco[2]; S.D. Sisson[2]; T. Rice[2]; A.W. Wu[2]; E.B. Bass[2]; G. Berkenblit[2]. [1]Johns Hopkins School of Medicine, Baltimore, MD; [2]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 173948)*

BACKGROUND: Recent CDC guidelines call for dramatic changes in the way that we address HIV care in clinical practice. Implementation of the CDC guidelines can be expected to require increased HIV testing, risk reduction counseling, and basic management of newly diagnosed patients by general internists. We surveyed residents in the year prior to these new guidelines to determine the adequacy of current training in HIV care.
METHODS: We surveyed PGY-2 and 3 residents from 4 internal medicine training programs in different regions of the country. Surveys were conducted electronically and by mail from March-June 2006. Areas surveyed included: 1) experience in caring for HIV patients, 2) perceived educational value & competency, and 3) performance of basic HIV care including risk factor assessment, testing, and initial management. Statistical analysis was done using the chi squared test.
RESULTS: 223 of 367 residents responded (61%). Respondents were predominantly male (60%), Caucasian (35%), and planned to pursue a non-ID subspecialty (67%) or primary care (13%). Regarding their exposure to HIV care, residents stated their HIV training was mostly inpatient based with 112 (50%) providing care for >30 HIV inpatients. Comparatively 122 (55%) estimated that they provided care for only 1–5 HIV patients in their continuity clinic. All of the programs surveyed had a separate outpatient clinic for HIV patients and 102 (46%) residents had participated in an ID or HIV elective. Evaluation of attitudes and perceived competency demonstrated that taking care of patients with HIV was rated as an excellent educational opportunity by 198 (89%) of residents and 172 (77%) planned to take care of HIV patients in the future. However, only 135 (61%) stated that they felt

competent to provide ambulatory care for patients with HIV/AIDS. Residents reported deficiency in outpatient HIV training (34.1%) compared to outpatient non-HIV training (7.6%, $p < 0.05$) and compared to inpatient HIV training (4.5%, $p < 0.05$). In reported performance of care for those with/at risk for HIV, residents reported more frequently assessing drug use (94.2%), alcohol use (91.9%), housing status (69.5%), history of sexually transmitted diseases (58.3%), and prior testing (55.6%). They less frequently asked about self-perceived risk (55.2%), number of partners (47.5%), sexual orientation (44.4%), partners' risk factors (35.9%), and incarceration history (26.5%). When caring for HIV patients, residents reported that they more frequently initiated prophylaxis against opportunistic infections (85.2%), screened for hepatitis (72.2%), performed immunizations (69.1%), and tested for tuberculosis (65.9%). They less frequently discussed prevention with positives (60.5%) and partner notification (58.3%), screened for metabolic complications (51.6%), initiated antiretroviral therapy (35.4%), and ordered resistance testing (33.6%).
CONCLUSIONS: New CDC guidelines place increased responsibility for HIV prevention, testing, and initial care of HIV patients on general internists. Current residency HIV training remains predominantly inpatient based while outpatient training in this area is rated as inadequate by residents. Self report of performance shows deficiencies in aspects of risk factor assessment, testing and basic management of the HIV patient. These training issues will need to be addressed before the CDC guidelines can be effectively adopted.

WORK HOUR RESTRICTIONS AND INTERNAL MEDICINE RESIDENTS' HEALTH-RELATED QUALITY OF LIFE. A.M. Walling[1]; R.D. Hays[2]; J. Fish[1]; A.P. Mahajan[1]; J. Friedman[1]; N.S. Wenger[1]. [1]University of California, Los Angeles, Los Angeles, CA; [2]University of California, Los Angeles, Santa Monica, CA. *(Tracking ID # 172919)*

BACKGROUND: Work hour restrictions in medical training emerged because of safety concerns, but also are expected to enhance quality of life. While there has been considerable evaluation of the effect of work hour restrictions on care, information about effects on internal medicine residents' health-related quality of life (HRQOL) is needed.
METHODS: We asked internal medicine residents in one training program about how much they slept and we administered the SF-12 health survey to a sample before and after the institution of work hour restrictions. We compared SF-12 physical component and mental component summary scores (PCS and MCS, respectively) between the two samples.
RESULTS: Forty-seven residents (64% response) completed the survey prior to the implementation of work hour restrictions and sixty-four residents (68% response) completed the survey after. Age and gender did not differ statistically between the two samples, but the pre-intervention respondents were on fewer inpatient rotations (26% pre-intervention v 56% post-intervention) and included fewer interns (10% v 44%). SF-12 PCS scores were higher before (mean = 58) and after (mean = 58) the intervention than the average score for the 30–39 year old age group from the general U.S. population. The SF-12 MCS scores before (mean = 50) and after (mean = 49) the intervention were similar to the U.S. general population. There was no statistically significant difference in SF-12 PCS or MCS after work hour restrictions (80% power to detect 0.54 effect size). In addition, there was no statistical difference in the hours of sleep residents reported before versus after work hour restrictions.
CONCLUSIONS: During a two-year period, HRQOL did not improve with work hour restrictions. Follow-up data and surveys of other programs are needed.

DISCUSSING RELIGION AND SPIRITUALITY WITH HISPANIC PATIENTS. J.E. Kayman[1]; P.F. Wimmers[1]; L. Rapgay[1]; M. Stuber[1]. [1]University of California, Los Angeles, Los Angeles, CA. *(Tracking ID # 172599)*

BACKGROUND: The Hispanic population is the largest and fastest growing minority population in the United States. Providing culturally competent medical care to this population is crucial. It can lead to better information sharing, mutually satisfactory treatment goals, more complete follow-up, and ultimately, better health outcomes. Over the past decade, researchers and educators have argued that asking a patient about their religious or spiritual practices is an appropriate way to seek an understanding of patients' belief systems and cultural values. However, there is no quantitative study in the medical literature that addresses Hispanic patients' desire to discuss their beliefs with their physicians. The purpose of the study is: 1) to determine if Hispanic patients want their physicians to inquire about their religious/spiritual beliefs; 2) to determine the circumstances under which Hispanic patients are most interested in physician inquiry into their religious/spiritual beliefs; and 3) to characterize the population of Hispanic patients who wish to discuss their religious/spiritual beliefs with their physicians.
METHODS: A structured interview of 37 questions about patients' preferences regarding physician-initiated inquiry into spiritual or religious beliefs was implemented at a Los Angeles County Hospital that serves a predominantly Hispanic population. A convenience sample of 205 inpatients and outpatients participated in the interview. Eighty-nine percent of participants spoke Spanish as a primary language, 94% were born outside the US, and 99.5% were uninsured or receiving Medicaid. Results were characterized using descriptive statistics, Pearson chi-square testing, and binary logistic regression.
RESULTS: Many participants said that they wanted their physician to inquire about their religious and spiritual beliefs, but a significant proportion did not. Fifty-four percent of participants agreed that their physician should be aware of their religious or spiritual beliefs. Seventy-four percent of patients wanted an inquiry at the end of life, 48% wanted the inquiry during a hospitalization, and 32% wanted the inquiry during a routine office visit. Many respondents did not want their physician to inquire about their religious or spiritual beliefs, either because they preferred to hold this discussion only with a physician of similar beliefs (31%) or because they did not see any need for their physician to be aware of their beliefs (29%). Patients who wanted to discuss religion with a physician in the greatest number of circumstances were significantly more likely to be older, to be less educated, and to attend religious services more frequently.
CONCLUSIONS: The preferences of Hispanic patients regarding religious or spiritual inquiry by a physician match those found in other ethnicities. Physicians can enhance their communication with patients by addressing their spiritual and religious beliefs through open-ended inquiry. The belief system of the patient, the patient's perception of the physician, and the context of the discussion are all important determinants of whether a patient will want to explore their religious or spiritual beliefs during a medical encounter.

DIVERSITY AND DISCRIMINATION IN HEALTH CARE: THE PHYSICIAN PERSPECTIVE. M. Nunez-Smith[1]; M. Wynia[2]; C.M. Bright[3]; M.M. Desai[4]; H.M. Krumholz[1]; E.H. Bradley[1]. [1]Yale University, New Haven, CT; [2]University of Chicago, Chicago, IL; [3]Duke University, Durham, NC; [4]Yale University, West Haven, CT. *(Tracking ID # 173649)*

BACKGROUND: In its 2002 report, The Institute of Medicine recommended research into the role of health care discrimination to address well-documented inequalities in health. Prior studies have documented patients' perceptions of discrimination in health care settings, and our previous qualitative work found that physicians also witness and personally experience discrimination at work. Understanding the physician perspective is essential to support a diverse workforce and design interventions to counteract discrimination in the health care system for both providers and patients. However, the prevalence of these physician experiences has not been comprehensively studied.
METHODS: Using the AMA Masterfile, we surveyed a nationally representative random sample (n = 376 respondents, 37% response rate) of practicing physicians in the U.S. and randomly oversampled physicians of African descent using the membership roster of the National Medical Association. Using descriptive and bivariate analyses, we examined the prevalence of two major outcomes: personally-experienced discrimination and witnessed discrimination and examined the personal and professional characteristics associated with each outcome. We also queried participants on a range of views and experiences on diversity and discrimination in the health care system.
RESULTS: Overall, 27% of respondents reported personally experiencing discrimination in their current work setting. Personal characteristics that were significantly ($p < .05$) associated with a report of personal discrimination included: gender (45% of women, 21% of men), race (47% of blacks, 22% of whites, and 30% of Asians, Native Hawaiians and Other Pacific Islanders, and Other), and nativity (38% of non-US born, 23% of US born). Significant ($p < .05$) professional characteristics associated with a report of personal discrimination included: number of promotions at current workplace (34% of zero, 33% of one to two, 26% of three to four, and 10% of five or more), exposure to AMA code of ethics (28% of exposed, 15% of unexposed), and work setting (19% of those in hospital-based practice, 20% in private group practice, 24% in academics, 30% in community health centers, 35% in industry, 36% in solo practice, and 53% in group/staff model HMOs). When asked if they sometimes, often, or very often witnessed unfair treatment at work, participant's affirmative answers ranged from 10% due to physical disability to 32% due to race/ethnicity. Unfair treatment was most often directed towards patients and their families (28%), nurses (28%), and support staff (28%). When asked if the healthcare system sometimes, often, or very often treated individuals unfairly based on personal characteristics, the number of affirmative responses increased considerably, ranging from 25% due to religion to 71% due to insurance status. The majority of respondents (59%) were exposed to the AMA's Code of Ethics, but only 30% reported that issues of discrimination are discussed in their workplace.
CONCLUSIONS: Practicing physicians report witnessing and personally experiencing discrimination in the workplace and state that the healthcare system treats individuals unfairly based on personal characteristics. Addressing issues of diversity and discrimination in health care is essential to reduce and eliminate health inequalities.

DO RELIGIOUS BELIEFS INFLUENCE SURGICAL DECISIONS FOR PATIENTS WITH EARLY STAGE NON-SMALL CELL LUNG CANCER?. S. Cykert[1]; M. Monroe[2]; D. Gordon[3]; C. Brown[3]. [1]University of North Carolina at Chapel Hill, Greensboro, NC; [2]Carolinas Medical Center, Charlotte, NC; [3]East Carolina University, Greenville, NC. *(Tracking ID # 173642)*

BACKGROUND: Analyses of several sources of administrative data have shown differences in surgical rates for early stage, non-small cell lung cancer and worse

survival for black patients. None of these studies ascertain specific causes. A previous study suggested that strong religious beliefs might influence patients to decide against surgery. We report results pertaining to the first 65 patients recruited prospectively with newly diagnosed, non-small cell lung cancer.
METHODS: We have actively informed and maintained regular contact with pulmonary, oncology, and thoracic surgery practices in 4 North Carolina communities. We have also discussed this study and presented enrollment criteria at family practice and internal medicine staff meetings. Inclusion criteria are as follows: patients must be at least 21 years old, have either a tissue diagnosis or > 60% probability of non-small cell lung cancer using Bayesian methods, and be limited to Stage I or II disease with clinical and radiological testing. Patients are identified by direct referrals from practices and through utilization of a chest CT review protocol. After being informed of the diagnosis of probable or definite lung cancer, but before the establishment of a treatment plan, patients are administered a 100-item survey that includes questions pertaining to demographic information, trust, religion, physician-patient communication, and perceptions about lung cancer. The primary outcome is lung cancer surgery within 4 months of initial diagnosis. We are able to perform limited bivariate and logistic regression analyses to explore possible explanations for surgical decisions. The independent variables of interest include age, race, functional status, diagnostic certainty, and agreement or disagreement with the statements, "Faith alone can cure disease" and "I believe that prayer will cure my cancer".
RESULTS: We have recruited 112 newly diagnosed patients with early stage, non-small cell, lung cancer to date. Of these individuals, 65 have reached the 4 month post-diagnosis milestone. This group is 24% black, 60% married, 57% male, and 88% insured. Patient ages range from 44 to 90 years with a mean of 65. One-third of these patients have received greater than a high school education. Seventy-four percent have been treated with lung cancer surgery. Thirty-six percent agree with the statement, "Faith alone can cure disease" while 46% agree with "I believe that prayer will cure my cancer". In bivariate analysis 74% who agreed with the faith statement went on to lung cancer surgery compared to 76% of those that disagreed. Agreement and disagreement with the prayer statements showed the exact same results. These statements of faith were not associated with decisions for or against surgery in our regression models.
CONCLUSIONS: In our early analyses of surgical decisions in lung cancer care, we find no evidence that beliefs in the healing power of faith or prayer are associated with decisions to avoid surgery. Enrollment will double over the next 6 months providing more insight into religiosity and other etiologic issues as they relate to disparities in cancer care.

GREAT EXPECTATIONS: PARTICIPANTS VIEWS AND FUTURE PARTICIPATION IN GENETIC STUDIES. G.E. Henderson[1]; J.M. Garrett[1]; J. Bussey-Jones[2]; M. Moloney[1]; G.M. Corbie-Smith[1]. [1]University of North Carolina at Chapel Hill, Chapel Hill, NC; [2]Emory University, Atlanta, GA. *(Tracking ID # 173347)*

BACKGROUND: The promise of gene-environment research coupled with the high cost of large-scale cohort studies examining genetic and environmental etiologies of chronic conditions has resulted in proposals to engage individuals who have already participated in genetic research as an efficient recruitment method. However, little is known about the views of individuals who participated in such studies and their willingness to participate in future studies. We conducted phone interviews with participants in a genetic epidemiology study that elicited their knowledge and expectations about participation in genetic research.
METHODS: We surveyed African American and white colorectal cancer cases and controls who participated in the North Carolina Colorectal Cancer Study. Cases had an initial diagnosis of invasive colorectal cancer. Controls were drawn from DMV records and Medicare beneficiary lists. We analyzed 725 respondents' answers to two questions: how positive they felt about genetic research and how likely they were to participate in future genetic studies. For a sub-sample of 194, we analyzed responses to open-ended questions about their perceptions of genetic research for themselves, their families and society.
RESULTS: Our response rate was 74%. 82% of respondents were white, 18% African American, 58% male, and mean age was 64. Most were "very" or "somewhat" religious, 40% had high school education or less, 28% had a college or graduate degree. Most were "very positive" (63%) or "positive" (32%) about genetic research and reported being "very likely" (49%) or "somewhat likely" (40%) to participate in a genetic research study in the future. In multivariable analysis, being "not religious", hearing "a lot" about genetic research, and two measures of trust in medical research were significantly related to both being "very positive" and "very likely" to participate in the future (p.01). When asked to list the good and bad things about genetic research, half of the sub-sample of 194 respondents said there were no bad things and about 20% said they did not understand the question or did not know. Those who listed negatives mentioned anxiety, "knowing too much," loss of confidentiality or abuse of information, and the specter of designer humans that go "against nature." Most respondents described good things, including discovering the causes of disease, being aware of prevention strategies even without a cure, and the benefit that information itself can bring. Some expressed great expectations about such studies and a profound belief in the inevitability of medical progress. Others described cost-savings that genetic medicine would bring. However, a few worried that good will toward medical research "would not last without "results."
CONCLUSIONS: Not surprisingly, the majority of participants in a genetic epidemiology study were quite positive about genetic research and willing to participate in future studies. This good will, however, has limits, as participants noted that faith in medical progress was tied to an expectation of investigator responsibility to be realistic about the potential of genetic research. In addition, given the number of prior study participants who were unable to answer open-ended questions, researchers must not assume that prior experience in genetic research guarantees the ability to articulate the risk and benefits of this research.

PHYSICIANS USE PLACEBOS IN CLINICAL PRACTICE AND BELIEVE IN THE MIND-BODY CONNECTION. R.C. Sherman[1]; J. Hickner[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 173911)*

BACKGROUND: The placebo and the placebo effect are often investigated in the context of clinical trials. Little data exist on the use of placebos in the course of routine health care. The purpose of this study is to describe and explore placebo use in clinical practice, and academic physician knowledge, attitudes, and beliefs about placebos and the placebo effect.
METHODS: A 16-question anonymous web-based survey of physicians from internal medicine departments of three Chicago-area medical schools: The University of Chicago Pritzker School of Medicine, Northwestern University Feinberg School of Medicine, and the University of Illinois at Chicago School of Medicine. The sampling frame included all Chicago-area department of medicine physician faculty who publicly listed their email contact information. We inquired about the information given to patients who receive a placebo treatment, the perceived therapeutic value of placebos, circumstances accompanying placebo use, the perceived mechanism of action of placebos, and ethical stances about the use of placebos in routine care.
RESULTS: 231/ 466 (50%) physicians responded, of those 45% reported that they had used a placebo in clinical practice. The most common reasons for placebo use were to calm the patient and as supplemental treatment. Physicians did not widely agree on the definition of a placebo and had a variety of explanations for its mechanism of action. Ninety-six percent of the respondents believed that placebos can have therapeutic effects, and up to 40% of physicians reported that placebos could benefit patients physiologically for certain health problems. Only 12% of the respondents said that placebo use in routine medical care should be categorically prohibited. Regarding "placebo-like" treatment, 48% of respondents reported giving at least one type of treatment in a situation where there was no evidence of clinical efficacy.
CONCLUSIONS: We have found that academic physicians use placebos in clinical practice and believe in the mind-body connection although the results of this study, based on retrospective self-reported behavior, are subject to recall bias and may not be representative of American physicians.

PHYSICIANS' ATTITUDES TOWARD SURROGATE DECISION-MAKING: BEYOND BEST INTEREST AND AUTONOMY. A.M. Torke[1]; G.C. Alexander[1]; M.C. Simmerling[1]; M. Siegler[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 172224)*

BACKGROUND: When a physician cares for a patient who lacks decision making capacity, ethical theory can be an important source for guidance. The standard ethical approach to surrogate decision making is based first on the principle of respect for autonomy, through the use of advance directives and substituted judgment, and second on the principle of beneficence, or promoting and protecting the patient's interests. However, little attention has been given to how well these theoretical ethical standards are reflected in clinical practice or what is done in situations where there is conflict between the requirements of these principles.
METHODS: In-depth, semi-structured interviews about surrogate decision-making were conducted with physicians in an academic medical center. Each physician was interviewed at the conclusion of a month of inpatient service. Physicians were asked to describe a situation in which a patient was unable to make a major medical decision regarding the use of life-sustaining therapy, major surgery, or placement in another medical facility. Interviews were transcribed verbatim and independently read and coded by two researchers using methods of grounded theory. A third researcher read all interviews and participated in coding. Team meetings were held to reach agreement about the analysis and identify major themes raised in the physician interviews. All factors that physicians used to explain or justify their medical decisions were included in the present analysis.
RESULTS: Twenty of 21 physicians approached for the study had cared for a patient within the previous month who could not make medical decisions. These physicians reflected a breadth of training levels. One-third were female and one-third were non-white. Physicians identified seven different types of considerations that guided decision-making: the patient's wishes, the patient's interests, the surrogate's wishes, the surrogate's interests, duty and obligation, religion, the law, and clinical judgment. Individual physicians varied in terms of the primary guiding principles used in the cases described, which appeared in part to depend on the nature of the decision.
CONCLUSIONS: Although physicians engaged in surrogate decision making often rely on the traditional, patient-centered ethical principles of respect for autonomy and

best interest, they also consider the family's interests and wishes. Moreover, physicians appeal to other sources of authority such as clinical judgment, religion, and the law. These considerations suggest that physicians' decision-making framework is broader and more complex than previously thought and may rely on factors that have been ignored in traditional ethical models. In order to be useful for practicing physicians, future guidelines must explicitly address the appropriate role of these additional factors when physicians and families must make decisions for a patient who lacks decision-making capacity.

SELLING THEM THE ROPE: PREVALENCE OF FOR-PROFIT HEALTH CARE CORPORATE DIRECTORS AMONG ACADEMIC MEDICAL LEADERS. R.M. Poses[1]; W.R. Smith[2]; R. Crausman[3]; R. Maulitz[4]. [1]Foundation for Integrity and Responsibility in Medicine, Warren, RI; [2]Virginia Commonwealth University, Richmond, VA; [3]Memorial Hospital of Rhode Island, Pawtucket, RI; [4]Drexel University, Philadelphia, PA. *(Tracking ID # 171860)*

BACKGROUND: There is increasing concern about conflicts of interest (COI) affecting health care, particularly physicians' acceptance of small gifts and meals from company sales representatives. There are moves afoot to ban such COI. Recent anecdotes suggest that academic medical leaders may have more intense conflicts, however, which are rarely discussed. In particular, these leaders may also serve on boards of directors of for-profit health care corporations, and thus may have fiduciary duties to companies with which their academic institutions may do business. The purpose of this study was to estimate the prevalence of directors of for-profit health care corporations in the leadership of academic medicine.
METHODS: This was a cross-sectional prevalence study. Our population of companies were those considered "pure" health care companies among the Standard & Poors (S&P) 1500. Thus, these were the largest such companies whose stock was publicly traded in the US. All publicly traded companies are required to make public the membership of their boards of directors. We scrutinized biographies of all companies' board members publicly available as of the end of 2005 in the companies' proxy statements, annual reports or web-sites. We tabulated all directors who also held positions at or were leaders of US medical schools.
RESULTS: In 2005, there were 164 US health care companies in the 2005 S&P 1500, and 125 US medical schools. We identified 198 people who served on the companies' boards of directors who had faculty or leadership positions at these medical schools. Of the 125 medical schools, 65 schools had at least one faculty member and/or leader who also served on a health care corporation's board of directors. 15 schools had more than five, and 4 had more than 10 such individuals. Of the 125 schools, 7 reported to university presidents who were also directors of health care corporations, and 11 schools reported to vice-presidents for health affairs who were also such corporate directors. Four schools were lead by deans who were also health care corporate directors, and 10 schools had academic medical center CEOs who were such directors. 22 schools had at least one top leader who was also a director of a health care corporation. 36 schools reported to university boards of trustees which each included at least one director of a health care corporation, and 12 schools' own boards of trustees included at least one such director.
CONCLUSIONS: We found that more than one-half of US medical schools had a leader or faculty member who also was a director of a major US for-profit publicly traded "pure" health care corporation, more than one-sixth of schools had a top leader who was also such a director, and more than one-fifth reported to boards of trustees which included such directors. Our data only gives lower-bound estimates of the number of medical schools influenced or lead by people who also have fiduciary duties to health care corporations that may conflict with their academic leadership obligations. Severe conflicts of interest may be more prevalent in US academic medicine than was heretofore appreciated.

UNDERSTANDING PATIENT EXPECTATIONS IN EARLY-PHASE CLINICAL ONCOLOGY TRIALS. K.P. Weinfurt[1]; D.M. Seils[1]; J.P. Tzeng[1]; K.L. Compton[1]; D.P. Sulmasy[2]; A.B. Astrow[3]; K.A. Schulman[1]; N.J. Meropol[4]. [1]Duke University, Durham, NC; [2]St. Vincent's Manhattan, New York, NY; [3]Maimonides Medical Center, Brooklyn, NY; [4]Fox Chase Cancer Center, Philadelphia, PA. *(Tracking ID # 173147)*

BACKGROUND: There has been much debate about the ethics of early-phase clinical oncology trials. Participants in early-phase trials might misunderstand the nature of the trials to which they have consented. As evidence of this, some researchers cite participants' high expectations of personal benefit from their participation. It is unclear, however, what patients mean when they respond to questions about likelihood of benefit. In this study, we examined how patients' expectations depended on the way they were queried. We also explored how patients interpreted their own answers to questions about the chance of benefit.
METHODS: Participants were 27 women and 18 men enrolled in phase 1 or 2 oncology trials and randomized to 1 of 3 interview protocols corresponding to 3 "target questions" about likelihood of benefit: frequency-type ("Out of 100 patients who participate in this study, how many do you expect will have their cancer controlled as a result of the experimental therapy?"); belief-type ("How confident are you that the experimental therapy will control your cancer?"); and vague ("What is the chance that the experimental therapy will control cancer?"). In semistructured interviews, we queried participants about how they understood and answered the target question. Each participant then answered and discussed one of the other target questions.
RESULTS: Participants tended to provide higher expectations in response to the belief-type question (median, 80) than in response to the frequency-type or vague-type questions (medians, 50) ($P = .02$). Only 7 (16%) participants said their answers were based on what they were told during the consent process. The most common justifications for responses involved positive attitude ($n = 27$ [60%]) and references to physical health ($n = 23$ [51%]). References to positive attitude were most common among participants with high (> 70%) expectations of benefit ($n = 11$ [85%]) and least common among those with low (< 50%) expectations of benefit ($n = 3$ [27%]) ($P = .04$).
CONCLUSIONS: We identified two important factors that should be considered when determining whether high expectations of benefit are signs of misunderstanding. First, participants report different expectations of benefit depending on how the question is asked. When asked about the chance that they will benefit personally, participants gave responses that were about 30 percentile points higher than when they were asked about the relative frequency of benefit in a population of patients. Second, the justifications participants give for their answers suggest that many participants use their responses to express hope rather than to describe their understanding of the clinical trial. Thus, there might be a significant mismatch between the goal of the interviewer (ie, to query understanding) and the goal of the participant (eg, to cultivate and express a positive attitude in the hope that it will improve their outcomes). This makes it challenging to assess patient understanding in early-phase oncology trials. Based on our findings, researchers should consider disclosing risks and benefits in terms of relative frequency rather than individual terms (eg, "The chance that you will benefit is..."). Researchers and clinicians involved in the consent process should also consider providing patients with an opportunity to express confidence in their particular outcome before querying them regarding their understanding about the trial's potential benefits.

A MULTILEVEL CONTROLLED INTERVENTION TO INCREASE COLORECTAL CANCER SCREENING AMONG LATINO IMMIGRANTS. A. Aragones[1]; F. Gany[1]; N.R. Shah[1]; M.D. Schwartz[1]. [1]New York University, New York, NY. *(Tracking ID # 173166)*

BACKGROUND: Latino immigrants have significantly lower rates of colorectal cancer (CRC) screening compared to the general population. Low screening rates may be due to lack of physician recommendation, patient cultural barriers or poor patient CRC knowledge. We examined the effectiveness of a multilevel intervention comprised of an educational CRC video and brochure for the patient and a paper-based reminder for the physician in increasing the rate of CRC screening among Latino immigrants at a primary care clinic in an urban hospital.
METHODS: All consenting physicians in the primary care clinic ($N = 64$) were randomized to intervention or usual care. Consecutive Latino immigrant patients of participating physicians who were eligible for CRC screening were recruited to participate in the study and were assigned to the group to which their physician had been randomly assigned. Intervention patients were asked to watch a CRC educational video on a portable player in the waiting room before the visit with their physician took place. Upon finishing the video, the patient was given a brochure with key information from the video and a paper reminder to show to his/her physician. Patients in the control group received usual care. The primary outcomes were: 1) guideline-concordant recommendation of any CRC screening test and 2) patient adherence to physician recommendation for CRC screening. To compare the rates of CRC screening between the intervention and the control group we used contingency table analysis and Chi-square tests. We used logistic regression analysis to assess the effect of the intervention and recommendation for CRC screening, adjusting for intra-class correlations (physician effect) and other covariates.
RESULTS: Interim analyses were conducted for the first 52 patients enrolled, (24 intervention and 28 control group). Mean participant age was 60 years, 59% were female, 58% had some high school or higher education, 48% were married, mean years since moving to the United States was 27 and 60% had health insurance at the time of recruitment, and no significant differences between intervention and control group patients were found. Overall rate of completed screening for CRC was 33.3% for the intervention group and 17.9% for the control group, $p = 0.16$. Eight (33%) of the patients in the intervention group received a physician's recommendation for CRC screening compared with ten (35%) of the patients in the control group, $p > 0.54$. Among those who were recommended for CRC screening, all eight (100%) in the intervention group adhered to their provider's recommendation for CRC screening, versus five of ten (50%) of the patients in the control group, $p < 0.03$.
CONCLUSIONS: Rates for CRC screening in both groups were low and consistent with previous studies. While the intervention had no effect thus far on physician recommendation rate, it was associated with increased patient adherence to recommended CRC screening test. Although patient activation through education benefits patient adherence to CRC screening, the rate limiting factor appears to be physician recommendation. Efforts should be focused on developing new strategies to increase referral for CRC screening.

A SYSTEMATIC REVIEW OF SCREENING TESTS FOR MALE OSTEOPOROSIS. N.M. Paige[1]; H. Liu[2]; C.L. Goldzweig[1]; E. Wong[3]; A. Zhou[4]; B. Munjas[1]; P. Shekelle[5]. [1]VA Greater Los Angeles Healthcare System, Los Angeles, CA; [2]Division of Endocrinology & Metabolism, Stanford University School of Medicine, Stanford, CA; [3]Division of Endocrinology & Metabolism, VA Greater Los Angeles Healthcare System, Los Angeles, CA; [4]RAND Corporation, Santa Monica, CA; [5]VA Greater Los Angeles Healthcare System, RAND Corporation, Santa Monica, CA. *(Tracking ID # 173236)*

BACKGROUND: Male osteoporosis remains a significantly underdiagnosed condition. We performed a systematic review to determine the test characteristics of osteoporosis screening tests in men.
METHODS: We searched PubMed for articles evaluating osteoporosis in men from 1990–2006. We included articles that evaluated an osteoporosis screening test against a gold standard (ie, central DXA (cDXA) or prior fractures) and performed independent dual abstractions for each article. We used meta-analytic techniques to determine summary screening test sensitivity and specificity and evaluated our results against previously published results from the literature. We used the QUADAS tool to assess the quality of included articles.
RESULTS: We evaluated 563 articles in total for possible abstraction. 26 articles, evaluating 26,142 subjects, met inclusion criteria, including: 6 articles that evaluated quantitative calcaneal ultrasound (QUS) against cDXA; 3 articles that evaluated the Osteoporosis Self-Assessment Test (OST) against cDXA; and 7 articles that evaluated QUS against prior fractures. Half of the studies reviewed did not evaluate subjects representative of a primary care population. At a calcaneal T-score threshold of −1.0, QUS had a sensitivity of 75% and specificity of 66% to identify cDXA-determined osteoporosis (cDXA T-score −2.5). At a calcaneal T-score threshold of −1.5, QUS specificity improved to 78% but sensitivity dropped to 47%. These results are comparable to those recently published in a meta-analysis of QUS evaluating primarily women (AnnIntMed 2006;144:832). At an OST risk score threshold of −1, we found that the OST had a sensitivity of 81% and specificity of 68% to identify cDXA-determined osteoporosis. At all thesholds evaluated, the OST had a higher sensitivity and specificity than QUS. Meta-analytic pooling could not be performed on other test modalities due to substantial heterogeneity in testing methods.
CONCLUSIONS: Data on screening tests for osteoporosis are much more limited for men than for women. The available data suggest that QUS has a sensitivity and specificity in men similar to that seen in women. Limited data support that the OST, which evaluates only weight and age, may be at least as sensitive and specific as QUS in men. A common limitation is the use of selected rather than general populations for assessment. More research is needed to better assess the relative value of these tests in the general male population.

ACCURACY OF NURSE PREVENTIVE SERVICES SCREENING IN A STANDARDIZED ROOMING PROCESS IN AN AMBULATORY PRIMARY CARE INTERNAL MEDICINE PRACTICE.. B. Thorsteinsdottir[1]; S. Tulledge-Scheitel[1]; R. Chaudhry[1]; R. Stroebel[1]; S. Mason[1]; M.A. Hansen[2]; S.K. Houle[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN; [2]Mayo Clinic, Rochester, MN. *(Tracking ID # 173496)*

BACKGROUND: Primary care practices nationwide struggle with ways to augment their adherence to national guidelines for the provision of preventive services to patients. In a large academic medical centre, a standardized rooming process was developed to increase adherence rates and awareness. This study was performed to assess the accuracy of the nurse review and its impact on guideline adherence by patients and physicians.
METHODS: In a large primary care group practice of 40 physicians, 96 resident, 24 Registered Nurses, 23 Licensed Practical Nurses (LPN) and over eight-thousand patient visits a year, a standardized process was developed for rooming patients. Twenty minutes were allowed for a patient-nurse visit prior to the physician visit. During this visit the LPN obtains vital signs, reviews the patients medications and screens for preventive services and immunizations that are due. The LPN enters the findings into a preliminary note in the electronic medical record and creates a preliminary order for those preventive services due. The provider reviews these orders and authorizes as appropriate. To evaluate the accuracy of the LPN preventive service review, 108 patient charts were prospectively sampled over a two and a half month period using random number tables. Two reviewers reviewed the preliminary LPN generated note against the age appropriate US Preventive Service Guidelines. The electronic medical record was then reviewed for any patient specific contraindications or other reasons for exclusion.
RESULTS: The LPN s accurately identified 105/108 vaccinations due and correctly identified all preventive services for 99/108 patients. The errors in identifying and recording the age/gender specific preventive services were; 4 patients were not screened for sexually transmitted diseases , 2 patients had the wrong type of colon screening documented, one patient was over the screening age for cervical cancer screening, one patient was not offered osteoporosis screening and one patient had the wrong date for the most recent prostate specific antigen screening. Providers ordered the services due in 38/60 preventive cases. When orders were not put through by the physician, there was documentation of refusal by the patient in 10 cases but no documentation of reason for deviation from preventive service guidelines in the remaining patients. Vaccinations due were administered by the nurses per protocol without physician authorization unless contraindicated or declined by the patient. Of 29 immunizations due, 6 were administered per protocol, 18 patients had documented refusal, 2 patients had contraindications. Three patients had no documentation, one of these patients had declined preventive service screening and this was documented.
CONCLUSIONS: Nurses are accurate in identifying preventive services due. Allowing for designated time at each patient visit to review patients preventive care needs, improves the identification of patients due for preventive services and increases the likelihood of the physician ordering preventive services for patients. However this review also illustrates the inherent errors in obtaining a preventive service history from patients and recording information from the electronic medical record. Further opportunities for feedback to nursing staff and physicians have been identified as the process is not 100% in delivery of services to patients who are due for the services.

ACTIVE SMOKING AND INCIDENCE OF TYPE 2 DIABETES: A SYSTEMATIC REVIEW AND META-ANALYSIS. C. Willi[1]; P. Bodenmann[2]; W.A. Ghali[3]; J. Cornuz[1]. [1]Department of Community Medicine and Public Health, University Outpatient Clinic & Institute of Social and Preventive Medicine, Lausanne University, Lausanne, ; [2]Department of Community Medicine and Public Health, University Outpatient Clinic, Lausanne University, Lausanne, ; [3]Department of Medicine and Community Health Sciences, Calgary, Alberta. *(Tracking ID # 171891)*

BACKGROUND: Several epidemiologic studies suggest a link between active smoking and incidence of type 2 diabetes. However such studies have never been systematically synthesized and a formal sytematic search on this association has never been performed. Here we present a systematic review with meta-analysis of studies assessing the link between active smoking and incidence of type 2 diabetes, glucose intolerance or impaired fasting glucose.
METHODS: We searched Medline and Embase databases from 1966 to october 2006 and bibliographies of key retrieved articles. Studies were included if they reported risk of glucose irregularities (type 2 diabetes, glucose intolerance or impaired fasting glucose) with respect to smoking status. Two authors independently reviewed each potential study for eligibilty, assessed data quality and extracted data. To be included in our review, studies needed to be original cohort studies (prospective cohorts or historical cohort studies). We transformed odds ratios (OR) into relative risks (RR) and considered hazard ratios (HR) and incidence density ratios (IDR) as RR. We conducted meta-analyses of the results both with and without adjustment for confounding factors. We used the meta command on STATA 9.0 to pool the log RR.
RESULTS: From 2245 retrieved abstracts, 148 were considered as potentially eligible after a first screen. 18 studies met the inclusion criteria after a second screen based on full text review. All were prospective cohort studies. Type 2 diabetes incidence was the main outcome of all studies and 2 studies also considered impaired fasting glucose or impaired glucose tolerance. We have therefore chosen type 2 diabetes as the principal outcome of all studies. We included a total of 1,136,124 subjects without pre-existing diabetes. Mean age of study participants was 50.9 years and mean body mass index (BMI) was 25 kg/m2. During the average follow-up of 8 years (5–17 years), 45,229 incident cases of diabetes were identified. All studies reported active smoking as a risk factor of type 2 diabetes, with adjusted RR ranging from 1.06 to 3.74. The corresponding pooled adjusted RR from a random-effects model was 1.18 (95% confidence interval (CI):1.13–1.23). This pooled result needs to be interpreted with some caution as the Q statistic revealed heterogeneity of results across studies and also because a funnel plot analysis revealed some asymmetry. A sub-group analysis was performed, for which we considered only the seven studies in which type 2 diabetes was biologically screened (as opposed to self-reported), and this suggested an even greater risk of diabetes associated with active smoking (adjusted RR 1.24, 95% IC 1.15–1.33) (P for heterogeneity 0.13).
CONCLUSIONS: We found a consistent finding of increased risk of type 2 diabetes among active smokers, though the magnitude of risk varies somewhat across studies. This association may be causal and future research should attempt to clarify mechanisms. In the interim, clinicians should consider mentioning avoidance of diabetes to their patients as yet another reason to stop smoking.

AN INTERACTIVE COMPUTERIZED CARDIOVASCULAR RISK MODULE HIGHLIGHTS MISPERCEPTIONS AND UNDER-TREATMENT OF RISK FACTORS AMONG HEALTH FAIR PARTICIPANTS. T.D. Mackenzie[1]; S.M. Coronel[2]; B. Leeman-Castillo[2]; B.B. Bartelson[2]; L. Jensen[2]; C. Kapral[2]; R. Estacio[1]; M.J. Krantz[3]. [1]Denver Health and Hospital Authority, Denver, CO; [2]Colorado Prevention Center, Denver, CO; [3]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 173754)*

BACKGROUND: Aggressive management of poorly controlled cardiovascular risk factors, especially among adults at high risk for a first or recurrent cardiovascular event, prevents heart attacks and saves lives. Many population-based studies, however, reveal poor adherence to established cardiovascular prevention guidelines. We sought to evaluate the relationships between perceived ten-year cardiovascular risk, self-reported risk factor treatment, and actual cardiovascular risk.
METHODS: Participants at 26 of Colorado's 9Health Fair events, in both rural and urban settings, were asked to complete a self-administered interactive bilingual computerized risk assessment module housed in touch-screen kiosks. Participants entered their own risk factor data and when they selected "I don't know" for blood pressure or cholesterol, the program imputed values based upon age, gender, and body mass index. A ten-year cardiovascular risk score was computed using the Framingham

formula. For participants with prior cardiovascular events or procedures, 10% was added to the calculated Framingham risk score.
RESULTS: A total of 4834 adult health fair participants started the computer module and 4797 (99%) completed the risk assessment. Mean age of participants was 57 years. 86% were white, 62% were female, and 80% had some college education. 10% of the population smoked, 5% had diabetes, and 5% had known cardiovascular disease. 25% of participants were taking regular aspirin for their heart, 22% were taking blood pressure medicines, and 15% were taking lipid lowering medicines. Among the 890 individuals who knew their blood pressure, total cholesterol, and HDL cholesterol values, 25% had a moderate (10–20%) ten-year Framingham risk score with 10% demonstrating a high (>20%) risk score. Among the 603 participants with a high risk score (including those with imputed values), 224 (37%) believed they were at low risk for developing cardiovascular disease at the start of the program. Conversely, only 5% of the 2485 participants with a low calculated risk score believed they were high-risk. Among high-risk participants with hypertension (self reported or measured systolic blood pressure >140 mm Hg), 52% were not taking blood pressure medicines. Among high-risk participants with hypercholesterolemia (total cholesterol >200 mg/dL), 78% were on no lipid lowering medicines. Among the 2485 participants with a low calculated risk score, 417 (17%) were taking aspirin for their heart.
CONCLUSIONS: In our sample, adult health fair participants at high-risk for heart attack and stroke underestimated their risk despite being well educated. Among high-risk individuals, self-reported pharmacologic treatment of blood pressure and lipids is suboptimal. Paradoxically, despite a low risk for cardiovascular events, many participants take regular aspirin for their heart, which exposes them to increased bleeding risk without proven cardiovascular benefit. These findings suggest an important treatment gap exists in Colorado with regard to both appropriate and inappropriate medical therapy.

ARE LITERACY AND NUMERACY ASSOCIATED WITH WORSE PORTION SIZE ESTIMATION SKILLS?. A. Carlisle[1]; M. Huizinga[1]; D. Davis[1]; R. Gregory[1]; R.L. Rothman[1]. [1]Vanderbilt University, Nashville, TN. *(Tracking ID # 172777)*

BACKGROUND: Portion size estimation skills are important for following dietary recommendations in the treatment and prevention of chronic diseases, including obesity, diabetes and heart disease. Over 90 million adults have low literacy and numeracy (quantitative) skills that may make portion size estimation difficult. This study seeks to determine patient's ability to estimate portion size and to examine the correlation of portion size estimation with literacy and numeracy skills.
METHODS: 400 participants will be enrolled from primary care clinics. Participants complete surveys about their dietary practices and nutrition education as well as validated surveys of health literacy (REALM) and numeracy (WRAT-3R). Portion size estimation skills are tested by having patients serve themselves three solid foods and one liquid. Participants are asked to: (1) serve the amount they normally eat, (2) serve the amount they think one "standard serving" is, and (3) after being told the actual serving size based on current FDA guidelines (e.g. 8 oz of juice), to serve that amount. Participants' servings of each food item are weighed and compared to the FDA standard serving sizes. Patients were considered to correctly estimate portion size if they were +/− 10% of the FDA standard size.
RESULTS: To date, 70 patients have completed the study. Average age of participants is 46.7 (SD 15), 81% are female and 47% are African American. While 84% have ≥ high school education, 36% have <9th grade literacy skills on the REALM, and 83% have <9th grade math skills on the WRAT-3R. Mean BMI is 31.6 (SD 8.8), 17% have diabetes, 41% hypertension and 13% heart disease. Poorer numeracy but not literacy was associated with increased BMI (rho = −0.33, $p < 0.01$). When asked to demonstrate their normal portion intake, 27% underestimated, 13% correctly estimated, and 60% overestimated compared to standard FDA sizes. When asked to demonstrate the amount they think one standard serving size is for each food item: 55% underestimated, 18% correctly estimated, and 27% overestimated. When told to measure the actual standard serving size (ex. 8oz of juice): 57% underestimated, 17% correctly estimated, and 26% overestimated portion size. Higher numeracy but not literacy was associated with higher chance of ones normal intake of food equaling within 10% of one standard serving size ($p = 0.004$). Numeracy or literacy levels were not significantly correlated with a patient's ability to estimate a single serving size or to accurately measure a standard size.
CONCLUSIONS: To date, we have found that most patients have difficulties accurately estimating portion size intake. Numeracy, but not literacy appears to be associated with higher BMI and more inaccurate estimation of ones normal intake of food when compared to standard sizes. Thus far, we have not found literacy and numeracy to be associated with a person's ability to estimate portion size or standard measuring sizes. This may be related to the fact that patients of all literacy and numeracy levels have poor portion size estimation skills. Opportunities may exist to improve patient estimation of serving size to improve nutrition adherence and health outcomes.

ARE PRIMARY CARE CLINICIANS KNOWLEDGEABLE ABOUT SCREENING FOR CHRONIC HEPATITIS B INFECTION?. M. Dulay[1]; J. Zola[2]; J. Hwang[1]; R. Baron[1]; C. Lai[1]. [1]University of California, San Francisco, San Francisco, CA; [2]San Francisco Department of Public Health, San Francisco, CA. *(Tracking ID # 172535)*

BACKGROUND: Many individuals who are at risk for chronic hepatitis B virus (HBV) infection have not been screened despite interacting with healthcare providers. One barrier to screening may be primary care clinicians' lack of knowledge about high-risk populations, screening guidelines and management of chronic infection.
METHODS: We distributed a multiple-choice HBV knowledge survey to 250 attendees at a university-based continuing medical education (CME) conference designed for primary care clinicians in October 2006. The questions evaluated clinicians' knowledge about screening for chronic HBV (6 questions), chronic HBV management (3 questions), and HBV prevalence in different at risk populations (5 questions). The primary outcomes were the proportion reporting the correct screening test for chronic HBV (hepatitis B surface antigen [HBsAg]) and a knowledge score that summed the number of correct responses (minimum 0, maximum 14). We used bivariate analysis to assess sociodemographic factors that were associated with knowledge of HBV including Asian language ability, Asian ethnicity, practice site, type of clinician, years since graduation, and number of clinical practice days per week.
RESULTS: Of the 250 surveys distributed, 196 were completed (78% response rate). Respondents included 70% physicians, 14% nurse practitioners and 10% physician assistants. The median years of clinical experience was 21 (range 0–51). Their ethnicity was 70% Caucasian, 11% Asian, 6% Latino, and 0.5% African-American. Only 45% of respondents correctly identified HBsAg as the sole screening test. In bivariate analysis, knowledge that HBsAg is the correct screening test was more prevalent among Asian providers vs. other ethnicities (68% vs. 43%, $p = 0.02$), physicians vs. non-physicians (56% vs. 23%, $p < 0.001$), those with more years since graduation (21 years vs. 17, $p = 0.02$), and among those with more time spent in clinic (3.8 days vs. 2.5, $p = 0.002$). The mean knowledge score was 10.6 out of 14 (±2.2). Physicians had a higher knowledge score than non-physicians (11.0 vs. 9.8, $p < 0.001$). Although most physicians appropriately identified Chinese immigrants as having a higher prevalence of chronic HBV than Caucasians (94%), many incorrectly identified individuals with HIV (40%), men who have sex with men (41%), and injecting drug users (60%) as having a higher prevalence of chronic HBV than Chinese immigrants. Nearly half of respondents (44%) were unaware that chronic HBV could be controlled by medication, and 25% incorrectly answered that chronic HBV is curable. Most clinicians (93%) were aware that individuals with chronic HBV should be screened for liver cancer.
CONCLUSIONS: A significant number of clinicians attending a primary care CME conference have important knowledge gaps about chronic HBV infection. Improving primary care clinicians' knowledge about hepatitis B and their awareness of at risk populations may improve detection of individuals who are chronically infected with HBV and thereby reduce the rate of cirrhosis and liver cancer in that population.

ASSESSING ADHERENCE TO THE AMERICAN COLLEGE OF CHEST PHYSICIANS' (ACCP) RECOMMENDATIONS FOR THROMBOPROPHYLAXIS IN HOSPITALIZED ACUTE MEDICAL PATIENTS. A.N. Amin[1]; S. Stemkowski[2]; J. Lin[3]; G. Yang[2]. [1]University of California, Irvine, Orange, CA; [2]Premier, New York, NY; [3]Sanofi Aventis, New York, NY. *(Tracking ID # 172961)*

BACKGROUND: Evidence-based guidelines are available to help clinicians assess patient risk for venous thromboembolism (VTE) and to recommend prophylaxis options for patients at risk of VTE. This study evaluates whether clinicians are providing appropriate thromboprophylaxis to at-risk non-surgical inpatients in accordance with ACCP guidelines.
METHODS: Premier's Perspective™ inpatient administrative database was used to assess VTE prophylaxis rates in seven acute medical conditions (acute myocardial infarction [AMI], lung disease, stroke, heart failure, cancer, spinal cord injury, trauma). Only patients age 40 or older, with a minimum length of stay of six days, and no contraindications for anti-coagulation were included in the study. Two rates were determined; the rate of discharges receiving any level of anticoagulation and the rate of patients receiving appropriate prophylaxis by comparing daily use of anti-coagulants and compression devices, dosage of anti-coagulant, and prophylaxis duration with the ACCP recommendations. The 6th guidelines were used due to their release prior to the study period. VTE prophylaxis rates based on the 7th guidelines were also calculated for the same patient cohort to assess how the revised guidelines affect our findings. Rates were assessed across geographic region, hospital demographics, and attending physician specialty. Trends were assessed by comparing prophylaxis rates for each quarter.
RESULTS: 196,104 patients from 227 hospitals discharged between January 2002 and September 2005 met the inclusion criteria. While 62% of at-risk discharges received some level of VTE Prophylaxis, only 33% of all discharges received the appropriate prophylaxis regimen recommended in the 6th guidelines. Rates varied by diagnosis ranging from 20% in non-surgical trauma to 49% in stroke discharges. 43% of acute myocardial infarction (AMI), 40% of heart failure, 31% of severe lung disease, 27 percent of cancer, and 22 percent of non-surgical acute spinal cord injury patients received appropriate VTE prophylaxis. 38% did not receive any anti-coagulation prophylaxis, 6.3% received insufficient dosage and 16.7% did not receive prophylaxis for the appropriate duration. Trends suggest a slight increase in appropriate prophylaxis rates for lung disease, cancer, and trauma discharges. Regional variation is evident ranging from 28% in New England to 37% in the Mid-Atlantic. Results suggest an association between hospital bed size and compliance level as rates ranged from 28 percent in hospitals with fewer than 100 beds to 38 percent in hospitals over 500 beds Appropriate prophylaxis rates based on 7th guidelines are lower than rates based on the 6th guidelines due to the more specific recommendation in the 7th guidelines.
CONCLUSIONS: Acute medical patients are known to have significant risk for VTE, yet VTE prophylaxis for this patient population is not optimal. More effort is required to increase awareness of the ACCP recommendations for thromboprophylaxis in at-risk medical patients.

ASSESSING QUALITY OF THE PSA SCREENING DECISION: INTEGRATING SHARED DECISION MAKING INTO PRIMARY CARE. C.D. Brackett[1]; N. Cochran[2]; M. Coutermarsh[1]; S. Kearing[3]; C. Clay[1]; B. Brooks[1]. [1]Dartmouth Hitchcock Medical Center, Lebanon, NH; [2]White River Junction VAH, White River Junction, VT; [3]Dartmouth Medical School, Hanover, NH. *(Tracking ID # 173617)*

BACKGROUND: Prostate cancer screening with the prostate-specific antigen (PSA) blood test is controversial, and the decision to screen should be guided by patient preference. The quality of this decision reflects the patient's knowledge and understanding of the relevant information and concordance of the decision with the patient's values. Engaging patients in decision making during office visits is challenging, especially in primary care. The goal of this study was two-fold: 1) assess feasibility of integrating a PSA screening decision aid (DA) into the routine process of primary care practice, and 2) assess impact of the DA on patient decision making.
METHODS: We systematically distributed a PSA screening video DA to eligible men (age 50–75) at Dartmouth Hitchcock Medical Center (DHMC, n = 242) and White River Junction VA Hospital (VAH, n = 215). Patients were asked to: 1) complete a pre-DA questionnaire, 2) watch the DA "PSA Screening: Is It Right for You?", and 3) complete a post-DA questionnaire. Measurements included pre/post screening intention, values influencing the decision (Likert: 1–10 importance), multiple choice knowledge questions, preference for decision making role, and DA acceptability. Analysis focused on within sample and across site distributions of treatment choice, knowledge and values scores.
RESULTS: After watching the DA, a substantial number of patients changed their intention for PSA screening (DHMC: 24%, VAH: 31%). Patients at both sites were less likely to be unsure about their decision and more likely to opt out of PSA screening after viewing the DA ($p < .01$). Knowledge scores after the DA were high (93% DHMC, 87% VAH), indicating patients understood key facts associated with their decision. Patients' value of "Desire to know if you have cancer" was strongly associated with patients leaning toward PSA screening (OR = 1.8, 95% CI 1.4–2.9); while patients who felt it was important to "Avoid worry from false alarm" were more likely to choose no PSA screening (OR = 0.7, 95% CI 0.6–0.9). Patients had a clear preference for taking the lead role in decision making (63%, 71%) or sharing the decision with their clinician (35%, 29%). Patients found the DA helpful in making their decision (87, 85%) and would recommend it to others (94, 96%).
CONCLUSIONS: The systematic distribution of a PSA screening decision aid to patients in primary care practice is feasible. Patients prefer an active role in decision making regarding PSA screening, and the DA helped them make this decision. After watching the DA, patients demonstrated an understanding of the key facts and concordance between their values and their choice, indicative of quality decision making. Patients found the DA acceptable and would recommend it to others facing the same decision. This process is likely to be appropriate for other preference-sensitive decisions in primary care.

Table 1: Patient PSA Screening Intention, Before vs. After DA

Intention	DHMC		VAH	
	before DA	after DA	before DA	after DA
Unsure	49 (22%)	32 (14%)	69 (35%)	35 (18%)
No screening now	42 (19%)	77 (35%)	62 (31%)	99 (50%)
PSA screening now	132 (59%)	114 (51%)	67 (34%)	63 (32%)
Change intention		59 (24%)		66 (31%)

BARRIERS TO COLORECTAL CANCER SCREENING IN AN INTERNAL MEDICINE RESIDENCY CLINIC. A. Blomberg[1]; R.O. Halperin[1]. [1]Providence Portland Medical Center, Portland, OR. *(Tracking ID # 172556)*

BACKGROUND: Colorectal cancer is the 2nd leading cause of cancer death in the United States. Despite the fact that colorectal cancer screening has been shown to decrease deaths in multiple trials, national screening rates remain low. Screening rates in our clinic, where many of the patients are underserved and internal medicine residents provide much of the care, was found to be even lower than the national rate. Our objective is to identify patient barriers to colorectal cancer screening in an internal medicine residency clinic population.
METHODS: Computerized medical record review of male and female patients aged 50–80 years old. A patient was considered to be screened if there was any documented fecal occult blood testing, sigmoidoscopy, or colonoscopy in the electronic record at any time since the patient established care and met the age criteria for screening. We looked at many covariates which are likely to be factors in getting screened including age, sex, provider type, and insurance status. We then constructed models using multivariate logistic regression to determine risk of being screened for colon cancer.
RESULTS: The mean age of our study population was 61.8 years, with 62.1% of the population being women. 67.3% of the study population had a resident physician as their primary care provider. 735 out of a total of 1705 (42.9%) patients underwent any form of colorectal cancer screening. A multi-variate analysis showed multiple significant predictors of barriers to colorectal cancer screening, including, male gender 0.80 (95% CI, 0.65 to 0.99), having Medicaid 0.23 (95% CI, 0.08 to 0.66) or being uninsured 0.39 (95% CI, 0.25 to 0.61), and having a resident provider 0.24 (95% CI, 0.16 to 0.35). Patients with PPO insurance plans and traditional Medicare were not significantly more likely to be screened than the reference group which was defined as those patients with traditional commercial insurance. Being involved in a Medicare advantage plan was the only type of insurance significantly associated with increased screening compared to patients with traditional insurance with OR of 2.85 (95% CI, 1.73 to 4.70).
CONCLUSIONS: Among patient seen in an internal medicine residency clinic, those who are male, less than 59 years of age, uninsured or insured with Medicaid, or see resident physicians, are less likely to receive colorectal cancer screening. Having commercial insurance with an exclusive provider organization or traditional Medicare did not improve the odds of being screened. Only patients with a Medicare advantage plan had significantly increased odds of being screened. One feature of the Medicare advantage plans is the inclusion of colorectal cancer screening as a benefit with minimal additional out-of pocket cost to the patient. It is possible that the out-of pocket costs associated with colon cancer screening, which can approach several hundred dollars with some insurance types, may be a deterrent to colorectal cancer screening. We found that patients whose primary care provider was a resident were also less likely to be screened. This may reflect the relative inexperience of the residents but also could be a marker for the characteristics of patients that are cared for by residents.

CANCER SCREENING IN THE AMBULATORY SETTING BY RESIDENT PHYSICIANS. P.G. An[1]; J.M. Ashburner[1]; F.W. Blair[1]; S.J. Atlas[1]. [1]Massachusetts General Hospital, Boston, MA. *(Tracking ID # 172480)*

BACKGROUND: Increased efforts to improve the ambulatory curriculum in internal medicine (IM) residency training include age-appropriate cancer screening. Internal medicine residents must not only be aware of current screening guidelines, but also employ them successfully in their primary care practices. There is limited data on the effectiveness of residents in screening for breast, cervical, and colorectal cancer. We sought to ascertain whether year of training and status as a primary care (PC) versus traditional categorical (C) IM resident influenced cancer screening rates.
METHODS: A retrospective review of electronic medical records at Massachusetts General Hospital identified all patients seen by IM resident physicians in the ambulatory setting between July 1 and December 31, 2005. Patients eligible for cancer screening based upon age and gender without a contraindication to screening (e.g. prior surgery) were identified and completion status ascertained. Eligible patients who had not completed screening by December 31, 2005 were then prospectively assessed for testing status from January 1 to June 30, 2006. Screening rates for breast, cervical and colorectal cancer were then compared for first, second, and third year IM residents, as well as between PC and C residents. The primary outcome was test completion rates in those without screening and having a visit during the follow-up study period, and the secondary outcome was test completion rates in all patients seen.
RESULTS: A total of 143 internal medicine residents saw 3,729 patients between July 1 and December 31, 2005. By IM resident year of training, screening rates for breast (71% vs. 67% vs. 77%), cervical (73% vs. 73% vs. 77%), and colorectal cancer (55% vs. 55% vs. 56%) did not differ significantly, although patients of third year residents had slightly higher breast and cervical cancer screening rates. Among patients overdue for a screening examination, test completion rates over the subsequent six months were also similar between first, second, and third year residents. However, PC residents outperformed their categorical counterparts. Controlling for year of training, PC residents demonstrated higher rates of screening for all cancer types in the same six-month follow-up period as follows: 46% vs. 28% for breast cancer ($p = 0.12$), 24% vs. 19% for cervical cancer ($p = 0.36$), and 22% vs. 12% for colorectal cancer ($p = 0.01$).
CONCLUSIONS: Although cancer screening rates were similar for IM residents based upon year of training, patients of primary care residents overdue for a screening examination had higher completion rates than those cared for by traditional IM residents. Future studies should identify which aspects of the outpatient experience and/or curriculum are associated with the higher rates observed among primary care resident patients. If the curriculum is in part responsible for improved outcomes, then it should be expanded to include all internal medicine residents.

CHANGES IN RATES OF PSA TESTING AMONG AMERICAN MEN. W.R. Farwell[1]; J. Linder[2]; A.K. Jha[1]. [1]VA Boston Healthcare System, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 172982)*

BACKGROUND: Physicians often order a prostate specific antigen (PSA) to screen for prostate cancer despite a lack of compelling evidence that this practice is beneficial. Given that significant debate regarding PSA testing has occurred during the past 10 years, it is unclear whether testing rates have changed. Therefore, we examined whether the rate of PSA testing by physicians changed during the most recent 10 year period and whether there were pre-specified subgroups of men including age and racial groups for whom testing rates changed substantially.
METHODS: We examined the 1995–2004 National Ambulatory Medical Care Surveys of visits to primary care providers by men aged ≥35 years, excluding those with a diagnosis of prostate cancer. We calculated the percentage of visits in which physicians ordered PSA tests for each calendar year. We then created multivariate logistic regression models to calculate the probability that a physician ordered a PSA test after adjusting for patient and provider characteristics. We further determined whether rates of PSA testing changed among subgroups of men during the second half of the study period (2000–2004) compared to the first half of the study period (1995–1999).
RESULTS: Men 35 years of age or older made approximately 100 million annual clinic visits to primary care providers between 1995 and 2004. The frequency of physicians ordering PSA tests increased from 4.7% of visits in 1995 to 7.0% of visits in 2004. In multivariate analysis, PSA testing in this population increased at an annual rate of 5% per year from 1995 through 2004 (95% CI 2%, 9%). Compared to PSA testing during 1995–1999, the odds of a physician ordering a PSA test increased 123% (95% CI 37%, 264%) among blacks during 2000–2004. Similarly, the likelihood increased 25% (95% CI 3%, 53%) among men aged 50–74 years and 73% (95% CI 22%, 145%) among men

aged 35–49 years. Among men aged 75 years or greater, we found that the likelihood of a physician ordering a PSA test increased 28% in 2000–2004 compared to 1995–1999 although this was not statistically significant (95% CI −14%, 190%).
CONCLUSIONS: During a period of intense debate about the utility of a PSA test for prostate cancer screening, PSA testing rates increased. In addition, not only are physicians ordering PSA tests more frequently among men perceived to be at high risk for prostate cancer such as blacks, but also among men perceived to be at low risk for prostate cancer such as men under the age of 50.

CHANGES IN READINESS AND DRINKING IN PRIMARY CARE PATIENTS WITH UNHEALTHY ALCOHOL USE. N. Bertholet[1]; N.J. Horton[2]; R. Saitz[1]. [1]Boston University, Boston, MA; [2]Smith College, Northampton, MA. *(Tracking ID # 173375)*

BACKGROUND: Brief counselling interventions (BI) for unhealthy alcohol use are modestly effective in primary care. Assessing readiness to change is recommended as part of BI and physicians are encouraged to help patients increase readiness. How readiness changes in response to BI and how it relates to subsequent behavior change (i.e. drinking) is not well known. An understanding of behavior change mechanisms is important to enhance the effectiveness of BI. Therefore we studied changes in readiness, and predictors of changes in readiness and drinking after a primary care visit.
METHODS: We studied patients with unhealthy alcohol use (>4 standard drinks/occasion or 14 drinks/wk for men, >3 drinks/occasion or 7 drinks/wk for women) who participated in a randomized trial of providing clinicians with patient's screening results. Before, immediately after, and 6 months after a primary care visit, participants were assessed on 2 measures of readiness to change drinking (visual analogue scales (VAS) 1–10, and Readiness to Change Questionnaire (RTCQ, −24 to +24) and 2 related factors (VAS for importance of changing and confidence in ability to change). We used generalized estimating equation linear regression models accounting for clustering of patients by physician. Adjusted models included randomization group, demographics, having a partner, being employed, alcohol consumption and related problems, and discussion with the clinician about alcohol. Changes in readiness importance and confidence were immediate post-visit outcomes. Four 6-month outcomes were no past 30-day unhealthy alcohol use (determined using a validated calendar method) or improvement in readiness (VAS, RTCQ), no unhealthy use or improved importance, and no unhealthy use or improved confidence.
RESULTS: Of the 173 participants, 58% were men, 58% African American, 16% Latino, 18% White, 68% had a partner, and mean age was 43. Pre-visit mean (SD) VAS score was 5.0 (3.1) for readiness, 6.0 (3.6) for importance, 7.8 (2.6) for confidence. Mean (SD) RTCQ was 3.3 (6.8). After the visit, participants had mean increases in readiness (VAS +1.0 p<.0001 and RTCQ +0.1 p<.0001), importance (+0.2 p=0.002), and confidence (+0.5 p=0.001). In adjusted models, having had a discussion with the physician about alcohol was associated with increases in readiness (VAS +0.8 p=0.037 and RTCQ +1.2 p=0.032) as were not having a partner (VAS +1.1 p=0.007), and being African-American (VAS +1.3 p=0.007) or Latino (VAS +1.8 p=0.003) compared to white. The other covariates were not significant predictors of readiness or related factors (p>.1 except alcohol related problems for VAS readiness p=0.088). Six months later, most participants had improvements in drinking or VAS readiness (61%), importance (58%) or confidence (56%). There were no significant predictors of these improvements in the hypothesized directions (p<.1), except for confidence (p=0.009) and importance (p=0.018), where not having a partner was a negative predictor.
CONCLUSIONS: Readiness, importance and confidence improved in patients with unhealthy alcohol use after a primary care visit during which there was limited, if any, intervention. These changes have potential for leading to clinically important decreases in drinking. Six months later, most patients had improvements in drinking or readiness, importance and confidence. These improvements suggest primary care physicians should be optimistic regarding the course of unhealthy alcohol use.

COLORECTAL CANCER SCREENING: PERCEIVED BARRIERS AND FACILITATORS IN A LATIN AMERICAN POPULATION. E.R. Casal[1]; E. Velazquez[1]; R.M. Mejia[1]; A. Cuneo[1]; E. PéRez-Stable[2]. [1]Universidad de Buenos Aires, Buenos Aires, ; [2]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172953)*

BACKGROUND: In Argentina, colorectal cancer (CRC) is the second leading cause of cancer death. Although there is strong evidence favouring implementation of screening starting at age 50, there is local controversy about this recommendation due to physicians' and patients' perceptions and attitudes regarding adequacy and appropriateness of this practice. Our objectives were: 1.To describe patient's attitudes, opinions and knowledge about the tests used for CRC early diagnosis and the percentage of patients who already used any of these tests; 2.To explore associations between the analyzed variables and having ever had CRC screening.
METHODS: A telephone survey was administered to a random sample of affiliates from DOSUBA, an HMO that serves employees of the University of Buenos Aires. 190 Participants with no history of CRC were selected from a list of 7700 members, 50 years of age. The questionnaire in Spanish was adapted from previously used instruments in California and pre-tested for cultural and linguistic appropriateness. It included questions on demographics, knowledge about CRC screening and prognosis, religiosity and fatalistic thoughts, and the use of screening procedures for CRC early diagnosis. Responses were in a Likert type scale and were dichotomized for analysis.
RESULTS: 132 patients completed the questionnaire (response rate 70%). The median age of the population was 58 years and 67% were women. 79.5% had more than twelve years of education, 2.3% were unemployed, and 82.6% reported at least a good or excellent health status. Attitudes and opinions about CRC early diagnosis were positive with 70 to 97% of patients agreeing with questions like "Screening can find things that with time transform into cancer". Negative attitudes and opinions averaged 16%, but were higher for questions like "fear of adverse events" 39% and "being embarrassed by the procedures" 30.1%. Fatalistic thoughts like "Having good health is not dependent on me" were agreed to by an average of 22.9% of respondents, with one question "Having good health is a present from God" agreed by 48.4%. Of the 132 respondents, 44 (30%) had ever done at least one procedure for CRC early diagnosis (27 FOBT, 11 Sigmoidoscopy and 20 Colonoscopy). Age, sex, living with a partner or income was not associated with ever having done a CRC screening test. A majority stated that they "will do the procedure if doctors recommend it", or "not do it unless my doctor advises to do it" (96.9 and 86.7%). Answering affirmatively that "physicians will do the best for their patients" was associated with ever having had a CRC screening test OR 1.55 (95% CI=1.02–2.37) P=.04.
CONCLUSIONS: The population studied has in general a good attitude and favourable opinions in relation with CRC early diagnosis. Fatalistic thinking has a low prevalence. A small proportion of this population has ever had a CRC screening test mainly FOBT. Physician's recommendation was highly valued as a reason to have CRC screening and the perception of physicians' professionalism is associated with ever having had a CRC screening test.

DESCRIPTIVE ANALYSIS OF HURRICANE KATRINA EVACUEES SEEN AT THE FOSCO PARK WELCOME CENTER IN CHICAGO. A. Katz[1]; P. Ricks[2]; W. Wong[3]; B. Boodram[2]; N. Westercamp[2]; L. Rosul[2]; D. Gonzalez[2]; O. Abid[2]; D. Broz[2]; R.C. Hershow[2]; V.W. Persky[2]. [1]John H. Stroger Hospital of Cook County, Chicago, IL; [2]University of Illinois at Chicago, Chicago, IL; [3]Chicago Department of Health, Chicago, IL. *(Tracking ID # 171916)*

BACKGROUND: Hurricane Katrina displaced over 1 million people from the Gulf Coast. Approximately 8,000 of these evacuees sought refuge in the Chicagoland area. The City of Chicago established a Welcome Center from September 5 and September 23.During this two week period, the Welcome Center saw 5,373 total guests. The Welcome Center placed 519 families in housing, conducted 919 medical and 241 mental health exams. The Chicago Department of Public Health (CDPH) asked the Student Epidemiology Corps of the University of Illinois at Chicago School of Public Health to abstract data from medical records from the Welcome Center charts. The purpose of the data abstraction was to present the CDPH with a description of the scope of the medical assistance given at the Welcome Center, and to develop a database that could easily be accessed for follow-up care.
METHODS: An abstraction form was developed to collate demographic information, hurricane exposure information, and information on the scope of both acute and chronic medical illnesses. A coding system was used to 1) categorize the purpose of the visit, 2) track medications with potential morbid side effects, and 3) categorize acute and chronic illnesses. Criteria for urgent follow-up were determined by the study team for the severity and instability of medical condition and the use of certain medications with potential morbid side effects.
RESULTS: A random sample of 564 charts was abstracted at the Welcome Center (61%). While most of the patients were adults (n=412, 77%), there were some age 0–18 (n=56, 11%). Most of the patients were female (n=306, 58%, 36 missing). Data on race was limited (62% missing). Of the126 (22%) patients where hurricane exposure data was available, 13 (10%) were exposed to floodwaters. Patients were seen for chronic illness care (52% n=350), acute illnesses (34%, n=228), and tetanus immunizations (7%, n=46). The three most common acute illnesses were upper respiratory infections (URI) (22%, n=75), non-infectious dermatitis (11%, n=38) and gastrointestinal complaints (8%, n=23). Patients exposed to floodwaters were more likely to be treated for cellulitis (n=6) (OR 33.6, p=0.003, 95% CI 3.2–35.3). Of 58 chronic medical conditions, the three most common were hypertension (n=170, 21%), depression (n=67, 9%) and asthma (n=64, 8%). One third of the hypertensive patients had blood pressure readings >160 systolic. 13 patients were sent to the Emergency Room and 63 patients had chronic conditions that were assessed by physicians to require follow-up within the next month (for laboratory or clinical monitoring). The most common reasons for urgent follow-up were patients on insulin (n=17, 27%), antiarrhythmics (n=6, 10%), and psychotropics (n=6, 10%).
CONCLUSIONS: Person displaced to Chicago from Hurricane Katrina-effected areas were commonly affected by acute illnesses like URIs, dermatitis, and asthma exacerbation. However, health issues pertaining to underlying chronic conditions were the preeminent issue for this group of evacuees. Jurisdictions receiving persons displaced by disasters must consider the importance of medication continuity and rapid establishment of health care access for person with chronic illnesses in need of urgent follow-up care.

DIAGNOSING OSTEOPOROSIS: FACTORS ASSOCIATED WITH BONE MINERAL DENSITY TESTING OF OLDER WOMEN. L. Davisson[1]; M. Warden[1]; S. Manivannan[1]; M.M. Kolar[2]; C. Kincaid[1]; S. Bashir[1]; R. Layne[1]. [1]West Virginia University, Morgantown, WV; [2]Louis A. Johnson Department of Veterans Affairs Medical Center, Clarksburg, WV. *(Tracking ID # 172294)*

BACKGROUND: Osteoporosis is a major public health problem. National guidelines recommend routine osteoporosis screening of all women aged 65 and older. The current rate of screening, most commonly done via bone mineral density (BMD) testing, appears to be inadequate. Understanding factors associated with BMD testing might be useful in developing interventions to improve screening rates. Thus, this study was conducted to determine factors associated with BMD testing of women 65 and older in several primary care settings.

METHODS: The study population consisted of a stratified random sample of all women who were at least 65 years old at the time of a follow-up visit to any of four primary care practices in 2004. These practices were a community Veterans Administration clinic (VA) and three academic practices: general internal medicine (GIM), gynecology (GYN), and family medicine (FM). Factors potentially related to screening for osteoporosis were identified a priori. Payor status was used as a surrogate for socioeconomic status (SES). Subjects having any type of commercial insurance were considered to be high SES. A composite burden of illness factor was constructed and included number of medications, number of visits, and number of total and unique ICD-9 codes. A review of all available records (paper charts, electronic medical records, and billing data) was performed.
RESULTS: The study cohort was 809 subjects. The overall BMD testing rate was 42.9%. Provider factors found to be associated with BMD testing included practice type, gender, and level of training. GYN had the highest rate of BMD testing (72%), which was significantly higher than the rates of FM (42%), GIM (36%), and VA (30%), $p < .0001$. Provider gender was associated with BMD testing, with female providers having higher rates of testing (54% vs. 31%, $p < .0001$). Faculty had the highest rate of BMD testing (48%), followed by mid-level providers (35%), then residents (21%), $p < .0001$. Patient factors found to be associated with BMD testing included age, body mass index (BMI), SES, and burden of illness. BMD testing was less likely with increasing patient age ($p < .0001$) and with increasing patient BMI ($p = .0089$). The high SES group had a higher rate of BMD testing (48%) compared to the rest of the subjects (25%), $p < .0001$. Number of medications, number of visits, and number of total and unique ICD-9 codes were each negatively associated with BMD testing ($p = .0029$, $p = .0367$, $p = .0034$, and $p = .0256$, respectively). The composite burden of illness factor was also found to be negatively associated with BMD testing ($p = .0072$).
CONCLUSIONS: We have shown that there are significant differences in BMD testing rates depending on several provider and patient factors. We hope that identifying these factors associated with BMD testing will help in developing targeted interventions to improve compliance with BMD testing recommendations and improve health care quality.

DOES OBESITY DECREASE SCREENING FOR CERVICAL CANCER? N.M. Maruthur[1]; S. Bolen[1]; F.L. Brancati[1]; J.M. Clark[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 172494)*

BACKGROUND: Obesity is a known risk factor for mortality from cervical cancer. One contributory factor may be that obese patients are less likely to undergo screening. To determine whether decreased cervical cancer screening is associated with obesity, we conducted a systematic review.
METHODS: Using PubMed, we conducted a systematic review and meta-analysis of original English language articles which addressed our research question. We excluded studies which: 1) applied non-standard screening guidelines or 2) classified body-mass index (BMI) in a non-standard fashion. Standard BMI categories were defined as: 1) dichotomous (< 30 kg/m^2 or ≥ 30 kg/m^2) or 2) categorical (normal 18.5–25 kg/m^2, overweight 25–30 kg/m^2, class I obesity 30–35 kg/m^2, class II obesity 35–40 kg/m^2, and class III obesity ≥ 40 kg/m^2). Data were abstracted sequentially by two reviewers and disagreements adjudicated. Using the DerSimonian and Laird method, random effects models were used to calculate a pooled odds ratio for cervical cancer screening according to BMI for the studies which used multiple categories of BMI.
RESULTS: Of 3766 citations, 5 studies were included. In the 3 studies that classified BMI into 5 categories, the pooled odds ratios for cervical cancer screening showed a strong, graded, inverse association between BMI and self-reported screening in the previous 2–3 years (See Figure 1.). Both studies that reported BMI as a dichotomous variable also showed an inverse association between BMI and cervical cancer screening.

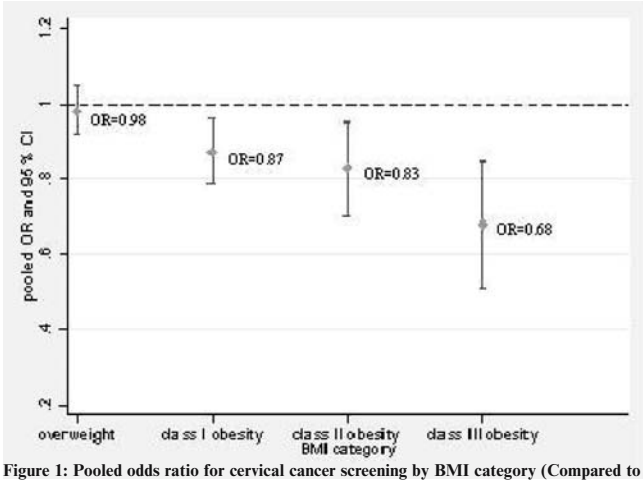


Figure 1: Pooled odds ratio for cervical cancer screening by BMI category (Compared to normal BMI).

CONCLUSIONS: In population-based studies, there was a strong, graded, inverse relationship between BMI and screening for cervical cancer. Whether this association stems from physician decision-making or patient discomfort or embarrassment requires further investigation.

DOES READINESS TO CHANGE PREDICT SUBSEQUENT ALCOHOL CONSUMPTION IN MEDICAL INPATIENTS WITH UNHEALTHY ALCOHOL USE? N. Bertholet[1]; D. Cheng[1]; T. Palfai[1]; J.H. Samet[1]; R. Saitz[1]. [1]Boston University, Boston, MA. *(Tracking ID # 173078)*

BACKGROUND: Assessment of readiness to change is part of recommended brief counseling interventions (BI) for unhealthy alcohol use (risky drinking, alcohol abuse, dependence). How readiness relates to subsequent alcohol consumption is not well known particularly for hospitalized patients. Therefore we studied whether readiness to change predicts alcohol consumption 3 months later in medical inpatients with unhealthy alcohol use.
METHODS: We studied medical inpatients at an urban academic hospital who were drinking risky amounts (> 14 drinks/wk or 5drinks/occasion for men, > 11 drinks/wk or 4 drinks per occasion for women and persons aged 66 and over) who were participants in a randomized trial of brief intervention. At baseline (in the hospital) and 3 months later, alcohol consumption was assessed using a validated calendar method, and readiness to change was assessed with the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES). Based on a factor analysis in this sample, we used a 2 factor structure for analyses: 1-"Perception of problems" and need for help, and 2-"Taking action". We used Poisson regression analyses that allowed for overdispersion to model the number of standard drinks per day at 3 months based on quartiles of each SOCRATES factor. Separate models were fit for each SOCRATES factor and each controlled for baseline drinking and randomization group.
RESULTS: Of 341 subjects enrolled, 337 had SOCRATES data and 81% (272) completed follow-up (with no important differences in baseline characteristics between those with and without follow-up). Most of the participants were men (71%), 76% had alcohol dependence, 45% were African-American, 9% Hispanic, 39% White, 26% reported heroin or cocaine use, and mean age was 44 years. They drank a median (25th and 75th percentiles) 3 (1, 9) drinks per day (past 30 days). Baseline median SOCRATES score (25th and 75th percentiles) were Perception of problems 39 (28, 44) and Taking action 22 (18, 26). In adjusted models, the 3 highest quartiles of Perception of problems were significantly ($p < 0.05$) associated with more than double the number of drinks per day at 3 months relative to the lowest quartile [incidence rate ratios (IRR) and 95% confidence intervals (CI) for the 2nd, 3rd, and 4th quartiles: 2.19 (1.13, 4.23), 2.66 (1.40, 5.04), 2.31 (1.20, 4.45)]. However, those in the highest quartile of Taking action drank about half as much at 3 months compared to those in the lowest quartile [IRR (95% CI) 0.45 (0.25, 0.83]; no significant associations were observed for the 2nd [IRR 0.92 (0.57, 1.49)] or 3rd quartiles [IRR 1.10 (0.69, 1.77)].
CONCLUSIONS: In hospitalized medical patients with unhealthy alcohol use, perception of problem and need for help is associated with more, not less, drinking and may reflect severity rather than an aspect of readiness associated with ability to change. On the other hand, a measure of readiness that reflects volition or commitment to change appears to predict less drinking. These two constructs or components of readiness to change appear to operate quite differently. Although assessing readiness to change may have clinical utility as part of brief counseling interventions, assessing the patient's planned actions may have more predictive value for future improvement in alcohol consumption. These findings suggest that counseling that supports self-efficacy may be particularly useful for medical inpatients with unhealthy alcohol use.

EFFECT OF CLINICAL RISK FACTORS ON OSTEOPOROSIS SCREENING. K. Jain[1]; F.F. Homayounrooz[2]; J. Zuleta[3]. [1]George Washington University, Washington, DC; [2]Saint Mary's Hospital, Waterbury, CT; [3]University of Miami, Miami, FL. *(Tracking ID # 173510)*

BACKGROUND: Osteoporosis is a significant public health problem affecting approximately 200 million women worldwide. More than 1.5 million osteoporotic fractures occur in the US each year. Bone densitometry examination with DXA scanning is an important tool in identification of patients at risk for fractures. In this study we examined how the presence of risk factors for individual patients affected their rate of bone mineral density testing.
METHODS: This study is a cohort prospective quality improvement study to enhance adherence to osteoporosis screening guidelines in eligible/at risk patients. This is a collaborative multi-institutional study consisting of 12 different sites. Female patients, age 65 or older as of June 1, 2004 who have a regular doctor at the clinic, were recruited from each clinic site. Three hundred and seventy- one patients completed the patient questionnaire and viewed a power point presentation about osteoporosis. Three hundred thirty- two patient charts were reviewed for evidence of prior osteoporosis screening. The data on risk factors were collected from the patient questionnaire and the chart review. These factors included weight, white race, history of fracture, family history of osteoporosis, smoking and chronic use of steroids. Descriptive data were compiled and both bivariate and regression analyses were performed.
RESULTS: We present the results from the 371 patient surveys at 12 clinical sites. The mean age of participants was 74 years (age range: 65–100). Of 332 charts reviewed, 132 patients (40%) had a completed DXA screening done. There was a significant association found between DXA screening and low weight ($p = 0.00$), white race ($p = 0.00$), history of fracture ($p = 0.03$), family history of osteoporosis ($p = 0.03$) and smoking (0.01). No significant association was found with DXA Scan and chronic use of steroids. Using a logistic regression, the association of low weight (OR 2.72, 95% CI 1.28–5.78) and white race (OR 2.72, 95% CI 1.56–4.52) remained significant on DXA screening, while controlling for demographic data and other risk factors.
CONCLUSIONS: Clinical risk factors except for chronic steroid use significantly inproves osteoporosis screening rate. It is well known that the use of systemic steroids are a potent cause of osteoporosis and thus a potential source of substantial morbidity in patients who are already sginificantly disabled by their underlying condition.

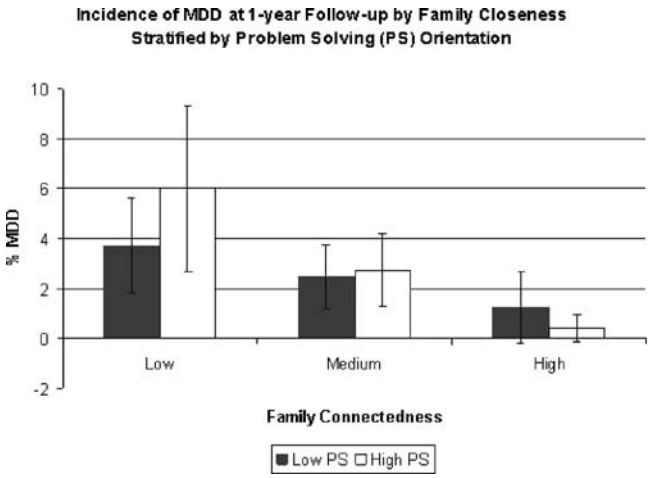
Increasing physician and patient awareness of chronic steroid use as well as other clinical risk factors may lead to aggressive screening practices.

EFFECTIVENESS OF A MAILED INTERVENTION TO INCREASE COLORECTAL CANCER SCREENING IN AN ACADEMIC PRIMARY CARE PRACTICE: A CONTROLLED TRIAL. C. Lewis[1]; A.T. Brenner[1]; J.M. Griffith[1]; R.M. Malone[1]; M. Pignone[1]. [1]University of North Carolina at Chapel Hill, Chapel Hill, NC. *(Tracking ID # 172738)*

BACKGROUND: Colon cancer screening is underutilized and effective methods are needed to increase its utilization in primary care practice.
METHODS: We conducted a controlled trial to test the effectiveness of a mailed intervention to increase colon cancer screening in an integrated academic primary care practice with attendings and residents practicing together in one system. Eligible patients were those adults ages 50–75 seen within the past two years who were not up to date with CRC screening, based on a query of institutional endoscopy billing databases and the practice's FOBT database. Eligible patients were divided alphabetically into intervention and wait-list control groups. Assessment of this intervention was conducted in two waves: a first wave for patients of attending physicians and a second, larger wave for patients primarily of resident physicians. Intervention patients received a mailed packet containing a letter from the practice documenting the need for screening, a brief survey, information about how to directly obtain screening, and the opportunity to request a copy of a decision aid about screening options. Reminder letters were sent at 1 and 2 months. Control patients were not contacted. Outcomes were documented completion of any CRC screening test after the date of the intial mailing. Documentation of screening test completion was determined by medical record review of intervention and control patients conducted by two independent reviewers 5–6 months after the initial mailing.
RESULTS: Database review identified 1711 eligible patients: 389 in wave a (all patients of attending physicians) and 1322 in wave b (1036 patients of residents and 286 others) Mean age was 61.5, 54% were women, 56% were white and 37% African-American. Patients of attending physicians were similar to those of residents in age and gender, but were more likely to be African-American (26% vs 41%). The intervention increased screening compared with controls for patients in wave a (13.4% vs. 4.1%, difference 9.2% 95% CI 3.8%, 14.8%) but not for wave b (2.2% vs. 2.2%, difference 0% 95% CI −1.5, + 1.5). Multivariate logistic regression, controlling for age, race, and gender of participants, did not alter these relationships.
CONCLUSIONS: A mailed intervention effectively increased colon cancer screening for patients of attending physicians but not for patients of resident physicians. Further research is needed to determine effective interventions for patients of resident providers.

FACTORS PREDICTING NEW ONSET MAJOR DEPRESSION IN A REPRESENTATIVE SAMPLE OF U.S. ADOLESCENTS: IMPLICATIONS FOR PRIMARY CARE AND COMMUNITY-BASED PREVENTION. D. Paunesku[1]; J. Ellis[1]; S.A. Kuwabara[2]; J. Gollan[3]; A. Basu[1]; B.W. Van Voorhees[1]. [1]University of Chicago, Chicago, IL; [2]Illinois Institute of Technology, Chicago, IL; [3]Northwestern University, Chicago, IL. *(Tracking ID # 173020)*

BACKGROUND: Primary care and community-based preventive interventions for depressive disorders during adolescence targeting pessimistic cognitions and poor problem solving skills have demonstrated inconsistent results. A better understanding of the factor structure underlying multiple vulnerability and protective behaviors predicting onset of future depressive disorder is needed to develop appropriately targeted and effective preventive interventions. We used the National Longitudinal Study of Adolescent Health (AddHealth) public use data set to identify factors predicting new onset major depression (MDD) at 1 year follow-up.
METHODS: This representative sample of United States adolescents (grades 7–12) included a baseline survey (1995) and a 1 year follow-up survey (N = 4,791 completed both surveys). We identified more than 100 cognitive, interpersonal, school, family and community variables related to predictive models for MDD. We used confirmatory factor analysis (CFA) with varimax rotation on all candidate variables to identify factors, retaining those with eigen values > 1.0, and assessed the internal consistency of each factor with Chronbach's Alpha. Using baseline factors and adjusting for gender, ethnicity, and family income, we conducted logistic regressions to determine which factors predict new-onset major depression at one year follow-up (MDD).
RESULTS: The sample was 48% male, 57% white, 23% African American, 11% Hispanic, 8% other, and had a mean age of 15.7 years. Five factors (Eigen, Alpha) were indentified: family (7.76, 0.86), school (2.45, 0.79), church (2.28, 0.80), delinquency (1.77, 0.71) and problem solving (1.46, 0.74). The family factor (closeness to parents and family social support or "connectedness") was protective against new onset MDD (OR = 0.48 , 95% CI 0.36, 0.56). Adverse experiences outside of the home predicted higher risk of MDD even after adjustment for demographic characteristics. These included a school factor (lack of connection to school/classmates, OR 2.15, 95% CI 1.43, 3.03), a church factor (lack of religious belief/activity, OR 1.68 95% CI 1.33, 2.12), and delinquency (anti-social behaviors, OR 2.20 95% CI 1.58, 3.05). The problem solving factor (skills and orientation) did not directly affect MDD, but did significantly interact with the protective effects of family. Suprisingly, strong problem solving (top quartile) in a low connectedness families (bottom quartile) may predict increased risk of MDD compared to low problem solving (6.0% versus 3.6%) while in the high connectedness families, strong problem solving was associated with a greater reduction in risk of MDD compared to weak problem solving (1.2% versus 4.0%). The family factor was the largest single contributor to the unadjusted predictive model (68%).
CONCLUSIONS: Family, school, church and delinquency factors, rather than cognitions and problem solving, may be the critical factors predicting new onset MDD at one year follow-up. High self-reported problem solving may amplify the vulnerability to MDD associated with low connectedness family relationships. Teaching problem solving alone may not be sufficient to prevent onset of MDD in primary care and community populations.



FIREARMS IN MAJOR MOTION PICTURES, 1995–2004. I.A. Binswanger[1]; J. Cowan[2]. [1]University of Colorado Health Sciences Center, Denver, CO; [2]University of Michigan, Ann Arbor, MI. *(Tracking ID # 171852)*

BACKGROUND: Firearm related injuries and deaths are a major cause of morbidity and mortality in the US. Media exposure influences heath and safety behaviors in both children and adults. The prevalence and nature of portrayal of firearms and firearm safety messages in major motion pictures is unknown. We sought to determine the (1) prevalence of movie scenes which depict firearms, the screen time with firearms, and the prevalence verbal firearm safety messages; (2) Motion Picture Association of America rating and genre of movies with firearms; and (3) types and numbers of firearms, criminal context, and injuries and deaths in firearm scenes.
METHODS: The 10 highest box-office grossing motion pictures were selected each year from1995 to 2004 from the Box Office Guru (www.boxofficeguru.com) database, excluding fully animated, pure science fiction/fantasy, or period (non-contemporary) motion pictures. For the 100 movies sampled, the Motion Picture Association of America rating, genre, and media length were recorded. Firearm scenes began when any firearm (handgun, rifle, or hand-held automatic weapon) came into view either on or within reach of a character and ended when the firearm had been removed from view and it or another other firearm did not return to view for . > 10 seconds. The following data were recorded for each firearm scene: type of firearm(s), number of firearms, scene context (crime or no crime), firearm discharge, injuries or deaths, and verbal messages about gun safety. Data collection by a trained movie coder occurred on dual monitor computer workstations using Microsoft Windows Media Player™ and a Javascript™ timer. Each movie was viewed twice by the same coder, and 15% of the movies were viewed by another coder to determine inter-coder reliability. All scene and character level variables reported had reliability (I_R) coefficients ≥0.85. We calculated the prevalence of firearm scenes in movies, the number and duration of firearm scenes, the prevalence of verbal firearm safety messages, and the injuries and deaths depicted in firearm scenes. Data analyses were conducted using Stata/SE 9.2
RESULTS: Seventy of the 100 highest grossing movies had scenes with firearms. 624 firearm scenes amounted to 12% of screen time in 100 movies, and 17% of screen time in movies with firearm scenes. Among movies with firearm scenes, the median firearm screen time was 13 minutes per movie (range < 1–68). The majority of movies with firearms were rated PG-13 (n = 41) and were Action/Adventure (n = 42). A verbal reference to safety was made in 0.8% (n = 5) of firearm scenes. Among firearm scenes, handguns were shown in 75% (n = 469), automatic weapons in 35% (n = 220), rifles in 22% (n = 137), and > 1 type of firearm was shown in 28% (n = 174). More than five individual firearms were shown in 28% (n = 173) of firearm scenes. Crime or illegal activity was involved in 45% (n = 282). Deaths occurred in 19% (n = 126) and injuries occurred in another 12% (n = 73) of firearm scenes.
CONCLUSIONS: A large majority of top-grossing movies depict firearms, and firearm scenes represent a high proportion of total screen time of these types of movies. Firearm scenes mostly involve handguns, but many have multiple firearms and firearm types. Verbal safety messages were rare. Audiences watching PG-13 rated movies are likely to have extensive exposure to firearms with few exposures to safety messages. Major motion pictures may represent an opportunity for education of adults and children about firearm safety.

HEALTH BELIEFS TOWARD CARDIOVASCULAR RISK REDUCTION IN PATIENTS ADMITTED TO CHEST PAIN OBSERVATION UNITS. D.A. Katz[1]; P. Lounsbury[1]; L. Esham[1]; M. Graber[1]; S. Hillis[1]; A.J. Christensen[1]. [1]University of Iowa, Iowa City, IA. *(Tracking ID # 172447)*

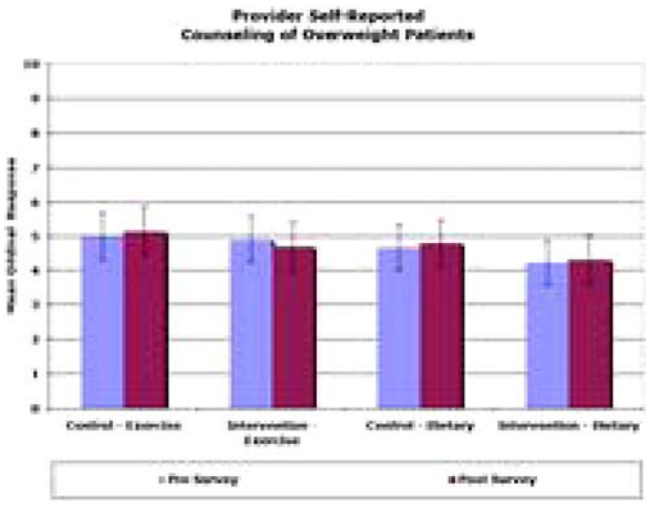
BACKGROUND: Even after acute coronary syndrome (ACS) is ruled out, observational studies have suggested that many patients with non-specific chest pain have a high burden of cardiovascular risk factors (CRFs) and are at increased long-term risk of CAD-related mortality. To evaluate the premise that evaluation in a chest pain observation unit (CPOU) is a "teachable moment," the aims of this study are to compare readiness to change CRF-related health behaviors (diet, exercise, and smoking) and self-reported behaviors at initial evaluation and at 3-mo follow-up.
METHODS: We conducted a baseline face-to-face interview and a 3-month telephone follow-up survey of 38 adult patients with at least one modifiable CRF (smoking, hyperlipidemia, hypertension, diabetes mellitus, obesity) who received evaluation of ACS symptoms at 1 academic medical center and affiliated VA hospital. Only patients with two initially negative cardiac troponin measurements were eligible. We evaluated stage of change for each CRF-related behavior using previously validated measures; patients in the preparation and action stages were identified as ready to change. We measured dietary intake of saturated fat and fruits & vegetables using a rapid food screener (Block, 2000), and asked patients to recall the amount of time spent in 4 different levels of physical activity over the prior week (Sallis, 1985). To assess smoking behavior, we collected data on the number of cigarettes smoked per day and 7-day point prevalence abstinence. To compare baseline and 3-month values within the analysis sample, we used McNemar's test for correlated proportions for dichotomous measures and the paired t-test (or signrank test if non-normally distributed) for continuous measures of health behavior.
RESULTS: Of 61 eligible patients, 62% agreed to participate (n = 38). Forty-five percent of study patients had a history of documented CAD. During CPOU evaluation, 45, 42, and 73% of patients reported having received advice on diet, exercise, and smoking cessation, respectively. More patients tended to report readiness to change CRF-related behaviors at 3-month follow-up compared to baseline: saturated fat (87 vs. 79%), fruits & vegetables (92 vs. 82%), physical activity (74 vs. 66%), and smoking (64 vs. 45%), although none of these comparisons attained statistical significance based on McNemar's test ($p > .05$). Patients ate more fruits & vegetables (4.4 vs. 3.9 servings/day, $p = .04$) and smoked fewer cigarettes (13 vs. 16, $p = .04$) at 3-month follow-up compared to baseline, and showed a trend towards greater physical activity (11.5 vs. 7.6 hrs/wk of moderate-vigorous physical activity, $p = .15$) and decreased intake of saturated fat (9.9 versus 10.3% of total calories, $p = 0.10$).
CONCLUSIONS: The observed improvements in CRF-related behaviors (and readiness to change these behaviors) during short-term follow-up support the idea that CPOU admission is a teachable moment. Patients with modifiable risk factors may benefit from systematic interventions to deliver CRF-related counseling during CPOU evaluation and subsequent outpatient follow-up.

HEPATITIS B VACCINATION OF ADULTS: CURRENT PRACTICE REGARDING VACCINE DELIVERY AND ATTITUDES REGARDING STANDING ORDERS. L. Hurley[1]; M. Daley[2]; K. Hennessey[3]; C. Weinbaum[3]; L. Crane[4]; B. Beaty[5]; J. Barrow[5]; C. Babbel[5]; M. Dickinson[6]; S. Stokley[7]; A. Kempe[2]. [1]Department of General Internal Medicine, Denver Health, Denver, CO; [2]Department of Pediatrics, University of Colorado at Denver Health Sciences Center, Colorado Health Outcomes Program, Children's Outcomes Research Program, Aurora, CO; [3]Division of Viral Hepatitis, Centers for Disease Control, Atlanta, GA; [4]Department of Preventive Medicine and Biometrics, University of Colorado at Denver Health Sciences Center, Denver, CO; [5]Colorado Health Outcomes Program, University of Colorado at Denver Health Sciences Center, Aurora, CO; [6]Family Medicine, University of Colorado at Denver Health Sciences Center, Denver, CO; [7]National Immunization Program, Centers for Disease Control and Prevention, Atlanta, GA. *(Tracking ID # 172923)*

BACKGROUND: The majority of adults at risk for hepatitis B are not vaccinated against the disease. In an effort to bolster vaccination rates, the Advisory Committee on Immunization Practices (ACIP) recently published new recommendations regarding hepatitis B vaccination (HBV) including the use of standing orders in primary care settings to identify and vaccinate at risk adults. We sought to determine current practices regarding hepatitis B vaccination of adults in primary care settings and to assess attitudes of primary care physicians regarding the feasibility of implementing standing orders for HBV using risk-based criteria.
METHODS: Sentinel networks of general internal medicine (GIM) physicians and family medicine (FM) physicians selected to be representative of membership of the American College of Physicians and American Academy of Family Physicians, respectively, were surveyed by mail or by internet during September-October 2006.
RESULTS: Response rates were 65% for FM (n = 282) and 79% for GIM (n = 332). Identification and vaccination of at risk adults was "high priority" for 19% of FM and 28% of GIM, "moderate priority" for 44% and 45% and "low priority" for 38% and 27% (priority level by specialty, $X^2 p < .01$). Forty-nine percent of GIM and 32% of FM patients estimated that less than 10% of their patients were at increased risk for infection. Verbal risk assessment was more commonly used than written questionnaire at initial visits for both GIM (58% vs. 41%, $p < .01$) and FM (51% vs. 34%, $p < .01$). Overall, 47% of respondents were "very supportive" and 38% were "somewhat supportive" of standing orders to identify and vaccinate patients at risk. Twenty-six percent thought it would be "very feasible" and 41% "somewhat feasible" for nurses or medical assistants (MAs) to use standing orders to identify and vaccinate at-risk patients. Characteristics identified as a "definite" or "somewhat" of a barrier to standing orders for both GIM and FM included: patients not disclosing sensitive information (definite 36%/somewhat 38%); nurses/MAs being too pressed for time to assess patients' risk (30%/37%); risk screening negatively impacting patient flow (20/28%); risk screening requiring a higher level of knowledge than nurses/MAs have (16%/31%); and nurses/MAs having questions about who should be immunized despite standing orders (16%/31%). Thirty-three percent of respondents reported screening most or all patients for risk factors for hepatitis B as per ACIP guidelines and characteristics associated ($p < .01$) with routinely screening included reporting hepatitis B vaccination as a high priority; reporting a high proportion of patients at risk for hepatitis B; having a higher percentage of Black patients; reporting fewer barriers to hepatitis B vaccination; using written risk-assessment questionnaires; urban inner-city location; and northeast region.
CONCLUSIONS: Most surveyed physicians considered HBV to be a moderate to low priority in their practices and did not consistently screen for hepatitis B risk factors. Overall, FM and GIM physicians were supportive of implementing hepatitis B vaccination of at risk adults in primary care settings using standing orders. However, physicians reported significant barriers to risk-based approaches, suggesting alternative strategies might be needed for hepatitis B vaccination rates to be improved.

IMPACT OF DISTRIBUTION OF THE AMERICA-ON-THE-MOVE TOOLKIT ON PRIMARY CARE PROVIDERS' SELF-REPORTED EXERCISE AND DIETARY COUNSELING WITH OVERWEIGHT PATIENTS. A. Abraham[1]; J. Stuht[1]; C.B. Emsermann[1]; J.S. Kutner[1]. [1]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 171807)*

BACKGROUND: Primary care visits provide opportunities to counsel patients about obesity risk factors such as inactivity and excess caloric intake. America-On-The-Move (AOM), a non-profit organization, developed a "health care professional toolkit" for primary care offices. The toolkit contains resources designed to leverage the limited time that providers have with patients to promote the message that weight gain can be neutralized if patients increase their step-count by 2000 steps/day and decrease their caloric intake by 100 kcal/day. The impact of the AOM toolkit on provider behavior is unknown. Our goal was to determine whether providers in clinics that received the AOM toolkit report increasing exercise and dietary counseling more than colleagues in control practices.
METHODS: Five general internal medicine clinics affiliated with the University of Colorado Health Sciences Center participated in the study. Clinics were stratified and randomly assigned to either an intervention group which received the AOM toolkit (two clinics) or to a control group which did not (three clinics). Primary care providers at intervention clinics were notified of the toolkit's contents and availability. We surveyed all providers in each clinic about their exercise and dietary counseling behavior before the toolkit was distributed and 8–12 weeks after intervention sites received the kit. The primary outcome was the change over time in provider response to an ordinal scale which estimated the percent of visits during which they counseled overweight patients about exercise and diet. Responses were categorized in decile increments beginning with 0–9% and ending with 90%–100%. We asked providers the same questions on both the pre- and post-intervention surveys. Since the interclass correlation among physicians within practices was significant, we performed a hierarchical analysis using SAS Proc Mixed, adjusting for variation due to clustering of physicians within practices as well as demographic variables.
RESULTS: We distributed 282 surveys; 183 were returned (64.9%). On average, providers in both intervention and control groups reported counseling overweight patients about exercise at between 40–49% of all visits during both survey periods. Control providers reported counseling overweight patients about nutrition at between 40–49% of all visits, whereas intervention providers reported nutrition counseling at between 30–39% of all visits with overweight patients during both survey periods. Adjusted analysis determined that the intervention did not significantly change provider self-reported frequency of exercise or dietary counseling over time ($p = 0.46$ (exercise); $p = 0.95$ (dietary)). Most providers (64.2%) who responded to a second survey at intervention sites felt behavioral counseling training would enhance toolkit effectiveness.
CONCLUSIONS: The distribution of a toolkit designed to minimize barriers to exercise and dietary counseling did not significantly impact self-reported provider counseling over the 2–3 month period following rollout. More research is needed to determine whether concomitant training in behavioral counseling for providers would increase their frequency of exercise and dietary counseling.



MOST CLINICIANS DO NOT RECOGNIZE PRE-DIABETES: RESULTS OF A SURVEY.
S. Sigworth[1]; A. Wiener[1]; S. Talavera[2]; C.R. Horowitz[1]. [1]Mount Sinai School of Medicine, New York, NY; [2]Senior Health Partners, New York, NY. *(Tracking ID # 172321)*

BACKGROUND: Pre-diabetes, a newly described entity, is prevalent and associated with increased rates of cardiovascular events. Its progression to diabetes is not inevitable; modest weight loss and some medications are effective preventive measures. In order for clinicians to take early action to prevent and treat pre-diabetes and diabetes, they must first be able to recognize each condition. We aimed to learn whether clinicians who provide primary care to adults can identify the criteria for pre-diabetes and diabetes.
METHODS: The East Harlem Partnership for Diabetes Prevention, a coalition of community leaders and academics, utilized community-based research methods to develop a survey to assess the ability of local clinicians to diagnose pre- diabetes and diabetes. This neighborhood has the highest prevalence (15%) of diabetes in New York City. We administered the survey to all adult primary care providers at two neighborhood health centers, one academic hospital, and one community hospital. As part of the survey, participants specified fasting and post-prandial glucose levels for normal and diabetic patients. We considered correct responses to be: normal fasting glucose <100 mg/dl; normal post-prandial glucose <140 mg/dl; diabetic fasting glucose >125 mg/dl; diabetic post-prandial glucose >199 mg/dl; pre-diabetes fasting glucose range 100–124 mg/dl, and pre-diabetes post-prandial glucose range 140–199 mg/dl.
RESULTS: Overall, 96% of clinicians (229 of 239) completed the survey. Of these, 55% were internal medicine residents, 44% were attendings and 3% were nurse practitioners. Based on their responses, only 13% of clinicians could accurately specify both fasting and post-prandial glucose levels that define normoglycemia. Notably, 68% considered prediabetic glucose values to be normal. More than half of the clinicians (55%) correctly labeled diabetes in both the fasting and post-prandial states, and 75% correctly identified diabetes in the fasting state. Attendings and residents did not differ significantly in their accuracy, except that attendings were better at correctly identifying a normal post-prandial glucose (36% vs. 21%, $p=0.02$).
CONCLUSIONS: Only a minority of clinicians we surveyed correctly labeled glucoses in the pre-diabetic range as abnormal. Therefore, many people with pre-diabetes in East Harlem may remain unrecognized and needlessly progress to diabetes. If these findings are generalizable, the health impact on the estimated 54 million Americans with pre-diabetes is profound.

OBESITY IN THE PRIMARY CARE SETTING: FACING OUR IGNORANCE
R. Seaman[1]; A. Barbour[1]. [1]George Washington University, Washington, DC. *(Tracking ID # 173474)*

BACKGROUND: The Centers for Disease Control estimates that 30% of adults are obese, and Medicare has officially defined obesity as a disease. This newly recognized disease state is responsible for greater than 300,000 deaths per year in the United States. Weight loss strategies and treatment for obesity are mulit-million dollar enterprises yet have poor long lasting success rates. We sought to assess knowledge, beliefs and attitudes toward obesity and weight loss measures in our patients in order to provide insight for physicians to improve their communication with patients about obesity and ultimately improve outcomes of weight loss in our obese patients.
METHODS: We developed a patient questionnaire based on an extensive Medline literature review. Using the search terms "obesity" "health risk" "medical complication" and excluding pediatric, pregnant, and surgical patients, we identified 200 abstracts to review the medical problems related to obesity. In addition, the search terms "weight loss", "counseling" and "advice" with the same limits for adult medical patients, were used to explore methods of discussing obesity with patients. After obtaining informed consent, we surveyed patients using the questionnaire in the general medical clinic at the Medical Faculty Associates at George Washington University. We recorded participants' weight, height and basic demographic information. Patients' answers to the open ended questions, true/false questions, and multiple choice questions were collated and are described.
RESULTS: Fifty-two people agreed to participate in this study. Demographic information are described in Table 1. Five of the obese patients (30%) did not identify themselves as obese and fifteen patients (29%) cited an ideal weight that would result in a BMI >25. A majority of obese patients (64.7%) planned to discuss obesity or weight issues with their doctor. The most common topics for discussion were food choices (65%), specific diets (65%), exercise advice (61%), and health problems associated with obesity (35%). The most common explanation for not wanting to discuss their weight with the physician was the belief that it was not a serious problem (69% in all individuals, 50% in obese individuals). On the knowledge questions, 54% of participants believed that obesity was associated with an increased incidence of cancer. Over 90% of participants associated obesity with an increased risk of heart disease, diabetes, and high blood pressure, while 87% associated it with increased overall mortality and only 64% with arthritis.
CONCLUSIONS: A high proportion of patients surveyed had a basic understanding about the medical risks of obesity and planned to discuss weight loss with their physicians the day of the visit. However, many patients underestimated their weight and risk of obesity. Furthermore over half of the patients surveyed did not believe that obesity was a serious personal health problem. This disparity in findings highlights the difficulty in doctor-patient encounters dealing with weight loss issues. It is important for physicians to recognize communication barriers and educate patients about their personal risks. Further studies are needed focusing on interventions for communication geared toward improving weight loss outcomes.

Table 1. Demographic Information

Race		
	African American	21 (40.4%)
	Caucasian	24 (46.2%)
	Other	7 (13%)
BMI		
	>30	17 (32.7%)
	<30	35 (67.3%)

OVERCOMING POOR ATTENDANCE TO FIRST SCHEDULED COLONOSCOPY.
B.J. Turner[1]; M.G. Weiner[1]; S. Berry[1]; K.M. Fosnocht[1]; C.S. Hollenbeak[2]. [1]University of Pennsylvania, Philadelphia, PA; [2]Pennsylvania State University, Hershey, PA. (Tracking ID # 172532)

BACKGROUND: The potential to reduce morbidity and mortality from colorectal cancer (CRC) is compromised by only half of eligible patients being appropriately screened. Poor attendance to scheduled sigmoidoscopy and colonoscopy studies contributes to this low screening rate. Our group has reported that less than 2/3 of nearly 12,000 primary care patients attended their first endoscopic colon study and the strongest predictor of attendance was patient adherence to scheduled physician visits. We developed 'peer coach' intervention to address barriers to attending colonoscopy appointments in persons at increased risk of non-attendance.
METHODS: We conducted a randomized, controlled trial of peer coach support versus professional brochure information in consecutive patients aged >50 from four urban primary care practices who kept $<75\%$ of their primary care visits and were scheduled for their first colonoscopy from 2/1/05 through 8/31/06. With physician consent, a research assistant called the patient to assess need for support and obtain consent. We judged as needing no support those patients who: reported "high readiness" on a screening question; worked as a health professional; or had a prior colonoscopy outside our system. The remaining patients were randomized in blocks of 10 to peer coach support or mailed CRC screening brochures. Peer coaches were patients nominated by their physicians as good communicators and trained for 6 hours about: CRC cancer, sceening, colonoscopy; and motivational interviewing techniques. They followed scripts to address barriers in calls to patients within 2 weeks of the study. Attendance to colonoscopy assessed from administrative data. Using logistic regression, we estimated the odds of colonoscopy attendance adjusting for demographic, clinical, and health care characteristics.
RESULTS: In the 275 patients scheduled for colonoscopy, the size and percent attendance of five study groups was: no support needed ($N=49$; 82%); peer coach ($N=70$; 69%); no contact ($N=49$; 61%); received brochures ($N=66$; 58%); and refused support ($N=41$; 49%). The cohort was predominantly female (69%) and black (62%) but the peer coach group was more likely to be black ($P<0.03$) and Medicaid enrolled ($P<0.001$). Compared with the peer coach group, the adjusted odds ratios (AOR) of colonoscopy attendance were lower ($P<=0.05$) for: refused support [AOR = 0.28 (95% CI 0.12, 0.69)]; not contacted [AOR = 0.40 (95% CI 0.17, 0.97)]; and received brochures [AOR = 0.47 (95% CI 0.22, 1.01)]. The patients needing no support showed no significant difference [AOR 1.26 (95% CI 0.49, 3.25)] versus the peer coach group. After adjustment,colonoscopy attendance was less likely for black patients (AOR = 0.36) and more likely for the highest quartile of primary care visit adherence (AOR 2.13).
CONCLUSIONS: Among patients who frequently miss primary care visits, peer coach support addressing barriers resulted in over a two-fold increase in the adjusted odds of colonoscopy attendance. The patients identified as needing no support were indeed more adherent to colonoscopy while patients who refused any support were markedly less likely to keep their appointment and will require other approaches to provide assistance.

PATIENT TIME REQUIREMENTS FOR SCREENING COLONOSCOPY.
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BACKGROUND: Understanding and measuring the time patients spend having screening colonoscopy is important because time requirements may be a barrier to undergoing recommended screening. Understanding time requirements is also important to allow accurate assessment of the true costs and cost-effectiveness of different options for screening in economic analyses.
METHODS: To measure patient time requirements, we recruited patients aged 50–85 years old at average risk of colon cancer from one university-affiliated endoscopy center who were scheduled for screening colonoscopy. Participants completed a time diary for the screening colonoscopy process to measure time spent in preparation, travel, waiting, colonoscopy, and recovery. Our initial analysis focused on descriptive statistics for the study subjects. Reported time requirements were described by means, medians, and ranges. Since the time intervals were not normally distributed, we report medians in our results. We also examined differences in time requirements according to various subject characteristics, including age, sex, race, educational attainment, income, insurance, colonoscopy experience, preparation experience, employment status, work days missed, complications, travel distance, travel cost, and out-of-pocket cost for the colonoscopy. We tested these bivariate comparisons using nonparametric statistics because the time data were not normally distributed.

RESULTS: We recruited 139 patients to be in the study. Of these, 110 completed the study. The sample was 57% female, 85% Caucasian, and 90% insured (40% Medicare, 4% Medicaid). Patients spent a median of 21.0 hours from beginning the bowel preparation until arriving at home (or other destination) after the procedure, including 16.7 hours in preparation, 1.1 hours traveling, 1.4 hours waiting, 12 minutes for sedation, 20 minutes having the colonoscopy, and 47 minutes recovering at the endoscopy center. Median time from the completion of the colonoscopy procedure until returning to routine activities was 17.7 hours (range 0.7 to 100.7). From beginning the bowel preparation until arriving at home, patient time requirements were sensitive to having a history of depression (22.0 hours for those with vs. 20.8 for those without; $p = 0.003$), being disabled (24.0 for disabled patients vs. 21.0 for employed, 19.3 for housewives/husbands, and 20.3 for retired; $p = 0.010$), type of person accompanying the patient (20.8 for patients accompanied by their spouse/significant other vs. 23.8 for those accompanied by a different relative; $p = 0.037$), and income (24.1 for patients with annual household incomes under $15,000 vs. 20.0 to 22.3 for those with higher incomes; $p = 0.011$).
CONCLUSIONS: Screening colonoscopy requires a substantial commitment of time. A small portion of that time is spent at the endoscopy center or having the colonoscopy. The majority of that time is spent in preparation and recovery. There is substantial variability in individuals' recovery experiences (in terms of how long it takes for them to return to their routine activities) after colonoscopy. Patients reporting a history of depression, being disabled, or lower annual household incomes had longer time requirements.

PHYSICAL ACTIVITY AS AN AID TO SMOKING CESSATION: A RANDOMIZED CONTROLLED TRIAL OF SEDENTARY ADULTS SMOKERS. J. Cornuz[1]; C. Willi[1]; A. Chiolero[2]; S. Payot[3]; R. Stoianov[2]; R. Bize[4]. [1]Department of Community Medicine and Public Health, University Outpatient Clinic & Institute of Social and Preventive Medicine, Lausanne University, Lausanne,; [2]Institute of Social and Preventive Medicine, Lausanne University, Lausanne,; [3]Department of Community Medicine and Public Health, University Outpatient Clinic, Lausanne University, Lausanne,; [4]Departement of Community Medicine and Public Health, University Outpatient Clinic & Institute of Social and Preventive Medicine, Lausanne University, Lausanne. *(Tracking ID # 172958)*

BACKGROUND: Observational studies showed that exercise might reduce nicotine craving and enhances mood when quitting smoking. Furthermore, increasing exercise might help to prevent or minimize weight gain through energy expenditures. We aimed to test the following hypothesis through a randomized controlled trial of sedentary adult smokers: including a moderate-intensity physical activity intervention in a smoking cessation program increases the chances of quitting and reduces nicotine withdrawal symptoms, negative mood, stress, desire to smoke and weight gain in smokers recruited from the community.
METHODS: The participants in both groups attended a 9-week program with a weekly 15-minute session composed of a individual standard smoking cessation program combining counseling and prescription of nicotine replacement therapy. On the top, once a week, the subjects enrolled in the intervention group attended a 60-minute exercise intervention based on a nationwide implemented moderate-intensity physical activity program led by a physical activity facilitator, whereas the subjects in the control group attended 60-minute health education program including sessions on osteoporosis, hypertension, diet, stress management, alcohol consumption (but excluding session on exercise) to ensure equal contact conditions. A visit was scheduled at 10th week, at 6- and 12-month follow-up. We used a conservative approach by considering participants lost during the follow-up period as smokers and confirmed continuous smoking abstinence by a level of CO < 10 ppm from 5th to 52nd week.
RESULTS: We enrolled 481 participants. There were no differences between the two groups regarding age (mean 42 years), socio-demographic data, clinical variables and smoking habits (mean daily cigarette consumption 27, mean years of smoking 17). The continuous smoking abstinence rates were similar in both groups at 10th, 26th and 52nd week: 45% and 44%, 33% and 34%, and 26% and 28%, for exercise and control groups, respectively. Scores of the Wisconsin withdrawal scale, the Desire to smoke scale, Perceived Stress Scale and Beck depression inventory were all reduced in a significant way at the end of the program in the exercised group, whereas such beneficial effect were only noted in the control group for the Desire to smoke scale and Perceived Stress Scale. The mean weight gain from baseline to week 52nd was 3.1 kg and 3.7 kg for exercise and control groups, respectively ($p = 0.4$). The evolution of mean integrated physical activity index over time (MET x min/week) showed during the intervention (at the 6th week), as expected, a clear difference between groups (2082 vs 1477 in vs exercised control group, $p < 0.001$), then a trend for a significant difference at 10th week (1786 vs 1486, $p = 0.054$), and no differences at 52nd week (1735 vs 1653). Indeed, 46% of the participants enrolled in the control group reported practising exercises during the 9-week program.
CONCLUSIONS: Adding a moderate-intensity physical activity for 9 weeks on the top of a comprehensive smoking cessation program is not sufficient to help smokers quit. The marginal effect of such an intervention might be not large enough to ensure a difference between groups regarding tobacco abstinence. This lack of difference might also be due to the fact that many smokers in the control group actually practiced exercise for themselves, which may contribute towards the null hypothesis. However, we observed a high percentages of smoking abstinence in both group.

PREDICTORS OF IMPAIRED FASTING GLUCOSE IN THE U.S. POPULATION: OPPORTUNITIES FOR SCREENING. C.E. Mclaughlin-Gavin[1]; A.K. Jha[1]. [1]MAVERIC, VA Boston Healthcare System, Boston, MA. *(Tracking ID # 172727)*

BACKGROUND: Although impaired fasting glucose (IFG) can herald the development of type 2 diabetes (DM), weight reduction and increased physical activity among those with IFG can delay or even prevent the onset of type 2 diabetes. Whom to screen for IFG is still largely unknown. Therefore, we sought to determine which easily attainable clinical and demographic factors predict IFG in the U.S. population.
METHODS: We examined the 1999–2004 National Health and Nutrition Examination Survey (NHANES) data on 5690 adults without a history of diabetes for whom fasting glucose values were available. We chose easily identifiable clinical and demographic factors that might be associated with IFG and used both bivariate and multivariate models, accounting for the complex survey sampling design, to determine which factors were associated with incident IFG. All factors found to be significant on bivariate testing and two confounders, insurance status and family history of diabetes, were included in the multivariate model.
RESULTS: The prevalence of IFG (glucose > 100) was 30% in this U.S. population of Americans without a known history of diabetes. Factors significantly associated with a greater likelihood of having IFG on bivariate analyses included older age, male sex, white or Mexican race/ethnicity, being a non-smoker, having a higher body mass index, lower income, or lower educational attainment. In the multivariate model, characteristics associated with having IFG included age (odds ratio [OR] 1.22, 95% confidence interval [CI] 1.22, 1.28, for each 5 year increase in age) and male sex (OR 2.37, 95% CI 2.12, 2.65). Whites (OR 1.50, 95% CI 1.13, 1.98) and Mexican Americans (OR 1.64, 95% CI 1.21, 2.21) were more likely to have IFG than non-Hispanic blacks. Other predictors of IFG included being overweight (BMI 25–29), obese (BMI 30–34) or extremely obese (BMI > 35) (OR 2.11, 2.67, 4.43, respectively, $p < 0.001$ for each), being uninsured (OR 1.33, 95% CI 1.01, 1.74), low educational attainment (less than high school compared to more than high school OR 1.40, 95% CI 1.13, 1.74) and having a family history of diabetes (OR 1.31, 95% CI 1.11, 1.56). Although smoking and income level were included in the model, they were not significant predictors of IFG.
CONCLUSIONS: Age, sex, racial/ethnic background, low educational attainment, being uninsured, having a family history, and BMI each is associated with an increased risk of having IFG. Given that these clinical and demographic factors are readily available to practicing clinicians, targeting those at higher risk for screening could help identify those with IFG and possibly prevent or delay the onset of type 2 diabetes.

PREDICTORS OF SUSTAINED WALKING AMONG MULTI-ETHNIC DIABETES PATIENTS IN MANAGED CARE: THE TRANSLATING RESEARCH INTO ACTION FOR DIABETES (TRIAD) STUDY. O.K. Duru[1]; R. Gerzoff[2]; C.M. Mangione[1]. [1]University of California, Los Angeles, Los Angeles, CA; [2]Centers for Disease Control and Prevention (CDC), Atlanta, GA. *(Tracking ID # 172428)*

BACKGROUND: Although observational analyses show that patients with diabetes derive a mortality benefit from continued, regular physical activity over years, many stop exercising. Few studies have examined predictors of sustained walking among individuals with diabetes. We examined demographic, clinical, and neighborhood factors potentially associated with sustained walking among managed care patients with diabetes.
METHODS: Data are from patients with diabetes enrolled in 10 managed care plans and 68 provider groups included in the Translating Research into Action for Diabetes (TRIAD) study, a multicenter longitudinal cohort study of diabetes care in managed care. The initial TRIAD survey was fielded in 2000–01, but we used data from 2 subsequent timepoints as baseline and follow-up for this analysis. TRIAD participants were asked the number of minutes they walked each day, in 2002–03 (baseline) and 2004–05 (follow-up). We included in our analytic sample only patients who reported walking at least 20 minutes/day at baseline. We used a multivariate hierarchical regression to estimate the relationship between demographic, clinical, and neighborhood factors, and the likelihood of sustained walking at follow-up. We expressed the results as predicted percentages. We used multiple imputation techniques for all missing variables.
RESULTS: There were 8,796 participants in the 2002–03 TRIAD survey. Slightly more than two-thirds (5,935, or 67.5%) walked for at least 20 minutes/day at baseline. Pain symptoms were associated with a lower likelihood of sustained walking, as 63% of patients who developed new pain over time, 68% of patients with ongoing chronic pain, and 70% who never reported pain were still walking at follow-up ($p = 0.03$). Only 65% of obese patients (BMI > 30) sustained walking compared with 71% of overweight and 70% of normal weight patients ($p = 0.03$). Patients 65 years and older (63%) were less likely to sustain walking than patients between 45 and 64 years (70%) or 18 and 44 years (73%, $p = 0.04$). Development of a new comorbidity, including myocardial infarction, cerebrovascular accident, amputation, or initiation of renal dialysis, was a significant correlate of stopping walking, as only 62% of these individuals sustained walking, compared with 68% of those who did not have one of these serious events ($p = 0.048$). We found no association between neighborhood variables and sustained walking behavior. A replication of these analyses limited to patients with complete data showed a similar pattern of results.
CONCLUSIONS: A number of treatable or preventable clinical conditions emerged as significant predictors of stopping regular walking among persons with diabetes. These findings underscore the importance of treating pain and obesity, as well as preventing microvascular and macrovascular complications among persons with diabetes, in order to help this population remain physically active over time and accrue the associated health benefits.

PREFERENCES FOR HPV TESTING AMONG ETHNICALLY-DIVERSE OLDER WOMEN. A.J. Huang[1]; Y. Iwaoka-Scott[2]; S.E. Kim[2]; S.T. Wong[3]; E.J. Perez-Stable[2]; E. Washington[2]; G.F. Sawaya[2]. [1]San Francisco Veterans Affairs Medical Center, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]University of British Columbia, Vancouver, British Columbia. *(Tracking ID # 172449)*

BACKGROUND: Infection with oncogenic human papillomavirus (HPV) plays a critical role in the development of cervical cancer. Since the Food and Drug Administration approved a test for oncogenic HPV types in 1999, HPV testing has increasingly been used as an adjunct to Pap testing in cervical cancer screening. Very little is known about US women's preferences for HPV testing, although discussions about cervical cancer screening may increasingly be driven by women's concerns about HPV.
METHODS: Between October 2002 and December 2005, women aged 50 to 80 years who had visited a primary care clinician in the previous 2 years were recruited from 6 San Francisco practice settings. Latina, African American, and Asian women were oversampled to ensure racial and ethnic diversity. Following a telephone survey to assess demographic and clinical characteristics, women who had not previously undergone hysterectomy were interviewed in English, Spanish, Mandarin, or Cantonese about their preferences for HPV testing. Women were informed that a positive HPV test suggests a higher than average risk for developing cervical cancer, while a negative test suggests a lower than average risk. Multivariable logistic regression was used to assess demographic and clinical factors associated with HPV testing preferences.
RESULTS: Of the 866 women interviewed (mean age = 61 years), 17% (n = 146) were Latina, 10% (n = 86) were African American, 43% (n = 371) were Asian, and 29% (n = 250) were non-Latina White. Over 60% (n = 548) indicated that they would like to be tested for HPV, while an additional 20% (n = 165) would undergo testing if recommended by their physician. Among women who were willing to be tested, over 90% (n = 514) indicated that they would want to undergo Pap testing more frequently than annually if they were HPV-positive. Sixty percent (n = 368) indicated they would be willing to have Pap tests every 3 years rather than every year if they had a negative HPV test with a normal Pap result. In multivariable-adjusted analyses, African American women were more likely, and Asian women were less likely, to want to be tested for HPV, compared to White women ($P < .01$ for both). Latina women were more likely than non-Latina White women to insist on annual Pap screening even with a concurrent negative HPV test ($P = .02$).
CONCLUSIONS: Among older women with access to community-based screening services, preferences for HPV testing vary significantly by race/ethnicity. The overwhelming majority of women would want more frequent Pap tests if they were HPV-positive, but a substantial minority of women would insist on at least annual screening even if they had a negative HPV test with a normal concurrent Pap result. Although one major goal of HPV testing is to identify low-risk women for whom annual screening is not indicated, HPV testing in older women may have only a modest effect on over-utilization of cervical cancer screening.

PREVENTIVE HEALTH CARE AMONG OLDER WOMEN: MISSED OPPORTUNITIES AND POOR TARGETING. M.A. Schonberg[1]; S.G. Leveille[1]; E.R. Marcantonio[1]. [1]Beth Israel Deaconess Medical Center, Brookline, MA. *(Tracking ID # 171600)*

BACKGROUND: Guidelines encourage clinicians to consider patients' life expectancy to target preventive health care to older women most likely to benefit. We examined receipt of preventive health care among US women aged 65 and older by their age and health status.
METHODS: We studied 4,829 women 65+ who saw a health care provider in the past year and responded for themselves to the 2005 National Health Interview Survey, a nationally representative survey of the non-institutionalized US population. We compared receipt of cancer screening (mammogram in the past 2 years, colonoscopy in the past 10 years, clinical breast exam [CBE] in the past year, PAP smear in the past 3 years), immunizations (pneumovax ever, flu shot in the past year), and clinician counseling about exercise in the past year by age (65–69 [n = 1,368], 70–74 [n = 1,137], 75–79 [n = 1,010], 80–84 [n = 776], and 85+ [n = 538]) and health status. Health status was defined into 3 categories: good (no heart disease, stroke, COPD, cancer, diabetes, kidney failure, or liver disease AND no functional dependency); fair (1–2 diseases or perceived fair health); and poor (3+ diseases, IADL/ADL dependency, or perceived poor health). Analyses were adjusted for sociodemographics and access to care and were performed using SUDAAN to account for the weighted sampling scheme.
RESULTS: Of the 4,829 respondents, 35% were in good health status, 45% in fair health status, and 20% were in poor health status. Overall, 68% had a recent mammogram, 51% a CBE, 38% a PAP smear, 37% a colonoscopy, 57% a pneumovax, 59% a flu shot, and 34% received exercise counseling. With increasing age, receipt of mammography, CBEs, PAP smears, colonoscopy, and exercise counseling declined. Immunizations increased with age until 85+ and then declined. With worsening health status, mammography, CBEs, colonoscopy, and PAP smears declined, exercise counseling increased. There was evidence of both underscreening (59% of women 65–69 and 70% of women 80–84 in good health status did not have a colonoscopy and 18% of women 65–69 and 36% of women 80–84 in good health status did not have a mammogram) and of overscreening (39% of women 85+ in poor health status had a mammogram, 28% had a colonoscopy, and 26% had a PAP smear; 57% of women aged 80–84 in poor health status had a mammogram, 27% had a colonoscopy, and 29% had a pap smear). The influence of health status on receipt of screening decreased with age and was not significant for women 80+. There were also missed opportunities for immunizations and exercise counseling (53% of women 85+ in poor health status did not have a pneumovax and 47% did not have a flu shot; 76% of women 80–84 and 82% of women 85+ in good health status did not receive exercise counseling)
CONCLUSIONS: Many older women in good health do not receive cancer screening from which they may benefit while many older women in poor health receive screening tests from which they are unlikely to benefit due to limited life expectancy. The association of preventive health measures with health diminishes with age, suggesting poor targeting among the oldest women. Our results suggest substantial need to improve delivery of preventive health care to older women.

PRIMARY CARE VALIDATION OF SINGLE QUESTION ALCOHOL SCREENING RECOMMENDED BY NIAAA. P.C. Smith[1]; S.M. Schmidt[1]; D. Allensworth-Davies[2]; R. Saitz[1]. [1]Boston University Medical Center, Boston, MA; [2]Boston University School of Public Health, Boston, MA. *(Tracking ID # 172731)*

BACKGROUND: Unhealthy alcohol use (including risky consumption amounts and the alcohol use disorders, alcohol abuse and dependence) is prevalent in the primary care setting and is under-diagnosed. Practice guidelines recommend universal screening. As time is limited, brief screening tools are desirable. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) has, in its' clinician's guide "Helping Patients Who Drink Too Much", recommended the use of the single question "How many times in the past year have you had X or more drinks in a day?" (where X is 5 for men and 4 for women, and a response of one or more is considered positive) as a screen for unhealthy alcohol use. We designed a study to evaluate the test characteristics of this single screening question in a sample of primary care patients, a population in which this screening test has not previously been validated. Here we report preliminary findings from the sample enrolled to date.
METHODS: We enrolled subjects from primary care waiting rooms at an urban academic medical center. Minors, the cognitively impaired, those who were not clinic patients and those who did not speak English were excluded. After subjects responded to the single screening question, alcohol consumption and the presence or absence of an alcohol use disorder were assessed using reference standards: a validated 30-day calendar-based method for the measurement of alcohol consumption, and the Composite International Diagnostic Interview (CIDI) Substance Abuse Module for the assessment of alcohol use disorders. Subjects were assured anonymity. We estimated the sensitivity and specificity of the single screening question for the detection of the consumption of risky amounts of alcohol (> 14 drinks per week or > 4 drinks per occasion for men, > 7 per week or > 3 per occasion for women), for the detection of current alcohol abuse or dependence, and for the detection of unhealthy alcohol use (either risky consumption amounts or an alcohol use disorder).
RESULTS: Of 113 eligible primary care patients, 97 (86%) were enrolled and 96 (85%) completed the interview. Of the 96 subjects who completed the interview, 51 (53%) were women, the mean age was 48 (range 21 to 86). Of these 96 subjects 39 (41%) reported consuming risky amounts of alcohol, while 17 (18%) had a current alcohol use disorder, and 42 (44%) reported unhealthy alcohol use (either the consumption of risky amounts of alcohol or the presence of an alcohol use disorder). Sensitivities and specificities of the single screening question appear in the table.
CONCLUSIONS: The single screening question recommended by the NIAAA accurately identified unhealthy alcohol use in this sample of primary care patients. The sensitivity and specificity of this single question was comparable to that reported for longer instruments in other studies. These preliminary findings, if confirmed, support the use of this brief screen in primary care, which should, in turn, help increase screening for unhealthy alcohol use.

Sensitivity and Specificity of Single Question Alcohol Screening

	Sensitivity (95% CI)	Specificity (95% CI)
Risky Consumption Amounts	.85 (.70, .93)	.74 (.61, .83)
Alcohol Use Disorder (Abuse or Dependence)	.94 (.73, .99)	.60 (.49, .70)
Unhealthy Alcohol Use (Risky Amounts or Disorder)	.83 (.69, .92)	.76 (.63, .85)

QUANTITY OF JARGON USED BY INTERNAL MEDICINE RESIDENTS IN THEIR COUNSELING ABOUT MAMMOGRAPHY AND PROSTATE CANCER SCREENING. L. Deuster[1]; J. Donovan[1]; S.A. Christopher[1]; M.H. Farrell[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173021)*

BACKGROUND: Breast and prostate cancer are common causes of morbidity and mortality. Cancer screening via mammography or prostate-specific antigen (PSA) can identify cancers early and give some patients a better chance of cure. However, guidelines recommend that physicians provide risk/benefit counseling before offering these tests to low-risk patients, largely because of the high prevalence of false positive results and limited evidence of mortality benefit. Unfortunately, physicians often speak in technical language that includes a lot of medical jargon. Guidelines warn against jargon, but surprisingly little research has been done to quantify physicians' use of jargon. This project demonstrates the use of a new quantitative method to assess the amount of jargon used and explained by medicine residents during counseling before mammography and PSA screening.
METHODS: This analysis used 86 transcripts obtained during educational workshops in a Primary Care Internal Medicine residency program. The transcripts were taken from recorded conversations between residents and standardized patients who were pretending to consider prostate or breast cancer screening. To determine the frequency and type of jargon words and jargon-explanations (JEs), each transcript was abstracted using an explicit-criteria abstraction instrument and a previously compiled data dictionary. When jargon was explained, the distance between the first usage of the jargon word and its explanation was measured using previously delineated statements, each of which corresponded with individual concepts with one subject and one predicate. Each transcript was reviewed by two abstractors for quality control purposes and to allow calculation of interabstractor reliability.
RESULTS: Interabstractor reliability for the explicit criteria procedure was excellent ($\kappa = 0.92$). The average number of unique jargon words per transcript was 19.6 (SD 6.1). Many jargon words were used more than once so that the total jargon count

averaged 53.6 words per transcript (SD 27.2); mammography transcripts averaged 44.6 total jargon words and PSA transcripts averaged 64.0 total words per transcript. There was an average of 4.5 jargon-explanations per transcript (SD 2.3); PSA transcripts averaged slightly more JEs per transcript than mammography transcripts (5.9 versus 3.2 JEs per transcript respectively, $p < .0001$). The average ratio of explained to total jargon included was 0.15 (SD 0.11); the ratio was statistically higher for PSA transcripts than for mammography transcripts (0.18 versus 0.12, $p = 0.0125$). When jargon words were explained, the average distance from the first usage to the JE was 8.4 statements (SD 13.4); the JE distance was significantly longer for mammography than for PSA transcripts (11.6 versus 4.56 statements, $p = 0.004$). None of these values varied significantly by the residents' gender or year in residency.
CONCLUSIONS: The high prevalence of jargon words and low number of jargon explanations suggest that communication quality during counseling about cancer screening tests may be suboptimal for many residents' patients. The high J-JE distance indicates that even when jargon is explained, a lot of new information is introduced in between the first usage of the jargon word and its explanation, decreasing the effectiveness of the explanation. This quantitative method should be useful in providing specific feedback to clinicians, and in future studies for assessing a portion of communication "quality."

RADIOGRAPHIC FINDINGS OF OSTEOPENIA AND SUBSEQUENT SCREENING FOR OSTEOPOROSIS. H. Coplin[1]; K. Feiereisel[2]; H. Diaz[3]. [1]Hennepin County Medical Center, Minneapolis, MN; [2]Wake Forest University, Winston-Salem, NC; [3]Michael Reese Hospital, Chicago, IL. *(Tracking ID # 172988)*

BACKGROUND: Osteoporosis can cause devastating fractures, which may compromise quality of life, create significant financial burden, or lead to premature death. Screening rates remain low despite Medicare coverage of dual x-ray absorptiometry (DEXA) scans for women over age 65 or women with risk factors for developing osteoporosis. Previous studies have shown that radiographic evidence of osteopenia is a strong predictor of osteoporosis. Its presence should influence rates of osteoporosis screening.
METHODS: This is a multi-center cohort prospective quality improvement study of patients presenting for care at outpatient Internal Medicine clinics affiliated with thirteen academic centers in the United States, including both resident and attending physician clinics. Women age 65 or older with at least one prior visit to the clinic in the last two years were enrolled. Their charts were reviewed at the date of enrollment for records of previously obtained x-rays and results of DEXA scans if completed.
RESULTS: Chart reviews were completed on 332 patients enrolled. Descriptive analysis reveals that 52 women had radiographic evidence of osteopenia. Thirty women (57.7%) with radiographic osteopenia had been referred for a DEXA scan, compared to a 36.2% screening rate of women without radiographic evidence. However, logistic regression analysis controlling for race and age demonstrates that this difference is not significant ($p = 0.095$). Of the 30 women with radiographic osteopenia referred for DEXA scan, 12 (40.0%) had t-scores consistent with osteoporosis and 11 (36.7%) had t-scores of osteopenia.
CONCLUSIONS: Our data show that radiographic osteopenia did not significantly influence further evaluation by DEXA scan to evaluate for osteoporosis. Yet when these women did undergo evaluation with DEXA, 76.7% had findings consistent with either osteopenia or osteoporosis. Radiographic osteopenia was confirmed as an indication for further evaluation by DEXA scan. Clinical systems should be developed to trigger formal osteoporosis screening when any radiologic study suggests osteopenia in women.

RELATIONSHIP OF HEALTH STATUS AND COLORECTAL CANCER SCREENING AMONG ELDERLY VETERANS. L. Walter[1]; K. Lindquist[2]; T. Schult[3]; S. Nugent[3]; M. Casadei[1]; M. Partin[3]. [1]San Francisco VA Medical Center, San Francisco, CA; [2]University of California, San Francisco, CA; [3]Minneapolis VA Medical Center, Minneapolis, MN. *(Tracking ID # 172444)*

BACKGROUND: Most guidelines recommend stopping colorectal cancer screening in persons whose age and comorbidities limit life expectancy because the harms of screening outweigh the benefits. Therefore, this study was conducted to determine whether colorectal cancer screening is performed primarily in healthy elders with substantial life expectancies rather than in elders in poor health with limited life expectancies.
METHODS: This is a cohort study of 26,700 veterans aged >= 70 years who had an outpatient visit at 4 VA medical centers during 2001–2002 and did not have a history of colon cancer, polyps, colitis, or colon cancer symptoms. All persons also had a VA outpatient visit in 2000 and were due for screening starting 1/1/01. The main outcome was receipt of colonoscopy, sigmoidoscopy, barium enema or fecal occult blood testing (FOBT) during 2001–2002 based on VA data and Medicare claims. Health status was measured by the Charlson-Deyo index using VA and Medicare claims in 2000. Charlson scores were used to stratify persons into 3 groups, ranging from best health (score = 0) to worst health (score >= 4).
RESULTS: Mean age of subjects was 77 years; 10% were black; 97% were men; median Charlson score = 1 (11% had score >= 4). 42% of elderly veterans underwent colorectal cancer screening during 2001–2002. Although screening rates decreased with advancing age, ranging from 47% in persons aged 70–74 to 27% in persons aged >= 85 years ($p < 0.001$), within each 5-year age group the percentage of persons screened did not decline with worsening health. For example, among persons aged >= 85 years, 24% in best health were screened compared with 27% in worst health ($p = 0.09$). Among the 11,253 persons who were screened, 74% had FOBT, 15% had colonoscopy, 9% had sigmoidoscopy and 2% had a barium enema. Advancing age and worsening health did not affect the type of test received. FOBT remained the most common screening test for elders >= 85 years (71% of those screened) and for elders in worst health (71% of those screened).
CONCLUSIONS: 42% of elderly veterans were screened for colorectal cancer during 2001–2002. Screening is not avoided by many elders in poor health who have limited life expectancies and FOBT is the most common screening test in the VA regardless of age or health. More attention to health status is needed when making colorectal cancer screening recommendations to elderly persons.

RESIDENT'S PRECAUTIONARY DISCUSSION OF EMOTIONS DURING COMMUNICATION ABOUT CANCER SCREENING. J. Donovan[1]; L. Deuster[1]; S.A. Christopher[1]; M.H. Farrell[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173035)*

BACKGROUND: Breast and prostate cancer are common causes of morbidity and mortality. Mammography and prostate-specific antigen can identify cancers early, but questions remain about whether routine screening has more net benefit than harm for certain groups of low-risk patients. Given this uncertainty, guidelines recommend that patients receive counseling about risks and benefits before the screening is offered. Unfortunately, studies suggest that patients may experience confusion or anxiety about this information, even when they understand that the only thing at stake is a possible screening test. The risk for emotional upset during counseling is problematic because in routine situations emotions may not become apparent to physicians, many of whom are mostly trained to watch for body language. Since even subtle emotions can lead to confusion and inconsistent decision-making, this study was designed to evaluate a new quantitative method to assess whether physicians' counseling includes "precautionary empathy" (a set of communication behaviors that assess for and deal with potentially inapparent emotions).
METHODS: This analysis used 86 transcripts obtained during educational workshops in a Primary Care Internal Medicine residency program. The transcripts were taken from recorded conversations between residents and standardized patients who were portraying a low-risk 50 year-old man or a low-risk 43 year-old woman presenting with a general question about prostate or breast cancer screening. To determine the frequency and type of precautionary empathy statements, each transcript was abstracted using an explicit-criteria abstraction instrument and a previously compiled data dictionary. Transcripts were abstracted separately by two authors for quality control purposes and to allow calculation of inter-abstractor reliability.
RESULTS: Duration of the original interviews ranged from 2.0 to 18.9 minutes (mean 10.1). Abstractors identified a total of 142 incidents of precautionary empathy among the 86 transcripts abstracted, but 37/89 (43%) transcripts did not include any precautionary empathy behaviors. Of the remaining 57%, 29 (34%) contained only one of the possible behaviors; 13 (15%) contained two, and 7 (8%) contained 3 or 4. The most common precautionary empathy behavior was ***Close-ended Assessment for Emotion*** (22/86 transcripts contained at least one, 32%), followed by ***Instruction about Emotion*** (15/86, 22%), ***Open-ended Assessment for Emotion*** (14/86, 16%), and ***Caution about Future Emotion*** (10/86, 12%). Average inter-abstractor reliability for the types was moderate at $k = 0.55$. Condition data demonstrated a difference in open and closed-ended Assessments for Emotion between mammography and PSA transcripts (0.70 vs. 0.03, $p = 0.0067$). There was no statistically significant difference for any of the emotional assessments based on the gender or years post-graduate of the resident.
CONCLUSIONS: This study suggests that residents may not be addressing potential emotional reactions by patients during counseling, especially when the resident regards the topic as routine. Training programs and communication quality assurance projects should consider how to improve empathic communication both in response to emotions and in anticipation of possible emotions. Although further refinement will be needed, this new, quantitative assessment method holds promise for providing feedback and for identifying a subset of physicians most in need of intervention.

SOCIETAL TRENDS MAY PROMOTE EPIDEMIC US OBESITY. K.M. Mctigue[1]; J.E. Bost[1]; M.H. Farrell[1]; L.H. Kuller[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173900)*

BACKGROUND: Despite broad medical and public health attention, the underlying causes of rising US obesity prevalence are poorly understood. We hypothesized that societal trends, which limit the time available for food preparation and physical activity (e.g. increasing single-parent households, decreasing household size, and increasing female participation in the workforce) may contribute to escalating obesity.
METHODS: We examined average BMI in three serial cross-sections of data from a longitudinal sample of 9763 young adults in the National Longitudinal Survey of Youth 1979. Predictors included single parent status, number of adults in the household and average weekly spouse' work hours. Linear regression analyses are weighted to reflect national estimates and adjusted for education and income.
RESULTS: Among women, mean BMI was persistently higher among those who were single parents, compared to those who were not (e.g. 22.7 versus 22.0 in 1982; 26.0 versus 24.7 in 1992, and 27.9 versus 27.0 in 2002). Adjusted results were marginally significant ($p < 0.09$) at the first two time points. Among men, adjusted analyses showed a similar trend towards significance ($p = 0.08$) in 1992 only. Focusing on women who were single parents in 1982, 19% experienced relatively stable weight (+5 kg) over the next 20 years and 21% marked weight gain (>25 kg); estimates for

women who were not single parents in 1982 were 26% and 15%, respectively. Most adjusted comparisons between BMI and the number of household adults were not significant, while two comparisons were counterintuitive to our hypotheses. BMI increased as the number of adults in the household increased in 1992 among men, and a similar pattern was seen for women in 2002. In adjusted analyses, a significant ($p < 0.05$) association between spouse work hours and BMI was seen only in 2002, and differed by sex. As spouse work hours increased, BMI increased among men, while it decreased among women.
CONCLUSIONS: Major societal trends in family structure, living arrangements, and career choices may have contributed to increasing body size in young US adults. Longitudinal analyses will help clarify these relationships. If substantiated, they could provide important clues to understanding escalating US weight trends, and identifying patients at risk for weight gain.

SUSTAINED IMPROVEMENTS IN DOCUMENTED BRIEF ALCOHOL COUNSELING 2 YEARS AFTER IMPLEMENTATION OF AN ELECTRONIC CLINICAL REMINDER. E.C. Williams[1]; C.E. Achtmeyer[2]; M.S. Frey[3]; B. Volpp[4]; D.R. Kivlahan[1]; K.A. Bradley[1]. [1]University of Washington, Seattle, WA; [2]VA Puget Sound, Seattle, WA; [3]VA Puget Sound Health Services Research & Development, Seattle, WA; [4]VA Northern California Healthcare System, Martinez, CA. *(Tracking ID # 173938)*

BACKGROUND: Brief alcohol counseling for patients with alcohol misuse is a top US prevention priority, but most patients with alcohol misuse do not receive it. The proportion of patients who do receive such counseling varies depending on the severity of alcohol misuse (e.g. in VA, 13% among patients with mild and 56% among patients with severe alcohol misuse), and implementation studies have not resulted in sustained improvement. This study evaluated whether implementation of a clinical reminder for brief alcohol counseling, integrated in the VA electronic medical record, would result in sustained increases in documented counseling over 2 years, and described variation in the proportion of patients counseled by alcohol misuse severity.
METHODS: This study was conducted at an 8-site VA facility where a clinical reminder for brief alcohol counseling was implemented in 2004 and clinicians were expected to use clinical reminders. All data collection was from automated monthly Clinical Reminder Reports that indicated the proportion of screen-positive patients who had alcohol counseling documented with the clinical reminder. VA outpatients were considered "screen-positive" if they scored >4 (>3 for women) on the Alcohol Use Disorders Identification Test Consumption (AUDIT-C) Questionnaire in the past year. Patients with scores from 4–7 (3–7, women) and 8–12 were considered to screen positive for mild and severe alcohol misuse, respectively. Cross-sectional analyses determined overall proportions of screen-positive patients with documented alcohol counseling from February 2004 until May 2006 and proportions by alcohol misuse severity group.
RESULTS: An average of 9,700 patients was included in descriptive analyses each month. In the first three months after implementation, overall proportions of screen-positive patients with documented alcohol counseling increased from 26% in February 2004 to 56% in May 2004. Over the following 24 months (June 2004 - May 2006), a mean of 65% of all screen-positive patients had documented counseling. The proportion of patients per month with documented alcohol counseling ranged from 52% to 70% (mean 62%) for those with mild alcohol misuse and 57% to 74% (mean 67%) for those with severe alcohol misuse.
CONCLUSIONS: In this VA facility with a culture that supports use of electronic clinical reminders, a clinical reminder for brief alcohol counseling was associated with relatively high rates of brief alcohol counseling, which were sustained over 24 months. Moreover, the clinical reminder appeared equally as effective at increasing brief alcohol counseling for the many patients with mild alcohol misuse as well as the minority with severe alcohol misuse. Further research is needed to evaluate the quality of documented brief alcohol counseling.

TACKLING THE OBESITY EPIDEMIC IN LOW LITERACY POPULATIONS: A RCT OF AN INTERVENTION TO TEACH PATIENTS TO UNDERSTAND NUTRITION FOOD LABELS. M. Jay[1]; J.G. Adams[1]; S.J. Herring[2]; H.J. Feldman[2]; G. Lee[1]; A. Qin[3]; A.L. Kalet[1]; C. Tseng[1]; D.L. Stevens[1]; S. Zabar[1]. [1]New York University, New York, NY; [2]Harvard University, Boston, MA; [3]New York University School of Medicine, New York, NY. *(Tracking ID # 173095)*

BACKGROUND: Food label use by consumers is associated with better health outcomes. Many Americans, however, lack basic health literacy skills needed to read and understand how to use them to make healthy food choices. In a community health center in New York City serving a poor culturally diverse population, we developed a color-coded food label tool and video designed to help low literacy patients understand and use the nutrition food labels.
METHODS: Subjects, recruited at a health screening table in the health center's lobby, were randomly assigned to receive either the food label tool with an 8-minute instruction video (intervention group) or an FDA handout (control group) describing how to read the food label. We used a computer-generated block randomization and excluded subjects from the study before randomization if they did not speak English and/or had <20/50 vision in both eyes (by Rosenbaum card). Before the intervention, we collected basic demographic data, measured BMI, and assessed literacy level (STOFLA reading test) and food label use. A 12-question nutrition food label quiz was given before and after the intervention or control to assess food label knowledge and understanding (maximum score 12, minimum score 0). We used a 2-sample t test to compare changes in mean scores between the two groups and a subset analysis to look at the effect of the intervention on patients.
RESULTS: Thirty one participants fit entry criteria and were randomized. Forty-three. percent had BMI's greater than 30 ,25% scored less than 22 on the STOFLA reading test (marginal or inadequate health literacy), and 68% were patients at our facility the remaining were either employees or family members. There were 16 subjects in the video (intervention) group and 15 subjects in the control group. 19 participants were patients at the health center and 12 were non-patients. The difference between the mean improvement scores on the food label quiz did not attain statistical significance (.86, $p = .23$). When looking at the patient subset only, the mean difference in score improvement was significant (1.67, $p = .01$). On average, participants who did not currently use food labels had better score improvement in either group ($p = .03$).
CONCLUSIONS: Use of a video and color-coded nutrition food label tool immediately increased understanding and knowledge of the food label in patients with a high percentage of low literacy. The randomized trial was under-powered to detect a difference. Future work needs to be done to assess whether this improvement in knowledge leads to healthier food choices and better weight management.

THE ACHIEVING HEALTHY LIFESTYLES IN PSYCHIATRIC REHABILITATION STUDY (ACHIEVE): A MULTIFACETED WEIGHT LOSS INTERVENTION FOR PERSONS WITH SEVERE MENTAL ILLNESS. G.L. Daumit[1]; A. Dalcin[1]; J.H. Hayes[1]; G. Jerome[2]; R.M. Crum[1]; J. Charleston[1]; D. Gayles[1]; P. Mccarron[1]; L. Appel[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Towson University, Towson, MD. *(Tracking ID # 172373)*

BACKGROUND: Persons with severe mental illness (SMI) have lifespans 20 percent shorter than the general population and die primarily of cardiovascular disease (CVD.) The epidemic of overweight and obesity in persons with SMI contributes substantially to this premature CVD risk. Behavioral weight loss interventions that decrease CVD risk factors are efficacious in the general population, yet need adaptation for persons with SMI who often have cognitive impairment, competing mental and medical health demands and limited access to healthy food and places to exercise. Psychiatric rehabilitation programs provide a logical setting for weight loss interventions because consumers attend several days a week, centers emphasize behavioral skills training, and exercise sessions can take place on-site. The objective of this study was to develop and pilot test a multifacted weight loss intervention appropriately tailored for persons with SMI in a psychiatric rehabilitation program.
METHODS: We performed a pre/post study at 2 psychiatric rehabilitation programs where persons with SMI attend 3 mornings a week. The 6 month intervention provided nutrition classes (2 45 minute sessions/wk) and group exercise classes (3 45 minute sessions/wk) along with healthy modification of on-site meals and vending machines. Nutrition sessions were led by trained dieticians, used materials adapted to a 5th–8th grade reading level and emphasized repetition of concepts and hands-on activities (e.g., taste testing, label reading, measuring portions). The primary outcome was weight change at 6 months. Paired t-tests were performed.
RESULTS: Sixty-three participants (65% of all possibly eligible) enrolled. Fifty-two (80%) completed the entire study; others were discharged from centers before completion. Mean participant age was 43 years; 56% were women, 51% African American, 54% had schizophrenia, 23% bipolar disorder, 20% depression, 23% mental retardation, 34% substance use. Cognitive levels were quite low with mean Repeatable Battery for Assessment of Neurologic Status (RBANS) scores of 59, 30% below published means for schizophrenia. Seventy% used an atypical antipsychotic; 17% used >1. Over half smoked, a third had hypertension, 20% had diabetes. Average attendance across all sessions was 70% (87% on days participants attended the center.) Participants significantly reduced weight and waist circumference, and improved fitness after the intervention (Table.) The 63% of participants achieving weight loss lost a mean of 11.3 lbs (SD 10.0), or 5.1% of body weight.
CONCLUSIONS: Persons with SMI in this multifaceted weight loss intervention had high levels of participation and achieved weight loss, decreased waist circumference and improved fitness, despite significant cognitive impairment. These pilot results, which need confirmation in controlled trials, suggest appropriately tailored healthy lifestyle interventions are feasible and can be effective to decrease CVD risk factors in this vulnerable population.

Achieving Healthy Lifestyles (ACHIEVE) Study Results Pre/Post Nutrition and Exercise Intervention

	Baseline	Follow-up	Change	P-Value
	Mean (SD)	Mean (SD)	Mean (SD)	
Weight (lbs) (n-58)	215.2 (47.3)	210.4 (45.7)	−4.8 (12.5)	0.005
Waist circumference men (cm) (n=24)	114.8 (12.6)	111.5 (12.6)	−3.3 (5.1)	0.004
Waist circumference women (cm) (n=28)	112.0 (17.1)	109.1 (18.4)	−2.9 (5.7)	0.01
6 minute fitness walk (ft) (n=52)	1358 (297)	1474 (310)	+104 (180)	0.0001

THE ASSOCIATION BETWEEN PHYSICAL ACTIVITY LEVEL AND HEALTH-RELATED QUALITY OF LIFE IN THE GENERAL ADULT POPULATION: A SYSTEMATIC REVIEW. R. Bize[1]; J.A. Johnson[2]; R.C. Plotnikoff[3]. [1]Department of Community Medicine and Public Health, University Outpatient Clinic, University of

Lausanne, Lausanne, ; [2]Institute of Health Economics and School of Public Health, University of Alberta, Canada, Edmonton, Alberta; [3]Centre for Health Promotion Studies, School of Public Health, and Faculty of Physical Education and Alberta Centre for Active Living, University of Alberta, Edmonton, Alberta. *(Tracking ID # 173038)*

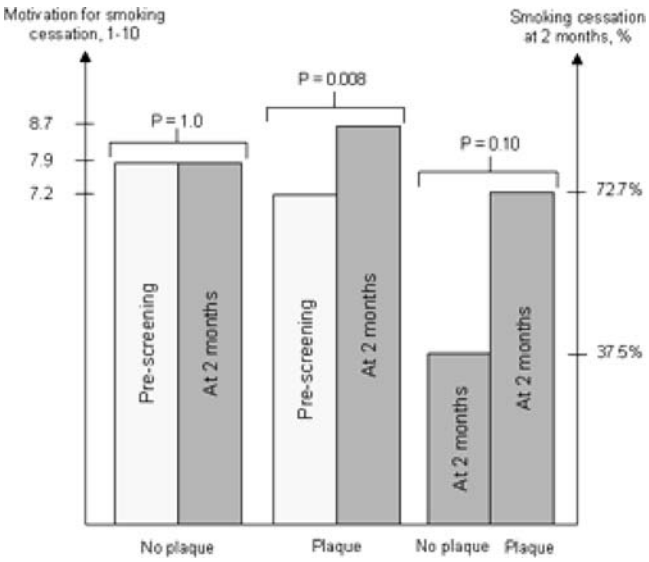
BACKGROUND: Many interventions promoting physical activity (PA) have proven effective in reducing the incidence of disease but less is known regarding health-related quality of life (HRQL) and its relation with PA level in the general population. Most conceptualizations of HRQL encompass physical, emotional, and social components. The primary objective of this study was to systematically review data examining the relationship between PA level and HRQL among healthy subjects from the general adult population.
METHODS: We systematically searched MEDLINE, EMBASE, CINAHL, and PsycINFO for HRQL and PA related keywords in titles, abstracts, or indexing fields. We additionally searched reference linkages through the Web of Science Database. All references were screened by two independent assessors on the basis of title and abstract, for possible inclusion. Observational designs were considered, provided that they reported the association between PA level and HRQL. Eligible participants consisted of healthy adults (aged 15 and older) drawn from the general population. Studies were assessed in full text for inclusion if they were retained by at least one of the reviewers. One of the authors extracted data from included studies. A second author checked and edited all entries for accuracy and consistency. All disagreements were reconciled in consultation with the third team member.
RESULTS: From 1426 retrieved references, 35 citations were initially judged to require further evaluation. References linkage provided 18 additional relevant papers. Of these 53 papers, 13 studies were retained for data extraction and analysis. Seven were cross-sectional studies, five were longitudinal, and one combined both approaches. Thirteen different types of PA assessments were used; only two studies used objective measures of fitness level as an outcome. Most HRQL instruments related to the Medical Outcome Study (MOS) SF-36 questionnaire. Cross-sectional studies showed a consistent positive association between self-reported PA and HRQL. The largest cross-sectional study (n = 175'850) reported an adjusted odds ratio of "having 14 or more unhealthy days (physical or mental)" during the previous month to be 0.40 (95%Confidence Interval 0.36–0.45) for those aged 45–64 who met recommended levels of PA compared to inactive subjects. A similar association was found when considering the two studies that provided contextual and psychometric arguments in favour of the validity of both their HRQL and PA instruments. In the largest of these two studies (n = 5'654), differences in SF-36 scores between inactive and vigorous exercisers were found to be at least four points in physical functioning, bodily pain, and mental health, approximately nine points in vitality and general health, and three points in physical composite score (a five points difference is generally considered as clinically meaningful). Longitudinal studies tended to show a positive effect of PA on HRQL, but were highly heterogeneous in term of design, and of limited methodological quality.
CONCLUSIONS: Cross-sectional data showed a consistently positive correlation between self-reported PA level and HRQL, although questionable validity of PA measures is a concern. Limited evidence from longitudinal studies precludes a definitive statement about the nature of this association.

THE EFFICACY OF PHARMACOTHERAPY FOR DECREASING THE EXPANSION RATE OF ABDOMINAL AORTIC ANEURYSMS: A SYSTEMATIC REVIEW AND META-ANALYSIS. I. Guessous[1]; D. Periard[1]; D. Lorenzetti[2]; J. Cornuz[1]; W. Ghali[2]. [1]University of Lausanne, Lausanne, ; [2]University of Calgary, Calgary, Alberta. *(Tracking ID # 172990)*

BACKGROUND: Early elective surgery for patients with small abdominal aortic aneurysms (AAAs) of 3 to 5.5 cm does not save lives and current recommendations therefore propose an attitude of watchful waiting with regular assessment of AAA size. Pharmacotherapy may represent a potential means to limit the expansion rate of small AAAs. Studies evaluating the efficacy of different pharmacological agents to slow down human AAA-expansion rates have been performed, but they have never been systematically reviewed or summarized. We therefore performed a systematic review and meta-analysis of clinical trials and prospective cohort studies evaluating the efficacy of various pharmacotherapies on the expansion rate of AAA.
METHODS: Studies were identified by searching MEDLINE, EMBASE and Cochrane databases. References of review articles and congress abstracts were also consulted. Two authors independently reviewed each potential study for eligibility, assessed methodologic quality, and extracted the data. We limited our research to RCTs and prospective cohort studies with a control group comparison. A priori, we did not limit our research to specific pharmacotherapies, but did include specific terms in our literature search for agents that the research team knew had been evaluated for AAA therapy (e.g. beta blockers, ACE inhibitors, calcium channel blockers, statins, doxycycline). Our main outcome measure was the growth rate difference (GRD) in abdominal aortic diameter (mm/year) between pharmacotherapy and control groups and expressed with standard deviation (SD) or equivalent.
RESULTS: Our search identified 999 potential articles addressing the efficacy of various pharmacotherapies on the expansion rate of AAA. Among these, 12 prospective studies (4 RCTs and 8 cohort studies) met eligibility criteria. Beta blockers have been evaluated in two RCTs and four cohort studies. When pooling the results of the two RCTs, beta-blockers do not significantly reduce the AAA growth rate [pooled GRD: −0.059 mm/year, 95% confidence interval (CI, −0.17 to 0.05)]. Among the four beta blockers cohort studies, only one shows a significant growth rate reduction, but pooled results also show a significant decrease [pooled GRD: −0.59 mm/year, (CI, −1.04 to −0.13)]. Doxycycline and roxithromycin have been evaluated in two RCTs and neither individual study results nor pooled results show a significant decrease of growth rate [pooled GRD: −1.32 mm/year, (CI, −2.89 to 0.25)]. Statins have been evaluated in two cohort studies, each showing a significant growth rate decrease [GRD: −1.60 mm/year, (CI, −2.38 to −0.82) and −4.52 mm/year, (CI, −6.10 to −2.94)]. Other cohort studies have separately evaluated the benefit of NSAIDs [GRD: −1.50 mm/year, CI −6.05 to 3.05)], diuretics [GRD: 0.10 mm/year, CI −0.71 to 0.91)] , calcium channel blockers [GRD: −0.30 mm/year, CI −0.97 to 0.37)] and ACE inhibitors [GRD: −0.78 mm/year, CI −1.58 to 0.02)], and suggest possible benefit, though none of the studies yield statistically significant differences in growth rate.
CONCLUSIONS: Our review indicates that various pharmacotherapies, and particularly anti-inflammatory agents, hold promise for reducing the expansion rate of AAAs greater than 3 cm. The literature summarized, however, constitutes a non-definitive body of evidence with most of the non-beta-blocker studies identified being observational cohort studies. There is now a need for more RCTs in this area, particularly for the promising anti-inflammatory agents.

THE IMPACT OF CAROTID PLAQUE SCREENING ON MOTIVATION FOR SMOKING CESSATION AND KNOWLEDGE RETENTION ABOUT ATHEROSCLEROSIS N. Rodondi[1]; R. Auer[1]; P. Devine[2]; P. Omalley[2]; D. Hayoz[1]; J. Cornuz[1]. [1]University of Lausanne, Lausanne, Vaud; [2]Walter Reed Army Medical Center, Washington, DC. *(Tracking ID # 171426)*

BACKGROUND: Smokers underestimate their own risk for smoking-related diseases, which may be a barrier to smoking cessation. Showing smokers their atherosclerotic plaques might be an efficacious strategy for increasing motivation for smoking cessation.
METHODS: We enrolled 30 regular smokers, aged 40–70 years in an observational pre-post pilot study to assess the feasibility and optimal processes of studying the impact of carotid atherosclerotic plaque screening. All smokers underwent smoking cessation counseling, nicotine replacement therapy, a carotid ultrasound, an educational tutorial on atherosclerosis, baseline and 2-month psychological and motivation to change assessment, and assessment of smoking cessation and atherosclerosis knowledge at 2 months. Carotid plaques were defined as a focal widening >50% relative to adjacent segment.
RESULTS: Participants had a mean (SD) duration of smoking of 34 (7) years, with a consumption of 22 (9) cigarettes/day. Carotid plaques were present in 22 smokers (73%). Between baseline and two months after plaque screening, motivation for smoking cessation increased, particularly in those with plaques (Figure). At two months, smoking quit rate was 63%, with a pattern of a higher quit rate in those with plaques vs. in those without plaques (Figure). Adjustment first for age and gender, and then for other potential confounders yielded similar results. Perceived stress, anxiety and depression did not increase after screening, both in those with and without plaques. 96% responded correctly to ≥80% of questions regarding atherosclerosis knowledge at baseline and two months.
CONCLUSIONS: Carotid plaque screening is feasible and appears to increase motivation for smoking cessation. Clinical trials should assess the impact of such screening on smoking cessation.



Plaque screening and smoking outcomes

TRENDS IN ADULT HEPATITIS B VACCINATION STATUS:IMPROVEMENT OR COHORT EFFECT? D. Koya[1]; E.G. Hill[1]; P.M. Darden[1]. [1]Medical University of South Carolina, Charleston, SC. *(Tracking ID # 172905)*

BACKGROUND: Hepatitis B virus infection (HBV) continues to be a global health problem despite our efforts to eliminate this common infectious disease through education and vaccination programs. Immunization is the most effective means of preventing HBV infection. Hepatitis B vaccination of infants and adolescents has been successful in the United States. The trends in adult immunization are not as clear. Objective: To determine the trends in hepatitis B vaccination prevalence among high-risk adults across years 2000, 2002 and 2004. To examine the effect of age on these trends and the factors associated with vaccination receipt.
METHODS: We used National Health Interview Survey (NHIS) 2000, 2002 and 2004 data to examine the trends in hepatitis B vaccination coverage among adults, 18–49 years of age with self-reported high risk behaviors. Health care workers were not included. Subgroup analyses within age groups (18–29, 30–39, 40–49) by survey year were conducted to assess the vaccination prevalence status by age groups across 3 survey years. Factors independently associated with vaccination receipt were determined by a multivariate model fitted to the 3 years of data. SUDAAN was used for statistical analysis to account for the NHIS complex survey design.
RESULTS: There was a significant increasing trend in the prevalence of vaccination status across the three survey years (2000 = 32.6%; 2002 = 35.3%; 2004 = 41.4%; trend test $p = 0.001$). When examined by age groups the increase in vaccination was significant only in 18–29 yr age group (2004 vs2000; 52.7% vs. 41.4%; $p = 0.02$). Compared to year 2000, 18–29 year age group is more likely to be vaccinated in year 2004 after adjusting for relevant confounders (OR 1.73, 95% CI 1.14–2.6). There was no significant increase in odds of vaccination for other age groups (30–39 and 40–49 yrs) between years 2000 and 2004. The independent predictors of vaccination are survey year, age, education status, receipt of influenza or pneumococcal vaccination, and testing for HIV.
CONCLUSIONS: There was a significant trend towards higher hepatitis B vaccination status with time, among high risk adults. This trend significant only in the younger age group suggests a 'cohort effect' caused by successfully vaccinated adolescents reaching young adulthood. Successful strategies should be developed and implemented to improve hepatitis B immunization rates among high-risk adults, particularly among older adults, in order to achieve the goal of successful elimination of Hepatitis B from the United States.

WEIGHT-LOSS MAINTENANCE IN AFRICAN-AMERICAN WOMEN: FOCUS GROUP RESULTS AND QUESTIONNAIRE DEVELOPMENT. A. Barnes[1]; K. Goodrick[1]; V.N. Pavlik[1]; J. Markesino[1]; D. Laws[1]; W.C. Taylor[2]. [1]Baylor College of Medicine, Houston, TX; [2]University of Texas Health Science Center at Houston, Houston, TX. *(Tracking ID # 172789)*

BACKGROUND: African American women are disproportionately affected by obesity and related diseases. Although acute weight loss can occur, maintenance is rare. Little is known about weight loss maintenance in African American women. Successful weight loss maintainers are a unique, important group from which useful information can be gathered. Their characteristics and strategies for weight loss maintenance can provide a basis for the development of successful weight loss and maintenance interventions. The purpose of this focus group study is three-fold: 1) to augment our understanding of successful weight loss maintenance in African American women; 2) using the theory of planned behavior, to explore the constructs of attitude, subjective norms, and perceived behavioral control regarding weight loss and maintenance in African Americans; 3) to help develop a reliable, relevant, and valid weight loss questionnaire that can be used to explore weight loss and weight loss maintenance in a larger sample of African Americans.
METHODS: Seven focus groups were conducted with African American women. Four included women who were successful at 10% weight loss and maintenance for at least 1 year and three included women who lost 10% of their weight but regained it. Participants were asked 8 open-ended questions regarding their weight loss and maintenance experiences. The study included thirty-seven African American women. The focus group transcripts were analyzed for content and important themes were identified.
RESULTS: Successful weight loss maintainers lost a mean of 59.5 pounds (22% of body weight). They view positive support from others as critical to weight loss maintenance. They believe that active opposition to cultural norms is important for weight loss maintenance. They struggle with weight regain, but have defined personal strategies in place to lose weight again. Some maintainers struggle with being perceived as sick or too thin at their new weight. Like weight regainers, maintainers monitor their weight by the fit of their clothing and struggle with hair style management during exercise. The theoretical constructs of attitude, subjective norm, and perceived behavioral control from the Theory of Planned Behavior were defined and supported by the focus group content.
CONCLUSIONS: In addition to questions regarding weight loss and weight-loss maintenance motivations and strategies, a weight-loss questionnaire for African Americans should include questions regarding the role of social support in maintaining weight loss, the importance of hair management for women during exercise, the influence of cultural norms and expectations on weight and food consumption, and concerns about being perceived as too thin or sick when weight is lost.

"YOUR SMOKING'S DONE ITS NUMBER ON YOUR LUNGS." MISSED OPPORTUNITIES FOR INTERVAL EMPATHY IN AFRICAN AMERICAN PATIENTS WITH LUNG CANCER. D.S. Morse[1]; E. Edwardsen[1]; A. Desai[2]; H.S. Gordon[3]. [1]University of Rochester School of Medicine and Dentistry, Rochester, NY; [2]Rochester General Hospital, Rochester, NY; [3]University of Illinois at Chicago, Chicago, IL. *(Tracking ID # 173240)*

BACKGROUND: Prior studies of African Americans (AA) with lung cancer reveal disproportionately high mortality, accompanied by communication rated lower in patient trust, participation, satisfaction, partnering, perceived support, and information sharing. We sought a detailed understanding of communication in these encounters to better understand positive and negative behaviors in cancer interactions.
METHODS: We conducted a qualitative, thematic analysis of 20 medical consultations between AA lung cancer patients and oncologists or thoracic surgeons, from a larger observational study of 103 patients in a large Southern VA hospital. Visits were audio-recorded, then transcribed. We selected 20 encounters, five each, with the highest and lowest patient trust in physician (MD), and the highest and lowest patient participation; authors were blinded to trust and participation ratings. The authors collaboratively developed themes through reviewing interviews until saturation was reached. Then each transcript was coded by two reviewers, using grounded theory methods, until consensus was achieved
RESULTS: Coding communication in the encounter yielded four themes and several categories within each theme. The four themes are: 1) patient response to cancer diagnosis; 2) statements of cancer diagnosis by MD or patient; 3) MD communication strategies and styles; and 4) healthcare system issues affecting care. Patient response theme categories are: a) understanding of diagnosis; b) physical symptoms; c) emotional or spiritual symptoms; and d) morbidity or mortality expectations. MD categories include: a) empathic response to patient emotional or physical needs; b) response to patient smoking; and c) presence or absence of shared decision-making. We identified 336 empathic opportunities, and 41 (12.2%) were addressed empathically. MD's rarely utilized smoking cessation strategies, and in 8 of 20 (40%) interviews explicitly blamed patients' cancer on smoking. Shared decision making with explicit patient understanding was seen in 13 of 212 (6.1%) opportunities. In the subset of 4 patients whose lung cancer did not qualify for treatment beyond comfort approaches, 100% criticized patient smoking, 8.6% empathic opportunities were addressed, and none shared decision-making. We did not note major differences between surgeons and oncologists. Generally, MD's did not express identification with or support of patients' concerns that were repeatedly raised throughout the encounter. We defined this phenomenon as missed opportunities for "interval empathy."
CONCLUSIONS: MD's rarely responded empathically to AA lung cancer patients' statements regarding emotional, physical, spiritual, morbidity or mortality concerns; often used criticism; and rarely shared decision making. These findings are helpful in better understanding decreased communication ratings previously described for these patients. One hypothesis is that the MD's managed their internal responses to less curable patients with blame and distancing behaviors. We propose use of "interval empathy" to take advantage of empathic opportunities and to progressively build rapport, rather than waiting until the end of the encounter. Strategies to help MD's recognize and manage their internal responses, as well as addressing patient emotional needs and decision making could potentially improve communication in this setting. Future efforts could address teaching "interval empathy" and study whether increased use improves patients' perceptual outcomes.

BARRIERS TO COLORECTAL CANCER SCREENING IN COMMUNITY HEALTH CENTERS: A QUALITATIVE STUDY OF PATIENTS AND THEIR PRIMARY CARE PROVIDERS. K.E. Lasser[1]; J.Z. Ayanian[2]; R.H. Fletcher[3]; M.D. Good[4]. [1]Cambridge Health Alliance/Harvard Medical School, Cambridge, MA; [2]Brigham and Women's Hospital/Harvard Medical School, Boston, MA; [3]Department of Ambulatory Care and Prevention/Harvard Medical School, Boston, MA; [4]Department of Social Medicine/Harvard Medical School, Boston, MA. *(Tracking ID # 170918)*

BACKGROUND: Colorectal cancer screening rates are low among multi-ethnic patient populations served by community health centers. We are not aware of prior studies that have directly compared patient and primary care provider (PCP) perspectives about why individual patients have not been screened.
METHODS: We conducted in-depth semi-structured interviews with 23 patients who were eligible for colorectal cancer screening, and with their PCPs. The patient sample comprised 14 women and 9 men; the PCP sample comprised 5 women and 5 men. We conducted all of the PCP interviews and 8 of the patient interviews in English; we conducted the remaining patient interviews via an interpreter in Portuguese or Portuguese Creole (n = 6), Spanish (n = 2), and Haitian Creole (n = 7). We asked each patient, and their respective PCP, why the patient was not screened for colorectal cancer. Seven of the patients had received screening that was not detected by our administrative database; in these interviews we assessed facilitators of screening. We audiotaped, transcribed, and coded the interviews to identify major themes for each interview, and to link together related themes across all interviews.
RESULTS: Despite the heterogeneity of patient languages, 4 distinct themes emerged from our analyses of patient interviews: 1) Unscreened patients cited lack of trust in doctors as a major barrier to screening ("I'm not going to go and be a guinea pig)" whereas few PCPs identified this barrier in their patients. 2) Both screened and unscreened patients identified presence or lack of symptoms as the main reason why they were or were not screened, respectively ("I have the world's best digestive system ") while very few PCPs identified this barrier in their patients. 3) A doctor's recommendation, or lack thereof, significantly influenced patients' decisions to be screened. This theme, while identified among patients speaking Spanish, English, and Haitian Creole, was especially common among Haitian patients ("The doctor never asked me to do it"). Some PCPs were aware that they had not recommended screening, often because of competing priorities-their own priorities or those of the patient 4) Patients, but not their PCPs, cited cancer fatalism as a barrier ("If you got it you got it"). Most PCPs identified competing priorities, such as psychosocial stressors ("intermittent crises in his life: job

injury, job loss, homelessness, substance abuse ") or comorbid medical illness ("I'll be glad if I control her blood pressure") as the reason why their patients were not screened. PCPs also had the perception that their patients preferred not to be screened, although they often could not identify the reasons why the patient did not wish to be screened.
CONCLUSIONS: Patients and PCPs often provided conflicting explanations for the reasons why patients did not receive screening for colorectal cancer. Interventions to improve screening rates in community health centers will need to address not only patient-level barriers, such as lack of trust in doctors, lack of symptoms, and cancer fatalism, but also provider-level barriers including lack of a recommendation for screening and a sense of too many competing priorities.

DESIGNING A HYPERTENSION CONTROL OUTREACH PROGRAM: QUALITATIVE COMMUNITY FEEDBACK. R. Padilla[1]; D. Fernald[2]; E. Havranek[1]; T.D. Mackenzie[1]; J.F. Steiner[3]. [1]Denver Health and Hospital Authority, Denver, CO; [2]University of Colorado Health Sciences Center, Denver, CO; [3]University of Colorado Health Sciences Center, Aurora, CO. *(Tracking ID # 172596)*

BACKGROUND: In the U.S., 41% of individuals with hypertension are untreated and only 34% of treated patients are well controlled with medications. We conducted qualitative research with focus groups to obtain information from minority hypertensive patients and from health care providers that could be used to redesign services to improve hypertension control.
METHODS: Five focus groups were conducted with a total of 35 hypertensive patients who receive care in a public health care system. A sixth focus group was made up of five health care providers who reviewed the suggestions made by the patient focus groups. Patients were separated into groups based upon whether they had a history of controlled or uncontrolled hypertension and whether they spoke primarily English or Spanish. We discussed their perception of the importance of hypertension control, barriers to hypertension control, and what features they would want in a hypertension outreach program.
RESULTS: Participants in the focus groups were in consensus that hypertension control is important. In each focus group, some individuals did and some did not perceive any problems with their hypertension management. Commonly described barriers to hypertension control included: difficulty in getting an appointment with their provider; financial barriers due to co-pays for medications and provider visits; dietary issues leading to inability to lose weight; competing demands; and pharmacy barriers (ordering medications through the interactive voice response system, long wait times, poor customer service). Barriers to taking their hypertension medications included: cost; having multiple medications; forgetting to take medications; and doubts about whether the medication is truly necessary. The Spanish-speaking patients encountered all the same issues as the English-speaking patients with the addition of issues related to language barrier, which the patients felt had a significantly negative impact on their health care. When asked to choose between a system navigator (a person with some training who would actively guide patients through the health care system); interactive voice response system; a "promatora"(a lay person who would serve as an intermediary between the health care system and the community) and a tailored newsletter to assist with implementing a hypertension control program, the majority of the patients chose a system navigator. The health care provider focus group described the same issues that were brought up by the patients. However, the health care providers attributed some of these issues to patient impatience or lack of knowledge about how to use the health care system effectively. The providers agreed that a system navigator could play a vital role in assisting the patients with many of their issues. The providers, most of whom did not speak Spanish, were frustrated with the lack of translator capacity available to assist the Spanish-speaking patients.
CONCLUSIONS: Community and provider feedback to design a hypertension control outreach program in a public health care system revealed that patients and providers share common beliefs about barriers to hypertension control and management. Both groups agree that a system navigator could be a viable way to overcome these barriers.

DO PRIMARY CARE PHYSICIANS CONTRIBUTE TO THE CASCADE EFFECT IN THE DIAGNOSIS AND TREATMENT OF CORONARY ARTERY DISEASE? G.A. Lin[1]; R.A. Dudley[1]; R.F. Redberg[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173026)*

BACKGROUND: Rapid advancement and access to newer technologies has resulted in the ability to recognize coronary disease in asymptomatic patients. The identification of subclinical or mildly symptomatic disease often starts a cascade of events leading to a percutaneous coronary intervention (PCI), even though the available evidence has shown that PCI offers no benefit to asymptomatic patients relative to medical therapy. The role of primary care physicians in this clinical cascade towards PCI is undefined. Therefore, our objective was to examine the beliefs, current practices, and decision making of primary care physicians in California with respect to the early identification, diagnosis and treatment of stable coronary artery disease.
METHODS: We conducted a qualitative study using three focus groups consisting of 38 primary care physicians from around the state of California. Participants discussed issues surrounding identification and treatment of coronary artery disease using hypothetical case scenarios. Transcripts and observational notes were analyzed according to the principles of grounded theory.
RESULTS: Although most primary care physicians did not believe that there was utility in screening tests such as electron beam computed tomography (EBCT) and would not necessarily order one themselves, they nevertheless felt obligated to pursue additional testing once presented with a positive EBCT or other screening test by a patient. Reasons given for performing additional testing and treatment included: relief of patient anxiety, physician intolerance of uncertainty, fear of missing a lesion, anticipatory guilt if no intervention was done and a cardiac event subsequently occurred, and medicolegal liability. In addition, physician memories of patients who died suddenly from CAD influenced the desire to do further testing, as did the perception that patients want and/or expect more testing and treatment. Physicians also cited a lack of knowledge of the latest evidence and feeling uncomfortable with positive test results as reasons for further diagnostic testing and referral, and did not participate in the decision making process after referral. The result of this testing cascade is that even the asymptomatic patient with coronary artery disease may be committed to a path of diagnosis and treatment from the first test performed, despite the evidence that PCI offers such patients no clinical benefit.
CONCLUSIONS: Diagnosis and treatment of asymptomatic, stable coronary artery disease appears to be the result of a cascade effect of positive screening or diagnostic testing leading to more testing and ultimately procedures. Emotional and psychological factors, along with physicians' perceptions of patient expectations, greatly influence physician decision making. Interrupting the clinical cascade requires understanding of physician and patient motivations in order to ensure optimal utilization of technology and maximization of patient benefit.

EXPERIENCES OF SOCIAL STIGMA AND IMPLICATIONS FOR HEALTH CARE AMONG A DIVERSE POPULATION OF HIV POSITIVE WOMEN AND MEN. J.N. Sayles[1]; G.W. Ryan[2]; J.S. Silver[3]; C.A. Sarkisian[1]; W.E. Cunningham[1]. [1]University of California, Los Angeles, los angeles, CA; [2]RAND, Los Angeles, CA; [3]University of California, Santa Cruz, Aptos, CA. *(Tracking ID # 173654)*

BACKGROUND: Stigma profoundly affects the lives of people with HIV/AIDS. However, little is know about how stigma may affect access to medical care, retention in care, and disclosure of HIV status to health care professionals.
METHODS: To better understand the experiences of HIV related stigma and how stigma may affect healthcare, we conducted 7 focus groups in a sample of diverse, low-income women and men living with HIV in Los Angeles, California (n = 48). We used a standard pile sorting technique to analyze the qualitative data and to identify the most salient domains and sub-domains of stigma experienced by our participants. We also explored the impact of stigma on health and healthcare among HIV positive persons in our sample.
RESULTS: Our sample included 48 HIV positive participants. Fifty-four percent of participants were female, 56% were African American, 21% Latino/a, 15% White and 8% of another race/ethnicity. Fifty percent of participants report being homeless at some time in the past, 72% report having a high school education or less, and the median household income for the sample was $10,400 per year. Our qualitative analysis indicates that the four most salient domains of stigma include: blame and stereotypes of HIV, fear of contagion, disclosure concerns, and renegotiating social relationships. In the health care setting participants describe how poor social support and fear of disclosure may lead to avoidance of care, delays in accessing care, and lack of follow-up care. Patients report that stigma and unwanted disclosure are often intensified by the antiretroviral therapy (ART related) physical changes of lipodystrophy and lipoatrophy, which are described as being visible signs of HIV infection. Furthermore, many participants report that fear of lipodystrophy/lipoatrophy side effects is an important barrier to both initiating and adhering to ART regimens.
CONCLUSIONS: Participants identified several aspects of stigma that may be important barriers to HIV treatment and care, including poor social support, fear of disclosure, and medication related physical changes (lipodystrophy/lipoatrophy). Interventions to reduce stigma in the health care setting are needed, particularly educating primary care providers and staff about patients' HIV disclosure concerns and their potential impact on medication adherence and care seeking behavior.

EXPERIENCES, PERCEPTIONS, AND BEHAVIORS OF PATIENTS WITH MEDICALLY UNEXPLAINED SYMPTOMS F.C. Dwamena[1]; J.S. Lyles[1]; R.M. Frankel[2]; R.C. Smith[1]. [1]Michigan State University, East Lansing, MI; [2]Indiana University Purdue University Indianapolis, Indianapolis, IN. *(Tracking ID # 173926)*

BACKGROUND: Descriptive studies of patients with Medically Unexplained Symptoms (MUS) have traditionally relied on definitions of MUS derived from the Diagnostic and Statistical Manual (DSM). However recent studies show that 50–75% of all high utilizing primary care patients with MUS do not meet full or abridged DSM criteria. Thus descriptive studies that use DSM may not well represent MUS patients seen in primary care. We conducted the study reported here to better understand the perceptions and experiences of high utilizing primary care patients with MUS.
METHODS: We used a reliable chart rating method to identify high utilizing primary care patients in whom MUS was the primary reason for at least 50% of visits. Participants of this study included a purposeful sample of nine patients for whom definitive tests had ruled out organic disease for 25% of unexplained symptoms (called documented non-organic) and ten patients who had not had sufficient testing for at least 75% of unexplained symptoms (called minor acute illness (MAI)). One of the authors, who was trained in qulaitative methods, interviewed all 19 patients. The audiotaped interviews, which lasted an average of 90 minutes, were designed to encourage the spontaneous expression of each patient's story. In addition to the narrative thread, additional inquiry included questions about a priori topics (patients' explanatory models, health-seeking behavior, locus of control, relationships, history of

abuse, and future expectations) and questions that allowed the interviewer to test theories that emerged from earlier interviews in later ones. From transcriptions of the audiotapes three authors identified relevant themes using an iterative consensus building approach based on Grounded Theory principles. Mean age of interviewees was 48 years; 84% were female and had 12.8 primary care visits/year. MUS was the primary reason for 69.6% of visits. We used Grounded Theory to test, expand, and refine categories from verbatim transcripts of interviews.
RESULTS: Three themes common to all patients (childhood trauma, family patterns of distress, and adulthood abuse) described negative experiences. Nine themes that constituted perceptions and behaviors divided participants into three groups: 1) Nine 'classic somatizers' (five with documented non-organic disease) focused on their symptoms, perceived personal relationships as difficult, demonstrated attitudes of entitlement, and appeared unable to make logical inferences about psychological stress. 2) Four 'coping high utilizers' (three with MAI), demonstrated psychological insight, described positive relationships, and rarely discussed symptoms or demonstrated entitlement. Their narratives revealed altruism and personal accomplishments. 3) Six 'worried high utilizers' (three with documented non-organic, three with MAI) complained about their healthcare and appeared to worry about missed diagnoses. Although they frequently discussed symptoms, their transcripts rarely suggested notions of entitlement.
CONCLUSIONS: These primary care patients with MUS frequently had negative experiences but differed based on perceptions and behaviors. The relationships between their unique characteristics e.g., association of poor insight with entitlement and symptoms focus, and of worry with complaining and symptoms focus may have identified possible targets for treatment and future research in similar patients.

FOCUS GROUPS TO EXPLORE OLDER PATIENTS' VIEWS OF AN INFORMED DECISION MAKING MODEL. E.L. Leemann[1]; S. Bereknyei[2]; A. Kuby[3]; C. Braddock[1]. [1]Stanford University, Stanford, CA; [2]Stanford University, Palo Alto, CA; [3]National Opinion Research Center, Chicago, IL. *(Tracking ID # 173816)*

BACKGROUND: There has been growing emphasis on involving patients in medical choices. One model for this is informed decision making (IDM), which has been associated with positive outcomes. However, no studies have explored patients' reactions to this model, particularly in older patients. This study explored the views of older adults towards IDM with a series of focus groups.
METHODS: We recruited persons 65 and older in diverse communities for six focus groups on Informed Decision Making (IDM). In each session, participants reviewed videotapes we produced depicting idealized patient-physician decision-making interactions, and discussed the videos in light of seven IDM elements: 1) discussion of the patient's role in decision-making; 2) discussion of the clinical issue; 3) discussion of alternatives; 4) discussion of benefits and risks; 5) discussion of associated uncertainties; 6) assessment of the patient's understanding; and 7) exploration of patient preference. The focus groups' goals were to: review the relevance and importance of IDM elements to older patients; determine any additional IDM elements needed; and explore older patients' general views about communication and decision-making. We reviewed focus group transcripts and data from questionnaires. We used a modified grounded theory approach to assess agreement with existing IDM criteria, identify emerging new criteria, and explore older patients' attitudes about medical decisions.
RESULTS: The six groups comprised 59 participants. Eighteen (30.5%) were African American; 39 (64.4%) were white; three (<1%) were neither. Thirty-nine (66%) were women. 53.5% had high-school level educations or higher. Participants strongly endorsed existing IDM criteria. In questionnaires, each IDM criterion was rated "somewhat" or "very" important by 57 to 59 participants (96.6–100%). Qualitative analysis also showed endorsement of the criteria, often related to participants'own experiences. For instance, regarding discussion of alternatives, one participant noted "My doctor acted like surgery was the only thing to do. He didn't know of any medication or anything else." Two additional IDM criteria emerged from these groups. The first was desire for input from trusted others. While some wished for a physician "second opinion", many felt they needed trusted non-physicians to provide "objective" viewpoints and assist with information-gathering: "I like my family to hear the doctor, it would make me feel more comfortable"; "It's always best for 2 people to hear what the doctor has to say." The second new criterion was discussion of a decision's impact on a patient's daily life, including mobility level and dependence on others: "(They discussed) approximately how long she would be back on her feet, even in the hospital a couple of days, perhaps, and then back on her feet with a cane." In all focus groups, IDM criteria were closely linked with communication themes including respectfulness, responsiveness, listening, and trust.
CONCLUSIONS: These focus groups affirmed the seven elements of the IDM model, and suggested two additional criteria: 1) involvement of trusted others and 2) discussion of decisions' effects on patients' daily lives. These additional themes have particular relevance for older patients and their specific concerns about memory loss, worsening health, and increasing dependence on others.

INCORPORATING ITEM BANKS INTO CLINICAL TRIALS: INVESTIGATOR PERCEPTIONS. K.E. Flynn[1]; C.B. Dombeck[1]; E. Morgan Dewitt[1]; L.W. Diener[1]; K.A. Schulman[1]; K.P. Weinfurt[1]. [1]Duke University, Durham, NC. *(Tracking ID # 173448)*

BACKGROUND: The use of patient-reported outcomes (PROs) to evaluate the experiences of patients in clinical trials is increasing, but assessment of PROs often suffers from several problems including long and burdensome measures, significant floor and ceiling effects, and a lack of standardization that makes it difficult to compare or combine scores across different studies. Item response theory (IRT) offers the promise of more sensitive and efficient measurement of PROs, and the NIH has made a large investment toward creating banks of items based on IRT through the Patient-Reported Outcomes Measurement Information System (PROMIS) network. However, the process of selecting and using PRO measures from these new IRT-item banks is very different from current methods of using PRO measures. Our objective was to evaluate a brief tutorial on IRT-item banks and anticipate barriers to the adoption of IRT-item banks into clinical trials.
METHODS: Lead authors who published results from clinical trials in the Journal of the American Medical Association, the New England Journal of Medicine, or other top clinical journals from July 2005-May 2006 were identified through literature search and recruited via email, with one follow-up message emailed to non-responders. We aimed for 10 interviews in each of 4 target areas: cardiovascular outcomes, oncology outcomes, pediatric populations, and mixed outcomes. Recruitment was not dependent on experience with PROs. Semi-structured telephone or in-person interviews were digitally-recorded and lasted 30 minutes. Participants received $200. Two coders independently characterized interview content using a hierarchical coding scheme. Discrepancies were resolved through discussion. The 6-slide tutorial on IRT-item banks described common problems with current PRO instruments, the process for developing item banks used by the PROMIS network, and the novel products from IRT-item banks including customized short forms and computerized adaptive tests.
RESULTS: We completed forty-two interviews (39% response rate) between April and October 2006. Most (90%) investigators had previous experience using PROs in clinical trials. After the tutorial, most (93%) understood the novel products from an IRT-item bank, and most (90%) thought an item bank would definitely or potentially be useful to them for their trials. However, investigators mentioned a number of potential barriers to adoption including economic or logistic restraints, concerns about whether an item bank is better than current practices, concerns about how to convince study personnel or statisticians to use item banks, and the lack of availability of items banks validated in specific disease populations.
CONCLUSIONS: A brief tutorial is sufficient to interest clinical investigators in the improved PRO measurement that IRT-item banks offer. Some potential barriers to investigators adopting IRT-item banks can be addressed through education (e.g., how an item bank is better), but others will require additional work on the part of bank developers (e.g., item banks validated in specific disease populations). Use of IRT-item banks could be advantageous to health assessment but, as with any new technology, success is not guaranteed. By anticipating barriers to the adoption of IRT-item banks in clinical trials, developers can aim to address these barriers before widespread adoption is expected.

MIXED METHODS EVALUATION OF ORAL SIGN-OUT PRACTICES. L.I. Horwitz[1]; T. Moin[2]; L. Wang[3]; E.H. Bradley[4]. [1]VA Connecticut Healthcare System, New Haven, CT; [2]Yale University School of Medicine, New Haven, CT; [3]Yale-New Haven Hospital, New Haven, CT; [4]Yale University, New Haven, CT. *(Tracking ID # 173726)*

BACKGROUND: Communication breakdowns among physicians are at the root of many preventable errors in medicine, but the ideal method of communicating patient information among physicians is unknown. The objectives of this study were to characterize patterns of communication in oral sign-out during transfers of patient care among internal medicine residents, and to identify key content of the oral sign-out by using a combined qualitative-quantitative approach.
METHODS: We observed oral sign-outs among house staff on internal medicine wards at an urban academic medical center. To minimize the Hawthorne effect of direct observation, on-call internal medicine interns were instructed to audiotape all oral sign-outs during the study period. All interns who had overnight duties were interviewed on the post-call day. Audiotapes were transcribed and examined for themes using the constant comparative method during an iterative coding process. We qualitatively assessed communication patterns and developed a list of core sign-out elements based on sign-outs, interviews, and rating of the quality of each sign-out by recipients. We also examined factors that influenced communication behaviors and content.
RESULTS: Twenty sign-outs involving 137 patients were recorded and transcribed. We observed widespread use of vague language, discursive and unstructured organization, and open-loop communication, in which responsibility for tasks was not clearly assigned. Residents suggested that ideal oral sign-outs included 1) a description of the patient's current situation (including clinical condition and planned events), 2) clear and concrete guidelines for overnight tasks, including a plan of action and a rationale for each task assigned, 3) anticipatory guidance for likely overnight problems, and 4) adequate verbal interaction between sign-out provider and recipient. Nevertheless, clinical condition and scheduled events were described in a minority of sign-outs. Furthermore, only 38% of assigned tasks and 40% of anticipatory guidance statements included a plan and rationale. Despite this, sign-outs were rated positively (4.2±0.8 on 5-point Likert scale) by recipients, whose assessments were driven more by the number of overnight calls they received about the patients than by communication patterns and content of sign-out. Communication style and content were influenced by level of training, participants' degree of familiarity with patients, hierarchical relationships among sign-out participants, and the degree to which sign-out recipients considered themselves integral members of the care teams.
CONCLUSIONS: Sign-out language is often vague, open-ended and unstructured. Clinical condition, scheduled events, plans and rationales for tasks assigned,

anticipatory guidance and time for discussion and interaction appear to be valuable components of sign-out content, but are not consistently accomplished. These are potential areas of focus for future efforts to improve sign-out.

PATIENT COMPUTING: INSIGHTS FROM CONSUMERS, PATIENTS, AND HEALTH PROFESSIONALS. J. Walker[1]; D. Ahern[2]; T. Delbanco[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 172474)*

BACKGROUND: The idea of personal health records (PHRs) is gaining acceptance rapidly, and health professionals are rushing to develop prototypes that will engage individuals in a variety of personal health applications. However, design teams rarely solicit lay perspectives, and we understand far too little about what people want from PHRs and the needs of different patient populations for management of health information.
METHODS: We conducted 8 focus groups with adults from diverse populations, representing a broad range of age, ethnicity, education, health status, and geography. All participants used the Internet frequently and expressed interest in matters related to health care. One group was with healthy individuals; three others were with patients with chronic illness. One group focused on caregivers for the chronically ill; another was composed of college/graduate students with particular interest in the future use of the Internet. In 2 groups, half the participants were clinicians, and half lay persons. Groups were led by experienced facilitators using a discussion guide designed to elicit participants' current practices for managing personal health information and care, their unmet needs, and how they think technology could help in the future. Focus group transcripts were analyzed qualitatively drawing from behavioral and grounded theory, employing an immersion/crystalization technique.
RESULTS: Individuals expect technology to transform their relationship with the health care system, just as it has changed their interactions with other sectors of the economy. They recognize that clinicians are stretched too thin and are willing to substitute technologies for some personal services, especially if they are more convenient. While healthy people are quite concerned about privacy, they want full access to their medical records, even though they may choose not to read them. People who are chronically ill want similar access, but may be far less concerned about privacy, particularly when acutely symptomatic. Individuals are willing to introduce monitoring and other technologies into their homes. They want computers to understand who they are, to bring them customized health information and advice, to furnish them with reminders, and to help them organize their care. They are interested both in diagnosing and treating common conditions themselves, and in rapid access by computer to clinicians whom they may not have met. Both consumers and clinicians believe providing patients with these capabilities may free clinicians from relatively low level tasks and give both patients and clinicians more time for important direct, individualized care.
CONCLUSIONS: Consumers, patients, and health professionals have concrete, congruent, and sometimes counter-intuitive ideas about how information technologies could enable people to be more proactive in promoting their own health and managing illness. When designing and planning new technologies, including a diverse array of individuals early in and throughout the process will help improve and integrate applications and data structures, both for the near and the long term.

PROFESSIONALISM ASSESSMENT TOOLS BASED ON PATIENT, NURSE, AND PHYSICIAN PERSPECTIVES. M.M. Green[1]; A. Zick[1]; G.T. Makoul[1]. [1]Northwestern University, Chicago, IL. *(Tracking ID # 172536)*

BACKGROUND: The competency of professionalism has gained increasing attention throughout the continuum of medical education and practice. The overall goal of this project was to use input from patients, nurses, and physicians to systematically develop behaviorally-based measures of professionalism that are relevant across specialties.
METHODS: We conducted a series of 22 focus groups designed to explore behavioral signs of professionalism in medicine. Groups were held with patients, inpatient nurses, outpatient nurses, resident physicians, and attending physicians recruited in four subspecialties (internal medicine, general surgery, pediatrics, physiatry). Each focus group had an average of 7 participants as well as two trained facilitators. Discussions were videotaped to facilitate content analysis and constant comparative analysis; all three authors participated in a debriefing session after each group. Items generated, whether by patients, nurses or physicians, were included for discussion in all subsequent groups. We applied to each item the Lexile measure of readability, and refined wording to meet the level at which people can read 8th grade texts with more than 80% comprehension. We then conducted a national telephone survey of US adults (patient survey) to measure the importance Americans attach to each item as a sign of professionalism, as well as to determine whether patients think they can know if a doctor exhibited the behaviors. We also conducted an online survey of inpatient and outpatient nurses from multiple specialties (nurse survey) and a parallel online survey of the leadership from all 24 medical specialty boards (physician survey). Items were included on the Professionalism Assessment Tool (PAT) if at least 75% of respondents deemed them very important and at least 75% indicated that they could gauge the behavior in a physician. Once items were selected, we conducted a set of 3 focus groups - one with patients, one with nurses, one with physicians - to ascertain the practicality of each list and discuss response scales
RESULTS: Focus groups generated a total of 73 behaviorally-based items ranging from the very basic (e.g., good hygiene) to communication, accountability, and service to the profession. Respondents to the patient survey (n = 415) indicated that 15 items met the criteria for inclusion on the PAT to be used by patients. Responses to the nurse survey (n = 223) yielded a set of 11 items for the PAT to be used by nurses. The physician survey (n = 214) suggested that a peer-assessment would not be feasible: only two items met the inclusion criterion regarding ability to gauge the behavior in a physician colleague. We created a PAT for physician and medical student self-assessment that included the 54 items rated as very important by at least 75% of any constituency (patients, nurses, physicians).
CONCLUSIONS: It is possible to define professionalism in terms of measurable behaviors. Developing the Professionalism Assessment Tools in partnership with patients, nurses, and physicians allowed us to develop instruments that will be tangible, relevant, and valuable for the people who use them. Providing physicians and medical students with feedback about their professional behavior has considerable potential for reinforcing the importance of "practicing what we teach" and improving the quality of patient care.

PROVIDER PERCEPTIONS OF INTEGRATING CARE FOR HIV INFECTION AND OPIOID DEPENDENCE. P.T. Korthuis[1]; B.A. Fuller[1]; A. Phelps[1]; J. Boverman[1]. [1]Oregon Health & Science University, Portland, OR. *(Tracking ID # 173243)*

BACKGROUND: Opioid dependence is common among HIV-infected patients and associated with suboptimal HIV outcomes. Office-based buprenorphine maintenance is a promising new treatment modality that may help opioid dependent patients engage in both addiction treatment and HIV care. The objective of this study was to assess HIV clinic and substance abuse treatment center provider perceptions regarding integration of buprenorphine treatment into an HIV care setting.
METHODS: In-depth qualitative interviews were conducted with 30 physicians, substance abuse counselors, nurses and administrative staff at 2 HIV clinics and 1 substance abuse treatment center in Portland, Oregon. This study was conducted locally in the context of a national initiative to integrate care for persons with co-existing HIV and opioid dependence. Interview guides contained open-ended questions about perceptions and attitudes toward care integration for HIV and opioid dependence treatment and probed potential barriers and facilitators of integrated care. Audiotaped interviews were transcribed and analyzed using grounded theory, with the assistance of ATLAS.ti software. Narratives were reviewed for recurrent themes.
RESULTS: Five themes emerged from these interviews. The first theme identified potential benefits of integrating opioid dependence treatment into an HIV clinical setting. Providers felt that providing opioid replacement in the HIV clinic might improve antiretroviral adherence, reduce drug use, and be well received by patients. The second theme identified potential barriers to integrated care including issues of stigma. The third theme concerned diversion of the medication to people other than the patient. This theme was strongest among substance abuse treatment center providers. The fourth theme identified concerns regarding patient issues. These included medical issues (e.g. interactions between HIV drugs and buprenorphine) and treatment issues (e.g. concerns that more socially chaotic patients might be better served in a substance abuse treatment center environment than in integrated care). The final theme identified organizational issues such as concern regarding site capacity to house an on site substance abuse counselor and clinic cultural differences in expanding to include substance abuse treatment services.
CONCLUSIONS: HIV provider enthusiasm for integrating opioid dependence treatment into HIV care was, overall, high. Successful treatment integration will need to address provider concerns regarding buprenorphine drug interactions, appropriate patient selection, stigma, and perceived need for increased clinic capacity to facilitate office-based substance abuse treatment.

RESIDENT UNCERTAINTY IN CLINICAL DECISION-MAKING AND IMPACT ON PATIENT CARE: A QUALITATIVE STUDY. J.M. Farnan[1]; J.K. Johnson[1]; D.O. Meltzer[1]; H.J. Humphrey[1]; V.M. Arora[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 172217)*

BACKGROUND: Little is known regarding how internal medicine residents manage decision-making during times of uncertainty and how it affects patient care. The aims of this study are to describe types of uncertainty faced by on-call residents during clinical decision-making, strategies employed to manage clinical uncertainty, and how these decisions impact patient care.
METHODS: All residents between January and November of 2006 at a single academic institution were privately interviewed within one week of their last call on the inpatient general medicine rotation. Using the critical incident technique, which aimed to elicit patient care decisions made during clinical uncertainty, residents were asked to recall important decisions during their most recent call night, with a subsequent probe to identify decisions made during uncertainty. Residents were also asked to report if they sought advice from anyone, and whom. Discussions were audio-taped for clarity and transcribed for analysis. Three members of the research team independently coded transcripts using the constant comparative method, with no a priori hypothesis. Categories were generated and subsequently mapped to the Beresford Model of uncertainty during medical decision making which categorizes uncertainty as technical, conceptual and personal. Atlas ti, a qualitative analysis software, facilitated retrieving, coding and sorting the data.
RESULTS: The 42/50 (84%) interviewed residents reported 18 critical incidents. Six major categories emerged from the analysis and mapped to each of the domains of the

Beresford Model of Clinical Uncertainty as follows: technical uncertainty [procedural skills, knowledge of indications]; conceptual uncertainty [transitions of care, diagnostic decision making and management conflict] and personal uncertainty [goals of care]. For example, a narrative comment representing procedural skill uncertainty in an HIV patient with mental status changes and fever: "and it was just that the standard work-up included an LP and I felt like I couldn't get it, I am not trained on how to do them and I just felt like let's do it tomorrow." For the 18 identified incidents, resident uncertainty led to a delay in procedure or other diagnostic decisions (6). In some cases, patients suffered harm such as procedural complications (2) and cardiac arrest (2). To manage clinical uncertainty, residents report using a definitive "hierarchy of assistance" in seeking advice, using resident colleagues and educational resources for initial management, followed by senior residents, sub-specialty fellows and, as a last resort , their attending physician. Barriers to seeking attending input included fear of losing autonomy, revealing gaps in fund of knowledge, repercussions (e.g., calling at a late hour) and the existence of a defined hierarchy for assistance. Residents identified the following reasons to seek attending input: lack of personal clinical experience with a patient complaint; deciding amongst therapeutic or diagnostic options and the need for escalation of care.
CONCLUSIONS: Resident uncertainty during times of clinical decision-making can result in delays of indicated care, which in some cases results in patient harm. Despite the presence of a supervisory figure, the attending physician, residents adhere to a strict hierarchy of assistance when seeking advice in clinical matters, opting to contact the attending as a last resort.

THE ROLE OF RELATIONSHIPS IN THE PROFESSIONAL FORMATION OF PHYSICIANS. P. Haidet[1]; D.S. Hatem[2]; H. Stein[3]; M.L. Fecile[4]; H.A. Haley[2]; B. Kimmel[1]; D.L. Mossbarger[5]; T.S. Inui[5]. [1]Houston VAMC, Houston, TX; [2]University of Massachusetts Medical School (Worcester), Worcester, MA; [3]University of Oklahoma, Oklahoma City, OK; [4]University of Texas Medical Branch at Galveston, Galveston, TX; [5]Regenstrief Institute, Inc., Indianapolis, IN. *(Tracking ID # 173657)*

BACKGROUND: Studies of the professional development of physicians highlight the important effect that the learning environment, or "hidden curriculum," has in shaping student attitudes, behaviors, and values. We conducted this study to better understand the role that relationships have in mediating these effects of the hidden curriculum.
METHODS: We randomly recruited one 2nd- and one 4th-year student from each of five medical schools (Baylor, Indiana Univ, Univ of Massachusetts, Univ of Oklahoma, and Univ of Texas Medical Branch) during the fall of 2005 and the spring of 2006. One interviewer at each school conducted a face-to-face, open-ended, semi-structured interview with each student. The interviewers used a method called 'life-space diagramming' to direct the student to draw a picture of all of the relationships in his/her life that had an influence on the sort of doctor that each student saw him/herself becoming. All of the interviewers then used a discussion guide designed to foster the student's elaboration and storytelling about the meaning of the relationships drawn on the life-space diagram. Interviews lasted between 60 and 120 minutes. Audiotapes of interviews were transcribed and entered into Atlas.ti for data management. In our ongoing analysis, we are using an iterative process of individual reading and group discussion (approximately 15 hours of group discussion thus far), and a narrative framework that focuses on elements of the students' life stories (e.g., setting, characters, plot, etc.) to approach our data.
RESULTS: Twenty students (ten each 2nd- and 4th year, nine female) completed data collection. Our team has analyzed ten students' data to date. These students' life-space diagrams demonstrate complex 'webs' of relationships that shape students' evolving identities, goals, motivation, aspirations, and views toward what they should 'be like' as future doctors. Some of the relationship-oriented themes in students' stories include control, competition, collaboration, variability and uncertainty (both within and across relationships), perseverence, and a dichotomy between relationships 'inside' and 'outside' the medical school. As an example of this last theme, one 2nd year student described how she felt herself changing (for the worse) and the important stabilizing effect of her family: "I can't put my finger on it, but something happens to you when you go through med school and it's nice to have people outside of it that can keep you grounded. I'm the person I am because of it, and I would probably be way worse off if I didn't have that in my life."
CONCLUSIONS: Students proceed through medical school embedded in complex webs of relationships that exert a powerful influence (both positive and negative) on their formation as physicians. In our presentation, we will provide an in-depth description of one student's relationships and stories as an exemplar of this influence. Educational interventions that foster adoption of professional values need to acknowledge the influence of relationships, and attempt to harness and shape their effects.

THE ROLE OF VETERANS SERVICE ORGANIZATIONS IN THE MENTAL HEALTH CRISIS FACING VETERANS FROM IRAQ AND AFGHANISTAN. M. Trivedi[1]. [1]Greater Los Angeles VA, Los Angeles, CA. *(Tracking ID # 172550)*

BACKGROUND: BRIEF BACKGROUND U.S. military personnel serving in Iraq and Afghanistan have a very high exposure to combat. This places them at an increased risk of developing mental health disorders. Rates of behavioral health problems such as post traumatic stress disorder (PTSD), depression, and anxiety are very high among those who have served in either Iraq or Afghanistan. However, for a variety of reasons, many veterans fail to seek treatment. Veterans service organizations (VSOs) such as the American Legion and the Veterans of Foreign Wars traditionally have had an important role in connecting newly discharged service members to needed healthcare, including care delivered by the VA healthcare system. They are also likely to have valuable insight on the barriers to and resources for improving access and care of mental health disorders for veterans. OBJECTIVE 1) To learn which mental health care issues veterans' service organizations regard as key for Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) veterans; 2) to seek partnership solutions with organizations that are interested in collaboration; 3) to identify an initial set of barriers and resources for mental health care for these veterans
METHODS: Key representatives of VSOs were interviewed in a semi-structured format. Over twenty VSOs representing all major and most mid-sized organizations were contacted from the VA Directory of VSOs. Interviews focused on four different areas of interaction: internal VA issues, the relationship between VSOs and veterans, internal VSO workings, and the VA-VSO relationship. The recorded interviews were analyzed to identify the key problems, their barriers and facilitators, the current practices, possible solutions and measurable outcomes.
RESULTS: There were four key issues surrounding mental health care for OEF/OIF veterans that were identified as problems by most of the VSOs: • The stigmatization of mental health problems in the active duty military and veteran populations • The lack of adequate funding and manpower at VA hospital facilities to handle the large influx of mental health problems • The faulty transition process and transfer of information from the Department of Defense (DOD) to the VA health care system • The use of outdated outreach and education programs for a new generation of "information age" veterans who have different information sources and more modern networks of communication Several partnership solutions were offered to address the key problems identified. Changing the culture of VSOs along with other military organizations to be more open, understanding and aware of mental health problems would be a first step in addressing the negative stigma that serves as a major barrier for veterans to seek to care. Assisting the VA with outreach programs that target a younger, more internet-friendly generation of veterans would aid education programs and increase awareness of possible mental health problems. And, encouraging the DOD to revamp the transition process from active-duty to veteran would increase the likelihood that new veterans get the appropriate care they need.
CONCLUSIONS: Several problems have been identified by VSOs as key in dealing with mental health issues facing OEF/OIF veterans. VSO can serve as strong partners with the VA to address these issues and improve the care and treatment of mental health problems among these veterans.

"THEY DIAGNOSED BAD HEART": A QUALITATIVE EXPLORATION OF PATIENTS' KNOWLEDGE ABOUT AND EXPERIENCES WITH HEART FAILURE. K.L. Rodriguez[1]; C.J. Appelt[1]; G.E. Switzer[2]; A.F. Sonel[1]; R.M. Arnold[2]. [1]VA Pittsburgh Healthcare System, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172303)*

BACKGROUND: The diagnosis of heart failure is a life-altering event. Although effective management requires patients to be knowledgeable about their condition and its treatment and monitoring, health care professionals know little about what heart failure patients actually understand regarding and experience with this condition.
METHODS: To gain information about patients' perspectives, we conducted semistructured telephone interviews with 25 adults diagnosed with heart failure who were being followed by a primary care and/or cardiology provider at a Veterans Affairs medical center. We elicited patients' responses to open-ended questions about heart failure in general and each patient's symptoms and experiences in particular. Transcripts of the audiotaped interviews were coded and key emergent themes were identified using grounded theory methods and constant comparative analytic techniques.
RESULTS: The majority of study participants were elderly (mean age, 70.4 years; range, 53–87 years), male (96%), white (92%), and had New York Heart Association (NYHA) class II disease (52%); B-type natriuretic peptide (BNP) levels varied widely (mean, 383.6 pg/mL; range, 104–1350 pg/mL). Only 9 patients (36%) used the term "congestive heart failure" to identify their condition, and 3 of these 9 used the term specifically to identify acute episodes of exacerbated symptoms that led to hospitalization. The rest characterized their condition in vague terms (e.g., having a heart that is "only pumping 20%" or is "weak"). Most patients without angina experienced a lengthy and difficult delay between symptom onset and diagnosis, often because they had comorbid illnesses that led physicians to misattribute symptoms such as dyspnea to other diseases (e.g., chronic obstructive pulmonary disease). Many recognized and discussed the importance of adhering to doctor recommendations, including diagnostic tests (e.g., echocardiograms), medications, dietary changes, physical activity, use of oxygen/breathing machines, and daily self-monitoring of weight and blood pressure. Discussions of life-changing effects typically focused on loss of physical functioning or decreased quality of life (e.g., decreased social and recreational activities), with a progressive decline in health over time ("I've had these attacks, but I never was able to fully bounce back"). Although participants reported wanting to know their prognosis ("I'd like to know how fast [my heart is] deteriorating"), most said they had not received information about it. Those who reported knowing their prognosis talked about having an uncertain future and living "from day to day." Only 2 patients noted having advanced care planning discussions, both initiated by health care providers.

CONCLUSIONS: The time it often takes to diagnose heart failure is a challenging one for patients. Once diagnosed, patients understand the importance of actively participating in their care by adhering to a treatment and monitoring plan. However, patients do not think that they have received adequate information from their health care provider; they need to be better informed about the meaning of the term "congestive heart failure" and about their associated prognosis.

WE USUALLY LEAVE THE THINGS OUTSIDE OF WORK OUTSIDE OF WORK: AN EXPLORATION OF DIVISION CHIEFS' ATTITUDES WITH PART-TIME WORK IN ACADEMIC INTERNAL MEDICINE. R.A. Harrison[1]; J. Gregg[1]. [1]Oregon Health & Science University, Portland, OR. *(Tracking ID # 173695)*

BACKGROUND: Previously, we explored the process by which women in academic internal medicine make the decision to work part-time and investigated the impact this decision has on their personal lives and careers. In the second part of our study, we explored their Division Chief's perspectives on the implications of part-time work.
METHODS: We invited all nine applicants to the Society of General Internal Medicine Horn Scholars Program from 2001 and 2004 award cycles to participate in a 1–2 hour recorded interview. With permission from the applicants, we interviewed their division chiefs. We performed a qualitative analysis of in-depth audiotaped interviews. Transcriptions were independently analyzed and themes generated.
RESULTS: 7 out of 9 eligible applicants (77%) and 6 of 7 division chiefs (86%) participated. All applicants were female, junior faculty clinician educators in academic internal medicine from seven major institutions. All division chiefs were male. Consistent with the applicant data, the division chiefs framed their view of part-time work as a decision a) to do less of a full time job or b) to work differently by reconceptualizing work as an academic physician. Notably, all division chiefs described the struggle of finding a balance between the individual division members needs with the needs of the division as a whole. It appeared that some division chiefs equated the needs of the individuals with less time at work, while others were more intent on creating work that fit the unique needs of each particular worker. Working Less: Some division chiefs stressed that equal division of time and labor was more important when approaching a part-time worker than considering the individual goals or priorities of division members. They emphasized being equitable in their decisions to support and structure part-time work is a stated "responsibility" of all division chiefs and a challenge in defining and promoting part-time. Some division chiefs described the challenge of part-time physicians to still remain active participants in the division and not be viewed as "less valuable" or "less committed" division members. Working differently: In contrast, some division chiefs described the concept of working part-time as one in which an individual's personal and professional goals should be articulated first and then through careful discussion the optimal number of hours to work for that individual can be determined. These division chiefs appear to be comfortable mentoring in the area of personal and professional balance, adapting to the needs of the individual and have a different approach to managing their division's individual and collective work.
CONCLUSIONS: Both the part-time academics and their division chiefs framed the decision to begin part-time work in one of two ways: either as a decision to do less of a current full time job or as a decision to reconceptualize work as academic physicians altogether. Those who understood part-time work through the latter paradigm seemed more satisfied with their decision and with it's consequences, or, for division chiefs, the decision of their division members. Self-reflection and articulation of values appear to help the individual physician who is considering part-time and also serves as a mentoring tool for division chiefs to help an individual worker determine the appropriate amount of work for maximal personal and professional satisfaction.

WHAT IS FOUND THERE: QUALITATIVE ANALYSIS OF PHYSICIAN-NURSE COLLABORATION STORIES. K.A. Mcgrail[1]; D.S. Morse[2]; T. Glessner[3]; K. Gardner[3]; J.L. Smith[3]. [1]University of Rochester, Rochester, N.Y., Rochester, NY; [2]University of Rochester, Rochester, NY; [3]Rochester General Hospital, Rochester, NY. *(Tracking ID # 172593)*

BACKGROUND: Effective physician-nurse collaboration is reported to result in better patient outcomes and higher patient-family satisfaction. Research on this dyadic relationship appears almost exclusively in the nursing literature and focuses primarily on attitudes and behaviors facilitative of collaboration. Research in this arena rarely appears in medicine's literature. A qualitative study of physician-nurse collaboration stories was undertaken to identify triggers of collaboration and to develop a fuller understanding of the collaboration experience and its outcomes.
METHODS: In May 2006, 30 medical residents and 36 practicing nurses attended a workshop on collaboration. As part of this workshop, participants spent 10 minutes writing a narrative about successful collaboration using an appreciative inquiry focus. 66 narratives were subjected to qualitative analysis by three physicians and two nurses. Initial coding focused on collaboration triggers, facilitative behaviors, and outcomes, followed by thematic analysis of the data.
RESULTS: Findings, important and previously undescribed, emerged in 5 categories. First, critical incidents (CI) of two types serve as collaboration triggers: a patient care crisis or an affective crisis for the involved professional. Second, collaboration can effect residents and nurses deeply in enduring ways. When the predominant CI is a patient care crisis, the personal outcome (PO) for the writer is often a sense of creativity, satisfaction or of a job well done. If the CI includes an affective crisis for the professional, the PO's can be profound: feeling respected, supported, understood , thankful, stronger as an individual; and the experience of a sustaining kindness. An unanticipated finding was that physician and nurse stories often mirrored one another, reflecting little difference in CI triggers or personal affective outcomes. Third, a conceptual framework emerged of collaborative competence as a series of graduated skills. The lowest level is consistent with unconscious incompetence while the highest level is marked by: fluid, repetitive interactions; flexible use of the other's abilities; and spontaneous shared problem solving. Reciprocity, spontaneity, intuitive appreciation of another's needs and reflexive use of that knowledge were inherent in high order collaboration where interactions in the affective domain were valued as highly as cognitive contributions. Fourth, behaviors previously described as facilitative of collaboration were validated including: being receptive, willing, respectful, trusting, physically present and intellectually available. Newly described attributes were also identified: being perceptive, responsive, flexible, supportive, and kind. Last, the ICU was the setting for 17 of 30 physician stories suggesting that immediacy and intensity of care are potent triggers for collaboration.
CONCLUSIONS: High order collaboration can be defined and its component skills, already recognized as core skills for relationship-centered care and practice, can be identified and reinforced. Despite prevailing wisdom about the impact of power differentials between the professions, these stories convey a deep sense of need for support, education and caring that is expressed by writers regardless of their gender, age, experience, or professional orientation. CIs and sites of care can be identified which offer particularly rich opportunities to foster interprofessional collaboration.

(MIS)USE OF ACID SUPPRESSION THERAPY IN HOSPITALIZED PATIENTS-GOING BEYOND THE APPROVED INDICATIONS. R. Gupta[1]; R. Kottoor[1]; J.C. Munoz[1]; P. Garg[1]. [1]University of Florida College of Medicine, Jacksonville, FL. *(Tracking ID # 173389)*

BACKGROUND: Acid suppression medications are one of the top 5 medications routinely being prescribed in hospitalized patients. In many cases these medications are not discontinued at the time of discharge. There are unequivocal indication for their use in treatment of certain disease states as laid down by United States Food and Drug Administration. Many patients are started on acid suppression therapy for reasons beyond the ones approved by FDA. Given their significant cost to the currently cost over loaded health care system and recent data associating acid suppression therapy with increased risk of infectious complications, the prescribing of acid suppression therapy in hospitalized patients needs to be more critically questioned. The aims of our study are to determine the frequency and validity of indications for prescription of acid suppression medication on General Medicine wards. We will also determine the frequency and characteristics of patient population who are discharged inappropriately on acid suppression therapy.
METHODS: We did a retrospective chart review of 200 patients admitted consecutively to General Medicine unit of a University Hospital to assess the use of acid suppression therapy. The study was approved by Institutional review board. We included patients for chart review if they received at least one dose of acid suppression therapy. Patients who had spent any time in the Intensive Care Unit or who were already on acid suppression therapy on admission were excluded. Accepted indications for acid suppression therapy are based on United States Food and Drug administration namely treatment of active ulcer disease, erosive gastritis or esophagitis, symptomatic gastroesophageal reflux disease, relief of dyspepsia caused by NSAIDs, prevention against NSAIDs induced ulcers in high risk population and H. Pylori treatment. We also calculated the percentage of patients who were discharged on acid suppression therapy. Various categorical variables like demographics, admitting diagnosis, co morbidities, length of stay were individually analyzed with "starting the patient on acid suppression therapy" and "discharge on acid suppression" as primary outcome variables.
RESULTS: A total of 92 (46%) patients were started on acid suppression therapy on admission. Proton pump inhibitors were used 88% of the times. 80% of the patients lacked an indication for initiation of acid suppression therapy. No known cause documented followed by stress ulcer prophylaxis in low risk patients were top 2 reasons for inappropriate acid suppression therapy. The most common reasons for admission were infectious disease related diagnosis (26%) followed by gastroenterology related diagnosis (15%). 45% of patients who were started on inappropriate acid suppression were discharged on these medications.
CONCLUSIONS: Our study reveals that not only acid suppression therapy is over used in hospitalized patients but a significant number of patients are also inappropriately discharged on it. Educating the house staff on approved indications, strict hospital based guidelines for starting a patient on acid suppression therapy and emphasizing the importance of medication reconciliation forms at the time of discharge are some of the simple interventions that can help cut down the cost and prevent the side effects of unnecessary acid suppression therapy.

A COMPUTERIZED SELF-ASSESSMENT MODULE FOR ADULTS WITH SORE THROAT. E.M. Aagaard[1]; J. Maselli[2]; R. Gonzales[2]. [1]University of Colorado Health Sciences Center, Denver, CO; [2]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173827)*

BACKGROUND: To aid in efforts to reduce the overuse of antibiotics for pharyngitis, we examined the potential for an interactive kiosk-based computer module to guide adults with sore throat in self-assessment of Group A streptococcal (GAS) infection and to teach them about the risks and benefits of treatment.
METHODS: A convenience sample of adults presenting to a university urgent care clinic with sore throat completed an interactive computer module. Patients received

audio-visual educational sessions to teach them how to examine their throat and cervical lymph nodes, after which they self-assessed the 4 Centor criteria that predict GAS infection [history of fever, absence of cough, presence of tonsillar exudates, and tender anterior cervical lymphadenopathy (LAN)]. Patients were randomized to education on the risks and benefits of antibiotic treatment for sore throat, after which, all patients rated their desire for antibiotics using a 5-point Likert scale [1 = strong desire for antibiotics; 5 = strong desire not to have antibiotics] at 5 different risks of GAS corresponding to Centor scores of 0 to 4. Physicians, masked to the patient's computer responses, completed a form inquiring about the presence of tonsillar exudates and tender cervical LAN. All patients received a throat culture. Kappa statistics were calculated to compare patient and physician assessments.
RESULTS: Eighty-eight patients completed the computer module and 84 (95%) also had a documented physician visit. Physician and patient concordance for physical examination Centor criteria were: tonsillar exudates 79% [kappa = 0.44; 95% CI 0.22–0.67]; tender LAN 56% [kappa = 0.18; 95% CI 0.00–0.35]. Eleven percent of patients had a positive GAS culture. Physicians were more likely than patients to assess patients as having a Centor score of 0 or 1 (55% vs. 36%). No patients who self-assessed as having a Centor score of 0 or 1 had a positive GAS culture. Patients who were shown information on the risks and benefits of antibiotics had a lower desire for antibiotics than those not shown this information at each risk of GAS.
CONCLUSIONS: Patients' self-assessment of physical examination elements of the Centor criteria were, at most, modestly concordant with physicians' assessments. Nevertheless, the interactive educational computer module effectively identified patients at low risk for strep throat, and reduced patients' desires for antibiotics. Future research should assess the impact of this module on patient visits to clinic for low risk sore throat, and subsequent diagnostic testing and antibiotic treatment for this condition.

Recovery of GAS by Patient- and Physician-Assessed Centor Score

Centor Criteria Score	Patient Assessed Centor Criteria Score (n=88)	Culture Positive	Physician-Assessed Centor Criteria Score (n=84)	Culture Positive
0	6	0	12	1 (8%)
1	27	0	34	2 (6%)
2	36	6 (17%)	18	2 (11%)
3	13	1 (8%)	11	2 (18%)
4	6	3 (50%)	9	2 (22%)

A PIECE OF THE PUZZLE: PATIENT PREFERENCES FOR COMMUNICATION OF TEST RESULTS IN A PRIMARY CARE INTERNAL MEDICINE PRACTICE. S. Leekha[1]; K. Thomas[1]; R. Chaudhry[1]; M. Thomas[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 173246)*

BACKGROUND: Appropriate and timely communication of test results is an important element of quality healthcare. Different communication methods are currently used with strong consideration towards resource management. Research to guide the result notification process is lacking. This study aimed to evaluate patients' preferences for, and main dissatisfiers with, test result notification in a primary care practice.
METHODS: Using a mailed questionnaire, we surveyed 1,458 consecutive patients who had routine blood tests performed in the Primary Care Internal Medicine division at our institution between January and March 2006. The electronic medical record was used to obtain information on patient demographics and provider characteristics.
RESULTS: Completed questionnaires were returned by 888 (61%) patients. The mean age of respondents was 70 years; 50% were male; 12% were employees of our institution and 1% were non-English speaking. Compared to non-respondents, respondents were significantly more likely to be older and English-speaking. 78% of patients reported anxiety to learn their results. 74% reported receiving their results within a week. 23% received their results between 1–2 weeks. Median time to receipt of results was 4 days. Among respondents, test result notification occurred by telephone call (43%), return visit (35%), letter (3%), e-mail (0.1%) or a combination of two or more methods (19%). Most telephone calls (60%) were handled by nurses. In contrast, patient preferences for test result notification were telephone call (55%), return visit with physician (20%), letter (19%), e-mail (5%) and automated answering mechanism (1%). Among patients choosing telephone call as their preferred method, most (67%) wanted to be called by a physician or nurse practitioner. Men were more likely to prefer a return visit (24% vs. 16% women, $p = 0.006$), as were patients who reported anxiety to learn their test results (23% vs. 13% who reported no anxiety, $p = 0.05$). Although the overall acceptance rates for e-mail communication and automated answering mechanisms were low (20% and 11% respectively), younger patients, institutional employees and those with higher education levels were significantly more likely to find these methods acceptable (all $p < 0.001$). Because of a high rate of non-response (84%) among non-English speaking patients in this survey, a meaningful assessment of preferences for result notification in this population sub-group could not be performed. Overall, 13% of respondents reported some level of dissatisfaction with at least one aspect of the notification process; the most commonly identified dissatisfier was a lack of timeliness of communication. There was a "dose response" towards higher rates of dissatisfaction with increasing time between performance of tests and receipt of results (p-trend 0.02), with increasing levels of education (p-trend 0.02), and with decreasing levels of understanding of the purpose of the tests (p-trend 0.0009).
CONCLUSIONS: These results describe patients' preferences for communication from their providers. Disparities exist between current practice and patient preferences in this primary care internal medicine practice. These results may be generalizable to other primary care practices, and serve as a reminder that patient preferences need to be assessed explicitly and given strong consideration along with resource management in order to optimize patient satisfaction and quality of care.

A PILOT OPEN SYSTEM DEPRESSION QUALITY IMPROVEMENT PROGRAM: CLINICAL AND UTILIZATION EFFECTS ON PATIENTS WITH MODERATE OR SEVERE DEPRESSION. M.K. Ong[1]; F. Zhang[1]; D. Lee[2]; F. Azocar[3]; E.J. Perez-Stable[2]; M.D. Feldman[2]. [1]University of California, Los Angeles, Los Angeles, CA; [2]University of California, San Francisco, San Francisco, CA; [3]United Behavioral Health, San Francisco, CA. *(Tracking ID # 173344)*

BACKGROUND: Real-world implementation of collaborative treatment for depression is difficult in most primary care settings. A particular challenge is that many health plans sub-contract ("carve out") depression care to managed behavioral health organizations (MBHOs). The carve-out arrangement creates financial disincentives for primary care providers (PCPs) because they do not receive compensation for diagnosing or treating depressed patients when the medical plan defers the claim to the MBHO. This open system structure also makes dialogue and collaboration between the primary care and the behavioral health care sectors difficult, resulting in a significant barrier for improving treatment of depression in primary care settings.
METHODS: A pilot program was developed, through a partnership of an academic primary care practice, a large health insurer, and a large MBHO, to address some of the structural and financial barriers dictated by carve-out arrangements. This program combined clinical best practices for depression treatment with financial incentive realignment to induce PCPs to improve their care of depressed patients in an environment where behavioral health care is "carved out". Practice innovations for PCPs included a patient registry, off-site telephonic care management, provision of depression screening and follow-up tools, and access to psychiatric consultations. Primary care practices were able to bill health plans for depression care provided by PCPs. Between February 2004 and July 2005, 241 patients (mean age 43.5, 66.4% female) were referred to the program, of which 146 enrolled. The last enrollees completed the program in January 2006. We analyzed PHQ-9 scores at baseline and at six months. We also analyzed pre- and post-referral primary care and other outpatient clinic utilization, using six month and one year intervals. Analyses presented focus on enrollees ($n = 78$) and non-enrollees ($n = 42$) with complete records; analyses including partial records found similar results.
RESULTS: There were no significant differences between enrollees and non-enrollees on initial mean PHQ-9 scores (enrollees = 14.3 and non-enrollees = 13.3) and levels of moderate or severe depression (PHQ-9 of 10 or more, enrollee 78.2%, non-enrollee 69.1%). Six month evaluations for enrollees showed a significant decline in PHQ-9 scores of 4.3 ($p < 0.01$), with significant declines in PHQ-9 scores among individuals with moderate or severe depression (average decline 5.9, $p < 0.01$) and no significant change in PHQ-9 scores among individuals with less severe depression. Pre and post utilization of primary care and other outpatient clinics showed that at six months only enrollees with moderate or severe depression had any significant changes in clinic utilization. These enrollees had fewer primary care clinic visits at six months ($p < 0.05$), but this effect did not persist at one year. Multivariate analysis of these enrollees found that six month differences in primary care clinic utilization was not predicted by change in PHQ-9 score or by care manager contact frequency.
CONCLUSIONS: Depression collaborative treatment programs can be effective in environments with MBHOs, although individuals with moderate-severe depression should be targeted. Slight reductions in primary care clinic utilization at six months do not appear to be mediated by improvement in underlying depression.

AGRESSIVENESS OF IMAGING FOR ACUTE LOW BACK PAIN IN ELDERLY PATIENTS. H.H. Pham[1]; C. Corey[1]; D. Schrag[2]; B.E. Landon[3]; H. Rubin[4]; J. Reschovsky[1]. [1]Center for Studying Health System Change, Washington, DC; [2]Sloan-Kettering Institute for Cancer Research, New York, NY; [3]Harvard University, Boston, MA; [4]Palo Alto Medical Foundation Research Institute, Palo Alto, CA. *(Tracking ID # 172514)*

BACKGROUND: Medicare spending on imaging has escalated dramatically since 2000, with unclear clinical benefits for beneficiaries. Practice guidelines discourage routine imaging for acute low back pain (LBP), but allow discretion in decisions to image elderly patients. We examined variation in physicians' use of imaging for Medicare patients, and whether specialty and training, and the economic environment in their practices, are associated with more aggressive imaging.
METHODS: We analyzed 2000–2002 claims data for 25,291 beneficiaries with acute LBP receiving the plurality of their care during the study period from one of 3,337 primary care physicians in the nationally representative 2000–2001 Community Tracking Study Physician Survey. Patients were 65 years or older, continuously enrolled in fee-for-service, not institutionalized, and had no back pain diagnoses for the preceding six months. We modified a measure of inappropriate imaging for LBP developed by the National Committee on Quality Assurance, excluding patients with prior or concurrent diagnoses of cancer, infection, trauma, neurologic deficits, or constitutional symptoms suggestive of increased cancer risk. We focused on the first imaging study each beneficiary received following the LBP diagnosis, and characterized imaging as least aggressive (none within 180 days); moderately aggressive (imaging within 28–180 days); and most aggressive (within 28 days). Ordered logit regressions adjusted for beneficiary demographics and comorbidities in the prior year; physician and practice characteristics; financial incentives (performance-based payment and overall effect of financial incentives); and local supply of radiologists.

RESULTS: 33% beneficiaries with LBP were imaged within 28 days of diagnosis, and 5% between 28–180 days. Of these, 85% had a radiograph, while 6% and 16% had a CT or MRI scan, respectively. (2% had multiple concurrent studies). Half of radiographs were performed in the physician's medical practice. Medicaid-eligible beneficiaries [OR 0.80 (0.70–0.92)], and those treated in practices with higher proportions of revenues from Medicaid [OR 0.90 (0.81–1.00) for >15% vs. <6%], were less aggressively imaged using any modality. Patients of family/general practitioners and non-board-certified physicians were less aggressively imaged than those of general internists or board-certified physicians [ORs 0.92 (0.85–0.99) and 0.90 (0.80–1.00), respectively]. Beneficiaries were less aggressively imaged if their physicians reported that overall financial incentives were to reduce services [OR 0.74 (0.63–0.86) relative to incentives to increase services], with no independent relationship between imaging and physicians' exposure to compensation based on quality performance or patient satisfaction. We found a strong association between aggressiveness of imaging, and supply of radiologists. Results were similar when we considered only CT and MRI scans, and when we excluded beneficiaries whose initial LBP diagnosis was coded by a radiologist.
CONCLUSIONS: In contrast to findings based on underuse indicators of quality, physicians who treat more Medicaid patients, are not board-certified, and those less specialized tend to image less aggressively. Less aggressive treatment may be to patients' benefit. Quality indicators focused on potential overuse may yield different performance assessments than those measuring underuse, and incentives supporting more vs. less aggressive patterns of care may have mixed effects on quality.

AN INSTRUMENT TO ASSESS PATIENT SAFETY DURING MEDICAL AND SURGICAL HOSPITALIZATIONS FOR PERSONS WITH SEVERE MENTAL ILLNESS: DEVELOPMENT AND PILOT TEST. G.L. Daumit[1]; J.H. Hayes[1]; D.E. Ford[1]; L.M. Dixon[2]; P.J. Pronovost[1]; D.M. Steinwachs[1]; J. Skapik[1]; T. Kim[1]; R.T. Boonyasai[1]; D. Thompson[1]. [1]Johns Hopkins University, Baltimore, MD; [2]University of Maryland at Baltimore, Baltimore, MD. *(Tracking ID # 173408)*

BACKGROUND: Persons with severe mental illness (SMI) have a high risk for premature death, primarily from medical causes. Patient safety issues are not well described in this population, yet persons with SMI may be at elevated risk for adverse events during non-psychiatric hospitalizations. The objective was to develop and pilot test an instrument targeted to persons with SMI to detect adverse events during medical and surgical hospitalizations.
METHODS: We developed a medical record abstraction tool to assess patient safety events, contributing factors and types of harm in medical and surgical hospitalizations for persons with SMI. Domains incorporate relevant patient factors (e.g., mental health status, social support) and provider factors (e.g., psychiatric consultation, communication.) A multidisciplinary team of internists, psychiatrists, and a critical care physician and nurse both specializing in patient safety developed and tested the tool. For the pilot, we selected a convenience sample of adults with an outpatient diagnosis of schizophrenia (ICD-9 295) admitted to one urban hospital's medical or surgical services from 1996–2004. Two reviewers sequentially reviewed each chart and adjudicated results. We used an iterative process to continually modify and enhance the instrument during the chart review period.
RESULTS: We reviewed 52 hospitalizations for 38 patients. Mean patient age was 48 years; 55% of patients were female, 84% African American. Sixty-nine% of hospitalizations were medical, 31% surgical. We found 136 patient safety events, a mean of 2.6 (SD 2.2) per hospitalization and 3.6 (SD 3.2) per patient. The most common safety events were medication-related (n = 44, 32% of events, 42% of hospitalizations.) Medication events included 2 cases of decreased conciousness from antipsychotic prescribing errors, 4 cases where outpatient antipsychotics were not continued during hospitalization, and 8 cases where maintenance psychotropics were not prescribed at discharge. General patient care events also were common (n = 42, 31% of events, 56% of hospitalizations) including 1 unanticipated surgery, 1 unanticipated admission after outpatient procedure and 10 cases of incomplete or incorrect treatment. Patient safety events also included general inpatient events (e.g., falls, hemorrhage) (n = 14), 6 nosocomial infections and 5 surgical complications. In 69 events provider factors may have contributed including: miscommunication (n = 23); not providing complete treatment (n = 22) and not following protocols (n = 15). Patient's mental status or nonadherence to recommendations was thought to contribute to 27 events. We categorized 50 events (37% of events, 56% of hospitalizations) as resulting in at least one known undesirable outcome or harm: 24 had physical injury; 29 had increased health care utilization; and 12 had discharge to another inpatient facility or a readmission.
CONCLUSIONS: Initial piloting of this patient safety tool with consensus among reviewers from multiple disciplines found high adverse event rates during non-psychiatric hospitalizations for persons with schizophrenia diagnoses, including a high prevalence of psychotropic-related events. These safety concerns underscore the critical need for tools to identify inpatient quality of care problems in this vulnerable population. The results also suggest greater attention to medication prescribing and provider communication may decrease patient safety events and reduce harms for persons with SMI.

ANTIBIOTIC PRESCRIBING FOR ACUTE UPPER RESPIRATORY INFECTIONS IN JAPAN - IS THERE A RELATIONSHIP WITH "IN-CLINIC PHARMACY"? T. Higashi[1]; S. Fukuhara[1]. [1]Kyoto University Department of Epidemiology and Healthcare Research, Kyoto,. *(Tracking ID # 172576)*

BACKGROUND: Since overuse of antibiotics is a potential cause of increase in bacterial resistance, guidelines discourage the prescription of antibiotics for common cold or acute upper respiratory infections (URI) of a viral cause. This study aims to describe the magnitude of the problem in Japan and to explore factors contributing to the prescription of antibiotics for acute viral URI, especially the association with "in-clinic pharmacy" dispensing of prescribed medications, a practice unique to Japan.
METHODS: We analyzed insurance claims submitted to an employer-sponsored insurance company from January to March, 2005. Cases of acute viral URI were identified based on ICD-10 code (J00, J02.9, J06.9, J20.3–9) on the claim, and antibiotic prescription by medication claims. Patients with accompanying diagnoses suggesting bacterial infection (e.g., pneumonia and otitis media) were excluded.
RESULTS: A total of 2925 claims for 2164 patients with a diagnosis of viral URI were submitted during the 3-month study period. Mean patient age was 29 years, and 65% were female. Among prescriptions, 58% were filled by an in-clinic pharmacy. Overall, antibiotics were prescribed in 57% of cases of viral URI. Children (defined as 15 years old or less) were more likely to receive antibiotics than adults (60% vs. 55%, $p < 0.01$), and dispensing from an in-clinic pharmacy was associated with a higher likelihood of prescribing antibiotics (59% vs. 53%, $p < 0.01$). Stratified analyses showed that physicians working at facilities with an in-clinic pharmacy were more likely to prescribe antibiotics for adult patients than those with no in-clinic pharmacy (58% vs 49%, $p < 0.01$), although the difference was much smaller for children (61% vs 59%, $p = 0.48$). Among antibiotics prescriptions, mean dosage duration was 3 days (2.1 days from in-clinic pharmacy vs 4.3 days from out-of-clinic pharmacy, $p < 0.01$). The most frequently prescribed type of antibiotics were the third-generation cephalosporins (57% overall), followed by macrolides (26%) and new quinolones (10%).
CONCLUSIONS: Prescription of antibiotics for acute viral URI is prevalent in Japan regardless of the presence or absence of an in-clinic pharmacy and patient age. Future research should explore the mechanisms that drive antibiotic prescribing practice for acute viral URI. The presence of an in-clinic pharmacy may give physicians a financial incentive to overprescribe antibiotics, but contributes only little to the overuse of antibiotics.

ANTIBIOTIC USE AND LEVOFLOXACIN RESISTANCE IN AN URBAN PUBLIC HEALTHCARE SYSTEM. J. Rozwadowski[1]; R.M. Everhart[1]; T.D. Mackenzie[1]. [1]Denver Health and Hospital Authority, Denver, CO. *(Tracking ID # 172297)*

BACKGROUND: Bacterial resistance to fluoroquinolones is a growing problem, especially in bacteria that commonly cause community acquired infections such as pneumonia, sinusitis, and otitis media. Generally, patterns of resistance parallel patterns of antibiotic use at a local level. Levofloxacin was added to the Denver Health (DH) formulary as the primary fluoroquinolone for restricted use in 1998. In preparation for designing an intervention to curb rising resistance, we investigated trends in overall antibiotic use and appropriateness of levofloxacin use over an 8 year period.
METHODS: Using comprehensive data from our outpatient pharmacies, we describe trends in antibiotic use by class of antibiotics over time. We also describe bacterial resistance data for outpatient E.coli isolates from our laboratory from 1999 to 2005. We attempted to match each levofloxacin prescription filled at a DH outpatient pharmacy with the ICD-9 codes associated with a billed visit. We analyzed 26,704 levofloxacin prescriptions filled at our pharmacies from 1998 to 2005. For those prescriptions that were filled within 7 days of an inpatient or outpatient visit, we categorized them as: associated with a diagnosis for which levofloxacin is an appropriate antibiotic, associated with an infectious diagnosis for which levofloxacin is an inappropriate antibiotic, or not associated with any infectious diagnoses.
RESULTS: The number of fluoroquinolone prescriptions increased from 4 prescriptions per 1000 outpatient visits in 1998 to 13 prescriptions per 1000 outpatient visits in 2005. Figure 1 of antibiotic prescriptions by class controlling for outpatient visits per year shows the trends in all antibiotic classes. There was an absolute increase in use of levofloxacin over time from 936 prescriptions in 1998 to 4149 prescriptions in 2005 that was paralleled by a fall in trimethoprim/sulfamethoxazole use. Among the prescriptions which we could link to a visit and an infectious diagnosis, there was an increase in the percentage of prescriptions for appropriate diagnoses from 80% in 1998 to 84% in 2005. Levofloxacin resistance among outpatient E. coli isolates steadily increased from 1% in 1999 to 7% at the end of 2005.

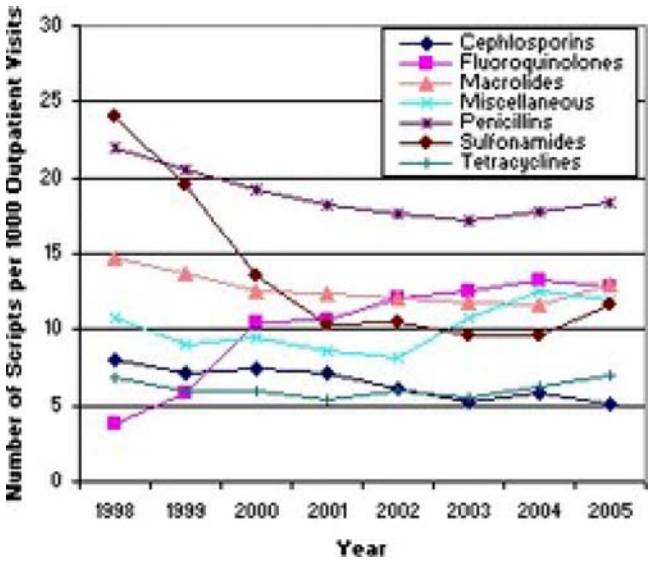


Figure 1. Antibiotic prescriptions by class filled at Denver Health 1998–2005.

CONCLUSIONS: Once levofloxacin was placed on our formulary in 1998, the use of the antibiotic increased over time with a concurrent decrease in the use of trimethoprim/sulfamethoxazole. This was accompanied by an increase in outpatient

E.coli resistance to levofloxacin. While the absolute number of levofloxacin prescriptions has increased over the years, there has not been a proportional rise in the inappropriate use of the antibiotic. This suggests that a strategy to curb inappropriate use may be insufficient to address the problem of resistance.

ANTICOAGULATION WITH UNFRACTIONATED HEPARIN IN OBESE PATIENTS. A. Raina[1]; I. Singla[1]; R. Aggarwal[1]; A. Towers[1]; H.S. Sheth[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173670)*

BACKGROUND: Current guidelines for anticoagulation with intravenous unfractionated heparin (UFH) recommend maximum of 5,000 units bolus and 1,000 units/hour infusion for cardiac indications without any specific recommendations for obese patients. Effectiveness and safety profile of UFH and patient factors influencing therapeutic status in obese has not been adequately studied. Our study aimed to determine effectiveness of the current weight-based anticoagulation guidelines in achieving therapeutic status, examine factors influencing therapeutic status and report bleeding complications in obese patients (> = 90 kg weight) receiving UFH for Acute coronary syndrome (ACS).
METHODS: As a quality improvement initiative, 121 randomly selected obese patients who received UFH infusions for ACS during 06/2004 to 12/ 2004 at an academic medical center were retrospectively evaluated using inpatient electronic medical records. Adherence to guidelines regarding anticoagulation is reported. Logistic regression analysis for therapeutic status achieved when first aPTT was drawn adjusting for age, gender,race, weight, smoking status, history of diabetes mellitus (DM) and hypertension, initial dosing information and concomitant use of other anticoagulant was performed. Lastly, incidence of heparin complications is reported.
RESULTS: Mean patient age was 58 years (range 18–88 years) with mean weight of 114kg (range 90–220 kg). The recommended guidelines for initial dosing were followed in 6%(7/121) of patients. Forty-nine percent (59/121) of patients had received an initial mean bolus dose of 53 units/kg. Mean infusion rate was 12 units/kg/hour. First drawn aPTT was therapeutic in 35(29%) patients, sub-therapeutic range in 34 (28%) patients and supratherapeutic range in 44 (36%) patients. Eight(7%) patients had only one aPTT drawn at 24 hours.Within 24 hours 48% (58/121) of patients achieved therapeutic status. 81% (36/44) supra-therapeutic patients had received higher than recommended initial bolus or infusion. However, 50% (19/38) subtherapeutic patients and 74% (29/39) therapeutic patients also received higher than recommended dosing. The logistic regression analysis for therapeutic status demonstrated that African American race (OR 4.5, p = 0.017), high initial dosing (OR 4.8, p = .009) and having high risk (OR 2.5, p = 0.04) for bleeding complications were more likely to be supratherapeutic. DM status (OR 0.45, p = 0.082) and increasing patient weight (OR 0.98, p = 0.054) may be less likely to become supratherapeutic. There were four (3.3%) documented complications. Two major bleeding episodes (lower gastrointestinal (GI) bleed/ retroperitoneal hematoma and groin hematoma) occurred in high risk patients, one upper GI bleed occurred in a low risk patient. One patient developed heparin induced thrombocytopenia. Of the three patients with major bleeding complications, one received higher than recommended bolus, one received more than recommended infusion and one did not receive any bolus.
CONCLUSIONS: Poor adherence to the current guidelines for UFH use in obese patients and downward adjustments in heparin bolus was seen. Supra-therapeutic aPTT still occurred in 36.4% of patients which may increase the risk of major bleeding complications. This demonstrates variability in dose-response to heparin in the obese patients resulting in over-anticoagulation in some patients. African American patients, high initial UFH dosing and high risk for bleeding are significantly associated with supratherapeutic status.

ARE TEACHING HOSPITALS EVEN BETTER THAN WE THINK? A.S. Navathe[1]; J.H. Silber[2]; P. Rosenbaum[3]; Y. Wang[4]; K. Volpp[1]. [1]University of Pennsylvania, Philadelphia, PA; [2]Children's Hospital of Philadelphia; The Wharton School; Leonard Davis Institute of Health Economics, Philadelphia, PA; [3]The Wharton School, Philadelphia, PA; [4]Children's Hospital of Philadelphia, Philadelphia, PA. *(Tracking ID # 173199)*

BACKGROUND: The objective of this study is to refine our understanding of the relationship between teaching status and quality of care. Previous research has found better outcomes in geographically limited samples of teaching hospitals, but treated all hospitals with resident-to-bed ratios greater than 0.25 identically, lumping together large quarternary care centers with relatively small teaching hospitals. This methodology may lead to significant understatement of the degree of difference in outcomes between highly teaching intensive hospitals and non-teaching hospitals. We examine how quality of care varies with a continuous measure of teaching intensity, use the nationwide population of Medicare patients, and test whether the relationship changes over time.
METHODS: We studied how 30-day all cause mortality varied by intern-and-resident-to-bed ratio (IRB) for 1,431,578 Medicare patients admitted for a principal diagnosis of new onset Acute Myocardial Infarction (AMI) from 1997–2003. For patients with multiple admissions in the sample, one admission was randomly selected for inclusion in the analysis to generate a representative set of admissions. We controlled for patient severity using Elixhauser comorbidities including a six-month look back to enrich risk-adjustment. We chose AMI because, as an emergent condition, patient selection is less likely to be a confounding factor than other conditions. Standard errors were clustered by hospital to account for within-hospital correlation. We calculated a patient risk model by employing 1996 data external to the sample to predict odds of death.
RESULTS: Relative odds of mortality decreased with teaching intensity with a p-value < 0.001 even after inclusion of categorical variables for minor and major teaching hospitals in the model. A Level III major teaching hospital (IRB = 1) has relative odds of mortality of 0.67 compared to a non-teaching hospital (IRB = 0). For a Level II major teaching hospital (IRB = 0.6) the relative odds are 0.78, Level I major teaching (IRB = 0.25) relative odds are 0.90, and minor teaching (IRB = 0.1) relative odds are 0.96. These results correspond to a 33.4% reduction in odds of mortality between non-teaching and Level III major teaching, a 9.7% reduction between non-teaching and minor teaching, and a 26.5% reduction between minor teaching and Level III major teaching. The results did not vary significantly over the years 1997–2003.
CONCLUSIONS: Using comprehensive Medicare data and a refined approach to teaching intensity we find that hospitals with greater teaching intensity had significantly lower mortality for AMI patients than hospitals of moderate teaching intensity. This difference was consistent across all years of our sample indicating that, during a period in which mortality for AMI decreased by 2.4 percentage points, non-teaching hospitals improved at similar rates to teaching hospitals. Forthcoming results describing the interaction between patient severity and teaching intensity will characterize which patients realize the most benefit from admission to a teaching intensive hospital. These results suggest that teaching intensity is a powerful marker of higher quality of care. Patients can use this marker in choosing hospitals and the relationship further suggests that practices adopted by teaching-intensive hospitals might be used to improve quality of care in less teaching-intensive institutions.

ASSESSING PATIENT SAFETY CULTURE OF INTERNAL MEDICINE HOUSESTAFF. H. Jasti[1]; H. Sheth[1]; M. Verrico[1]; S. Perera[1]; G. Bump[1]; A.L. Towers[1]; W. Kapoor[1]; S.M. Handler[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173619)*

BACKGROUND: Patient safety culture (PSC) is an area of health services research that examines how the attitudes and behaviors of individuals determine an organization's commitment and proficiency in health and safety management. PSC assessments have been used to conduct benchmarking, determine targets for interventions to improve patient safety, evaluate the success of patient safety interventions, and fulfill regulatory requirements. Hospitals with indicators of an optimal PSC reduce lengths of stay, reduce medication reconciliation errors, and improve nursing staff retention. The primary objective of this study was to assess PSC in Internal Medicine housestaff, and compare the results across post-graduate year (PGY) of training and to national hospital benchmark data. The secondary objective was to determine a list of key patient safety topics to be included in a patient safety curriculum.
METHODS: We used a modified version of the Agency for Healthcare Research and Quality (AHRQ) Hospital Survey on Patient Safety Culture, a validated instrument that has 12 safety culture dimensions. Each dimension has 3 to 5 questions and uses a 5-level Likert scale of agreement ("Strongly disagree" to "Strongly agree") or frequency ("Never" to "Always"). The survey was distributed to 68 PGY-2 and PGY-3 Internal Medicine housestaff at one academic institution. We created composite scores for each respondent by calculating the proportion of positive responses for each domain. The 12 domain scores were summarized using appropriate descriptive statistics for all respondents and by level of training. We used two and one sample t-tests to compare domain score means between level of training and against the national benchmark data. Housestaff were also asked to select the most important patient safety topics derived from a consensus list developed by the AHRQ.
RESULTS: The overall response rate was 65%, with PGY-2 and PGY-3 response rates of 69% and 61% respectively. Most respondents were female (57%), graduates of US medical schools (84%), and were aware of a patient safety event (74%). PGY-3's scored lower (p < 0.05) than PGY-2's in 8 of the 12 PSC dimensions (frequency of events reported, organizational learning and continuous improvement, communication openness, feedback and communication about error, nonpunitive response to error, staffing, management support for patient safety, and teamwork across units). When housestaff were compared to the national benchmarks, they scored lower (p < 0.05) on 4 of the 12 PSC dimensions (frequency of events reported, communication openness, feedback and communication about error, and handoffs and transitions). The three most frequently selected safety topics were: 1) Adverse drug events; 2) Adverse events related to transition of care; and 3) Disclosing medical errors to patients and family.
CONCLUSIONS: PSC among Internal Medicine housestaff at our institution differs significantly between PGY-2 and PGY-3, and from the national benchmark data. The results of this study will be used to develop internal benchmarking and to identify targets for interventions to improve PSC. We are currently developing a patient safety curriculum based on these results, and will assess its impact on PSC and patient outcomes.

ASSOCIATION BETWEEN ELECTRONIC LABORATORY RESULT VIEWING AND QUALITYOFCARE. L.M. Kern[1]; Y. BarróN-Vaya[1]; A.J. Blair[2]; J. Salkowe[3]; D. Chambers[3]; M.A. Callahan[1]; R. Kaushal[1]. [1]Cornell University, New York, NY; [2]Taconic IPA and MedAllies, Fishkill, NY; [3]MVP Health Care, Schenectady, NY. *(Tracking ID # 173473)*

BACKGROUND: Electronic viewing of laboratory results has been shown to decrease unnecessary repeat testing and facilitate identification and management of abnormal test results. Effects of electronic viewing of laboratory results on quality of care, including preventive care, chronic disease management and patient satisfaction are unclear.
METHODS: We conducted a cross-sectional study of primary care physicians (PCPs) in the Taconic IPA, located in the Hudson Valley of New York. All PCPs in this IPA have the opportunity to use MedAllies, an electronic portal for laboratory result viewing. We used data collected in 2005 by MVP Health Care for a physician report card, which included those PCPs with at least 150 MVP patients (n = 168). The report card included 15 quality measures, which were collected from medical records, administrative claims and patient surveys: rates of mammography, pap smears, colorectal cancer screening, appropriate asthma medication use, antibiotic use for acute upper respiratory infections; documentation of body mass index, nephropathy screening, lipid and glycemic control for patients

with diabetes; documentation of body mass index and counseling for drug and alcohol use, sexual activity and tobacco use among adolescents; and member satisfaction with quality of care and communication from physicians' offices. We used physicians' characteristics as potential confounders: age, gender, specialty (internal medicine, family practice or general practice), board certification, degree (MD or DO), physician group size, patient panel size, case mix, resource consumption, use of an electronic health record (EHR), and use of ePocrates (an electronic drug reference). We determined whether each physician's performance for each quality measure exceeded the average performance of MVP's HMO. We then derived a quality index equal to the number of measures for which a physician exceeded average performance divided by the number of measures for which that physician was eligible. We used generalized estimating equations and backwards stepwise regression to determine whether use of electronic laboratory result viewing was associated with a higher score on the quality index, adjusting for the other physician characteristics above.
RESULTS: One-third of physicians (32%) used electronic laboratory result viewing at least once over the previous 6 months. Those physicians using electronic laboratory result viewing logged in 6.3 days per month on average (SD 5.1, median 5.1). Use of electronic laboratory result viewing was associated with higher scores on the quality index [unadjusted odds ratio (OR) 1.29, 95% confidence interval (CI) 1.02, 1.64; adjusted OR 1.25, 95% CI 1.003, 1.57]. Use of EHRs was not associated with higher quality, although only 10% of physicians were using them, limiting power to find a difference (adjusted OR 1.26, 95% CI 0.85, 1.84). Furthermore, the EHRs were varied in terms of clinical decision support to improve quality.
CONCLUSIONS: Use of electronic laboratory result viewing was independently associated with higher scores on an ambulatory care quality index that reflected 15 measures of preventive care, chronic disease management and patient satisfaction.

BEDSIDE MANNERS PREFFERD BY AFRICAN AMERICAN AND HISPANIC PATIENTS. A SURVEY IN A NEW YORK TEACHING HOSPITAL. S. Kuppachi[1]; S. Annavarapu[1]; Y. Alamdew[1]; S. Harris[2]; H.V. Naina[3]. [1]Our Lady of Mercy Medical Center, Bronx, NY; [2]Mayo Clinic, Rochester, MN; [3]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 173903)*

BACKGROUND: Time spent in history taking and physical examination provides physician's interviewing patient's, valuable time to establish a rapport and build a relationship. However the aspect of patient's preference in terms of the physician's bed side manners have not been studied. We therefore aimed to evaluate patient preferences pertaining to non verbal behaviors during the interview process especially regarding sitting on the patient's bed or not, in a New York City Hospital, among African Americans (AA) and Hispanics (H).
METHODS: A one-page questionnaire was distributed between AA and H patients admitted to a teaching Hospital in the Bronx. Besides baseline demographic data, patients were required to answer 5 questions regarding their preference on physicians sitting on their bed, sitting on a chair or standing while talking to them, beliefs regarding spreading of disease by sitting on the bed, and physician practices in comforting patients. All responses were graded on a 5-point scale (1 = strongly agree and 5 = strongly disagree). Patients were also asked to choose the position of the doctor that made them most comfortable - standing, sitting on a chair or sitting on the bed.
RESULTS: A total of 85 patients responded to the survey, 53 were AA and 32 were H. There were 33 males and 52 females. Sixty-nine had a high school education and 16 had attended college. Mean age of the patients was 46.3 years (SD ±14.6 years). When asked about the preference on physician posture majority said they did not mind the physician standing, sitting on a chair or sitting on the patient's bed. Of the 85 patients, 36 (42%) patients felt comfortable with their physicians standing, 44 (52%) felt comfortable with them sitting on chair and only 5 (6%) felt physician sitting on their bed was the most comfortable way to communicate. When asked if doctors sat on their beds without their permission, 75 answered never and 10 replied occasionally. When asked about physicians exhibiting empathy by patting on the back when they look discouraged or concerned 63 agreed they felt comforted, 16 did not mind and 6 disagreed. There was no correlation between sex of the patient or age of the patient and preference to a specific posture. In reply to beliefs regarding physicians spreading disease by sitting on their bed, 12 agreed that they could, 52 disagreed and 21 did not know. When patients were asked whether they considered disrespectful physicians chewing gum during the interaction, only 13% agreed that it was disrespectful, 33% agreed with chewing gum while, remaining said they did not mind.
CONCLUSIONS: A vast majority of the AA and H population did not mind about the posture of physicians, however 94% of the patients did not felt comfortable their physicians sitting on patients bed. Physicians should ask patients for their preference regarding physician sitting or standing as a way to enhance communication.

CHANGES IN LONG-TERM MEDICATIONS DURING AND AFTER HOSPITALIZATION: THE ROLE OF RESIDENTS, PRIMARY CARE PHYSICIANS AND PATIENTS. E. Gerstel[1]; P. Micheli[1]; M.P. Kossovsky[1]; M. Louis-Simonet[1]; P. Sigaud[1]; T.V. Perneger[1]; J.M. Gaspoz[1]. [1]Department of Internal Medicine and Groupe de Recherche et d'Analyse en Systèmes et Soins Hospitaliers, Geneva,. *(Tracking ID # 169964)*

BACKGROUND: Significant changes in patients' long-term medications occur during hospitalization. Although often necessary, these changes can be deleterious, because they lead to poor understanding of drug therapy by the patients which, in turn, favors dosage errors, poor compliance, and increased hospital readmissions. The purpose of our study was to describe the fate of patients' long-term medications during and the weeks following a hospitalization in general internal medicine wards and to describe the reasons for these changes. Primary care physicians' satisfaction concerning management of their patients and communication of discharge medications by hospital residents was also assessed, and its association with further changes was evaluated.
METHODS: Patients with at least one long-term medication (i.e. prescribed for more than 30 days) who stayed more than 24h and were discharged from the wards of general internal medicine of a teaching hospital in Geneva were prospectively included. The number and classes of long-term medications added, discontinued or left unchanged during hospitalization and the reasons for these changes were collected. During the week following discharge, information was collected from patients about medications they stopped or added. Three weeks after discharge, the same variables were collected from primary care physicians, who were asked to rate their satisfaction (score between 0–10) concerning the management of their patients during hospitalization and the communication about discharge medications.
RESULTS: 283 patients were included. Mean age was 65.5 years (range 19–93); 49.5% were men. During the whole observation period, an average of 5.6 medication changes per patient (addition or suppression) was observed and only 21 (7.4%) patients had no change at all. Most changes occurred during hospitalization (25% drugs discontinued; 35% added), followed by primary care physician visits (15% drugs discontinued; 10% added) and by patients themselves (7% drugs discontinued; 8% drugs added). As a result, the mean number of drugs per patient increased by 0.5. Discontinuations of medications by patients concerned all therapeutic classes and occurred 3 times more often for medications introduced during hospitalization ($p < 0.001$). Primary care physicians dissatisfaction about drug management and communication with hospital residents was associated with an increased risk of introducing a new medication after hospital discharge (OR 1.19 for each point less on the satisfaction scale; CI%95 1.1–1.3) as well as of reintroducing a drug that had been stopped during hospital stay (OR 1.14 for each point less on the satisfaction scale; CI%95 1.0–1.3). No significant association was found between satisfaction and suppression of a newly introduced drug.
CONCLUSIONS: Hospitalization in general internal medicine triggers many changes in patients' long-term medications, during and following the stay. Both hospital physicians and general practitioners should find ways to limit these changes to reduce their potential impact of on patients' understanding of their medications and on their compliance. If these changes cannot be avoided, strong emphasis should be given to patient information and to communication with primary care physicians.

CHEST X-RAY IN COMMUNITY-ACQUIRED PNEUMONIA: SHADES OF GRAY. J.T. Hagaman[1]; G. Rouan[1]. [1]University of Cincinnati, Cincinnati, OH. *(Tracking ID # 173036)*

BACKGROUND: The diagnosis of community-acquired pneumonia (CAP) is based upon a constellation of signs, symptoms, laboratory, and radiographic data. Although numerous national and international organizations have developed guidelines for the management of CAP, no group has endorsed specific criteria for its diagnosis. Many consider a new infiltrate on chest x-ray to be a required element for the diagnosis of CAP, despite the fact the sensitivity and specificity of such has never been studied. In fact, some authors and organizations have suggested a new infiltrate on chest x-ray should be required as a marker of quality of care delivered to those with CAP. Little is known about CAP with negative chest x-ray and its clinical and epidemiological significance. We sought to determine what percentage of patients with a clinical diagnosis of CAP lack chest x-ray findings and what clinical characteristics might differentiate this subset of patients.
METHODS: Patients admitted to the hospital with the diagnosis of CAP were identified retrospectively by ICD-9 codes (480.0 to 487.0) between December, 2003 and March, 2004. Of those 520 patients, a random sample of 105 patients was reviewed. Data extraction included symptoms, signs, laboratory, and radiographic studies. ICD-9 codes were also reviewed to determine the number of active comorbidities during the hospitalization. Admission chest x-rays were interpreted by an attending radiologist, blinded from all other clinical data. Follow up studies were reviewed in a similar fashion.
RESULTS: Twenty one percent (22/105) of patients with a final diagnosis of CAP had negative chest x-ray at presentation, and 79% (82/105) had positive studies. Patients with negative initial chest x-ray had significantly lower white blood cell counts (9.7 v. 13.1, $p = 0.04$), and more active comorbidities (0.86 v 0.38, $p = 0.0003$). No cases with an initially negative chest x-ray had bacteremia (0.0% v. 10.2%, $p = 0.05$). The groups were not different with respect to age, gender, disease severity as defined by the pneumonia severity index, physical exam findings such as rales or signs of dehydration, length of stay, hemoglobin, or blood urea nitrogen. Five of the 22 patients (22%) with an initially negative chest x-ray had positive follow up studies within 48 hours (four had positive chest x-rays and one had an infiltrate on chest CT).
CONCLUSIONS: Our findings show that when compared to a clinical diagnosis, initial chest x-ray lacks sensitivity for the diagnosis of CAP. Moreover, a significant percentage of patients without an infiltrate on initial chest x-ray will develop such within 48 hours. Therefore, requiring an infiltrate on chest x-ray is not a valid quality marker for CAP. Future study is needed to develop evidence-based criteria for CAP diagnosis.

CLINICAL INERTIA OR APPROPRIATE CARE PLAN? EFFECT OF USING A FOLLOW-UP INTERVAL ON PERFORMANCE MEASURES FOR HYPERTENSION WITH CO-EXISTING CONDITIONS. L.A. Petersen[1]; L. Woodard[2]; L. Henderson[1]; T. Urech[1]. [1]HSR&D Center of Excellence, Michael E. DeBakey VA Medical Center, Houston, TX; [2]Baylor College of Medicine, Houston, TX. *(Tracking ID # 173444)*

BACKGROUND: Clinical inertia is defined as the failure to initiate or intensify therapy when indicated. How much of the apparent clinical inertia revealed in performance measures for hypertension would be remedied if appropriate therapy in a follow-up window after an index visit was incorporated? What is the impact of a follow-up period on performance measures and the quality of care for hypertension when there is co-existing diabetes and ischemic heart disease (IHD)?
METHODS: We studied 248,574 patients who had a primary care visit in FY 2005 in one of 8 VAMCs. Using both clinical data (e.g., blood pressure [BP], medications, laboratory values) and ICD-9 codes, we identified patients with hypertension and the subset with both diabetes and IHD. We used national guidelines to determine the proportion who met treatment goals at an index visit. Of those with a recorded BP > 140/90, we determined the

proportion who were initiated on anti-hypertensive medication, OR had a dosage increase if already on a medication, OR had another medication added, OR were already receiving maximal medical therapy, OR met the blood pressure goal in a 6-month follow-up period.
RESULTS: 155,354 (62%) had hypertension and 14,966 (10%) of these had both co-existing IHD and diabetes. 71% of those with hypertension without co-existing IHD and diabetes and 76% of those with both IHD and diabetes had BP < 140/90 at index (P < 0.0001). 9% of patients with hypertension without co-existing IHD and diabetes and 8% of those with both IHD and diabetes had either a BP of > = 160/100 mm Hg or none recorded at index. 57% of patients with hypertension without co-existing IHD and diabetes and 75% of the patients with both IHD and diabetes who did not meet the goal at index received appropriate care in the 6-month follow-up period (P < 0.0001). Of those with a BP of > = 160/100 mm Hg or no BP recorded, 57% of those with hypertension without co-existing IHD and diabetes and 70% of those with diabetes and IHD had appropriate care in follow-up (P < 0.0001).
CONCLUSIONS: We found that a significant proportion of those patients who did not meet an initial performance measure subsequently achieved it in a follow-up period. Surprisingly, more patients with co-existing diabetes and IHD who did not have controlled BP at an index visit subsequently received appropriate care than those without these co-existing conditions. Therefore, performance measures that do not include a follow-up window to assess therapeutic responses may produce bias in performance assessments. This bias is more likely for patients with common, chronic, co-existing diseases. Such bias could lead to false attribution of clinical inertia. Performance measures must be improved in order to ensure that providers who care for medically complex patients are not penalized under pay-for-performance and other quality reporting efforts.

COLONOSCOPY ADHERENCE IN A SAFETY NET HEALTH CARE SYSTEM. E.S. Kazarian[1]; F. Carreira[1]; T. Denberg[1]. [1]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 169800)*

BACKGROUND: Colonoscopy is commonly used for colorectal cancer (CRC) screening and surveillance and for evaluation of lower gastrointestinal (GI) pathology. Anecdotally, patients in safety net health care systems have difficulty completing screening and diagnostic procedures, but this is poorly characterized. Our main objective was to describe the rates and the sociodemographic predictors of two primary outcomes: (1) colonoscopy no-shows and (2) inadequate colonic preparations for all colonoscopy indications in a safety net health care system. Our secondary objective was to identify patients' own reasons for non-adherence to screening procedures.
METHODS: We performed a 6-month retrospective review of GI scheduling and procedure logs and electronic medical records at Denver Health Medical Center (DHMC) and identified bivariate and multivariate predictors of the primary outcomes. Predictors included patient age, gender, race/ethnicity, procedure indication, and insurance type. Brief, semi-structured patient telephone interviews were conducted to identify common reasons for non-adherence to screening procedures.
RESULTS: The no-show rate was 41.7% for all scheduled colonoscopies. Only DHMC HMO and Commercial insurance as well as referrals for concomitant esophagogastroduodenoscopy (EGD) predicted lower no-show rates. Consistent with non-safety-net systems, the rate of inadequate (fair/poor) colonic preparation was 30.2%; however, the rate of poor preparations, specifically, was 9.9% and may be significantly higher than in other settings. Correctional care patients had significantly higher no-show and poor preparation rates than other groups. Competing demands, active medical problems, and fear of procedures were the most common patient-reported barriers to adherence for screening exams.
CONCLUSIONS: No-show and inadequate colonic preparation rates are extremely high in a large safety net health care system. Interventions are needed to ameliorate a very wasteful and inefficient use of limited and expensive resources. Possible approaches include earlier, more frequent reminders and education about colonoscopy; more rapid access to procedures, better coordination with correctional care administrators; selective overbooking; and the use of more easily tolerated bowel preparations.

COMMUNICATION OUTCOMES OF CRITICAL IMAGING RESULTS IN A COMPUTERIZED NOTIFICATION SYSTEM. H. Singh[1]; H. Arora[2]; M. Vij[3]; R. Rao[2]; M. Khan[2]; L.A. Petersen[1]. [1]Houston Center for Quality of Care and Utilization Studies, Michael E. DeBakey Veterans Affairs Medical Center and Baylor College of Medicine, Houston, TX; [2]Baylor College of Medicine, Houston, TX; [3]Michael E. DeBakey Veterans Affairs Medical Center, Houston, TX. *(Tracking ID # 173314)*

BACKGROUND: Communication failures are responsible for a significant number of outpatient medical errors and are often implicated in liability claims. It is unknown whether a computerized test-result notification system can improve communication outcomes of abnormal imaging results. We prospectively studied outcomes of abnormal imaging result notifications (alerts) that were not acknowledged in the electronic medical record (EMR) as received by providers in an ambulatory multi-specialty clinic of a tertiary care Veterans Affairs hospital between March 7 and May 28, 2006.
METHODS: Staff radiologists electronically coded abnormal imaging that required action, which was then transmitted to the ordering provider and the primary care physician as an alert in the "View Alert" window of the EMR. The window is displayed every time providers log on or switch between patient records and contains alerts on all their patients, regardless of which record is being viewed. Providers are expected to acknowledge the alert electronically. Using a taxonomy of communication errors, we focused on errors related to message acknowledgment and reception. We used computerized tracking to generate weekly lists of unacknowledged alerts on outpatient imaging studies. Because providers may also receive information from other modes of communication, we then looked for documentation of message reception by reviewing medical records for appropriate follow-up action related to the report. In the absence of this documentation, we contacted providers by telephone to determine their awareness of the reports and any follow-up action they had taken as a final step in the process of determining reception failure.
RESULTS: Among the 190,799 outpatient visits that occurred in the study period, 20,680 outpatient imaging studies were performed, and 1017 (4.9%) alerts for abnormal studies were electronically transmitted. Over a third of transmitted alerts (368 of 1017) were found to be unacknowledged by providers after excluding 34 cases where the patient was admitted due to the abnormal imaging test. Of 368 charts reviewed, we determined the need to call 52 providers to check for awareness, of whom 7 were aware of the report, 5 could not be reached on several attempts, and 40 were unaware of the abnormal findings. We found 45 (4.4%) cases of abnormal imaging completely lost to follow-up 4 weeks after the date of alert transmission. Most of these were related to some form of a suspected new malignancy. This communication failure was not associated with any particular type of imaging, provider characteristic, specialty, or notification of an additional provider.
CONCLUSIONS: We found that lack of physician awareness of abnormal imaging results and subsequent loss of appropriate follow-up occur, despite the use of a computerized notification system intended to minimize communication errors. Although previous data comparisons are limited, the rate of communication failures in this system appears to be lower than that reported in systems that do not use comparable information technology. Future research should assess the effectiveness of various methods of notifying providers of abnormal test results and determine why some alerts are lost in computerized notification systems.

COMPLIANCE WITH JCAHO/CMS CORE MEASURES REALLY DOES MAKE A DIFFERENCE. G.C. Lamb[1]; M. Conti[2]; A. Kolker[2]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]Froedtert Hospital, Milwaukee, WI. *(Tracking ID # 173334)*

BACKGROUND: As of 2004, JCAHO and the Center for Medicare and Medicaid Services (CMS) required that all hospitals submit data on compliance with specific "core" measures associated with the management of at least 3 of 4 common disorders: acute myocardial infarction (AMI), Congestive heart failure (CHF), Community Acquired Pneumonia (CAP) and pregnancy related conditions. The same year, CMS began publicly reporting individual hospital performance with regard to AMI, CHF and CAP. These performance measures were evidence based and known to reduce mortality in the target conditions in controlled trials. Despite this, there is only limited evidence that improvement in compliance with these measures is associated with any substantial improvement in patient outcomes when applied in the "real world". The purpose of this study was to assess the impact of improving compliance with core measures on inpatient mortality in one hospital.
METHODS: This was a retrospective cohort study performed in a 433 bed academic tertiary care center. Beginning in 2004, hospital based nurse managers were identified to coordinate data collection and lead quality improvement teams for each core measure. Formal training for nurses on patient care units was implemented. Color coordinated reminder sheets were placed on charts of patients identified as meeting criteria for a core measure. Standardized order sets were created for the Medicine services. Mortality rates, total and by DRG, were obtained from the University Healthsystems Consortium database. Compliance with core measures was ascertained by a combination of chart abstraction and electronic data and reported through MIDAS. Comparisons of mortality by quarter were performed using a one way ANOVA with adjusting for multiple comparisons. Means were compared with a test for two proportions and t tests.
RESULTS: Compliance rates with the performance measures steadily increased from 2004 through 2006. Despite remaining stable from 2002 through mid 2004, overall hospital mortality dropped significantly from 2.55% to 1.95% (p = 0.007) beginning in the 4th quarter 2004. During the same time interval, "expected" mortality actually increased from 2.71 to 2.94. All of the reduction in mortality rate occurred in medical DRG's; mortality in surgical DRG's remained flat at 2.26%. Patients admitted with a core measure diagnosis only constituted 4.6% of admissions to the hospital, yet 61% of the overall reduction in mortality was attributable to these diagnoses.
CONCLUSIONS: Significant reductions in hospital mortality occurred coincident with the public reporting of core measures and a concerted effort of the hospital and Medical services to improve compliance with recommended practices. The reduction in overall mortality was largely attributable to a decline in mortality in AMI, CHF and CAP. The exact mechanism for this improvement remains uncertain although we hypothesize that it was due to the multifaceted effort to standardize care and reduce variation in practice.

Core Measures and Mortality 2003–2006

Year	Compliance with total bundle AMI %	Compliance with total bundle CHF %	Compliance with total bundle CAP %	Overall Mortality %	Core measure mortality %
2003–2004	80	28	27	2.55	6.38
2006	92	76	67	1.95	2.03

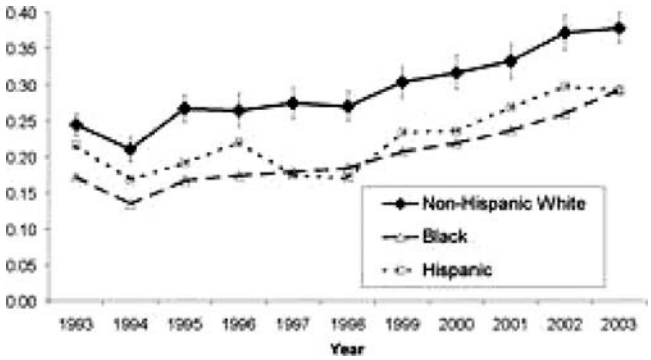
DIABETES CARE PATTERNS FOR FRAIL OLDER ADULTS. J. Tjia[1]. [1]University of Massachusetts Medical School, Worcester, MA. *(Tracking ID # 173525)*

BACKGROUND: Quality-assurance initiatives encourage adherence to clinical performance guidelines (CPGs) for the management of chronic disease. New geriatric care guidelines for diabetes mellitus recommend tailored management based on factors such as life expectancy, functional status, and comorbidities. The aim of this study is to examine patterns of diabetes care and medication use for older adults with diabetes mellitus stratified by markers of frailty, including age, functional status, and comorbidities.
METHODS: Using a sample of adults aged 65 and older participating in the Diabetes Care Survey component of the 2001 Medical Expenditure Panel Survey (MEPS), we examined patterns of diabetes care and medication use stratified by markers of frailty (age ≥ 85 years, ADL impairment, and ≥ 3 comorbidities). Diabetes care process

measures included dilated pupil exam, HbA1c monitoring, and podiatry examination within the past 12 months. Medication use patterns included use of traditional and novel oral hypoglycemic drugs and lipid-lowering agents. Novel hypoglycemics included thiazolidiones, meglitinides, alpha-glcosidase inhibitors and rapid-acting insulins,
RESULTS: No statistically significant differences were observed in the receipt of any diabetes process of care measure by indicator of frailty. For example, there was no difference in the receipt of annual eye examination between the oldest old (age ≥ 85 years) and younger old subjects (79.2% v 82.9%; p = .38), between those with ≥ 3 and fewer than 3 comorbidities (85% v 80.4%; p = .40), or between those with and without an ADL impairment (78.8% v 82.3%; p = .64). Medication patterns were significantly different for lipid-lowering medication use. The oldest old were less likely to use lipid lower medications than younger old adults (21.8% v 45.0%; p < .01). In adjusted analysis, lipid lowering medication use remained significantly lower for the oldest old, those with ≥ 3 comorbid conditions, and for those with ADL impairment.
CONCLUSIONS: Patterns of care for frail older adults with diabetes appear to be no different than for healthier older adults with the exception of lipid lowering medication use. Our results indicate that patterns of care are fairly homogenous across strata of age, functional status, and comorbidity burden, despite the heterogeneity of this population. Physicians who care for older adults with multiple comorbidities face the task of balancing demands of CPGs with tailoring recommendations for individual patients' circumstances. Further investigation is necessary to understand whether this pattern of diabetes care has changed in recent years, are consistent with patient care goals and contribute to improved health outcomes.

DIFFERENTIAL OPIOID PRESCRIBING TO NON-HISPANIC WHITES IN THE EMERGENCY DEPARTMENT: CAUSE FOR CONCERN? M.J. Pletcher[1]; S.G. Kertesz[2]; M. Kohn[1]; R. Gonzales[1]. [1]University of California, San Francisco, San Francisco, CA; [2]University of Alabama at Birmingham, Birmingham, AL. *(Tracking ID # 171453)*

BACKGROUND: Opioid prescribing has increased markedly in the past 10 years, but it is unclear if this has led to a narrowing in previously described racial/ethnic differences in opioid prescribing for pain in the emergency department (ED).
METHODS: We used nationally-representative survey data collected on over 300,000 ED visits over 11 years (1993–2003) in the National Hospital Ambulatory Medical Care Survey to find pain-related visits resulting in administration or prescription of an opioid medication. We categorized visits by region (Northeast/Midwest/South/West), patient (age, sex, race/ethnicity), and primary location of pain (chest, neck, back, lower/upper extremity, abdomen, headache, generalized, or other) recorded among three reason-for-visit codes. Totals, proportions, and logistic regression models adjusting for age, sex, race, and pain location were estimated accounting for the clustered survey design.
RESULTS: The proportion of all pain-related ED at which an opioid was prescribed increased from 23% in 1993 to 35% in 2003 (p < .001 for trend), but differences in opioid prescribing by race/ethnicity persist throughout the time period (Figure), with adjusted odds ratios (adjOR) of .60 (95%CI: .57–.64) for Blacks and .74 (95%CI: .69–.80) for Hispanics compared with Non-Hispanic Whites. Differences were less pronounced in the West than in other regions of the US, especially compared with the Northeast, where the odds of receiving an opioid medication during a pain-related ED visit are nearly twice as high for Non-Hispanic Whites as for other groups (adjOR = 1.9; 95%CI: 1.7–2.2 in the Northeast; 1.6; 95%CI: 1.5–1.8 in the South; 1.4; 95%CI: 1.3–1.6 in the Midwest; and 1.2; 95CI: 1.1–1.3 in the West; interaction p < .001, Figure). Differences comparing opioid prescribing for Non-Hispanic Whites to others are detectable in opioid prescribing for pain in the chest (adjOR = 1.3), neck (1.6), back (1.7), lower extremity (1.3), upper extremity (1.3), headache (1.7), other types of pain (1.7), for injuries (1.3), and even when neither pain nor injury are among the patient reasons for visit (1.3). For the specific physician diagnosis of long bone fracture, opioid prescribing differences are evident in the South (adjOR = 1.8; 95%CI: 1.3–2.6) and Northeast (1.4; 95%CI: .9–2.3), but not in the West (.9) or Midwest (.9, interaction p = .04).
CONCLUSIONS: Non-Hispanic Whites remain consistently more likely to receive opioids when they present with pain to an ED. These data can neither identify factitious pain complaints nor assess true appropriateness of opiate prescribing, but raise possibilities of both undertreatment of pain among Blacks and Hispanics and/or overprescribing to Whites.



Proportion of pain-related ED visits at which an opioid is provided

DO PATIENT SAFETY INDICATORS MEASURE PATIENT SAFETY? T. Isaac[1]; A.K. Jha[1]. [1]MAVERIC, VA Boston Healthcare, Boston, MA. *(Tracking ID # 172756)*

BACKGROUND: Patient Safety Indicators (PSIs) are tools that use billing data to identify preventable complications occurring in hospitals. Despite limited validation, payers are increasingly using PSIs to grade hospital safety and to pay hospitals with better performance. Whether hospitals that adopt established safety practices perform better on the PSIs is unknown.
METHODS: We used the 2004 Leapfrog survey to examine whether hospitals that adopted evidence-based expert-endorsed safety practices performed better on twelve PSIs. We calculated risk-adjusted PSI rates using the MedPAR 100% data file, and limited our analysis to all discharges of Medicare enrollees aged 65 to 90 in the fee-for-service program. We used non-parametric testing to determine whether hospitals that adopted computerized physcian order entry (CPOE) or intensivist physician staffing in the intensive care unit (IPS) performed better on each PSI compared to hospitals that did not adopt either practice. We calculated Spearman correlation coefficients to assess the relationships among a hospital's performance on the 27 safety practices endorsed by the National Quality Forum (NQF) and its rates of PSIs. Finally, we examined whether hospitals with better safety scores in select dimensions, such as decubitus ulcer care, central line care and surgical site infection care had better performance in related PSI outcomes.
RESULTS: Of 1,650 hospitals surveyed by Leapfrog, 1,420 hospitals had at least one calculable PSI rate, and 967 hospitals reported their state of adoption of CPOE, IPS, or had a NQF-endorsed safety score. Hospitals that adopted CPOE or IPS generally performed worse on PSIs. For example, hospitals that adopted CPOE performed better on 3 PSIs and worse on 5 PSIs (p < 0.05 for each comparison). Similarly, hospitals that adopted IPS did not perform better on any PSIs and performed worse on 9 PSIs (p < 0.05 for each comparison). Spearman correlations among total NQF safety score and the 12 PSIs were significant in 6 instances, although each relationship showed that better NQF safety performance was associated with worse PSI performance (coefficients ranging between 0.04 and 0.16; p < 0.05 for each comparison). Better safety processes in decubitus ulcer, central line and surgical site infection care were each associated with worse performance on the related PSI outcome (correlation coefficients ranging between 0.11 and 0.45; p < 0.05 for each comparison).
CONCLUSIONS: PSIs often have inverse relationships with widely recognized evidence-based hospital safety processes. It is unclear whether PSIs are capturing other dimensions of safe care or are inadequate measures of hospital safety. PSIs need further validation before being used to grade safety or pay hospitals.

DOES THE LEAPFROG GROUP HELP IDENTIFY HIGH QUALITY HOSPITALS? A.K. Jha[1]; J. Orav[2]; A.M. Epstein[1]. [1]Harvard University, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 173079)*

BACKGROUND: The Leapfrog Group is a coalition of major purchasers of healthcare that encourages U.S. hospitals to adopt two main patient safety practices: computerized physician order entry (CPOE) and "intensivists" staffing of intensive care units. Whether the Leapfrog program helps identify hospitals with better quality of care or outcomes is largely unknown.
METHODS: We examined all hospitals in the 31 regions where the Leapfrog Group targeted its 2005 annual survey. We categorized hospitals into three groups: those choosing not to report their patient safety practices publicly, those willing to do so but without substantive adoption of the Leapfrog safety practices, and those that had made substantive efforts towards implementing Leapfrog safety practices. We used data from the Hospital Quality Alliance (HQA), a national program run by Medicare that encourages hospitals to collect and publicly report on process quality indicators, and data from the MedPar 100% sample to determine patients' demographic and clinical characteristics and rates of 30-day mortality. The main outcome measures were performance on HQA process quality metrics and risk-adjusted mortality rates for acute myocardial infarction (AMI), congestive heart failure (CHF), and pneumonia.
RESULTS: There were 1,860 hospitals targeted for reporting by the Leapfrog Group. Hospitals that had begun CPOE implementation had better performance on AMI process quality metrics than those only willing to report publicly or those not willing to report their data publicly (95.4% versus 92.1% versus 90.1% respectively, p-value < 0.001). The scores were comparably better on the CHF metrics (91.5% versus 85.2% versus 84.1%, p < 0.001). There were small, inconsistent differences in performance on pneumonia metrics. Similarly, hospitals with intensivists staffing of ICUs had better AMI performance than those only willing to report publicly or those choosing not to report at all (95.2% versus 91.3% versus 90.1% respectively, p < 0.001). There were similar findings for CHF process quality (90.0% versus 85.2% versus 84.1%, p < 0.001). The differences in performance on the pneumonia metrics were again small and inconsistent. Finally, patients admitted with an AMI to hospitals with CPOE had 21% lower adjusted odds of death within 30 days (p < 0.001) compared to patients admitted to either hospitals that only publicly report or those that choose not to report. Patients admitted to hospitals with intensivists staffing ICUs had similar mortality benefits for AMI. There were no mortality differences among patients admitted for CHF or pneumonia.
CONCLUSIONS: Hospitals that have begun to implement CPOE or staffing ICUs with intensivists have better quality of care processes for AMI and CHF and better outcomes for AMI than hospitals that did not. While these patient safety practices may not be the cause of better care in these hospitals, consumers who use the Leapfrog ratings to choose hospitals can increase their chances of getting high quality cardiac care and can reduce their chances of dying from AMI.

DYSFUNCTIONAL GROUP PROBLEM SOLVING IN THE CARE OF MEDICALLY COMPLEX PATIENTS: THE NECESSITY OF RECIPROCAL INTERDEPENDENCE. R.P. Westergaard[1]; J.C. Peirce[2]. [1]University of Colorado at Denver and Health Sciences Center, Denver, CO; [2]University of Michigan, Ann Arbor, MI. *(Tracking ID # 172603)*

BACKGROUND: Systems are understood at multiple biological levels. Molecules and cells comprise immune systems; cells and tissues make up gastrointestinal systems; health care workers and clinical groups constitute health systems. Dysfunction in any system can be understood as a function of inefficient or maladaptive interactions among its constituent parts. The paradigm of complex systems is useful for identifying organizational forces that contribute to dysfunctional medical care or adverse patient outcomes.

METHODS: We applied a set of conceptual tools incorporating principles from complex systems theory and organizational psychology in order to identify root causes of inefficient care in a single case characterized by repeated misdiagnosis. The patient, a 41 year woman, had intermittent nausea, vomiting, watery diarrhea and abdominal cramping pain for 10 months. During this time she was given multiple incorrect diagnoses, was treated with inappropriate medications and unnecessarily underwent invasive and risky diagnostic procedures. The correct diagnosis, mesenteric angioedema caused by ACE inhibitor therapy, was reached during a hospital admission where her case was the subject of an interactive case conference among medical housestaff, face-to-face meetings among the primary physicians and consulting specialists, and formal literature reviews. The flow of information during her 10 month illness was analyzed using Thompson's (1967) theory of workforce interdependence. We sought to identify organizational features of the physicians' practices and the health care system that prevented the diagnosis from being reached earlier.
RESULTS: During her 10 month illness over 15 physicians participated in the medical care of the patient, including 2 general internists, 4 gastroenterologists, 2 surgeons, 3 pathologists, 4 radiologists, and many resident physicians. She had 5 computed tomograms of abdomen and pelvis, a mesenteric angiogram, 2 pan-GI endoscopies with biopsies, a pelvic ultrasound, a small bowel follow through and a colonoscopy with biopsy. One hospital was at the center of her care but others were involved and each specialty group was corporately and geographically separated. Flow of information during the 10 month outpatient evaluation was mostly unidirectional, i.e., providers communicated via shared electronic medical records and written consultation reports, examples of pooled and sequential interdependence. Real-time, interactive collaboration proved necessary to establish a diagnosis. Reciprocal interdependence, exemplified by the intellectual give-and-take that occurred during interactive case conferences, was needed to reduce ambiguity and discard incorrect hypotheses. It is likely that the lack of reimbursement for these cognitive activities in the outpatient medical settings contributed to the delay in diagnosis.
CONCLUSIONS: (1) Clinical problem solving in difficult cases often requires collaboration among multiple physicians with differing expertise. (2) Fee-for-service (FFS) does not reimburse primary care providers for time spent collaborating with colleagues, working through difficult cases using reciprocal interdependence or searching the medical literature. (3) We hypothesize that the present FFS system is a major factor in dysfunctional medical care.

EFFECT OF A REGISTRY, TRACKING & FEEDBACK INTERVENTION TO IMPROVE BREAST CANCER CARE.

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BACKGROUND: Despite the existence of effective adjuvant treatment for early stage breast cancer, women do not always receive it. Primary treatment for breast cancer, surgery and varying combinations of radio-, chemo- and hormonal therapy, is delivered by different specialists and is often fragmented. Underuse of post-surgical adjuvant treatment occurs more commonly among women who do not see a medical oncologist despite surgeons' referral request. To reduce underuse of adjuvant treatment due to failed connections, we tracked and fedback to surgeons information about whether their newly diagnosed breast cancer patients saw the oncologist.
METHODS: We compared oncology visit and underuse rates among pre (N = 677) and post (N = 261) intervention patients undergoing breast cancer surgery at 6 NYC hospitals. Pre-intervention, we abstracted in- and out-patient charts to measure oncology visits and underuse. All 38 surgeons consented to the intervention. Each surgeon chose an office person to verify eligibility; both office staff and patients identified upcoming oncology appointments. Following scheduled visits, oncologists were called to verify patients' visits & these data were fedback to surgeons and their office staff. Six months later, patients reported oncology visits and treatments received. We compared pre and post intervention oncology visit and adjuvant therapy underuse rates in women with newly diagnosed early-stage breast cancer.
RESULTS: (see table below) A logistic model found the intervention (OR = 2.9; 95% CI: 1.7–5.0) and patient age < 70yrs (OR = 0.3; 95%CI: 0.2–0.4) most affected the chance of seeing the medical oncologist (model c = .70; p < .0001).
CONCLUSIONS: Registry, tracking and feedback may improve rates of medical oncology consultation but does not appear to reduce rates of adjuvant treatment underuse. This is likely because these episodes of underuse are due to causes other than failed connections between surgeons and oncologists.

Results

	Mean Age (range)	Minority	Medicaid & Uninsured	Saw Oncologist	Underuse Rate
Pre-Intervention (N=677)	60y (29–101)	45%	25%	81%	21%
Post-Intervention (N=261)	58y (28–90)	40%	24%	93%	21%
p	0.06	0.13	0.79	<.0001	0.91

EFFECT OF AN AUTOMATED PAGING SYSTEM ON RESPONSE TO CRITICAL LABORATORY VALUES.

E. Etchells[1]; N.K. Adhikari[1]; C.M. Cheung[1]; R. Fowler[1]; S. Quan[2]; B. Wong[2]. [1]University of Toronto, Toronto, Ontario; [2]Sunnybrook Health Sciences Centre, Toronto, Ontario. *(Tracking ID # 172960)*

BACKGROUND: Timely and reliable communication of critical laboratory values is a JCAHO National Patient Safety Goal. Our objective was to evaluate the effect of an automated paging system for critical laboratory values on response time.
METHODS: We conducted a prospective randomized controlled trial from February 2006-April 2006 inclusive. Patient participants were inpatients from the general medicine units at Sunnybrook Health Sciences Center, an urban teaching hospital. The unit of analysis was the critical laboratory value. The intervention was an automated real-time system for sending the critical laboratory value directly from the laboratory information system to an alphanumeric pager carried by the responsible housestaff physician. The control arm was usual care, where the laboratory technician would telephone the critical value to the ward staff, who would then page the responsible housestaff physician. The primary outcome was response time, which we defined as the interval between the input of the critical value into the laboratory information system, to the writing of an order on the patient's chart in response to the critical laboratory value. If there was no documented time of order, then we used the time of administration of treatment to calculate response time. Each response time was verified by chart reviewers and outcome assessors who were blinded to the study group allocation. We compared median response times for the two groups using a two sample Wilcoxon rank sum test. Our secondary objective was to describe any qualitative problems with the paging system.
RESULTS: We prospectively studied 165 critical values. Selected characteristics of the patients with critical values are shown in table 1. Most alerts were for serum potassium 3.0 mmmol/L or less (65%), hemoglobin 70 g/L or less (10%), low (120 mmol/L or less) or high (160 mmol/L or more) serum sodium (10%), and INR of 5.0 or more (5%). The median response time in the automatic paging group was 16 minutes (IQR 2–124 minutes), while the median response time in the usual care group was 38 minutes (IQR 5–104 minutes) (p = 0.33). We encountered one three day period where the paging system was not functioning. If the attending physician in the registration system was incorrect, then pages would go to the wrong housestaff.
CONCLUSIONS: We found that the median response time with the automated paging system was not significantly different from usual care. The observed 26 minute difference in median response time is also of uncertain clinical importance. The system is not yet sufficiently reliable to replace telephone notification. The system may be more useful to provide decision support to guide the clinical response to the critical value, and for alerting clinicians to abnormalities where telephone notification is not currently provided.

Characteristics of Study Groups

	Automated Paging (n=84)	Usual Care (n=81)	p value
Patient age (mean)	77 years	75 years	0.28
Female	51%	42%	0.25
Serum creatinine (mean)	115 umol/L	144 umol/L	0.22
DNR order on chart	20%	15%	0.47
Length of stay at time of critical value	5.1 days	4.3 days	0.42

EFFECTS OF A SUBCUTANEOUS INSULIN PROTOCOL, COMPUTERIZED ORDER SET, AND EDUCATION ON THE QUALITY OF INPATIENT MANAGEMENT OF HYPERGLYCEMIA.

J.L. Schnipper[1]; M.L. Pendergrass[1]. [1]Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 172384)*

BACKGROUND: Inpatient hyperglycemia is common and associated with adverse patient outcomes. Current guidelines recommend treatment to achieve glucose levels below 180 mg/dL in the inpatient non-ICU setting. The best ways to achieve this glucose target are unknown.
METHODS: We developed a multifaceted intervention to improve inpatient glycemic control that consisted of the following: 1) a detailed subcutaneous insulin protocol based on American Diabetes Association guidelines; 2) an admission order set built into the hospital's computerized order entry system; and 3) case-based educational workshops and lectures to nurses, physicians, and physician assistants (PAs). Workshops required a total of approximately 6 hours of instructor time in addition to the time typically devoted to educational activities. We then conducted a before-after study on the Physician Assistant / Clinician Educator (PACE) service, a geographically localized general medical service with a dedicated cadre of nurses, hospitalists, and PAs. Study subjects were prospectively identified, consecutively enrolled patients with known diabetes or at least one random laboratory glucose value > 180 mg/dL. Patients with type 1 diabetes or with an indication for intravenous insulin infusion were excluded. We compared results from July 15 to December 12, 2005 (usual care) with January 18 through June 20, 2006 (intervention). The primary outcome was the mean percent of glucose readings per patient between 60 and 180 mg/dL. Secondary outcomes included the patient-day weighted mean glucose (i.e., mean glucose per patient-day, averaged across all patient days), the rate of patient-days with any hypoglycemia (glucose < 60 mg/dL), and insulin ordering practices consistent with ADA guidelines. The primary outcome was analyzed using multivariable binomial logistic regression using general estimating equations in order to adjust for potential confounders and clustering by patient.
RESULTS: We identified 133 study subjects: 52 usual care patients and 81 intervention patients. There were no significant baseline differences between study groups with respect to age, sex, race, admission glucose, Hb A1C, insulin use prior to admission, or prior diagnosis of diabetes. The mean percent of readings per patient between 60 and 180 mg/dL was 59% prior to the intervention and 66% afterwards (adjusted odds ratio, 1.41, 95% CI 0.99–2.00, p = 0.056). The patient-day weighted mean glucose level decreased from 171 mg/dL to 159 mg/dL (p = 0.01). The percent of patient days with any hypoglycemia was 5.3% pre-intervention and 7.6% afterwards (p = 0.36). Use of basal insulin increased from 79% of patients to 99%, and use of scheduled nutritional insulin increased from 37% to 78% (p < 0.001 for both comparisons).
CONCLUSIONS: This multi-faceted intervention, which was easy to implement and required minimal resources, was associated with improvements in both insulin ordering practices and glycemic control among non-ICU medical patients, without a significant increase in hypoglycemia (although the primary outcome was of only borderline significance). Such an intervention is worthy of further refinement and study.

EFFECTS OF CARING FOR DIFFICULT PATIENTS: DATA FROM THE MEMO (MINIMIZING ERROR, MAXIMIZING OUTCOME) STUDY. P.G. An[1]; J.S. Rabatin[2]; R.L. Brown[3]; L.B. Manwell[3]; M. Linzer[3]; M.D. Schwartz[4]. [1]Massachusetts General Hospital, Boston, MA; [2]Brown Medical School, Providence, RI; [3]University of Wisconsin-Madison, Madison, WI; [4]New York University School of Medicine, New York, NY. *(Tracking ID # 172483)*

BACKGROUND: Physicians consider nearly one out of six visits to be difficult. Difficult visits are time-consuming and unsatisfying, and physicians report secretly hoping that those patients involved will not return. Physicians often feel ill equipped to manage these cases. We sought to determine the effect of caring for difficult patients on a cohort of US general internists and family physicians.
METHODS: MEMO (Minimizing Error, Maximizing Outcome) is a longitudinal study of 422 physicians and 1794 of their patients from 97 ambulatory clinics in Chicago, Madison, Milwaukee, New York City, and rural Wisconsin. Two self-administered surveys, given 12 months apart, queried physician outcomes including time pressure, job satisfaction, personal stress and burnout, intent to leave the practice, frequency of medical errors in the past year, and likelihood of future errors. We created a measure of the volume of difficult patients defined by physicians' reports of their most challenging patients. This scale determined the burden of difficult cases physicians faced in their practices. We stratified physicians by quartile based on this scale, and compared outcomes for physicians in the top quartile to those in the remaining three quartiles.
RESULTS: One hundred forty-four physicians with scores on our scale exceeding 17 out of a possible 24 met criteria for inclusion in the top quartile, indicating they had the highest volume of difficult patients. Physicians in the top quartile were more likely to be younger (43.9 years vs. 40.9, $p = 0.002$) and female (52% vs. 40%, $p = 0.024$) compared with physicians in the lower three quartiles. No significant differences were found between physicians in the top quartile and those in the remaining three quartiles for income, race, ethnicity, or years at the current practice site. Compared to physicians in the lower three quartiles, more physicians in the top quartile reported symptoms of stress (65% vs. 41%, $p < 0.001$) and burnout (43% vs. 18%, $p < 0.001$). Fewer physicians from the top quartile reported high job satisfaction (47% vs. 75%, $p < 0.001$), and more indicated a sense of time pressure (62% vs. 44%, $p < 0.001$) and an intent to leave the practice within two years (37% vs. 27%, $p = 0.017$). More doctors in the top quartile reported making errors at least several times in the past year (16% vs. 5%, $p < 0.001$). No significant differences were found for likelihood of future error between the two groups (30% vs. 24%, $p = 0.09$).
CONCLUSIONS: Physicians caring for greater numbers of difficult patients were more prone to stress, burnout, and job dissatisfaction. They sensed more time pressure in their office practices, and were more likely to quit their current jobs. Moreover, physicians caring for difficult patients reported committing more medical errors. These important findings support the need to identify strategies to better manage difficult patients. However, whether difficult patients are solely responsible for poorer physician and patient outcomes, or physician variables lead to difficult relationships is unclear. Further research is needed to elucidate the complex causal links between difficult patients and outcomes in physicians and patients.

ERRORS CONTRIBUTING TO MISSED AND DELAYED DIAGNOSES OF BREAST AND COLORECTAL CANCERS: A SYSTEMS ANALYSIS OF CLOSED MALPRACTICE CLAIMS. E.G. Poon[1]; T. Gandhi[1]; A. Puopolo[2]; A.B. Kachalia[1]; D. Studdert[3]. [1]Brigham and Women's Hospital, Boston, MA; [2]Risk Management Foundation, Cambridge, MA; [3]Harvard School of Public Health, Boston, MA. *(Tracking ID # 171918)*

BACKGROUND: Because many breast and colorectal cancers are curable if diagnosed early, errors that lead to delayed diagnoses have important consequences. We performed a systems analysis on cases involving missed and/or delayed diagnoses of breast and colorectal cancer in order to 1) characterize the errors that occurred during diagnosis, and 2) identify possible prevention strategies.
METHODS: Our data consisted of 56 closed malpractice claims from 4 malpractice insurers in which the diagnoses of breast (43) or colorectal cancers (13) had been missed or delayed. We developed a systems framework to describe the range of clinical activities in the diagnostic process for breast and colorectal cancer, and these cases were reviewed to identify the errors that occured during the various clinical activities prior to the eventual cancer diagnosis. Errors were classified as either 1) cognitive errors, defined as errors due to poor judgement or lack of clinical knowledge (e.g. ordering the wrong test), or 2) process errors, defined as failures to excute on clinically sound plans (e.g. patient missing a test without rescheduling). Due to the high number of cognitive errors during the selection of diagnostic strategy, we further characterized the decision making points during this activity and determined how frequently congitive errrors were made during each of these decision making points. Strategies to prevent cognitive and process errors were also identified for each case. We calculated the frequency of the cognitive errors, process errors, and prevention strategies across all cases, and the 95% confidence intervals for these frequencies.
RESULTS: In 95% (95% CI = [85%,99%]) of the 56 cases studied, at least one cognitive error was identified; process errors were identified in 55% [41%,69%] of the cases. The clinical activities most commonly associated with cognitive errors were the selection of diagnostic strategy during the office visit (45% [31%,59%] of cases) and interpretation of test result reports (44% [30%,59%] of cases). Our analysis of the decision making points during the selection of diagnostic strategy revealed that cognitive errors were commonly due to clinicians selecting the wrong initial diagnostic strategy for patients presenting with symptoms (46% [31%,63%] of the 41 cases where the patient presented with symptoms), or selecting the wrong next step after reviewing the reports for non-invasive tests on patients who previously presented with symptoms (52% [33%,71%] of the 29 cases where such a report was reviewed). With respect to process errors, they most commonly occurred when the plan for the patient to follow-up with the primary care physician or the specialist did not materialize (36% [21%,53%] of 39 cases where a follow-up visit was intended). In terms of prevention strategies, use of current clinical guidelines might have prevented at least one error in 66% [52%,78%] of all cases. Improved communication between providers or between the patient and the provider might have prevented at least one error in 42% [29%,56%] of cases.
CONCLUSIONS: Both cognitive and process errors contribute to delayed diagnoses of breast and colorectal cancers. Prevention strategies should focus on the adoption of clinical guidelines that are well incorporated into the workflow of clinicians during the visit and during the interpretation of test result reports. Tools to facilitate communication and to ensure that follow-up visits occur as planned should also be considered.

EVALUATING PUBLIC HEALTH IMPACT OF BEERS CRITERIA MEDICATIONS IN OLDER ADULTS, UNITED STATES, 2004–2005. D. Budnitz[1]; N. Shehab[1]; C. Richards[1]. [1]Centers for Disease Control and Prevention (CDC), Atlanta, GA. *(Tracking ID # 172811)*

BACKGROUND: The Beers criteria are a consensus-based list identifying certain medications as potentially inappropriate for use in older adults. According to the most recent iteration of the Beers criteria, 41 medications or medication classes are considered always potentially inappropriate and seven medications or medication classes are considered potentially inappropriate when used in certain circumstances (i.e., above certain doses, frequencies, or durations). Prescribing rates of Beers criteria medications have become one of the most widely used measures of healthcare quality and safety for older adults; however, population-based data substantiating the use of Beers criteria medications are sparse.
METHODS: We used nationally representative surveillance data from the National Electronic Injury Surveillance System-Cooperative Adverse Drug Event Surveillance project (NEISS-CADES) to estimate the number of emergency department (ED) visits due to adverse drug events (ADEs) from Beers criteria medications, and other medications, among patients 65 years of age or older, from January 1, 2004 through December 31, 2005. NEISS-CADES is a stratified probability sample which includes 63 hospital EDs across the United States and its territories. Each ED visit is assigned a sample weight based on the inverse probability of selection. National estimates of ED visits and corresponding 95% confidence intervals (CIs) were calculated using the SURVEYMEANS procedure in SAS (version 9.1, SAS Institute, Cary, N.C.) to account for the sample weights and complex sample design.
RESULTS: Based on 4,492 cases collected through NEISS-CADES, an estimated 177,504 individuals 65 years of age or older (95% CI, 100,155–254,854) were treated in U.S. EDs for ADEs annually. An estimated 3.6% of these visits (95% CI, 2.8%–4.5%) were from medications considered always potentially inappropriate; an additional 5.2% (95% CI, 3.4%–7.1%) were from medications considered potentially inappropriate in certain circumstances. Digoxin (considered potentially inappropriate at doses greater than 0.125 mg per day) was the only Beers criteria medication among the ten most commonly implicated medications in ADEs, accounting for 3.2% of ED visits (95% CI, 1.6%–4.7%). More ED visits were from warfarin (17.3%; 95% CI, 12.7%–21.9%) and from insulins (13.0%; 95% CI, 9.4%–16.6%) than from all Beers criteria medications combined. Nine of the ten medications most commonly implicated in ED visits for ADEs fell into three classes: oral anticoagulant/antiplatelet agents (warfarin, aspirin, clopidogrel), antidiabetic agents (insulin, metformin, glyburide, and glipizide), and narrow therapeutic index agents (digoxin, phenytoin). Together, medications from these three classes were implicated in nearly half of all estimated ED visits for ADEs (47.5%; 95% CI, 40.2%–54.8%).
CONCLUSIONS: Based on data from a nationally representative surveillance system, we found that Beers criteria medications caused few emergency department visits for adverse events compared with other medications, suggesting that efforts focused on improving the use of other medications such as insulin and warfarin could have a larger impact on reducing adverse events among older Americans. While the Beers criteria can play an important role in helping to optimize medication use in older adults, up-to-date, population-based data on the burden of adverse events should be used to prioritize and focus efforts to reduce drug-related injury in older adults.

EXPLAINING POOR RISK FACTOR CONTROL IN DIABETES: POOR PATIENT ADHERENCE VS. CLINICIAN FAILURE TO INTENSIFY THERAPY IN THE TRIAD (TRANSLATING RESEARCH INTO ACTION) STUDY. J. Schmittdiel[1]; C. Uratsu[1]; A. Karter[1]; M. Heisler[2]; J. Selby[1]. [1]Kaiser Permanente Division of Research, Oakland, CA; [2]VA, Ann Arbor, MI. *(Tracking ID # 172942)*

BACKGROUND: Blood pressure, glucose, and lipid-lowering therapies effectively reduce complications in diabetes. Two modifiable barriers to risk factor control are patient non-adherence to medications and clinician failure to appropriately intensify treatments. This work examines the following in diabetic patients with poorly controlled hyperglycemia, hypertension, and/or hyperlipidemia: 1) proportion with poor medication adherence during the past 12 months; 2) for those with good adherence, proportion not receiving appropriate treatment intensification in the past 6 months.
METHODS: This observational study was conducted in the Kaiser Permanente Northern California 2005 adult diabetes population using electronic data. Poor control was defined as most recent A1c $>= 7.0\%$ for hyperglycemia; LDL-cholesterol (LDL-c) $>= 100$ mg/dL for dyslipidemia; and SBP $>= 130$ mmHg for hypertension. Patient adherence to individual medications for each condition was defined as the proportion of days in the interval between the first and last prescription fill during the year for which the patient was lacking sufficient medication supply. A weighted average of all drug classes was used to assess overall patient adherence for each of the three conditions. Poor adherence was defined as medication gaps of $>20\%$. Treatment intensification was measured as clinician response to poor control with:

a) an increase in number of drug classes; b) an increase in dose of current drug class, or; c) a switch to a drug in different class within 6 months.
RESULTS: Among 143,858 patients with diabetes, 41% were in poor control of hyperglycemia; 53% were in poor control of dyslipidemia, and 47% were in poor control of hypertension. Poor adherence was found in 24% of patients in poor control of hyperglycemia; 21% of those in poor control of hyperlipidemia, and 20% of those in poor control with hypertension. Among those in poor control and with good adherence, there was no evidence of treatment intensification in 30% of patients with hyperglycemia, 42% of patients with dyslipidemia, and 32% of patients with hypertension. Together, poor adherence or failure to intensify therapy was evident in 52–63% of all patients not in control, depending on condition.
CONCLUSIONS: Poor medication adherence and lack of treatment intensification each frequently occur in poorly controlled patients; however, clinician failure to intensify treatment appears more common than poor patient adherence. Quality improvement efforts should focus on these modifiable barriers to clinical risk factor control and could potentially reduce endstage complications.

FACTORS ASSOCIATED WITH TREATMENT OF PATIENTS WITH OSTEOPOROSIS DOCUMENTED BY DUAL X-RAY ABSORPTIOMETRY SCAN. K.B. Feiereisel[1]; H. Coplin[2]; H. Diaz[3]; T.L. Tullo[4]. [1]Wake Forest University, Winston-Salem, NC; [2]Hennepin County Medical Center, Minneapolis, MN; [3]Michael Reese Hospital, Chicago, IL; [4]Moses Cone Health System, Greensboro, NC. *(Tracking ID # 173710)*

BACKGROUND: Osteoporotic fractures are a costly consequence of osteoporosis and lead to significant morbidity and mortality. The National Osteoporosis Foundation (NOF) guidelines recommend treatment for a T-score ≤ -2.0, ≤ -1.5 in women with risk factors, or any T-score with a history of hip or vertebral fractures. Existing data clearly show that woman are underscreened and undertreated. The purpose of this study is to assess the treatment of osteoporosis determined by duel x-ray absorptiometry (DXA) scan in selected teaching clinics.
METHODS: The Better Osteoporosis kNowledge, Education and Screening Study (BONES) is a multi-center prospective cohort quality improvement study of patients presenting to outpatient clinics affiliated with thirteen United States medical centers. Women age 67 or older were administered a 77-item survey regarding their health, attitudes and beliefs, osteoporosis knowledge and demographics. A chart review was completed for documentation of osteoporosis screening and treatment. Following patient and physician educational interventions, a follow-up chart review will be completed. Data were analyzed using Stata with bivariate analysis and logistic regression.
RESULTS: Results are presented for 332 patients. Of these, 132 (39.8%) had evidence of a DXA scan in their chart, and 51, or 38.6% of women with a DXA scan, met treatment criteria for osteoporosis by a T-score ≤ -2.0. Only 29 (56.9%) of the 51 women had documentation of treatment with a bisphosphonate, selective estrogen receptor modulator (SERM), parathyroid hormone, or calcitonin. Married women were more likely to be on therapy (85.7% of married vs. 46.0% non-married, OR 8.1 [95% CI 1.1, 56]). Women who reported having been told by their doctor that they have osteoporosis were also more likely to be on therapy (72.4% of those told vs. 36.4% of those not told, OR 4.7 [95% CI 1.1, 20]). No association was found with age, race, income or prior fractures.
CONCLUSIONS: Data show that women age 67 or older with a diagnosis of osteoporosis by DXA scan are consistently undertreated in this study population. These data underestimate the number of women who meet criteria using only part of the NOF treatment criteria. Further analysis of patient and physician characteristics and views regarding osteoporosis screening and treatment may identify additional target populations that would benefit most from osteoporosis education and quality improvement interventions. In this study population, non-married women who do not perceive a diagnosis of osteoporosis despite DXA scan are less likely to be on treatment. Interventions that confirm patients' understanding of their diagnosis appear to be important.

GUILT, ISOLATION, AND FEAR: PATIENT AND FAMILY EXPERIENCES WHEN THINGS GO WRONG. T. Delbanco[1]; T. Augello[2]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Risk Management Foundation of the Harvard Medical Institutions, Cambridge, MA. *(Tracking ID # 173101)*

BACKGROUND: National attention and scholarly efforts addressing medical error have focused primarily on clinicians and the health care system. Investigators and policy makers have spent far less time learning about what patients and their families experience when things go wrong.
METHODS: To create a documentary film and educational package intended to illuminate patient/family experiences with events leading to and cascading from medical errors, we interviewed 53 individuals from 25 families, including 21 surviving patients. All had experienced medical error, with outcomes ranging from significant loss of income, to severe disability, to death. They represented widely diverse socioeconomic, racial, ethnic, and geographic backgrounds. We filmed and transcribed interviews with 11 of the families, including 3 whose family members had died. The interviews focused on what made things better or worse following the adverse event. We sought both general themes and specific insights that would help organize health professional and lay initiatives for future improvements in care.
RESULTS: Patients and families commented most often on 6 topics: Emotion, Communication, Isolation, Trust, Apology, and Closure. They recalled a "myriad of emotions," including fury, a sense of abandonment, resignation, and depression. Many complained about poor communication, noting they could not get enough information, that their concerns and questions were not taken seriously, and that they had difficulty finding opportunities to talk directly with their primary caregivers. Trust was invariably shaken or destroyed; it was most apt to be retained or restored when prompt, caring attention was offered by staff involved in the error. Patients and families hoped for apology, open disclosure of the facts, and/or reasons for errors. Rarely did they feel they received these in a timely way. Closure for some was impossible. For others, resolution was aided by full communication, prompt apology, rapid financial compensation, and information about concrete plans to prevent similar events in the future. The interviews yielded 3 unexpected insights. First, clinicians may tend to shy away from those who have been harmed, isolating them at just the time they are most in need. Second, while guilty feelings among clinicians are well-recognized, family members may experience similar, and sometimes overwhelming guilt after medical error. And third, patients and their families may fear retribution from clinicians and institutions. While recruiting for the film, we found that this kind of fear was the most frequently stated reason for declining to participate. This was especially true for recent immigrants.
CONCLUSIONS: Patients and family members who have suffered from medical error can provide important insights that are often unspoken and seldom taken into account by health professionals. These insights can inform efforts to prevent and manage error. In particular, health professionals should understand that feelings of guilt, isolation, and fear of retribution can be significant components of the patient and family experience when things go wrong.

HAS THE HOSPITAL QUALITY INITIATIVE MEASURE ON ANTIBIOTIC TIMING IN PNEUMONIA PRODUCED UNINTENDED CONSEQUENCES? M.W. Friedberg[1]; A. Mehrotra[2]; J. Linder[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172739)*

BACKGROUND: In 2004, the Centers for Medicare and Medicaid Services' Hospital Quality Initiative (HQI) began publicly reporting hospital performance on 10 quality measures, including the rate of antibiotic administration within 4 hours of hospital arrival for patients with pneumonia. Concern has been raised that this measure may have unintended consequences for pneumonia diagnostic accuracy, antibiotic use, and resource allocation. We sought to determine whether the introduction of this measure has been associated with increased rates of pneumonia diagnosis, increased provision of antibiotics intended to treat pneumonia, and-as a measure of potential resource diversion-decreased waiting times for patients presenting to hospital emergency departments (EDs) with respiratory complaints, relative to other patients seeking emergency care.
METHODS: We used the National Hospital Ambulatory Medical Care Survey (NHAMCS) to identify a nationally representative cohort of 15,065 ED visits by adult patients with respiratory complaints from 2001 to 2004. In bivariate analyses, we compared pre-HQI (2001–2003) and post-HQI (2004) rates of pneumonia diagnosis, rates of administration of antibiotics recommended for hospital treatment of pneumonia, and waiting times to see a physician for patients with respiratory complaints. We then constructed multivariable models predicting each of the outcome variables as functions of the pre- and post-HQI time periods as well as patient, hospital, and clinical factors. In models of waiting times, we further controlled for trends in this variable among patients without respiratory symptoms.
RESULTS: There were 45 million (95% confidence interval [CI], 41 million to 48 million) visits by adults with respiratory complaints to hospital EDs in the United States from 2001 to 2004. Among ED visits for respiratory complaints, rates of pneumonia diagnosis were 9.7% pre-HQI and 10.6% post-HQI (OR, 1.10; 95% CI, 0.95–1.27), rates of administration of antibiotics recommended for pneumonia were 9.4% pre-HQI and 11.1% post-HQI (OR, 1.21; 95% CI, 1.02–1.42), and waiting times to be seen by a physician were 40.4 minutes pre-HQI and 46.3 minutes post-HQI (difference, 5.9 minutes; 95% CI, 0.7–11.2). In multivariable modeling, there were no significant differences between pre- and post-HQI rates of pneumonia diagnosis (OR, 1.15; 95% CI, 0.86–1.53), administration of recommended antibiotics (OR 0.89, 95% CI, 0.64–1.23), or waiting times to see a physician (difference 8.1 minutes, 95% CI, −2.5–18.7). Patients with respiratory complaints had mean adjusted waiting times that were 6.2 minutes (95% CI 3.5–8.9) shorter than patients without respiratory complaints pre-HQI, and this difference showed a nonsignificant decrease of 3.9 minutes (95% CI, −0.1–7.9) post-HQI.
CONCLUSIONS: Judging by national trends in pneumonia diagnosis rates, administration of antibiotics recommended for pneumonia, and waiting times to see a physician, early empirical evidence does not substantiate concerns that the HQI pneumonia measure on antibiotic timing has created unintended potentially adverse consequences for patient care. However, our study is limited by short post-HQI duration of observation (2004 only) and a data source that does not allow for hospital-level analysis. Ongoing monitoring of clinical parameters potentially impacted by quality incentives will help determine their intended and unintended effects.

HOW AND WHY ARE PHYSICIANS USING ELECTRONIC HEALTH RECORDS? A STATEWIDE SURVEY. S.R. Simon[1]; R. Kaushal[2]; C. Jenter[3]; P. Cleary[4]; L. Volk[3]; E.J. Orav[5]; E. Burdick[5]; E.G. Poon[5]; D.W. Bates[5]. [1]Harvard Medical School, Boston, MA; [2]Weill Medical College of Cornell University, New York, NY; [3]Brigham and Women's Hospital, Wellesley, MA; [4]Yale University, New Haven, CT; [5]Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 169889)*

BACKGROUND: Electronic health records (EHR) allow for a variety of functions ranging from visit documentation to laboratory test ordering, but little is known about physicians' actual use of these functions.
METHODS: We surveyed a random sample of 1884 physicians in Massachusetts by mail and assessed availability and use of EHR functions, predictors of use, and the relationships between EHR use and physicians' perceptions of medical practice.
RESULTS: A total of 1345 completed surveys were returned, resulting in a response rate of 71 percent. Respondents and non-respondents were similar with respect to specialty, practice size, hospital-based practice, and non-urban practice location. Among physicians who reported having an EHR, there was considerable variation in the EHR functions available and in the reported use of each function. The most commonly reported functions were the

ability to view laboratory test results (85%) and to document visit notes electronically (84%). In contrast, the least available functions were electronic prescribing with electronic transmittal of prescriptions to pharmacies (45%) and laboratory order entry (47%). For each of the 10 functions assessed, less than three-fourths of physicians reported using the function most or all of the time if it was available in their system. The largest observed gap between availability and use existed for clinical decision support (alerts, warnings, reminders). While a total of 53 percent of physicians reported having this function, only 31 percent of them reported using it most or all of the time. In contrast, the smallest observed gap was for viewing radiology test results, where 74 percent of physicians who had this function available reported using it most or all of the time. As compared with physicians who had not adopted EHRs, EHR users reported more positive views of the effects of computers on health care; there were no significant differences in these attitudes between high and low users of EHRs. Overall, about one in four physicians reported dissatisfaction with medical practice; there was no difference in this measure by EHR adoption or use.
CONCLUSIONS: There is considerable variability in the functions available in EHRs and in the extent to which physicians use them. Future work should emphasize factors that affect the use of available functions.

HOW IDEAL ARE QUALITY INDICATORS FOR COMPLEX GENERAL MEDICAL INPATIENTS WITH HEART FAILURE? R. Wu[1]; V. Palda[1]; M. Cheung[1]; E. Etchells[2]; C. Bell[1]. [1]University of Toronto, Toronto, Ontario; [2]Sunnybrook Health Sciences Center, Toronto, Ontario. *(Tracking ID # 173548)*

BACKGROUND: Despite excellent evidence-based therapies for patients with heart failure, there are well-described gaps in heart failure care during hospitalization and at discharge. There are well-defined indicators for heart failure care in Canada. However, patients admitted to general medicine units with heart failure may be more medically complex having more co-morbidities, and these indicators may not apply in this subgroup. Our objectives were to 1) determine the applicability of these indicators for internal medicine patients and 2) determine our current performance based on these indicators.
METHODS: From each of four teaching hospitals affiliated with the University of Toronto, we randomly selected 50 or more charts of patients admitted to internal medicine with a most responsible diagnosis of heart failure. Our main measures were the established quality indicators for inpatient care of heart failure developed by the Canadian Cardiovascular Outcomes Research Team (CCORT). This included prescription rates for medications such as ACE inhibitors and beta-blockers for all patients as well as the CCORT-defined subset of 'ideal' patients - those patients who met specific inclusion and exclusion criteria for each medication. We conducted further chart review in specific patients in which a performance indicator was not met to determine if there was a reasonable explanation.
RESULTS: We reviewed 204 charts of inpatients with a most responsible diagnosis of heart failure. 176 patients met a clinical definition of heart failure using Framingham criteria and were alive at discharge. The average age was 78 years. 55% had known coronary artery disease and 42% had known LV dysfunction. Only 30% of patients were considered 'ideal' for ACE inhibition, and only 38% of patients were considered 'ideal' for beta-blockade. At discharge, 87% of ideal patients and 62% of non-ideal patients were prescribed ACE inhibitors ($p < 0.01$), and 79% of ideal patients and 55% of non-ideal patients were prescribed beta-blockers ($p < 0.01$). On further review of the ideal groups who were not discharged on ACE inhibitors or beta-blockers, there was one case in each that did appear to have a valid reason for withholding therapy (1 out of 7 for ACE inhibitors, 1 out of 14 for beta-blockers).
CONCLUSIONS: We found that only 30–38% of general medical patients were 'ideal' patients for heart failure quality measures. Clinicians may unwarily increase prescribing for non-ideal patients in order to improve their performance on report cards. Conversely, clinicians may passively ignore or actively criticize quality improvement programs that do not clearly identify 'ideal' patients for specific therapies. We recommend that quality improvement initiatives clearly define the ideal target patient, and provide opportunities for clinicians to identify valid reasons to forego a specific therapy.

HOW INFORMED ARE PATIENTS WHO CONSENT TO BEDSIDE PROCEDURES? A PATIENT SURVEY. T. Uchida[1]; C. Schaeffer[1]; M. Charles-Damte[1]. [1]John H. Stroger, Jr. Hospital of Cook County, Chicago, IL. *(Tracking ID # 170252)*

BACKGROUND: Obtaining informed consent is a routine process on inpatient medicine wards, yet little is known about how well patients understand the risks and benefits of procedures. The purpose of this study was to elicit patients' responses to the informed consent process after having a bedside procedure.
METHODS: A convenience sample of 178 medicine inpatients was asked to complete a 6-item survey after having a bedside procedure at a large urban public hospital. Procedures included central venous catheterization, paracentesis, thoracentesis, arthrocentesis, lumbar puncture and transfusion of blood products. Due to the generally low level of literacy among patients at our hospital, survey questions were read aloud to patients by a trained research assistant. To allow patients the opportunity to respond negatively, survey items were phrased negatively. For example: "Some people agree to have a procedure even though they do not understand why they need it. Would you say that you do NOT understand why you needed this procedure?"
RESULTS: Out of 178 patients, 71 (39.9%) were women, 59 (33.1%) had undergone the same procedure previously, and the mean age was 50.2. Sixteen patients (9.0%) said they did not understand why they needed the procedure, 28 (15.7%) said they did not understand the risks of the procedure before it was done, 22 (12.4%) said they did not understand what would happen if they refused the procedure, 20 (11.2%) said they felt they could not ask all of their questions before the procedure, 14 (7.9%) said they felt "forced into" having the procedure, and 18 (10.1%) said that the discussion with the doctor before the procedure went poorly. There were equal percentages of men (29.9%) and women (32.4%) with one or more responses that indicated a lack of informed consent. Furthermore, in comparing the group of patients who had had the same procedure previously to those who had not, there was no significant difference in the percentage of patients who were not fully informed (28.4% vs. 35.6%, $p = 0.79$). In logistic regression analysis, patients younger than 30 were significantly more likely to agree with the statement, "I felt 'forced into' having the procedure. I did not feel that I had a choice," than older patients ($p = 0.004$). Also, although the absolute numbers were small, among the 15 patients who had lumbar punctures, 4 (27%) said they did not understand why they needed the procedure ($p = 0.019$), 5 (33%) said they did not understand the risks of the procedure before it was done ($p = 0.042$), 5 (33%) said they did not understand what would happen if they refused the procedure ($p = 0.014$), and 4 (27%) said that overall the discussion with the doctor before the procedure went poorly ($p = 0.028$).
CONCLUSIONS: In this brief survey of medicine inpatients at a large public hospital, 8–16% of patients said they did not understand some of the basic risks and benefits of a common bedside procedure even after the procedure was performed. Patients who have had the same procedure previously are just as likely to report feeling uninformed as patients who have never had the procedure before. Younger patients are more likely to report feeling "forced into" having a procedure, and patients who have lumbar punctures are more likely to report being less informed before the procedure. These patients may need additional careful counseling to ensure that consent is truly informed.

HYPERTENSIVE PATIENTS OF PROVIDERS WHO ACHIEVE SUCCESSFUL BLOOD PRESSURE CONTROL REQUIRE FEWER HYPERTENSIVE MEDICATIONS THAN THOSE OF LESS SUCCESSFUL PROVIDERS. M.G. Weiner[1]; S. Eachus[1]; T. Lagu[1]; J.S. Schwartz[1]; B.J. Turner[1]. [1]University of Pennsylvania, Philadelphia, PA. *(Tracking ID # 173681)*

BACKGROUND: Quality measures for hypertension (HTN) traditionally rank providers based on the proportion of patients with HTN seen in a given year whose most recent recorded BP meets a quality of care standard. This approach to measuring quality of care does not account appropriately for ease of BP control and provider effort to control blood pressure (BP) by prescribing first line agents such as diuretics and beta blockers and then prescribing antihypertensive medications from additional classes to control BP. We hypothesized that providers who ranked poorly in regard to achieving BP control would rank higher after accounting for antihypertensive management effort as assessed by use of first line agents and additional antihypertensive medication classes.
METHODS: Using blood pressure and prescription data from the electronic health records of 9 primary care practices, we ranked the 217 providers who treated > 10 patients with HTN in 2006 by the proportion of their patients whose most recent BP was at goal ($< 140/< 90$). We then ranked providers by the proportion of their patients with HTN who had currently or previously been prescribed beta blockers or diuretics and also ranked them by the average number of classes of BP medications ever prescribed to each patient in their panel. We used Pearson's coefficient of correlation to examine the relationship between providers' ranking of BP control and ranking in terms of the average number of medication classes prescribed to patients as well as the ranking in the use of beta blockers and diuretics. Lastly, we used the T-test to compare the average number of BP medications prescribed to patients who achieved goal BP at their most recent assessment to those who had poor control.
RESULTS: The 217 providers treated 26,411 hypertensive patients in 2006. The proportion of each provider's patient panel having a BP $< 140/< 90$ at the most recent visit ranged from 20% to 93%. The proportions of each provider's panel ever prescribed a beta blocker ranged from 3% to 70%, while the proportion ever prescribed a diuretic ranged from 2% to 88%. Correlation between provider ranking of their patient panel's BP control and their rank in prescribing beta blockers or diuretics was poor ($r = .10$ [$p = 0.13$] and $r = 0.002$ [$p = .97$], respectively). The average number of BP drug classes ever prescribed per patient ranged from 1.6 to 3.6. Among providers in the top 10% based on BP control rank, all but 3 were in the bottom half of the ranking according to the number of BP medication classes ever prescribed. Consistent with this finding, the correlation between the BP control rank and rank by the average number of BP classes prescribed was not significant [0.08 ($p = .24$)]. On average, the number of blood pressure medications prescribed to patients achieving BP goal was 0.36 less (95% CI 0.28–.44) than the number prescribed to those with poor control.
CONCLUSIONS: Successful BP control is a laudable goal with major health implications. However, these data suggest that just evaluating quality of care based on the proportion of a provider's hypertensive patient panel at goal BP may reward providers who have patients with easier-to-manage HTN. High medication class counts may reflect patients requiring several classes at once or patients who have been tried on medications of different classes and did not tolerate them. Quality measures of HTN care should also take into consideration appropriate provider treatment efforts to achieve BP control and the ease of achieving control.

IMPACT OF A C-REACTIVE PROTEIN-BASED ALGORITHM ON ANTIBIOTIC TREATMENT OF ACUTE COUGH ILLNESS IN ADULTS. R. Gonzales[1]; E. Aagaard[2]; C.A. Camargo Jr[3]; O. Ma[4]; J. Maselli[1]; T.D. Mackenzie[5]; C.E. Mcculloch[1]; S.K. Levin[1]; J.P. Metlay[6]. [1]University of California, San Francisco, San Francisco, CA; [2]University of Colorado Health Sciences Center, Denver, CO; [3]Massachusetts General Hospital, Boston, MA; [4]Oregon Health & Science University, Portland, OR; [5]Denver Health and Hospital Authority, Denver, CO; [6]Department of Veterans Affairs and University of Pennsylvania, Philadelphia, PA. *(Tracking ID # 172339)*

BACKGROUND: Evidence does not support antibiotic treatment of non-pneumonic, acute cough illness, yet antibiotic use remains common even following educational interventions. Studies suggest that c-reactive protein (CRP) testing could help to

reduce antibiotic use for viral respiratory tract infections. We evaluated the effect of a point-of-care CRP blood test on antibiotic treatment of acute cough illness in adults.
METHODS: Adults with acute cough illness (duration < 21 days) were randomized to receive a fingerstick CRP blood test at triage between 11/05 and 03/06 at a single Midwestern, urban emergency department (ED). Persons with recent antibiotic use, cystic fibrosis, immunodeficiency or requiring urgent evaluation were ineligible. ED physicians received a seminar on the evidence-based management of acute cough illness, and the performance characteristics of CRP. For control patients, recommendations for chest xray (CXR) and/or antibiotic treatment were based on a clinical algorithm. For CRP patients, recommendations were based on an algorithm plus the CRP level categorized as normal [< 10 mg/L], indeterminate [10–99 mg/L], or high [> 100 mg/L]. Medical records were abstracted to compare the frequency of antibiotic prescriptions and CXR ordering before and during the trial using the chi-square test.
RESULTS: 131 persons were enrolled in the trial. There was a substantial decrease in antibiotic treatment during the trial year (34%) compared with the 2 previous years (63% and 62%; $p < 0.001$ for each comparison). Except for pneumonia (clinically severe pneumonia being an exclusion criteria), the distribution of specific diagnoses and clinical features was similar across years. Among patients randomized to CRP testing, 51% had normal CRP (for whom antibiotic treatment is rarely recommended) and 4% had high CRP (for whom empiric antibiotic treatment should be considered). Patients with normal CRP levels received antibiotics much less frequently than patients with indeterminate CRP levels (20% vs. 50%; $p = 0.01$). However, in aggregate, there was no difference between CRP and control patients in antibiotic use (37% vs. 31%; $p = 0.46$), CXR use (52% vs. 48%; $p = 0.67$) or illness-related return visits (26% vs. 30%; $p = 0.76$).
CONCLUSIONS: Physicians appeared to follow recommendations for antibiotic treatment based on CRP levels; however, the net effect on total antibiotic use did not differ from the control group in this study. The decrease in antibiotic use in the control group, which was much greater than that seen following educational interventions in similar EDs, could represent a Hawthorne effect, impact of the clinical algorithm or other secular effects. A better understanding of what factors contributed to such a large decrease in antibiotic use in the control group could be useful for reducing overuse of antibiotics for acute cough illness in EDs.

IMPACT OF DIABETES ON CONTROL OF HYPERTENSION IN PRIMARY CARE PRACTICES IN NORTH CAROLINA: BASELINE RESULTS FROM THE GLAD HEART TRIA. A.G. Bertoni[1]; E.L. Wenzel[1]; C.C. Davis[1]; C. Blackwell[1]; D.G. Goff[1]. [1]Wake Forest University, Winston-Salem, NC. *(Tracking ID # 171565)*

BACKGROUND: GLAD Heart is a randomized, practice-based trial to test the effects of a strategy incorporating a personal digital assistant based decision support tool on adherence to the ATPIII cholesterol guideline in comparison to an attention control strategy focused on the JNC7 hypertension (HTN) guideline. This report provides baseline results on the quality of HTN management.
METHODS: Demographic and clinical data were abstracted from charts of 5,073 patients eligible to be screened for dyslipidemia that were seen between 6/1/01 and 5/31/03 at 60 participating practices. Clinical sites were non-university based primary care practices from 22 NC counties; 25% were predominantly staffed by internists and 75% family physicians. Full chart abstraction was only performed on patients with a lipid profile. The proportion of patients with diagnosed and undiagnosed HTN, proportion drug treated, and managed to JNC7 BP goals (< 140/90 mmHG, except if diabetes mellitus (DM), < 130/80 mmHG) were calculated. Practice level performance (and variation) was examined using the 50th (20th and 80th) percentile values across practices. Logistic regression accounting for clustering of data by practice was utilized to investigate the contribution of patient-level characteristics on achieving BP goals.
RESULTS: Among 1779 who received a lipid profile, 15 had no BPs recorded, leaving 1764 records for analysis (mean age 51.4, 56% female, 16% with diabetes). There were 938 with HTN (53.2%); of these 85.8% were diagnosed and treated, 6.9% diagnosed but untreated, and only 7.2% undiagnosed. The median practice-level HTN control rate was 41.2% (23.8%, 54.7%) if assessing control as < 140/90. However 24.7% of HTN patients had DM, and when considering the lower BP goals for DM the median practice level control was only 33.3% (19.5%, 50.0%). Meeting the higher goal was somewhat more common among those with DM vs. without (44.8% vs 37.8%, age, gender, race adjusted OR 1.42, $p = 0.03$). The JNC7 goal was less frequently achieved in those with DM (21.6%, age, gender, race adjusted OR 0.45, $p < 0.001$).
CONCLUSIONS: Most HTN patients in this sample were treated, but many did not reach BP goal, and substantial variability existed between practices. These data suggest providers may be treating diabetic patients somewhat more aggressively, but may not be aiming for 130/80 mmHG. As DM is common, summary control statistics are worse due to more strict goals for this population. Opportunities for improving HTN management exist among primary care practices in NC.

IMPACT ON PATIENT SATISFACTION WITH PHYSICIAN USE OF AN AUTOMATED TEST RESULTS MANAGEMENT SYSTEM. M.E. Matheny[1]; T.K. Gandhi[1]; E.J. Orav[1]; Z. Ladak-Merchant[1]; D.W. Bates[1]; G.J. Kuperman[2]; E.G. Poon[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]New York-Presbyterian Hospital, New York, NY. *(Tracking ID # 171529)*

BACKGROUND: Few reliable and efficient systems support the communication of test results to outpatients. This may lead to patient dissatisfaction with test result communication, and affect the provider-patient relationship. This study sought to assess the impact of physicians' use of an automated test results management tool embedded in an electronic health record on patient satisfaction with test result communication.
METHODS: We performed a prospective, cluster randomized, controlled trial in 26 outpatient primary care practices from December 01, 2002 to April 31, 2005. All physicians in practices randomized to the intervention group were trained and given access to an automated physician test results management tool. This tool (Results Manager [RM]) was developed internally and embedded into the institution's ambulatory electronic health record. RM tracks all test results associated with an ordering physician and summarizes them in a single dashboard screen with patient information, test result type, and level of result abnormality. It also provides letter and documentation templates for the patient record and an audit trail of test result viewing. The primary outcome in the study was overall patient satisfaction with test results communication by the primary care provider. Surveys of patient expectations and levels of satisfaction were conducted by telephone within six weeks after the patient underwent the test, and were administered before and after the intervention in both arms. All of the outcomes were evaluated with multivariate logistic regression clustered by physician, and adjusted for patient age, sex, race, socioeconomic status, and insurance type.
RESULTS: The survey response rate after successful patient contact was 570/768 (74.2%). Patient satisfaction with test result communication was 89.9% and 85.1% in the control arm, and 82.5% and 92.5% in the intervention arm (pre and post, respectively). After adjustment, the intervention significantly increased satisfaction, ($p = 0.026$) with no change in the control arm (Adjusted Odds Ratio (OR) 0.69 [0.35–1.36]) and an increase in the odds of satisfaction in the intervention arm (OR 2.35 [1.05–5.25]). Patient satisfaction with the method of test result communication was 60.8% and 44.4% in the control arm, and 47.8% and 57.9% in the intervention arm. After adjustment, the intervention significantly increased satisfaction, ($p = 0.001$) with a decrease in odds in the control arm (OR 0.48 [0.33–0.68]) and no change in the intervention arm (OR 1.36 [0.81–2.29]. Patient satisfaction with the amount of information given to them for medical treatments and conditions regarding their results was 95.3% and 93.5% in the control arm, and 86.8% and 95.8% in the intervention arm. After adjustment, the intervention significantly increased satisfaction, ($p = 0.019$) with no change in the control arm (OR 0.71 [0.29–1.76]) and an increase in odds in the intervention arm (OR 3.45 [1.30–9.17]).
CONCLUSIONS: This study showed that an automated test results management system that provides centralized test results tracking and facilitates contact with patients improved overall satisfaction with the communication of test results. Improvement in secondary outcomes, such as satisfaction in the method of result receipt as well as with information regarding conditions and treatments related to the tests, suggests that these factors had a direct impact on overall patient satisfaction with test results communication.

INDICATIONS FOR CORONARY BYPASS SURGERY IN CALIFORNIA. Z. Li[1]; J.P. Marcin[1]; P.S. Romano[1]; D.M. Rocke[2]; T.A. Denton[3]; R.G. Brindis[4]; E. Amsterdam[1]; R.L. Kravitz[1]. [1]University of California, Davis, Sacramento, CA; [2]University of California, Davis, Davis, CA; [3]High Desert Heart Institute, Victorville, CA; [4]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173274)*

BACKGROUND: Coronary artery bypass (CAB) surgery entails substantial cost and risk of mortality. Randomized trials favor surgery over medical therapy for patients with extensive jeopardized myocardium with or without left ventricular dysfunction. For the remaining patients, evidence for mortality benefit is less certain, and quality of life considerations dominate. We performed this study to examine variation in patient selection criteria for CAB surgery among California hospitals and surgeons.
METHODS: Data were obtained from the California Coronary Outcomes Reporting Project (CCORP), which requires California hospitals to submit detailed clinical information on indications and outcomes for CAB surgery. Based on American College of Cardiology/American Heart Association clinical guidelines, we classified all isolated CAB operations performed in 2003–4 as having "survival enhancing indications" (SEIs) (left main coronary artery disease or multi-vessel coronary disease with diminished left ventricular ejection fraction or impaired functional status) or other (non-SEI) indications. We used hierarchical logistic regression to identify patient and hospital characteristics associated with indication status.
RESULTS: During the 2-year study period, 302 surgeons performed 40,374 isolated CAB procedures in 121 California hospitals. 69.9% of CAB operations were performed for SEIs. There was substantial variation by hospital (median 69%, range 35% to 97%) and by surgeon (median 71%, range 32% to 99%, with analysis restricted to the 274 surgeons performing at least 12 procedures per year). Using multilevel logistic regression, the likelihood of undergoing CAB surgery for a SEI was increased among patients at least 75 years of age compared with those aged 65–74 (adjusted odds ratio [AOR], 1.30; 95% CI 1.23–1.38, $p < .0001$) and decreased among patients < 64 years of age ($p < .005$). Having a SEI was less likely among men than women (AOR 0.92, 95% CI 0.88 to 0.97, $p = .003$) and more likely among Hispanics than whites (AOR 1.10, 95% CI 1.02 to 1.19, $p = .009$). Geographic region, hospital teaching status, and hospital CAB surgery volume in 2003–4 were not associated with the likelihood of surgery for SEI. The hospital intraclass correlation was significant (rho = 0.138, $p < .001$), indicating modest within-hospital consistency in patient selection for CAB surgery. The physician intraclass correlation, while significant, was of trivial magnitude (rho = 0.036).
CONCLUSIONS: California hospitals vary substantially in their selection of patients for CAB surgery, with some hospitals operating almost exclusively on patients with SEIs and others emphasizing patients with relatively little myocardium in jeopardy. An important limitation of our data is lack of information on symptom severity and anti-ischemic medications. Further research is needed to determine whether the observed variation in patient selection results from market factors, referral patterns, patient preferences, or local clinical culture.

INFLUENCE OF RACIAL-ETHNIC DISCRIMINATION ON SELF-REPORTED QUALITY OF HEALTH CARE. I. De Alba[1]; J. Huh[1]. [1]University of California, Irvine, Irvine, CA. *(Tracking ID # 173180)*

BACKGROUND: A significant gap between quality of health care patients should receive and the quality of care they actually receive has been previously highlighted by an Institute of Medicine report. Furthermore, racial/ethnic minorities are disproportionately affected by poor quality of care. Although minorities are also more likely to report negative attitudes from health care providers; very little is known about the influence of these experiences on self-reported quality of care. The aim of this study is to assess the impact of perceived racial/ethnic discrimination while receiving health care on self-reported quality of care.
METHODS: We analyzed data from 37,897 adults included in the 2003 California Health Interview Survey. Lower quality of care was the outcome of interest; subjects were asked to rate their health care in the past year using any number from 0 to 10 where 0 is the worst health care possible and 10 is the best health care possible. Lower quality of care was defined as a score of 7 or lower. Participants were asked whether they would have gotten better medical care if they had belonged to a different race; ever in the past or recently (within previous year). Logistic regression was used to assess the impact of perceived racial discrimination on self-reported quality of care and to adjust for sociodemographics, health insurance status, country of birth and other potential confounders.
RESULTS: Most of our participants were female (60.0%), had some college education or more (62.2%), and were currently insured (89.9%). Non-Hispanic Whites comprised the largest proportion (62.5%); Hispanics, Asians and African-Americans constituted 20.7%, 10.4% and 6.4% respectively. One out of every four (24.6%) participants reported lower quality of care. However, Asians (35.8%) and African Americans (28.5%) were more likely to report lower quality as compared to non-Hispanic Whites (24.6%, $p = 0.005$). After adjusting for potential confounders, participants who reported being subject of racial/ethnic discrimination while receiving health care ever were more than two times as likely (OR = 2.7, 95%CI 2.36–3.08) and those reporting recent discrimination were more than three times as likely (OR = 3.28, 95% CI 2.58–3.66) to report lower quality of care. Asians (OR = 1.26, 95% CI 1.12–1.42) were still significantly more likely to report lower quality scores as compared to non-Hispanic Whites once discrimination was accounted for. However, Hispanics (OR = 0.62, 95%CI = 0.55–0.69) and African Americans (OR = 0.87, 95%CI 0.75–.99) were less likely. Other factors also related to reporting lower quality of care included younger age (OR = 1.02, 95% CI 1.02–1.03), male gender (OR = 1.16, 95% CI 1.09–1.25), some college education or higher (OR = 1.19, 95% CI 1.10–1.29), lack of health insurance (OR = 1.31, 95% CI 1.17–1.47) and lack of a usual source of health care (OR = 1.23, 95% CI 1.09–1.14).
CONCLUSIONS: Perceived racial/ethnic discrimination while receiving health care negatively impacts self-reported quality of care. Furthermore, racial discrimination accounted for a major proportion of the racial/ethnic gap in quality of care reported by participants. Efforts to improve quality of health care in the U.S must address racial/ethnic discrimination during the health care process. Further research is needed to assess the impact of cultural factors and interventions such as cultural sensitivity training for health care providers on perceived quality of care.

IN-HOSPITAL, PATIENT-LEVEL, MULTIDIMENSIONAL INTERVENTIONS OF CARDIOVASCULAR SECONDARY PREVENTION IN CORONARY HEART DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS. R. Auer[1]; J. Gaume[1]; N. Rodondi[1]; J. Cornuz[1]; W. Ghali[2]. [1]University of Lausanne, Lausanne, Vaud; [2]University of Calgary, Calgary, Alberta. *(Tracking ID # 173360)*

BACKGROUND: Prior randomized controlled trials (RCTs) and systematic reviews have demonstrated the efficacy of outpatient secondary prevention programs for patients with coronary heart disease (CHD). In contrast, the efficacy of in-hospital interventions administered soon after acute cardiac events is less clear. We performed a systematic review to determine whether in-hospital, patient-level interventions targeting multiple cardiovascular risk factors (CVRF) reduce all-cause mortality and readmission rates after an acute coronary syndrome (ACS).
METHODS: We searched MEDLINE, EMBASE, CINAHL and PsychINFO from 1966 to October 2006, the bibliographies of key articles in the field, and those included in this review. We included all RCTs and controlled before and after studies (CBA) of interventions initiated in hospital that provided follow-up outcomes of mortality and/or readmission rates in patients with ACS. At least a part of the intervention had to 'touch' the patient directly through education, counseling or patient-specific order sets. We further classified the interventions, assessing if they also included a health care provider-level intervention (e.g., physician education) or a system-level intervention (e.g., critical pathways or facility outcome reporting), and if they included a continuity outpatient component. Two authors independently reviewed each potential study for eligibility, assessed study quality, and extracted the data.
RESULTS: Our search identified 2200 abstracts. After a two steps selection procedure, 20 studies met the inclusion criteria. We identified 9 RCTs including 1'318 subjects (sample size range 20 to 722) and 11 CBA studies including 39'827 subjects (sample size range 100 to 32'145). Overall, in-hospital interventions were associated with a reduced risk of all-cause mortality at one year (summary risk ratio [RR]: 0.80, 95% confidence interval [CI]: 0.68–0.93) using a random effect model (P for heterogeneity among individual study findings 0.07). However, the apparent benefit depended on study design. The CBA studies showed a reduction in all-cause mortality at one year (RR: 0.78, 95% CI: 0.65–0.92) with 3845 dead patients, while the RR was 1.09 (95% CI: 0.63–1.88) among the RCTs that examined only 57 deaths. Furthermore, characteristics of the intervention also appeared to influence the results. If the intervention only involved the patients through counseling and education, the RR was 1.10 (95% CI: 0.65–1.86) whereas it was 0.77 (95% CI: 0.65–0.92) if the intervention also included a provider-level or system-level intervention. Readmission rates were reduced by in-hospital interventions (RR: 0.78, 95% CI: 0.62–0.98).
CONCLUSIONS: The evidence on the efficacy of in-hospital, patient-level interventions for secondary prevention is promising but not definitive. As a reduction in mortality has been shown only in the CBA studies, larger RCTs with sufficient statistical power are needed to confirm these promising findings. Future studies should also assess the components of interventions that contribute the most to improved outcomes, as our findings suggest that interventions may be more effective when they target not only the patient, but also providers and the system.

IS QUALITY IMPROVEMENT SUSTAINABLE? THE EXAMPLE OF AMERICAN COLLEGE OF CARDIOLOGY'S GUIDELINES APPLIED IN PRACTICE (GAP). A.B. Olomu[1]; M. Stommel[1]; A. Prieto[1]; W.D. Corser[1]; M. Holmes-Rovner[1]; K.A. Eagle[2]. [1]Michigan State University, East Lansing, MI; [2]University of Michigan, Ann Arbor, MI. *(Tracking ID # 172778)*

BACKGROUND: Quality Improvement (QI) strategies in hospitals have been successful in improving care, but sustainability has not been established. There is an urgent need for evaluation beyond the initial implementation period. The objective of the study was to examine the sustainability of QI intervention by the American College of Cardiology's Guideline Applied to Practice (ACC/GAP) in Acute Coronary Syndrome (ACS) in Michigan.
METHODS: In this prospective observational study, 516 ACS patients who were admitted consecutively to 5 mid-Michigan community hospitals one year after the GAP intervention were compared to 499 immediate post GAP patients. The main outcome measure was adherence to guideline medications and recommendations in patients without any contraindications. Independent predictors of medication prescription use were determined using multivariable logistic regression analysis.
RESULTS: One year after ACC GAP implementation, adherence to most medications remained high. There was an increase in the in-hospital use of beta-blocker (BB) (87.9% (recent) Vs 72.1% (past) $p < 0.001$), while cholesterol assessment within 24 hrs of admission did not change significantly (79.5% Vs 83.6 $p > 0.225$). The rates of prescription of aspirin (83% Vs 90% $p < 0.018$) and BB (84% Vs 92% ($p < 0.016$) dropped to pre GAP -intervention values. Prescription of ACE Inhibitors (82.5% Vs 65.9% $p > 0.063$) at discharge and treatment of patients with LDL > 100 (82.7% Vs 74.2% $p > 0.093$) were not significantly changed. Predictors of being prescribed guideline medications were male gender for aspirin (OR 1.96 $p < 0.05$) and BB (OR 2.95 $p < 0.05$). Also, treatment with percutaneous coronary intervention (PCI) was a significant predictor for aspirin prescription (OR 3.11 $p < 0.05$), and lipid lowering therapy (OR 6.27 $p < 0.01$) compared to coronary artery bypass grafting (CABG) (OR 2.52 $p > 0.05$; 1.13 $p > 0.05$), respectively. Finally, prescription rates for discharge medications differed significantly by hospital of admission.
CONCLUSIONS: Early benefits of the Mid-Michigan ACC GAP on guideline use were largely sustained at one year. Our findings suggest that in-hospital changes in treatment based on a relatively simple intervention process in accordance with established guidelines are sustainable. Differences in ACS guideline adherence by treatment modality and hospital pose challenges for follow-up phases of ACC GAP.

LENGTH OF HOSPITAL STAY AND POST-DISCHARGE MORTALITY IN PATIENTS WITH PULMONARY EMBOLISM: A STATE-WIDE PERSPECTIVE. D. Aujesky[1]; R.A. Stone[2]; E. Crick[2]; M.J. Fine[2]. [1]University of Lausanne, Lausanne, ; [2]VA Pittsburgh Healthcare System, Pittsburgh, PA. *(Tracking ID # 171848)*

BACKGROUND: The optimal length of stay (LOS) for patients (pts) with pulmonary embolism (PE) is unknown. While reducing LOS is likely to save health care resources, its effects on patient safety are unclear. Our goals were to identify the patient and hospital factors associated with LOS and to assess whether LOS was associated with post-discharge mortality in pts with PE.
METHODS: We studied patient discharges with a primary diagnosis of PE from 186 acute care hospitals in Pennsylvania (1/2000–11/2002). The study outcomes were LOS and post-discharge mortality, both within 30 days of presentation for PE. We used a discrete survival model to examine the association between patient and hospital factors and the time to discharge (in days). Deaths in the hospital were treated as discharges. We adjusted for baseline patient (race, insurance, severity of illness) and hospital (region, number of beds) factors. Severity of illness was quantified using the Pulmonary Embolism Severity Index (PESI), a validated prognostic model that stratifies pts with PE into 5 risk classes (I-V) of increasing risk of short-term mortality. The PESI consists of 11 demographic characteristics, comorbid conditions, and vital sign abnormalities. We used the same discrete survival and adjustment approach to examine the association between post-discharge mortality and LOS among pts who were discharged alive.
RESULTS: Of the 15,531 discharges with PE, 55% were aged ≥65 years, 60% women, and 11% African American (AA). Median LOS across all hospitals was 6 days (interquartile range: 4–8 days). Six percent of pts died in the hospital while 30-day post-discharge mortality was 3.3%. In multivariable analysis, pts from Philadelphia were less likely to be discharged (OR 0.83, 95% CI: 0.75–0.93) and pts from North Central Pennsylvania were more likely to be discharged on a given hospital day (OR 1.40, 95% CI: 1.23–1.60), relative to pts in other regions of Pennsylvania. Pts who were treated in larger hospitals were less likely to be discharged (OR 0.86, 95% CI: 0.82–0.90), as were AAs (OR 0.89, 95% CI: 0.83–0.95), and pts without private health insurance (OR 0.90, 95% CI: 0.87–0.94). The odds of discharge decreased with increasing severity of illness, ranging from 0.78 for PESI risk class II to 0.57 for PESI risk class V, both relative to risk class I. After controlling for hospital region, number of hospital beds, patient race, insurance, and severity of illness, LOS was significantly associated with post-discharge mortality (OR 1.06, 95% CI: 1.04–1.09), indicating an estimated 6% increase in the odds of dying for each additional day in the hospital.

CONCLUSIONS: LOS for pts with PE was independently associated with hospital region and size, severity of illness at presentation, and insurance status. Post-discharge mortality was independently associated with longer LOS, which may be due to unmeasured confounding or resistance to anticoagulation therapy. There was no evidence that a shorter LOS was associated with increased post-discharge mortality.

LINKING PATIENTS' EXPERIENCES OF CARE TO CLINICAL QUALITY AND OUTCOMES. T.D. Sequist[1]; E.C. Schneider[1]; M. Anastario[2]; E. Odigie[2]; W.H. Rogers[2]; D.G. Safran[2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Tufts-New England Medical Center, Boston, MA. *(Tracking ID # 173118)*

BACKGROUND: While patient reported experiences with care and clinical quality measures are increasingly used in combination to assess overall quality of care, little information regarding their relationship exists. We analyzed the association between these two dimensions of quality at the practice site level and the individual physician level.
METHODS: Practice site-level data (2005) were obtained from a statewide measurement initiative including 310 adult primary care practices in Massachusetts. Physician-level data (2005) were obtained on 120 primary care physicians from each of 14 health centers comprising a multisite integrated group practice in eastern Massachusetts. Patient experience data were derived from the Ambulatory Care Experiences Survey (ACES). We classified 6 ACES indicators into three measures of organizational features of care: 1) integration, 2) office staff, and 3) access; and three measures of clinical interaction quality: 1) physician-patient communication, 2) clinical team interactions, and 3) health promotion support. Clinical quality measures were derived from the Health Plan Employer and Data Information Set (HEDIS) indicators using claims (practice site level) or electronic medical record (physician-level) data. We classified fourteen HEDIS indicators into 3 composites: 1) process-prevention (e.g. cancer screening), 2) process-disease management (e.g. annual hemoglobin A1c monitoring), and 3) outcomes of care (e.g. controlling high blood pressure). We calculated Pearson correlation coefficients between the ACES and HEDIS composites.
RESULTS: The majority of ACES-HEDIS correlations were positive in both site-level and physician-level analyses (67% and 72%, respectively), though few were statistically significant. Among the 18 ACES-HEDIS measure combinations, only 4 demonstrated statistically significant ($p < 0.05$) correlations at the practice site level and 2 of these reflected the patient experience of organizational features of care. The HEDIS process-prevention composite was positively correlated with integration ($r = 0.11$) and clinical team ($r = 0.12$). The HEDIS process-disease management composite was positively correlated with integration ($r = 0.12$) and clinical team ($r = 0.15$). At the physician level, 5 ACES-HEDIS combinations demonstrated statistically significant positive correlations, and four of the five positive correlations focused on patient experience with clinical interaction quality. The HEDIS process-prevention composite was positively correlated with all 3 ACES measures of clinical interaction quality (communication quality, $r = 0.25$; health promotion support, $r = 0.21$; and clinical team interactions $r = 0.24$) and with organizational access ($r = 0.23$). The HEDIS process-disease management composite was negatively correlated with clinical team ($r = -0.19$). There were no significant correlations between any patient experience measures and the HEDIS clinical outcome composite at either the practice site or physician level.
CONCLUSIONS: Patient experience measures describing the physician-patient interaction were associated with clinical performance at the physician level and those describing organizational interaction were associated with clinical performance at the practice site level. The modest, generally positive correlations suggest that parallel, yet distinct efforts will be needed to improve overall care, and that efforts to improve patient experiences should not undermine clinical performance.

LINKING THE QUALITY OF ANTICOAGULATION CONTROL TO CLINICAL OUTCOMES IN PATIENTS WITH ATRIAL FIBRILLATION: THE ATRIA STUDY. M.C. Fang[1]; D. Singer[2]; Y. Chang[2]; L.H. Borowsky[2]; N.K. Pomernacki[3]; A.S. Go[4]. [1]University of California, San Francisco, San Francisco, CA; [2]Massachusetts General Hospital, Boston, MA; [3]Kaiser Permanente Division of Research, Oakland, CA; [4]University of California, San Francisco and Kaiser Permanente Division of Research, Oakland, CA. *(Tracking ID # 173268)*

BACKGROUND: Warfarin is highly effective in preventing atrial fibrillation-related stroke but has a narrow therapeutic window. The risk of stroke rises at international normalized ratios (INRs) less than 2.0 and the risk of intracranial hemorrhage at INRs over 4.0. However, few studies have linked variation in the quality of anticoagulation management to actual clinical outcomes. Using a large cohort of patients with atrial fibrillation, we examined how variation in the time in therapeutic INR range across different anticoagulation clinics was associated with outcomes of stroke and intracranial hemorrhage.
METHODS: The ATRIA Study is a cohort of 13,559 patients with nonvalvular atrial fibrillation enrolled in an integrated healthcare delivery system. Patients were followed for a median 6.0 years, accumulating a total of 34,716 person-years follow-up on warfarin. Data on patient characteristics and comorbid conditions, as well as warfarin use and outpatient INR results, were obtained from automated clinical and administrative databases. Patients receiving warfarin were followed at one of 20 facilities. Quality of anticoagulation control was defined as the proportion of person-time in a therapeutic INR range (i.e. INR of 2.0 to 3.0). Primary outcomes were incident thromboembolism (ischemic stroke and peripheral embolism) and intracranial hemorrhage. All events were validated by chart review. We then used multivariable log-linear regression to assess how outcome events were related to INR control, adjusting for clinical risk factors.
RESULTS: The time in therapeutic INR range (TTR) varied from 48.2% to 63.1% across the 20 facilities; the time at INRs ≥4.0 varied from 0.6% to 2.2%. The annual rate of thromboembolism ranged from 0.63% to 2.3% and the rate of intracranial hemorrhage from 0.18% to 0.87%. The absolute rate of thromboembolism decreased by 0.07% for every percent improvement in TTR, adjusting for differences in clinical risk factors across clinics ($p = 0.02$). However, TTR was not significantly associated with rates of intracranial hemorrhage ($p = 0.5$), likely reflecting the low event rate and small variation in person-time of INRs ≥4.0.
CONCLUSIONS: Better anticoagulation control was associated with lower rates of thromboembolism. We estimate that for every 1 percent improvement in TTR, the absolute rate of stroke declines by 7 per 10,000 person-years. Such quantitative data linking processes of care to clinical outcomes is crucial for rational quality improvement and pay-for-performance reimbursement policies.

LOST IN THE CLUTTER: MISSED AORTIC ANEURYSMS DESPITE AN ADVANCED ELECTRONIC MEDICAL RECORD. J.R. Gordon[1]; T. Wahls[1]; R.C. Carlos[2]; P. Cram[1]. [1]University of Iowa, Iowa City, IA; [2]University of Michigan, Ann Arbor, MI. *(Tracking ID # 172715)*

BACKGROUND: There is growing evidence that abnormal test results are frequently overlooked in clinical practice, compromising patient safety. Abdominal Aortic Aneurysms (AAA) detected as incidental findings on imaging studies are an important clinical finding that require further follow-up, yet little is known about the management of incidental AAAs and how often they are overlooked. The objective of our study was to examine the prevalence of incidental AAAs on CT scans and determine the proportion of AAAs that were missed in an integrated healthcare system with an advanced electronic medical record (EMR).
METHODS: We obtained radiology reports from consecutive CT scans of the abdomen and pelvis performed in 2003 for patients receiving care in a network of Veterans Administration (VA) hospitals ($N = 6267$ patients). At the time of this study, all radiology reports were routinely sent to the ordering clinician's computerized "in-box" for review as well as archived in the VA's EMR to facilitate clinician review. The text of each CT report was searched using key words to identify all patients with AAAs. Using data available in both the CT report and the patient's EMR (e.g. clinic notes, operative reports), we collected additional information about the AAA including: 1) patient demographics; 2) date of identification; 3) AAA size; 4) evidence the aneurysm had been identified previously; 5) indication for CT scan; 6) whether the scan result had been communicated to the ordering provider by the radiologist; 7) whether the AAA was recognized by the clinical team during follow-up; and 8) whether the patient had comorbid conditions that made the AAA irrelevant. Incidental AAAs were defined a priori as: 1) aneurysms that had never been identified previously; and 2) aneurysms that were detected on CT scans that had not been explicitly ordered to screen for or "rule-out" a AAA.
RESULTS: We identified 257 aortic aneurysms of which 78 (30%) were determined to be incidental findings. The mean age of these patients was 72 years, 83% were white and 100% were male. 69% of the patients had a history of tobacco use ($n = 53$) and 31% were using tobacco at the time of their CT scan ($n = 24$). Of the 78 patients with incidental AAAs, 71% ($n = 55$) of these AAAs had not been mentioned in the EMR within three months of the CT scan and 56% ($n = 44$) of the AAAs were never mentioned anywhere in the EMR during a mean follow-up of 2.3 years. The mean size of these AAAs was 3.3cm (range 2.2–4.5 cm).
CONCLUSIONS: Incidental AAAs were often missed despite the availability of an advanced EMR that makes test results widely available and accessible to clinical teams. Better systems are needed to insure that important abnormal test results are reviewed and appropriate follow-up is initiated.

LOWER HEALTH LITERACY IS ASSOCIATED WITH POORER MEDICATION KNOWLEDGE, BUT NOT ADVERSE DRUG EVENTS IN THE ELDERLY. P. Kaboli[1]; K. Mcdonald[2]; M.J. Barnett[3]; A.M. Arozullah[4]. [1]VA Iowa City Healthcare System and University of Iowa, Iowa City, IA; [2]Touro University, San Francisco, CA; [3]VA Iowa City Healthcare System, Iowa City, IA; [4]University of Illinois at Chicago, Chicago, IL. *(Tracking ID # 173708)*

BACKGROUND: Low health literacy is associated with misunderstanding medical instructions and lower medication-related knowledge, but little is known about associated clinical outcomes. Our objective was to study the association between health literacy and adverse drug events (ADEs) in an elderly veteran population.
METHODS: Subjects were recruited from a Veterans Health Administration (VHA) primary care clinic who were >65 years of age, taking >5 scheduled medications, and cognitively intact. Medication knowledge and following label directions was assessed by clinical pharmacist interview. ADEs were determined by patient interview and chart review at 3 and 12 months. Health literacy was assessed using the Rapid Estimate of Adult Literacy in Medicine (REALM).
RESULTS: The 310 subjects recruited had a mean age of 74, 99% were white, 97% male, and taking on average 12.1 medications. Health literacy equivalent levels by REALM scores divided patients into <6th grade (9%), 7th–8th grade (30%), and >8th grade (61%). Percentage of medication names known by the patient was lower for the <6th grade (29%) compared to the 7th–8th grade (49%) and >8th grade (56%) groups ($P < .001$) and percentage of medication purposes known by the patient was also lower in the lower literacy group (49% vs. 71% vs. 74%; $P < .001$). However, lower literacy did not predict percentage of medications taken correctly by the label for <6th grade (84%), 7th–8th grade (80%), and >8th grade (77%) levels ($P = .14$) nor percentage of patients experiencing an ADE at one year (48% vs. 33% vs. 40%; $P = .30$). Results were similar when stratified by number of medications, however patients taking <9 medications were taking a greater percentage of medications according to the label (83%) when compared to patients taking >13 medications (76%) ($P = .02$).

CONCLUSIONS: Our results support prior research that patients with lower health literacy have poorer medication knowledge, contradicts prior studies suggesting poorer knowledge impacts following directions, and is the first study to show that health literacy was not significantly associated with ADEs. Although health literacy may directly impact patient medication knowledge, other factors may mitigate the effect on health outcomes such as ADEs.

MEDICAL ERRORS INVOLVING HOUSESTAFF: A STUDY OF CLOSED MALPRACTICE CLAIMS FROM 5 INSURERS. H. Singh[1]; E.J. Thomas[2]; L.A. Petersen[1]; D. Studdert[3]. [1]Houston Center for Quality of Care and Utilization Studies, Michael E. DeBakey Veterans Affairs Medical Center and Baylor College of Medicine, Houston, TX; [2]University of Texas Health Science Center at Houston, Houston, TX; [3]Harvard School of Public Health, Boston, MA. *(Tracking ID # 173323)*

BACKGROUND: Although trainees face special risks of involvement in medical errors, information about the causes of errors involving trainees is limited. The goal of this study was to describe the characteristics of trainee errors and identify factors that contributed to them.
METHODS: We studied data from the Malpractice Insurers Medical Error Prevention Study (MIMEPS), a comprehensive review of 1452 malpractice claims from five insurers. Data were extracted from random samples of closed claim files at five insurers, which were reviewed by specialist physicians to determine whether injuries had occurred, and if so, whether they were due to error. We focused on claims in which study reviewers detected harmful error and judged one or more interns, residents, or fellows to have played an important causal role in the error. We examined the clinical circumstances, contributing factors, and staff involvement of harmful errors that involved trainees ("cases") and compared the characteristics of trainee errors with those of errors by their non-trainee counterparts. Problems with communication, supervision, handoffs, failures to establish clear lines of responsibility, and conflict among clinical staff were categorized as "teamwork" breakdowns. With respect to problems of technical competence or knowledge, we identified the task being performed by the physician when the error occurred. The task options were modified from a list of categories of general practitioner tasks provided by the Occupational Information Network, which are general enough to adequately capture the work of clinicians in a range of specialties.
RESULTS: The claims were closed between 1984 and 2004, and the errors occurred between 1979 and 2001. Seventy-two percent of the claims were closed in 1990 or later. Of 889 cases (claims in which both error and injury were detected) identified in the MIMEPS study, 240 (27%) involved trainees, whose role in the error was judged to be at least moderately important. One third of the cases involved trainees in obstetrics and gynecology, followed by general surgery, adult primary care, orthopedic surgery, and pediatrics. Collectively, 78% of the cases involved trainees from one or more of these five specialties. Among 240 cases, errors in judgment (173/240, 72%), teamwork breakdowns (167/241, 70%), and lack of technical competence (139/240, 58%) were the most prevalent contributing factors. Lack of supervision and handoff problems were the most prevalent types of teamwork problems, and both were disproportionately more common among errors that involved trainees than those that did not (respectively, 54% vs 7%, $P < 0.001$ and 20% vs 12%, $P = 0.009$).The most common tasks during which failures of technical competence occurred were diagnostic decision-making and monitoring the patient or situation. Trainee errors were more complex than non-trainee errors (average of 3.8 contributing factors vs. 2.5 among non-trainee errors, $P < 0.001$).
CONCLUSIONS: In addition to problems with handoffs, causal characteristics for trainee errors include problems with teamwork, multiple levels of supervision, and diagnostic decision-making. Our findings should help leaders of residency programs and the Accreditation Council for Graduate Medical Education to orient training interventions toward these problem areas, and also stimulate further research into why and how trainee errors occur.

OPENING THE BLACK BOX: EXPLORING PATIENT SAFETY THREATS AMONG AMBULATORY CHRONIC DISEASE PATIENTS. U. Sarkar[1]; M. Handley[1]; R. Gupta[1]; A. Tang[1]; K.G. Shojania[2]; D. Schillinger[1]. [1]University of California, San Francisco, San Francisco, CA; [2]University of Ottawa, Ottawa, Ontario. *(Tracking ID # 173658)*

BACKGROUND: Patients with chronic illness perform complex self-management tasks independently, creating potential for unsafe situations. While prior studies have explored ambulatory safety using incident reporting, chart review, or claims data, none has used patient-generated data for surveillance.
METHODS: We harnessed information from a telephone-based disease management program to characterize patient safety issues that arise between outpatient visits. Patients with diabetes from urban public-sector clinics participated in a 39-week program that provides self-management support through weekly automated telephone interactions with follow-up by a nurse practitioner. We aggregated 3 data sources: (1) reports from automated calls, (2) encounter narratives generated by the study nurse, and (3) all patient clinical records from the study period. A consensus panel of 4 generalist and specialist providers developed event thresholds a priori. To characterize events, we used existing taxonomies to create a coding scheme specific to ambulatory settings: Definitions ·Adverse event: (AE) an injury, with varying levels of harm, resulting not only from medical management, but also from patient self-management ·Potential adverse event (PAE) as an unsafe state, not currently an AE, but likely to lead to one if it persists without intervention. We further classified events as: preventable: an event that could have been avoided; ameliorable (for AEs only), an event that could have been reduced in severity with different actions or procedures; or non-preventable. Finally, we designated events as incident, or new to the patient, vs. prevalent, ongoing events in the patient's disease process or self-management behavior, to create 4 event types. Two physicians identified potentially eligible events and brought them to the consensus panel for approval. Study physicians independently coded event preventability and determined whether primary care providers were aware of events at the time of detection. The consensus panel resolved discrepancies.
RESULTS: Among 111 participants, the mean number of automated calls completed per patient was 16 (range 1–39). Ninety-six patients (86%) experienced > 1 event (mean 2.6 events, range 0–5). The majority of events were preventable or ameliorable; we detected more prevalent events than incident events (Table). Primary providers were less likely to be aware of incident vs. prevalent AE's (72% vs 32%, OR = 5.0, CI 2.1–12.0), and incident vs. prevalent PAE's (90% vs 47%, OR = 10.8, CI 3.2–22.0) at the time of detection.
CONCLUSIONS: Patient-cued surveillance via a telephonic self-management support program can further our understanding of ambulatory safety. Almost all patients experienced threats to safety. Events detected through this between-visit mechanism were frequently unknown to primary providers, and the majority of events were preventable or ameliorable, suggesting that this type of surveillance, with appropriate system-level intervention, may improve patient safety for chronic disease patients.

Distribution and Preventability of 264 Events, N(%)

	Incident AE N=32	Prevalent AE N=72	Incident PAE N=52	Prevalent PAE N=101
Preventable	11 (34)	69 (87)	50 (96)	99 (99)
Ameliorable	11 (34)	6 (8)	NA	NA
Non-preventable	4 (13)	1 (1)	1 (2)	1 (1)
Unable to determine	6 (19)	3 (4)	1(2)	1 (1)

OSTEOPOROSIS SCREENING IN AN INTERNAL MEDICINE PRACTICE AT A LARGE ACADEMIC CENTER. E. Lin[1]; R.L. Kesman[1]; R. Chaudhry[1]; R. Cabanela[1]; M.A. Hansen[2]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN; [2]Mayo Clinic, Rochester, MN. *(Tracking ID # 172337)*

BACKGROUND: Osteoporosis is a common problem nationwide leading to significant morbidity, mortality, and costs. In 2005, an estimated 2 million osteoporotic-related fractures occurred costing approximately 16.9 billion dollars. As the population continues to age, this will become an even more prevalent issue. Fortunately, a safe screening test and effective treatments are available. Currently, the USPSTF recommends osteoporosis screening for all women age 65 and older.
METHODS: The Primary Care Physician Portal (PPP), a tool that utilizes billing data to compile statistics about patient care, shows a screening rate of 73% in Primary Care Internal Medicine (PCIM). Currently, PCIM has a standardized rooming process in which the nursing staff record adult preventive services in the electronic medical record. In a retrospective analysis, sixty women age 65 and older who had not received osteoporosis screening were randomly selected from 2 consultant patient populations. A detailed chart review was undertaken to determine the major factors contributing to the low screening rate.
RESULTS: For the majority of patients (53%), there was a defect in the check-in process with the nursing staff and the physician failing to screen eligible patients. Another significant factor (20%) was loss of the patient to follow-up, which was defined as the patient not being seen in PCIM over the past 2 years. PPP inaccuracy, patient preference, and incorrect documentation accounted for smaller percentages (15%, 8%, and 2%).
CONCLUSIONS: The major factors contributing to low screening rates in PCIM are failure of the rooming process and loss of patients to follow-up. Improving care will require both education of the nursing and physician staff and also the development of a population based intervention. Plans are currently underway to develop an independent process at the population level utilizing PPP to contact patients who are due for osteoporosis screening. If results are similar at other institutions, provider and system-based processes are needed nationwide to improve the quality of care provided to the patient population.

PATIENT CARE EXPERIENCE ENHANCED BY USE OF ONLINE JOURNALS: PRELIMINARY RESULTS. L. Buckel[1]; A.C. Businger[1]; L. Vollk[2]; J. Wald[2]; E.G. Poon[3]; R.W. Grant[4]; T. Gandhi[3]; J.L. Schnipper[3]; B. Middleton[5]. [1]Brigham and Women's Hospital, Wellesley, MA; [2]Partners HealthCare System, Inc., Wellesley, MA; [3]Brigham and Women's Hospital, Boston, MA; [4]Harvard Medical School, Boston, MA; [5]Harvard University, Wellesley, MA. *(Tracking ID # 173638)*

BACKGROUND: The recent increase in development of secure electronic patient portals has given patients an opportunity to become more involved in their healthcare. Patient Gateway (PG) at Partners HealthCare in Boston, MA is one such portal through which patients can communicate with their primary care providers (PCP) and review selected sections of their medical record. A subset of patients using PG is enrolled in the Prepare for Care study. Three weeks before a scheduled visit with their PCP, these patients are invited to submit an online pre-visit "journal" that allows them to update health information and track their care. The journal includes information from the patient's electronic office chart, and is submitted by the patient to the provider for use during a scheduled visit. Once the journal is submitted, the PCP can review and use it to update the patient's electronic health record (EHR). Clinics were randomized so that their patients could update medications, allergies, and diabetes information, or family history, relevant personal history, and health maintenance items. A survey of patient experience with the journals was administered to evaluate patient attitudes and satisfaction.
METHODS: Patients who had opened a journal after June 2006 were invited to complete an online survey 3 days after a scheduled visit with their PCP. Patients who did not respond were sent 2 reminder messages, spaced 2 weeks apart. The survey asked respondents to report their experience completing the journal, and the impact they felt it had on their care.

RESULTS: As of 12/31/06, 637 (65%) of the 976 invited patients have responded to the online survey. The mean age of both invitees and respondents was 53 and 60% of both groups were female. Of those who returned the survey, 609 patients (96%) had completed journals through to submission. Of these 609 patients, 304 (50%) reported discussing the information with their provider during the visit and 282 (46%) indicated they had not (23 did not answer). 52% of those who reported they discussed the journal information agreed that the use of the journal improved communication with their provider during the visit which is significantly higher than the 15% of those who reported they did not discuss it ($p < .0001$). 66% of patients who reported discussing the journal during the visit agreed that the journal both provided their clinician with more accurate information and allowed them to feel more prepared for their visit. This is significantly greater than the 38% and 37%, respectively, of those who did not report discussing the journal ($p < .0001$). 67% of all patients who submitted a journal would be interested in completing one again for another visit; 80% of those who reported discussing it would do so again compared to 54% of those who did not ($p < .0001$).
CONCLUSIONS: Providing online tools (journals) for patients to review and comment on selected data from their EHRs and sending this information to their clinician before a visit appears to be a valuable mechanism for enhancing a patient's care experience. The majority of patients reported they would like to complete another journal before a visit. Patients who reported discussing their journal information with their clinician were more likely to perceive benefits than those who did not report discussing this information. Further analysis is needed to understand the factors influencing whether a journal is discussed during an office visit, such as journal content, time constraints, and provider interest.

PATIENTS WHO DO NOT FILL PRESCRIBED ANTIHYPERTENSIVE MEDICATIONS: THE EFFECT OF CONCORDANT AND DISCORDANT COMORBIDITIES. T. Lagu[1]; M.G. Weiner[1]; C.S. Hollenbeak[2]; S. Tang[3]; J.S. Schwartz[1]; B.J. Turner[1]. [1]University of Pennsylvania, Philadelphia, PA; [2]Pennsylvania State University, Hershey, PA; [3]Pfizer Global Pharmaceuticals, New York, NY. *(Tracking ID # 173400)*

BACKGROUND: New pay-for-performance initiatives penalize physicians whose hypertensive patients do not achieve specified blood pressure (BP) goals. Patients with poor adherence to medications compromise the physician's quality of care performance and, more importantly, their own health. An overlooked but critical aspect of adherence is whether the patient fills prescribed antihypertensive medications (AHMs). In this study, we examine the impact of concordant and discordant comorbidities on filling AHMs. We hypothesized that patients with severe hypertension, hyperlipidemia, and other comorbidities that increase cardiovascular risk (e.g., diabetes) would be more likely to fill AHMs while those with a high burden of discordant comorbidities (e.g., arthritis, depression) would be less likely to fill.
METHODS: From 6 primary care clinics in an academic center from 1/1/03–2/1/05, we identified 327 African-American patients enrolled in a Medicaid managed care plan with full prescription drug coverage. We obtained prescribed medications from study clinics' electronic medical record (EMR) and concurrent AHM claims from the managed care plan. For each prescribed AHM, our outcome was filling the drug based on a claim within 30 days. Lipid status was classified as: current or previously prescribed lipid-lowering treatment (lipid Rx), untreated (high last LDL or diagnosis), or normal lipid level. BP at the visit when the AHM was prescribed was categorized as: controlled (< 140 and < 90 or if diabetic < 130 and < 85), high systolic only, high diastolic only, both elevated, and both elevated with one severely (> 99 or > 159). Using generalized estimating equations to account for clustering of prescribed AHMs within patients and adjusting for demographics and medication regimen, we examined associations of comorbidities as well as BP control and hyperlipidemia management with filling the AHM.
RESULTS: Of 1,742 unique AHM prescriptions, 25% were not filled. Filling AHMs was more likely for persons with severely elevated BP (adjusted odds ratio [AOR] 1.68, CI 1.17, 2.41) but less likely for a high diastolic only (AOR 0.64, CI 0.41, 1.00) versus a controlled BP. A concordant comorbidity such as diabetes was not associated with filling AHMs (AOR 0.75, CI 0.48, 1.18) but patients with a lipid Rx were more likely to fill AHMs (AOR 1.77, CI 1.15, 2.73) compared to those with untreated hyperlipidemia. Patients with > 4 discordant comorbidities were more likely fill AHMs (AOR 1.59, CI 1.08, 2.33) versus fewer conditions. Persons aged < 50 were less likely to fill AHM (AOR 0.55, CI 0.35, 0.88). However, the number of AHMs and the overall number of other drugs in the patient's regimen prior to the visit were not significantly associated with filling AHMs.
CONCLUSIONS: Failure to fill AHMs was common but patients appear to be more motivated to fill AHMs when their BP is severely elevated. Filling AHMs is also more likely in patients who have been prescribed lipid Rx, suggesting increased willingness to accept drug treatment to reduce vascular disease risk. Contrary to our hypotheses, patients with a concordant comorbidity were not more likely to fill AHMs and those a high discordant burden were more likely to fill AHMs. These effects are independent of the number of drugs prescribed for the patient. Poor filling of AHMs is particularly common in younger patients. Efforts to support filling drugs could become a process measure when assessing quality of care for hypertension.

PERFORMANCE INDICATORS FOR BIPOLAR DISORDER: DEVELOPMENT AND FEASIBILITY TESTING. J.W. Williams[1]; W. Golden[2]; P.E. Keck[3]; M. Jewell[4]; C. Brewster[5]. [1]Durham VAMC, Durham, NC; [2]Arkansas Foundation for Medical Care, Inc., Ft. Smith, AR; [3]University of Cincinnati, Cincinnati, OH; [4]EPI-Q, Inc., Oak Brook, IL; [5]EPI-Q, Inc, Oak Brook, IL. *(Tracking ID # 173673)*

BACKGROUND: In people age 15–44, bipolar disorder (BD) is the 6th leading cause of loss in disability adjusted life years. For individuals with BD, the gap between usual and guideline concordant is substantial. As a tool to facilitate quality improvement, we developed and field tested performance indicators (PI) for BD.
METHODS: A multidisciplinary expert panel used a modified Delphi process and the RAND appropriateness criteria to develop 16 candidate PI. A convenience sample of 80 practices (48 psychiatry, 32 primary care) in 28 states used chart audit, guided by a detailed data collection form and data dictionary, to field test the PI. Each practice identified patients via automated data (e.g., ICD-9 codes) with depression or bipolar disorder for chart audit. A subset of patient records were re-abstracted for inter-rater reliability. Feasibility was evaluated by: the number of patients eligible for the PI, the ability to apply the PI based on information available in medical records, and the variability in performance on the PI. Inter-rater reliability was described using simple agreement and the kappa statistic.
RESULTS: The 16 candidate indicators included measures to screen for mania and for a family history of mental health disorders in unipolar depression, and measures to assess suicide risk and alcohol or substance use in patients with unipolar or BD. Twelve measures specific to bipolar disorder addressed treatment (5), monitoring for treatment adverse effects (4), response to treatment (2), and education (1). 802 cases (419 BD; 383 Depression) were audited. Six BD-specific PI (3 treatment, 2 adverse effect monitoring, 1 treatment response) had low feasibility based on few patients qualifying for the indicator or little variability in measured performance. For the depression specific PI, practice performance was as follows: assessment for mania (47.6%) and obtained a family history of mental health disorders (40.8%). Performance on measures applicable to unipolar or BD were: suicide risk assessment (71.5%) and assessment for substance abuse (60.5%). For the BD specific PI, practice performance was: serum level when treated with lithium (44.4%), level of functioning assessed at baseline and with 12 weeks (41.4%), appropriate psychosocial interventions recommended (39.9%), provided education on BD (33.4%), assessment for hyperglycemia after initiating an atypical antipsychotic (19.7%) and weight measurement (15.5%). Psychiatric practices performed better than primary care practices on 7 of the 10 feasible PI ($p < 0.05$). Primary Care Practices were more likely to measure weight, and did not differ significantly for hyperglycemia monitoring or obtaining serum lithium levels. Inter-rater reliability was substantial in the 68 charts that were double abstracted; simple agreement ranged from 89.5% to 100% and kappa ranged from 0.75 to 1.0.
CONCLUSIONS: There is a need to improve the quality of care for individuals with bipolar disorder. These ten reliable PI can be implemented using chart audits and may be a useful component of quality improvement efforts.

PHYSICIAN PRACTICE STYLES AND REFERRAL PATTERNS: A MODEL FROM BREAST CANCER CARE, LOS ANGELES WOMEN'S HEALTH STUDY. D. Rose-Ash[1]; D. Tisnado[2]; M. Tao[3]; M. Maggard[1]; P. Ganz[2]; K.L. Kahn[2]. [1]University of California, Los Angeles-JCCC, Los Angeles, CA; [2]University of California, Los Angeles, Los Angeles, CA; [3]Vantage Oncology, Los Angeles, CA. *(Tracking ID # 173238)*

BACKGROUND: Variations in use of services has been reported across many aspects of health care, but more clinical detail on variations in referral patterns for cancer patients is needed to develop best practice models. We queried physicians about their management and referrals styles for patients with incident breast cancer. We hypothesized that variations would exist for rates of physicians self-managing versus referring patients specific areas of care. Furthermore, we predicted that practice characteristics, more than provider characteristics would predict these management and referral patterns.
METHODS: We surveyed all medical oncologists, radiation oncologists and surgeons identified by women from a population-based cohort of women with breast cancer identified by the Los Angeles County cancer registry (76% physician response rate, $n = 347$). Physicians were asked to characterize their hypothetical management of a 65-year-old woman with incident breast cancer and well-controlled diabetes: whether they managed care themselves, co-managed care with another physician, or referred the patient to another physician. Respondents were asked to focus on 10 aspects of care: e.g., establishing goals for treatment, assessing patient preferences, treating symptoms (depressive symptoms, pain), signs (lymphedema), and comorbidity (diabetes). We present the proportion of tasks ($n = 10$) reported as performed by physicians themselves. We tested for bivariate and multivariate associations with physician age, gender, specialty, practice setting (county or medical school; HMO; solo practice; single specialty group, multispecialty group) and large practice size ($> = 50$ physicians). Analyses were weighted for survey non-response and controlled for clustering at the office level.
RESULTS: Physicians indicated substantial variations in practice style. Of 10 aspects of care evaluated, 14% respondents indicated managing $> = 7$ aspects alone, while 12% indicated never managing care alone. Among physicians reporting co-management for at least one of 10 tasks ($n = 327$), 39% reported shared responsibility for 1–3, 39% for 4–6, and 16% for $> = 7$ tasks. Among physicians reporting usually referring management to another physician ($n = 291$), 67% referred 1–3 tasks, and 16% for $> = 4$ tasks. While most (87%) of physicians indicated they were involved in some way with all 10 tasks, 12% indicated they were not involved in 1–3 of the 10 tasks. In multivariate analyses, radiation oncologists and surgeons, compared to medical oncologists, were less likely to manage care on their own (both $p < 0.001$), more likely to report co-managing care ($p < 0.01$ and $p < 0.05$, respectively), or referring patients to another physician ($p < 0.001$ for both). HMO physicians were more likely to report co-managing care as compared to physicians in solo practice ($p < 0.05$). County government or medical school physicians were more likely to indicate being involved as compared to physicians in solo practice or HMO doctors (both $p < 0.05$).
CONCLUSIONS: Specialty type appeared to be the strongest predictor, followed by practice setting, of practice style and referral. Physician demographics did not appear to influence practice style, nor did practicing in a large physician practice. More research is needed to understand how differences in practice styles might affect outcomes of patient care. We plan on exploring this further in linked physician and patient datasets.

PHYSICIAN TO PHYSICIAN HANDOFF: THE VETERAN'S ADMINISTRATION CAIRO PROJECT. J.K. Anderson[1]; P. Kaboli[1]. [1]VA Iowa City Health Care System and University of Iowa, Iowa City, IA. *(Tracking ID # 172498)*

BACKGROUND: The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) introduced a national patient safety goal which states hospitals should "implement a standardized approach to 'handoff' communications, including an opportunity to ask and respond to questions." Despite this recommendation, few studies on the safety or efficacy of current handoff systems exist and few standardized electronic medical record (EMR) handoff tools are available. In order to develop a physician-friendly EMR-based handoff tool, we evaluated data handed off at physician shift change to determine completeness of current patient handoff methods.
METHODS: After their duty shift, handoff sheets used by internal medicine residents were collected from the Iowa City (IC) and White River Junction (WRJ) VA Medical Centers. The handoff forms were abstracted to identify the presence or absence of the following information: code status, floor location, room number, at least two types of identifying information, mention of anticipated issues, and format (typed or handwritten.) Tasks handed off to covering physicians to do during their shift and problems encountered by the covering physician were also abstracted.
RESULTS: There were 109 total handoff forms abstracted (IC = 72; WRJ = 37). Code status was complete for 81% of handoff sheets but was incomplete in 19% (i.e., missing on 1 or more patients.) All handoffs mentioned anticipated issues. Floor location was missing in 62% and room number in 64%. Two types of identifying information and medication lists were missing in 64% and 72%, respectively. One handoff was handwritten. The most frequent handoff tasks included follow-up of test results, follow-up on consult recommendations, and management of ventilation, blood sugar, and blood pressure. Residents occasionally asked the covering physician to personally check on specific patients, perform procedures, confirm if medications were administered or discontinued, and order diets as appropriate after tests were performed. One handoff asked to check line placement, and one asked to transfer a patient to a different floor. Examples of written comments by covering physicians included changes in patient condition, loss of IV access, restraint orders, need for blood transfusions, falls, laboratory abnormalities, difficulty with inserting a urinary catheter, medication errors, order clarifications, refusal of services, poorly communicated plan for patient discharge, participating in family discussions, and failure of tests to be performed despite orders. One death was noted; however it was not possible to discern if it was anticipated.
CONCLUSIONS: Our findings indicate that the current handoff tool used at the two medical centers was frequently incomplete, yet is unclear if these omissions are compromising patient safety. In order to address the limitations of the current system and comply with the JCAHO patient safety goal, the Department of Veterans Affairs is developing a standardized EMR-linked handoff system, the CAIRO handoff tool, designed to include all necessary elements of a handoff. The goal of the CAIRO handoff tool is to prevent omission of vital information and improve patient safety while at the same time creating a product that makes the process of handing off patients between healthcare providers easier.

PHYSICIAN USE OF HEALTH PROFESSIONALS AND SUPPORT STAFF IN CARING FOR A POPULATION-BASED COHORT: RESULTS FROM THE LOS ANGELES WOMEN'S (LAW) STUDY. D. Rose Ash[1]; D. Tisnado[1]; M. Tao[2]; M. Maggard[3]; P. Ganz[1]; K.L. Kahn[1]. [1]University of California, Los Angeles, Los Angeles, CA; [2]Vantage Oncology, Los Angeles, CA; [3]University of California, Los Angeles-JCCC, Los Angeles, CA. *(Tracking ID # 173533)*

BACKGROUND: Understanding whether physicians, nurses, paraprofessionals, or support staff complete prevalent tasks during patient visits with physicians could reveal useful insights into variations in care and outcomes. Physicians vary in the strategies they use to assure the delivery of high quality care at the lowest costs. Some physicians delegate tasks, while others complete the tasks themselves to optimize efficiency. Little is known about the clinical epidemiology of how office tasks are completed and how variations in who completes these tasks influence patient care and outcomes.
METHODS: Using a cross-sectional survey, we queried physicians associated with a population-based cohort of women with incident breast cancer in Los Angeles County. We asked "Who usually performs clinically relevant tasks in your office setting?" (e.g., who: documents medication use, takes vital signs, monitors catheter use, monitors patient signs/symptoms, administers treatment ,monitors patient's progress). Response options were: themselves, other health professionals (RN, LVN, administrative staff or no set policy). We present the proportion of tasks (n = 8) reported as performed by physicians themselves. We tested for bivariate and multivariate associations with physician age, gender, specialty, practice setting (county or medical school; HMO; solo practice; single specialty group, multispecialty group) and large practice size (> = 50 physicians). Analyses were weighted for survey non-response and controlled for clustering at the office level. We surveyed all medical oncologists, radiation oncologists, and surgeons practicing in Los Angeles County identified by a population-based cohort of women with breast cancer retrieved from the cancer registry (76% response rate, n = 348).
RESULTS: Of eight tasks studied, we noted substantial variations in physician report of completing tasks themselves: Physicians reported completing 0 tasks (5%), 1–2 tasks (23%), 3–4 tasks (34%), 5–6 tasks (32%), and 7–8 (6%) of 8 tasks. In bivariate analyses, older physicians reported performing a higher proportion of tasks ($p < 0.01$); radiation oncologists and surgeons reported performing more tasks compared to medical oncologists ($p < 0.001$). Physicians in large practices reported performing fewer tasks ($p < 0.05$). In multivariable analyses, radiation oncologists and surgeons were more likely to report performing a higher proportion of tasks compared to medical oncologists ($p < 0.001$). Physicians in single specialty groups were associated with a smaller proportion of tasks compared to physicians in solo practice ($p < 0.001$).
CONCLUSIONS: Significant specialty and practice setting differences exist in the proportion of tasks reported as performed by cancer physicians themselves, as compared with by their designees. Physicians in solo practice appear less likely to delegate tasks compared to other physicians. Medical oncologists appear more likely to delegate tasks compared to other cancer specialists. In multivariate regression, large practice size did not appear to predict proportion of work done by physicians. Understanding variations in practice style and predictors of those variations are the first step in understanding how structure influences care and outcomes. Next steps include linking these data to patient-level data to determine if differences in tasks performed by physicians as compared with their designee influences care or outcomes.

POTENTIALLY INAPPROPRIATE MEDICATION USE IN HOSPITALIZED ELDERS. M.B. Rothberg[1]; P. Pekow[1]; F. Liu[2]; M. Brennan[1]; S. Bellantonio[1]; P. Lindenauer[3]. [1]Baystate Medical Center, Springfield, MA; [2]University of Massachusetts Amherst, Amherst, MA; [3]Tufts University, Springfield, MA. *(Tracking ID # 171434)*

BACKGROUND: The misuse of selected high risk medications is a major cause of morbidity and mortality for elders. Prescribing errors have been well documented in outpatient offices, clinics and nursing homes but little is known about the scope of the problem in the inpatient setting. The Beers' List of potentially inappropriate medications has been used by Medicare as a quality measure for nursing homes and was recently adopted as a HEDIS measure of ambulatory quality. Our objective was to determine the incidence of, and risk factors associated with, potentially inappropriate prescribing in a large sample of hospitalized elders.
METHODS: We conducted a retrospective cohort study of patients aged 65 years admitted with 1 of 7 common medical diagnoses to 384 U.S. hospitals. We used pharmacy billing data to identify potentially inappropriate prescribing using a modified version of the Beers' List. We developed a multivariable logistic regression model that included patient, hospital and physician characteristics, and that accounted for clustering at the hospital, physician, and diagnosis levels, to identify the extent to which patient, physician and hospital characteristics were associated with potentially inappropriate prescribing. We also examined the pattern of use within each medical specialty and among individual hospitals.
RESULTS: Of 493,971 patients studied, 49% received at least one potentially inappropriate medication (PIM) and 6% received 3 or more, most commonly promethazine, diphenhydramine, propoxyphene, clonidine, amiodarone and lorazepam (> 3 mg/d). In univariate analysis, patient age, sex, race, marital status, payor type, primary and secondary diagnoses, physician specialty and hospital region, size, setting, teaching status and geriatrician presence were associated with use of PIMs ($p < 0.0001$ for each). In multivariable analysis, compared to patients aged 65–74 years, patients aged 85 years were less likely to receive high severity PIMs (OR 0.59, 95% CI 0.58 to 0.61). Women, whites, married people, and those not in managed care plans were slightly more likely, and patients admitted with myocardial infarction or heart failure much more likely to receive PIMs ($p < 0.0001$ for all comparisons). For high severity PIMs, internists, family physicians and hospitalists had similar prescribing rates (33%–36%), cardiologists had a higher rate (48%) and geriatricians the lowest (24%), but there was tremendous variation among individual providers. Among internists and cardiologists who saw at least 50 patients, high severity PIM usage rates ranged from 0% to > 90%. The proportion of elders receiving PIMs ranged from 34% in the Northeast to 55% in the South. Smaller hospitals and those with a geriatrician presence had lower rates. Teaching status and hospital setting were not associated with PIM rates. Variation at the individual hospital level was extreme. Half of all hospitals had rates between 43% and 58% but at 7 hospitals with > 300 geriatric patients each, PIMs were never prescribed.
CONCLUSIONS: There is enormous variation in the use of high risk medications among the elderly that is associated with hospital and physician characteristics. Care may be improved by minimizing this non-patient-centered variation. A stronger geriatrician presence and educational interventions, particularly for cardiac patients, may maximize patient safety.

PREDICTORS OF SELF-RATED QUALITY OF PRIMARY CARE FOR MULTIMORBID OLDER ADULTS. C. Boyd[1]; B.A. Leff[1]; J.L. Wolff[1]; L. Semanick[1]; G. Noronha[1]; L. Karm[2]; C. Boult[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Kaiser Permanente, West End, Washington, DC. *(Tracking ID # 172423)*

BACKGROUND: Quality of primary health care may be affected by general health status among older adults with multimorbidity.
METHODS: We examined baseline data collected as part of a clinical trial of a chronic care model ("Guided Care") for older adults identified as the 25% at highest risk of future health care utilization (N = 869) based on claims-based predictive modeling at multiple primary care sites. The Patient Assessment of Chronic Illness Care (PACIC) instrument was administered in an in-home interview to patients or their proxies (n = 46). PACIC assesses 5 domains of the quality of primary health care based on the Chronic Care Model (Patient Activation, Delivery System Design/Decision Support, Goal-setting/Tailoring, Problem-solving/Contextual, Follow-up/Coordination), each on a scale of 1 (low quality) to 5 (high quality). Also assessed were: age, ethnicity, education, gender, insurance status, self-rated health, and self-report of 10 conditions. We conducted t-tests of the relationships between mean PACIC domain scores and each of the independent variables. As the PACIC scores were normally distributed, we then estimated multiple linear regression models of the relationships between PACIC domain scores and self-rated health, adjusting for demographic status, chronic disease burden, and insurance status.
RESULTS: Mean age was 78.4 years; 54% were women; 43% were African-American; 70% of the population had 2–4 out of the 10 conditions, with 18% having 5 or more. Mean ratings (SD) of the PACIC subscales were: Patient Activation = 2.53(1.05), Delivery System Design/Decision Support = 3.21(0.86), Goal-setting/Tailoring = 2.4(0.90), Problem-solving/Contextual = 2.71(1.02), Follow-up/Coordination = 2.39(0.86). There was no evidence of a relationship between self-rated health (Excellent/Very Good, Good, or Fair/Poor) and ratings of primary health care in bivariate or multivariate analyses, except that

persons reporting fair or poor health reported significantly worse quality in the Delivery System Design/Decision Support domain. In bivariate and multivariate analyses, older age was associated with worse quality of care on all domains. African-Americans and people of other ethnicity had higher ratings of quality of primary care compared with Caucasians; this relationship can,in part, be explained by differences in insurance status. Greater disease burden was associated with better quality of care in the Problem Solving/Contextual, Follow-up/Coordination, and Goal-setting/Tailoring domains.
CONCLUSIONS: With the exception of lower ratings of the Delivery System Design/Decision Support domain by individuals with fair or poor self-rated health, the quality of primary health care among high-risk older adults did not vary with self-reported health. General measures of quality of primary health care are not associated with overall health status among older adults with complex needs. Acknowledgments: This study was funded by the John A. Hartford Foundation, Agency for Healthcare Research and Quality, the National Institute on Aging, the Langeloth Foundation, and the Johns Hopkins Bayview Center for Innovative Medicine. The PACIC was developed by the MacColl Institute for Healthcare Innovation.

PREVALENCE OF INADEQUATE HYPERTENSION CONTROL AMONG VETERANS AFTER A MAJOR CARDIOVASCULAR EVENT. C.L. Roumie[1]; R. Greevy[1]; M. Maney[2]; T. Findley[3]. [1]Vanderbilt University; VA Tennessee Valley Healthcare System, Nashville, TN; [2]University of Medicine and Dentistry of New Jersey; VA New Jersey Health Care System, East Orange, NJ; [3]University of Medicine and Dentistry of New Jersey; VA New Jersey Health Care System, East Orange, NJ. *(Tracking ID # 173154)*

BACKGROUND: Deficiencies in delivery of secondary prevention and in the quality of care have been noted after incident cardiovascular and cerebrovascular events. For patients with myocardial infarction (MI) guidelines promote initiation of key antihypertensive medications early in the hospital course, whereas no recommendations are made for initiation of antihypertensive agents for patients with stroke. Our aim was to describe the quality of hypertension care among veterans after 2 common cardiovascular events, stroke and MI.
METHODS: We conducted a retrospective cohort study utilizing the Diabetes Epidemiology Cohort (DEpiC), a longitudinal database of over 500,000 diabetic veterans receiving care between fiscal years 1997 and 2000. The population included veterans hospitalized for an initial ischemic stroke (ICD-9-CM 431.xx, 431.x1 and 434.x1) or MI (ICD 9-CM 410.X, or 411.1 and length of stay > 3 days) between 1998 and 2000. We excluded patients who had < 1 pre and/or post event BP, had both stroke and MI, or died in the year following their cardiovascular event. We examined recorded blood pressure (BP) and hypertension medication regimens for 1 year after their discharge date. The outcome was the proportion of patients in each group that had adequate BP control (¡Û 130/85 according to JNC-6 guidelines which were applicable in this time period).
RESULTS: We identified 343 veterans with a stroke and 1689 veterans with an MI who were hospitalized for an initial cardiovascular event and met our inclusion criteria. Stroke patients were older than MI patients (66.9 years vs. 65.6 years $p = 0.02$) and most were male (98.6% vs. 98.6%). Stroke patients were more likely African American compared to patients with MI (22.2% vs. 12.2% $p < 0.0001$). The baseline diastolic BP was higher among those hospitalized with a stroke compared to MI (141.8/76.3 mm/Hg vs. 141.3/74.5 $p = 0.71$ systolic, $p = 0.018$ diastolic). In the year after hospitalization for their cardiovascular event, the average BP among stroke patients decreased to 136.8/72.2 vs. 132.7/69.8 among MI patients ($p = 0.002$ systolic, $p = 0.001$ diastolic). Stroke patients were less likely to have their last BP in control (SBP < 130 & DBP < 85 mm Hg) (35.9% vs. 41.9% $p = 0.039$). Post cardiovascular event, fewer stroke patients were on at least 2 antihypertensive medications than MI patients (58.9% vs. 74.3% $p < 0.0001$).
CONCLUSIONS: BP values in excess of national guidelines are common after both stroke and MI; however fewer stroke patients achieved BP control and were prescribed at least 2 antihypertensive agents despite the higher average BP in this group. Organized approaches initiated prior to hospital discharge for patients with stroke will improve adherence to secondary prevention guidelines and the quality of care provided to veterans.

PROMOTING SURVEILLANCE FOR COLORECTAL ADENOMAS: A RANDOMIZED CONTROLLED TRIAL. J.Z. Ayanian[1]; T.D. Sequist[1]; A.M. Zaslavsky[1]; R.S. Johannes[2]. [1]Harvard University, Boston, MA; [2]Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 172863)*

BACKGROUND: Most colorectal cancers develop from adenomatous polyps, and national guidelines recommend surveillance colonoscopy within 5 years following removal of a colorectal adenoma. With this long interval, physicians and patients may benefit from reminders about the need for surveillance colonoscopy.
METHODS: We conducted a randomized controlled trial of patient-specific reminders to primary physicians about the need for surveillance colonoscopy among their patients with prior adenomas (ClinicalTrials.gov ID NCT00397969). The study was conducted in Massachusetts at 12 primary care practices (5 hospital-based and 7 community-based) affiliated with an academic medical center and 14 centers of an integrated multi-specialty group practice. Based on electronic linkages of endoscopy and pathology reports, we identified 717 eligible patients who had adenomas removed during 1995–2000 and no recorded surveillance colonoscopy through 2005. Half of the eligible patients were randomized to have a patient-specific reminder mailed to their primary physicians about the potential need for colonoscopy, along with a letter the physicians could send to their patients. The primary study outcome was documentation of a colonoscopy within 6 months following the physician mailing. Pre-specified subgroup analyses were conducted by health-care organization, patient age and sex. We also collected physicians' self-reported responses to the intervention reminders.
RESULTS: Among 358 patients whose physicians were randomized to receive reminders, 26 (7.3%) underwent colonoscopy within 6 months, compared with 10 (2.8%) of 359 patients whose physicians did not receive reminders ($P = 0.006$). The magnitude of the intervention effect did not differ statistically (all $P > 0.38$ by Breslow-Day test) between practices affiliated with the academic medical center (7.5% vs. 3.5%, $P = 0.11$) and multi-specialty group (7.0% vs. 1.8%, $P = 0.02$), between patients under age 65 (8.9% vs. 3.8%, $P = 0.08$) and 65 or older (6.3% vs. 2.2%, $P = 0.03$), and between women (8.7% vs. 4.1%, $P = 0.08$) and men (6.1% vs. 1.6%, $P = 0.02$). Among the 141 physicians who received reminders, 119 (84.4%) returned response forms accounting for 270 (75.4%) of 358 intervention patients. Physicians reported that they planned to recommend colonoscopy to 92 of these 270 patients (34.1%). However, over half of the 270 patients were no longer active in the physicians' practices (27.4%), had already undergone surveillance colonoscopy within 5 years (18.5%), or were deceased or too sick to undergo colonoscopy (13.7%).
CONCLUSIONS: Among patients with prior colorectal adenomas who appeared to be due for surveillance colonoscopy based on electronic clinical data, reminders to primary physicians led to a statistically significant but modest increase in use of this procedure within 6 months. Despite the existence of advanced electronic medical record systems at the study sites, the impact of physician reminders was limited by incomplete electronic data regarding current primary physicians and prior surveillance procedures.

QUALITY MEASUREMENT AND GENDER DIFFERENCES IN MANAGED CARE POPULATIONS WITH CHRONIC DISEASES. A.F. Chou[1]; C.S. Weisman[2]; A. Bierman[3]; S.H. Scholle[4]. [1]University of Oklahoma, Oklahoma City, OK; [2]Pennsylvania State University, Hershey, PA; [3]University of Toronto, Toronto, Ontario; [4]NCQA, Washington, DC. *(Tracking ID # 173267)*

BACKGROUND: Gender disparities are well documented in guideline-indicated cardiovascular disease (CVD) management. Gender disparities in CVD prevention and treatment in acute care settings can contribute to greater adverse clinical outcomes in women, who may need more aggressive management than men due to differences in risk factors and symptom presentation. However, few studies have evaluated the quality of CVD care in the ambulatory setting, especially in the managed care population stratified by gender with chronic conditions. As a significant portion of the US population receives care through managed care organizations and the quality of care delivered in this setting appears to be higher than that through traditional fee-for-services arrangements, it is important to assess possible gender differences for the managed care populations. This study examines possible gender disparities in meeting low-density lipoprotein cholesterol (LDL) screening and control quality measures in commercial and Medicare managed care populations of patients with a history of CVD or diabetes mellitus (DM).
METHODS: Four HEDIS® quality measures serve as dependent variables: LDL screening and control at < 100 mg/dL among patients with DM and CVD. Analyses were conducted at both patient- and health plan-level. On the patient level, we analyzed data from a national sample of commercial plans including 11,813 patients from 31 plans, and 48 Medicare managed care plans that had 96,055 patients. We used hierarchical generalized linear model to estimate HEDIS® measures as a function of gender, controlling for other patient characteristics on the first level, and the clustering effect of plans on the second level. On the plan level, our dataset included 46 plans. We compiled descriptive statistics on gender differences, and applied T and 2 tests to determine significance of these differences.
RESULTS: At the patient level, women with CVD were less likely to be screened in both commercial (OR = 0.88; 95% CI: 0.79–0.99) and Medicare populations (OR = 0.91; CI: 0.86–0.98). For LDL screening in patients with DM, no gender differences were observed in both commercial and Medicare populations. For LDL control, commercially insured women with CVD were less likely to achieve adequate control than men (OR = 0.72; CI: 0.64–0.82). Women with DM enrolled in Medicare and those in commercial plans were 0.75 and 0.81 times, respectively, as likely to achieve control as their male counterparts. At the plan level, average male-female differences in meeting LDL screening indicator among CVD patients was 2.6% ($p = 0.008$) in commercial and 1.6% ($p = 0.003$) in Medicare plans. The difference in screening was not significant for patient with DM in commercial plans and was < 1% favoring women in Medicare plans. For LDL control, gender differences were significant among CVD patients in commercial (9.3%, $p < 0.0001$) and Medicare plans (8.5%, $p < 0.0001$). Similar patterns for patients with DM in commercial (5.6%, $p < 0.0001$) and Medicare (6.4%, $p < 0.0001$) plans were observed.
CONCLUSIONS: Our findings showed significant and consistent patient and plan level gender disparities in LDL control in a sample of diverse patients and managed care plans. Gender disparities identified in other settings are present in managed care despite equity in access and possibly quality of care. Gender-tailored strategies are needed to encourage women to increase their knowledge about disease risks, seek adequate care and comply with therapeutic interventions.

QUALITY OF CARE FOR EPILEPSY: EXPERT AND PATIENT PERSPECTIVES. B.G. Bokhour[1]; M.V. Pugh[2]; J.K. Rao[3]; D.R. Berlowitz[1]; G. Montouris[4]; L.E. Kazis[1]. [1]CHQOER, ENRM Veterans Affairs Medical Center, Boston University, Bedford, MA; [2]Boston University, San Antonio, TX; [3]Centers for Disease Control and Prevention (CDC), Atlanta, GA; [4]Boston University, Boston Medical Center, Boston, MA. *(Tracking ID # 173555)*

BACKGROUND: Primary care providers are increasingly being held accountable for the care they provide to patients with complex chronic diseases such as epilepsy. Quality indicators used to measure the quality of care provided to patients with specific conditions are usually based on review of the medical literature and expert opinion. Patients' perceptions of what constitutes quality often diverge from how quality is typically measured. We sought to examine how medical experts' opinion on quality of care for epilepsy compares with patient's opinions.

METHODS: We conducted six focus groups of epilepsy patients, stratified by race/ethnicity and gender, to discuss their perceptions of quality of care. We used grounded theory to identify themes and generate 10 initial patient-centered quality indicators. We also developed an initial list of evidence-based quality indicators by reviewing existing national clinical guidelines and systematic literature reviews. A 10-member expert panel participated in a modified Delphi process (RAND appropriateness method) using three rounds of ratings to finalize a list of quality indicators. All ratings used a 9-point Likert scale. Round one and two ratings were for appropriateness (validity) and feasibility (reliability). Round three identified valid indicators considered necessary for high quality care. After round 1 we convened a face-to-face panel meeting to discuss initial ratings after providing panel members feedback on individual and group ratings. For each phase of the rating process, we determined the median panel rating and a measure of dispersion for each indicator. Items where three or more ratings were outside the three point range that included the median were considered to have disagreement and excluded from the final round of rating for necessity. Items found to be both appropriate and necessary were primary quality indicators; those rated as appropriate but not necessary were secondary indicators. We compared expert ratings for patient-centered and literature-generated indicators, and compared these with findings from the focus groups.
RESULTS: Of the 41 potential evidence based indicators, experts identified 17 primary indicators. Of the potential 5 patient based indicators, they identified 3 as both appropriate and necessary. The indicators were classified as referring to technical (the use of particular medications, tests and other medical care, interpersonal (features of the patient-provider relationship), communication (the content and complexity of information communicated by the provider) or access (patients' ability to get appointments and to obtain medications) aspects of care. The expert panel rated technical aspects of care as the most appropriate and reliable measures of quality. Patients focused primarily on interpersonal, communication and access aspects of the care they received. Experts rated 5 patient indicators as appropriate, but less necessary and less reliable measures of quality than other indicators.
CONCLUSIONS: Patients' perceptions of quality of care differ from those of experts. Current quality measures focus on the clinical perspective, but do not capture patients' perspectives. Measures of quality of care for diseases like epilepsy need to incorporate patients' perspectives in order to more fully realize the breadth of health care quality.

QUALITY OF CARE GIVEN TO DIABETICS IN RESIDENT CLINICS. J. Pillarisetti[1]; M. Kosiborod[2]. [1]University of Missouri-Kansas City, kansas city, MO; [2]University of Missouri Kansas City, Kansas City, MO. *(Tracking ID # 171194)*

BACKGROUND: American Diabetics Association guidelines recommend an annual ophthalmologic exam in all diabetics. However, previous studies have shown that most diabetics are not referred for annual eye exams. Whether this pattern of care is different in diabetic patients cared for by internists in-training is unknown.
METHODS: To address this issue, we evaluated the proportion of diabetic patients referred for annual eye exams by resident physicians in a single academic medical center. We specifically assessed whether referral rates improve with rising clinical experience (post-graduate year (PGY) level) of resident physicians. PGY-1, PGY-2 and PGY-3 residents from all exclusive general medicine clinics were selected. A list of all diabetic patients seen by them was generated. Patient encounters with residents were reviewed using electronic health records. Documentation of eye exam referral by the residents was given credit irrespective of whether the patient was subsequentlty seen by the ophthalmologist. Referral rates were compared cross-sectionally among patients cared for by PGY1, PGY2 and PGY3 residents. A group of PGY-1 residents was also selected for the longitudinal analysis in which their referral rates were followed from PGY-1 to PGY-3 levels.
RESULTS: Overall, 58.8% of 442 diabetic patients were referred for eye exams. Higher PGY year was directly associated with higher referral rates (42.5% referral rate by PGY-1 residents 58.8% by year PGY-2 and 65.5% by year PGY-3. Although this difference was not statistically significant (P value) due to small number of patients, it was clinically important. There was also a significant improvement noted when residents were followed longitudinally from their year 1 performance(22.7%) to year 2 (62.5%) and 3.(70.9%). $P = 0.001$
CONCLUSIONS: Although overall proportion of diabetic patients referred to eye clinic by internal medicine residents is higher than the national average, it is still inappropriately low. The referral rates increase with higher level of training experience. Targeted educational interventions aimed at physicians in-training may improve the quality of care delivered to patients with diabetes.

QUALITY OF OUTPATIENT CONGESTIVE HEART FAILURE CARE AMONG PRIMARY CARE PATIENTS AT AN URBAN PUBLIC HEALTH CARE SYSTEM. J. Rozwadowski[1]; A.L. Sabel[2]; T.D. Mackenzie[2]; H.A. Batal[3]; R. Hanratty[2]; P.S. Mehler[2]. [1]University of Colorado Health Sciences Center, Denver, CO; [2]Denver Health and Hospital Authority, Denver, CO; [3]Denver Health, Denver, CO. *(Tracking ID # 172347)*

BACKGROUND: While the Centers for Medicare and Medicaid Services currently emphasize composite or bundled measures of quality in the inpatient setting, there has been less support for such metrics in the outpatient arena. We developed a tool similar to the inpatient composite score to evaluate the quality of Congestive Heart Failure (CHF) care in the outpatient setting. We chose CHF because there is strong evidence for blood pressure control, Beta-blocker (BB) and Ace Inhibitor (ACE) use and emerging evidence for HMG-CoA reductase inhibitor use influencing and improving outcomes. Our objective was to develop a tool to measure quality of CHF care among outpatients in an urban public health care system.
METHODS: We performed a retrospective review of outpatient charts from January to August 2006 of patients with an ICD-9 diagnosis code for CHF for any visit to an Internal Medicine Clinic (IM) at Denver Health. Patients were excluded if they had a Left Ventricular Ejection Fraction of greater than or equal to 40% or if they had been seen fewer than 3 times in clinic within a 2 year period. The audit assessed 6 guideline-based measures: blood pressure under control for 2 out of the last 3 encounters; lipids assessed and controlled; use of ACE or Angiotension Receptor Blocker (ARB); use of a BB; no Non-steroidal Anti-inflammatory (NSAID) use without documentation of discussion of risk; and tobacco assessment with cessation advice. A composite score was created to assess comprehensiveness of care. The composite metric was considered to be unmet if any single variable was not present. Spearman correlation coefficients and chi-square tests were used to assess for predictors of the bundled score.
RESULTS: In an audit of 100 charts, blood pressure was controlled for 2 out of the last 3 encounters in 74% of patients. Lipids were assessed and controlled in 81%. 88% of patients were either on an ACE or ARB, and an additional 7% of patients had a documented reason for nonadherence. 79% of patients were treated with a BB, and in an additional 13% of patients there was a documented reason for not using a BB. Patients were either not on a NSAID or there was documentation of risk discussion 91% of the time. Tobacco was assessed with cessation advice to current smokers in 88% of patients. In only 35% of the cases were all 6 indicators present. When the cases with a documented reason for absence of an indicator were counted as adherent, the composite score rose to 46%. None of the demographic characteristics (gender, race, age, insurance, and primary language) or measures of utilization (hospitalizations, IM visits) were significantly associated with the bundle score.
CONCLUSIONS: Despite excellent values for individual metrics, there was poor adherence to the composite score. This suggests an opportunity to improve the quality of care for treatment for CHF in our urban public hospital system through our primary care clinics. To our knowledge, outpatient composite scores have not been assessed in any publications to date; these are likely to become important indicators of quality of care provided to patients with CHF.

REFOCUSING THE LENS FOR AMBULATORY PATIENT SAFETY: WHAT HAPPENS TO DIABETES PATIENTS IN BETWEEN VISITS? U. Sarkar[1]; M. Handley[1]; R. Gupta[1]; A. Tang[1]; D. Schillinger[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173905)*

BACKGROUND: Patients with diabetes perform complex self-management tasks independently, creating potential for unsafe situations. Little is known about the nature and contributing causes of threats to safety among ambulatory patients with diabetes.
METHODS: We obtained data from a telephone-based disease management program to characterize patient safety issues that arise in between outpatient visits. Patients with diabetes from urban public-sector clinics participated in a 39-week program that provides self-management support in the form of weekly automated telephone interactions with review and follow-up by a nurse practitioner. We adapted a widely-used definition of adverse event (AE) to include any injury, with varying levels of harm, resulting not only from medical management, but also from patient self-management. We defined a potential adverse event (PAE) as an unsafe state, not currently an AE, but likely to lead to one if it persists without intervention. A panel of 4 generalist and specialist providers developed event thresholds a priori. Two physicians identified potentially eligible events from study records; we included events as AEs or PAEs after agreement by the consensus panel. Two physicians independently reviewed all patient records to code event characteristics, including the unique self-management domain involved. We categorized factors that directly contributed to the event as follows: system factors, patient-provider communication, and patient or provider actions (apart from communication). The consensus panel resolved discrepancies.
RESULTS: Among the 111 participants, there were 264 distinct events (111 AE's, 42%; 153 PAE's, 58%) An example of a typical AE was new-onset, symptomatic hypoglycemia; an example PAE was patient mis-identification of acetaminophen as metformin. The most frequent self-management domain implicated in events was medication use (Table). There were often multiple contributors to a single event; only 46 (17%) events had 1 contributing cause. Systems issues contributed to 163 events (62%); impaired patient-provider communication contributed to 155 (59%) of events; patient actions were implicated in 145 (55%) of events, and primary care provider actions contributed to 16 (6%) of events.
CONCLUSIONS: A significant proportion of ambulatory diabetes patients experienced adverse events or threats to safety. Our results suggest that efforts to improve ambulatory patient safety in diabetes should focus on medication safety and monitoring. While patient-cued surveillance via a telephonic self-management support program can shed light on ambulatory safety, additional interventions that address system-level barriers and patient-provider communication are also needed to improve safety for ambulatory diabetes patients.

Diabetes Self-Management Domains for 264 Events, Number (%)

	AE's N=111 (42%)	PAE's N=153 (58%)
Medication use	66 (59)	100 (65)
Symptom recognition	16 (14)	0
Glucose monitoring	1 (1)	46 (30)
Diabetes foot care	1 (1)	0
Diet adherence	23 (21)	5 (3)
Appointment adherence	0	1 (1)
Unable to determine	4 (4)	1 (1)

REPORTING MEDICAL ERRORS TO INSTITUTIONS: ATTITUDES AND PRACTICES OF PHYSICIANS AND TRAINEES. L.C. Kaldjian[1]; E.W. Jones[2]; B.J. Wu[3]; V.L. Forman-Hoffman[2]; B.H. Levi[4]; G.E. Rosenthal[2]. [1]University of Iowa Carver College of Medicine, Iowa City, IA; [2]Center for Research in the Implementation of Innovative Strategies in Practice, Iowa City VA Medical Center, Iowa City, IA, Iowa City, IA; [3]Hospital of Saint Raphael, New Haven, CT; [4]Penn State University/Hershey Medical Center, Hershey, PA. *(Tracking ID # 173397)*

BACKGROUND: Collecting data on medical errors is essential for improving patient safety, but factors affecting error reporting by clinicians to institutions are poorly understood, and despite efforts to encourage or require error reporting, it is not clear how much change has occurred since the Institute of Medicine issued 'To Err is Human' in 1999.
METHODS: Based on a previously developed taxonomy of factors that influence error disclosure, we surveyed faculty physicians (n = 138), residents (n = 200), and students (n = 200) in Midwest, Mid-Atlantic, and Northeast regions of the U.S. The survey instrument was pilot tested for validity and reliability and queried actual experiences with error reporting to institutions, hypothetical likelihood of reporting errors (using an error vignette followed by variable degrees of injury - no harm, minor harm, major harm), attitudes toward and knowledge about reporting, and demographic variables. For bivariate and multivariate analyses, actual and hypothetical reporting served as dependent variables and attitudes toward reporting, knowledge about reporting, and demographic variables served as independent variables.
RESULTS: Responses were received from 538 participants (response rate = 77%); 51% were women. 84% of faculty and residents believed that reporting errors improves the quality of care for future patients, and 43% would likely report a hypothetical error if it caused no harm, 73% if it caused minor harm, and 92% if it caused major harm. However, only 18% had reported an actual error that prolonged treatment or caused discomfort, and only 4% had reported an actual error that resulted in disability or death. Moreover, 19% of faculty and residents acknowledged having not reported an actual error that prolonged a patient's treatment or caused discomfort, and 4% acknowledged having not reported an actual error that resulted in a patient's disability or death. Only 55% of faculty and residents knew how to report errors to their institution, and only 39% knew what kind of errors should be reported. In bivariate analyses, faculty were more knowledgeable than residents and students about how and what to report but less certain about the true causes of adverse events. Pediatric physicians were more likely than their internal medicine or family medicine colleagues to report a hypothetical error resulting in no harm or major harm. Belief in forgiveness was associated with greater likelihood of disclosing a hypothetical error resulting in no harm or minor harm. Multivariate analyses identified several variables positively associated with the reporting of some categories of actual or hypothetical errors: knowledge about how and what to report; belief in forgiveness; faculty (versus resident) status; and having been named as a defendant in a malpractice case.
CONCLUSIONS: Most faculty and residents were inclined to report harm-causing hypothetical errors, but only a minority acknowledged reporting actual errors and substantial numbers did not know how or what to report. These results suggest there is a gap between attitude and practice among physicians regarding the reporting of medical errors to institutions. Willingness to report errors was associated with higher training level and knowledge about how or what to report, and, in some cases, with exposure to malpractice litigation.

SELF-REPORTED HANDOFF EVENT ANALYSIS: EFFORTS TOWARDS STANDARDIZATION OF THE HANDOFF PROCESS. S.G. Brown[1]; L.A. Paine[1]; B. G. Petty[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 173294)*

BACKGROUND: Standardization of handoffs is a 2007 JCAHO Patient Safety Goal, and it has been adopted as a goal at The Johns Hopkins Hospital. The purpose of this initial qualitative study was to evaluate handoff events, as identified by the Johns Hopkins Patient Safety Team, in an effort to determine common contributing factors for the cause of events.
METHODS: A purposive sample was taken from all of the self-reported events that had been entered into our Patient Safety Net system during a three-month period. All reported events related to handoffs were examined.
RESULTS: There were 239 handoff events reported during the three-month period. There were no sentinel events; however, 28% of the events negatively affected the patient (e.g., increased length of stay, increased care required, or required increased monitoring). The remaining 72% were near-miss events. Of the 239 events, poor communication, including that leading to medication errors, was the largest factor contributing to handoff events (63%). Other factors contributing to reported events included lack of transport assistance (10%), inappropriate transfers or changes in the level of patient care (7%), failure to follow isolation procedures (5%), and transfers without orders or chart (5%). Less frequent categories of problems included lack of bed availability and flawed handoffs during shift change.
CONCLUSIONS: This data analysis provided stimulation for continued assessment of handoff events and continued work towards a stronger communication process for standardized handoffs in patient care. In light of increasingly fragmented patient care (e.g., more handoffs with 80-hour work week), it is important to identify and understand the nature and impact of poor handoffs so that solutions can be found.

STAGE OF COLORECTAL CANCER AMONG VETERANS WITH MENTAL ILLNESSES AND SUBSTANCE ABUSE. A. Aggarwal[1]; K. Freund[2]; V. Ramakrishnan[1]; R. Rosenheck[3]. [1]Virginia Commonwealth University, Richmond, VA; [2]Boston University, Boston, MA; [3]VA-NEPEC, West Haven, CT. *(Tracking ID # 173612)*

BACKGROUND: Morbidity and mortality from late stage colorectal cancer (CRC) is an indicator of quality of care, as late stage CRC is now viewed as a preventable disease. The aim of the current study is to compare stage of incident CRC among veterans with and without mental illnesses and substance abuse.
METHODS: Veterans in Veterans Administration (VA) Central Cancer Registry diagnosed with CRC in 2004 were identified for a cross-sectional study. Based on date of birth, gender and location of care within the VA, Veterans Integrated Service Network (VISN) the cancer subjects were linked with VA administrative workload files to acquire information on mental illnesses and substance abuse. CRC was staged based on Surveillance, Epidemiology and End Results (SEER) classification. All in-situ and localized cancers were categorized as early-stage cancers and regional and distant cancers as advanced-stage cancers. Mental illness and substance abuse diagnoses were identified based on ICD9 code, which were recorded before the index date of cancer diagnosis. Diagnosis of mood disorder (includes major depression, dysthymia and bipolar disorder), schizophrenia, post traumatic stress disorder (PTSD), alcohol abuse and non prescription drug abuse were included. Chi-square tests were used to compare stage of incident CRC with demographic characteristics. The association between each category of mental illness and substance abuse with CRC stage was analyzed using separate logistic regression models, adjusting for relevant demographic characteristics.
RESULTS: Of 2,517 subjects with colorectal cancers registered in 2004, 73% (N = 1,851) were matched with VA administrative workload files. Fifty percent of subjects had cancers diagnosed at advanced stage. Prevalence of mood disorder, schizophrenia, PTSD, alcohol abuse and substance abuse diagnosis were 13.3%, 1.8%, 5.3%, 5.3% and 2.1%, respectively. Bivariate comparisons showed no significant association between age, gender, race or marital status, versus stage of CRC. The proportion of CRC diagnosed at advanced stage varied across VISNs, ranging from 39% to 72%. In the bivariate analysis, late CRC stage (versus early) was inversely associated with the presence of mood disorders (11.7% vs. 15.9%, P = 0.01), PTSD (4.4% vs. 6.7%, P = 0.04), alcohol abuse (6.8% vs. 4.4%, P = 0.04) and drug abuse (2.9% vs. 1.02%, P = 0.005). Multivariate analysis showed that veterans with mood disorders had lower odds (OR 0.7, CI 0.5, 0.9) and those with drug abuse had higher odds (OR 2.8, CI 1.2, 6.3) of being diagnosed at advanced stage of CRC. Controlling for VISN, only drug abuse remained a significant predictor of CRC stage.
CONCLUSIONS: Veterans with drug abuse are more likely to present with advanced stage CRC, while those with mood disorders are less likely to present with advanced stage CRC. VISN location was a stronger predictor of CRC stage at diagnosis than presence of mental illness. Differences in stage of incident CRC among VISNs may indicate disparities in quality of health care delivery.

STRATEGIES FOR PATIENT EDUCATION RELATED TO CHRONIC WARFARIN THERAPY: A SYSTEMATIC REVIEW. J.L. Wofford[1]; M.D. Wells[1]; S. Singh[1]. [1]Wake Forest University, Winston-Salem, NC. *(Tracking ID # 171507)*

BACKGROUND: Patient education is an important component of ensuring the quality of chronic anticoagulation with warfarin. However, it is time consuming for clinicians, overwhelming for patients, and anticoagulation clinics are expensive to operate.
METHODS: In an effort to move patient education to the multimedia computer, as a first step we sought to identify best practices in patient education related to chronic anticoagulation with this systematic review. Two reviewers independently and in duplicate searched the MEDLINE and Google Scholar databases (last search November 2006) using the MESH terms ("warfarin" or "anticoagulation") AND "patient education". Of the 206 citations from the initial search,191 articles were excluded because of inadequate data or description, exclusive focus on patient self-testing, or unrelated to patient education. Twenty-five articles were selected for final analysis. Data were extracted on clinical setting, study design, group size, content source, time and personnel involved, educational strategy and domains, and measures of patient knowledge.
RESULTS: Among the 11 articles that described educational programs, 5 used a nurse or pharmacist (45%), 4 used a physician, and 2 studies used other personnel/vehicles (lay educators (1), videotapes (1)). The duration of the educational intervention ranged from 1 to 10 sessions, and group size ranged from 1 to 4 persons. Normal anticoagulation, diet and Vitamin K, and bleeding complications were discussed in the majority of studies, but issues such as pill identification and trauma precautions were inconsistently reported. Among the 15 studies that tested patient knowledge, patients ranged in number from 20 to 180. Three surveys were self-administered, and 2 were administered over the telephone. Studies most often used multiple choice questions (40%,6/15), and the number of questions ranged from 4 to 28. Adherence and attitudes were only evaluated in 3 studies.
CONCLUSIONS: Published reports of patient education related to chronic warfarin therapy vary greatly in strategy, content, and patient testing. In order to optimize the efficiency of patient education with the multimedia computer, prioritizing the educational domains, standardizing the educational content, and minimizing the time and manpower involved will be necessary.

SUBSTANCE ABUSE TREATMENT IN A MULTI-CENTER COHORT OF HIV INFECTED PATIENTS: THE ROLE OF PATIENT-PROVIDER DISCUSSIONS. P.T. Korthuis[1]; J.S. Josephs[2]; P. Lawrence[2]; J. Hellinger[3]; K.A. Gebo[2]. [1]Oregon Health & Science University, Portland, OR; [2]Johns Hopkins University, Baltimore, MD; [3]Community Medical Alliance, Boston, MA. *(Tracking ID # 173573)*

BACKGROUND: Substance abuse is common among HIV-infected patients. Substance abuse treatment (SAT) decreases HIV risk behavior and can improve HIV outcomes. Provider communication has been associated with improved adherence to treatment recommendations. The objective of this study was to examine factors associated with SAT utilization, including patient-provider discussions of substance abuse issues, in a multi-center cohort of U.S. HIV-infected patients.
METHODS: In 2003, we interviewed 951 adults at 14 HIV primary care community and academic sites across the U.S. HIV Research Network to assess illicit drug and alcohol abuse and treatment. Current substance abuse was defined as any illicit substance in the past six months or hazardous/binge alcohol drinking according to NIAAA criteria.

Former substance abuse was any illicit drug use prior to the last 6 months. We defined SAT as any self-reported twelve-step, inpatient, outpatient, or methadone maintenance treatment in the past 6 months. Participants were asked to report if their providers had discussed alcohol or drug issues in the past 6 months. We identified associations between SAT and medical, socio-demographic factors, ancillary services, and patient-provider discussions using multivariable logistic regression.
RESULTS: Seventy-three percent of respondents reported current or former substance abuse. Of these, 71% were male, 51.7% African American, and 13.7% Hispanic. Median age was 44 years (range 20–74). HIV risk was 34% MSM, 26% heterosexual, and 31% injection drug use. Twenty-three percent received SAT and 46% reported discussing substance abuse issues with their providers. Participants who discussed substance abuse issues with their HIV provider were more likely to report SAT (OR 2.3, 95% confidence interval [CI] 1.4–3.6) than those who did not in adjusted models. Other factors associated with SAT utilization were transportation assistance (OR 2.0, 95%CI 1.2–3.2), and employment (OR 2.0, 95%CI 1.1–3.7). College education was associated with decreased SAT vs. attending less than high school (OR .37, 95%CI .15–.90).
CONCLUSIONS: Despite high prevalence of drug use, less than half of HIV-infected substance abusers discussed substance abuse issues with their HIV providers and one in four received treatment. Special efforts may be needed to improve patient-provider discussions of substance abuse issues and engage HIV-infected patients in under-utilized substance abuse treatment services.

THE ASSOCIATION BETWEEN NURSE STAFFING LEVELS AND INPATIENT FALLS. L. Leykum[1]; C. Padgett[1]; D. Gustke[1]; D. Baruch-Bienen[1]; J. Patterson[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 # 172562)*

BACKGROUND: Falls remain a source of preventable morbidity and mortality in the hospitalized patient with acute medical illness. Because of the high cost associated with falls, both in terms of dollars, length of stay, and patient outcomes, much research has focused on patient falls. However, much of this work has focused only on the patient: identifying factors associated with a high risk of falls, assessing the risk of individual patients based on these factors, and creating interventions that decrease or attenuate these risks. The purpose of this study was to examine more closely both the circumstances and activities surrounding patient falls, and the relationship between nurse staffing practices and falls.
METHODS: We prospectively studied all falls on a single inpatient medicine ward from July 2005 to March 2006. A national Veterans Affairs standardized reporting form was used to collect information regarding each fall at the time of the fall. This form was locally adapted for the purposes of this study. We assessed patient acuity using a standardized Veterans Affairs acuity score. Finally, we collected the following information regarding each nursing shift: the number of nurses and nurses' aides, the total number of nursing staff, the time of the shift (i.e., day, evening, or overnight), the day of week, the census at its highest point during the shift, and the average acuity of all patients on the ward.
RESULTS: 58 falls occurred during the study period. The most situation was a man getting out of bed in the evening to go to the bathroom and "slipping." 50% of falls were associated with toileting. 38% of falls occurred overnight, compared with 26% during the day. 27% of falls occurred during shift changes. Falls tended to occur on Fridays, Saturdays, and Mondays. Overall, falls occurred during 7% of shifts. Shifts with and without falls did not differ in the total number of nurses present, or average census. However, there was a difference in nurse to patient ratio ($p = 0.04$) and acuity ($p = 0.02$). Logistic regression adjusting for day of week, shift, and patient acuity demonstrated a significant relationship between staffing levels and likelihood of falls ($p = 0.03$). For every increase in patient to nurse ratio of 0.5, there was a 10% increase in likelihood of a fall occurring.
CONCLUSIONS: This study demonstrates that after adjustment for patient factors, higher nurse staffing ratios are associated with higher falls rates on an inpatient medicine ward.

THE ASSOCIATION OF PAIN CHARACTERISTICS WITH HEAVY ALCOHOL USE. A. Aggarwal[1]; E.A. Sommers[2]; W. Suen[3]; H. Cabral[2]; R. Saitz[2]; L. Kazis[4]. [1]Virginia Commonwealth University, Richmond, VA; [2]Boston University, Boston, MA; [3]Dana-Farber Cancer Institute, Boston, MA; [4]CHQOER, VA Hospital, Bedford, MA. *(Tracking ID # 173164)*

BACKGROUND: Chronic pain and heavy drinking are both common in primary care settings. Patients with pain symptoms and pain-related disability might use alcohol as self-medication. Which manifestation of pain is most associated with heavy drinking is not known. We hypothesized that pain-related disability (functional characteristics) would be a stronger indicator of heavy alcohol use than intensity, duration and frequency (clinical characteristics) of pain.
METHODS: A cross-sectional study design was used to analyze data collected in the Veterans Health Study (VHS). Eligible subjects had pain for more than four weeks and reported on their alcohol consumption in the previous six months. Pain was classified as clinical pain and functional pain; Clinical pain was quantified based on intensity, duration, and frequency of pain (scale, 0–10) whereas Functional pain was quantified based on pain-related disability in sleeping, walking, climbing stairs, mood, work, recreational activities and enjoyment in life (scale, 0–5). Pain scores were categorized as mild, moderate or severe based on previously published studies. The dependent variable, heavy alcohol use was defined among participants < 65 years of age as > 14 drinks/week or > 4 drinks per occasion and for those participants ¡Y65 years of age > 7 drinks/ week or > 3 drinks per occasion. Chi square test was used to compare clinical and functional pain categories. Bivariate comparisons of pain with demographic characteristics were also performed. The association of clinical pain and functional pain with alcohol use was analyzed using logistic regression models, adjusting for age, education, depression and physical co-morbidity.
RESULTS: 1513 male veterans had chronic pain. Forty percent of the subjects who reported mild clinical pain were classified as having moderate functional pain. Similarly, 57% of the subjects who described their clinical pain as severe were categorized as having moderate functional pain. In the adjusted analyses, functional pain was significantly associated with heavy alcohol use but clinical pain was not (clinical pain: severe versus moderate (odds ratio 0.94, confidence interval (0.59, 1.49)), functional pain: severe versus moderate (odds ratio 1.60, confidence interval (1.00, 2.60)).
CONCLUSIONS: Among veterans with chronic pain, pain-related disability is associated with heavy drinking. There was discordance between clinical and functional pain levels. Patients with moderate to severe pain-related disability warrant particular attention to alcohol use by their primary care provider. Primary care interventions to reduce alcohol use may improve pain-related disability and alcohol-related quality of life.

THE EFFECTS OF A COMPUTER-TAILORED MESSAGE ON SECONDARY PREVENTION IN TYPE 2 DIABETES: A RANDOMIZED TRIAL. S. Yetman[1]; C.N. Sciamanna[2]; R. Breitbart[3]; A.G. Crawford[2]; S.L. Thier[4]; R.N. Rimal[5]; J. Lee[6]; L. Janneck[7]. [1]Thomas Jefferson University, 19107, PA; [2]Thomas Jefferson University, Philadelphia, PA; [3]University of the Sciences in Philadelphia, Philadelphia, PA; [4]Jefferson University, Philadelphia, PA; [5]Johns Hopkins University, Baltimore, MD; [6]Miriam Hospital, Providence, RI; [7]Brown University, Providence, RI. *(Tracking ID # 173689)*

BACKGROUND: Diabetes is one of the most prevalent chronic diseases in the United States. Though guidelines for caring for patients with diabetes are available from a variety of organizations such as the American Diabetes Association and medical experts, wide differences in blood sugar control and quality of care remain. Research has shown that getting patients actively involved in the care of their chronic illness is essential to improving care. Tailoring health messages to individual patients has been identified as a key way of making information more relevant to its intended audience and, as a result, more effective. The purpose of this study was to test the effect of computer-generated tailored feedback on the quality of the chronic disease management care received when given to a patient prior to a scheduled physician visit. Also, to determine whether the type of message received by patients, risk-oriented (negative) or efficacy-oriented (positive), impacts the effectiveness of the message.
METHODS: A stand-alone computer application was developed to provide tailored, printed feedback aimed at empowering patients to more actively engage in their diabetes management at the point of care. First, a survey was created to assess the degree to which certain American Diabetes Association (ADA) guidelines were being met. Second, tailored reminders aimed at empowering participants to more actively engage in their diabetes management at the point of care were developed. Third, feedback messages were provided to participants in either intervention group whose care was not consistent with ADA guidelines covered in the intervention. Lastly, pocket-sized-charts to enter key clinical data and track it over time were provided to participants before a primary care visit. Men and women who were age 21 years and older receiving routine outpatient care for type 2 diabetes between September 2003 and July 2004 were recruited through an advertisement on www.google.com. 203 adults with type 2 diabetes were randomly assigned to one of two intervention groups (risk-oriented or efficacy-oriented) or a delayed treatment control group. Each of the two intervention groups were sent computerized reports one week prior to their scheduled primary care visits. Following the visit, a patient exit interview was conducted with all participants.
RESULTS: There were no significant differences in the percentage of participants who received intensified care or routine tests between the control, efficacy-oriented feedback, and risk-oriented feedback groups, even when analyses were limited to those in need of care. For example, there was no significant difference in the number of patients in each group who reported that their physician changed any dose of their diabetes medication (22.0, 31.6, and 25.4 respectively, $p = 0.50$). Satisfaction with care was also unaffected by participant condition.
CONCLUSIONS: Participants may benefit from more directive feedback, providing them specific questions to ask their physician that can lead to improved care, rather than educational information about the risks of high blood pressure or benefits of controlling their blood pressure. Given the success of direct-to-consumer interventions and the sharp rise in consumer-directed health plans, effective patient-directed interventions to improve the quality of care are an area of great need.

THE EPIDEMIOLOGY OF MISSED TEST RESULTS AND ASSOCIATED TREATMENT DELAYS IN VA PRIMARY CARE CLINICS. T.L. Wahls[1]; P.M. Cram[2]. [1]VA Iowa City Health Care System, Iowa City, IA; [2]University of Iowa, Iowa City, IA. *(Tracking ID # 173376)*

BACKGROUND: There is increasing evidence that missed test results are common in clinical practice and constitute an important threat to patient safety. The Veterans Affairs (VA) Healthcare System has utilized an integrated electronic medical record for many years, and thus, in theory, missed results should be uncommon in this setting, however data are currently lacking. Our objective was to assess the frequency and types of missed results and associated treatment delays encountered by primary care providers in the VA Health System.
METHODS: As part of an ongoing quality improvement project, a multi-disciplinary team developed an anonymous internet-based survey to collect information on missed test results in a large rural VA healthcare network which includes 3 large teaching hospitals, 5 smaller community and rural hospitals and over twenty much smaller community based outpatient satellite clinics. All physicians, nurse practitioners and physician assistants with a primary care

continuity practice received an e-mail invitation to participate in the survey at the beginning of February 2006 and again at the beginning of September 2006. Providers received 3 follow up reminders encouraging participation. A missed result was defined as an abnormal diagnostic test result, greater than 1 month old which in the provider's opinion did not receive the anticipated clinical response. The survey collected information on the clinical effort of providers (e.g., number of patients seen during the prior two-weeks), number and types of missed results encountered during the prior two-weeks, and the number and types of treatment delays associated with missed results. Responses from the spring and fall collection periods were combined for the data analysis.
RESULTS: 336 responses were obtained (223 from staff providers and 113 from trainees). Staff providers reported more patient visits than trainees (average of 83.7 vs. 10.7 during the prior two weeks) for a total of approximately 19,980 patient visits total during the previous two weeks period of the providers' clinics. Many responses reported they had seen patients with missed results (38%) or treatment delays (46%) for a total of 225 missed results and 213 treatment delays during the two study periods. The diagnostic test result category which was most commonly reported as a missed result was imaging (34%) followed by clinical pathology (30%), other (28%) and anatomic pathology (8%). 38% of missed results were test concerning the diagnosis of malignancy (e.g., Fecal Occult Blood Test, Prostate Specific Antigen, anatomic pathology, mammograms, and chest X-ray). The most common clinical delays were cancer (27%) followed by endocrine (i.e. diabetes and thyroid diagnoses and or treatments) (26%), lipid disorder treatments (14%), cardiac diagnoses or treatment (12%) and other diagnoses or treatments (21%).
CONCLUSIONS: Clinically important treatment delays associated with missed results were commonly reported by primary care practitioners in the VHA in spite of an advanced electronic medical record. This surprisingly high frequency of missed results suggests that the availability of an advanced EMR may be insufficient to reduce missed test results to an acceptable level.

THE HOSPITAL QUALITY ALLIANCE SURGICAL MEASURES: IS BETTER PERFORMANCE RELATED TO BETTER OUTCOMES? T. Isaac[1]; A.K. Jha[1]. [1]MAVERIC, VA Boston Healthcare System, Boston, MA. *(Tracking ID # 172519)*

BACKGROUND: The Hospital Quality Alliance (HQA) is a collaboration of major healthcare organizations, led by the Centers for Medicare and Medicaid Services (CMS), striving to improve hospital care by collecting and publicly reporting performance data. Recently, hospitals have begun to report data on their surgical infection prevention measures. Whether better performance on these measures is related to surgical outcomes is unknown.
METHODS: We examined the performance of U.S. hospitals listed as providing general medical and surgical care on the surgical measures using the December 2006 HQA dataset. We examined the two surgical measure individually and created summary surgical performance scores for each hospital using a widely employed methodology. We examined the relationship between surgical measure performance and surgical mortality among Medicare patients in two high-risk and two intermediate-risk surgeries: coronary artery bypass graft (CABG), abdominal aortic aneurysm repair (AAA), carotid endarterectomy (CEA), or total hip replacement. We limited our analysis to patients between the ages of 65 and 90. We used generalized estimating equation models to examine whether patients who received surgery in a hospital with better performance on surgical quality measures had lower odds of in-hospital death, accounting for patient comorbidities, age, and clustering of patients at the hospital level. Finally, we calculated risk-adjusted post-operative sepsis and post-operative wound dehiscence rates for each hospital by using Patient Safety Indicator (PSI) software on the Medicare dataset. We used linear regression to examine the relationship between HQA surgical measure performance and complication rates.
RESULTS: Of 3,645 U.S. general surgical hospitals in the HQA dataset, 2,682 hospitals reported at least one surgical measure. Of the four surgeries examined, we found only one significant relationship between performance on an individual surgical measure and surgical mortality. Hospitals with better performance on giving antibiotics one hour prior to surgery had lower mortality for AAA repair (top quartile odds ratio of 0.87 compared to bottom quartile; p-value for trend = 0.05). Performance on individual surgical measures had no relationship to surgical complication rates. Summary surgical measure performance had slightly stronger relationships with patient mortality and hospital complication rates than individual surgical measure performance. Better performance in summary surgical score was associated with lower mortality for hip replacement (top quartile odds ratio of 0.75 compared to bottom quartile; p-value for trend = 0.05) and CEA (top quartile odds ratio of 0.77 compared to bottom quartile; p-value for trend = 0.05). Hospitals in the best performing quartile for summary surgical performance also had fewer post-operative wound dehiscences than hospitals in the worst performing quartile (1.87 vs. 2.58 cases per 1,000; trend p value across quartiles = 0.05) but had no difference in post-operative sepsis rates.
CONCLUSIONS: The Hospital Quality Alliance surgical measures have weak relationships with mortality and post-operative complications. Additional measures are necessary to better characterize a hospital's surgical quality.

THE IMPACT OF COMORBID MEDICAL CONDITIONS ON THE QUALITY OF DIABETES CARE. L. Woodard[1]; T. Urech[2]; M. Kuebeler[2]; K. Pietz[2]; L. Capistrano[2]; L.A. Petersen[2]. [1]Baylor College of Medicine, Houston, TX; [2]HSR&D Center of Excellence, Michael E. DeBakey VA Medical Center, Houston, TX. *(Tracking ID # 173490)*

BACKGROUND: Patients with diabetes often suffer from multiple co-existing medical conditions. The concern is that increasing complexity could adversely affect the quality of diabetes care and contribute to significant morbidity and mortality. We examine the impact of varying numbers and types of comorbidities on the quality of diabetes care.
METHODS: We assessed 248,574 patients who had an outpatient primary care visit in fiscal year 2005 to one of eight VA medical centers in the mid-Atlantic region. We used clinical (e.g., blood glucose readings, medications) and administrative (e.g., ICD-9 CM codes, CPT codes) data to identify patients with diabetes and their concordant (i.e., hypertension, ischemic heart disease (IHD), dyslipidemia) and discordant (i.e., depression, arthritis, and chronic obstructive pulmonary disease) comorbidities. We assessed the quality of diabetes care by determining the proportion of patients who achieved guideline-recommended hemoglobin A1c (HbA1c) levels of < 7% or who received appropriate care in response to abnormal readings within a six month follow-up period. We conducted a logistic regression analysis examining the association of guideline-recommended diabetes care and co-existing medical conditions adjusting for age and illness burden.
RESULTS: Of the cohort, 51,399 (20.7%) patients had diabetes. Of these, 2.4% had none of the study comorbidities, 67.3% had only concordant comorbidities, 0.3% had only discordant comorbidities, and 30.0% had both. At the conclusion of the follow-up period, the proportion of patients who received appropriate quality of diabetes care was 62.7% of those with no comorbidities, 64.9% of those with concordant-only comorbidities, 56.8% of those with discordant-only comorbidities, and 70.0% of those with both types of comorbidities ($p < 0.0001$). Compared to diabetic patients with concordant-only comorbidities, patients with discordant-only comorbidities were 30% [OR = 0.70 (95% CI 0.52, 0.95)] less likely to receive good quality care while patients with both concordant and discordant comorbidities were 20% [OR = 1.20 (95% CI 1.15, 1.26)] more likely to receive good quality care. Interestingly, patients with co-existing IHD were less likely than those without IHD to receive good quality diabetes care [OR = 0.89 (95% CI: 0.85, 0.93)].
CONCLUSIONS: Contrary to our hypothesis, we found that diabetic patients with the greatest level of clinical complexity were more likely than less complex patients to receive high quality diabetes care. However, diabetic patients with IHD, who are at highest risk for cardiovascular morbidity and mortality, were less likely to achieve guideline-recommended levels of diabetes care. Our findings suggest that, in general, providers are identifying and appropriately treating diabetic patients with the most complex medical conditions. Additional efforts are needed to improve diabetes control in patients with comorbid IHD.

THE IMPORTANCE OF PATIENT MEDICATION EDUCATION AND COORDINATION IN PREVENTING SERIOUS EVENTS FOR OLDER ADULTS ON WARFARIN. J. Metlay[1]; S. Hennessy[2]; R. Localio[2]; C. Leonard[2]; K. Haynes[2]; A. Cohen[2]; S. Kimmel[2]; H. Feldman[2]; B. Strom[2]. [1]Philadelphia VA Medical Center, Philadelphia, PA; [2]University of Pennsylvania, Philadelphia, PA. *(Tracking ID # 173237)*

BACKGROUND: Adverse drug events (ADEs) are an important cause of preventable hospitalizations, particularly among elderly individuals taking high-risk medications. We sought to identify health care level factors modifying the risk of serious bleeding for older adults on warfarin.
METHODS: We performed a prospective cohort study of older adults within the Pennsylvania Pharmaceutical Assistance Contract for the Elderly (PACE) program, which provides comprehensive drug benefits for older adults with low income. Eligible subjects filled new or refill prescriptions for warfarin at the time of enrollment. Subjects were interviewed at the time of enrollment regarding the management and coordination of their health care as well as medication comprehension. Ongoing drug exposure was measured by identifying drug claims during each month of follow-up. Hospitalizations were identified by linking patient identifiers to a state-wide registry that includes data on all discharges in Pennsylvania. Discharge summaries of possible warfarin related ADEs (i.e., bleeding) were reviewed by trained abstractors, with probable episodes confirmed by a panel of clinical experts. Unadjusted and adjusted incidence rate ratios (IRR) were calculated based on person-months of exposure using Poisson regression models, adjusting for within subject repeated measures.
RESULTS: From March 2002 through May 2003, we enrolled a total of 2346 adults on warfarin. Over a two year follow-up period, we observed a total of 126 hospitalizations due to warfarin-related bleeding, equivalent to 46 hospitalizations per 1000 person-years of exposure. Adjusting for age, living arrangement, and cognitive function, patients who reported receiving medication instructions from their pharmacist and physician had a 60% reduced risk of subsequently experiencing a serious bleeding event over the next 2 years (IRR 0.4, 95% CI 0.2–0.8). Having > 3 physicians providing medication prescriptions over the last 3 months and filling prescriptions at > 1 pharmacy over the last 3 months were independently associated with increased bleeding risk (IRRs 2.5, 95% CI 1.3–4.7 and 1.7, 95% CI 1.0–2.7, respectively), even after controlling for total number of medications filled.
CONCLUSIONS: The risk of warfarin-related hospitalization for bleeding, while low, is significantly influenced by patient knowledge of medication instructions and the number of medical and pharmaceutical care providers. Efforts to reduce bleeding risk for patients on warfarin should consider information systems that can coordinate medication information among multiple physicians and pharmacists and improve the delivery of medication information to patients.

THE INVESTIGATION OF ABNORMAL LIVER FUNCTION TESTS IN PRIMARY CARE. A. Montero[1]; J.C. Lai[1]; J. Karkhanis[1]. [1]Columbia University, New York, NY. *(Tracking ID # 173937)*

BACKGROUND: The prevalence of abnormal liver function tests (LFTs) in the U.S. population is significant. In a recent study, the overall prevalence was found to be 7% in no-Hispanic whites and 14.9% in Mexican Americans in the U.S. Expert reviews recommend a variety of laboratory tests constituting the "serologic" workup of abnormal liver function tests. However, the workup in primary care is not well

characterized. The aim of this study was to characterize this workup and investigate the possible effect of provider type (resident vs. attending).
METHODS: Subjects were drawn from all patients making regular visits to their primary care doctor in a university-based, urban general medicine practice from July 1st, 2003 to July 1st 2006. Patients making regular visits were defined as those patients making at least one visit in each calander year during the study time frame. Elligible patients consisted of all patients with a serum ALT determination greater than 61 (1.5X upper limit of normal) on at least two occasions separated by at least 30 days. All laboratory and radiologic studies relavent to the workup of abnormal LFTs during the study period were abstracted from our practice's clinical information system. Our primary outcome consisted of all components of a basic serologic workup(BSW) as defined by the presence of the following tests: viral hepatitis panel (hepatitis B and C), hemochromatosis screen (iron saturation), and autoimmune hepatitis screen (anti-smooth muscle antibody or antinuclear antibody). Secondary outcomes consisted of the individual components of the basic serologic workup, celiac antibody testing, abdominal imaging studies, and liver biopsy. Our independent variable consisted of provider type at the outset of the study period (resident versus attending). Covariates consisted of age, sex, and ethnicity. In our cross sectional analysis, univariate analysis was carried out by provider status in all patients and in a subgroup of patients without an obvious diagnosis (negative viral hepatitis screen and no liver biopsy).
RESULTS: A majority of study subjects were minorities and women (76.5% Hispanic/ 14.8% African American/ 56.5% Female). Among all study patients cared for by an attending provider, 11.67% received the BSW. For study patients cared for by a resident provider, 6.82% received the BSW. Study patients cared for by an attending provider were more likely to receive a liver biopsy ($p = .01$).
CONCLUSIONS: In patients with chronically elevated liver function tests engaged in primary care at an urban general medicine practice, a basic serologic workup was carried out in a minority of patients. Most patients received viral hepatitis screens and abdominal imaging studies, but a majority did not receive tests for hemachromatosis or autoimmune hepatitis. When limited to patients without a clear diagnosis, these findings did not change significantly. Residents and attending patients received a similar workup with the exception of more liver biopsies in the attending patients.

Workup of Abnomal LFTs in Primary Care

N=116	Attending Pts.	Resident Pts	P Value
BSW %	11.7	6.8	.41
Viral Hepatitis Screen %	93.3	90.9	.65
Hemochromatosis Screen %	36.7	36.4	.97
Autoimmune Hep. Screen %	18.3	13.6	.52
Celiac Ab %	1.67	0	.39
Abdominal Imaging %	90.0	90.9	.88
Liver Biopsy %	58.3	31.8	.01

THE QUALITY GAP: WHY DO HIV-INFECTED PATIENTS NOT RECEIVE ANTIRETROVIRAL THERAPY IN THE CURRENT HAART ERA? M.C. Beach[1]; R.D. Moore[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 173550)*

BACKGROUND: Not being on HAART when clinically eligible is considered an indicator of suboptimal healthcare quality. Studies done with earlier HAART regimens have shown that there is a gap in health care quality, such that 20–30% of patients eligible for antiretroviral therapy did not receive it. It is unclear whether previous estimates of HAART non-use are still relevant, given that newer therapies may be easier to use. Furthermore, it is unclear from previous data whether the quality gap is the result of patients not choosing not to take the therapies or the providers failing to prescribe them. We conducted this study to estimate the current rate of HAART receipt, and to evaluate the extent to which non-receipt of HAART is related to provider or patient factors.
METHODS: Patients were interviewed from October 2005- September 2006 using an audio computer-administered self-interview (ACASI) while awaiting appointment with their primary care provider at an urban HIV practice in Baltimore, MD. Patients were shown samples of all available antiretroviral drugs and were asked if they were receiving any of them. If a patient indicated that they were not receiving HAART, they were then asked if they had ever been on HAART. If a patient indicated that they had never been on HAART, they were asked if their HIV provider had recommended HAART. In subsequent analyses, patients were considered eligible for HAART based on the clinical criteria of CD4 < 300, which was measured within 30 days of the interview.
RESULTS: Patients were mostly male (64%), African American (85%), and had a mean age of 39 years. HIV risk factors were IVDU (44%), heterosexual (25%), and MSM (22%). Of 932 patients interviewed, 104 (11.2%) were eligible and not receiving HAART. Of those who were eligible, 65 (62.5%) had previously taken HAART and stopped. Of eligible patients who stopped HAART, 40% indicated that they did so because their HIV provider told them to stop; the remainder chose to stop on their own, and the most common reason was that they started using drugs. Of the 39 eligible patients who had never received HAART, 14 indicated that HAART had been recommended by their HIV provider but they had chosen not to take it, and 25 (24% of 104 eligible patients not on HAART and 3% of total patients) indicated that had never had HAART recommended.
CONCLUSIONS: In the current HAART era, a smaller, though still significant, proportion of eligible patients are not receiving appropriate therapy. Although this gap in quality seems to be a result of both patient and provider factors, the principle reason for not being on HAART is patient-related. Therefore, interventions to improve use of HAART may have the greatest impact if focused on patient behaviors and attitudes. However, provider behavior directly accounts for a small number of eligible patients who do not receive HAART, may contribute to patients choosing not to take it, and should not be ignored.

THE RELATIONSHIP BETWEEN QUALITY AND COST-EFFICIENCY AMONG INDIVIDUAL PHYSICIANS. A. Mehrotra[1]; W. Thomas[2]; J.L. Adams[3]; S. Ashwood[4]; E.A. Mcglynn[5]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Southern Maine, Portland, ME; [3]RAND, Santa Monica, CA; [4]RAND, Pittsburgh, PA; [5]RAND Corporation, Santa Monica, CA. *(Tracking ID # 173833)*

BACKGROUND: Many US national health plans are using their claims databases to profile network physicians on their cost-efficiency. Cost - efficiency profiles measure physicians' relative use of resources to care for their populations of patients. Many physicians and policy makers are concerned that encouraging greater cost-efficiency will lead to lower quality of care. The purpose of this study is to describe the relationships between cost-efficiency and quality-of-care performance among individual physicians.
METHODS: Cross-sectional study of individual physicians using 2003–2004 claims for continuously enrolled patients from three Massachusetts health plans. We created a cost-efficiency profile in several steps. Using a commercial product, Symmetry's Episode Treatment Groups (ETG), we took each patient's claims and divided them into episodes of care. For an acute problem such as pneumonia, the episode begins with the first claim for this illness and ends when there is a 90-day period during which there are no claims for pneumonia. For chronic illnesses, an episode refers to all the care received for that condition during an entire year. We then assigned each episode to a physician using an attribution rule and compared the cost of that episode to the episode-type (ETG) average across all physicians. Lastly, we aggregated across all episodes for physicians in the three health plans. To measure quality, we used the RAND claims-based QA tools to evaluate performance on 131 indicators of quality of care for 20 acute and chronic conditions as well as preventive care. Each quality indicator was assigned to a physician using an attribution rule. For each physician we calculated the proportion of recommended care provided. For both the cost-efficiency profile and quality profile we only included in the analyses physicians who had both 10 episodes and 10 quality events. We examined the correlation between the cost-efficiency profile and quality profile for individual physicians.
RESULTS: There were 269,950 continuous enrollees across the two years in the three health plans, 461,145 episodes of care, and 407,043 quality events. Of the 11,848 physicians with either a quality event or episode, 5148 had a sufficient number of both episodes and quality events. The average quality score among these physicians was 68.0% (STD 14.6%). Primary care physicians had better cost-efficiency scores than specialty physicians (-0.03 vs. -0.01, $p < 0.001$). We found essentially no correlation between quality and cost-efficiency ($r = -0.02$, $p = 0.09$). This was also true among primary care physicians ($r = 0.02$, $p = 0.25$) and specialty physicians ($r = -0.004$, $p = 0.85$).
CONCLUSIONS: These data support the premise that there is no relationship between measured quality and cost-efficiency performance at the individual physician level. Some have worried that policy interventions such as cost-efficiency profiling and pay-for-performance incentives that encourage less utilization might translate into lower quality care. Our data do not support this concern.

THIAZOLIDINEDIONES AND HEART FAILURE: A TELEO-ANALYSIS. S. Singh[1]; Y.K. Loke[2]; C.D. Furberg[1]. [1]Wake Forest University, Winston-Salem, NC; [2]University of East Anglia, Norwich, Norfolk. *(Tracking ID # 172156)*

BACKGROUND: Thiazolidinediones are oral hypoglycemic drugs which are widely used in patients with diabetes mellitus. However, there is a possibility that these drugs may increase the risk of heart failure. We aimed to evaluate the magnitude of this risk of heart failure with thiazolidinediones and classify this adverse effect under the novel Dose-Time-Susceptibility system.
METHODS: Evidence from randomized trials, controlled observational studies, anecdotal case reports, case-series and spontaneous reports in the Canadian Adverse Events Database (CADRMP) were analyzed in a teleo-analysis to determine the magnitude of the risk of heart failure with thiazolidinediones and the characteristics of the reaction.
RESULTS: Random effects meta-analysis of 3 randomized controlled trials showed an odds ratio of 2.1 (95% CI: 1.08–4.08; $p = 0.03$) for the risk of heart failure in patients randomized to thiazolidinediones compared to placebo. Similarly, 4 observational studies, revealed a pooled odds ratio of 1.55 (95% CI: 1.33–1.80; $p < 0.00001$) for heart failure with thiazolidinediones. A Dose-Time-Susceptibility analysis of 28 published case reports, and 214 spontaneous reports from the CADRMP database showed that heart failure was more likely to occur after several months of thiazolidinedione use, with median treatment duration of 24 weeks prior to the adverse reaction. Heart failure occurred at all doses and patients taking low doses of thiazolidinediones were not free from harm. The adverse reaction was not limited to the elderly, with 42/ 162 (26%) of the reported cases occurring in those below the age of 60 years.
CONCLUSIONS: A teleo-analysis of clinical trials, observational studies and case-reports suggests that increased risk of heart failure is a genuine adverse effect of thiazolidinediones use. Given the epidemiological data on the baseline incidence of heart failure, we estimate the Number-Needed-to-Harm with thiazolidinediones to be around 50. Existing recommendations on thiazolidinedione use need to incorporate the magnitude of this increased risk of heart failure, as well as the long-term, dose independent nature of this effect.

TRANSFORMING ACUTE CARE: POTENTIAL SAVINGS FROM IMPROVING SAFETY IN U.S. HOSPITALS. A.K. Jha[1]; D.C. Chan[2]; A. Ridgway[1]; C. Franz[3]; D. W. Bates[4]. [1]Harvard University, Boston, MA; [2]Brigham and Women's Hospital, Brighton, MA; [3]ERG, Inc., Lexington, MA; [4]Brigham and Women's Hospital, Watertown, MA. *(Tracking ID # 173016)*

BACKGROUND: Adverse events, or injuries due to medical care, are common, expensive, and often preventable. Given the rising costs of healthcare and the urgent need

to improve patient safety, understanding the financial impact of improving safety may motivate providers, payers, and policy makers to redouble their efforts to improve care.
METHODS: We identified, using a combination of literature review and expert consensus, ten adverse events (AE) that are common, expensive, and preventable: venous thromboembolism (VTE), surgical site infections, catheter-related blood stream infections, iatrogenic urinary tract infections, nosocomial pneumonia, adverse drug events, in-hospital falls, pressure ulcers, post-operative hemorrhage, and iatrogenic pneumothorax. Through literature review, we determined, for each AE, the incidence rate, preventability, the frequency with which prevention efforts are used, and the cost of each adverse event. We then used the 2004 National Inpatient Sample and incidence and preventability rates from our literature review to create national estimates of how often each of these adverse events occur in aggregate, how many are preventable, and the costs associated with these preventable events. We also considered an "ideal savings" scenario where we estimated the potential savings of completely eliminating each of the ten adverse events identified (i.e. assuming preventability rate of 100%). In both cases, we performed a stochastic sensitivity analysis with Monte Carlo simulation to estimate a range of likely savings given the ranges of parameters obtained from literature reviews.
RESULTS: In 2004, there were approximately 5.7 million adverse events in U.S. hospitals, of which approximately 49% were preventable. These included approximately 1.6 million episodes of VTE (44% were preventable associated with $6.4 billion in potential savings). Similarly, there were 1.4 million cases of hospital-acquired infections, of which 84% were preventable and these preventable events were associated with nearly $6.6 billion in annual savings. Other adverse events included an estimated 1.8 million adverse drug events (27% were preventable with $ 1.7 billion in potential savings), 650,000 falls (33% preventable with $2.5 billion in savings) and approxiamtely 220,000 cases of pressure ulcers (82% preventable with $795 million in savings). Overall, we estimated approximately $19 billion in annual savings (8.8% of total hospital costs) from reducing adverse events in hospitals. When we assumed that all of ten AEs could be completely eliminated, overall savings rose to $42 billion annually or 16% of hospital costs.
CONCLUSIONS: Preventable adverse events consume substantial resources in our healthcare system. These figures can be used by policymakers and organizations to help justify investing in prevention efforts which would also reduce harm.

TYING UP LOOSE ENDS: IMPACT OF DISCHARGE SUMMARIES ON COMPLETION OF RECOMMENDED OUTPATIENT WORK-UPS. C.R. Moore[1]; T. Mcginn[1]; E.A. Halm[2]. [1]Mount Sinai School of Medicine, New York, NY; [2]Mount Sinai School of Medicine, Mamaroneck, NY. *(Tracking ID # 172706)*

BACKGROUND: As hospital length of stays are decreasing, patients are more likely to be discharged with unresolved medical problems that require close outpatient follow-up. This study evaluates the frequency with which hospital physicians recommend outpatient diagnostic procedures, sub-specialty referrals, and lab tests to work-up patients' unresolved medical problems after discharge. It also assesses the impact that availability of discharge summaries to primary care physicians (PCPs) have on work-up completion rates.
METHODS: We conducted a retrospective cohort study of patients discharged from the medicine service of a large teaching hospital between June 2002 and January 2004 who subsequently had a PCP visit at an affiliated primary care ambulatory practice within 2 months after discharge. Each subject's inpatient medical record was reviewed to determine if the hospital physician recommended an outpatient work-up. Subjects' outpatient medical records were then reviewed to determine if the workups were completed. Work-ups were considered complete if there was documentation of completion in the medical record within 6-months after the initial post-discharge PCP visit or if there was documentation that the PCP believed the recommended work-up was unecessary. Logistic regression was used to evaluate associations between work-up completion and the availability of discharge summaries to PCPs. The multivariate model controlled for age, gender, ethnicity, insurance, length of hospitalization, time from discharge to outpatient PCP follow-up, and the number of comorbidities.
RESULTS: Of 3,695 admissions during the study period, 693 met the inclusion criteria. The most common reasons for hospitalizations were; asthma (11%), chest pain (11%), pneumonia (10%), and heart failure (10%). Among the 693 admissions, 191 (28%) were discharged with 240 outpatient work-ups recommended by their hospital physicians. Forty-eight percent of the recommended work-ups were diagnostic procedures, 35% were sub-specialty referrals, and 17% were lab tests. Overall, one-third of the work-ups were not completed; the most common being endoscopic procedures to work-up gastrointestinal bleeding (16%), stress tests to work-up suspected coronary artery disease (14%), and CT scans to follow-up incidental lung nodules seen on previous radiographic studies (11%). Discharge summaries were available for 80% of discharged patients; however, 54% of the work-ups recommended in patients' hospital charts were not documented in their discharge summaries. In multivariate analyses, availability of a discharge summary by itself was not associated with work-up completion (OR: 1.59, P = .417); however, if a discharge summary explicitly documenting the recommended work-up was available, then the work-up was more likely to be completed (OR = 2.35, P = .007).
CONCLUSIONS: One in 4 hospitalized patients has an outpatient work-up recommended by a hospital physician to address an unresolved medical problem at the time of discharge; however, 34% of these work-ups are not completed. While PCPs rely on discharge summaries for information to manage their post-hospital patients, only about half of the discharge summaries ever mention the recommended work-ups. Interventions to improve communication between inpatient and outpatient physicians regarding follow-up of patients unresolved medical problems are needed.

UNDERSTANDING UNCONTROLLED HYPERTENSION: IS IT THE PATIENT OR THE PROVIDER? A.J. Rose[1]; D.R. Berlowitz[1]; M.B. Orner[1]; N.R. Kressin[1]. [1]United States Department of Veterans Affairs, Bedford, MA. *(Tracking ID # 169918)*

BACKGROUND: Improved control of hypertension has been linked with both more intensive medical therapy and greater patient adherence to therapy. However, the relative contributions of adherence and treatment intensity to blood pressure (BP) control are not known.
METHODS: We studied a group of hypertensive patients (n = 410) from three primary care clinics in the Veterans Affairs medical system (VA). All patients had uncontrolled BP at baseline (≥140/90 mm/Hg), and were followed for an average of 438 days. We used a questionnaire with six items to assess patient adherence to therapy; patients who endorsed two or more items were labeled "poorly adherent." We used VA pharmacy fills to determine medications and doses received by the patient, and thus to measure the intensity of antihypertensive management. The baseline regimen was labeled "adequate" if it contained at least moderate doses of three different antihyptertensives; otherwise it was considered "inadequate." In a cross-sectional analysis, we divided the patients into three groups, based on the most likely explanation for their uncontrolled BP at baseline. The first group contained the "poorly adherent" patients; the remaining patients were divided into two groups based on whether they were receiving an "adequate" regimen. Thus, we were left with three groups, whose uncontrolled hypertension was presumably due to poor adherence, an inadequate regimen, or physiologically resistant hypertension, respectively. In a longitudinal analysis, we examined the ability of adherence and treatment intensity to predict BP at the end of the study. Again, patients were labeled as being "poorly adherent" if they endorsed at least two of the six adherence items. The longitudinal variable for treatment intensity had three levels. Patients who experienced any increase in their therapy during the study period, and patients who had no therapy increases but were on an "adequate" regimen at the beginning, were compared to patients that had neither of these characteristics. We used linear regression to examine the ability of adherence and treatment intensity to predict the final systolic and diastolic BP, controlling for the initial BP and the known predictors of BP.
RESULTS: At baseline, an inadequate antihypertensive regimen was implicated as the most probable reason for uncontrolled BP in a majority of the patients (72%), with the remainder divided between poor adherence (13%) and physiologically resistant hypertension (15%). In multivariable longitudinal analyses, neither adherence nor treatment intensity was related to the final systolic blood pressure. However, both patients who had an increase in their regimen during the study and patients who were on an "adequate" regimen at the beginning of the study had lower final diastolic BP compared to the patients who had neither characteristic (−3.64 and −5.56 mm/Hg respectively, $p < 0.05$).
CONCLUSIONS: At baseline, 72% of patients in our sample had uncontrolled hypertension due to an inadequate regimen. In longitudinal analyses, only variables related to the intensity of management predicted a lower final BP. While patient adherence to therapy plays a role, vigorous clinical management by the clinician contributes more to BP control. Efforts to lower BP in populations should focus on increasing treatment intensity.

USE OF FEATURES IN ELECTRONIC HEALTH RECORDS AND HEALTH CARE QUALITY: HOW ARE THEY RELATED? E.G. Poon[1]; S.R. Simon[2]; C. Jenter[1]; R. Kaushal[1]; L. Volk[1]; P.D. Cleary[2]; A.Z. Tumolo[1]; D.W. Bates[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard University, Boston, MA. *(Tracking ID # 172358)*

BACKGROUND: Limited evidence supports the widely-held belief that the deployment of electronic health records (EHR) improves quality of care. Even less is known about how the various features of the EHR impact quality indicators. We therefore used a cross sectional design to study whether the use of EHR features was associated with improved quality in the community setting.
METHODS: To study the relationships between the use of EHR features and quality, we combined data from two sources. EHR use was assessed in a written survey conducted in the state of Massachusetts in early 2005. The survey assessed whether the physician had an EHR and, if so, when it was installed. It also assessed whether the physician's EHR (if installed) provided the following key functions: on-line laboratory results review, on-line radiology result review, care reminders, problem list and medication list. The survey further assessed whether the physician used each of these features "most or all of the time". The quality of care delivered by each physician in 2004 was assessed using administrative data supplied by the 5 major health plans in Massachusetts in the areas of diabetes, women's health, cardiovascular disease, depression, colorectal cancer screening, well child visits, and asthma. To study the relationships between the use of EHR features and quality, we built logistical regression models to assess whether self-reported use of each relevant key EHR feature was associated with the physician scoring in the top quartile for each quality area. Models adjusted for practice size and volume, physician age and gender, self-reported presence of active quality improvement activities, and clustering at the medical group level.
RESULTS: We administered the survey to 1884 physicians, of whom 1345 responded (response rate = 71%). Of the survey respondents, 509 were primary care physicians on whom we were able to obtain quality data. Results of our regression analyses are summarized in the table below. The results indicate that consistent use of key EHR features was significantly associated with higher performance in women's health and

colorectal cancer screening. Consistent use of some, but not all, of the key EHR features was associated with higher quality in cardiovascular care. No relationships were identified between the use of EHR features and quality in diabetes, depression, well child visits, and asthma.

	Adjusted Odds Ratio (p value) for Scoring Above 75% percentile in 2004						
Usage of EHR Feature by MD	Diabetes	Women's Health	Cardiac	Depression	Colon Cancer Screening	Well Child Visits	Asthma
MD uses EHR to view lab results	0.73 (p=0.53)	2.91 (p=0.02)	2.37 (p=0.16)	n/a	n/a	n/a	n/a
MD uses EHR to view radiology results	n/a	3.84 (p<0.001)	n/a	n/a	3.22 (p=0.02)	n/a	n/a
MD uses EHR to order labs	1.00 (p=0.99)	0.79 (p=0.73)	5.58 (p=0.16)	n/a	n/a	n/a	n/a
MD uses EHR to order radiology	n/a	2.04 (p=0.29)	n/a	n/a	4.05 (p=0.04)	n/a	n/a
MD uses reminders	0.64 (p=0.39)	1.20 (p=0.007)	2.83 (p=0.10)	1.76 (p=0.30)	2.77 (p=0.04)	1.07 (p=0.91)	1.03 (p=0.95)
MD uses problem list	1.38 (p=0.54)	3.33 (p=0.007)	3.71 (p=0.04)	1.72 (p=0.32)	6.57 (p=0.01)	1.13 (p=0.95)	1.59 (p=0.64)
MD uses medication list	0.60 (p=0.34)	3.73 (p=0.002)	2.88 (p=0.08)	1.60 (p=0.35)	3.22 (p=0.01)	0.87 (p=0.82)	1.38 (p=0.53)

CONCLUSIONS: The use of key EHR features is associated with higher performance in some, but not all areas of quality. Our results suggest that deployment of EHR is an important building block for improving quality, but does not necessarily result in higher quality. Other factors, such as the quality of decision support in the EHR and whether the EHR is effectively used to support the chronic care team, may be important determinants of quality.

USE OF HOSPITAL ADMINISTRATIVE DATA TO ASSESS QUALITY IMPROVEMENT INITIATIVES. M.W. Smith[1]; K.M. Jarman[1]; A.M. Schleyer[1]; A.B. Schreuder[1]; R. Goss[2]; S. Onstad[1]. [1]University of Washington, Harborview Medical Center, Seattle, WA; [2]University of Washington, Seattle, WA. *(Tracking ID # 173357)*

BACKGROUND: With mandatory national quality improvement (QI) initiatives, assessment of inpatient care becomes increasingly critical for evaluation of hospital performance. QI information is often readily available through hospital administrative data. We chose to evaluate how these data can be utilized as part of our ongoing QI efforts in prevention of venous thromboembolism (VTE). Our aim was to identify a cohort of hospitalized patients who have increased risk of rebleeding, those with variceal bleeds, to assess our use of pharmacologic VTE prophylaxis in this high risk population. Based on prior research using administrative data, we hypothesized that case finding via hospital administrative billing data would be relatively straight forward.
METHODS: All admissions to the Medicine and Medical Intensive Care Services of a 400 bed urban teaching hospital between 1/1/2003 and 12/31/2005 were retrospectively screened. Eight distinct diagnosis codes (ICD9-X) related to upper gastrointestinal bleed, 10 procedural codes (3 ICD9-CM and 7 CPT) for endoscopy (EGD), and pharmacy data were used to identify eligible patients. The identified cohort was further categorized into 4 groups based on diagnosis of variceal bleed, use of EGD to confirm this diagnosis, and the use of octreotide infusion. Approximately 10% of each group underwent independent manual chart review by a health care professional (MD or PharmD) to confirm inclusion criteria.
RESULTS: 1522 total patients were considered to be eligible. The four groups categorized by diagnosis, EGD and octreotide are shown in Figure 1. In the group with a diagnosis of variceal bleed who underwent EGD (group 3), the subgroup started on octreotide generated 224 subjects. A random sample of 32 from this subgroup underwent further chart review and inclusion validation. Of these, 20 patients met study criteria. Thus, 62.5% (20/32) accuracy of the described selection process was evident. Extrapolation to the entire 224 patients in this subgroup resulted in 140 cases identified (0.625 × 224). The overall yield (extrapolated) for identifying our cohort from decision support data has therefore calculated to 9.2% (140/1522) over the designated three year study period.

Group 1	2	3	4
Variceal bleed, No EGD, Yes or No Octreotide N=512	No Variceal bleed, EGD, Yes or No Octreotide 501	Variceal bleed, EGD, Yes or No Octreotide 464	No Variceal bleed, No EGD, Yes Octreotide 45

Eligible patients n = 1522

CONCLUSIONS: This study demonstrates the challenge of high risk group case finding in our attempt to review our hospital VTE prevention initiative using patients admitted with variceal bleeding. The use of diagnostic and procedural hospital administrative data combined with pharmacologic data did not improve our yield of cases for this retrospective review. While similar case finding principles to those used in this VTE prevention QI review process would likely apply to other national quality measures, we conclude that this complex method of case finding may not be appropriate for all hospitals tasked with identifying cases in their ongoing QI review efforts.

USE OF NASAL SWABS TO TAILOR ANTIBIOTICS IN METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS SKIN AND SOFT TISSUE INFECTIONS. A.M. Schleyer[1]; K.M. Jarman[2]; J.D. Chan[2]; T.H. Dellit[3]. [1]University of Washington, Harborview Medical Center, Seattle, WA; [2]Harborview Medical Center, Seattle, WA; [3]University of Washington, Seattle, WA. *(Tracking ID # 173588)*

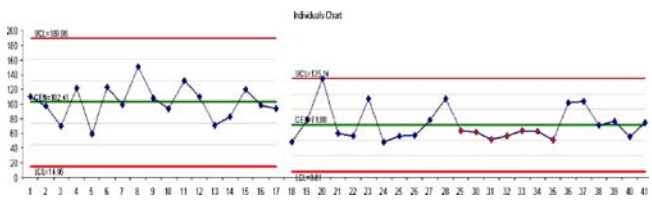
BACKGROUND: Methicillin-resistant Staphylococcus aureus (MRSA) is an increasingly prevalent community pathogen in skin and soft tissue infections (SSTI) but is difficult to diagnose in the absence of a purulent wound or abscess. We compared organisms isolated from SSTI and their antibiotic susceptibilities to organisms recovered from nasal swabs (NS) to determine whether they could be used to identify pathogens and guide antimicrobial therapy in SSTI.
METHODS: Retrospective review of NS and wound cultures in all patients with SSTI admitted to the Medicine service of a 400-bed urban teaching hospital between August and December 2005. Isolates from NS and wound cultures were characterized by antimicrobial susceptibility testing.
RESULTS: Of 298 eligible patients, 75 (26%) had NS performed; 52 (18%) had both NS and wound cultures. There were no statistically significant differences between patients who had only NS culture and those who had both NS and wound cultures based on demographics, known MRSA risks or SSTI location. See Table 1 Sensitivity of NS for MRSA was 55%; the positive predictive value was 100%. Antimicrobial susceptibilities matched exactly for vancomycin, trimethoprim-sulfamethoxazole, tetracycline and clindamycin (including inducible resistance) in all MRSA samples isolated from both sites. Sensitivities for fluoroquinolones matched in 95%.
CONCLUSIONS: In patients admitted to the hospital with SSTI, NS can help identify MRSA as a pathogen. Although NS sensitivity for MRSA was only 55%, a positive result can help guide antimicrobial therapy in the absence of wound culture data. Thus, NS may be an effective and relatively inexpensive means of improving patient care in SSTI.

Table 1. Performance Characteristics of NS

	Wound (+) MRSA	Wound (-) MRSA	Total
NS (+) MRSA	21	0	21
NS (-) MRSA	17	14	31
Total	38	14	52

USING STATISTICAL PROCESS CONTROL TO DRIVE IMPROVEMENT IN DOOR-TO-BALLOON TIME. R.L. Huang[1]; C.L. Roumie[1]; T.A. Elasy[1]; R.S. Dittus[1]; T. Disalvo[1]; D. Zhao[1]; T. Speroff[1]. [1]Vanderbilt University, Nashville, TN. *(Tracking ID # 173626)*

BACKGROUND: The ACC/AHA guidelines for ST-elevation myocardial infarction (STEMI) set a door-to-balloon (D2B) time target of ≤90 minutes (min). Statistical process control (SPC) charts can isolate the components of the STEMI care process and validate the effectiveness of interventions implemented for improvement in D2B time.
METHODS: Data from all STEMI patients presenting to Vanderbilt University Medical Center from July 2005-Nov 2006 were analyzed for D2B times and subinterval time periods. In February 2006, established clinical strategies to improve D2B times were implemented: a 10 min insistence of door-to-ekg time, emergency department activation of the catheterization lab, insistence of 30 min arrival time for the catheterization team, and rapid cycle feedback to faculty using SPC charts.
RESULTS: SPC charts of the overall D2B process revealed a 30 min (29%) decrease in average D2B time from 102 min to 72 min. Nonparametric tests on before vs after quality improvement intervention revealed decreased overall D2B by 44 min ($p = 0.0003$) in median D2B time from 108 min (interquartile range (IQR) = 94–122 min) to 64 min (IQR = 56–94 min). For the subinterval time periods: ED to EKG time decreased 9 min (56%) from 16 min to 7 min, EKG to cardiac catheterization laboratory (CCL) time decreased 17 min (31.5%) from 54 min to 37 min, and CCL-balloon time decreased 4 min (12%) from 33 min to 29 min.
CONCLUSIONS: SPC methods provided the quality improvement team with real-time monitoring of D2B and its component care processes and demonstrated that strategic changes in clinical care were correlated with improvement. As institutions begin to implement strategies for reducing D2B time, SPC can be used to monitor the effect of these strategies in real-time and graphically show which interventions are effective.



Overall Door-to-Balloon time: Patient #18 is when new strategies were implemented. Note the decrease in the average D2B time (central mean line) and narrowing of the control limits demonstrating effective improvement.

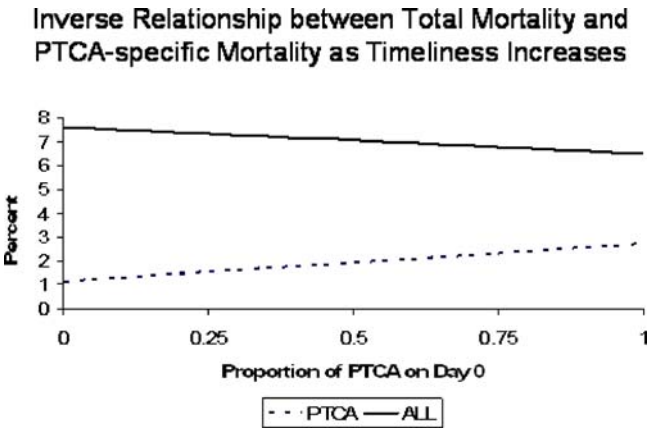
VOLUNTARY ELECTRONIC REPORTING OF LABORATORY ERRORS: AN ANALYSIS OF 266,224 EVENT REPORTS FROM 30 HEALTH CARE ORGANIZATIONS. L.K. Snydman[1]; B. Harubin[1]; S. Kumar[2]; J. Chen[2]; R.E. Lopez[1]; D.N. Salem[1]. [1]Tufts-New England Medical Center, Boston, MA; [2]Quantros Inc., Milpitas, CA. *(Tracking ID # 173687)*

BACKGROUND: Laboratory evaluation is a critical aspect of a patient's care and is essential for diagnosis, evaluation and management. Laboratory errors may cause patients avoidable physical, emotional and mental discomfort, as well as time and money. To our knowledge, there has never been a large systematic review of hospital errors across multiple

acute care hospitals. This study describes the type of laboratory events reported in acute care hospitals using a voluntary electronic error reporting system (e-ERS).
METHODS: Cross-sectional analysis of reported laboratory events by hospital employees and staff between January 1, 2000 and December 31, 2005 from thirty United States Healthcare Organizations that voluntarily implemented a secure, standardized, commercially available web-based e-ERS.
RESULTS: 37,532 laboratory-related events were reported over six years and accounted for 14.1% of the total number of quality events reported (266,224). The distribution of laboratory error reporting by job classification was as follows: laboratory technicians (38%), administrators (28.8%), nurses (9.9%) and physicians (0.8%). Laboratory errors were separated into three components: preanalytic, analytic and postanalytic. Preanalytic errors accounted for 81.1% of all laboratory errors, while analytic errors and postanalytic errors accounted for 6% and 5.2% respectively. 7.7% of laboratory errors could not be classified. The top 3 preanalytic errors were specimen not labeled (18.7%), specimen mislabeled (16.3%) and improper collection (13.2%). The top 3 postanalytic errors were delayed report (3%), critical results not reported (0.9%) and misinterpreted results (0.7%). Analysis of the consequences of a laboratory error revealed that approximately 0.08% (30/37,532) of laboratory events caused permanent harm or death, 8% (3,002/37,532) caused temporary harm, and 55% (20,602/37,532) did not cause harm to the patient. Persons reporting the event determined the level of harm. The level of impact was not reported for 9.9% (3,712/37,532) of events, 14.4% (5,403/37,532) of events were related to safety/environment (unsafe practices and/or conditions in the institution) and 12.7% (4,783/37,532) were considered "near miss" (averted before reaching the patient).
CONCLUSIONS: 1. A hospital-wide e-ERS provides previously unavailable data regarding the make-up and severity of hospital laboratory errors from multiple healthcare organizations. 2. Laboratory errors are common and constitute 1 of 7 quality events that are reported in a hospital-wide e-ERS system. 3. Over one third of reporters of laboratory events are laboratory technicians. 4. Laboratory errors are often caused by events that precede specimen arrival in the lab and thus should be preventable with better labeling and tracking. 5. The vast majority of laboratory errors do not lead to harm and rarely cause permanent harm or death. Results are limited by subjective designation of level of harm by reporters and by potential under-reporting of events. Monitoring of laboratory errors is imperative so that quality management systems can be implemented to improve patient comfort and safety and decrease the cost of care.

WHEN BETTER QUALITY CARE INCREASES THE TREATMENT SPECIFIC RISK OF MORTALITY: A NEWLY DESCRIBED BIAS IN PERFORMANCE REPORTING. L.C. Kleinman[1]. [1]Mount Sinai School of Medicine, New York, NY. *(Tracking ID # 173519)*

BACKGROUND: Timeliness is a key attribute of quality. This study demonstrates the bias that results from the unreported association between classification variables and time to treatment. Hospital discharge data demonstrate the misleading association of better, timelier care with increased treatment-specific mortality for acute myocardial infarction (AMI) and percutaneous transluminal angioplasty (PTCA).
METHODS: From a database of 31,351 AMI acute hospital discharges in PA in 2000, we anlayzed the 11,488 with APR Risk of Mortality Score of 3 out of 4 (N = 11,488) to create a decision model to calculate mortality risk by treatment class (PTCA, no PTCA) for each day following admission. The decision model further demonstrates implications for research data.
RESULTS: Timelier PTCA saves lives but increases the measured mortality among those receiving it: increasing the proportion of PTCA performed on the first day from 20% to 70% raises PTCA-specific mortality, 1.5% to 2.3%, and lowers overall mortality, 9.5% to 9.3%. This inverse relationship between overall and PTCA-specific mortality is 'outcomes migration bias.' Bias occurs whenever sicker patients die sooner, early intervention is effective, and timing of intervention varies. Delaying enrollment in research studies (eg the delay to enroll Spanish speaking patients to wait for an interpreter) may either conceal real associations (eg, when delay leads to uncounted deaths prior to offering enrollment), or reveal spurious ones (eg when delay harms prognosis but is not fatal before enrollment).



CONCLUSIONS: Although the timing data are blunt (day of procedure), they demonstrate the concept of outcomes migration bias, which cannot be corrected using risk adjustment. Health care outcomes are often reported by treatment variables, or by any number of classification variables, such as age, race, gender, or insurance type.Treatment- or class-specific mortality rates may be misleading. The independent associations of any classification variable with timeliness and outcomes may lead to confounding and misleading results. Such reports might hide true associations or cause non-existent ones to appear. Report cards stratified by treatment could steer informed patients away from the best care and towards a premature demise. These findings reveal a potential incentive to withhold care from patients at highest risk for mortality: quality of care should not be reported to the public primarily through the use of stratum-specific outcomes rates. Outcomes reports should include condition-specific outcomes and often information regarding the timing of treatment. Time from presentation (not enrollment) to treatment is important when analyzing research data.

WHEN MORE IS NOT BETTER: TREATMENT INTENSIFICATION AMONG HYPERTENSIVE PATIENTS WITH POOR MEDICATION ADHERENCE. M. Heisler[1]; M.M. Hogan[1]; T.P. Hofer[1]; J. Schmittdiel[2]; E.A. Kerr[1]. [1]VA Ann Arbor Health System/University of Michigan, Ann Arbor, MI; [2]Kaiser Permanente Division of Research, Oakland, CA. *(Tracking ID # 172699)*

BACKGROUND: Poor patient medication adherence and providers' lack of medication intensification are widely recognized as barriers to good blood pressure (BP) control. Little is known, however, about the prevalence of inappropriate intensification in the face of poor adherence to already prescribed medications. We thus examined the prevalence of and relationship between patient medication adherence and provider treatment intensification among hypertensive patients on at least one BP medication.
METHODS: We identified all patients in a Midwestern Veterans' Affairs (VA) administrative region who received at least two outpatient BP medication fills during 2004 and had one or more outpatient primary care visits with an elevated BP during 2005 (n = 41756). For each episode of elevated BP during 2005 (73597 events), we used pharmacy refill data to examine patients' prior medication adherence over a 12-month period and whether there was provider medication intensification in response to the elevated BP. We then examined bivariate and multivariate relationships between adherence level and whether or not intensification occurred. Gaps in medication refills for each BP medication class were calculated with the Continuous, Multiple interval measure of Gaps in therapy (CMG) measure. Intensification included any of the following actions within 14 days of the elevated BP: a) adding a new class; b) changing to a new class; c) switching to a different medication within the same class; or d) increasing the dosage category of an ongoing medication.
RESULTS: In 41% of elevated BP events, patients had prior medication refill gaps of 20 percent or greater in one or more BP medication classes. Intensification took place after 30 percent of elevated BP events, including 31 percent of events with refill gaps 20 percent or greater. Accounting for the clustering of elevated BP events within patients, worse adherence was associated with significantly higher odds of undergoing medication intensification than better adherence, even when patient age, co-morbidities, number of BP medications and systolic BP were included in the multivariate models. Medication refill gaps from 20–59% were associated with higher odds of undergoing medication intensification than gaps < 20% (AOR: 1.09, 95% CI: 1.04–1.13). Patients aged 75 or older were less likely to undergo intensification than patients younger than 65 (AOR: 0.84, 95% CI: 0.80–0.88) and patients with cardiovascular disease were less likely to undergo intensification than patients with neither cardiovascular disease or diabetes (AOR: 0.81, 95% CI: 0.76–0.86).
CONCLUSIONS: Poor adherence or lack of intensification were present in 82% of visits with high BPs. However, patients with poor medication refill adherence were more likely than patients with good adherence to undergo medication intensification. These findings reinforce the need to build on increasingly available electronic pharmacy data to develop effective methods for providers to objectively assess and address patients' medication adherence problems before intensifying medications and for interventions that simultaneously address patient medication adherence and provider clinical inertia to improve BP outcomes.

"HEALTH RELATED QUALITY OF LIFE IN ADULT PATIENTS WITH SICKLE CELL DISEASE." N.L. Artz[1]; J.X. Zhang[2]; D. Meltzer[2]. [1]University of Chicago Hospitals, Chicago, IL; [2]University of Chicago, Chicago, IL. *(Tracking ID # 173607)*

BACKGROUND: Sickle cell anemia is a common inherited disorder characterized by recurrent episodes of severe pain, cumulative organ damage and early death. It affects an estimated 70,000 Americans and results in $475 million in health care expenditure annually. Studies of health care resource utilization show large variability between patients but reasons for this are poorly defined. Health-related quality of life (HRQOL) has been shown to correlate significantly with health care utilization in other patient populations, however very little data exists in patients with sickle cell disease, and no studies have examined the relationship between HRQOL and use of healthcare resources. We sought to determine the average physical and mental HRQOL in adults with sickle cell disease as compared with US norms and to describe the relationship between HRQOL and healthcare resource utilization.
METHODS: 169 adult patients with sickle cell anemia, admitted to the general internal medicine ward between July 1997 and June 2003 at the University of Chicago Medical Center, completed surveys assessing their functional status and pain 4 weeks prior to admission, using the SF-12 health survey, standard 4 week recall version. The patients' information was then linked with the hospital's administrative database to obtain their demographic information including age, gender, race, zip code, and total cost. The patient data were further linked to the census data of neighborhood information including racial composition through patients' residential zip code. We performed multivariate regression analyses using Generalized Linear

Models (GLM) to measure the association between functional status, pain, and length of stay (LOS) and costs, adjusting for age, gender, and race.
RESULTS: Among the 169 patients, the mean age was 31 years (s.d. 10). 101 (60%) were female, and 157 (93%) were African American. 25% of patients reported that health limited moderate activities "a lot" and 60% reported that they accomplished less due to physical health. 74% reported that pain interfered to some degree with normal work, and 20% reported that it interfered "extremely." The mean SF-12 physical score was 40 (s.d. 12), and mental score 49 (s.d. 12). Adjusted for age, gender, and race, longer LOS was associated with a lower SF-12 physical composite score ($p = 0.01$), and with lower HRQOL as measured by patients who reported that they "accomplished less due to physical health" ($p = 0.04$), and were "limited in kind of work due to physical health" ($p = 0.07$). Adjusted for age, gender, and race, higher total costs were associated with a lower SF-12 physical composite score ($p = 0.07$), and with lower HRQOL as measured by patients who reported they "accomplished less due to physical health" ($p = 0.08$).
CONCLUSIONS: Adults with sickle cell disease have decreased physical HRQOL as compared with national norms and this correlates with increased utilization of acute healthcare resources. Effects of efforts to improve physical HRQOL on acute healthcare resource utilization in adults with sickle cell disease await further study.

"IT CAN HURT AND IT CAN ACHE BUT I AM NOT TELLING ANYTHING." T.M. Ho[1]; T. Fancher[1]; D. Paterniti[1]. [1]University of California, Davis, Sacramento, CA. *(Tracking ID # 173636)*

BACKGROUND: Depression among Southeast Asian refugees in the US ranges from 51–73%; but less than 15% received treatment. We sought to identify culturally-relevant factors that contribute to inadequate treatment of depression among Vietnamese refugees.
METHODS: We conducted a series of semi-structured interviews and focus group with key stakeholders and those with a vested interest in Vietnamese mental health (i.e. family and patients). The interviews' purpose was to assess understanding of conceptions of depression, attitudes toward the provision of care, and adherence to antidepressants. Participants were identified by snowball sampling and all were Vietnamese. All interviews were audio-tape recorded, translated, and transcribed for qualitative analysis. Coding categories and related themes emerged through an iterative process of transcript review.
RESULTS: 6 unique interviews and 1 focus group were conducted. The Vietnamese community emphasized that treatment decisions are seldom made alone: depression diagnosis and treatment, is negotiated within the family. Given the perceived burden of depression on family status, three strategies were identified to unite patients and family towards collective agreement and understanding of depression. Using clues from the medical interview, providers can take on 3 potential roles as director, facilitators, and cultural brokers (Table). For patients who cannot agree to the definition of illness, the provider works to bring them to an agreed upon understanding. Contrary to traditional collaborative models, the patient wants a more directive provider: "It can hurt and it can ache but I am not telling anything". When the family does not agree to the diagnosis, the provider needs to takes on the role of facilitator: " you switch terms around and say something like, do you experience some of these symptoms? You know, this is not your fault. This is actually something that can be helped." In situations where both patients and family do not agree to the diagnosis providers can act as cultural brokers to bridge the understanding between the Western view of illness and the traditional Eastern view. "It means we have to get used to American doctors and have to improvise some way so that the American doctor can help the Vietnamese patients in a different culture." Developing a culturally congruent definition of illness will improve depression care. In order to be patient-centered, patient-physician interactions need to remove the focus on the patient. Indirect questionings should be employed to actively engage patients in discussion of illness. Discussion emphasizing the provider's need to understand the patient and their illness will help reduce stress and stigma that can hinder provision of care.
CONCLUSIONS: Our study provides clues gained from the medical interview to help providers vary their interviewing style to meet the needs of the patient. This strategy goes beyond cultural competence by teaching providers to easily expand their interviewing repertoires. Ultimately, such strategy enhances Vietnamese patients' and families' understandings of depression and its treatment.

Roles

Agreement with Definition of Illness	Role of Provider
Patient does not agree (Family agrees)	Director
Family does not agree (Patient agrees)	Facilitator
Family and Patient do not agree	Broker

A COMPARISON OF THE SELF- ADMINISTERED 30 DAY TLFB METHOD COMPARED TO THE PHONE INTERVIEW METHOD AMONG CLINICAL SAMPLES OF HIV+ AND HIV- PATIENTS. J. Conigliaro[1]; S.A. Maisto[2]; A. Gordon[3]; K.A. Mcginnis[4]; A.C. Justice[5]. [1]University of Kentucky, Lexington, KY; [2]Department of Psychology, Syracuse University, Syracuse, NY; [3]VA Pittsburgh Healthcare System, Pittsburgh, PA; [4]University of Pittsburgh, Pittsburgh, PA; [5]Yale University, West Haven, CT. *(Tracking ID # 173674)*

BACKGROUND: Background: Alcohol use has significant implications for the management of HIV infected patients. The time line followback (TLFB) has been considered the most reliable and accurate method of collecting retrospective reports of daily alcohol consumption. Yet, many studies have used the personal interview mode of administering the TLFB, which is labor intensive and expensive when used in primary care settings. There have been few studies of self-administered TLFB, but none have involved clinical populations such as the Veterans Aging Cohort Study (VACS). Objectives: To compare the temporal stability and amount of alcohol use reported using the self- administered 30 day TLFB method to the phone interview method among clinical samples of HIV+ and HIV- patients enrolled in VACS.
METHODS: Methods: A convenience sample of 72 patients were randomly enrolled to one of four experimental conditions that combine mode and order of TLFB administration over two occasions separated by no more than one week: TLFB self @ time 1 - TLFB self @ time 2 ($n = 18$); TLFB self - TLFB phone interview ($n = 19$); TLFB phone interview - TLFB self ($n = 17$); or TLFB phone interview - TLFB phone interview ($n = 18$). For each condition approximately half were HIV+ and HIV- patients. Each of the two TLFB interviews covered the same 30-day period.
RESULTS: Results: When comparing the total drinks per 30 days for those 36 who completed both a TLFB self and a TLFB phone interview, there was high correlation between the two methods ($rho = .90$). When recoding number of drinks as hazardous vs. non hazardous agreement remained high ($kappa = 0.86$ with 94.4% agreement).
CONCLUSIONS: Conclusion: Although number of drinks varies by interview, correlation between number of drinks is high and there is high agreement for hazardous drinking from two interviews. Additionally, information gathered in person correlates highly with information gathered via telephone. Self-administration of the TLFB is shown to be feasible thus allowing study of the co-occurrence of alcohol use and other health behaviors in clinical settings.

AFRICAN AMERICANS AND BELIEFS ABOUT HYPERTENSION, ITS THERAPY, AND ETIOLOGY: MORE WORRIES, FEWER BENEFITS, LESS CONTROL. N.R. Kressin[1]; M.B. Orner[2]; M. Manze[3]; M. Glickman[4]; P.K. Davidson[4]; A. Borzecki[4]; D.R. Berlowitz[5]. [1]Center for Health Quality, Outcomes & Economic Research, a VA HSR&D Center of Excellence, Bedford, MA; [2]United States Department of Veterans Affairs, Bedford, MA; [3]Boston Medical Center, Boston, MA; [4]Boston University, Boston, MA; [5]Boston University, Bedford, MA. *(Tracking ID # 172700)*

BACKGROUND: In the US population, African Americans (AA) have higher rates of hypertension and worse blood pressure (BP) control than whites (W). Patient beliefs about the disease may contribute to worse outcomes. However, little is known about how patient beliefs about hypertension vary by race.
METHODS: We identified white and African American patients with outpatient diagnoses of hypertension (who had been prescribed antihypertensive medications) from the primary care practices of an academically affiliated urban tertiary care medical center. From this population, we recruited a sample of 870 white and African American (representing 43% and 57% of the sample, respectively) hypertensive patients and interviewed them regarding their beliefs about the disease and its care.
RESULTS: African Americans were more likely to be concerned about BP medications, more often agreeing that they had worries about long term effects (57% AAs vs. 39% Ws), and concerns about becoming dependent on them (40% vs. 18%). African Americans were more likely to indicate that medications give unpleasant side effects (17% vs. 13%), or that they experience disruptions in life due to the medications (12% vs. 4%). African Americans were less likely to say that their health in the future would depend on taking their BP medications (81% vs. 90%). Further, African Americans were more likely to attribute the cause of their high BP to external factors not under their control, including a germ or virus (19% vs. 6%), pollution (21% vs. 11%), chance (34% vs. 22%), other people (32% vs. 25%), and prior poor medical care (17% vs. 8%). African Americans were less likely to report the receipt of "enough" information about blood pressure medicines (64% vs. 77%). In contrast, African Americans more often correctly noted that high BP was a function of heredity (84% vs. 75%), and were less likely to say that missing their BP medications for a day wouldn't matter to their future health (41% vs. 61%). Finally, African Americans had higher rates of uncontrolled blood pressure than whites (41% vs. 32%; all p's $< .05$).
CONCLUSIONS: We found numerous racial differences in beliefs about hypertension, with African Americans evidencing more negative perspectives about antihypertensive medications, and more external (and incorrect) attributions regarding the etiology of their BP. Each of these types of beliefs might be amenable to change through patient education. Thus, addressing negative belief patterns about the disease, stressing the importance of adhering to antihypertensive medications in achieving BP control, and correcting misunderstandings about disease causality may help to improve outcomes of care and decrease racial disparities in the future.

AMERICANS LIVING IN FOOD INSECURE HOUSEHOLDS REPORT LESS HEALTHY DIETARY INTAKE. H.K. Seligman[1]; B. Laraia[1]; M. Kushel[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172120)*

BACKGROUND: Food security is defined as access to enough food for an active, healthy life at all times. In the U.S., food insecurity exists when lack of financial resources significantly limits the availability of food. Almost 40 million people in the United States (12% of the population) report living in households experiencing food insecurity annually. Adults living in food insecure households have reduced intake of dietary micro- and macronutrients. Because it is difficult for primary care physicians to target dietary counseling to specific nutrients, we sought to determine whether there are differences in basic dietary components between adults in food secure and insecure households.
METHODS: We performed a cross-sectional analysis of the National Health and Nutrition Examination Survey (1999–2002 waves). We included 5450 adults >20 years of age with household incomes $\leq 300\%$ of the federal poverty level. We used a standard scale (the Food Security Core Module) to categorize respondents as food secure, mildly food insecure, or severely food insecure. We assessed dietary intake using the United States Department of Agriculture's Healthy Eating Index (HEI). Its 10 components include conforming to dietary recommendations for whole grains, vegetables, fruits, milks, and meats; consumption of fat,

saturated fat, cholesterol, and sodium; and dietary variety. Components are reported on a 0–10 scale; higher scores indicate recommended intake. Components are summed to derive a summary score (range 0–100). A summary score above 80 signifies a "good diet," 51–80 "needs improvement," and < 51 "poor." We accounted for the complex survey design in both univariate and multivariate regressions. Multivariate regressions adjusted for demographic characteristics, including age, gender, race, income, and education.
RESULTS: Compared to food secure adults, food insecure adults were younger ($p < 0.001$), less well-educated ($p < 0.001$), more likely to have an annual household income < 130% of the federal poverty level ($p < 0.001$), and more likely to be a racial or ethnic minority ($p < 0.001$). Adults living in severely food insecure households reported diets significantly lower in whole grains (5.6 vs. 6.3, $p < 0.001$), fruits (2.6 vs. 3.6, $p < 0.001$), vegetables (5.2 vs. 6.0, $p = 0.002$), and dairy (4.3 vs. 5.3, $p = 0.002$) compared to adults living in food secure households. Dietary variety was also significantly lower among individuals in severely food insecure households (5.8 vs. 7.3, $p < 0.001$). The summary HEI score was 58.6 for adults living in severely food insecure households and 62.8 for adults living in food secure households ($p < 0.001$). 23% of adults in severely food insecure households and 18% of adults in food secure households had "poor" dietary intake ($p < 0.001$). Differences in whole grain intake, dietary variety, and the summary HEI score remained significant after adjusting for demographic characteristics.
CONCLUSIONS: Among adults with household incomes ≤300% of the federal poverty level, those living in food insecure households have less healthy intake of some basic dietary components. Clinicians should target their dietary counseling of patients living in food insecure households toward increasing dietary variety and intake of whole grains, fruits, vegetables, and dairy. They must also provide practical strategies to patients for achieving these recommendations within limited food budgets. Policy efforts to improve dietary intake should address food insecurity as a significant barrier.

ARE THERE RACIAL/ETHNIC DIFFERENCES IN LIFESTYLE MODIFICATION COUNSELING AMONG DIABETES PATIENTS? M.E. Peek[1]; H. Tang[1]; G.C. Alexander[1]; M.H. Chin[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 173835)*

BACKGROUND: Diabetes is more common and leads to worse outcomes among African-Americans than among their non-Hispanic white counterparts. Some of these disparities may be due to documented differences in the prevalence of obesity, maintenance of appropriate nutritional standards, and levels of physical activity. While research generally supports the efficacy of primary care-based counseling for lifestyle modification, little research has examined whether African-Americans with diabetes are less likely to receive provider counseling and referral for such services.
METHODS: We utilized data from the 2002–2004 National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS), which are multi-stage sampling surveys of U.S. physicians working in outpatient settings. The basic sampling unit is the patient visit and sample data are weighted to produce national estimates. We included all visits with an ICD-9 diagnosis of diabetes, and conducted a series of logistic regression models in which the primary dependent variable was referral/counseling for nutrition or exercise and the primary independent variable was race. We controlled for age, gender, insurance type, diabetes severity, co-morbid illnesses, primary doctor status, physician specialty type, geographic region and frequency of patient visits. STATA 9.0 was used for all analyses, and we defined statistical significance as a two-tailed $p < 0.05$.
RESULTS: There were 8429 patient visits in our study sample; nearly two-thirds were non-Hispanic whites (63.6%), 13.4% were African-American and 23.0% were categorized as "other." The majority of patient visits were by persons with private insurance or Medicare (86.0%), and the majority of care was delivered in a private practice setting (91.7%). In our study, 36.2% of patients received nutrition referrals or on-site counseling and 18.2% received counseling for exercise. In both unadjusted and adjusted analyses, race (African-American vs. white) was not an independent predictor of referral/counseling for either nutrition (OR: 1.05 [0.76, 1.47]) or exercise (OR: 0.80 [0.54, 1.19]) counseling. Variables that were significantly associated with the receipt of nutrition counseling included co-morbid illness (OR: 4.24 [2.16, 8.29; $p = 0.00$]), primary care specialty (OR: 1.95 [1.18, 3.24; $p = 0.01$]) and private insurance (OR for Medicare: 0.72 [0.55, 0.95; $p = 0.02$]). Variables that were significantly associated with the receipt of exercise counseling included younger age (OR for persons > 65 y/o: 0.54 [0.35, 0.85; $p = 0.01$]), co-morbid illness (OR: 4.84 [1.60, 14.6; $p = 0.04$]) and living in the western region (OR: 1.74 [1.04, 2.93; $p = 0.04$]).
CONCLUSIONS: The causes of health disparities among African-Americans with diabetes are complex and multi-factorial; elucidating contributing patient and physician factors are important areas of research. In this study, we found no racial differences in physician referral/counseling patterns for nutrition or exercise among patients with diabetes. Our study is limited, however, by relatively small subgroups of vulnerable patients, such as the uninsured and those receiving care at community health centers. As such, our results may not be generalizable to those African-Americans most at risk for worse diabetes outcomes, and future research should explore potential disparities in lifestyle modification referral/counseling among these subgroups.

ASSOCIATION BETWEEN LANGUAGE PROFICIENCY AND THE QUALITY OF PRIMARY CARE AMONG A NATIONAL SAMPLE OF INSURED LATINOS. J.R. Pippins[1]; M. Alegria[2]; J.S. Haas[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]Center for Multicultural Mental Health Research, Cambridge Health Alliance, Cambridge, MA. *(Tracking ID # 173308)*

BACKGROUND: Latinos experience substantial barriers to primary care. Limited English language proficiency may be a mechanism for deficiencies in the delivery of primary care to this population, even for Latinos with health coverage. The objective of this study is to determine the relationship between English language proficiency and the experience of primary care reported by a diverse sample of Latinos.
METHODS: Analysis of the National Latino and Asian American Study (NLAAS), a nationally representative, cross-sectional household survey administered in 2002–2003. This survey of 2,554 Latinos and 2,095 Asian Americans uses a stratified area probability sample design. Data were collected from 2002 to 2003, and Latino participants were questioned in either English or Spanish. The response rate for the Latino sample was 75.5%. Because our interest was specifically in the experience of Latinos, we restricted our analysis to individuals who self-identified as Latinos (n = 2,554). We asked only those subjects who reported a current source of insurance (n = 1,792) survey questions addressing the quality of primary care. Four outcome measures were selected to address different aspects of the quality of primary care: 1) not having a regular source of care or lacking continuity of care; 2) difficulty getting an appointment over the phone, 3) long waits (> 1 hour) in the waiting room, and 4) difficulty getting information or advice by phone.
RESULTS: English language proficiency was associated with the experience of primary care for three of the four outcomes. Insured Latinos with poor/fair English language proficiency were more likely than those with good/excellent proficiency to report not having a regular source of care or lacking continuity (odds ratio {OR} 1.80, 95% 95% confidence interval {CI} 1.33–2.43), long waits in waiting room (OR 2.06, CI 1.44–2.96), and difficulty getting information/advice by phone (OR 1.69, 95% CI 1.23–2.32). There were no differences reported by language proficiency in ability to get an appointment by phone.
CONCLUSIONS: Low English language proficiency is associated with worse reports of access and continuity in primary care. As Latinos are the largest and fastest growing minority group in the US, these results suggest that interventions to address limited English proficiency may be important to reducing disparities in the quality of primary care.

ASSOCIATION BETWEEN OUTDOOR ADVERSTISEMENTS AND WEIGHT-RELATED DISPARITIES IN NEW YORK CITY. R.V. Brown[1]; A.K. Yancey[2]; J. Williams[3]; B. Cole[2]; W. Mccarthy[2]; S.A. Grier[4]; A. Hillier[4]. [1]New York University, New York, NY; [2]University of California, Los Angeles, Los Angeles, CA; [3]University of Texas at Austin, Austin, TX; [4]University of Pennsylvania, Philadelphia, PA. *(Tracking ID # 173847)*

BACKGROUND: The prevalence of obesity in the U.S. continues to increase, disproportionately affecting Hispanic, Black, and poor communities. Commercial advertising impacts our food and behavior choices. We sought to describe and compare the prevalence and content of outdoor advertisements in urban areas to determine if differences in such ads might be linked to rates of obesity.
METHODS: We conducted a multi-site observational study to assess frequency and content of ads promoting food, beverage, and physical activity. Census data were used to identify pairs of zip codes: a high and low median income comprised of at least 50% of each race (White, Black, or Latino). Observers recorded content and location of all outdoor ads including billboards, bus or phone shelter ads, subway exit ads, and some store window ads. We photographed ads felt to convey a weight-related theme, including food, beverages, alcohol, physical activity (including sports clothing and apparel), and sedentary activities such as television or movies. We then conducted X2 analyses to compare high and low income data within the same race category as well as between ads from minority and White zip codes of the same income category. The data were then linked to the New York City Community Health Study.
RESULTS: Results are presented from the New York City site (Table 1). The percentage of food ads in the high income white neighborhood was highest, but there were proportionately more ads for healthy prepared food. Over 1/3 of the ads in the high income Black zip code were for alcohol, and there were no ads for food in either Black neighborhood. There were relatively fewer ads promoting physical activity in the Black and Hispanic zip codes.
CONCLUSIONS: Outdoor media in New York City varies based on race and income of neighborhoods. The absence of food ads in either Black neighborhood reflects a lack of emphasis on healthy eating. Combined with the large proportion of alcohol ads, there is an overall unhealthy message. This disparity in the content of ads based on race and income suggests that consumer choice may be a biased concept. Future research should focus on understanding influences of the media on behavior.

% Ads by Race and Median Income

AdContent	Total	Lo $ Black	Lo $ Hispanic	Lo $ White	Hi $ Black	Hi $ Hispanic	Hi $ White
Total#Ads	685	65	66	99	27	174	254
Food	88	0**	3	6.1*	0**	3.4**	29.1
Alcohol	131	21.5	15.2*	13.1	37**	28.2**	13.8
PhysicalActivity	27	1.5	4.6	3	0	1.2**	7.5
TV/Movies	71	3.1**	9.1	13.1	11.1	4.6**	15.4
%ObesityNYC	20	27	54	20	24	18	8

*$p < .05$ compared to same race zip code
**$p < .05$ compared to same income White zip code

BARRIERS TO SCREENING COLONOSCOPY IN LATINO AND WHITE NON-LATINO PATIENTS IN AN URBAN COMMUNITY HEALTH CENTER. S. Percac-Lima[1]; A. Peters-Lewis[2]; S.J. Atlas[2]; J.M. Richter[2]; J.R. Betancourt[2]; M. Janairo[2]; A.R. Green[2]. [1]Massachusetts General Hospital, Chelsea, MA; [2]Massachusetts General Hospital, Boston, MA. *(Tracking ID # 172896)*

BACKGROUND: Colorectal cancer (CRC) is the second leading cause of cancer death in the United States. Despite evidence that reductions in CRC morbidity and mortality can be achieved through early detection and treatment, CRC screening rates are relatively low, particularly for racial and ethnic minorities. For Latinos, lower CRC screening rates may be responsible for their later stage of disease at presentation and poorer prognosis than White non-Latinos. The objective of this study was to identify patients' barriers to CRC screening particularly colonoscopy in Latino and White non-Latino patients who either had a colonoscopy or were eligible to have one but had not, in a low-income urban community health center.
METHODS: We performed a qualitative, descriptive interview study at an academic hospital-affiliated urban community health center that serves predominately minority and low-income patients. A bilingual research assistant conducted semi-structured one-on-one interviews with patients 53 to 70 years old that spoke English or Spanish using open-ended questions to explore their knowledge, beliefs, experience with, or reasons for not having a screening colonoscopy. Interviews were tape-recorded, transcribed and translated. We performed content analysis of the transcripts using established qualitative techniques.
RESULTS: We collected data until saturation was achieved and no new themes emerged. Of forty participants recruited, 57% were women, 55% Latino, 20% had private health insurance and 40% had a prior colonoscopy. We identified wide range of barriers and categorized them into 5 major themes: (1) System Barriers were most commonly reported and included problems with scheduling, and financial and transportation impediments; (2) Fear - the second most commonly mentioned barrier included fear of pain/complications of the colonoscopy, fear of diagnosis/cancer; (3) Perception of Others - refers to experience of friends/family members influencing participants' decision to have or not have a colonoscopy; (4) Lack of knowledge/ Provider recommendation - two patients had not heard of colonoscopy as a screening test for colon cancer, a few patients did not understand the preparation instructions or had not been referred for colonoscopy; (5) Lack of Desire/Motivation - two patients cited ' laziness' and 'procrastination' as key barriers. There was no obvious difference in barriers to screening colonoscopy identified in Latino and White non-Latino participants. Most of the Latino male participants that did not have colonoscopy, provided brief (yes/no) responses to many of the interview questions.
CONCLUSIONS: System barriers and fear were the major barriers to screening colonoscopy identified in both Latino and White non-Latino low-income patients. Other barriers came up less commonly in our sample. A thorough understanding of barriers to screening is needed to create potential interventions to increase the rate of screening colonoscopy and eliminate racial/ethnic disparities. Based upon these findings, interventions to address identified barriers could include better education and emotional support, help with scheduling, interpreting, arranging transportation/accompanying patient to colonoscopy, and helping with insurance coverage/payment.

BEHAVIOR CHANGE USING LOW-LITERACY EDUCATIONAL MATERIALS AND BRIEF COUNSELING AMONG VULNERABLE PATIENTS WITH DIABETES. D.A. Dewalt[1]; A.S. Wallace[1]; H.K. Seligman[2]; D. Schillinger[2]; E.B. Shilliday[3]; C. Arnold[4]; T.C. Davis[4]. [1]University of North Carolina at Chapel Hill, Chapel Hill, NC; [2]University of California, San Francisco, San Francisco, CA; [3]University of North Carolina, Chapel Hill, NC; [4]Louisiana State University Medical Center at Shreveport, Shreveport, LA. *(Tracking ID # 172915)*

BACKGROUND: Diabetes (DM) self-management requires patient motivation and skill. Understanding diabetes-related information and sustaining behavior change is often overwhelming for patients, particularly those with limited literacy skills. We performed a feasibility study to determine whether a literacy-level appropriate DM self-management guide, combined with brief instruction on goal setting, assisted patients in making health-related behavior changes.
METHODS: We recruited a cohort of English- and Spanish-speaking patients with DM from three geographically diverse, academic internal medicine clinics and followed them for 12 weeks. Patients received an education guide developed by content experts, patients and providers. The guide was conceptualized as a product to support behavioral counseling. It was intended to be implemented in the context of periodic follow-up to assist patients in making incremental behavior changes. At the initial visit, patients were individually given the guide by a research assistant (RA). The RA briefly reviewed the Guide, pointing out pages that emphasized making small, incremental behavior changes (action plans). The RA then helped patients create an action plan. The RA contacted each patient by phone at 2 and 4 weeks after enrollment to determine whether they accurately recalled their behavior change action plans, whether they accomplished their behavior change goal, and to explore whether they had set additional behavior change goals. We assessed literacy using the short Test of Functional Health Literacy in Adults, and dichotomized scores as adequate vs. marginal/inadequate literacy.
RESULTS: To date, 210 patients have been enrolled. 64% are female, 57% African-American, and 22% Spanish-speaking Latinos. 52% are uninsured and 19% have Medicaid. Thirty-eight percent have limited literacy. 21 patients (10%) have been lost to follow-up; incomplete follow-up represents that patients are still enrolled in the study. Patients chose to develop most behavior change goals in the diet (47%) or exercise (42%) domains. Action plan examples ranged from making an appointment to see a dietitian to not eating chocolate more than once a week to walking 45 minutes six days per week. Of the 194 subjects who have completed the 2 week follow-up call, 88% remembered their behavior change goal and 74% of them achieved their goal completely and/or sustained the behavior change. At the 4 week follow-up call (n = 162), 92% of participants remembered their goal and 74% reported they achieved it completely and/or sustained the behavior change. At the 12 week exit interview (n = 50), 80% remembered their goal and 67% reported achieving it and/or sustaining behavior change. No statistically significant relationships were found between patient literacy and goal achievement.
CONCLUSIONS: This study's preliminary findings demonstrate that education materials, combined with brief, focused goal setting follow-up, may foster high rates of DM-related behavior change. The ability of patients to recall and sustain their behavioral goals appears stable over time. These preliminary results suggest that brief behavior change counseling related to diabetes self-care is feasible, sustainable, and beneficial to those with limited literacy skills.

BURDEN AND PREDICTORS OF UNDETECTED EYE DISEASE IN MEXICAN-AMERICANS:THE LOS ANGELES LATINO EYE STUDY. R. Varma[1]; S.A. Mohanty[1]; J.Y. Deneen[1]; J. Wu[1]; S.P. Azen[1]. [1]University of Southern California, Los Angeles, CA. *(Tracking ID # 173954)*

BACKGROUND: Mexican-Americans have one of the highest prevalence of visual impairment in the US. Little is known about the prevalence and risk indicators of undetected eye disease (UED) among this group. Mexican-Americans have higher rates of co-morbidities (diabetes) associated with eye disease and encounter disproportionate barriers in accessing quality health care services, including lack of insurance and lower education, which may differentially influence the burden of UED. We sought to determine the burden of UED and what factors predict the risk of having UED among predominantly Mexican-Americans.
METHODS: We conducted a population-based, cross-sectional study of the Los Angeles Latino Eye Study (LALES) from 1999–2004. A detailed interview and eye examination were performed on eligible participants within six census tracts in Los Angeles, California. Participants included a convenience sample of 6,357 non-institutionalized Latinos, 95% of whom were of Mexican ancestry, aged 40 years and older. Our main outcome measure was the prevalence of UED (Diabetic retinopathy, glaucoma, lens opacity, age-related macular degeneration and uncorrected refractive error) among those with eye disease on the LALES examination and no reported history of that eye disease. We performed chi-square analyses to evaluate bivariate associations between risk indicators (i.e. sociodemographic and health characteristics) and any undetected eye disease. The relationship of undetected eye disease to that of these selected was explored using stepwise logistic regression analysis.
RESULTS: Among the 3,349 with any eye disease, 63% percent (2,095/3,349) were found to have UED. Important risk indicators of UED included having a history of diabetes (OR 3.3, 95% C.I. 2.6, 4.1), never having had an eye exam (OR 2.4, 95% C.I. 1.9, 3.1), older age (OR 4.7, [age 80 or older], 95% C.I. 2.4, 9.0), being uninsured (OR 1.6, 95% C.I. 1.3, 1.9), male gender (OR 1.7, 95% C.I. 1.4, 2.0), primary school or lower educational attainment (OR 1.4, 95% C.I. 1.1, 1.9), and having low acculturation scores (OR 1.3, 95% C.I. 1.0, 1.5).
CONCLUSIONS: The Los Angeles Latino Eye Study is the largest United States population-based survey to investigate visual impairment and the second to do so in a Latino population. Our data confirm that approximately two-thirds of a large sample of Latinos of primarily Mexican ancestry aged 40 and older had undetected age-related eye disease. The risk indicators of undetected eye disease underscore the importance of access to care measures (i.e. uninsurance), health behaviors (i.e. never having had an eye exam), acculturation, and medical comorbidities. Targeted interventions aimed at improving detection of eye disease may decrease the burden of visual impairment in this high-risk minority population.

CAN WE ASSSESS LIFETIME SUBSTANCE USE BY TELEPHONE IN LESS THAN 10 MINUTES? A CAUTIONARY FINDING FROM THE CARDIA STUDY. S.G. Kertesz[1]; M.J. Pletcher[2]; S. Samples[1]; J.A. Tucker[1]; C. Balentine[1]; J. Schumacher[1]. [1]University of Alabama at Birmingham, Birmingham, AL; [2]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172812)*

BACKGROUND: Longitudinal data regarding the health outcomes of substance use in the general population can be difficult to acquire, given the time and cost of establishing epidemiologic cohorts de novo. Retrospective telephone surveys of substance use may permit the use of cohorts originally developed for other research goals, but feasibility and response errors (e.g. recanting of previous reports of use) are potential limitations. We adapted the World Health Organization's Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) to assess the feasibility of telephone administration and the degree of concordance between participants' prospective and retrospective self-reports of substance use over a 20-year follow-up interval.
METHODS: Participants in a community-based cohort followed prospectively since 1985 in the Coronary Artery Risk Development in Young Adults (CARDIA) study (n = 20, 60% Black, 40% Male) were administered a telephone version of the ASSIST that assessed use/misuse of illicit drugs, alcohol and tobacco. We recorded acceptability of the survey, and discrepancies between prospective (years 0, 2, 5, 10, 15 and 20) and retrospective self-reports of (a) substance use, and (b) alcohol misuse, as indicated by reports of cutting down or stopping drinking and by reports of any of 8 potential alcohol problem indicators in the telephone survey.
RESULTS: Repondents reported the survey (M duration = 9 minutes, SD = 2.8) was without discomfort (19/20), understandable (19/20), and that they did not censor responses due to privacy concerns (20/20). They reported lifetime use of tobacco (12/20), alcohol (19/20), marijuana (9/20), cocaine (3/20), opiates (2/20) and illicit drugs

(combined, 12/20). As shown below, agreements between retrospective and prospective reports of use were high for commonly used substance, but were lower for less commonly used substances. Recanting (past positive, present negative) and confession (past negative, present positive) were equally common discrepant reporting patterns. However, of 9 participants who had reported cutting down drinking in CARDIA's prospective surveys, only 1 gave the same report on the retrospective phone survey. Agreement was enhanced by broadening the definition of alcohol misuse to include any of 8 alcohol problem indicators.

Table: Discrepancies Between Prospective Self-Report of Substance Use and Retrospective Self-Report on Telephone Interview, Year 20

	Substance Use (Ever)					Alcohol Problem	
Self-report concordance	Alcohol	Marijuana	Tobacco	Cocaine	Any Illicit Drug	Ever Cut Down	Any Alcohol Problem
Consistently Positive	19	9	9	2	10	0	3
Consistently Negative	1	9	8	15	7	10	9
"Recant" (1)	0	2	0	2	1	9	6
"Confession" (2)	0	0	3	1	2	1	2
Kappa	1	0.48	0.71	0.48	0.69	0	0.16

(1) Recant = reported use in prospective data, then denied on Year 20 telephone survey.
(2) Confession = denied in prospective data, with positive self-report on Year 20 survey.

CONCLUSIONS: A brief telephone substance abuse survey proved both feasible and acceptable. While prospective and retrospective reports of substance use tended to agree, retrospective reports of alcohol misuse involved some under-reporting. Telephone surveys may be a useful tool to advance epidemiologic research using existing data sets, but inferences regarding past problem substance use require caution.

CROSSTALK: INFLUENCE OF LANGUAGE BARRIERS ON OUTCOMES OF HOSPITAL CARE FOR GENERAL MEDICINE INPATIENTS. L.S. Karliner[1]; S. Kim[1]; D. Meltzer[2]; A.D. Auerbach[1]. [1]University of California, San Francisco, San Francisco, CA; [2]University of Chicago, Chicago, IL. *(Tracking ID # 173757)*

BACKGROUND: A large body of outpatient-focused work suggests that limited English proficiency patients often receive lower quality and less efficient care, but few studies have examined the inpatient setting. Our study's aim was to examine how patient's primary language influenced hospital costs, length of stay (LOS), and 30-day readmission risk.
METHODS: We studied care of patients 18 years old admitted to the University of California San Francisco between 7/1/2001–6/30/2003, using administrative data from our site gathered as part of the Multicenter Hospitalist trial (MCH), and data regarding patients' self-report of primary language obtained from hospital registration databases. The large number of individual languages were aggregated into 4 categories :1) English 2) Asian (composed of 12 separate languages), 3) Russian, 4) Spanish, and 5) Other (composed of 10 separate categories). This merged dataset was used to perform logistic and linear models adjusting for patient age, gender, ethnicity, insurance status, admission to the ICU, a Charlson Comorbidity Index calculated using administrative data (CCI), admission diagnosis, and attending physician (hospitalist/ non-hospitalist). These models were used first to understand differences between English and non-English speakers (using an English/Non-English predictor), then to understand associations between English speakers and all non-English language categories and our key outcomes. Finally, we also examined how ethnicity and primary language influenced each other and our primary outcomes.
RESULTS: 7,360 patients were admitted during the study period. Mean age was 61 years (s.d. 20); 3,728 (51%) were female. The majority (5,968 (81%)) spoke English; 693 (9%) spoke Asian languages, 290 (4%) Russian, 268 (4%) Spanish, and 123 (2%) 'Other'. Forty-six percent were White, 18% African American, 17% Asian, 7% Latino and 12% 'Other' ethnicity. In multivariable models using the English vs. non-English predictor variable, non-English speakers and English speakers had statistically similar LOS and cost; however, non-English speakers had a higher odds of readmission by 30 days (OR 1.3; 95% CI 1.0–1.6). In models employing a disaggregated non-English category variable, we again saw no significant differences between English and non-English speakers in terms of LOS or cost. However, compared to English speakers, Spanish and Asian language speakers had increased odds of being readmitted at 30 days (OR 4.1; 95% CI 2.7–6.5 and OR 1.5; 95% CI 1.1–2.0 respectively), while Russian speakers had a lower odds (OR 0.6; 95% CI 0.4–0.9). When comparing within ethnic groups, both Spanish speakers and Asian language speakers had increased odds of readmission at 30 days compared to their English speaking Latino or Asian counterparts (Spanish speaking OR 7.0; 95% CI 3.0–16.0; Asian language OR 1.6; 95%CI 1.1–2.3).
CONCLUSIONS: A non-English primary language did not influence LOS or cost of hospitalization in our study, but was associated with higher risk for readmission among Latinos and Asians, and lower risk among Russian speakers - even after accounting for available socioeconomic variables, ethnicity and comorbidity. These results suggest that post-discharge outcomes differ for distinct minority language groups, perhaps related to poor communication at the time of discharge, or variable access to home/social supports.

DELAYS IN FOLLOW-UP AFTER ABNORMAL CERVICAL CANCER SCREENING AMONG INNER CITY MINORITY WOMEN. K.E. Lipstreuer[1]; S.M. Bak[2]; M. Santana[2]; S. Pavel[2]; S.M. Tringale[3]; K.M. Freund[4]; T.A. Battaglia[4]. [1]Boston Medical Center/Boston University/Boston VA Health System, Boston, MA; [2]Boston University, Boston, MA; [3]Boston University, Dorchester, MA; [4]Boston Medical Center/ Boston University, Boston, MA. *(Tracking ID # 172810)*

BACKGROUND: Low income and racial/ethnic minority women continue to suffer higher incidence and mortality from cervical cancer, partially due to delays in timely diagnosis and treatment. We evaluated follow-up after abnormal Pap smears among a diverse population seeking care at inner-city community health centers to inform the design of an intervention.
METHODS: A retrospective chart review was conducted of all women with abnormal Pap smear results at two inner city community health centers between January 2004 and December 2005. After obtaining IRB approval, clinical and demographic information was abstracted from the electronic medical record. Outcomes included: 1) diagnostic resolution (yes/no) = definitive tissue diagnosis obtained or clinical determination that no further evaluation was required, 2) timely resolution (yes/no) = resolution achieved within 120 days of index abnormality. Of those women with cervical intraepithelial neoplasia (CIN) 2 or 3 on diagnostic biopsy, we also evaluated receipt of treatment (yes/no) and time to treatment (number of days).
RESULTS: Preliminary analyses examined 263 cases (96 (37%) ASCUS with HPV + testing; 142 (54%) LGSIL; 25 (10%) HGSIL): 3% White, 53% Black, 35% Latina, 8% other; median age 25 (lower quartile 22-upper quartile 32) with 80% ages 18–35, 16% 36–55 and 4% over 55; 77% spoke English; 85% were single; 91% had a primary care provider; 19% had no insurance, 58% had public insurance and 23% had private insurance. Overall, 82% of women reached diagnostic resolution of their cervical abnormality, however only 48% had timely resolution. We found race and language to be associated with both resolution and timely resolution. Blacks, compared with other races, were least likely to reach resolution (78% vs. 86%, $p = 0.08$), and also least likely to have timely resolution (39% vs. 59%, $p = 0.0012$). Spanish speakers were more likely to have resolution (95% vs. 80% English, $p = 0.03$) and they were also more likely to have timely resolution (72% vs. 41% English, $p = 0.0004$). We found no association between resolution or timely resolution and the following variables: age, marital status, insurance or primary care provider. Eighteen women had CIN 2 or 3 at diagnosis, of those only 55% received treatment. Median time to treatment was 186 days (lower quartile120-upperquartile 327) from index abnormal Pap smear.
CONCLUSIONS: Among a cohort of racial/ethnic minority women participating in cervical cancer screening at inner-city community health centers, there are low rates of timely follow up and long delays to receiving treatment. Interventions are needed to prevent delays in cervical cancer diagnoses and to help decrease delays in treatment in these high-risk populations.

DO MINORITY-SERVING PHYSICIANS HAVE COMPARABLE RATES OF USE OF ELECTRONIC HEALTH RECORDS. A.K. Jha[1]; D.W. Bates[2]; C. Jenter[3]; J. Orav[4]; J. Zheng[5]; S.R. Simon[1]. [1]Harvard University, Boston, MA; [2]Brigham and Women's Hospital, Watertown, MA; [3]Brigham and Women's Hospital, Wellesley, MA; [4]Brigham and Women's Hospital, Boston, MA; [5]Department of Health Policy and Management, Harvard School of Public Health, Boston, MA. *(Tracking ID # 172936)*

BACKGROUND: Racial differences in health care are widely recognized, although we know relatively little about why these differences exist. Most minorities receive care from a small number of physicians and data suggest that minority-serving physicians may have fewer resources to provide high quality care. Given concerns that efforts to improve quality using tools such as electronic health records (EHR) could increase the digital divide, we sought to determine whether minority-serving physicians in Massachusetts use EHR at the same rate as non-minority serving physicians.
METHODS: We used a stratified random sampling technique to survey physicians in Massachusetts about their use of EHRs, their perceived barriers to EHR use, and their perceptions about the impact of EHR use on clinical practice. We asked physicians to report the racial and ethnic composition of their patient panel and we aggregated the percentage of under-served minorities (Hispanics and non-Hispanic blacks) for each practice. We further collected data on practice characteristics including location, number of physicians in the practice and academic affiliation. We stratified each practice by their composition of minority patients: low minority (< 10%), moderate minority (10% to 39%) or high minority (40%).
RESULTS: Of the 1,885 physicians surveyed, we received 1,345 completed surveys for a response rate of 71%. A total of 36% of practices were classified as having a low minority panel, 48% had a medium minority panel, and 16% had a high minority panel. High-minority practices were more often hospital-based (15% versus 6%, $p = 0.006$), had seven or more physicians in the practice (10% versus 4%, $p < 0.001$), and were affiliated with a teaching hospital (41% versus 25%, $p < 0.001$) compared to low minority practices. When we adjusted for baseline differences in practice characteristics, we found that high-minority practices and low-minority practices had similar rates of EHR adoption (27.9% versus 21.8%, $p = 0.39$). High-minority practices were at least equally likely as low-minority practices to have each of the key EHR functionalities including electronic-prescribing (25.8% versus 18.8%, $p = 0.40$). Among non-users of EHRs, high-minority practices identified financial barriers at comparable rates to low-minority practices (80.2% versus 84.0%, $p = 0.49$) and had similar plans to adopt EHR over the upcoming 12 months (18% versus 12%, $p = 0.35$). Among EHR users, high-minority practices had similar perceptions of EHR benefit of quality, costs, and communication with patients.

CONCLUSIONS: In a representative survey of Massachusetts physicians, practices with a high percentage of minority patients have comparable levels of EHR use, identify similar barriers to EHR adoption and report similar benefits from EHR use. While Massachusetts may not be representative of other states, it is diverse, and we found no evidence that minority-serving physicians are being left behind in the march towards the digital age.

DOES TRUST IN PHYSICIANS EXPLAIN RACIAL DISPARITIES IN HIV CARE?. S. Saha[1]; M.C. Beach[2]; E.A. Jacobs[3]; R.D. Moore[2]. [1]Portland VA Medical Center, Portland, OR; [2]Johns Hopkins University, Baltimore, MD; [3]Rush University Medical Center, Chicago, IL. *(Tracking ID # 173792)*

BACKGROUND: Distrust among African Americans is often invoked as a possible explanation for racial disparities in health care, particularly in the realm of HIV/AIDS, where conspiracy theories about the origins of the disease and the drugs used to treat it are prevalent in some African American communities. Few studies, however, have examined the role of distrust in explaining disparities in HIV care. We sought to determine whether African American and white patients express different levels of trust in their HIV care providers, and whether differences in trust account for racial disparities in receipt of highly active antiretroviral therapy (HAART), adherence to HAART, or viral suppression.
METHODS: We surveyed patients at a single, university HIV clinic, using an audio computer-assisted self-interview. Patients reported trust in their HIV care provider using a single item (0–10 scale); their own race and other demographic information; whether they were on HAART (confirmed by chart review); and their adherence to HAART (self-reported 100% adherence over previous 3 days). Serum HIV-1 RNA less than 400 copies/ml, determined within 4 weeks of the survey, was considered to indicate viral suppression. We used logistic regression to test associations of race with trust (dichotomized, 10 vs. <10), being on HAART, adherence, and viral suppression, after adjusting for age, sex, injection drug use, and sexual orientation. We then adjusted for patient-provider communication (5-item scale), to determine the role of this variable in explaining racial differences. Finally, we added trust to each model, to examine its role in explaining racial differences in HIV care and outcomes.
RESULTS: Among 1223 patients, 1050 (86%) were African American and 177 (14%) were white. Fewer African Americans than whites gave their providers the highest rating of 10 on our trust scale (64% vs. 73%, $p=.02$). This association remained significant after adjusting for age, sex, history of injection drug use, and sexual orientation (Table). African Americans reported better communication with their providers, and adjusting for communication accordingly made the association between race and trust slightly more pronounced. African Americans were less likely than whites to be on HAART, to adhere to HAART, and to achieve viral suppression, though not all of these findings were statistically significant. Accounting for trust did not explain any of these disparities.
CONCLUSIONS: Among patients receiving care at the same clinic site, African Americans expressed lower levels of trust in their providers than white patients did. However, this difference in trust did not help explain racial disparities in HIV care and outcomes.

Odds Ratios (95% CI) of Maximal Trust in Provider and HIV Care and Outcomes Among African Americans vs. Whites

	Trust (N=1223)	HAART (N=1223)	Adherence (N=884)*	Viral suppression (N=462)*
Unadjusted	.67 (.47–.96)	.60 (.41–.89)	.72 (.42–1.22)	.63 (.33–1.23)
1. Baseline model	.69 (.48–.99)	.71 (.47–1.07)	.70 (.40–1.22)	.56 (.28–1.13)
2. Model 1 + communication	.64 (.43–.94)	.71 (.47–1.07)	.70 (.40–1.23)	.55 (.27–1.11)
3. Model 2 + trust	-	.70 (.47–1.05)	.74 (.42–1.30)	.54 (.27–1.10)

**Among those on HAART*

EFFECT OF THE RE-ENGINEERED DISCHARGE PROGRAM ON SELF-ASSESSED READINESS FOR DISCHARGE AFTER HOSPITALIZATION FOR PATIENTS WITH LIMITED HEALTH LITERACY. M. Paasche-Orlow[1]; V. Chetty[1]; J. O'Donnell[1]; D. Anthony[2]; A. Johnson[1]; J. Greenwald[1]; C. Manasseh[1]; G. Burniske[1]; K. Casey[1]; B. Jack[1]. [1]Boston University, Boston, MA; [2]Brown University, Providence, RI. *(Tracking ID # 172909)*

BACKGROUND: Transitions in care have been identified as episodes of increased risk for patient safety. One source of errors during times of transition relates to clinicians' failure to communicate self-care instructions effectively to patients. We hypothesized that information exchange at the time of discharge from the hospital would be particularly difficult for patients with limited health literacy.
METHODS: Ad interim analysis of 277 subjects in a randomized controlled trial of English-speaking patients admitted to a general medical service at Boston Medical Center to evaluate the Re-Engineered Discharge program. The intervention consists of 10 components provided by a "Discharge Advocate" and reinforced by a telephone call 2–4 days after discharge by a clinical pharmacist. One month after discharge, patients were asked in a phone interview: 1) "How prepared did you feel to go home when you left the hospital?"; 2) "How well did you understand your appointments when you left the hospital?"; 3) "How well did you understand your medications when you left the hospital?"; and 4) "How well did you understand your diagnosis when you left the hospital?" A 5-point Likert scale (extremely well, very well, moderately, a little bit, and not at all) was used and responses were divided at extremely and very well versus other. Literacy was tested using the 66-word Rapid Evaluation of Adult Literacy in Medicine to divide subjects into limited (8th grade and below) versus higher literacy (9th grade and above). The distribution of baseline variables (gender, age, race, education, income, insurance, employment, having a primary care provider, ever homeless in past three months, hospital admission in previous 6 months, Short Form-12 Health Survey) according to randomization group and literacy group were evaluated with Chi-square tests. Unadjusted and adjusted logistic regression models were fit for each of the four questions and odds ratios are presented.
RESULTS: The population in this study was: 53% Female, Mean (SD) age of 51(15), 50% Black, 14% private insurance, 65% High School Graduate or less. Randomization provided a well balanced sample. Subjects with limited literacy (53%) were less likely to have a high school diploma ($p<0.0001$), and more likely to be Black ($p<0.0001$), unemployed ($p=0.01$), and have government issued insurance ($p<0.01$) than those with higher literacy. Subjects with limited literacy reported lower ratings on each of the four questions; however, these differences were only significant in the control group. All results were similar in adjusted analyses. For example, in an analysis adjusted for race, education, employment, and insurance, control group subjects with higher literacy were more likely than control group subjects with limited literacy to indicate that they understood their medications [OR = 10.52 (1.43, 77.20)] but this was not true in the intervention group [OR = 1.40 (0.29, 6.77)].
CONCLUSIONS: The Re-Engineered Discharge program improves patients' self-assessed readiness for discharge, especially for those with limited health literacy.

ETHNIC DIFFERENCES IN MEDICATION NON-ADHERENCE DUE TO COST AMONG PATIENTS WITH DIABETES. Q. Ngo-Metzger[1]; D. Sorkin[1]; K. August[1]; S. Greenfield[1]; S. Kaplan[1]. [1]University of California, Irvine, Irvine, CA. *(Tracking ID # 172870)*

BACKGROUND: Previous research has shown that high medication cost can lead to medication non-adherence among patients with chronic diseases. It is not known whether this finding is true among racial/ethnically diverse patients. We examined ethnic differences in medication non-adherence due to cost among patients with Type 2 diabetes, and studied whether these differences are associated with higher hemoglobin A1c.
METHODS: We conducted a cross-sectional study of patients seen at 4 clinics in Southern California. Medication non-adherence due to cost was measured by a 5-item scale (cronbach's alpha = 0.69) that asked questions including how often patients did not fill a prescription because it was too expensive or skipped doses to make the prescription last longer. Response categories were: often/ sometimes vs. never. Glucose control was measured by serum hemoglobin A1c at the time of the survey. We conducted analyses using chi-square and multivariate logistic regression.
RESULTS: Of the 311 patients surveyed (response rate 83.5%), 29% were non-Hispanic whites, 22% were Hispanics, and 49% were Asians. Mean age was 63.4 (SD 11.8). Hispanics and Asians were more likely to have lower education (81.4% and 72.4%) compared to whites (20.8%, $p<0.001$). They were also more likely to have an annual income less than $20,000 (Hispanics 74.5%, Asians 77.4% compared to whites 16.1%, $p<0.001$). Hispanics (54.8%) and Asians (32.3%) reported higher medication non-adherence due to cost compared to whites (19.8%), $p<0.001$. In multivariate logistic regression, patients who reported non-adherence due to cost were twice as likely to have hemoglobin A1c greater than or equal to 8% (Odds Ratio 2.42, 95% confidence intervals 1.03, 5.68) compared to those who were adherent, adjusting for age, gender and race/ethnicity.
CONCLUSIONS: Hispanic and Asian patients with Type 2 diabetes are more likely to report medication non-adherence due to cost compared to white patients. Non-adherence due to cost is associated with poorly-controlled diabetes. Finding ways to decrease medication cost is an important way to improve diabetes care for all patients, especialy racial/ethnic minorities who have low income.

EVALUATION OF RISK FACTORS FOR HOSPITALIZATION IN HIV INFECTED INDIVIDUALS. S. Singh[1]; J. Cohen[1]; R. Samuel[1]; P. Axelrod[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173265)*

BACKGROUND: Highly active antiretroviral therapy has significantly decreased mortality and hospitalization rates for patients with HIV. Studies have shown that the number of outpatient visits inversely correlates with hospitalizations and emergency department visits in people with AIDS. Reported barriers to optimal outpatient care include: substance abuse, mental illness, neurological disorders, poverty and cultural barriers. Temple University Hospital is an urban tertiary care institution serving an inner city population with many of these risk factors. We tried to assess the risk of hospitalization in our HIV population. In 2005 there were 985 patients (82/month) admitted to our hospital with a diagnosis of HIV. We used outpatients in our HIV clinic as our control group.
METHODS: Patients in both the inpatient and outpatient settings were interviewed via a questionnaire that took about fifteen minutes to administer. We asked questions regarding risk factors for non-compliance (eg. transportation, housing, drug abuse, mental illness.) In the inpatient setting, HIV positive patients were identified through "study information cards" given to them by residents and attendings on the inpatient services. These patients

had to initiate contact with the study team in order for the interview process to take place. Controls were outpatients who were in care at Temple HIV clinic for at least one year. The controls were chosen in a continuous manner until they reached the number of cases.
RESULTS: Seventeen inpatients and seventeen outpatients were enrolled in the study. All thirty-four patients completed the study. We found that the inpatients were younger (median case 41 and control 52, $p = 0.01$); had a greater incidence of being out of care at any point (OR 6.0, CI 1.1–33.5, $p = 0.03$); a greater incidence of stopping their medications (OR 9.0, CI 1.5–70, $p = 0.01$) and a greater risk of having an opportunistic infection at anytime (OR 4.4, CI 1.1–19.6, $p = 0.04$). We found unstable housing as the major predictor of hospitalization for HIV patients (OR 14.2, CI 1.4–669, $p = 0.009$). Other related significant differences included: duration in the current housing (median of 0.16 years in case versus 4 years in control, $p = 0.06$) and numbers if residences changed in past year (mean 1.5 in case versus 1.2 in control $p = 0.02$). The other significant predictor of hospitalization was active cocaine use (OR 11.2, CI 1.1–540, $p = 0.02$).
CONCLUSIONS: We found that unstable housing was the most significant contributing factor in precluding HIV infected patients to get optimal HIV care. Based on our results, we recommend an intensive multidisciplinary team consisting of case managers, social workers, and physicians that can focus on providing a sound social structure to these patients on the internal medicine services before they are discharged from the hospital.

EXPERIENCE OF RESPECT AND PAIN MANAGEMENT AMONG ADULT PATIENTS WITH SICKLE CELL DISEASE DURING VASO-OCCLUSIVE CRISIS. L. Lattimer[1]; S. Lanzkron[2]; P.S. Duggan[1]; C. Haywood[1]; N. Ratanawongsa[1]; S.M. Bediako[3]; P. Hill[1]; N.R. Powe[1]; M.C. Beach[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Johns Hopkins University School of Medicine, Baltimore, MD; [3]University of Maryland Baltimore County, Baltimore, MD. *(Tracking ID # 173562)*

BACKGROUND: Adults with sickle cell disease (SCD) have reported adversarial relationships with health professionals anecdotally and in qualitative studies, but there are little quantitative data. We sought to examine experiences of respect among patients with SCD seeking acute care for vaso-occlusive crisis (VOC), and to relate these experiences to patient reports of pain management quality.
METHODS: We surveyed adult patients with VOC upon discharge from the Emergency Department (ED) at an urban academic medical center. We measured patient experience of respect using items from the Interpersonal Processes of Care Instrument and summed responses to form a 'respect' scale from 0–100 (alpha 0.89). We measured patient reports of pain management quality by asking patients whether doctors and nurses brought them their pain medicines as soon as they needed them, changed their pain medicines if they were not working, and offered any strategies besides narcotics to deal with pain ('all' and 'most' of the time were considered favorable responses while 'some' or 'none' of the time were considered unfavorable). We used chi-squared tests and generalized estimating equations to account for multiple observations on individual patients in unadjusted and adjusted analyses controlling for potential confounders.
RESULTS: In 54 ED visits by 32 patients, patients generally reported low levels of respect and poor pain management. For example, a small proportion of patients reported ('all of the time') that doctors and nurses seemed to care about them as a person (19%), listened carefully to what they had to say (17%), and took their concerns seriously (13%). A substantial proportion reported ('all, 'most' or 'some of the time') that their doctors and nurses had a negative attitude towards them (63%), made them feel inferior (74%), made them feel as if they weren't welcome (65%) and behaved rudely towards them (50%). Patient experience of respect was not significantly related to patient age, sex, or employment status; however patients seen more frequently in the ED reported less respect (mean respect scores 74.1, 62.7, and 54.6 for patients seen < 3 times/year, 3–10 times/year, and > 10 times per year respectively, $p = 0.04$). Compared to patients who reported timely receipt of medication, patients who reported delays in receipt had lower respect scores (mean 71.9 vs. 53.9, $p < 0.001$). Similarly, compared to patients who reported changes in ineffective therapies, those who reported no change in ineffective medication had lower respect scores (65.6 vs. 53.7, $p = 0.04$). There were no differences in patient experience of respect for patients who had or had not been offered alternative strategies (besides narcotics) to deal with pain. Results were not changed after controlling for the frequency of painful crisis and accounting for multiple observations on a single patient.
CONCLUSIONS: SCD patients with VOC generally reported low levels of respect and poor pain management; the more frequent contact they had with the ED, the less they felt respected. Research is needed to determine the causes and consequences of, and to test interventions to improve, these poor experiences.

FACTORS ASSOCIATED WITH CERTIFICATION TO PRESCRIBE BUPRENORPHINE AMONG HIV PROVIDERS. R.J. Roose[1]; N.L. Sohler[1]; H.V. Kunins[1]; R.T. Elam[1]; C.O. Cunningham[1]. [1]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 173244)*

BACKGROUND: With the substantial overlapping prevalence of HIV and substance abuse, HIV providers are faced with new challenges and opportunities in providing quality care to complex patients. Traditionally, HIV and substance abuse treatment have occurred in separate parts of the health care system. Buprenorphine is a partial opioid agonist that can be used to treat opioid addiction in the primary care setting, giving providers the opportunity to unify their patients' HIV and substance abuse treatment. However, few physicians have become certified to prescribe buprenorphine. Little is known about barriers to prescribing buprenorphine and no studies have examined barriers experienced by HIV physicians, who may be particularly well suited to treat opioid addiction in the context of routine care. This study examined factors associated with certification to prescribe buprenorphine among HIV providers.
METHODS: Physicians attending International AIDS Society-USA conferences in six large U.S. cities in 2006 were anonymously surveyed using modified validated questionnaires. Questions included practice characteristics, barriers to treating opioid addiction, and experience with buprenorphine. The main outcome, certification to prescribe buprenorphine, was defined as having completed a certification training course, or having a DEA-"X" number to prescribe buprenorphine. We conducted bivariate analyses using chi-square and Mann-Whitney U tests, and multivariate analyses using logistic regression to examine factors associated with certification to prescribe buprenorphine.
RESULTS: Of the 420 physicians who completed the questionnaire (44.0% response rate), 375 who were licensed with complete data were included in this analysis. Most physicians were male (60.4%), non-Hispanic white (66.0%), infectious disease specialists (37.6%) or general internists (36.0%). The mean age was 47 years and the median duration providing HIV care was 14 years. Ninety-four physicians (25.1%) were certified to prescribe buprenorphine. The most common barriers reported were lack of knowledge about opioid addiction treatment (54.9%), lack of immediate access to consult with an addiction expert (42.9%), and inability to send difficult patients to a substance abuse treatment program (41.3%). In multivariate analysis, factors independently associated with certification were confidence in screening for or counseling about drug problems (AOR = 2.18, 95% CI = 1.13–4.21) and practicing in the New York City metropolitan area (AOR = 2.24, 95% CI = 1.31–3.85). The sole barrier negatively associated with certification was concern about no immediate access to consult with an addiction expert (AOR = 0.56, 95% CI = 0.32–0.97).
CONCLUSIONS: Despite the availability of buprenorphine for opioid addiction treatment, only one quarter of HIV providers were certified to prescribe it. Physician-level and system-level barriers were identified. Further investigation into how physician-level and system-level barriers can be overcome, and whether remedying these barriers will increase uptake of buprenorphine into traditional medical settings, is warranted.

FACTORS ASSOCIATED WITH DISCONTINUATION OF ANTIRETROVIRAL THERAPY IN HIV-INFECTED PATIENTS WITH ALCOHOL PROBLEMS. T.W. Kim[1]; A. Palepu[2]; D.M. Cheng[1]; H. Libman[3]; R. Saitz[1]; J. Samet[1]. [1]Boston University, Boston, MA; [2]University of British Columbia, Vancouver, British Columbia; [3]Harvard University, Boston, MA. *(Tracking ID # 173250)*

BACKGROUND: Although mortality rates among HIV-infected populations have declined with the advent of combination antiretroviral therapy (ART), patients with substance use disorders have benefited less from these therapies. While adherence to ART has been well studied, less is known about factors associated with discontinuation of antiretroviral therapy. The aim of this study is to investigate predictors of discontinuation of ART in HIV-infected patients with alcohol problems, focusing on their substance use and depressive symptoms.
METHODS: The study cohort ($n = 266$) was prospectively assessed with biannual standardized interviews between 2001–05. Four predictor variables (cocaine, heroin, heavy alcohol use and substantial depressive symptoms) were assessed six months prior to the outcome (ART discontinuation). Longitudinal logistic regression models examined the association between predictor variables and ART discontinuation adjusting for age, gender, race/ethnicity, homelessness, CD4, HIV RNA, and HIV Symptom Index.
RESULTS: Characteristics of the cohort ($n = 266$) were the following: male, 77%; black, 43%; homeless, 22%; median annual income, $7,500; cocaine use, 45%; heroin use, 20%; heavy alcohol use, 29%; and depressive symptoms (Centers for Epidemiologic Studies - Depression scale), 40%. Discontinuation occurred in 135 (18%) of the observations ($n = 743$). In bivariate analyses, cocaine use, heroin use, and depressive symptoms were significantly associated with ART discontinuation, but heavy alcohol use was not. In the multivariable model, substantial depressive symptoms (adjusted odds ratio [AOR] 1.66; 95% confidence interval [CI] (1.04, 2.65), but not cocaine (AOR 1.28; 95%CI 0.76, 2.16) or heroin use (AOR 1.27 95%CI 0.66, 2.44), remained significantly associated with ART discontinuation.
CONCLUSIONS: Among HIV-infected adults with alcohol problems, depressive symptoms, but not substance use, predicted subsequent ART discontinuation. Recognition and treatment of depressive symptoms in this population may result in better maintenance of ART and its associated clinical benefits.

FACTORS ASSOCIATED WITH HEPATITIS B SEROLOGIC TESTING AMONG KOREAN AMERICAN ADULTS. J.H. Choe[1]; L. Li[2]; H. Le[1]; J. Chong[1]; V.M. Taylor[1]. [1]University of Washington, Seattle, WA; [2]Fred Hutchinson Cancer Research Center, Seattle, WA. *(Tracking ID # 173953)*

BACKGROUND: Approximately one-quarter of patients with chronic hepatitis B viral (HBV) infection develop cirrhosis or hepatocellular carcinoma (HCC). These sequelae disproportionately affect Asian immigrants, who represent around half of chronic HBV patients in the United States. Identification of chronic viral carriers can potentially reduce the incidence and mortality of HCC and other HBV-associated sequelae. The purpose of our study was to examine factors associated with HBV serology testing among Korean Americans.
METHODS: Over a six-month period from 2005–06 we conducted a population-based survey focused upon hepatitis B and liver cancer. Participants were Korean adults aged 18–64 years old, from households randomly selected by surname from three counties in Western Washington with large populations of Koreans. Surveys were conducted in-person by trained bilingual/bicultural field interviewers. Survey

items included measures of health care access; sociodemographic factors including proxy measures of acculturation (e.g. proportion of life spent in the U.S.); and knowledge and belief questions regarding hepatitis B (e.g. understanding that hepatitis B can cause liver cancer). Our primary outcome measure was self-report of prior HBV serology testing. We used bivariate comparisons to identify significant sociodemographic, knowledge/beliefs, and health care factors associated with HBV testing.
RESULTS: The survey was completed by 466 Korean American adults. Although most had heard of hepatitis B (93%), less than half reported any past serology test for HBV (48%) or had previous HBV vaccinations (46%). In bivariate comparisons, the sociodemographic factors associated with having had past HBV testing ($p < 0.05$) included: current or previous marriage; and fewer number of years spent in the U.S. The health care access factors significantly associated with previous HBV testing included: having another serious chronic health condition; and having received past obstetric care in Korea. Participants who received recommendations for HBV testing from physicians or family members were significantly more likely to have had serologic testing. Participants who correctly understood that HBV causes cirrhosis or liver cancer were more likely to have had previous HBV testing ($p < 0.05$ for all associations presented here).
CONCLUSIONS: Serologic testing for HBV offers the opportunity for clinicians to identify patients who might benefit from timely initiation of antiviral therapies; to monitor the chronically infected for early development of HCC or cirrhosis; and to counsel lifestyle behavior changes (e.g. reduction of alcohol). Despite the high incidence of cirrhosis and HCC in this population, more than half of Korean American adults reported no history of HBV serology testing. Importantly, those Korean Americans who understood that chronic HBV could lead to cirrhosis or liver cancer were more likely to report previous HBV testing; those who had received recommendation for testing by their physicians and family members were also more likely to have completed HBV testing. As part of a comprehensive strategy to reduce the disproportionate burden of chronic hepatitis B and HCC, clinicians should consider routine HBV serologic testing for Korean adult patients and their families, and should consider offering HBV vaccination for those without evidence of immunity. Clinicians should emphasize the long-term consequences of chronic hepatitis B infection with their Korean patients.

GENDER DIFFERENCES IN TREATMENT OF PATIENTS WITH ACUTE CORONARY SYNDROMES: A FOCUS ON AFRICAN-AMERICAN POPULATION. S. Parashar[1]; M. Santra[2]; P. Agarwal[3]; I. Genao[4]; T.A. Jacobson[1]; N.K. Wenger[1]; V. Vaccarino[1]. [1]Emory University, Atlanta, GA; [2]Mount Sinai School of Medicine, New York, NY; [3]Brown University, Providence, RI; [4]Yale University, New Haven, CT. *(Tracking ID # 173479)*

BACKGROUND: Coronary artery disease (CAD) is the leading cause of mortality among men and women in US, and acute coronary syndromes (ACS) represent a large proportion of CAD events. Previous studies have shown that women with ACS are treated less aggressively than men. Most of these studies, however, have primarily involved patient samples undergoing invasive coronary procedures. Only a few have evaluated gender differences in the pharmacological treatment for ACS, and even fewer have have focused on African-American women, a patient group in which such disparities could be most marked. The purpose of this study was to examine gender differences in the receipt of initial pharmacological treatments according to national guidelines, in a predominantly African-American patient population admitted with suspected or con-firmed ACS.
METHODS: We conducted a retrospective chart review of 600 consecutive patients admitted to Grady Memorial Hospital, Atlanta, GA, with an admission diagnosis of acute myocardial infarction (AMI), unstable angina, rule-out AMI, and suspected unstable angina as defined by the American College of Cardiology Clinical Data Standards. The outcome variables were receipt of aspirin (ASA), beta-blockers (BB) and anti-thrombin therapy (ATT) (unfractionated heparin and low molecular weight heparin) within 24 hours of hospital arrival. Multiple logistic regression models were conducted to compare the receipt of each treatment between men and women after adjusting for age, race, smoking, family history of CAD, past medical history of hypertension, diabetes or hypercholesterolemia, systolic blood pressure on admission and cardiac enzymes within 24 hours of admission.
RESULTS: In the study period, 600 patients (268 men and 332 women) were enrolled. Approximately 85% of patients were African-American. Women were more likely than men to be older, and to have Medicare and Medicaid for insurance (all $p < 0.01$). Women also had more comorbid conditions as compared with men, including hypertension, higher body mass index, and prior history of AMI (all $p < 0.01$). However, women were as likely as men to have history of diabetes, hypercholesterolemia and family history of CAD. Overall, 89% of the patients received ASA, with similar frequency in men and women (90% men versus 88% women; $p = 0.44$), and 60% received BB, again with similar rate by gender (56% men versus 63% women; $p = 0.12$). Only 47% patients received ATT (46% men versus 48% women; $p = 0.67$). After adjusting for other factors, gender remained a non significant predictor for the receipt of ASA [odds ratio (OR) 0.81;95% CI 0.49–1.35], BB (OR 1.30; 95% CI 0.94–1.80) or ATT (OR 1.10; 95% CI 0.78–1.48).
CONCLUSIONS: In African-American patients with suspected or confirmed ACS, there were no gender differences in receipt of pharmacological agents within 24 hours of hospital arrival. Future studies are needed to confirm and examine the factors for the overall suboptimal usage of these interventions in African-American patient population.

GEOGRAPHICAL PROXIMITY TO A SAFETY NET CLINIC AS A PREDICTOR OF HEALTH CARE UTILIZATION AMONG THE UNINSURED IN CALIFORNIA. K.M. Cordasco[1]; M.S. Gatchell[1]; N.A. Ponce[1]. [1]University of California, Los Angeles, Los Angeles, CA. *(Tracking ID # 171923)*

BACKGROUND: Recent studies have suggested that living closer to a safety net clinic is associated with increased use of routine medical care and less use of emergency departments. This study assesses for this relationship among uninsured non-pregnant adults interviewed in the population-based 2003 California Health Interview Survey (CHIS).
METHODS: We compiled a list of, and census tract data for, all Federally-Qualified Health Centers (FQHCs), FQHC "look-alikes", Community Health Clinics, Free Clinics, Rural Health Clinics, and Indian Health Services Clinics in the State of California. Then, matching this list with individual census tracts in the 2003 CHIS, we assessed for individuals having a safety net clinic within their census tract of residence. Using logistic regression, we determined the significance and effect of having a safety net provider within respondents' census tract on 1) naming a usual source of care, 2) having any health care provider visit in the past 12 months, and 3) having an emergency department visit in the past 12 months. Random-effects modeling was used to account for clustering at the level of the census tract. Co-variates utilized included age, gender, self-perceived English proficiency, health status, income as a percentage of federal poverty level (FPL), and designation of community as rural, urban, second city, or suburban.
RESULTS: There were 3781 uninsured non-pregnant adults in our sample. 781 of these individuals lived in a census tract containing at least 1 safety net clinic. 50% were female, 70% had a high school diploma, 16% lived in a rural area, 64% reported an income less than 200% of the FPL, 64% were non-white, and 29% reported their health to be "fair" or "poor". Respondents with a safety net clinic within their census tract were significantly more likely to name a usual source of health care ($OR = 1.2$, $p = 0.04$) and report having had a health care provider visit in the past 12 months ($OR = 1.2$, $p = 0.02$). No significant relationship was seen for having an emergency department visit in the prior 12 months.
CONCLUSIONS: This study affirms a positive relationship between health care utilization and proximity to safety net providers among the uninsured. Possibly due to omitted variable bias and issues of potential endogeneity, we were unable, however, to show any association between proximity and emergency department visits. Additionally, this study is limited by using classification by census tract as a proxy for distance rather than a more sensitive measurement. However, this finding lends evidence that proximity of an uninsured person's residence to a safety net clinic is an important factor in access to care and should be considered in making decisions about the structure and financing of the medical safety net.

HAVE BLACKS AND WHITES EQUALLY BENEFITED FROM IMPROVEMENTS IN AMI MORTALITY? K. Volpp[1]; J. Zhu[2]; T. Konetzka[3]. [1]Philadelphia VA Medical Center, University of Pennsylvania School of Medicine, Wharton School, and Leonard Davis Institute of Health Economics, Philadelphia, PA; [2]University of Pennsylvania, Philadelphia, PA; [3]University of Chicago, Chicago, IL. *(Tracking ID # 173172)*

BACKGROUND: Mortality from acute myocardial infarction (AMI) improved substantially over the past two decades largely due to technological improvements. However, it remains unclear whether blacks and whites equally benefited from these improvements.
METHODS: This is an observational study of in-hospital mortality within 30 days of admission for patients admitted to hospitals in California with a principal diagnosis of AMI. The study sample included all unique patients ($n = 826{,}210$) admitted to acute-care hospitals in California from 1983 to 2001 with a principal diagnosis of AMI. We used OSHPD discharge data from 1983–2001, creating 3-year moving averages of mortality for each year to create more stable estimates (except for the two end years, where two adjacent years were pooled). Linear Probability models and logistic regressions were used separately to examine the probabilities of 30-day in-hospital death for blacks versus whites, adjusting for patient age, gender, type of AMI and comorbidities. All analyses were done separately for Medicare and non-Medicare patients.
RESULTS: Among Medicare patients, blacks had much lower mortality (15.7%) than whites (21.6%) in 1983. This difference persisted through 1986 and then gradually narrowed until 2001, as mortality for whites improved by more than 9 percentage points to 12.0% while for blacks it improved by only 4.6 percentage points to 11.1% (Figure 1). For non-Medicare patients, mortality between blacks and whites generally differed by less than 2 percentage point per year throughout the time period. Adjusted results largely confirmed the above trends. For Medicare patients, blacks were likely to have much lower mortality than whites from 1983 (3.7 percentage points, $OR = 0.75$, p-value < 0.0001) through 1986 (3.8 percentage points, $OR = 0.73$, p-value < 0.0001). The degree to which mortality was lower among blacks diminished in the following 15 years, with the probability of in-hospital death for blacks only 1.0 percentage point lower than whites around 1993 ($OR = 0.89$, p-value $= 0.03$) and not significantly different from 1994–2001 (p-values > 0.34). In comparison, for non-Medicare patients, the probability of in-hospital death for blacks was largely similar to that of whites over time, with statistically significant lower mortality for blacks reported only in 1986 (-1.2 percentage point, $OR = 0.84$, p-value $= 0.014$) and 1992–1995 (-0.8 to -1.0 percentage point, $OR = 0.81$ to 0.86, p-values $= 0.01$ to 0.05). These results on in-hospital mortality did not appear to be biased by differential changes in length of stay, as length of stay for whites and blacks tracked closely from 1983–2001.
CONCLUSIONS: Black AMI patients under Medicare experienced significantly lower mortality in the 1980s, an advantage that disappeared by 2001. Mortality rates for whites and blacks not covered by Medicare were generally statistically similar and improved at similar rates. Lower or similar mortality for black AMI patients suggests that hospital care may not be the best target for disparity reduction efforts;

however, the greater rate of improvement in mortality for white Medicare AMI patients is a concerning trend, suggesting that elderly whites are disproportionately benefiting from new life-saving technologies.

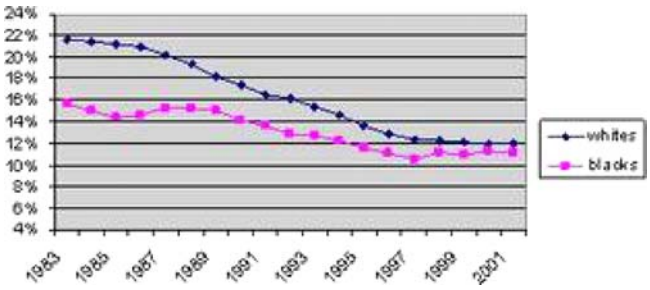


Figure 1: 30-day in-hospital mortality: Medicare, 3-year Averages

HIV TESTING IN ADULTS WITH ALCOHOL AND OTHER SUBSTANCE USE DISORDERS. N.M. Dookeran[1]; J. Burgess[2]; C. Bowman[3]; Y. Chen[3]; S. Asch[4]; A. Gifford[1]. [1]VA Bedford and Boston University, Bedford, MA; [2]VA Boston and Boston University, Boston, MA; [3]VA San Diego, San Diego, CA; [4]VA Greater Los Angeles, Los Angeles, CA. *(Tracking ID # 172631)*

BACKGROUND: HIV testing is recommended by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) in adults with alcohol and other substance use disorders because of increased HIV risk behaviors. We sought to determine the rates of HIV testing among adults with substance use disorders and whether type of substance use was associated with HIV testing in a national sample of adults receiving care in the Veterans Health Administration (VA).
METHODS: The VA National Patient Care Database was used to conduct a retrospective study of all adults with substance use disorders who used health care services within a one year period ending in May, 2005. Study subjects were those with any history of alcohol or illicit drug use (cocaine, opioid and/or amphetamine) disorders between 1999 and 2005 by International Classification of Diseases (ICD-9) codes. We determined whether HIV testing was performed at least once between 1999 and 2005. Subjects who already had HIV or AIDS by ICD-9 code (only 0.2% of sample) were excluded from base case analysis. Multivariate logistic regression was used to assess the association of HIV testing with type of substance use, adjusting for specific high-risk co-morbidities (hepatitis B, hepatitis C, sexually transmitted disease), as well as for patient demographics and use of different inpatient and outpatient health care services.
RESULTS: Only 18.8% of 370,294 adults with substance use disorders in the VA had been HIV tested within the period between 1999 and 2005. Among these, 56.8% had only alcohol use diagnoses, 3.8% had only illicit drug use diagnoses and 39.4% had both. Of the key clinical covariates, diagnosis of hepatitis C (21.7%) was much more common than that of hepatitis B (4.1%) or sexually transmitted disease (3.5%). After adjusting for all other covariates, those with hepatitis B (OR 1.46, 95% CI 1.41–1.52), hepatitis C (OR 2.15, 95% CI 2.10–2.19) and sexual transmitted disease (OR 2.01, 95% CI 1.94–2.10) were all more likely to have been tested for HIV compared to those without these respective diseases. Those with illicit drug use only (OR 1.48, 95% CI 1.41–1.56) and mixed alcohol/illicit drug use (OR 1.50, 95% CI 1.36–1.65) were also more likely to be tested for HIV than those with alcohol use alone.
CONCLUSIONS: HIV test performance is very low among adults with substance use disorders in the VA. Testing is more likely to be done in those with hepatitis B, C, or sexually transmitted disease ICD-9 codes. There is little evidence to suggest that NIAAA recommendations for HIV testing are being followed in adults with substance use disorders, especially among those with alcohol use disorders.

HOSPITAL MORTALITY OF RURAL RESIDENTS: DOES HOSPITAL LOCATION MATTER? C.A. Steiner[1]; R. Andrews[1]. [1]Agency for Healthcare Research and Quality, Rockville, MD. *(Tracking ID # 173569)*

BACKGROUND: Rural areas face different health care challenges than urban areas. Information on the quality of health care services for rural residents (20% of the US population) is sparse. Our objective was to study whether in-hospital mortality across several important clinical conditions differs between residents of rural areas and large urban areas, and whether any differences are related to the rural or urban location of the hospital.
METHODS: National estimates of risk-adjusted hospital mortality for 6 conditions (AMI, CHF, GI hemorrhage, hip fracture, pneumonia, stroke) as measured by the Agency for Healthcare Research and Quality's Inpatient Quality Indicators were calculated for residents of urban and rural areas overall, and by hospital location. Data are from the Healthcare Cost and Utilization Project's Nationwide Inpatient Sample (7 million discharges from a representative sample of 20% of US community hospitals) linked to the State Inpatient Databases for 2002. Risk-adjustment variables include age, gender, age-gender interaction, and APR-DRGs specific to each condition. Rates are expressed per 1000 discharges. The urban-rural classification for patients and hospitals was based on the new OMB definitions of Core-Based Statistical Areas. Metro areas were divided into large and small metro areas using Urban Influence Codes. Final designations were large/small urban, large/small rural (counties with no town greater than 10,000 residents).
RESULTS: The number of discharges for each condition varied: 292,070 for hip fracture; 501,477 for GI hemorrhage; 528,733 for stroke; 628,922 for AMI; 1,116,749 for CHF; and 1,280,880 for pneumonia. Residents of small rural areas (the most remote) had 30% higher adjusted hospital mortality rates than residents of large urban areas for CHF, hip fracture and stroke (48 per 1000 discharges, 34 per 100, and 132 per 1000 respectively), 14% higher for AMI (98 per 1000), but no significant differences for GI hemorrhage (30 per 1000) or pneumonia (81 per 1000). Among small rural areas residents, adjusted hospital mortality rates for AMI, CHF and stroke were 25%, 49% and 18% higher respectively for patients treated at rural hospitals than for those treated at large urban area hospitals. Stroke patients from small rural areas treated at urban area hospitals maintained a 20% higher adjusted hospital mortality rate compared to residents of large urban areas. In contrast, AMI and CHFpatients from small rural areas treated at urban area hospitals showed an adjusted in-hospital mortality rate that was no different than residents of large urban areas. Findings for residents of large rural areas were similar to those of small rural areas.
CONCLUSIONS: Findings suggest that rural areas residents are at higher risk for in-hospital mortality for 4 of 6 conditions as compared to urban area residents. Treament for these conditions (AMI, CHF, hip fracture and stroke) can include more advanced technological care. Treatment at urban area hospitals elliminates this rural disparity for all but stroke patients. While urban area hospitals may have the broader resources for providing care, urban hospital care may not be available to all rural area residents, especially the most remote. There are opportunities to augment the breadth and depth of care in rural hospitals, but it remains unanswered whether such efforts would decrease in-hospital mortality.

IMPACT OF HEALTH DISPARITIES COLLABORATIVES ON RACIAL/ETHNIC AND INSURANCE DISPARITIES IN U.S. COMMUNITY HEALTH CENTERS. L.S. Hicks[1]; A. O'Malley[2]; T. Lieu[3]; T. Keegan[2]; B.J. Mcneil[1]; E. Guadagnoli[2]; B.E. Landon[4]. [1]Brigham and Womens Hospital; Department of Health Care Policy, Harvard Medical School, Boston, MA; [2]Department of Health Care Policy, Harvard Medical School, Boston, MA; [3]Harvard Pilgrim Health Care, Harvard Medical School, Boston, MA; [4]Beth Israel Deconess Hospital; Department of Health Care Policy, Harvard Medical School, Boston, MA. *(Tracking ID # 173589)*

BACKGROUND: Federally funded community health centers (CHCs) are responsible for caring for over 15 million Americans, many of whom are uninsured or are members of immigrant or minority groups that have been previously documented to receive lower quality care. Since 1998, about 75% of CHCs have participated in a Health Resources and Services Administration (HRSA) Health Disparities Collaborative focusing on improving care for chronic medical conditions. To date however, it is unknown whether these collaboratives reduce disparities in quality by race/ethnicity or insurance status within CHCs.
METHODS: We performed a controlled pre/post intervention study of a nationally-representative sample of CHCs participating in quality improvement collaboratives for diabetes, asthma, or hypertension. We enrolled 44 intervention centers and 20 "external" control centers that had not participated in a collaborative. Each intervention center also served as an "internal" control for another condition. Quality measures involving processes and outcomes of care were abstracted from medical records. For each condition, we created an overall quality score and defined disparities in care as the difference in quality of care between non-Hispanic white, non-Hispanic black, and Hispanic patients and between those with commercial or Medicare insurance versus those with Medicaid or no insurance. To determine if disparities in quality narrowed or widened over time and if changes in disparities over time differed by clinic type, we conducted a series of hierarchical models using a three- way interaction term between time period (pre- versus post-intervention), patient characteristic of interest (race/ethnicity or insurance status categories), and treatment group (intervention versus control).
RESULTS: We studied 11,153 patients with one of the three target conditions. We observed significant disparities in care by race/ethnicity and insurance status in the baseline time period for both intervention and control clinics. In most instances, whites received significantly higher quality care than racial/ethnic minorities and uninsured patients received lower quality care than those with insurance. For example, Hispanics in collaborative clinics received 35% of the recommended care for asthma as compared to 39% for whites. Although overall quality of care improved in the intervention centers compared with both types of controls, the intervention had minimal effect on narrowing disparities within individual health centers. For asthma care, collaborative centers eliminated the baseline Hispanic/white disparity with Hispanics receiving 54% of recommended care compared to 51% for whites in the post-intervention period, resulting in a significantly reduced disparity between Hispanics and whites (decreased disparity by 7%) compared to the change in disparity seen among external controls (increased disparity by 1%) ($P = 0.04$). However, there were no other improvements in racial/ethnic or insurance disparities for any other condition.
CONCLUSIONS: In this controlled study, the HRSA Health Disparities Collaboratives significantly improved the quality of care in intervention centers, but had minimal effect on racial/ethnic disparities and insurance disparities within the health centers. Future work should focus on factors associated with persistent disparities in chronic disease care and quality improvement initiatives should assess disparity reduction as an outcome in addition to examining overall improvement in quality.

IMPLICIT BIAS AMONG PHYSICIANS AND ITS PREDICTION OF THROMBOLYSIS DECISIONS FOR BLACK AND WHITE PATIENTS. A.R. Green[1]; D. Carney[2]; D. Pallin[3]; J. Betancourt[4]; L. Ngo[5]; L.I. Iezzoni[6]; M. Banaji[2]. [1]Society of General Internal Medicine, Boston, MA; [2]Harvard University, Cambridge, MA; [3]Brigham and Women's Hospital, Boston, MA; [4]Massachusetts General Hospital, Boston, MA; [5]Beth Israel Deaconess Medical Center/Harvard Medical School, Brookline, MA; [6]Harvard University, Boston, MA. *(Tracking ID # 173819)*

BACKGROUND: Widely-documented racial/ethnic disparities are particularly striking in the treatment of cardiovascular disease such as the use of thrombolysis. Studies frequently implicate physicians' nonconscious biases as potential root causes of disparities. No study to date has measured physicians' nonconscious racial biases to test whether these may influence their clinical decisions. The primary goals of this study were to test: 1) whether physicians show racial bias on Implicit Association Tests (IATs) - a well-established sociocognitive test of bias, and 2) whether magnitude of such bias predicts differential thrombolysis recommendations for black and white patients with acute coronary sydrome.
METHODS: We developed an internet-based tool comprising a clinical vignette of a patient presenting to the emergency department with an acute coronary syndrome, followed by a questionnaire and three IATs. We e-mailed study invitations to all internal medicine and emergency medicine residents at four academic medical centers in Atlanta and Boston; 220 completed the study, met inclusion criteria, and were randomized to receive either a black or white patient vignette. We calculated IAT scores (normal continuous variables) measuring residents' implicit (nonconscious) racial preference and perceptions of patient cooperativeness. The questionnaire explored residents' attribution of symptoms to coronary artery disease (CAD) and decisions to use thrombolysis (yes/no). We measured residents' explicit (self-reported) racial biases through several validated questions. To test whether bias predicted residents' use of thrombolysis, we used multiple linear regression with thrombolysis decision as the dependent variable, bias as the independent variable, and patient race as the moderator, adjusting for demographic variables.
RESULTS: Participants assigned black vs. white patients did not differ significantly, except that first and second year residents were more likely to be assigned white patients (75.9% vs. 58.1%, $P = 0.05$). No characteristics of the residents were associated with IAT scores except race (preference IAT score for black vs. white residents = -0.04 vs. 0.40, $P = 0.01$). Overall, IATs revealed implicit bias favoring whites (mean IAT score = 0.36, $P < 0.001$, one-sample t-test) and implicit stereotypes of black persons as less cooperative with medical procedures (mean IAT score 0.22, $P < 0.001$), and less cooperative generally (mean IAT score 0.30, $P < 0.001$). As physicians' pro-white implicit bias increased, so did their likelihood of treating white patients and not treating black patients with thrombolysis ($P = 0.009$). Physicians reported no explicit preference for white versus black patients or differences in cooperativeness.
CONCLUSIONS: This study represents the first evidence of nonconscious (implicit) racial bias among physicians using a measure of implicit social cognition, and its predictive validity. Results suggest that physicians' nonconscious biases may contribute to racial/ethnic disparities in the use of medical procedures such as thrombolysis for myocardial infarction.

IMPROVING DIABETES SELF-MANAGEMENT USING LOW-LITERACY EDUCATIONAL MATERIALS AND BRIEF COUNSELING. A.S. Wallace[1]; H.K. Seligman[2]; T. Davis[3]; D. Schillinger[2]; C. Arnold[3]; E.B. Shilliday[4]; D. Dewalt[1]. [1]University of North Carolina at Chapel Hill, Chapel Hill, NC; [2]University of California, San Francisco, San Francisco, CA; [3]Louisiana State University Medical Center at Shreveport, Shreveport, LA; [4]University of North Carolina, Chapel Hill, NC. *(Tracking ID # 172862)*

BACKGROUND: Patient education materials, particularly those targeted toward audiences with limited literacy skills, have generally not proven effective at facilitating behavior change when used in isolation. The purpose of this feasibility study was to determine whether a DM self-management guide targeted to a low-literacy audience would increase patients' diabetes-specific self-efficacy, decrease diabetes-related distress, and improve self-care activities when combined with brief instruction on goal setting.
METHODS: We recruited a cohort of English- and Spanish- speaking patients with DM from three geographically diverse, academic internal medicine clinics and followed them for 12 weeks. Patients received an education guide developed by content experts, patients and providers. The guide was conceptualized as part of a process including counseling for incremental behavior change and periodic follow-up. At the initial visit, patients were individually given the Guide by a research assistant (RA). The RA briefly reviewed the Guide, pointing out pages that emphasized making small, incremental behavior changes (action plans). The RA then helped patients create an action plan. The RA contacted each patient by phone at 2 and 4 weeks after enrollment to determine whether they accurately recalled their behavior change action plans, whether they accomplished their behavior change goal, and to explore whether they had set additional behavior change goals. Patients were also interviewed at 12 weeks and given post-test surveys. We assessed literacy using the short Test of Functional Health Literacy in Adults, and dichotomized scores as adequate vs. marginal/inadequate literacy. We measured at baseline and 12-week follow up participants' confidence in their ability to manage their disease (the Patient Activation Measure), self-efficacy, diabetes-related emotional distress (Diabetes Distress Scale), and diabetes self-care. We compared changes from baseline to follow-up using paired t-tests.
RESULTS: To date, 210 patients have enrolled in the study and 48 have completed their final interview. Of those who have completed the final interview, 36% have low literacy, 58% are female, 71% are African-American, 56% are uninsured, and 10% have Medicaid. The mean age is 54 years, mean length of schooling is 11 years, and mean length of time since diabetes diagnosis is 9 years. Average BMI is 34 and mean glycosylated hemoglobin is 8.8 mg/dl. From baseline to follow-up, patient activation increased from 71.7 to 76.0 (range 0–100, $p = 0.01$), self-efficacy increased from 73.5 to 82.8 (range 0–100, $p < 0.01$), diabetes-specific distress decreased from 11.0 to 9.4 (range 5–30, $p = 0.01$), and self-care behaviors improved from 73.5 to 78.2 (range 0–100, $p = 0.02$). Standardized effect sizes ranged from 0.38–0.69. In preliminary analyses, we observed variations in these results by literacy level. However, no consistent pattern emerged. As more participants complete the exit interview, we will have sufficient data to produce stable estimates stratified by literacy level.
CONCLUSIONS: Preliminary findings demonstrate that patient education materials, when combined with brief, focused goal setting sessions, result in improvement in diabetes related distress, patient activation, self-efficacy and self-care behaviors.

IMPROVING MEDICATION ADHERENCE THROUGH GRAPHICALLY ENHANCED INTERVENTIONS IN CORONARY HEART DISEASE: THE IMAGE-CHD STUDY. S. Kripalani[1]; R.S. Robertson[1]; B. Schmotzer[1]; T.A. Jacobson[1]. [1]Emory University, Atlanta, GA. *(Tracking ID # 171892)*

BACKGROUND: Up to 50% of patients with cardiovascular disease do not take medications as prescribed, limiting the effectiveness of therapies proven to improve health outcomes. Poor patient literacy skills may adversely affect medication adherence rates.
METHODS: We performed a randomized controlled trial to test the effect of 2 low-literacy interventions on medication adherence among inner-city patients with coronary heart disease (CHD). Patients received usual care, refill reminder postcards, an illustrated daily medication schedule, or both interventions. The interventions were updated and delivered for 1 year. The primary outcome was 1-year cardiovascular medication refill adherence, assessed by the cumulative medication gap (CMG), which represents the portion of the year that patients did not have medication available. Patients with CMG < 0.20 were considered adherent.
RESULTS: Among the 435 participants, most were elderly (mean age 64), African-American (91%), and female (56%). About half (53%) had graduated high school, but 78% read below the 9th grade level. CMG could be calculated for 420 subjects (97%). Only 138 patients (32.9%) were adherent over 1 year. Adherence did not differ significantly among study groups.
CONCLUSIONS: Non-adherence was common among inner-city patients with CHD. Adherence rates were not improved by either intervention alone or in combination. More intensive interventions may be needed to improve adherence in this patient population.

One-Year Cardiovascular Medication Adherence

Study Group	N	CMG (Mean)	Adherent (%)
Usual care	93	0.32	31.2%
Postcard reminders	99	0.32	28.3%
Illustrated schedule	117	0.32	34.2%
Both interventinons	111	0.32	36.9%
Overall	420	0.32	32.9%

INFORMED DECISION MAKING FOR PROSTATE CANCER SCREENING: AN AFRICAN AMERICAN AND HISPANIC PERSPECTIVE. T.L. Byrd[1]; J.R. Ureda[2]; H.M. Brandt[3]; J.A. Calderon[4]; M.E. Leyva[5]; E.C. Chan[6]. [1]University of Texas Health Science Center at Houston, El Paso, TX; [2]Insights Consulting, Columbia, SC; [3]University of South Carolina, Columbia, SC; [4]University of Texas Houston, El Paso, TX; [5]University of Texas Houston School of Public Health, El Paso, TX; [6]University of Texas Health Science Center at Houston, Houston, TX. *(Tracking ID # 173940)*

BACKGROUND: Screening for prostate cancer with prostate specific antigen remains controversial because it is unclear whether annual testing reduces the mortality from prostate cancer. Professional organizations such as the US Preventive Services Task Force and the American College of Physicians recommend informing men about the potential risks and benefits of testing so that they can make an informed decision about whether or not to take the test. Little is known about what African American and Hispanic men believe they need to know in order to make an informed decision about prostate cancer screening, even though African American men are at higher risk than White men for prostate cancer and Hispanic men have been at lower risk. In this study we asked African American and Hispanic men what they would need to know in order to make an informed decision about prostate cancer screening.
METHODS: Ten groups of Hispanic men in El Paso, TX, and ten groups of African men from Columbia, SC, were recruited to participate in focus group discussions in English or in Spanish about prostate cancer screening. Men were age 50 and older with no history of prostate cancer. There were 8–10 men per group. Men were first shown clips from a video about prostate cancer screening produced by the Foundation for Informed Decision Making and then asked, "What would you need to know in order to make an informed decision about prostate cancer screening?" All interviews were transcribed in English and in Spanish. The software program ATLAS.ti was used to facilitate the qualitative analysis. The authors independently coded transcripts and identified emerging themes in response to the research question.
RESULTS: Men believed that they would need to consider the facts about prostate cancer screening, who would be making the decision (role preference), influences upon the decision making process, and the debate about the efficacy of prostate cancer screening. Men also considered it important to weigh the credibility of the source of information, the experiences of others who have had cancer, and the availability of prostate cancer screening and treatment in their communities.
CONCLUSIONS: African American and Hispanic men consider it important to know more than just factual information about prostate cancer screening in order to make an informed decision about whether or not to undergo testing. This has implications for designing interventions to promote informed decision making for prostate cancer screening in these groups.

INTEREST IN PRESCRIBING BUPRENORPHINE AMONG TYPES OF HIV PROVIDERS. R.J. Roose[1]; H.V. Kunins[1]; N.L. Sohler[1]; R.T. Elam[1]; C.O. Cunningham[1]. [1]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 173225)*

BACKGROUND: In the United States, different types of providers deliver HIV care. In addition to infectious disease specialists, general internists and family physicians often care for patients with HIV. Increasingly, nurse practitioners (NPs) and physician assistants (PAs) deliver HIV care as part of a multidisciplinary team or as independent primary care providers. As a substantial proportion of HIV-infected individuals are drug users, the recent approval of buprenorphine for the office-based treatment of opioid dependence places HIV providers in a unique position to combine HIV and drug treatment. However, although NPs and PAs have been shown to provide quality HIV care and can prescribe other controlled substances, only physicians can be certified to prescribe buprenorphine, limiting its potential for uptake. This study examines interest in prescribing buprenorphine among different types of HIV providers.
METHODS: Physicians, NPs, and PAs attending International AIDS Society-USA conferences in six large U.S. cities in 2006 were anonymously surveyed using modified validated questionnaires. Questions included practice characteristics and interest in and experience with buprenorphine. The main dependent variable, interest in prescribing buprenorphine, was defined as responding "strongly agree" or "somewhat agree" to the statement "I am interested in treating patients with buprenorphine." The main independent variable, type of HIV provider, was categorized as infectious disease specialist, general internist, family physician, NP, or PA. We conducted multivariate regression analysis controlling for age, gender, race, location, and years caring for HIV patients to examine the association between type of HIV provider and interest in prescribing buprenorphine.
RESULTS: Of the 625 providers who responded to the survey (49.7% response rate), 511 were included in the analysis. Providers who had incomplete data, or physicians who were unlicensed or had ever prescribed buprenorphine were excluded. Of included providers, the majority was female (52.2%) and non-Hispanic white (69.3%). Their mean age was 46.7 years and the median duration of providing HIV care was 12 years. Two hundred and six (40.3%) of all providers were interested in prescribing buprenorphine. In multivariate analysis, independent factors significantly associated with interest in prescribing buprenorphine were practicing in the New York metropolitan area (adjusted odds ratio (AOR) = 1.72, 95%CI = 1.15–2.57), and type of HIV provider (AOR for physician assistant = 3.11, 95%CI = 1.48–6.52; AOR for nurse practitioner = 2.70, 95%CI = 1.47–4.97; AOR for family physician = 2.14, 95% CI = 1.11–4.12; AOR for general internist = 1.88, 95%CI = 1.04–3.40; AOR for infectious disease specialist = 1.0 as the reference group).
CONCLUSIONS: More than one-third of all HIV providers were interested in prescribing buprenorphine. When controlling for other factors, interest varied between different types of providers. Compared to infectious disease specialists, general internists, family physicians, NPs, and PAs were significantly more interested in prescribing buprenorphine. Despite federal regulations prohibiting non-physicians from prescribing buprenorphine, NPs and PAs who provide HIV care were interested in prescribing buprenorphine. Attempts to improve uptake of buprenorphine into HIV settings should consider targeting specific types of providers and policy specific to non-physicians.

INTERFACES WITH THE LAW: CRIMINAL JUSTICE INVOLVEMENT AMONG PATIENTS PRESENTING FOR PRIMARY CARE. M.P. Shah[1]; R. Barreras[1]; E. Drucker[1]. [1]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 173788)*

BACKGROUND: In 2005, almost 72,000 arrests were made in Bronx County, NY, a 45% increase from 1990. From the time of arrest, individuals are navigated through a complex process, which includes arrest, detention, arraignment, plea bargain or trial, and if convicted, sentencing and incarceration in jail or prison. Each of these stages poses various potential health risks, particularly the disruption of continuity care. There are also several health risks related to incarceration, including exposure to high rates of HIV, Hepatitis C, and TB infection, and inadequate mental health care. Upon release, individuals return to their families and communities, often ill-equipped to manage the re-entry process. Although it is suspected that many patients from underserved populations have a high burden of criminal justice involvement, this has not been well quantified. In a pilot study, our goal was to describe the extent and nature of criminal justice involvement of patients and their family members presenting to a community-based, primary care clinic in the South Bronx.
METHODS: The sample consisted of consenting patients who presented to a single resident-physician for primary care at a community clinic in the South Bronx during a 4 week period. Patients were asked to participate in a standardized survey to explore current and past legal involvement of themselves and their family members. Legal involvement was divided into trials, arrests, and incarceration in jail or prison. In addition to criminal involvement, patients were also asked about civic legal proceedings involving housing, child support, employment and immigration. The data were analyzed using Microsoft Excel spreadsheet software.
RESULTS: Of 44 patients completing the survey, 30 (68%) were women and 22 (50%) were foreign-born. At the time of the interview, 17 (39%) were currently participating in active legal proceedings, of which 10 were criminal charges. In addition, 8 respondents (18%) had been incarcerated in jail or prison in the past 2 years, and 11 (25%) had a spouse or significant other who had been incarcerated during that time. More than half of all respondents (24, 55%) had themselves or had a family member (including 12 children) who had been arrested in the past 2 years. Furthermore, 7 respondents (16%) currently had a family member in jail or prison. Finally, 30 respondents (68%) felt that they would utilize legal services if they were available at the clinic.
CONCLUSIONS: Questions about criminal justice involvement are not typically asked at intake or as part of routine medical visits. Our study found that, when asked, patients will agree to share this information. In our South Bronx population, we found a high burden of criminal justice involvement among primary health care patients. Although not specifically elicited, some respondents also described how this involvement affected their health care. Better integration of health and legal services could be of significant benefit to providing health care to similar patient populations. Further research is needed to better delineate the type of involvement and its impact on the health of individuals, families, and communities.

IS ASSIMILATION BAD FOR YOUR HEALTH ?THE ASSOCIATION BETWEEN ACCULTURATION AND CARDIOVASCULAR DISEASE RISK FACTORS. A. Card[1]; O. Carrasquillo[1]. [1]Columbia University, New York, NY. *(Tracking ID # 172900)*

BACKGROUND: Latinos have lower CVD mortality rates than non-Hispanic whites. Several studies examining this "Latino paradox" have also found that increasing acculturation is associated with an increased prevalence of CVD disease risk factors. However, most of these studies: a) do not use validated measures of acculturation, b) focus on disease prevalence (many using self-reported rather than physiologic measures), and c) do not control for important covariates.
METHODS: To examine the relationship between acculturation status and various CVD risk factors we analyzed data from the 2003–2004 National Health and Nutrition Examination Survey. This nationally representative survey of the US population sampled 1,870 Hispanic adults. Our independent variable was acculturation status as measured using a modified version of the Marin acculturation scale. We then categorized this variable into tertiles (low, intermediate, high). Our dependent variables were low-density lipoprotein (LDL), systolic blood pressure (SBP), and Hemoglobin A1C (HbA1C). A-priori the following were selected as potential co-variates: age, socioeconomic status (education and income), gender, and body mass index (BMI). We modeled age and BMI as continuous measures, all others variables were categorical. The R-squared for our models were 0.15 for LDL, 0.33 for SBP, and 0.13 for HbA1C. We used SUDAAN software for the analysis.
RESULTS: In bi-variate analysis we found non-statistically significant (NS) trends for increasing acculturation to be associated with lower mean LDL, SBP, and HbA1C levels. In multivariate models, age and BMI emerged as the strongest predictors for all three outcomes (except BMI with LDL). In all the models, gender and socioeconomic status were also important co-variates. Once adjusted for these baseline differences, we found increasing acculturation was significantly associated with decreased mean LDL levels. SBP was not associated with acculturation. However, we did find a trend (NS) towards increased HbA1C among the highest acculturation group.

Outcome* (mean ± standard error)	Acculturation Level		
	Low	Intermediate	High
LDL** (mg/dL)	121 ± 2.9	109 ± 2.2	104 ± 3.8
SBP (mmHg)	116 ± 1.1	119 ± 1.4	118 ± 1.1
HbA1C (%)	5.54 ± 0.1	5.53 ± 0.1	5.68 ± 0.1
* We present group means adjusted for covariates listed above			
** p<.01, low versus high			

CONCLUSIONS: Our unadjusted findings and most of our multivariate analysis refute the hypothesis that increasing acculturation is associated with poorer health status among Latinos.The Latino paradox cannot be explained by a protective health effect of lower acculturation.

IS HEALTH LITERACY ASSOCIATED WITH PATIENT AND PHYSICIAN COMMUNICATION BEHAVIORS? M.C. Beach[1]; D.L. Roter[1]; S.O. Okelo[1]; K.A. Carson[1]; L.A. Cooper[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 173466)*

BACKGROUND: Patients' health literacy is associated with poorer health outcomes, though the reasons for these associations are unclear. This study explores one potential reason - that patients with poorer health literacy may be less involved in communication with their physician - by determining whether patient health literacy is associated with their ratings of desired and actual involvement in medical care, audiotaped measures of the patient's involvement, and the physician's accuracy of predicting the patient's desired level of involvement.
METHODS: We conducted a cross-sectional study using baseline data from primary care visits of 275 hypertensive patients enrolled in a clinical trial. Following the visits, physicians rated their perception of the patient's desired level of involvement in health decisions and research assistants interviewed patients to assess their desired level of involvement in healthcare (using the categories of "my doctor decides what is best for me," "my doctor considers my ideas but still makes most, if not all, final decisions," "my doctor and I make all final decisions together," and "I make final decisions alone"), their actual level of involvement using a validated 8-item scale, and their health literacy using the REALM. Visits were audiotaped and analyzed using the Roter Interaction Analysis System to assess patient behaviors (the number of questions asked and the amount of information given by the patient), and physician behaviors (the number of questions asked and information given by the doctor). REALM scores were dichotomized to compare patients with greater than (high literacy) versus less than (low literacy) a 9th grade reading level.

RESULTS: The sample was 58 years old on average, 66% women, 62% black, and 38% had an annual household income of < $10,000. Most patients (173/275, 63%) scored at least a 9th grade reading level on the REALM. Patients did not differ with regard to their desired level of involvement based on health literacy (72% of those with low health literacy preferred to share or make all decisions compared to 69% of those with high health literacy, p = 0.627). Patients similarly did not perceive that they were more or less involved in encounters with physicians based on health literacy (mean level of involvement (S.D.) 25.3 (4.3) vs. 25.9 (5.2) for those with low vs. high health literacy, p = 0.28). In audiotaped analysis, however, patients with low health literacy asked significantly fewer questions (4.8 vs. 7.0 questions, p = 0.01) and gave less information to physicians (90.0 vs. 105.6 statements, p = 0.03) than patients with high health literacy, although physicians did not ask fewer questions or provide less information to lower-literate patients. Following encounters, physicians were more likely to underestimate the desire of low-literacy compared to high-literacy patients to be involved in healthcare (44% vs. 29%, p = 0.004). None of these results were changed after adjustment for patient race, gender and age.
CONCLUSIONS: Patients with low health literacy desire to be involved in their own healthcare, but appear less likely to do so. Perhaps as a result, physicians underestimate the desires of patients with low health literacy to be involved. Although physician behaviors do not appear to be influenced by patient literacy, physicians may need to adapt their communication styles such that they make a greater effort to empower lower-literate patients to become involved.

JAIL AS PRIMARY HEALTH CARE?: FINDINGS FROM THE SAN FRANCISCO JAIL ACCESS STUDY. E.A. Wang[1]; M.C. White[1]; R. Jamison[1]; J.P. Tulsky[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173309)*

BACKGROUND: US prisons and jails are often reported to be the first and only site of regular medical care for the 11 million people who have been incarcerated. Little data are available describing inmates' use of health care services and how much jails serve as a regular venue of care. We designed this study to evaluate whether inmates with chronic diseases identified a usual source of community care and how they utilize jail health services.
METHODS: The ACCESS study was a cross sectional study of inmates incarcerated in the San Francisco County jail from March 2005 to January 2006. A total of 347 inmates were interviewed. Participants were asked 1) whether they had a usual source of community care and 2) whether San Francisco jail health services (JHS) was a source of primary care. Information was gathered on personal demographics, socioeconomic and health status, history of chronic disease (including human immunodeficiency virus infection, hepatitis, hypertension, diabetes), history of health care utilization, incarceration, and drug use. The data were analyzed using chi squared analysis and ANOVA to identify factors associated with whether inmates with chronic diseases had a usual source of community care and whether they considered JHS a primary source of care. Multivariate regression analysis was performed to identify variables that were independently associated with patients receiving medical care in community-based health sites as compared to the emergency department and in JHS.
RESULTS: Inmates' mean age was 39.3±9.9 years; 87% (n = 303) were men, 24% (n = 84) white, and 50% (n = 172) African-American; 50% (n = 173) had public insurance; and 74% (n = 257) had one or more chronic diseases. Among those with chronic diseases, 90% (n = 232) identified a usual source of care in the community. Having insurance (3.22, 95% CI 1.22, 9.44, p = 0.009) and higher income (p = 0.01) were associated with having a usual source of community care. In spite of high rates of accessing community care, 24% (n = 63) of inmates with chronic disease reported that they considered JHS their primary site for care. More than 25% of inmates report receiving the diagnosis of a chronic disease while in jail, and 75% perceived jail as a place for shelter, sobering up, and referral to social services. Length of time incarcerated (p = < 0.0001) and lack of health insurance (0.55, 95% CI 0.29, 1.01, p = 0.03) were associated with naming JHS as the primary site for medical care. When these two variables were controlled for, having a chronic disease other than HIV was a significant predictor of whether inmates identified JHS as a primary source of care (2.04, 95%CI 1.11, 3.75, p = 0.02).
CONCLUSIONS: The majority of inmates with chronic disease report having access to a usual source of community care. Nonetheless, many inmates use jail health services for primary care and the provision of and referral to social services, despite high rates of access to community care. These data suggest that improving linkages from jail to community health and social services for incarcerated adults with chronic diseases is important for the quality of chronic disease management in this population.

LANGUAGE AND INSURANCE STATUS DISCRIMINATION ARE RELATED TO POOR GLUCOSE CONTROL AMONG PATIENTS WITH TYPE 2 DIABETES. Q. Ngo-Metzger[1]; D. Sorkin[1]; K. August[1]; S. Greenfield[1]; S. Kaplan[1]. [1]University of California, Irvine, Irvine, CA. *(Tracking ID # 173549)*

BACKGROUND: Discrimination due to race/ethnicity has been linked with poor health, especially among African Americans. Little is known about the relationship of other types of discrimination (due to limited English-language proficiency or health insurance status) to health outcomes among other ethnic groups. We examined whether discrimination due to language or insurance status may be associated with poor quality of care and glucose control among patients with Type 2 diabetes.
METHODS: We conducted a cross-sectional study of patients seen at 4 clinics in Southern California. Discrimination was measured by asking patients two questions: whether a health professional judged them unfairly or treated them with disrespect during their health care visits in the last 12 months 1) because of their English-language ability; or 2) because of their health insurance status. Response categories were a 5-point Likert scale ranging from never (1) to always (5). Patients were considered to have experienced discrimination if they gave any answer other than "never." Patients were also asked to rate the quality of their diabetes care (excellent/ very good vs. good/ fair/ poor). Glucose control was determined by measuring hemoglobin A1c at the time of the survey. We conducted analyses using chi-square and multivariate logistic regression.
RESULTS: Of the 311 patients surveyed (response rate 83.5%), 29% were non-Hispanic whites, 22% were Hispanics, and 49% were Asians. Mean age was 63.4 (SD 11.8). Hispanics and Asians were more likely to have lower education (81.4% and 72.4%) compared to whites (20.8%, p < 0.001). They were also more likely to have an annual income less than $20,000 (Hispanics 74.5%, Asians 77.4% compared to whites 16.1%, p < 0.001). Thirteen percent of Hispanics and 23.5% of Asians reported experiences of discrimination due to their limited English-language proficiency, compared to 0% of white patients, p < 0.001. Five percent of white patients, 14.5% of Hispanic patients, and 21.0% of Asian patients reported experiencing discrimination due to their health insurance, p < 0.001. In multivariate analyses, patients who reported discrimination because of their language ability were less likely to rate their diabetes quality of care as excellent or very good (Odds Ratio 0.36, p < 0.05) adjusting for age, gender, income and ethnicity. Asian patients who reported discrimination due to language were more likely to have A1c levels > or = to 8 compared to those who did not report discrimination (OR 5.17, p < 0.05) adjusting for age, gender and income. White patients who reported discrimination due to their insurance status were more likely to have A1c > or = to 8, compared to those who did not report discrimination (OR 35.5, p < 0.05), adjusting for age and gender. Further adjustment for income did not substantatively change our findings (p < 0.06).
CONCLUSIONS: Previous research suggested an association between discrimination due to race and health status. Our findings suggest that discrimination due to limited English proficiency and health insurance status are also signficantly associated with patients' ratings of care and health outcomes. Patients with Type 2 diabetes who reported discrimination rated their quality of care more poorly and had worse glucose control compared to those who did not. More research is needed to better understand these associations and to find ways to eliminate health disparities.

LITERACY AND MISUNDERSTANDING OF PRESCRIPTION DRUG LABELS. P.F. Bass[1]; M.S. Wolf[2]; R. Parker[3]; M. Midelbrooks[1]; T.C. Davis[4]. [1]Louisiana State University Health Sciences Center, Shreveport, Shreveport, LA; [2]Northwestern University, Chicago, IL; [3]Emory University, Atlanta, GA; [4]Louisiana State University Medical Center at Shreveport, Shreveport, LA. *(Tracking ID # 173277)*

BACKGROUND: Health literacy is increasingly viewed as a patient safety issue and may contribute to medication errors. Previous studies have demonstrated medication labels, though seemingly simple, are commonly misunderstood. We hypothesized more precise wording of prescription medication labels would lead to better patient understanding.
METHODS: Patients presenting for regular care to a public hospital medicine clinic were interviewed and asked to interpret prescription drug labels for glyburide and amoxicillin. Literacy was assessed with the REALM, a commonly used word recognition test. Patients were given 6 prescription medication bottles one at a time in random order and instructed to state how they would take the medication. Each label contained the same dosage instructions but was worded differently. Physicians and pharmacists agreed upon a standard label (the most commonly used wording) and health literacy experts designed additional labels to be more precise and enhance comprehension. Trained research assistants recorded patients' verbatim responses for each label. Responses were graded as correct or incorrect by the three internists. Discordant results were sent to an expert panel for review.
RESULTS: A convenience sample of 200 patients were recruited. Mean age was 50 years (SD = 11); 81% were female, 67% African American. One fifth (19%;) had low literacy (reading at a 6th grade level or below) one third (33%) had marginal literacy (7–8th grade) and 49% had adequate literacy skills (9th grade or above). Rates of correct understanding for the six labels ranged from 29% to 91% (see Table 1). Low literacy was associated with patient understanding of the standard Glyburide label (p < .001) but not for the more precise Glyburide labels (2 and 3). Significant differences in all the Amoxicillin labels were noted by literacy (p < .001). Labels were further classified as 'vague' (1,4,5) and 'explicit' (2,3,6). Limited literacy was associated with poorer understanding for each of the 'vague' labels (p = 0.01, 0.003, and 0.02), not with understanding the 'explicit' labels (p = 0.16, 0.09, 0.24 respectively). The average rate of understanding for explicit labels was 73% compared to 44% for the vague labels (p < 0.001). In multivariate regression analysis, errors in understanding were a third as likely on 'explicit' labels than on those deemed 'vague' (ARR 0.27, 95% CI 0.22–0.33). Low literacy skills remained a significant independent predictor of misunderstanding instructions (ARR 2.30, 95% CI 1.45–3.64).

Table 1

Glyburide	% Correct	Amoxicillin	% Correct
#1 Take two tablets by mouth twice daily.	52%	#4 Take one teaspoonful by mouth three times daily for 10 days.	51%
#2 Take four pills by mouth every day. Take 2 pills in the morning and 2 pills in the evening.	91%	#5 Take 1 teaspoonful every eight hours every day. Take for 10 days.	29%
#3 Take 2 pills by mouth at 8 a.m. and 2 pills at 6 p.m. every day.	90%	#6 Take one teaspoonful by mouth 3 times a day every day. Take 1 teaspoonful at 8am, 1 at 2 pm, and 1 at 8 pm/ Take for 10 days.	40%

CONCLUSIONS: Wording of prescription labels significantly affects patient comprehension. Results have important potential implications for dosing instructions and patient safety issues.

MEDICATION UNDERSTANDING AMONG PATIENTS AT AN URBAN PUBLIC HOSPITAL. N. Redmond[1]; M. Gatti[1]; K. Jacobson[1]; J.A. Gazmararian[1]; S. Kripalani[1]. [1]Emory University, Atlanta, GA. *(Tracking ID # 173690)*

BACKGROUND: Only about half of patients take their prescribed medications correctly, and those with limited health literacy are more likely to indicate confusion about their medication regimen. We examined the association of medication understanding with age, education, and health literacy.
METHODS: Subjects were adult, English-speaking patients who regularly filled prescriptions at outpatient pharmacies of an urban public hospital (Grady Memorial Hospital, Atlanta, GA). In-person interviews were conducted to obtain patient information, including health literacy as measured by the Rapid Assessment of Adult Literacy in Medicine (REALM). Patients' understanding of each medication was assessed by unassisted recall on four domains: Medication name, Indication, Regimen, and Appearance (MIRA). Accuracy of patient recall was assessed using electronic pharmacy records and a medication image library as reference standards. Points were assigned equally for each of the four domains. A summary "MIRA" score was calculated for each patient by averaging together the scores for each medication. MIRA summary scores ranged from 0 to 1, with higher scores indicating better understanding; the scores were dichotomized for some comparisons using the mean as a cutpoint. Chi square tests and Pearson's correlation coefficients were used to measure the association of patient characteristics with MIRA summary scores and with scores for individual MIRA domains.
RESULTS: Of the 149 subjects, 65.1% were women, and 84.6% were African-American; the mean age was 52.4 years. Almost one-third (31.5%) had less than a 12th grade education, and 22.5% read at or below the 6th grade level as determined by the REALM. The mean MIRA summary score was 0.76, and the mean for each domain was 0.65 (M), 0.9 (I), 0.76 (R), and 0.72 (A). Patients' ability to correctly state the names of their medications was significantly better among those with high school education ($p = .0075$), greater than 6th grade reading level ($p = .0178$), and younger age ($p = .0086$). The measured patient characteristics were not significantly associated with MIRA summary scores, or with the I, R, or A domains of the MIRA.
CONCLUSIONS: Patient recall of medication names, a key aspect of medication understanding, was significantly associated with education, age, and health literacy. These findings have implications for the accuracy of medication histories taken from patients with advanced age, lower educational attainment, or low health literacy.

MULTISOMATOFORM DISORDER IN PRIMARY CARE. J.L. Jackson[1]. [1]Uniformed Services University of the Health Sciences, Bethesda, MD. *(Tracking ID # 173124)*

BACKGROUND: Patients rarely meet criteria for a full Somatization disorder in primary care. Multisomatoform disorder has emerged as a diagnosis for patients with persistent, multiple, unexplained medical symptoms. We explored the prevalence, impact and 5-year outcomes of this diagnosis on patients in a primary care setting.
METHODS: 500 adults presenting to a primary care clinic with a physical symptom were screened with the PRIME-MD. Multi-somatoform disorder was diagnosed if the patient had more than 3 symptoms on the PHQ-15, that had persisted more than 2 years. Other measures at baseline included functional status, symptom characteristics (duration, severity) and demographics. Additional surveys at 2 weeks, 3 months and 5 years assessed functional status (MOS SF6), symptom outcome and patient satisfaction. Physician surveys assessed encounter difficulty (DDPRQ). Utilization was obtained from our health database, mortality from the national death index.
RESULTS: Eight percent ($n = 41$) of primary care patients met criteria for multisomatoform disorder, equally distributed between men and women, and not associated with age, race or marital status. Patients with multisomatoform disorder were more likely to have comorbid mental disorders (RR: 1.5, 1.1–2.3). At all timepoints(baseline, 2 weeks, 3 months, 5 years) they reported worse functional status ($p < 0.001$ for all), and were less likely to experience improvement in their presenting symptom (Table). Twenty four percent still met criteria for multisomatoform disorder at 5 years, higher than the rate among those without the disorder at baseline (RR: 2.7, 1.5–5.1). Patients with multisomatoform disorder were more likely to be worried their symptom was serious at 2 wk, 3 mo and 5 years and had higher 5 year utilization rates (26 vs 20 visits, $p < 0.001$), though there was no effect on mortality ($p = 0.73$). Patients with multisomatoform disorder were reported as being more "difficult" by their clinicans ($p = 0.01$).
CONCLUSIONS: The diagnosis of multisomatoform identifies a group of patients who are less likely to experience long-term symptom improvement, have significant functional impairment, have greater serious illness worry, higher utilization rates and are more likely to be experienced by clinicians as "difficult." A substantial portion experience persistence of the disorder over 5 years. Our data supports emerging literature suggesting this is a unique group of individuals. Whether the worse outcomes seen can be improved by targeted interventions is an important, open question.

Symptom Improvement

	Improved (RR)
2 weeks	0.67 (0.48–0.93)
3 months	0.67 (0.49–0.92)
5 years	0.78 (0.61–0.99)

OBESITY IN ADOLESCENCE: WHAT ARE THE SOCIAL AND EDUCATIONAL CONSEQUENCES? A.G. Fowler-Brown[1]; L. Ngo[1]; C.C. Wee[1]. [1]Beth Israel Deaconess Medical Center, Brookline, MA. *(Tracking ID # 173677)*

BACKGROUND: Obesity can be a stigmatizing condition. Previous research found that overweight in adolescence is associated with poorer educational attainment and income levels and lower likelihood of marriage as an adult. Whether the recent rise in prevalence of obesity in the U.S. has led to greater acceptance and an attenuation of the adverse socioeconomic consequences of obesity is unclear.
METHODS: We used data from a 1997 government-sponsored, nationally-representative survey of U.S. adolescents. Our analysis included those 14 years or older on entry into the study ($n = 5997$). Participants were surveyed in-person at baseline and then yearly about their educational, occupational and social experiences. Our primary exposure of interest was BMI at age 16 years, calculated from self-reported height and weight. Participants were categorized as not overweight (BMI < 25), overweight (BMI 25–29.9), obese class1 (BMI 30–34.9), and obese class 2–3 (BMI 35 or above). Using generalized linear models with a log link, we examined whether obesity in adolescence is associated with the probability of attaining a bachelor's degree and with the probability having a marriage/marriage-like relationship; as assessed at the latest available follow-up in 2004. Model 1 included covariates for age, sex, race, height at 16 years, and education of participant's mother. Model 2 included covariates in model 1 and baseline aptitude test score. Because we were unable to control for unobserved clustering that was induced by the complex sampling design of the survey, we used a more stringent criterion for statistical significance; findings at a p value of 0.01 or less were considered significant.
RESULTS: Of 4924 participants with outcomes assessed at the latest follow-up,16% were overweight, 5% had class 1 obesity, and 3% had class 2–3 obesity. An average of 37% of the sample was married/in marriage-like relationship and this did not vary by weight category, before or after adjustment. However, overweight was significantly associated with lower probability of attaining a bachelor's degree (Table). No significant interactions between weight category and race or sex were observed.
CONCLUSIONS: Overweight and obesity in adolescence continues to be adversely associated with future educational attainment in early adulthood, and is not fully accounted for by baseline aptitude test score. Marriage is not associated with weight category. Further study is necessary to elucidate how factors, including weight-related bias and stigma, mediate the association of overweight with lower educational achievement, so that we might develop interventions to mitigate this effect.

PATIENT PERSPECTIVES ON LESBIAN, GAY, BISEXUAL, AND TRANSGENDER PROVIDERS. R.S. Lee[1]; T.V. Melhado[1]; K.J. White[1]; A.G. Huebschmann[1]; K.M. Chacko[1]; L.A. Crane[1]. [1]University of Colorado Health Sciences Center, Aurora, CO. *(Tracking ID # 170817)*

BACKGROUND: Based on estimates that lesbian, gay, bisexual, and transgender (LGBT) people represent 2–6% of the population, there are between 115,811 to 347,334 LGBT healthcare providers in the United States.1 We designed a survey to assess the impact of provider gender and sexual orientation on the physician-patient relationship, including whether respondents would change providers, practices, or chaperone preferences in response to the sexual orientation of their provider.
METHODS: Using the Dillman Tailored Design Method including multiple contacts, a survey was mailed to 1,600 people randomly selected across the United States. Survey questions focused on clinically relevant outcomes such as whether knowledge of a provider's sexual orientation would lead respondents to change providers, change clinical practices, or change preferences regarding chaperones during genital exams. Responses were rated using a 5-point Likert scale.
RESULTS: The response rate was 32% ($n = 502$). Respondents were predominately male (59.3%), heterosexual (96.3%), non-Hispanic white (87.7%) with a mean age of 56 years. Responders generally assumed their provider was heterosexual (46.9%), while 20.4% noted an openly heterosexual provider, 0.4% of responders had an openly gay/ lesbian provider, and 27.7% did not know the sexual orientation of their provider. Many respondents indicated they would change providers upon finding out they were LGBT (30.5%) or change practices if LGBT care providers were employed there (35.4%). Significant predictors of changing providers or changing practices were gender (male), higher frequency of attendance of religious services, and lower level of education. Preferences for a chaperone were as follows: 38.5% if heterosexual male provider; 51.1% if gay male provider, 32.0% if heterosexual female provider; and 44.9% if lesbian provider. Using Generalized Estimating Equations (GEE) modeling, responders preferred a chaperone less often with a heterosexual provider (odds ratio [OR] 0.53, 95% CI 0.45 to 0.62) and less often when the responder was male (OR = 0.24, 95% CI 0.17 to 0.35). Respondents who preferred chaperones tended to have a high school education or less (OR = 3.57, 95% CI 1.99 to 6.41), were of Christian/Catholic faith (OR = 2.51, 95% CI 1.50 to 4.23), resided in the Mid-Atlantic (OR = 2.47, 95% CI 1.14 to 5.37), or the South (OR = 1.98, 95% CI 1.24 to 3.18), and had never had an LGBT provider previously (OR = 2.11, 95% CI 1.46 to 3.04).
CONCLUSIONS: Knowledge of a provider's sexual orientation is likely to have a strong impact on the patient-physician relationship. A sizable proportion of patients would change providers upon learning their provider was LGBT and would change practices if openly gay/lesbian providers were employed there. Additionally, preference for having a chaperone during genital exams was dependent on the provider's sexual orientation. This may have significant implications for practices that employ LGBT healthcare providers. References: 1. Personal communication from Curran Nault, Membership Services Coordinator, Gay and Lesbian Medical Association.

PERCEPTIONS OF AN UNDERSERVED, INNER CITY MINORITY POPULATION ON THEIR PRIMARY CARE INFRASTRUCTURE AND BARRIERS TO HEALTHCARE. C.L. Voelkel[1]; J. Landry[1]; S. Nelson[1]; S. Walker[1]; G. Nicole[1]; I. Naqvi[1]; H. Torres[1]; W. Eleanor[1]; F.D. Rachel[1]; M. Arrieta[1]. [1]University of South Alabama, Mobile, AL. *(Tracking ID # 173272)*

BACKGROUND: The University of South Alabama Center for Healthy Communities (USA CHC) conducted a study to explore, by means of focus group discussions, the perceptions and knowledge of an underserved, inner city minority population of their primary care infrastructure and barriers they face when seeking healthcare. Information was specifically collected about individual clinics within the community that serve this population. The present abstract reports findings as they were summarized to be presented to primary care clinics in the community with the purpose of improving general health care delivery to this medically underserved population.
METHODS: Recruitment - Purposeful sampling utilized nine zip code defined areas within Mobile County Alabama considered economically disadvantaged based on available 2000 census data, as well as medically underserved. Participants were recruited from three community and three healthcare sites. Flyers were distributed to facilitate enrollment and face-to-face recruitment was also used. Participants received an incentive of fifteen dollars per session up to three sessions. Design - Using a facilitator guide, research associates lead focus groups of up to eight participants from March-September 2006. Open-ended questions based on current literature and a previous pilot study guided the discussion and allowed for free dialogue between facilitators and study participants. Sessions lasted between 45–120 minutes. Every session was audio taped and transcribed verbatim. Notes were also taken during the group discussion. The transcripts and notes were later analyzed for content and themes. Collected information was organized into individualized, formal reports which were then delivered to the main clinics in the community.
RESULTS: Participants had widely varying degrees of knowledge about the primary care clinics in their community and the resources available to them at these locations. Overall, there was a dearth of knowledge of services available and underutilization of resources presently in existence. Participants did not report on any formal system of information on the availability of services. Instead, they seemed to rely on hearsay and outdated patterns of health care seeking behaviors. The financial limitations faced by members of this community were also discussed at length. Transportation, availability of same-day services, wait time to be seen, satisfaction with health care providers, enforcement of payment policies, a desire for respectful interaction with support personnel, and assistance to obtain prescription medications emerged as issues affecting the receipt of health care. There were also references to stigma associated with seeking care at clinics known to provide services to patients with HIV/AIDS and sexually transmitted diseases.
CONCLUSIONS: An understanding of the perceptions and knowledge of their primary care infrastructure and of barriers faced when seeking care is important when considering avenues to improve health care for an underserved, inner city minority population. Through a focus-group format, and mediator-lead discussions, valuable information can be obtained that could directly affect enhancement of health care provision to this population. Note: The present study was conducted under the auspices of the USA CHC EXPORT Center, funded through NCMHD Grant# 5R24MD001094–02.

PHYSICIAN PREDICTORS OF COLORECTAL CANCER SCREENING AMONG LATINOS AND VIETNAMESE. J. Walsh[1]; R. Salazar[1]; T.T. Nguyen[1]; C.P. Kaplan[1]; J. Hwang[1]; R. Pasick[1]; S.J. Mcphee[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173229)*

BACKGROUND: Although rates of colorectal cancer (CRC) screening are increasing, they are still low and they are even lower in ethnic minority groups. Our goal was to determine physician (MD) characteristics associated with colorectal cancer (CRC) screening in Latinos and Vietnamese seen in primary care clinics.
METHODS: As part of an intervention to increase rates of CRC screening, we conducted a telephone survey of Latinos and Vietnamese men and women seen in 5 primary care clinics in a large county medical center. Primary care MDs were asked about participation of eligible patients. Patient participants were aged 50–79 with no history of cancer. The survey was developed in Spanish, Vietnamese, and English and was administered in the language of the participant's choice. Survey items included demographics, CRC screening behaviors, acculturation, and perceived barriers and facilitators to CRC screening. Fecal occult blood testing (FOBT) was the primary available screening modality and was the main outcome.
RESULTS: 41 of 49 (84%) MDs practicing at these sites agreed to participate and provided lists of eligible patients. Of these MDs, 56% (n = 23) were female; 10% (n = 4) were Latino, 17% (n = 7) were Vietnamese, 51% (n = 21) were Caucasian and 22% (n = 9) were other Asian. 51% (n = 21) spoke Spanish and 17% (n = 7) spoke Vietnamese. A total of 1793 of these MDs' patients (1013 Latinos and 808 Vietnamese) completed the survey (response rate = 42%). Among 1013 Latinos, 73% were female and 83% completed the survey in Spanish; 38% had an FOBT in the past year, 51% were up to date with any (ANY) screening (FOBT in the past year OR sigmoidoscopy in the past 5 years OR colonoscopy in the past 10 years). Latino men and women who saw a female MD were more likely to be up to date with FOBT than those who saw a male MD (45% vs 32%; $p < 0.001$). Latinas who saw a female MD were more likely to be up to date with FOBT than Latinas who saw a male MD (48% vs 34%; $p = 0.001$), but in Latino men, FOBT rates were not associated with MD gender (27% for men seeing male MDs vs 35%: $p = 0.17$). Patients whose MDs spoke Spanish were actually less likely to be up to date with FOBT screening than those whose MDs did not speak Spanish (36% vs 43%: $p = 0.02$). Among 808 Vietnamese, 65% were female and 100% completed the interview in Vietnamese; 53% had an FOBT in the past year; 74% were up to date with ANY screening. Vietnamese individuals who saw female MDs were also more likely to be up to date with FOBT than those who saw male MDs (59% vs 51%; $p = 0.04$). Gender concordance was not associated with screening in Vietnamese women. Vietnamese men who saw female MDs were more likely to be up to date with FOBT than those who saw male MDs (62% vs 45%; $p = 0.01$). Language concordance (MD and patient speaking the same language) was not associated with screening in Vietnamese. Ethnicity concordance (both patient and physician of same ethnicity) was not associated with FOBT screening in either Latinos or Vietnamese. MD gender remained an independent predictor in multivariate analyses.
CONCLUSIONS: Even in a primary care clinic population, CRC screening is significantly below national guidelines. Vietnamese and Latino patients of female MDs receive more FOBT testing. Ethnicity concordance was not associated with screening and surprisingly language concordance was not associated with increased rates of screening.

PHYSICIAN-LEVEL PERFORMANCE AND RACIAL DISPARITIES IN DIABETES CARE. T.D. Sequist[1]; G. Fitzmaurice[1]; R. Marshall[2]; S. Shaykevich[1]; D.G. Safran[3]; J.Z. Ayanian[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Vanguard Medical Associates, Newton, MA; [3]Tufts University, Boston, MA. *(Tracking ID # 172924)*

BACKGROUND: Racial disparities in diabetes care are well documented, however little information is available regarding the importance of individual physician performance. We analyzed variation in disparities in diabetes care to quantify the contributions of patient characteristics and individual physicians to population-level differences in care.
METHODS: We used electronic medical record data to identify primary physicians caring for at least 5 white and 5 black adults with diabetes during 2005 within a large multisite group practice in Massachusetts. We assessed rates of optimal control of HbA1c (< 7.0%), LDL cholesterol (< 100 mg/dL), and blood pressure (< 130/80 mmHg). We fit hierarchical linear regression models to 1) measure population-level disparities in diabetes care (base model); 2) adjust disparities for patient characteristics including age, sex, income, and insurance status (patient model); 3) adjust disparities for patient characteristics and health center and physician effects (physician model); and 4) measure adjusted disparities within individual physician panels.
RESULTS: We identified 85 eligible physicians caring for 5,463 patients (62% white, 38% black) across 13 health centers. The median number of white patients per physician was 38 (interquartile range (IQR) 20 to 53, maximum 124) and of black patients was 13 (IQR 8 to 32, maximum 112). There was substantial clustering of care for black patients, with 39% of physicians caring for 75% of black patients. White patients were significantly more likely than black patients to achieve optimal control of HbA1c (40.9% vs 31.8%), LDL cholesterol (47.5% vs 37.3%), and blood pressure (36.0% vs 29.4%, all $p < 0.001$). Adjustment for patient characteristics had a substantial impact on white-black disparities in these 3 measures, with only minor changes related to additional adjustment for health center and physician effects (Table).

	Base Model	Patient Model	Physician Model
	White-Black (%)	White-Black (%)	White-Black (%)
HbA1c<7%	9.1	7.7	7.3
LDL<100 mg/dl	10.2	6.8	5.7
Blood pressure <130/80	6.6	8.2	8.5

Adjusted white-black differences in control rates varied substantially between physician panels for HbA1c (IQR 5.3% to 9.5%), LDL cholesterol (IQR 2.5% to 8.9%), and blood pressure (IQR 7.7% to 10.0%). There was no association between the magnitude of disparity and number of black patients treated within a physician panel for any of the 3 measures.
CONCLUSIONS: Racial disparities in diabetes care are mainly related to patient characteristics and within-physician differences, with little effect due to between-physician differences and no relation to the number of blacks treated by individual physicians. Therefore, targeting physicians with lower performance or shifting black patients care to physicians who provide more equal care would have a limited impact on disparities. More systemic efforts to improve care for black patients across all physicians will be required.

PHYSICIANS' ATTITUDES REGARDING RACE-BASED THERAPEUTICS. D. Frank[1]; T.H. Gallagher[2]; L.A. Cooper[3]; B. Odunlami[4]; S. Sellers[5]; E.G. Price[6]; E. Phillips[7]; V.L. Bonham[7]. [1]VA Puget Sound, Seattle, WA; [2]University of Washington, Seattle, WA; [3]Johns Hopkins University, Baltimore, MD; [4]National Institutes of Health, Bethesda, MD; [5]University of Wisconsin-Madison, Madison, WI; [6]Tulane University, New Orleans, LA; [7]National Institute of Health, Bethesda, MD. *(Tracking ID # 173158)*

BACKGROUND: Black-white differences in medication treatment effects for hypertension and congestive heart failure in Blacks and Whites have been widely reported in the medical literature. Recent debates have focused on the role of genetic, social and environmental factors in explaining racial variation in drug response. Angiotensin converting enzyme inhibitors (ACE-inhibitors) and Bidil are two prominent examples of medications with reported differential effects across race. However, little is known about physicians' attitudes and medical decision-making behaviors with regard to race-based therapy. We evaluated how physicians describe the utilization, premise, and implications of race-based therapeutics.
METHODS: We conducted ten focus groups of internal medicine physicians (five groups of White physicians and five groups of Black physicians). A total of 90 physicians in five US cities participated. Physicians were recruited via invitations sent to local and national physician organizations and Departments of Medicine at local medical schools. To meet recruitment goals we implemented snowball sampling to recruit additional physicians. A focus group interview guide was developed to query attitudes and beliefs about race-based therapeutics and the medical relevance of race in clinical practice. Experienced moderators matched to the participants' race conducted the focus group discussions which lasted 90 minutes and were audio-taped and transcribed verbatim. The data was analyzed by two independent coders using common coding techniques for qualitative data. The coded data were entered into a software package designed to handle unstructured qualitative data (NVivo) to assist in reporting recurrent themes.
RESULTS: Both Black and White physicians reported using BiDil to treat their Black heart failure patients. In addition, physicians reported treating White patients with BiDil despite the lack of trial results. However, both Black and White physicians were skeptical of the premise of BiDil, citing market forces as the primary impetus behind its creation. Physicians voiced concern that commercial considerations shaped the drug development of BiDil thereby threatening the validity of the trial. Most physicians did not feel that BiDil represented the future direction of medicine; rather they thought it would be an exception. According to both Black and White physicians, hypertensive Whites respond better than hypertensive Blacks to ACE-inhibitors. Several physicians were less likely to start Black patients on ACE-inhibitors in the absence of a compelling reason such as proteinuria. However, physicians often recognized the potential reno-protective effects and post myocardial infarction benefits of ACE-inhibitors in Black patients. Both Black and White physicians were uncertain if they could identify patients who are most likely to benefit from a drug using race as a selection criterion. Physicians hoped that eventually patients could be genotyped to determine if they would respond to a treatment or not but were skeptical of realizing the promise of genomic medicine.
CONCLUSIONS: Physicians prescribed medications such as BiDil and ACE-inhibitors differentially in their Black and White patients. However, both White and Black physicians acknowledged limitations of using race as a basis for selecting medical therapies and voiced concern about potentially negative consequences to patients and society (e.g., reduced access, increased costs) of race-based therapy.

PREVALENCE AND CORRELATES OF MODERATE TO SEVERE PHYSICAL PAIN AMONG HIV-INFECTED METHADONE MAINTAINED DRUG USERS ON ANTIRETROVIRAL THERAPY. H. Newville[1]; N.A. Cooperman[2]; J.H. Arnsten[2]; X. Li[2]; K.M. Berg[2]. [1]Yeshiva University, Bronx, NY; [2]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 173392)*

BACKGROUND: Physical pain is prevalent among HIV-infected patients, and is often under treated, especially in current and former drug users (DUs). However, little is known about physical pain among HIV-infected DUs on methadone maintenance for opioid dependence. To address this issue, we examined the prevalence and correlates of physical pain among methadone-maintained HIV-infected current and former DUs.
METHODS: We analyzed baseline data from a longitudinal study investigating antiretroviral adherence. Participants were surveyed using audio computer-assisted self-interview (ACASI) technology. Survey items included: physical pain (using items from the Brief Pain Inventory or BPI), use of prescription pain medications, methadone dose and treatment duration, illicit drug use (heroin, crack or cocaine) in the past 30 days, severity of psychological symptoms, self-reported antiretroviral adherence, and 11 dimensions of health-related quality of life. Utilization of an antiretroviral adherence-counseling program, available in all the methadone clinics, was collected by chart review. We defined "moderate to severe pain" using two questions: a score of five or higher (on a 10-point scale) on either (1) the BPI item measuring severity of pain "at its worst in the past week," or (2) the BPI item measuring the extent to which pain "interfered with daily activities in the past week". Bivariate logistic regression models were used to assess associations between independent variables and moderate to severe pain. Factors significant at $p < 0.05$ were entered into a multivariate logistic regression model.
RESULTS: Eighty-two participants were surveyed. Mean participant age was 46 years (range 29–62); 41 (50%) were female; and the majority was Black or Hispanic (93%). Thirty-one participants (38%) reported moderate to severe physical pain. Twenty-seven (87%) had taken pain medication prescribed by their doctor in the prior three months, and among these, 14 (52%) described their pain relief as "not at all" or "a little." Thirteen (42%) participants reported using illegal drugs, alcohol, or street pills for the purpose of treating pain. Moderate to severe pain was significantly associated in bivariate analysis with female gender, worse antiretroviral adherence, greater psychological distress, lack of adherence counseling, and two quality of life dimensions: worse social functioning and worse role functioning (e.g., being unable to do certain kinds or amounts or work, housework, or schoolwork because of your health). In multivariate analysis, worse social functioning [ORadj = 0.40 (95% CI: 0.25–0.64)], worse role functioning [ORadj = 0.48 (95% CI: 0.23–0.97)], and lack of adherence counseling [ORadj = 0.15(95% CI: 0.05–0.49)] were independently associated with moderate to severe pain.
CONCLUSIONS: These data demonstrate that physical pain is prevalent among methadone maintained HIV-infected current and former DUs, and that inadequate analgesia is common. Physical pain is also associated with factors that may impair substance abuse and HIV-related treatment, including low social functioning, inability to work, and poor utilization of antiretroviral adherence support.

PROJECT HEAL: PEER EDUCATION LEADS TO WEIGHT LOSS IN HARLEM. J.Z. Goldfinger[1]; G. Arniella[2]; J. Wylie-Rosett[3]; C.R. Horowitz[1]. [1]Mount Sinai School of Medicine, New York, NY; [2]North General Hospital, New York, NY; [3]Yeshiva University, Bronx, NY. *(Tracking ID # 172830)*

BACKGROUND: The Harlem community is typical of predominantly minority, urban communities nationwide, in that residents suffer from disproportionately high rates of obesity and related health problems. There is a relative scarcity of linguistically and culturally appropriate health professionals to counsel Harlem residents to lose weight, and it is difficult to replicate successful large-scale weight loss programs locally, due to their prohibitive economic and personnel costs. In light of these challenges, a coalition of local community and academic leaders developed and tested the effectiveness of a low-cost, peer-led weight loss course.
METHODS: Using community-based participatory research methods, a community-academic coalition developed Project HEAL: Healthy Eating, Active Lifestyles. Partners developed all course elements and evaluation tools through extensive collaboration with community members and local and national experts in nutrition, physical activity, and peer education. We piloted the eight-session course over ten weeks at a local church. Trained peer leaders followed a weight loss curriculum that conformed to accepted nutrition and physical activity guidelines. We assessed the impact of the course through measured weights, self-reported diet using food frequency questionnaires, exercise using a validated survey, and health-related quality of life. We compared data at baseline, the end of the course (10 weeks) and at follow-up (22 weeks after enrollment).
RESULTS: Twenty-six overweight and obese African American adults attended at least 3 of the 8 classes, with an average attending 75% of classes. Their mean age was 68 years, mean body mass index was obese at 33 kg/m2, 81% were female, and 27% received emergency food in the past 12 months. At enrollment, they underestimated their actual weight by an average of 10.4 pounds, but accurately reported their height. At 10 weeks, this group lost a mean of 4.4 pounds ($p < 0.001$) and mean body mass index decreased by 0.7 kg/m2 ($p < 0.001$). Participants reported decreased fat consumption from 88 mg to 80 mg ($p = 0.046$), decreased sedentary hours (5.4 to 4.1 hours daily, $p = 0.034$), and improved health-related quality of life ($p = 0.046$). At 22 weeks, the group lost a mean of 8.4 pounds total ($p < 0.001$), with a total decrease in body mass index of 1.4 kg/m2 ($p < 0.001$), and eight participants lost greater than 5% of their initial body weight. The group maintained a significantly decreased fat consumption at 22 weeks.
CONCLUSIONS: In a pilot study, the peer-led and community based Project HEAL course led to weight loss and behavior change. The minority communities most profoundly affected by obesity and diabetes, but with limited resources to address these epidemics, may benefit from this low cost, sustainable and culturally appropriate intervention.

PROMOTING ACCESS TO RENAL TRANSPLANTATION: THE ROLE OF INSTRUMENTAL SOCIAL SUPPORT NETWORKS IN TRANSPLANT EVALUATION. C. Clark[1]; L.S. Hicks[2]; J. Keogh[3]; A.M. Epstein[4]; J.Z. Ayanian[2]. [1]Brigham and Women's Hospital, Harvard Medical School, Boston, MA; [2]Brigham and Women's Hospital, Department of Health Care Policy, Harvard University, Boston, MA; [3]CliGnosis, Boston, MA; [4]Brigham and Women's Hospital, Department of Health Policy and Management, Harvard School of Public Health, Boston, MA. *(Tracking ID # 172793)*

BACKGROUND: Prior research has documented racial disparities in access to renal transplantation and found black dialysis patients are less likely than whites to complete the diagnostic evaluation requisite to be considered for transplantation. The evaluation process may be arduous for those with multiple medical and social risk factors. There is little known about the role of social support in facilitating the completion of a renal transplant evaluation. We sought to determine: (1) whether greater social support is associated with a higher likelihood of completing a renal transplant evaluation; and (2) whether differences in social support mediate racial disparities in completing the evaluation.
METHODS: We conducted a medical record review in a multi-regional sample of 742 patients with end-stage renal disease (ESRD) from across the U.S. to assess whether they completed the transplant evaluation. In addition, we surveyed each patient regarding factors that may influence access to transplantation including socioeconomic characteristics, insurance status, patient preferences, physician recommendations for transplantation, co-morbid conditions, and psychosocial resources. We surveyed patients about available social support in three domains: (1) instrumental support: the number of close friends or family that could help with

daily activities in the home, (2) emotional support: the number of close friends or family available for counsel on personal problems; and (3) institutional support: the degree to which dialysis center staff served as sources of support. Unadjusted analyses assessed dimensions of social support and the likelihood of having an incomplete transplant evaluation by race. Multivariable logistic regression was used to estimate the odds of not completing the evaluation, adjusted for patient characteristics.
RESULTS: Of the 742 participants, 374 (50%) were black. Blacks were more likely than whites to have an incomplete transplant evaluation (75% versus 58%, $p < 0.0001$, respectively). Instrumental social support improved the likelihood of completing the evaluation (46% of participants with 'high' support completed the evaluation compared to 25% with 'low' support, $p < 0.001$). Blacks and whites did not differ in levels of social support. After controlling for sociodemographic and clinical characteristics, patients were less likely to have incomplete evaluations if they had greater instrumental social support (OR 0.71 95% CI [0.56–0.89]) or had a physician recommend transplantation (OR 0.44 95% CI [0.26–0.76]). Black patients continued to have higher odds of incomplete evaluations compared to whites after adjustment for covariates (unadjusted OR 2.2 95% CI [1.6–3.0], adjusted OR 1.88 95% CI [1.3–2.7]).
CONCLUSIONS: Patients with stronger instrumental social support networks and appropriate physician recommendations are more likely to complete a renal transplant evaluation. However, significant racial disparities in rates of completion persist despite adjusting for social support. Interventions to improve instrumental social support may be insufficient to reduce racial differences in completing the transplant evaluation. Our results underscore the importance of physician recommendations in discussing options for transplantation. Future work should focus on additional strategies to reduce disparities in evaluation for renal transplantation.

PROSPECTIVE RECRUITMENT OF PATIENTS WITH EARLY STAGE NON-SMALL CELL LUNG CANCER: AN EARLY ANALYSIS OF TREATMENT DISPARITIES. S. Cykert[1]; C. Brown[2]; G. Downie[2]; M. Monroe[3]. [1]University of North Carolina at Chapel Hill, Greensboro, NC; [2]East Carolina University, Greenville, NC; [3]Carolinas Medical Center, Charlotte, NC. *(Tracking ID # 173620)*

BACKGROUND: Analyses of several sources of administrative data have shown differences in surgical rates for early stage, non-small cell lung cancer and worse survival for black patients. None of these studies ascertain specific causes. We report results of the first 65 patients recruited prospectively with newly diagnosed, non-small cell lung cancer.
METHODS: We have actively informed and maintained regular contact with pulmonary, oncology, and thoracic surgery practices in 4 North Carolina communities. We have also discussed this study and presented enrollment criteria at family practice and internal medicine staff meetings. Inclusion criteria are as follows: patients must be at least 21 years old, have either a tissue diagnosis or > 60% probability of non-small cell lung cancer using Bayesian methods, and be limited to Stage I or II disease with clinical and radiological testing. Patients are identified through either direct referral from practices or through the utilization of a chest CT review protocol. After being informed of the diagnosis of probable or definite lung cancer, but before the establishment of a treatment plan, patients are administered a 100-item survey that includes questions pertaining to demographic information, trust, physician-patient communication, perceptions about lung cancer, and physical-functioning. The primary outcome is lung cancer surgery within 4 months of initial diagnosis. We are able to perform limited bivariate and logistic regression analyses to explore possible explanations for surgical decisions.
RESULTS: We have recruited 112 newly diagnosed patients with early stage, non-small cell, lung cancer to date. Of these individuals, 65 have reached the 4 month post-diagnosis milestone. This group is 24% black, 60% married, 57% male, and 88% insured. Patients' ages range from 44 to 90 years with a mean of 65. One-third of these patients have received greater than a high school education. Our early analysis is consistent with administrative reports in that 76% of white patients and 68% of black patients have received lung cancer surgery within 4 months (p = ns). Twenty-eight percent of these patients don't agree with the statement, "When told about lung surgery, I had the opportunity to express my concerns." Of those that agree that they could express concerns, 85% went on to surgery compared to 43% who do not agree ($p = .003$). Logistic regressions reveal that those who perceive that they can express their concerns were more likely to receive lung cancer surgery (OR 8.3, 95% CI 2.1, 32.6) and black patients were less likely to do so (OR .58, p = ns).
CONCLUSIONS: During the early phase of a prospective study examining disparities in treatment of non-small cell lung cancer, we are proving capable of recruiting patients during this sensitive and limited interval before treatment is established. We are already observing a trend, though not yet statistically significant, of less black patients advancing to surgery, comparable to administrative reports. We also have evidence of perceived communication differences. Enrollment will double over the next 6 months providing further insight into etiologic issues related to disparities in cancer care.

QUE DICE AQUI? AVAILABILITY OF MULTILINGUAL PRESCRIPTION MEDICATION INFORMATION FOR LIMITED ENGLISH PROFICIENT PATIENTS IN NEW YORK PHARMACIES. L. Weiss[1]; I. Sharif[2]; F. Gany[3]; O. Carrasquillo[4]. [1]New York Academy of Medicine, New York, NY; [2]Montefiore Medical Center, Bronx, NY; [3]New York University, New York, NY; [4]Columbia University, New York, NY. *(Tracking ID # 172022)*

BACKGROUND: As the foreign born population in the US continues to increase, the quality of care provided to patients who are limited English proficient (LEP) has come under increased scrutiny. While much of the existing research has focused on doctor-patient communication, less is known about interactions between pharmacists and LEP patients.
METHODS: As part of a wider initiative focused on improving the availability of multilingual prescription medication information, we conducted a cross-sectional phone survey of 200 New York City (NYC) pharmacies. We used a randomized list of all licensed pharmacies in NYC (2,186). Pharmacies were excluded if they lacked an identifiable working phone ($N = 44$), did not serve outpatients ($N = 20$), or pharmacists were unable to complete the survey ($N = 62$, e.g. refusal, attempts at up to 5 call backs unsuccessful). Once excluded, we contacted the next pharmacy on the list until 200 phone interviews were completed. The survey was developed through a process that involved a review of existing pharmacist phone surveys and input from an Advisory Board, including practicing pharmacists and pharmacist educators. Anticipating that characteristics at multiple levels would be associated with the provision of information to LEP patients, the survey included questions on pharmacy, pharmacist and patient characteristics. Based on pilot testing, we shortened the survey to one that took under 5 minutes for pharmacists to complete. The primary outcomes were frequency of medication label translation (dichotomous: daily vs. not daily), translated medication information sheets, and availability of bilingual staff for counseling. Survey responses were geo-coded and merged with census tract level data on proportion of LEP persons. We used multivariate analysis to identify characteristics independently associated with providing translated medication labels.
RESULTS: Most pharmacists (88%) reported that they served LEP patients on a daily basis. Among the 176 pharmacies serving LEP patients on a daily basis, 80% noted they could provide translated labels and 52% could provide translated patient information sheets. Despite these capabilities, only 39% reported translating labels on a daily basis and 23% never translated labels. Spanish was the most common language for translated labels (72%) followed by Chinese (12%). Although 75% of the pharmacies had staff to provide medication counseling to Spanish speaking LEP patients, less than a quarter were pharmacists or pharmacy interns as legally required. In multivariate analysis, there was an increased odds of daily label translation for independent versus chain pharmacies (OR = 4.08, 95%CI, 1.55–10.74) and with increasing proportion of Spanish-speaking LEP persons in the pharmacy's census tract (OR = 1.09, CI 1.05–1.13 for each 1% increase in Spanish LEP population).
CONCLUSIONS: Our study identifies a major gap in the provision of health care services for LEP patients that warrants immediate attention. Although not optimal, use of widely available label translation software is a simple and feasible initial step. Physicians can serve an important role by reviewing medication labels and reminding LEP patients to request translated labels. The provision of pharmacy counseling services for LEP patients may require more complex interventions. Lastly, given the sharp reduction in independent pharmacies, our findings on language access at chain pharmacies raise additional concerns.

RACE, INSURANCE STATUS, AND DESIRE FOR TUBAL STERILIZATION REVERSAL. S. Borrero[1]; M.F. Reeves[2]; E. Schwarz[2]; J.E. Bost[2]; M. Creinin[2]; S. Ibrahim[3]. [1]University of Pittsburgh, VA Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA; [3]Veterans Administration, Pittsburgh, PA. *(Tracking ID # 172400)*

BACKGROUND: Tubal sterilization is the second most commonly used method of contraception in the United States and is used more often by black women than white women. While tubal sterilization is a highly effective method of contraception, it has the potential downside of being permanent and is associated with a high degree of regret. In order to determine whether the increased rate of sterilization among black women and women with public or no insurance is associated with increased post-sterilization regret, we examined the independent effects of race/ethnicity and insurance status on desire for sterilization reversal.
METHODS: This study utilized cross-sectional data collected by the 2002 National Survey of Family Growth (NSFG). The NSFG is designed to represent women and men 15–44 years of age in the household population of the US and provides national estimates of factors affecting pregnancy and birth outcomes. This analysis focused only on those women who had undergone tubal sterilization at any time prior to being interviewed. Our main outcome measure was desire for sterilization reversal. A multivariable logistic regression model was used to estimate the effects of race/ethnicity and insurance status on desire for reversal after adjusting for confounders. Because prior literature has demonstrated a strong association between age at the time of surgery and subsequent post-sterilization regret, we also conducted multivariable logistic regression analyses stratified by age groups (18–30 and > 30).
RESULTS: The sample consisted of 934 women who had undergone tubal sterilization. Nearly 24% of women expressed desire for reversal of sterilization: 30% of black women and 27% of Hispanic women expressed desire for reversal compared to 21% of white women ($p = 0.07$). Women with public or no insurance also expressed a higher rate of desire for reversal compared to women with private insurance (31% vs 19%, respectively, $p < 0.01$). In unadjusted analyses, black race, public/no insurance, age 30 years and younger, lower education level, and never having been married were significantly associated with desire for reversal of tubal sterilization. In adjusted analysis, the only significant predictor of desire for sterilization reversal was being age 30 years or younger at the time of surgery.

Among the 373 women in the older age group (>30 at the time of surgery), black women were significantly more likely to express desire for reversal compared to white women (aOR: 2.6; 95% CI: 1.2, 5.8). Among the 561 women in the younger age group (18–30 at the time of surgery), Hispanic and black women were equally likely to express desire for reversal as white women (aOR: 1.0, 95% CI: 0.6, 1.8; aOR: 1.1, 95% CI: 0.5, 2.2). Insurance status was not a significant predictor of regret in either of the age strata.
CONCLUSIONS: Among women over age 30 at the time of tubal sterilization, black women were much more likely to express desire for reversal than white women.

RACIAL AND GENDER DIFFERENCES IN REVASCULARIZATION FOR ACUTE CORONARY SYNDROMES. K.M. Freund[1]; A.K. Jacobs[1]; J.L. Speckman[1]; A. Ash[1]. [1]Boston University School of Medicine, Boston, MA. *(Tracking ID # 173492)*

BACKGROUND: Racial and ethnic minority men and women suffer higher mortality from coronary artery disease than white men. It is unknown if mortality differences reflect differences in disease or differences in treatment. Evaluation and revascularization is the standard of care when feasible in Acute Coronary Syndromes, especially for those at high risk. Our objective is to describe revascularization rates with either cardiac stent or coronary bypass grafting after Acute Coronary Syndromes by gender and race/ethnicity, adjusted for age, comorbidity,economic status and geographic variation.
METHODS: We conducted logistic regression analyses to assess stent use or coronary bypass grafting, compared with no cardiac intervention in subjects admitted with acute coronary syndrome. Models controlled for demographics, comorbidities (using claims data of inpatient and outpatient visits) and small area geographic variation. The study population was a random sample of 522,389 White, Black and Hispanic Medicare beneficiaries in 2001, aged 65+ with fee-for-service coverage, and without end stage renal disease. Blacks and Hispanics were oversampled to be able to study racial differences. Results are reported with reweighting to reflect the entire Medicare population.
RESULTS: Of the 22,903 admissions with acute coronary syndrome in the sample, 34% were black, 25% Hispanic,and 41% were white. In bivariate analyses, Black, Hispanic and White women were less likely to receive either stent or coronary bypass grafting than their male counterparts, and Whites had higher rates than Black or Hispanic subjects (all $p < 0.001$). In multivariate logistic regression adjusted for age, comorbidities, diabetes, prior MI or revascularization, CHF, peripheral arterial disease, renal insufficiency, CVD, HTN and economic status, Black and Hispanic men and all women had lower rates of revascularization, compared with their white counterparts (Hispanic men OR = 0.56 (CI = 0.53–0.56) and women 0.75 (0.71–0.80), black men 0.48 (0.47–0.50) and women 0.69 (0.67–0.71). White women (OR = 0.67, CI = 0.66–0.68), Hispanic women (OR = 0.74, CI = 0.68–0.80), and Black women (OR = .92, CI = 0.88–0.97) had lower rates of revascularization than the corresponding men.
CONCLUSIONS: In the setting of Acute Coronary Syndromes, all women, Hispanics and Blacks are less likely to receive revascularization than white men. Differences in age, economic status and overall health only partially account for these differences.

RACIAL DIFFERENCES IN JOINT REPLACEMENT EXPECTATIONS AMONG VETERANS WITH OSTEOARTHRITIS. P.W. Groeneveld[1]; C. Kwoh[2]; M.K. Mor[3]; M. Geng[4]; C.J. Appelt[4]; J.C. Gutierrez[5]; S.A. Ibrahim[4]. [1]Philadelphia VA Medical Center and the University of Pennsylvania, Philadelphia, PA; [2]Pittsburgh VA Health Care System and University of Pittsburgh, Pittsburgh, PA; [3]Pittsburgh VA Health Care System and The University of Pittsburgh School of Medicine, Pittsburgh, PA; [4]Pittsburgh VA Health Care System, Pittsburgh, PA; [5]Philadelphia VA Medical Center, Philadelphia, PA. *(Tracking ID # 172508)*

BACKGROUND: Joint replacement surgery can dramatically improve the symptoms and functionality associated with osteoarthritis (OA), yet black and white veterans with OA undergo joint replacement surgery at markedly different rates. Patients' expectations of the outcomes of joint replacement surgery are likely to influence their willingness to undergo these elective procedures. There are limited data, however, on whether blacks and whites differ in their expectations of joint replacement outcomes.
METHODS: We surveyed 939 veterans (459 blacks, 480 whites) ages 50–79 who were enrolled in primary care clinics in the VA Pittsburgh Health Care System or the Philadelphia VA Medical Center between 2004–2006. All enrollees were identified as potential candidates for joint replacement as indicated by their high scores on the Western Ontario and McMaster Universities OA Index. The previously validated Hospital for Special Surgery Joint Replacement Expectations Survey (JRES) was used to assess patients' expectations for pain relief, functional improvement, and psychological well-being after surgery. Data were collected in face-to-face interviews with the respondents. Multivariable linear regression models were fitted to the data to assess the relationship of the JRES score (the dependent variable) to age, race, sex, income, education, employment, marital status, symptoms, functional status, and clinical site.
RESULTS: Among hip OA patients (n = 296), unadjusted JRES scores among blacks (median = 40, interquartile range [IQR] = 30–50) were lower than whites' scores (median = 48, IQR = 36–60, $p < 0.001$). The adjusted mean score for blacks was 1.3 points lower than for whites ($p = 0.009$), and blacks with hip OA were more likely than whites (adjusted odds ratio [OR] = 1.19, $p = 0.03$) to be in the lowest expectations quartile. Among knee OA patients (n = 643), blacks' unadjusted JRES scores (median = 44, IQR = 33–56) also were lower than scores for whites (median = 49.5, IQR = 37–63, $p = 0.002$). The adjusted mean score for blacks was 0.8 points lower than for whites ($p = 0.03$), but blacks with knee OA were not more likely to be in the lowest expectations quartile ($p = 0.41$). Both hip JRES scores (OR for 1 point increase = 1.06, $p < 0.001$) and knee JRES scores (OR for 1 point increase = 1.04, $p < 0.001$) were strongly associated with patients' willingness to undergo surgery.
CONCLUSIONS: Among potential candidates for joint replacement, black veterans have significantly more pessimistic expectations for the outcomes of surgery than white veterans. Furthermore, favorable expectations of surgical outcomes were highly correlated with an increased willingness to consider joint replacement. Together, these findings suggest that interventions designed to enhance minority patients' understanding of the benefits of joint replacement surgery (e.g., testimonial videos, peer counseling, etc.) may be effective in reducing racial disparities in these procedure rates.

RANDOMIZED COMMUNITY-BASED INTERVENTION TO IMPROVE SELF-MANAGEMENT OF DIABETES AMONG OLDER AFRICAN AMERICANS AND LATINOS. C.M. Mangione[1]; A. Brown[2]; C. Sarkisian[1]; R.J. Brusuelas[1]; K. Norris[3]; N. Steers[1]; M. Davison[3]; S. Ettner[1]; D. Ganz[1]; M.M. Funnell[4]; R.M. Anderson[4]. [1]University of California, Los Angeles, Los Angeles, CA; [2]University of California, Los Angeles, Los Angeles, AZ; [3]Charles R. Drew University of Medicine and Science, Los Angeles, CA; [4]University of Michigan, Ann Arbor, MI. *(Tracking ID # 173704)*

BACKGROUND: Although participation in self-care has been shown to improve glycemic control, many persons with diabetes report low levels of physical activity, self-monitoring of blood glucose (SMBG), or following a special diet. To address this problem, we conducted a community-based randomized trial of a behavioral intervention with older Latinos and African Americans designed to enhance participation in diabetes self-care. Our intervention was implemented in English and Spanish, grounded in empowerment theory, and used individualized goal-setting and problem-solving to effect behavior change.
METHODS: From 2004 to 2005, we recruited participants from senior centers, churches, and community clinics who were African American or Latino, English or Spanish speaking, ≥ 55 years and had hemoglobin A1c ≥8%. All Latino group sessions were conducted in Spanish. We gave each participant a glucose meter and strips and instruction on their use. Participants were then randomized to either 6 weekly diabetes intervention group meetings that were facilitated by a trained health educator or to a 6 weekly control group health lectures unrelated to diabetes. As dictated by empowerment theory, the content of each session was participant driven yet also included strategies for enhancing physical activity, eating a healthier diet, managing multiple medications, and control of risk factors such as blood pressure, cholesterol, and glycemia. Our primary endpoint was change from baseline to 6-month follow-up in hemoglobin A1c. We also measured change in a number of potential mediators such as diabetes knowledge, self-efficacy, and reported participation in self-care and other intermediate outcomes including systolic blood pressure (SBP), LDL cholesterol (LDL), and body mass index (BMI).
RESULTS: The 258 intervention and 258 control participants were 38% African-American and 62% Latino. Mean age was 63 years, 71% were female, 70% had an income less than $15,000 per year, 43% were uninsured, and less than half had ever had diabetes education. Six-month follow-up data were available for 223 intervention and 217 control participants. At baseline, mean hemoglobin A1c was 9.6% (intervention) and 9.7% (control), mean (SD) SBP was 141 (20) (intervention) and 141 (19) (control), and mean (SD) LDL-cholesterol was 119 (35) (intervention) and 120 (37) (control). At follow-up, mean hemoglobin A1c improved by 1.0% for the intervention group and by 0.5% for the controls ($p = 0.016$ between trial arms). None of the potential mediators tested improved at follow-up. Additionally, SBP, LDL-Cholesterol, and BMI did not improve in either group.
CONCLUSIONS: This simple, community-based, low-cost behavioral intervention designed to improve self-care of diabetes among poor, low literacy populations did significantly improve glycemic control but did not improve other important intermediate outcomes associated with risk for complications, such as blood pressure and cholesterol levels. The 0.5% decrease in A1c between trial arms, if sustained over time, potentially could confer a 15% reduction in end-stage renal disease or progression to blindness. Easy access to diabetes programs designed to support personal self-management could mitigate long-term complications among some of the highest risk populations for poor outcomes.

RECENT DRUG USE AND HOMELESSNESS ARE ASSOCIATED WITH INCREASED SHORT-TERM MORTALITY IN HIV-INFECTED PERSONS WITH ALCOHOL PROBLEMS. A.Y. Walley[1]; D. Cheng[1]; H. Libman[2]; D. Nunes[1]; C.R. Horsburgh[1]; R. Saitz[1]; J. Samet[1]. [1]Boston University, Boston, MA; [2]Harvard University, Boston, MA. *(Tracking ID # 172595)*

BACKGROUND: Although suboptimal use of anti-retroviral therapy (ART) may be the most important modifiable factor affecting the survival of HIV-infected patients, the mortality impact of common, treatable concurrent conditions, such as substance use and homelessness is less clear. We assessed the impact of recent heavy alcohol use, heroin or cocaine use and homelessness on short-term mortality in HIV-infected patients with alcohol problems.
METHODS: We conducted survival analyses of a cohort of 595 HIV-infected persons with current or past alcohol problems who were prospectively assessed at 6-month intervals between 1996 and 2005. The three main independent variables were: recent heavy alcohol use (past 30 days), recent heroin or cocaine use (past 6 months), and recent homelessness (past 6 months). We determined the dates of death via the Social Security Death Index. To ensure recent assessments of heavy alcohol use, heroin or cocaine use and homelessness, we limited the outcomes to deaths occuring within 6 months of a study assessment. Data were analyzed using Cox proportional hazard models with the main independent variables modeled as time-varying variables. Covariates considered for inclusion in adjusted models were age, sex, race/ethnicity, CD4 cell count <200 at study entry, currently on ART, depressive symptoms, prior suicide attempt, injection drug use ever, mental and physical health function, and year of study entry.
RESULTS: Over a mean follow-up of 2.7 years, 31 subjects (5.2%) died within 6 months of their last study assessment. Cohort characteristics at study entry were: median age 41 years; 25% female; 41% African-American; 24% with CD4 count <200; 41% not on ART; 30% recent heavy alcohol use; 57% recent heroin or cocaine use; and 28% recent homelessness. Recent heroin or cocaine use (hazard ratio (HR) 2.20 [95% confidence interval (CI): 1.03–4.73]) and recent homelessness (HR 2.75 [95%CI: 1.25–6.03]), but not heavy alcohol use (HR 0.93 [95%CI: 0.41–2.12]), were associated with increased mortality in analyses adjusted for age, injection drug use ever, CD4 cell count, and current ART use.
CONCLUSIONS: Recent heroin or cocaine use and homelessness are significantly associated with increased short-term mortality in HIV-infected patients with alcohol problems. Our findings support including regular assessments of drug use and homelessness, as well as efforts to house homeless patients and to provide drug treatment to drug using patients in optimal treatment for HIV-infected patients.

REDUCING HEALTH DISPARITIES IN DEPRESSIVE DISORDERS OUTCOMES BETWEEN WHITES AND ETHNIC MINORITIES: A CALL FOR PRAGMATIC STRATEGIES OVER THE LIFE COURSE. A.E. Walters[1]; M.T. Prochaska[1]; M. Quinn[1]; B.W. Van Voorhees[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 173076)*

BACKGROUND: Depressive disorders are the most common of all mental disorders, causing suffering and leading to substantial medical and social costs. In addition, there exist significant racial and ethnic disparities in treating process and outcomes of depressive disorders. Progress has been made in defining mechanisms that shape such disparities across the life course (Figure 1), and interventions to address these disparities have been conducted and reported. Yet, no systematic review is available to guide health organizations, policy makers, and researchers on which interventions might be most efficacious and on which areas deserve future focus. We conducted a comprehensive review of existing treatment and prevention interventions designed to address disparities at specific points in the delivery of care: system, community, providers, and patients. In addition, we reviewed areas we believed held the highest potential for reducing disparities, but for which only a limited number of interventions have been tested.
METHODS: We searched the Medline and PsycInfo OVID databases for process, depressive symptom, and functional outcomes utilizing 31 MeSH terms (Medline), 37 subject terms (PsycInfo), and corresponding keywords. We excluded papers that: 1) were published prior to January 1995 or after January 2006, 2) were not in English, 3) did not pertain to humans, 4) were not conducted in the United States or Canada, 5) did not have a full text article, 6) did not have an intervention component with minority group participants, or 7) did not describe the mechanism for reducing disparities. Data abstraction was independently performed by the principal investigator and two research assistants. The quality of the intervention studies was assessed using the Downs and Black scale, with possible scores ranging from 0–27. The mean inter-rater reliability (Kappa) was 0.744 (SD = 0.174), with a range of 0.437–1.000.
RESULTS: We identified 983 abstracts meeting our search criteria. Among these, 20 studies described interventions to reduce disparities. Within these 20, we identified 12 utilizing chronic disease management models (CMM) and eight using culturally adapted psychosocial interventions. Quality scores ranged from 10.5–22.5. Of the CMM interventions, nine were multi-component and three were single-component. Seven of the CMM interventions utilized case management and four employed collaborative care approaches. Of the culturally tailored interventions, three were treatment programs, four were prevention interventions, and one was a psycho-educational program. Fourteen were randomized controlled trials and six were observational study designs. Multi-component, but not single component CMM interventions reduced disparities in process, depressive symptom and functional outcomes. Socioculturally tailored psychosocial interventions for treatment and prevention may be more efficacious than ones that are not.
CONCLUSIONS: The observed improvement in depression symptoms and functional status across studies that used multi-component interventions suggests a fairly robust and durable effect. Further progress is possible with the development of interventions that not only reduce structural barriers to care, but also continue to enhance trust and communication, using socio-cultural adaptation to ethnic minority populations.

RISK OF HOSPITALIZATIONS AND DEATH AMONG INJECTION DRUG USERS SEEKING CARE FOR SOFT TISSUE INFECTIONS. I. Binswanger[1]; T. Takahashi[2]; T.H. Dellit[3]; K. Bradley[2]; K.L. Benton[4]; J.O. Merrill[3]. [1]University of Colorado Health Sciences Center, Denver, CO; [2]VA Puget Sound/University of Washington, Seattle, WA; [3]University of Washington, Seattle, WA; [4]University of Colorado Health Sciences Center, Aurora, CO. *(Tracking ID # 173618)*

BACKGROUND: Soft tissue infections are common among active injection drug users (IDUs). Little is known about the health care utilization and health outcomes of injection drug users with these infections. Among injection drug users who sought care in the Emergency Department for soft tissue infections, we sought to examine the rate of repeat hospitalization and the mortality rate from all causes.
METHODS: For this prospective cohort study, we recruited English speaking IDUs, ≥18 years of age who sought Emergency Department care for soft tissue infection(s) at Harborview Medical Center (Seattle, WA) from May 2001 to March 2002, and had not received previous medical care for their current infection(s). In-person structured interviews were conducted at the index Emergency Department visit and follow-up hospitalization data were obtained from Harborview and University of Washington Medical Center electronic health and billing records. For the rate of hospitalization, person years were calculated from the index visit through September 2005. Data were linked to the National Death Index to identify deaths in the cohort through December 31, 2004.
RESULTS: Emergency Department staff identified 211 eligible patients; 156 (74%) agreed to participate. The mean age at enrollment was 42 years (Standard Deviation [SD] 9). 63% were men, 84% had previously been incarcerated, and 48% reported being homeless. Participants had been injecting drugs for a mean of 19 years (SD 12) and 81% had been patients at Harborview in the past. Forty-two participants (27%) were hospitalized at the time of the index Emergency Department visit. Patients were followed for hospitalizations over a mean of 4.0 years (SD 0.2) and a total of 625 person years. There were 258 subsequent hospitalizations during the follow-up period, a rate of 41 hospitalizations per 100 person years. Among the 86 people with one or more hospitalizations after the index visit, the mean number of hospitalizations during the follow-up period was 3.0 (SD 3.7). During 496 person years of follow-up for mortality, there were 10 deaths. The mortality rate was 2.0 per 100 person years (95% confidence interval 1.1, 3.7).
CONCLUSIONS: This study demonstrated that IDUs who sought emergency care for soft tissue infections had a high rate of hospitalization and death. We were limited by small sample size and we relied on utilization data from only 2 of the local hospitals, so the observed hospitalization rate is a conservative estimate. These results suggest that interventions to reduce the morbidity and mortality of IDUs who seek care for soft tissue infections are needed. ED visits and hospitalization for soft tissue infections may provide an opportunity to intervene among drug users with a high risk for adverse health outcomes.

RISK OF TUBERCULOSIS AMONG UNDOCUMENTED MIGRANTS IN GENEVA, SWITZERLAND. H. Wolff[1]; J.P. Janssens[2]; A. Meynard[1]; C. Delhumeau[3]; T. Rochat[2]; H. Stalder[1]; P. Sudre[4]; M.C. Costanza[3]; J.M. Gaspoz[1]; A. Morabia[5]. [1]Division of Primary Care Medicine, University Hospital of Geneva, Geneva; [2]Division of Pneumology, University Hospital of Geneva, Geneva; [3]Division of Clinical Epidemiology, University Hospital of Geneva, Geneva; [4]Public Health Departement, Geneva; [5]Queens College, City University of New York, New York, NY. *(Tracking ID # 172285)*

BACKGROUND: Most of the estimated 10,000 undocumented migrants, synonymously called "illegal migrants" in Geneva come from Latin-America, where the prevalence of tuberculosis (TB) is 5- to 50-fold higher than in Switzerland. Since 1996, a health care facility offers free access to care for undocumented migrants, who are defined as migrants without legal residency permit. We aimed to estimate their relative risk of TB compared to the general population of Geneva, Switzerland.
METHODS: During October/November 2002 every undocumented migrant in contact with the most important charitable associations on Geneva and a health care facility offering free care was invited to be screened for TB by chest X-ray in a mobile radiology unit. The incentive-strategy included interactive workshops and information lectures about pulmonary diseases and free flu vaccination. We informed community leaders, charitable associations, trade unions, and public social services dealing with undocumented migrants. Based on attendance of the health care facility and participation on workshops and lectures we estimate that 500 undocumented migrants were reached and invited to participate. All X-rays were examined by an experimented pneumologist who classified them as either normal, abnormal without, or abnormal with signs suggestive of former or active TB. The X-rays were compared to those of a control group comprising 12,904 persons (6,538 women and 6,366 men) participating between 1992–2002 in a general screening program in various Geneva workplaces using the same mobile radiology unit.
RESULTS: 206 undocumented migrants (41% of the invited) participated in this project. Their sociodemograpic characteristics (64% female, mean age 36,7 years, 82% form Latin-America) were representative of the typical profile of undocu-

mented migrants in Geneva. Compared to controls, undocumented migrants had more TB-related fibrotic changes (10/206 = 4.9% versus 154/12'904 = 1.2%, $p < 0.001$). The main factors associated with an increased risk of TB-related fibrotic changes were Latin-American origin and age. The age- and sex-adjusted odds ratio was 2.7 (95% confidence interval: 1.6,4.7), 2.05 (0.9, 4.7) for undocumented status and 5.5 (2.8, 10.8) for both being undocumented and of Latin-American origin.
CONCLUSIONS: This pilot study not only supports the hypothesis that undocumented migrants have a higher risk of tuberculosis than residents of a western city, but it also shows that this increased risk is mainly due to Latin-American origin rather than to illegality per se. Nevertheless, systematic screening strategies are extremely difficult to realize in this hard-to-reach population and would therefore not be cost-effective. More emphasis should be put on easy access to care for undocumented migrants with particular attention to tuberculosis.

SHOULD HEALTH STUDIES MEASURE WEALTH? A SYSTEMATIC REVIEW. C. Pollack[1]; S. Chideya[2]; C. Cubbin[3]; B. Williams[4]; M. Dekker[4]; P. Braveman[4]. [1]University of Pennsylvania, Philadelphia VA Medical Center, Philadelphia, PA; [2]Centers for Disease Control and Prevention (CDC), Atlanta, GA; [3]University of California, San Francisco and University of Texas at Austin, San Francisco, CA; [4]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173090)*

BACKGROUND: Measures of socioeconomic status/position (SES) are not interchangeable. Different SES factors, such as education, income, occupational status, and wealth, may influence health through various mechanisms at different stages of the lifespan. Few health researchers include measures of wealth even though wealth may be particularly important for elderly and retired persons, may buffer the effects of lost income, and may vary tremendously by different racial/ethnic groups. This study reviews the U.S.-based health literature to describe how wealth has been measured and to determine whether empiric evidence supports including measures of wealth in health research.
METHODS: We systematically reviewed studies published between 1990 and 2006 that included wealth as an independent variable and a health-related indicator as a dependent variable. Included studies controlled for least one other measure of SES.
RESULTS: Twenty-nine studies met inclusion criteria. Studies varied tremendously in the level of detail devoted to estimating wealth; some used the results of a single question while others delineated each source of assets and debts. Additionally, wealth was categorized in different ways, with eleven studies using it as a continuous variable (six of these log transformed). The majority of studies (15 of 29) found a significant and direct relationship between wealth and health after controlling for an additional SES measure, 10 found mixed results, and 4 showed no association. Higher levels of wealth were consistently associated with decreased mortality and better health status. The findings also generally supported an association between increased wealth and better functional status, fewer chronic disease and fewer mental health problems. Controlling for wealth tended to reduce or eliminate black/white differences in many of the studies. For older and elderly persons, the correlation between wealth and health was particularly strong. Few studies focused on gender differences in the relationship between wealth and health.
CONCLUSIONS: Health studies should include wealth as an important SES indicator. Failure to measure wealth may result in underestimating the contribution of SES to health, e.g., when studying the etiology of racial/ethnic disparities. Validation is needed of simpler approaches to measuring wealth that would be feasible in health studies.

STIGMA AND MISPERCEPTIONS: RISK PERCEPTIONS AND BARRIERS TO COLORECTAL CANCER SCREENING AMONG DOMINICANS AND PUERTO RICANS. J. Diaz[1]; R. Goldman[1]. [1]Brown Medical School / Memorial Hospital of RI, Pawtucket, RI. *(Tracking ID # 172385)*

BACKGROUND: In 2006, there were an estimated 148,610 new cases and 55,170 deaths secondary to colorectal cancer. Among Latinos, colorectal cancer is the second most commonly diagnosed cancer, but the percentage of those screened is lower than that of Whites and Blacks. Previous studies suggest that a higher proportion of Latinos have misperceptions about cancer that may impact their preventive health behavior. Therefore, in addition to recognized economic barriers, specific differences in knowledge, attitudes, and beliefs may impede higher rates of colorectal cancer screening among Latinos. This study explores colorectal cancer risk perceptions and attitudinal barriers to screening among two Latino sub-groups, Puerto Ricans and Dominicans, living in the northeastern U.S.
METHODS: Semi-structured, in-person, qualitative interviews were conducted with 147 adults who self-identified as Dominican or Puerto Rican. Interview questions were designed to elicit participants' perceptions, attitudes, beliefs, and experiences concerning cancer, prevention, and screening with colorectal cancer being one of four cancers addressed. Participants were recruited from a variety of community venues; all chose to do the 2 hour interview in Spanish. Qualitative content analysis was conducted on the original Spanish transcripts with the aid of Atlas.ti ethnographic software.
RESULTS: The study sample consisted of 36 Dominican women, 38 Dominican men, 38 Puerto Rican women, and 35 Puerto Rican men. The largest aggregated theme of responses about perceived risks of colorectal cancer was "don't know" as many participants had not heard of this cancer. However, among risks mentioned, the most commonly noted risks related to sexual practices. Sex in general was implicated by some participants, but most who spoke about sex referred to anal sex, usually between men, and sometimes between men and women - e.g., "people do it from behind" or, "people who have sex back there." Food was also commonly mentioned as a risk, usually as general notions of "bad food" without understanding of what properties of food potentially impact risk. Another commonly mentioned risk for colorectal cancer was poor digestion leading to constipation and straining during bowel movements. Among both men and women, fear was the most frequently mentioned barrier to screening. The most commonly mentioned fear was of receiving a diagnosis of cancer, and the associated fear of pain and death. In addition, men and women commonly noted "verguenza", or embarrassment, as a reason for avoiding screening tests. "Machismo" was cited by both men and women as a barrier to men's reluctance to undergo exams involving the rectum.
CONCLUSIONS: This sample of Dominican and Puerto Rican women and men described a variety of beliefs and attitudes about risks for colorectal cancer that are potential barriers to screening. Further study is needed to determine how common these beliefs are among Dominicans and Puerto Ricans, and if they can be generalized to other ethnic groups. The potential of patients from these Latino sub-groups to hold these beliefs and attitudes should be considered when educating or counseling about colorectal cancer screening.

THE ASSOCIATION BETWEEN "GATEWAY" SUBSTANCES AND ABUSE OF PRESCRIPTION OPIOIDS IN YOUNG ADULTS. L.E. Sullivan[1]; J.M. Tetrault[2]; W.C. Becker[1]; R. Desai[1]; D.A. Fiellin[1]. [1]Yale University, New Haven, CT; [2]Yale University, West Haven, CT. *(Tracking ID # 173372)*

BACKGROUND: The "gateway" hypothesis of drug sequencing states that there is a progression of substance abuse during adolescence beginning with licit drugs such as alcohol and/or tobacco, progressing to marijuana, and then on to "harder" drugs, which were conventionally listed as heroin and cocaine. There has been a dramatic shift to the abuse of prescription opioids (i.e. non-medical use). In general, and specifically in younger users, 44% of new abuse of prescription opioids in 2001 was by individuals younger than age 18 and the number of 18–25 year olds admitted to treatment for abuse of prescription opioids more than doubled between 1993 and 2002. Therefore, an investigation into the association between "gateway" substances (marijuana, alcohol, cigarettes) and subsequent abuse of prescription opioids may help identify younger patients who are important to target for prevention strategies.
METHODS: To evaluate this potential association, we analyzed the 2003 National Survey on Drug Use and Health, an annual, self-report survey that collects information on illicit drug, alcohol, and cigarette use from non-institutionalized U. S. citizens ages 12 and older. We restricted our analysis to respondents aged 18–25 years old. We examined the independent effect of age of first use of gateway substances on past-year (current) abuse of prescription opioids. Gateway substance was defined as age of first use of that substance before age 18 and/or before the age of the patient's first abuse of prescription opioids. We conducted a logistic regression model of current abuse of prescription opioids and gateway substance use, using gender, age, and race as covariates. Interactions were tested between those gateway substance use variables that remained in the model, with gender and with race.
RESULTS: Of the 18,337 respondents ages 18–25 year old, 50% were women, 62% white, 13% black, 18% Hispanic, and 7% other. Prevalences of gateway substance use prior to age 18 and/or preceding first use of prescription opioids was 38% (marijuana), 61% (alcohol), and 56% (cigarettes). Twelve percent (2106/18337) reported current abuse of prescription opioids. On logistic regression, only marijuana use was independently associated with subsequent abuse of prescription opioids ($p = .01$). Males and females with gateway marijuana use were at greater risk (AOR 1.72, $p = .01$) and (AOR 1.32, $p = .03$), respectively, than their counterparts without marijuana use for subsequent abuse of prescription opioids. All race/ethnic groups with gateway marijuana use were at increased risk for subsequent abuse of prescription opioids: White (AOR 7.1, $p = .001$), other (AOR 4.57, $p = .02$), Hispanic (AOR 3.35, $p = .15$), and black (AOR 1.71, $p = .01$).
CONCLUSIONS: We conclude that prior marijuana use, and not alcohol or cigarette use, is associated with subsequent abuse of prescription opioids in 18 to 25 year olds, especially among white males. As such, marijuana may act as a gateway substance for the abuse of prescription opioids. Prevention efforts targeted at the early use of marijuana in these specific populations may have an important effect on curbing the growing number of abusers of prescription opioids.

THE IMPACT OF FATALISTIC ATTITUDES ON COLORECTAL CANCER SCREENING AMONG LATINOS AND VIETNAMESE. R. Salazar[1]; J. Walsh[1]; T.T. Nguyen[1]; C.P. Kaplan[1]; S.J. Mcphee[1]; R. Otero-Sabogal[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173752)*

BACKGROUND: Beliefs have been suggested as a barrier to colorectal cancer (CRC) screening among Latinos and Vietnamese. Fatalism, the belief that death is inevitable

when cancer is present, may be a barrier to CRC screening among diverse communities. The goal of this study was to determine to impact of fatalistic attitudes on CRC screening in Latinos and Vietnamese.
METHODS: A telephone survey was conducted as part of a randomized controlled trial to evaluate the effect of culturally tailored interventions in Latinos and Vietnamese. Participants age 50–79 were recruited from primary care clinics in San Jose, CA. A five-item fatalism scale, modified from a scale previously tested in women from multiethnic communities, was included in the survey. The 5 items assessed cancer fear, locus of control and cancer fatalism (i.e. cancer is a death sentence). The mean score (range 1–5) was used to categorize participants as either "more" (above the mean) or "less" (below) fatalistic. Multivariate analysis was used to identify predictors of higher fatalism scores and the impact of fatalism on CRC screening and intent to screen.
RESULTS: 1013 Latino and 808 Vietnamese individuals completed the survey. More Vietnamese participants were up to date with any screening (defined as fecal occult blood test (FOBT) in previous year, flexible sigmoidoscopy (SIG) in the previous 5 years or colonoscopy (COL) in the previous 10 years) compared to Latinos (74% vs. 51.2%; $p < 0.001$). Mean fatalism scores were higher among Latinos (2.34; SD 1.61) than Vietnamese (2.06; SD 1.39). Among Latinos, male gender was associated with a higher fatalism score (OR 1.70; 95% CI 1.05–2.75). Latinos who were more educated (OR 0.84; 95% CI 0.79–0.89), more accultured (OR 0.86; 95% CI 0.75–0.99) or Catholic (OR 0.81; 95% CI 0.66–0.99) were less fatalistic. Vietnamese who were more educated (OR 0.92; 95% CI 0.88–0.97) or Catholic (OR 0.44; 95% CI 0.27–0.72) were less fatalistic. Among Latinos, those with higher fatalism scores were less likely to be up to date with COL (22.9% vs. 10.7%; $p < 0.001$) or any CRC screening (55.8% vs. 45.9%; $p = 0.002$). Furthermore, those Latinos with higher fatalism scores were less likely to plan on having a SIG (44.2% vs. 50.9%; $p = 0.01$) or COL (52.7% vs. 35.4%; $p < 0.001$. Among Vietnamese participants, higher fatalism scores were not significantly associated with being up to date with or planning to have CRC screening. When controlling for sociodemographic variables (education, age, income) multivariate analysis revealed that a higher fatalism score was not predictive of being up to date with or intent to have CRC screening in either Latinos or Vietnamese participants.
CONCLUSIONS: In this study, Latinos were more fatalistic than Vietnamese participants. Latinos with higher fatalism scores were less likely to be up to date with screening; however, after controlling for other variables, fatalistic attidues were not predictive of CRC screening practices.

THE IMPACT OF LANGUAGE BARRIERS ON INFORMED CONSENT AT A HOSPITAL WITH ON-SITE INTERPRETER SERVICES. Y. Schenker[1]; F. Wang[1]; S. Selig[1]; R. Ng[1]; A. Fernandez[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172301)*

BACKGROUND: No study has examined the impact of language barriers on informed consent. Informed consent is legally and ethically required prior to common invasive procedures, and language barriers could reasonably be expected to complicate the informed consent process. We designed a study to determine the impact of language barriers on receipt of informed consent.
METHODS: This was a retrospective matched cohort study conducted at a public teaching hospital with award-winning interpreter services and consent forms available in multiple languages. Chinese and Spanish-speaking patients with limited English proficiency (LEP) who received a thoracentesis, paracentesis or lumbar puncture between January 1st, 2004 and January 1, 2006 were matched with English-speaking patients by procedure, hospital service, and date of procedure. Patients were ineligible if the clinical note indicated lack of consent capacity, altered mental status or intubation at the time of the procedure. Charts were reviewed for evidence of informed consent (IC). Informed consent for English-speaking patients required a procedure note with documentation of a consent discussion and a signed consent form. For LEP patients, IC required a procedure note with documentation of a consent discussion through an interpreter or in the patient's primary language and a signed consent form (any language). To minimize misclassification in LEP patients, we included as informed consent instances where the procedure note did not contain documentation of a consent discussion yet the consent form was signed by an interpreter. To further distinguish lack of informed consent from poor documentation, a sensitivity analysis was conducted including as informed consent all instances with a consent form in the patient's primary language. Differences in informed consent were compared using chi-square analysis. Multivariate logistic regression was used to determine the independent effect of language on informed consent.
RESULTS: 74 procedures in LEP patients were matched with 74 procedures in English-speakers. English speaking patients and LEP patients did not differ by age or primary diagnosis. English-speakers were more likely than LEP patients to have received informed consent (53% vs. 27%; OR: 3.01; 95% CI, 1.51–5.98; $p = 0.002$). While there was no difference in the number of procedure notes, the charts of LEP patients were less likely to contain consent forms in any language (70% vs. 85%, $p = 0.03$), suggesting that actual differences in practice, not documentation, accounted for the results. Upon multivariate analysis adjusting for patient (age, gender, diagnosis) and healthcare (procedure, medical service) factors, English speakers remained more likely than LEP patients to undergo informed consent (Adj OR: 5.65; 95% CI, 2.41–13.25). Sensitivity analysis with the expanded definition of informed consent did not substantially alter our results.
CONCLUSIONS: Despite the availability of on-site professional interpreter services, physicians are less likely to obtain informed consent for common invasive procedures when patients do not speak English. This provider-driven health care disparity should be the focus of hospital quality measures and initiatives focused on diminishing inequities in health care. Residency programs should provide additional training on the process of informed consent and the care of LEP patients.

THE IMPACT OF LANGUAGE ON ACCESS AND EXPERIENCE OF CARE AMONG COMMERCIALLY INSURED ADULTS. A. Fernandez[1]; H.K. Seligman[1]; J. Viloria[1]; F. Wang[1]; S.J. Selig[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173145)*

BACKGROUND: Recent studies suggest that racial and ethnic disparities in health care may be decreasing, particularly among insured populations. However, race/ethnicity categorization may mask important heterogeneity related to English language proficiency. Therefore, we explored the effect of language on access to and experiences of care in an insured population.
METHODS: We used data from the 2003 California Health Interview Survey, a population-based survey conducted in 5 languages. We included adults ages 18–64 years who identified one of California's 7 largest carriers as their main insurer, and who were not co-insured through public insurance. Our independent variables were self-reported race/ethnicity and limited English proficiency (LEP), defined as speaking English "not well" or "not at all". We evaluated 4 measures of access to care (usual source of care, problems getting care, delays in care, and problems seeing a specialist), and 3 measures of experiences of care (problems finding a provider you were happy with, problems understanding your provider, and perceptions you would have received better care if you were a different race). We used weighted logistic regression to assess the independent contribution of race/ethnicity and language on access to and experiences of care. Multivariate analyses adjusted for gender, income, education, marital status, chronic disease burden, insurance plan, and urban vs. rural residence.
RESULTS: We included 17,574 English proficient (EP) and 832 LEP respondents. We observed no racial/ethnic disparities in access to care in adjusted analyses, although in unadjusted analyses Latinos were more likely than whites to report delays in getting care (18% vs. 15%, OR 1.2, $p < 0.01$) and Asians were more likely than whites to report problems seeing a specialist (23% vs.17%, OR 1.2, $p = 0.02$). LEP respondents were significantly more likely than EP respondents to report poorer access to care across all measures: having no usual source of care (10% vs. 6%, adjusted OR 1.7, $p < 0.01$), problems getting care (19% vs. 16%, AOR 1.5, $p < 0.01$), delays in care (23% vs. 15%, AOR 1.6, $p < 0.01$), and problems seeing a specialist (28% vs. 20%, AOR 1.8, $p < 0.01$). Racial/ethnic disparities in experiences of care were observed only for reports of "would have received better care if you were a different race" (AOR 6.9, $p < 0.01$ for African-Americans; AOR 3.4, $p < 0.01$ for Latinos; and AOR 3.44, $p < 0.01$ for Asians compared to Whites). However, LEP respondents were significantly more likely than EP respondents to report poorer experiences of care across all of the measures: problems finding a provider you were happy with (24% vs. 18%, AOR 1.8, $p < 0.01$), problems understanding your provider (12% vs. 3%, AOR 3.0, $p < 0.01$), and perceptions you would have received better care if you were a different race (14% vs. 3%, AOR 2.5, $p < 0.01$).
CONCLUSIONS: To our knowledge, this is the first study to examine the effect of language in a multiethnic insured population. We found that English language proficiency is an important independent risk factor for disparities in access to and experience of care among the insured, with approximately 1 in 5 LEP respondents reporting problems with access to care. Moreover, we found that these disparities would not be detected in analyses focused solely on race/ethnicity. As policymakers move to require health plans to collect and report data by race/ethnicity, they should also require data collection and quality improvement efforts by language status.

THE IMPACT OF PATIENT RACE ON PATIENT-CENTERED CARE IN A MULTI-CENTER COHORT OF HIV-INFECTED PATIENTS. P.T. Korthuis[1]; S. Saha[1]; J.S. Josephs[2]; R.D. Moore[2]; K.A. Gebo[2]; J. Hellinger[3]; M.C. Beach[2]. [1]Oregon Health & Science University, Portland, OR; [2]Johns Hopkins University, Baltimore, MD; [3]Community Medical Alliance, Boston, MA. *(Tracking ID # 173484)*

BACKGROUND: Patient-centered care (including dimensions of access and good patient-provider communication) is an important determinant of positive clinical outcomes, and has been associated with race/ethnicity in previous studies. The objective of this study was to determine the association between patient race and patients' perceptions of patient-centered care among patients with HIV.
METHODS: In 2003, we interviewed 951 randomly selected adults at 14 HIV primary care community and academic HIV Research Network sites. As a measure of access, patients were asked to report the amount of time it takes to travel to their usual source of HIV care and how long they wait to see a provider after arrival (both dichotomized at the median). As a measure of communication, patients were asked to report how often their HIV provider a) listened carefully to you? ("listens"), b) explain things in a way you could understand ("explains")?, c) show respect for what you had to say ("respects")?, and spend enough time with you ("enough time")? We assessed the association of patient race with access and communication measures using bivariate and multivariate logistic regression, all accounting for clustering by site.
RESULTS: 54% of patients were black, 32% were white, and 14% were Hispanic. Most (68%) patients were male with a median age of 46 (range 20–85). HIV risk

factors were 39% MSM, 27% heterosexual, and 14% IDU. Patients reported it took them a median of 20 minutes to get to their usual source of care and waited a median of 15 minutes to see their provider after arrival. Patient race was significantly associated with having a >20 minutes travel time (Black vs. White OR = 1.50 95%CI 1.04–2.16 and Hispanic vs. white OR 1.25 [0.64–2.46]) but was not associated with a >15 minute wait time (Black vs. White OR 1.31 [0.88–1.95]) and Hispanic vs. White OR 1.25 [0.71–2.21]). Black patients were significantly more likely to report that their provider listens (OR 1.61, [1.01–2.55]), explains (OR 1.71, [1.19–2.46]), respects (OR 2.10, [1.41–3.14]), and spends enough time (1.54, [1.06–2.22]). There were no differences between Hispanics and Whites in measures of communication. Associations remained significant after adjustment for patient sex and insurance status.
CONCLUSIONS: Associations between race and patient-centered care are mixed, with black patients having longer travel time to their usual source of care yet reporting better communication with provider. Reducing disparities and improving patient-centered care for Black patients with HIV may need to focus more on access and other factors than on communication.

THE YOUNG ACHING HEART: BLACK-WHITE DISPARITIES IN PREMATURE CARDIOVASCULAR DISEASE. S. Jolly[1]; A. Chattopadhyay[1]; K. Bibbins-Domingo[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172344)*

BACKGROUND: Racial disparaties in cardiovascular disease prevalence and outcomes have been described, although the effect of age on these differential disease rates has not been well defined. We determined rates of premature cardiovascular disease (occurring in individuals less than 55 years of age) among blacks and whites.
METHODS: Using data from the National Health and Nutrition Survey (NHANES) ('99-'02), the National Hospital Discharge Survey (NHDS) ('00-'04), and Vital Statistics ('99-'03), we determined the rates of prevalent disease, hospitalizations, and deaths for heart failure (HF), stroke, and myocardial infarction (MI). Race was determined by self-report in NHANES, hospital administrative and medical records in NHDS, and by funeral directors or family members in the death records of Vital Statistics. We examined disease rates for each of the three conditions for blacks and whites between the ages of 20 and 55, and those over 55, and determined the proportion of hospitalizations and deaths attributed to these diseases that occurred among those less than 55 years.
RESULTS: Blacks less than 55 years of age have markedly higher rates of prevalent disease, hospitalizations, and deaths than whites for each of the conditions examined (Table). Differences between blacks and whites less than 55 years was most prominent for HF and stroke, with blacks having a 10-fold higher rate of hospitalizations for HF than whites, and a 3-fold higher rate of premature deaths for both HF and stroke. Twenty percent (20.1%) of all HF deaths and 31.4% of all HF hospitalizations among blacks occur in those less than 55 years, compared with 5.2% of all HF deaths and 8.2% of all HF hospitalizations among whites.
CONCLUSIONS: Blacks experience high rates of premature cardiovascular disease, particularly heart failure and stroke, resulting in significant morbidity and mortality at young and middle age. Recognizing the burden of cardiovascular disease at this younger age among blacks has important implications both for the study of racial disparities in cardiovascular disease, as well as interventions aimed at reducing these disparities.

Prevalence, Hospitalization, and Death Rates per 100,000 Population

	Prevalence		Hospitalization		Death	
	White	Black	White	Black	White	Black
Heart Failure Age <55 years	597	1447	4.3	37.9	4.1	13.6
Heart Failure Age >55 years	6018	9165	103.4	299.8	165.3	182.5
Stroke Age <55 years	859	2083	17.4	41.2	4.9	15.0
Stroke Age >55 years	6302	8290	293.6	543.7	250.5	288.4
Myocardial Infarction Age <55 years	873	1752	98.6	339.7	10.0	13.0
Myocardial Infarction Age >55 years	10180	8998	302.9	882.4	286.0	293.1

THIRTY-DAY MORTALITY FOLLOWING AN ADMISSION FOR PULMONARY EMBOLISM IS LOWER FOR WOMEN THAN FOR MEN. S. Borrero[1]; D. Aujesky[2]; R.A. Stone[3]; M. Geng[4]; M.J. Fine[3]; S. Ibrahim[1]. [1]Veterans Administration, Pittsburgh, PA; [2]University of Lausanne, Lausanne; [3]University of Pittsburgh, Pittsburgh, PA; [4]Veteran's Administration, Pittsburgh, PA. *(Tracking ID # 172407)*

BACKGROUND: Pulmonary embolism (PE) is a common disease with substantial associated mortality. Prior studies have reported higher PE mortality rates among men than women, but it is unclear whether these differences were due simply to incomplete adjustment for baseline risk. Using a large statewide database, we compared 30-day mortality rates for PE between women and men adjusting for severity of disease, insurance status, and hospital volume.
METHODS: The study cohort included all patients aged ¡Y˜ 18 years who were discharged with a diagnosis of pulmonary embolism from 186 Pennsylvania hospitals between 1/2000 and 11/2002. The study outcome was death from all causes within 30 days of admission for PE. Mortality data was obtained by linking study patients to the National Death Index. We compared 30-day mortality for women and men, using random-effect logistic regression to adjust for clinical characteristics shown to predict early mortality (age, cancer, chronic lung disease, heart failure, pulse ¡Y110 beats per minute, systolic blood pressure <100 mm Hg, respiratory rate ¡Y30 per minute, body temperature <36¡âC, altered mental status, and oxygen saturation <90%), as well as patient race, insurance status, and log hospital bed size. We assessed interactions among sex, race, and clinical variables.
RESULTS: The study sample consisted of 15,531 patient discharges for pulmonary embolism, of which 9,304 were women and 6,227 were men. The mean age was 64.9 for women and 62.5 for men ($p < 0.01$). Men were more likely to have cancer and lung disease while women were more likely to have heart failure ($p < 0.01$ for each). Physical examination findings were similar between men and women except for altered mental status which was more prevalent in women. The crude 30-day mortality rates were 8.9% for women and 9.8% for men. The unadjusted odds ratio of 30-day mortality for women was 0.90 (95% confidence interval (CI): 0.80, 1.00). After adjusting for severity of disease, race, insurance status, and log bed size, women had lower 30-day mortality compared to men (adjusted OR: 0.80; 95% CI: 0.71, 0.91). There were no significant interactions between sex and race, age, or clinical characteristics expect for an interaction between sex and chronic lung disease. Among patients with chronic lung disease, the adjusted odds ratio of 30-day mortality for women compared to men was 0.62 (95% CI: 0.49, 0.78). However, among patients without chronic lung disease, the adjusted odds ratio of 30-day mortality for women compared to men was 0.88 (95% CI: 0.77, 1.02). Chronic lung disease appeared to be associated with higher odds of mortality for men (adjusted OR: 1.51; 95% CI: 1.24, 1.84) but not for women (adjusted OR: 1.06; 95% CI: 0.87, 1.27).
CONCLUSIONS: Women hospitalized with pulmonary embolism had significantly lower odds of 30-day mortality compared to men, particularly among patients with chronic lung disease.

TOBACCO USE AND CONTININE MEASUREMENTS IN SOMALI IMMIGRANT POPULATION. T. Selameab[1]; S. Jama[2]; A. Dalmar[3]; D.J. Pryce[4]. [1]Boston Medical Center, Boston, MA; [2]Minnesota Institute of Health Volunteers, Minneapolis, MN; [3]Medical College of Wisconsin, Milwaukee, WI; [4]Hennepin City Medical Center, Minneapolis, MN. *(Tracking ID # 172628)*

BACKGROUND: Acculturation and unique cultural barriers affect tobacco use prevalence in immigrant populations and has not been fully studied in the Somali immigrant population. Correlation of self-reported tobacco use to measurable levels of cotinine has been studied and confirmed in other populations but have not been tested in the Somali population. Our study aims to: 1) Identify the prevalence of smoking in a representative sample of the Somali immigrant population, 2) Confirm self-reported tobacco smoking behavior with measured cotinine levels, 3) Obtain specific descriptive information on this unique populations in order to focus tobacco cessation efforts and resources.
METHODS: Prevalence of tobacco use in Somali immigrant populations age 18 years or older were assessed using the Centers of Disease Control rapid epidemiological survey. Eighty-five percent of the Somali speaking population in Hennepin County lives in Minneapolis within seven continuous neighborhoods. The addresses of all identifiable households were cataloged and 36 sites (clusters) identified through random selection with an average of seven participants identified per cluster. Informed consent and survey were obtained through trained Somali nurses and medical doctors to assure that cultural, religious, and gender bias was minimized. Demographic information (age, gender, months in the USA etc) were collected on each participant and they were asked to participate in a survey assessing cardiovascular disease risk factors, including tobacco use. Other behavioral practices were assessed, including alcohol and Khat consumption, and serum cotinine levels measured.
RESULTS: There were 253 survey participants (42% males, 58% females) with 96.8% consenting to serum cotinine levels. The prevalence of self-reported current smoking was 8.3% (1 female, 20 male), former smoking was 2.4% (5 male, 1 female), and 89.7% reported never smoking. Smoking rates for males age 18 years old −39 years old was 27%, accounting for 61% of all smokers. Ten percent (10%) of male participants admitted to Khat use with 72% of Khat users also admitting to tobacco use. We identified no participants with alcohol use. Cotinine levels were positive (>14ng/ml) in 13.9% of the 244 participants, confirming current smoking in all the self-reported current smokers and were positive in 4.8% (5 males, 6 females) of self-reported never smokers.

CONCLUSIONS: Our study finds a low prevalence of tobacco smoking in the Somali immigrant population. It is especially low in females, and elderly Somali immigrants. The measured levels of cotinine suggest that self-reported non-smoking Somali females are more likely to have positive levels than self-reported non-smoking males. This could be explained through second-hand smoke exposure, or through exposure to replacement nicotine products but the actual cotinine levels were 50 ng/ml or greater, thus we believe it is most likely due to underreporting as a response to deep cultural and religious stigmata. These results also indicate a need for appropriate smoking cessation resources allocation focused on young Somali males, especially those that use Khat.

UNDER-RECOGNITION OF OBESITY AND METABOLIC SYNDROME. E. Yeung[1]; K. St. Clair[1]; L. Inouye[1]. [1]Naval Medical Center, Portsmouth, VA, Portsmouth, VA. *(Tracking ID # 172023)*

BACKGROUND: Obesity has reached epidemic levels in the United States, with detrimental health, financial and psycho-social issues at an individual, community and national level. However, obesity remains under-diagnosed and under-treated. Likewise, metabolic syndrome was described 20 years ago, but the criteria of metabolic syndrome have still not been clearly defined. This adds to the other barriers to recognizing and counseling for obesity and metabolic syndrome. We examined how often physicians are screening and counseling patients about these two conditions.
METHODS: A retrospective random chart review of 10 percent of outpatient convenience files were reviewed for visits made between June 2004 to June 2005 at an ambulatory internal medicine clinic. All clinic visits include height and weight recording as part of the vitals signs. We collected demographic information, physician or provider status/training level, subject waist size, systolic and diastolic blood pressure, fasting blood sugar, triglyceride, and HDL. The National Cholesterol Education Program/Adult Treatment Panel III (NCEP/ATPIII) diagnostic criteria were used to identify subjects with metabolic syndrome. We examined whether documentation in the problem list or past medical history, or counseling in the assessment/plan for obesity or metabolic syndrome was present. Comparison of trainee to staff for counseling rates was analyzed using the visit as the unit of analysis, with the chi-squared test.
RESULTS: A total of 543 charts were screened. Three hundred thirty charts met the time frame criteria, with a total of 505 visits. Two hundred seventeen of 330 (66%) subjects were either obese or overweight. None of the subjects had a waist girth documented, so BMI > = 30 was used instead of waist circumference. Forty eight percent of subjects were obese and 42% also had at least two of the other NCEP/ATPIII criteria for metabolic syndrome. Of those with obesity, only 17% of subjects had obesity either listed in the problem list/past medical history or listed as part of the assessment/plan. Housestaff recognized obesity in 5.3% of the visits, and staff recognized obesity in 8% ($p > .05$). Of those subjects meeting criteria for metabolic syndrome, no visits had this condition listed in either problem list/past medical history or in the assessment/plan of the note. Only one visit where the subject met metabolic syndrome critieria had any documentation of counseling with regards to metabolic syndrome, done by a staff physician.
CONCLUSIONS: From this pilot study, we conclude that obesity and metabolic syndrome are under-recognized in this internal medicine clinic. There were no physicians who established a diagnosis of metabolic syndrome, and only one note contained any counseling documentation. There is substantial room for improvement in increasing clinician awareness in recognizing and addressing the issues and conditions of obesity and metabolic syndrome. Potential areas for systems improvement include documentation of waist circumference and providing methods for quicker recognition of patients with risk factors or overt metabolic syndrome. Physicians' skills and comfort level with behavioral counseling skills must also be explored.

USE AND MISUSE OF PRESCRIPTION ANALGESICS IS COMMON AMONG HIV-INFECTED HOMELESS AND MARGINALLY HOUSED ADULTS. S. Cohen[1]; D. Bangsberg[1]; R. Gupta[1]; L. Gee[1]; M. Kushel[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172226)*

BACKGROUND: Patients with HIV and co-existing substance use disorders have high rates of chronic non-malignant pain. Due to concerns about misuse of analgesics, the prescription of opioid analgesics for patients with co-existing substance use disorders is controversial. Little is known about prescribing practices or the risk of analgesic misuse in patients with HIV and co-existing substance use disorders.
METHODS: We conducted a cross-sectional study of 267 participants in the REACH cohort, a community-based study of HIV-infected homeless and marginally housed adults. We interviewed participants about their pain (SF-36 bodily pain index), illicit substance use (lifetime and past 30- day use of heroin, crack/cocaine or methamphetamine), and use and misuse of prescription analgesics. We defined lifetime chronic prescription analgesic use as taking daily analgesics prescribed by a health care provider for at least 30 consecutive days. We defined misuse of prescription analgesics as ever buying on the street, selling, trading sex or drugs to acquire, or using prescription analgesics to get high. We asked participants to report which analgesics prescribed by a health care provider they currently take and which analgesics they have ever misused. Using multivariate analysis, we evaluated factors associated with use and misuse of prescription analgesics.
RESULTS: The majority of the participants were African-American (50.4%) and male (71.5%) with a median age of 46. Most (86.0%) reported a lifetime history of illicit substance use and 40.7% reported illicit substance use in the past 30 days. Participants reported high rates of pain: SF-36 bodily pain index median score 64 (Q1, Q3 42, 80). Over half (50.9%) reported a history of chronic prescription analgesic use and one-third (32.6%) reported current prescription opioid analgesic use. One-third (35.2%) reported a lifetime history of prescription analgesic misuse; 9.0% reported misuse in the prior month. Among participants who reported lifetime misuse, the most commonly misused analgesics were: hydrocodone (reported by 56.8% of misusing participants), oxycodone (33.8%), codeine (32.4%), benzodiazepines (21.6%) and morphine (21.6%). In multivariate analysis, high rates of chronic pain (AOR 3.5, CI 1.8–7.3) and a history of crack/cocaine use (AOR 2.8, 95% CI 1.3–6.1) were associated with chronic prescription analgesic use; the same factors were associated with current opioid analgesic use. A history of heroin use (AOR 7.5, CI 4.0–14.5) was associated with prescription analgesic misuse.
CONCLUSIONS: In a community-based population of HIV-infected adults with high rates of illicit substance use, the medical use of prescription opioid analgesics was 10 times greater than that reported in the general population. Illicit substance use did not appear to deter the medical use of opioid analgesics; rather, cocaine use was associated with the prescription of opioid analgesics by health care providers. Misuse of prescription analgesics was common and associated with illicit substance use. Strategies to manage pain that optimize the quality of life while minimizing controlled substance misuse are needed.

VARIATION IN DRUG PRICES AT PHARMACIES: DO THE POOR PAY MORE? W.F. Gellad[1]; W.H. Shrank[1]; J.S. Haas[1]; N.K. Choudhry[2]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard University, Boston, MA. *(Tracking ID # 173749)*

BACKGROUND: Those who live in poverty have been shown to pay more than wealthier individuals for needed services such as mortgages, insurance, and groceries. While geographic variations in medical care and costs are well documented in the medical literature, there are few formal studies on variations in pharmacy prices. Variations in prices could contribute to disparities in access to prescription drug care for patients without prescription drug coverage or with limited coverage. We examined the association between pharmacy prices and neighborhood wealth, using Florida's publicly available prescription price database as an example.
METHODS: We conducted a cross-sectional analysis of prescription prices in November 2006 from the Myfloridarx.com website. The Florida prescription drug price website provides prices for the 100 most commonly used drugs in Florida, and lists the retail prices that an uninsured patient would be expected to pay. Pharmacies that have dispensed one of these top 100 drugs to a patient on Medicaid are required by law to report the retail price to the state for publication on the website. In total, 3,598 pharmacies are included on this website. Prices for three commonly used drugs for chronic conditions and one antibiotic for short term acute administration were analyzed: Esomeprazole 40 mg (30 tablets) for peptic ulcer disease, Fluticasone/Salmeterol (Advair 250/50) for asthma, Clopidogrel 75 mg (30 tablets) as an anti-platelet agent, and Azithromycin 250 mg (6 tablets) for bacterial infections. Pharmacies were classified as chain pharmacies if they were either CVS, Walmart, Walgreens, or Winn-Dixie, the four largest pharmacies in the state. Median zip code income from the 2000 census was used as a measure of neighborhood wealth and was categorized into < $20,000, $20,000-$40,000, $40,000-$60,000, and > $60,000. We compared median prices for each drug in each income category using the Kruskal-Wallis test. We also compared the frequency of chain pharmacies in each income group using Chi-square tests and the mean prices of each drug at chain vs. non-chain pharmacies using t-tests.
RESULTS: 2,342 unique pharmacies reported prices for one of the 4 drugs studied. 61% of the pharmacies were classified as chain pharmacies. 63% of pharmacies in the highest income zip codes were chain pharmacies, compared to 39% in the poorest neighborhoods ($p = .003$). The median price for Advair in the poorest neighborhoods was $200, while in the wealthiest neighborhoods the median price was $196 ($p = .002$). The median prices for azithromycin, esomeprazole and clopidogrel were also higher in poorer neighborhoods ($p = .05$, $p = .002$, and $p < .0001$ respectively). The mean price of Advair was $199 at chain pharmacies vs. $206 at non-chain pharmacies ($p < .0001$) and the mean price of a course of azithromycin at chain pharmacies was $50, compared to $54 at non-chain pharmacies ($p < .0001$).
CONCLUSIONS: Pharmacies in poorer neighborhoods of Florida charge higher retail prices for these four commonly prescribed drugs. This phenomenon could impose additional barriers to access to prescription drugs for the poor and uninsured, those most vulnerable to drug costs. The lack of economies of scale in poorer neighborhoods has been used to explain the presence of higher prices for other goods in poorer neighborhoods. The lower number of chain pharmacies in poor neighborhoods likely contributes to the higher prices seen in this study.

WHAT FACTORS CONTRIBUTE TO RACIAL DISPARITIES IN BLOOD PRESSURE CONTROL AMONG URBAN PRIMARY CARE PATIENTS? C.N. Wiley[1]; D. Roter[1]; L.R. Bone[1]; K. Carson[1]; E. Miller[1]; M.S. Barr[2]; D.M. Levine[3]; L.A. Cooper[1]. [1]Johns Hopkins University, Baltimore, MD; [2]Baltimore Medical System, Baltimore, MD; [3]Johns Hopkins Medical Institutions, Baltimore, MD. *(Tracking ID # 173259)*

BACKGROUND: Racial disparities in high blood pressure (HBP) are only partially explained by sociodemographics and access. In addition to demographic and clinical factors, we examined whether healthcare processes, such as patient-physician communication and patient adherence, contribute to disparities in BP control.
METHODS: We conducted a cross-sectional analysis of baseline data from a clinical trial of interventions to improve patient adherence to HBP treatment. Study subjects included hypertensive adult patients receiving care in one of 18 urban community-based clinics in Baltimore, Maryland. BP was measured as the average of 3 readings with the automatic oscillometric (Omron HEM 907) monitor. Study participants were considered to have controlled BP with SBP <140 mmHg and DBP <90 mmHg. Medication adherence was assessed using the Hill-Bone (HB) medication compliance subscale. Demographic, clinical, and doctor-patient relationship factors were assessed using self-reported survey items from validated instruments. Literacy level was assessed using the Rapid Estimate of Adult Literacy in Medicine (REALM). Encounters were audio-taped, and patient-physician communication behaviors were measured using the Roter Interaction Analysis System. We used chi-square statistics and analysis of variance (ANOVA) to test for differences between groups and multiple logistic regression to assess for possible mediating factors in the relationship between race and BP control.
RESULTS: 274 patients (62% black, 32% white; 66% female; 44% diabetic) were enrolled in the study. The mean age of the sample was 58 years; 38% had an annual income $<$\$10,000 (45% of blacks vs. 26% of whites; $p=0.002$). Compared to whites, blacks were more likely to be diabetic (54% vs. 29%; $p<0.001$) and to have shorter office visit lengths (14.7 minutes vs. 18.4 minutes; $p=0.001$) that were verbally dominated (ratio defined as all doctor talk divided by all patient talk) by their physician (1.47 vs. 1.19, $p=0.001$). Fewer blacks felt that their doctor "very often or often" asked them to state which treatment choice they preferred (58% vs. 76%; $p=0.004$) and fewer blacks than whites stated that they trusted their doctor "completely" (68% vs. 80%; $p=0.03$). Blacks had higher mean scores on the HB medication adherence subscale, indicating worse HBP medication adherence (10.6 vs. 9.8, $p=0.001$) and lower mean literacy levels (51.8 vs. 58.3; $p=0.007$). Black race (OR = 0.50; 95% CI 0.29–0.84) and poor medication adherence (HB medication score >13 compared with score of 9) (OR = 0.24; 95% CI 0.10–0.55) were statistically significantly associated with decreased odds of blood pressure control in univariate analyses. Black race remained a statistically significant negative predictor of BP control after adjusting for age, diabetes and literacy level (OR = 0.54; 95% CI = 0.30–0.94). After further adjusting for medication non-adherence and whether the physician elicited the full spectrum of the patient's concerns early in the visit (OR = 0.60; 95% CI = 0.33–1.09), blacks still had poorer BP control, but this finding was no longer statistically significant.
CONCLUSIONS: Black primary care patients have worse HBP control than their white counterparts. Racial disparities also exist in patient-physician communication and patient adherence. Physician communication behaviors and patient medication adherence partially mediate the effect of race on BP control and are important targets for future intervention.

WHAT SHOULD WE INCLUDE IN A CULTURAL COMPETENCE CURRICULUM? - A FORMATIVE EVALUATION. C.A. Estrada[1]; R.M. Shewchuk[1]; L. Staton[2]; J. Bigby[3]; T.K. Houston[1]; J.J. Allison[1]. [1]University of Alabama at Birmingham, Birmingham, AL; [2]University of Tennessee, Chattanooga, TN; [3]Harvard University, Boston, MA. *(Tracking ID # 169971)*

BACKGROUND: Designing a cultural competence curriculum is inherently complex. Many elements are needed and multiple frameworks exist. We used a novel approach to identify and prioritize elements to include in a cultural competence curriculum to address disparities in cardiovascular disease.
METHODS: First, we used the Nominal Group Technique (NGT) to generate and prioritize a list of ideas to include in the curriculum. NGT is a structured small group process that fosters creativity and equal participation of participants. We conducted 4 NGT sessions and elicited responses to: "What sorts of things could be included in a curriculum that focuses on cultural competence training for physicians?" Participants of the NGT sessions were 9 medical students, 7 medicine residents, 7 practicing physicians, and 7 disparities researchers. To organize the ideas generated, we then asked 45 educators and researchers to group and rank the ideas based on their own perceptions of importance. Lastly, to produce homogeneous groupings of elements based on the ideas grouped and ranked, we used multidimensional scaling (MDS) and hierarchical cluster analysis.
RESULTS: The NGT sessions generated 61 ideas, 29 of which were selected by at least 2 participants. We observed five clusters of related issues within the multidimensional space: 1) **Patients' cultural background** (provide information on cultures,* habits, customs, values), 2) **Impact on healthcare and health behavior** (include factors influencing health services, folk remedies, diet), 3) **Differences in therapies and health disparities** (provide pharmacological therapies, reasons for cardiovascular disparities), 4) **Awareness of approaches to multicultural care** (increase awareness of own biases,* "stereotype avoidance"), and 5) **Resources to manage cultural diversity** (provide resources for patients and their families to comprehend instructions,* provide questions to permit taking a cultural history,* language translation guide and available services, community resources). The asterisk (*) indicate the top rated ideas by the NGT groups. The MDS showed good fit of the dimensions (Stress = 0.074; R2 = 0.97).
CONCLUSIONS: Our cognitive mapping approach allowed us to use input obtained from various stakeholders and generate critical domains to guide the development of the new curriculum.

WHERE DO BLACK VETERANS RECEIVE HOSPITAL CARE? VARIABILITY IN OUTCOMES AND DISPARITIES WITHIN VA HEALTHCARE. A.K. Jha[1]; R.A. Stone[2]; J.R. Lave[2]; H. Chen[3]; H. Klusartiz[4]; K. Volpp[4]. [1]Harvard University, Boston, MA; [2]University of Pittsburgh, Pittsburgh, PA; [3]CHERP, Pittsburgh VA Medical Center, Pittsburgh, PA; [4]University of Pennsylvania, Philadelphia, PA. *(Tracking ID # 173399)*

BACKGROUND: Racial disparities in care are well documented although their reasons are not fully understood. Research in non-VA settings suggests higher mortality rates in hospitals with a large proportion of black patients. We sought to determine whether overall 30-day mortality or racial disparities in mortality were also higher in VA hospitals that disproportionately cared for black veterans.
METHODS: We ranked VA hospitals by the average annual number of blacks discharged over the study period and identified hospitals that cumulatively cared for 25% and 75% of all black veterans. We examined the characteristics of hospitals that disproportionately cared for Blacks and determined 30-day mortality rates for six common medical conditions: pneumonia, acute myocardial infarction (AMI), congestive heart failure (CHF), gastrointestinal bleeding, hip fracture, and stroke. We used random effects logistic models to assess the variability in mortality and differences by race across hospitals.
RESULTS: Just 9 VA hospitals cared for 25% of all hospitalized black veterans in 2002 and 42 facilities (28% of all VA hospitals) cared for 75% of black veterans. These 42 minority-serving facilities were more often major teaching hospitals (86% versus 38%, $p<0.001$) and had available advanced procedures such as angioplasty (69% versus 36%, $p<0.001$) than other hospitals. While blacks over age 65 had lower 30-day mortality than whites for all six conditions, mortality for blacks under age 65 was generally not significantly different than for whites. For four of the six conditions (CHF, GI bleed, hip fracture, and stroke), minority-serving hospitals had similar mortality rates compared to other hospitals. However, for AMI and pneumonia, hospitals with a higher proportion of blacks often had a higher mortality rate. Finally, the proportion of blacks treated was not a significant predictor of differences in outcomes between blacks and whites for any of the six conditions (p-value >0.07).
CONCLUSIONS: Hospital care for black veterans is very concentrated: 28% of hospitals care for 75% of blacks and just 9 hospitals care for 1 in 4 Blacks. The general lack of variation in outcomes and a lack of difference in disparities between minority-serving VA hospitals and other hospitals suggest uniformity in care within VA not seen in the private sector. To the extent that disparities exist in other areas of care, the level of concentration suggests that programs to target improvements in care for black veterans can focus on a small number of hospitals.

ASSESSING RESIDENTS' GENDER SPECIFIC PREVENTIVE CARDIOVASCULAR KNOWLEDGE. D.O. Rowe[1]; A. Defilippis[2]; S. Kripalani[1]; J.P. Doyle[1]; L. Sperling[1]. [1]Emory University, Atlanta, GA; [2]None Given, Decatur, GA. *(Tracking ID # 172922)*

BACKGROUND: Previous studies have identified a relationship between patient gender and attending physicians' preventive cardiology risk stratification practices. However, we know of no study that has evaluated resident physicians' knowledge of gender specific preventive cardiology management or if residents' knowledge level is related to resident' gender.
METHODS: A 40 item true/ false questionnaire with a subset of gender specific questions were administered to 159 internal medicine (IM) residents at one largest university-based IM programs. All of the questions were evidence-based and reviewed by 3 physician investigators for clarity and accuracy; thereafter 11 questions were eliminated due to ambiguity.
RESULTS: There was no significant mean score difference with gender specific questions between male and female residents (56.36% vs. 48.96%, $p=0.122$). With-in the PGY 1 and 2's year of training no differences in the mean test scores were evident (PGY 1's 71.6% males vs. 70.86% females $p=0.854$; PGY2's 17.65% males vs. 22% females $p=0.427$); however, PGY 3 males had higher mean scores compared to females (53.04% vs. 30% $p=0.010$). Across training levels , PGY 1's had higher mean gender specific question scores compared to PGY 2's and 3's (PGY1 vs. PGY2, 72.18% vs. 20%. $p<0.001$; PGY1 vs. PGY3, 72.18% vs. 45.14%. $p<0.001$).
CONCLUSIONS: Residents' gender within and across PGY levels was not associated with gender specific preventive cardiology test scores but; PGY 1's had higher mean scores than PGY 2's and 3's on these gender specific questions. Evidence based educational interventions for residents may be warranted considering the continually evolving gender specific preventive cardiology guidelines.

COMPUTERIZED COUNSELING ABOUT EMERGENCY CONTRACEPTION: A RANDOMIZED CONTROLLED TRIAL. E.B. Schwarz[1]; B. Gerbert[2]; R. Gonzales[2]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173088)*

BACKGROUND: Emergency contraception (EC) can prevent unintended pregnancy. However, use of EC remains limited, even in California, where EC has been available without a prescription since 2002. Clinician counseling about EC increases knowledge and use of EC. However, clinicians, especially in urgent care settings, have limited time to provide preventive counseling. To evaluate whether computerized counseling about EC in an urgent care setting can increase knowledge and use of EC, we performed a randomized controlled trial.
METHODS: We recruited 446 English-speaking women from two urgent care waiting areas in San Francisco in 2005; 42% of women approached agreed to participate. The intervention group received a 15-minute computerized educational session and then received one pack of EC. The control group received similar education on prevention of neural tube defects and a bottle of folate. Audio headphones connected to the computer allowed women with lower levels of literacy to participate. Participants were contacted by phone seven months after enrollment. We used an intention to treat analysis to compare knowledge and use of EC, use of routine contraception, and rates of pregnancy between groups.
RESULTS: Demographic and reproductive characteristics of the intervention and control groups were similar at baseline: 44% were White, 12% were Black, 15% were Latina, and 17% were Asian; 24% were foreign born. The average age of participants was 29 +/− 6 years (range 18–45 years); half had annual incomes < $40,000; 26% were uninsured. 21% of women reported a prior birth, and 29% a prior abortion. Initially, 32% of women incorrectly thought EC was not currently available in California. Women in the intervention and control groups were equally available for follow-up (61% vs. 58%, p = 0.55) and socio-demographic characteristics of the intervention and control groups remained similar at follow-up. At follow-up, women in the intervention group were less likely to consider EC dangerous (5% vs. 11%, RR = 0.44, 95% CI 0.22–0.87), and more likely to state that EC does not cause abortion or birth defects (15% vs. 28%, RR = 0.52, 95% CI 0.36–0.76). Women in the intervention group were more likely to have used EC (6% vs. 3%, RR = 2.25, 95% CI = 0.87–5.80), and no less likely to have used condoms (22% vs. 21%, RR = 1.06, 95% CI = 0.74–1.51) or hormonal contraception (20% vs. 21%, RR = 0.97, 95% CI = 0.67–1.40). At baseline, equal proportions of women in each group were trying to avoid pregnancy (65% vs. 69%, p = 0.78). At follow-up, women in the intervention group were less likely to be pregnant (0.5% vs. 4.0% RR = 0.12, 95% CI 0.01–0.90) and tended to be less likely to have been pregnant since enrollment (2.7% vs. 5.7% RR = 0.48, 95% CI 0.19–1.24).
CONCLUSIONS: Computerized counseling about EC in urgent care waiting areas increased knowledge of EC in a state where EC had been available without a prescription for 3 years. Computerized counseling about and advance provision of EC may increase use of EC and decrease rates of unintended pregnancy.

COUNSELING ABOUT AND USE OF EMERGENCY CONTRACEPTION IN THE UNITED STATES: RESULTS FROM THE NATIONAL SURVEY OF FAMILY GROWTH. M.L. Kavanaugh[1]; E.B. Schwarz[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 171419)*

BACKGROUND: Emergency contraception (EC) has the potential to significantly reduce the number of unintended pregnancies and abortions that occur in the United States (US), yet information about EC has been limited in the US. The aims of this study were to estimate the prevalence of counseling about EC and use of EC among reproductive-aged women in the US. In addition, we examine the sociodemographic and reproductive characteristics of women who received counseling about EC and have ever used EC.
METHODS: Data collected from 7643 US women, aged 15–44, who participated in the 2002 National Survey of Family Growth were analyzed with consideration of weighting and stratification appropriate to the sampling design. Multivariable logistic regression models that considered the weighting and stratification of the data in the survey analysis function were constructed using stepwise elimination.
RESULTS: In the prior year, 3.8% of all respondents indicated that they had been counseled by a health care provider about EC. Few women (7%) who received a Pap smear or pelvic exam in the last year reported that their doctor had discussed EC with them. In multivariable analyses, women were more likely to receive counseling about EC if they were younger (OR = 3.21, 95% CI: 2.15, 4.78), Hispanic (OR = 3.97, 95% CI: 2.54, 6.22), and married (OR = 2.50, 95% CI: 1.56, 3.99). Of respondents who reported ever having sex with a male partner, 4.2% reported ever having used EC. The majority of women who had ever used EC had used the medication only once (73%). Women who had been counseled about EC in the last 12 months were significantly more likely than women who had not been counseled about EC to report having ever used EC (adjusted odds ratio (OR) = 11.90, 95% confidence interval (CI): 6.24, 22.70). In multivariable analyses, women who had ever used EC were more likely to be younger (OR = 2.24, 95%CI: 1.34, 3.74), college educated (OR = 3.81, 95% CI: 1.64, 8.89), married (OR = 1.94, 95% CI: 1.27, 2.96), of younger age at first sexual intercourse (OR = 3.87, 95% CI: 1.82, 8.21), have had an abortion (OR = 3.31, 95% CI: 2.29, 4.78), and have an intention to have children in the future (OR = 1.66, 95% CI: 1.15–2.39). The most common reasons women gave for having used EC were because they were worried that the contraceptive used at last intercourse did not work (39.3%) and they hadn't used any other form of contraception (43%). The most common location women received EC counseling, pills, or a prescription was at a family planning clinic.
CONCLUSIONS: US women who have been counseled by a clinician about EC are significantly more likely to use EC. However, few US clinicians routinely counsel women about EC.

DISPARITIES IN BREAST CANCER MORTALITY: ELICITING COMMUNITY VOICES. C. Masi[1]; S. Gehlert[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 173133)*

BACKGROUND: Breast cancer is the most common non-cutaneous malignancy among women in the United States. Mortality from breast cancer has declined steadily over the past 15 years but the rate of decline is greater among White women compared to Black women. As a result, breast cancer mortality is approximately 30% higher among Black women compared to White women. Traditional explanations of this phenomenon include disparities in stage at diagnosis, access to care, quality of care, and tumor aggressiveness. Using focus group interviews, we sought to determine whether these explanations or others reflected the beliefs of Black female breast cancer survivors and their family and friends.
METHODS: Focus group questions were designed in partnership with a community advisory board and participants were recruited through print media ads and flyers posted in 15 community areas on Chicago's South Side. Each focus group was comprised of 10–12 community residents and was led by two facilitators trained in qualitative research techniques. Faciliators used open-ended questions to ensure that the beliefs expressed arose from study participants. Each two-hour session was audiotaped and transcribed for later analysis. Grounded theory was used in conjuction with NVivo software to identify themes related to breast cancer disparities and recommendations to reduce breast cancer mortality.
RESULTS: Three hundred ten Black women and men aged 18 years and over participated in 30 focus groups. Traditional explanations of breast cancer disparities were offered by study participants. These included reduced access to screening mammography, delay in diagnosis, and low quality of care. Other explanations were also frequently described. These incluced avoidance of breast cancer screening due to fear of a positive result, the perception of breast cancer as a death sentence, mistrust of the pharmaceutical industry and the federal government, and hesitancy to seek help from family and friends once breast cancer is diagnosed. Participants indicated that a female head of household may hide her diagnosis if she believes that sharing this information will reduce her ability to provide emotional and financial support to others. Regarding strategies to reduce breast cancer mortality, raising awareness of treatment success and reducing financial barriers to screening and high quality care were mentioned most frequently. Participants also called for an expansion of support groups and social services since many women with breast cancer experience severe social and financial distress.
CONCLUSIONS: Qualitative research offers outstanding opportunities for insight regarding racial disparities in breast cancer mortality. In addition to validating traditional explanations, we found evidence that fear, mistrust, and lack of social and financial resources may also contribute to higher breast cancer mortality among Black women. Highlighting the effectiveness of current therapies and a renewed emphasis on social and financial support may lead to a reduction in the Black-White breast cancer mortality gap.

DO GENDER AND RACE AFFECT QUALITY OF CARE IN THE VA HEALTHCARE SYSTEM? B. Bean-Mayberry[1]; E. Yano[1]; M. Wang[1]; M.K. Mor[2]; M.J. Fine[2]. [1]VA Greater Los Angeles HSR&D Center of Excellence, Sepulveda, CA; [2]VA Pittsburgh Center for Health Equity Research and Promotion and University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173590)*

BACKGROUND: In the past decade, VA has achieved better quality of care for patients with diabetes and has surpassed the non-VA health care sector in many diabetes performance measures. Given the vulnerable populations served by the VA, we assessed the degree to which gender and race mediate the performance of recommended processes of care and key intermediate outcomes for patients with this illness.
METHODS: We performed secondary analyses using a national dataset of outpatient veterans identified by the VA External Peer Review Program (2001–2003). We linked this cohort to the National Patient Care Database to obtain clinical and demographic information and to VA Medicare files to obtain race. We performed bivariate analyses and multiple logistic regression for 4 separate diabetic quality measures, consisting of processes of care and intermediate outcomes, while adjusting for patient demographics, outpatient utilization and geographical region.
RESULTS: Our cohort of 56,632 veterans with diabetes included 20% women and 15% black veterans. Compared to men, women had lower performance rates for receipt of pneumonia vaccine (72.3% vs. 80.9%), receipt of influenza vaccine (61.3% vs. 68.2%), and fasting lipids within 2 years (90.1% vs. 92.1%), while presence of uncontrolled blood pressure (BP) >/=140/90 (11.2% vs. 11.2%) was similar. Compared to whites, blacks had lower performance rates on all measures: receipt of pneumonia vaccine (73.0% vs. 81.7%) or influenza vaccine (60.2% vs. 69.1%); fasting lipids (91.1% vs. 91.9%); and uncontrolled BP (18.7% vs. 9.4%). In multivariate comparisons, compared to men, women had a significantly lower odds of receipt of pneumonia vaccine (OR 0.87, 95%CI 0.82,0.92) or influenza vaccine (OR 0.93, 95%CI 0.88,0.98) and fasting lipids (OR 0.85, 95%CI 0.78,0.92), but were less likely to have uncontrolled BP (OR 0.83, 95%CI 0.76,0.92). While compared to whites, blacks showed significantly lower performance for all measures: receipt of pneumonia vaccine (OR 0.79, 95%CI 0.75,0.84) or influenza vaccine (OR 0.78, 95%CI 0.74,0.82); fasting lipids (0.90, 95%CI 0.82, 0.98) and uncontrolled BP (OR 1.99, 95%CI 1.83,2.16).

CONCLUSIONS: While blood pressure control for women in VA appears better than men, women and blacks display consistently poorer levels of quality. These lower levels may stem from lack of knowledge about how vulnerable populations use the VA and obtain chronic disease care, knowledge deficits among patient or providers, or unrecognized gaps in delivering care. Both women and black veterans require interventional efforts to reduce chronic disease care disparities. Planning appropriate interventions will require research that describes gender and racial utilization patterns and informs care delivery models by showing patient or practice determinants associated with improved outcomes in diabetes care.

DO PATIENT SOCIODEMOGRAPHIC CHARACTERISTICS AFFECT PRIMARY CARE PRACTICE SITES' PERFORMANCE ON QUALITY MEASURES? M.W. Friedberg[1]; D.G. Safran[2]; J.A. Singer[3]; K.L. Coltin[4]; J. Zheng[5]; K. Howitt[6]; E.C. Schneider[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]Tufts University, Boston, MA; [3]Massachusetts Health Quality Partners, Boston, MA; [4]Massachusetts Health Quality Partners, North Andover, MA; [5]Department of Health Policy and Management, Harvard School of Public Health, Boston, MA; [6]Harvard School of Public Health, Boston, MA. *(Tracking ID # 172654)*

BACKGROUND: In recent years, measurement of primary care quality for public reporting and as a basis for payment incentives has expanded dramatically in the United States. Prior research suggests that quality of care is lower for minority patients and those with lower incomes and lower educational attainment, raising the prospect that providers who care for disproportionate shares of such patients might incur a "performance measure penalty." Our objective was to assess the relationship between physician practice site scores on quality measures and site-level prevalence of patients from disadvantaged groups.
METHODS: The Massachusetts Health Quality Partners statewide reporting program supplied data on 8 Health Plan Employer Data and Information Set (HEDIS) measures collected from 241 physician practice sites (including 1,489 physicians) providing adult primary care to commercially insured patients during 2004. We linked these data to patient responses from the 2002–2003 Massachusetts Ambulatory Care Experiences Survey (ACES) in order to calculate the prevalence of sociodemographic characteristics (age, gender, race, ethnicity, and education) within each practice site's patient panel. Using the practice site as the unit of analysis, we calculated correlations between the prevalence of each sociodemographic characteristic and performance scores on each HEDIS measure using Spearman tests of statistical significance. Next, we constructed multivariable regression models predicting site scores on each HEDIS measure as a function of patient panel sociodemographic case-mix.
RESULTS: Sociodemographic characteristics varied among site patient panels on mean age (mean 48.9 years, range 37–56 years) and proportions of males (mean 38%, range 3%–82%), whites (mean 92%, range 54%–100%), blacks (mean 3%, range 0%–29%), Asians (mean 3%, range 0%–31%), Hispanics (mean 2%, range 0%–34%), and college graduates (mean 50%, range 20%–97%). Mean site-level HEDIS scores ranged from 43% for Chlamydia screening in women ages 21–25 (interquartile range 34%–52%) to 93% for LDL screening in diabetics (interquartile range 92%–97%). In bivariate analyses, lower site-level proportions of college graduate patients were significantly associated ($p < 0.05$) with lower HEDIS scores on all 8 measures. These associations remained statistically significant for 7 of the 8 measures after multivariable adjustment. In multivariable models, higher site-level proportions of male patients were also associated with lower performance on 2 measures of women's health care (mammograms and Pap smears). Standardized coefficients derived from the multivariable models suggested that a one-standard-deviation decrease in the proportion of college graduate patients was associated with a performance score decrease of up to 2.5%. Significant bivariate associations between sites' HEDIS scores and the age, racial, and ethnic composition of their patient panels were present for Chlamydia screening, but these associations did not remain statistically significant after multivariable adjustment.
CONCLUSIONS: Primary care practice sites with disproportionate shares of patients having lower educational attainment may incur a "performance measure penalty" on widely-used HEDIS quality measures. Designers of performance reporting and pay-for-performance systems should address the potential impact of variation in the sociodemographic characteristics of patient panels on measures of clinical quality.

DOES DEPRESSION DURING OR AFTER PREGNANCY AFFECT A WOMAN'S ABILITY TO RETURN TO HER PRE-PREGNANCY WEIGHT? S.J. Herring[1]; J.W. Rich-Edwards[1]; E. Oken[1]; S.L. Rifas-Shiman[1]; K.P. Kleinman[1]; M.W. Gillman[1]. [1]Harvard University, Boston, MA. *(Tracking ID # 172215)*

BACKGROUND: For many women, the childbearing years represent a critical life stage for excess weight gain and the development of obesity. Few data, however, exist about the relationship between maternal depression during or after pregnancy and postpartum weight retention (PPWR). We examined the associations of antenatal and early postpartum depression with weight retention at one year after delivery.
METHODS: We analyzed data from 850 women enrolled in Project Viva, a longitudinal study of pregnant women and their offspring in eastern Massachusetts. We prospectively assessed depression with the 10-item Edinburgh Postnatal Depression Scale (EPDS), a widely used self-report screening measure, at mid-pregnancy and again at 6 months postpartum. Based on prior validation work, we used a score above 12 to indicate depression. We evaluated antenatal and postpartum depression separately because they are likely to differ in their relationship to weight gain in the puerperal period. Weight retention was calculated as the difference between self-reported 1 year postpartum weight and pre-pregnancy weight. We defined our primary outcome as substantial PPWR, a weight difference of at least 5 kg. We used multivariable logistic regression to examine the extent to which antenatal and postpartum depression were each associated with substantial PPWR. We included in our model only those covariates that changed the regression estimate for the main effect by at least 10%, or were previously reported as important predictors of the outcome.
RESULTS: Seven-hundred thirty six women (87%) were not depressed in either period, 55 women (6%) reported antenatal depression only, 37 women (4%) reported postpartum depression only, and 22 women (3%) reported both antenatal and postpartum depression. The mean age of the entire sample was 33.0 years (standard deviation [SD] = 4.66), mean pre-pregnancy BMI was 24.2 kg/m2 (SD = 4.72), and mean weight gain during pregnancy was 15.7 kg (SD = 5.12); approximately 79% of the participants were white, 23% had not graduated from college, and 48% were pregnant with their first child. At 1 year, participants retained a mean of 0.63 kg (range −16.4 to 25.5), and 12% retained at least 5 kg. Compared to the non-depressed women, the unadjusted odds ratio (OR) of substantial PPWR in women with new onset postpartum depression was 3.00 (95% confidence interval [CI]: 1.40, 6.41). The OR was 1.28 (95% CI: 0.37, 4.41) in women with depression during both periods and 1.18 (95% CI: 0.52, 2.69) in women with antenatal depression only. After adjusting for maternal sociodemographics, pre-pregnancy body mass index, gestational weight gain, early postpartum walking, television viewing, sleep and dietary trans fat intake, the association between postpartum depression and substantial PPWR remained (OR 2.54, 95% CI: 1.03, 6.26). A null association persisted after adjustment in women with antenatal depression only or depression during both periods.
CONCLUSIONS: New onset postpartum depression is associated with substantial weight retention in the postpartum period. Future work is needed to determine if the management of these symptoms will lead to enhanced weight loss and aid in the prevention of obesity among women.

DOES OBESITY DECREASE SCREENING FOR BREAST CANCER? N.M. Maruthur[1]; S. Bolen[1]; F.L. Brancati[1]; J.M. Clark[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 173190)*

BACKGROUND: Obesity is a known risk factor for mortality from breast cancer. One contributory factor may be that obese patients are less likely to undergo screening. To determine whether decreased breast cancer screening is associated with obesity, we conducted a systematic review.
METHODS: Using PubMed, we conducted a systematic review and meta-analysis of original English language articles which addressed our research question. We excluded studies which: 1) applied non-standard screening guidelines or 2) classified body-mass index (BMI) in a non-standard fashion. Standard BMI categories were defined as: 1) dichotomous (< 30 kg/m^2 or ≥ 30 kg/m^2) or 2) categorical (normal 18.5–25 kg/m^2, overweight 25–30 kg/m^2, class I obesity 30–35 kg/m^2, class II obesity 35–40 kg/m^2, and class III obesity ≥ 40kg/m^2). Data were abstracted sequentially by two reviewers and disagreements adjudicated. Using the DerSimonian and Laird method, random effects models were used to calculate a pooled odds ratio for breast cancer screening according to BMI for the studies which used multiple categories of BMI.
RESULTS: Of 3766 citations, 5 studies were included. In the 3 studies that classified BMI into 5 categories, the pooled odds ratios for breast cancer screening showed a strong, graded, inverse association between BMI and self-reported screening in the previous 2 years (See Figure 1.). One of the 2 studies that classified BMI as a dichotomous variable also showed an inverse association between BMI and breast cancer screening while the other did not find an association.

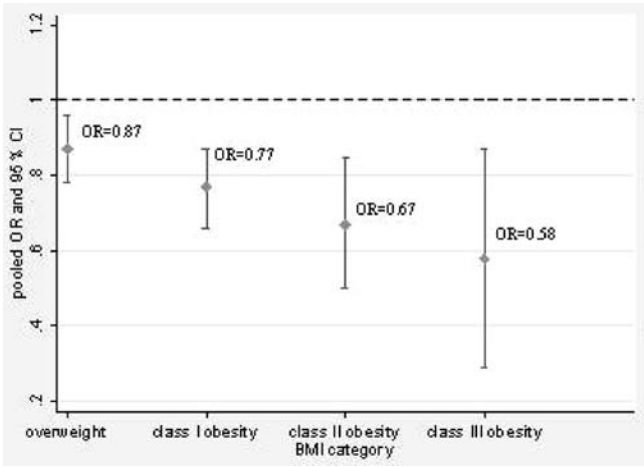


Figure 1: Pooled Odds Ratio for Breast Cancer Screening by BMI Category (Compared to Normal BMI)

CONCLUSIONS: In most population-based studies, there is a graded, inverse relationship between BMI and screening for breast cancer. Whether this association stems from physician decision-making or patient discomfort or embarrassment requires further investigation.

HEALTH CARE EXPERIENCES OF LONG-TERM BREAST CANCER SURVIVORS. C.M. Duffy[1]; S.A. Allen[1]. [1]Brown University, Providence, RI. *(Tracking ID # 172898)*

BACKGROUND: Research regarding the follow-up health care concerns and experiences of breast cancer survivors has focused on early survivorship. How long-term breast cancer survivors' health care concerns, and health seeking practices, may shift over time to reflect their diminished risk of recurrence has not been extensively explored. We conducted two focus groups to obtain information on long-term breast cancer survivors' health-related concerns and their experiences with the health care system.
METHODS: We conducted two focus groups comprised of women recruited from a previously conducted (1995–1999) randomized trial of a psychosocial support intervention for young women diagnosed with stages I-IIIA breast cancer. Focus groups were led by an experienced facilitator. There were 5–6 participants in each group and the sessions were tape-recorded and then transcribed, with identifying information removed. Transcripts were coded and analyzed for major themes by the investigators employing an iterative process until consensus was reached.
RESULTS: Thirty-four women from the original study were contacted and eleven women agreed to participate. Eight were unable to make the focus group time and fifteen declined to participate. Participants were aged 38–58 and 7–10 years from completion of treatment. All participants were Caucasian, except for one Hispanic participant. Most women reported seeing their primary care physician (PCP) (9/11) and oncologist (9/11) in the previous year. Just over half had seen their surgeon (6/11) and fewer had seen their radiologist (4/11). Major themes identified were: 1) fear regarding recurrence and desire for knowledge regarding preventing recurrence; 2) lack of support and referral for the psychological sequelae of cancer and its treatment; 3) frustration with medical providers who lacked knowledge of issues of breast cancer survivorship and dismissed their disease-related medical concerns; and 4) desire for improved coordination and communication among physicians regarding their care. Several focus group members expressed interest in obtaining care and information in a practice specifically devoted to the needs and concerns of breast cancer survivors. Trust in provider, rather than specialty of provider, was key in obtaining satisfactory follow-up care.
CONCLUSIONS: A major concern among even long-term breast cancer survivors is risk of cancer recurrence. Lack of provider knowledge in issues of breast cancer survivorship, as well as failure to recognize the on-going psychological impact of cancer and its treatment were particular frustrations among participants. Education and training of health care providers, particularly oncologists and PCPs, in the area of cancer survivorship may help address these issues. Future research with a more diverse population of long-term breast cancer survivors to further explore these themes is warranted to determine the generalizability of these findings.

IMPACT OF INTENTIONAL WEIGHT LOSS ON BONE MINERAL DENSITY IN OVERWEIGHT POSTMENOPAUSAL WOMEN. M.B. Conroy[1]; A.M. Kriska[1]; J.A. Cauley[1]; L.H. Kuller[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173135)*

BACKGROUND: Weight loss is recommended for overweight and obese adults, but may have a negative impact on bone mineral density (BMD). This is of particular concern for postmenopausal women, a group at higher risk for osteoporosis and osteoporotic fractures. We examined the impact of intentional weight loss on BMD, controlling for hormone therapy (HT) use and discontinuation.
METHODS: Subjects for this analysis included 431 participants in the Woman on the Move through Activity and Nutrition (WOMAN) Study, an ongoing lifestyle intervention clinical trial designed to reduce weight in overweight postmenopausal women. The intervention included both diet and physical activity. Weight loss between baseline and 18 months was divided into actual quartiles (-98.5 to -18 lbs; -17.9 to -8.5 lbs; -8.4 to 0 lbs; $+0.1$ to $+38.0$). Women were classified as continuous HT users ($n=124$), continuous HT non-users ($n=169$) or women who discontinued HT during the 18 months of follow up ($n=138$); most HT discontinuation occurred within the first few months following baseline. 6 women who started HT between baseline and 18 months were excluded, as were women with incomplete BMD or weight data. BMD was measured using dual energy x-ray absorptiometry (DEXA) at baseline and 18 months. Multivariable models included weight change, HT group, age, tobacco use, intervention group, physical activity, and race.
RESULTS: Mean age was 57 years; 88% of women were white. Mean weight loss over 18 months was -10.5 lbs. Weight loss among women who discontinued HT was not significantly different than that among continuous HT users or non-users ($p=0.25$). At baseline, mean (SD) BMD (g/cm2) was 1.02 (0.14) for total spine, 0.96 (0.12) for total hip and 0.79 (0.11) for femoral neck. There was significantly increased loss in BMD across quartiles of weight loss, with women with the most weight loss experiencing the highest annualized percentage of bone loss at all three regions ($p<0.01$ for spine; $p<0.0001$ for total hip and femoral neck). When analyses were restricted to women in the intervention group, similar trends were observed. Women with the most weight loss experienced -2.7%/year loss in BMD at the hip, while women with weight gain experienced -0.54%/year. Discontinuation of HT was also associated with more loss in BMD than continuous use or non-use in all three regions (all $p<0.01$). Women who discontinued HT lost -2.21%/yr at the hip compared to -1.47% in continuous non-users and -0.81%/yr in continuous users. Both weight loss and hormone therapy remained significant independent predictors of BMD loss in multivariable models; women who both lost weight and discontinued HT experienced the most bone loss over 18 months.
CONCLUSIONS: Both weight loss and discontinuation of HT were independent predictors of bone loss in this population of overweight, postmenopausal women. Recommending weight loss and/or cessation of HT may be indicated for numerous other health reasons in this population; attention should be paid to addressing bone health when doing so.

INCONSISTENT APPLICATION OF TREATMENT CRITERIA FOR OSTEOPOROSIS IN POSTMENOPAUSAL WOMEN. T.L. Tullo[1]; K.B. Feiereisel[2]; H. Coplin[3]; A. Alvanzo[4]. [1]Moses Cone Health System, Greensboro, NC; [2]Wake Forest University, Winston-Salem, NC; [3]University of Minnesota, Minneapolis, MN; [4]Virginia Commonwealth University, Richmond, VA. *(Tracking ID # 173187)*

BACKGROUND: Although the incidence of hip and vertebral fractures due to osteoporosis surpasses the incidence of breast cancer, stroke, and myocardial infarction in postmenopausal women, the reported screening rates for osteoporosis with DXA scan have been less than half of those reported for breast cancer screening. The low rate of osteoporosis screening occurs despite reimbursement by Medicare. In this report, we examine the association of DXA scan T-scores with osteoporosis treatment.
METHODS: The Better Osteoporosis Knowledge, Education and Screening (BONES) Study is a quality improvement initiative that includes 13 residency clinics. Enrolled women were at least 67 years of age (to insure Medicare coverage over the last 2 years) with at least one prior visit to the participating clinic. Participants answered a 77-item survey which assessed demographics, risk factors and knowledge of osteoporosis. Baseline chart reviews of all participating patients were done to document prior screening. Descriptive statistics were compiled. Bivariate analyses were performed comparing characteristics of women receiving both screening and actual osteoporosis treatment as the outcome.
RESULTS: In an analysis of 334 charts, 132 women had documentation of prior screening for osteoporosis with DXA scan. 49 women met criteria for treatment by having T scores <-2.0, but only 29 were being treated. However, 64 women were actually prescribed medications to treat or prevent osteoporosis, of which 35 (or 55%) did not meet criteria by current guidelines. Documentation of reasons for treatment of these patients was incomplete. Compared to treated women with qualifying T scores, women who were receiving treatment without qualifying T scores were not significantly different with regard to income, race, level of education, number of comorbidities, risk factors, marital status, preventive screening behaviors, or prior history of fractures. Treated women who lacked documented qualifying T scores were more likely to know the disease was preventable than their qualifying peers (74% vs 50%, $p=0.047$) but less likely than their peers to be aware of having a specific diagnosis of osteoporosis or osteopenia (52% vs 82%, $p=0.012$).
CONCLUSIONS: Inadequate documentation of risk factors and poor communication between women and their providers continue to present barriers to appropriate documentation and treatment of osteoporosis.

IS DISSATISFACTION WITH SEXUAL ACTIVITY PREDICTIVE OF CARDIOVASCULAR DISEASE IN POSTMENOPAUSAL WOMEN? J.S. Mccall-Hosenfeld[1]; K.M. Freund[2]; C. Legault[3]; S. Jaramillo[3]; B.B. Cochrane[4]; C.B. Eaton[5]; J.E. Manson[6]; S.G. Mcneeley[7]; B.L. Rodriguez[8]; N.K. Wenger[9]; D. Bonds[10]. [1]VA Boston Healthcare System, Boston, MA; [2]Boston University, Boston, MA; [3]Wake Forest University, Winston-Salem, NC; [4]University of Washington, Seattle, WA; [5]Brown University, Providence, RI; [6]Brigham and Women's Hospital, Boston, MA; [7]Wayne State University, Detroit, MI; [8]University of Hawaii, Manoa, HI; [9]Emory University, Atlanta, GA; [10]University of Virginia, Charlottesville, VA. *(Tracking ID # 172262)*

BACKGROUND: Sexual dysfunction in men is a sentinel symptom of occult cardiovascular disease (CVD). The same vascular mechanisms are thought to play a role in female sexual dysfunction, but the role of cardiovascular disease is less well-studied. We investigated whether dissatisfaction with sexual activity, an important component of female sexual dysfunction, is associated with prevalent and incident cardiovascular disease in postmenopausal women.
METHODS: We analyzed data from the Women's Health Initiative-Observational Study, a cohort of 93,676 postmenopausal women. Subjects were asked at baseline, "How satisfied are you with your sexual activity, either with a partner or alone?" Responses were dichotomized into unsatisfied or satisfied. We excluded subjects who did not respond to the question or reported no sexual activity with a partner in the past year. To determine whether there was greater cardiovascular disease among women who reported dissatisfaction with sexual activity at baseline, we performed multiple logistic regression analyses modeling baseline cardiovascular conditions including myocardial infarction, stroke, revascularization (CABG/

PTCA), peripheral arterial disease (PAD), congestive heart failure, and angina. We controlled for demographic covariates, medical and psychiatric comorbidities, and cardiovascular disease risk factors. To determine whether the incidence of cardiovascular disease was greater among women reporting decreased sexual satisfaction at baseline, we calculated frequencies and annual percentages of CVD outcomes by sexual dissatisfaction. Finally, we created Cox proportional hazards models to determine hazard ratios for incident CVD by baseline sexual dissatisfaction status.
RESULTS: Dissatisfaction with sexual activity at baseline was significantly associated with prevalent peripheral arterial disease (OR 1.44, 95%CI: 1.15, 1.84, $p < 0.002$). The association between stroke at baseline and sexual dissatisfaction approached significance (OR 1.23, 95%CI: 0.99, 1.52, $p = 0.067$). Paradoxically, the odds of baseline angina were decreased among those reporting sexual dissatisfaction at baseline (OR 0.77, 95%CI: 0.66, 0.86, $p < 0.001$). Sexual dissatisfaction at baseline was not significantly associated with prevalent MI, CABG/PTCA or the composite CVD variable (MI, stroke, CABG/PTCA). The annual percentage of incident cardiovascular disease including fatal and nonfatal MI, CABG/PTCA and stroke did not differ significantly by sexual dissatisfaction status, nor did the hazard ratio (annual percent among satisfied = 51 per 10,000 person-years, dissatisfied = 48 per 10,000 person-years, HR 1.07, 95%CI: 0.95, 1.20, $p = 0.249$). Likewise, in adjusted analyses, dissatisfaction with sexual activity was not significantly related to an increased hazard of any cardiovascular disease endpoint including fatal and nonfatal MI, stroke, CHF, PAD, angina and carotid arterial disease.
CONCLUSIONS: Dissatisfaction with sexual activity was modestly associated with an increased baseline prevalence of peripheral arterial disease, even after controlling for smoking status. However, dissatisfaction did not predict the incidence of cardiovascular disease in sexually active postmenopausal women. Although this may represent insensitivity of the sexual satisfaction construct to measure sexual dysfunction in women, it may also be due to physiological differences in sexual functioning between men and women. The role of cardiovascular disease in female sexual functioning deserves further study.

MEDICAL STUDENTS' PERCEPTIONS OF EDUCATION AND TRAINING IN WOMEN'S HEALTH AND SEX AND GENDER FACTORS. J.B. Henrich[1]; C.M. Viscoli[2]; G. Abraham[3]. [1]Yale University, Hamden, CT; [2]Yale University, New Haven, CT; [3]Albert Einstein College of Medicine, New York, NY. *(Tracking ID # 172499)*

BACKGROUND: Because student opinions were not sought in previous studies of women's health curricular activities at U.S. medical schools, we surveyed medical students to: 1) learn their perceptions of the adequacy of women's health and sex/gender-specific teaching and of their preparedness to care for female patients; and 2) identify school factors that may influence those perceptions.
METHODS: Between September 2004 and June 2005, we invited all 3rd and 4th year medical students at the 125 U.S. medical schools to respond to an online survey designed by the authors and conducted by the America Medical Women's Association (AMWA). All students received an email with the survey link either from the Student Affairs Dean at their school, or from AMWA (for members). The survey included 44 curriculum assessment items divided into 6 domains and 27 preparedness items divided into 2 domains. Students rated the extent to which topics were covered in the curriculum at their school from 1 to 4 (1 = no, 2 = brief, 3 = moderate, 4 = in-depth coverage), and their preparedness to care for women from 1 to 4 (1 = no, 2 = minimal, 3 = moderate, 4 = thorough preparedness). We calculated a mean rating for each domain, overall mean curriculum and preparedness ratings, and a mean combined curriculum and preparedness rating. We examined the relationship between students' sex and school characteristics and mean combined ratings in a regression model.
RESULTS: 1267 students from 101 of the 125 medical schools responded (mean number/school = 13 SD 12); 79% of respondents were women. There was greater participation from 66 of the 101 schools with an AMWA chapter. The overall mean curriculum rating (2.5 SD 0.5) indicated brief to moderate coverage of topics. Mean ratings for the 6 curriculum domains were, in descending order: sex/gender information on mental health disorders (2.7 SD 0.7) and basic science topics (2.6 SD 0.6); sexual and reproductive function (2.6 SD 0.7); sex/gender information on preventive health topics (2.5, SD 0.6); gender identification and interpersonal violence (2.4 SD 0.7); and sex/gender information on common medical conditions (2.4 SD 0.6). The mean preparedness rating (3.1 SD 0.4) indicated moderate preparedness. Although the 2 preparedness domains had similar ratings (clinical skills, 3.0 SD 0.5; counseling skills, 3.1 SD 0.5), several individual items pertaining to reproductive-related interviewing, examination and counseling skills, and screening for and managing important medical conditions in women, had ratings greater than 3, indicating moderate to thorough preparedness. In a regression model, female student sex and site of an AMWA chapter were associated with lower mean combined ratings (female 2.8, male 3.0, $p < 0.001$; AMWA 2.8, non-AMWA 2.9, $p < 0.001$), while school characteristics that might be expected to be associated with higher ratings (proportion of tenured women faculty, presence of a women's health program or female dean) had no association.
CONCLUSIONS: Although medical students reported that they were moderately prepared to care for women, their low ratings of curricular coverage of women's health and sex/gender-specific topics suggest important gaps in teaching. Lower ratings by female students and at AMWA schools may reflect differences in students' knowledge, expectations, or perceptions about the importance of topics. Schools would benefit from students' recommendations to improve teaching.

PERSISTENT HOT FLASHES IN OLDER POSTMENOPAUSAL WOMEN. A.J. Huang[1]; D.G. Grady[2]; T.L. Blackwell[3]; D.C. Bauer[2]; G.F. Sawaya[2]. [1]San Francisco Veterans Affairs Medical Center, San Francisco, CA; [2]University of California, San Francisco, San Francisco, CA; [3]California Pacific Medical Center (CPMC), San Francisco, CA. *(Tracking ID # 171508)*

BACKGROUND: Hot flashes affect up to 80% of women during the menopausal transition and may persist for years after menopause in a significant minority of women. Recent concerns about the negative long-term effects of estrogen therapy have created new interest in identifying modifiable risk factors for hot flashes and developing alternate therapies to address these symptoms in older women. We sought to describe the prevalence, natural history, and clinical predictors of hot flashes in women who are 5 or more years postmenopausal.
METHODS: Analyses were based on data from 3,167 older postmenopausal women (mean age = 67 years) with osteoporosis enrolled in the Multiple Outcomes of Raloxifene Evaluation trial. Demographic characteristics, medical history, health-related habits, and medication utilization were assessed by self-administered questionnaire at baseline. Serum total estradiol (by double antibody assay), fasting cholesterol, fasting blood sugar, and thyroid hormone levels were also measured at baseline. Severity of hot flashes in the previous 6 months was assessed by self-administered questionnaires using a 5-point Likert scale at both baseline and after 3 years. We considered women who reported bothersome hot flashes "some," "most," or "all" of the time to have "clinically significant" hot flashes, and compared them to women who reported bothersome hot flashes "none" or "little" of the time. Logistic regression was used to identify demographic and clinical characteristics that were independently associated with having clinically significant hot flashes at baseline and after 3 years.
RESULTS: Of the 3,167 participants, 2% (n = 54) reported bothersome hot flashes "most" or "all" of the time, 10% (n = 321) had hot flashes "some" of the time, 18% (n = 556) had hot flashes "little" of the time, and 71% (n = 2,236) had hot flashes "none" of the time at baseline. After adjusting for multiple other characteristics, women were more likely to report clinically significant hot flashes at baseline if they had more recently undergone menopause (OR = 0.72, 95%CI = 0.66–0.77 per each 5 years since menopause); had fewer years of education (OR = 0.93, 95%CI = 0.89–0.98 per each 4 years of education); had previously undergone hysterectomy (OR = 1.53, 95%CI-1.16–2.01); had bothersome symptoms of vaginal dryness (OR = 2.32, 95%CI = 1.82–3.00); were currently using tricyclic antidepressants (OR = 1.86, 95%CI = 1.01–3.42); had previously used hormone replacement therapy (OR = 1.68, 95%CI = 1.32–2.12); or had lower high-density lipoprotein (HDL) cholesterol levels (OR = 0.82, 95%CI = .72–0.94 per standard deviation of HDL level). Sixty-six percent of women with clinically significant hot flashes at baseline also reported persistent significant hot flashes at 3 years. Among women with clinically significant hot flashes at baseline, the only independent predictor of having persistent significant hot flashes after 3 years was time since menopause (OR = 0.87, 95%CI = 0.77–0.99, per each 5 years since menopause).
CONCLUSIONS: Over 10% women who are 5 or more years postmenopausal have clinically significant hot flashes, and up to two thirds of older postmenopausal women with significant hot flashes will continue to be symptomatic after 3 years. Identification of risk factors for hot flashes in older postmenopausal women may provide new insight into the etiology of these persistent symptoms and help guide management in this population.

PREDICTORS OF OSTEOPOROSIS KNOWLEDGE IN WOMEN OVER 65. A.A. Alvanzo[1]; G. Mitri[2]. [1]Virginia Commonwealth University, Richmond, VA; [2]Scranton Temple Residency Program, Scranton, PA. *(Tracking ID # 173231)*

BACKGROUND: More than 1.5 million osteoporotic fractures occur in the U.S each year and half of all postmenopausal women will have an osteoporosis-related fracture during their lifetime. Despite the significant morbidity and mortality associated with osteoporosis, adherence to screening guidelines is low. Educating patients about osteoporosis may be one way to improve osteoporosis screening rates, as women with increased osteoporosis knowledge may be more likely to ask for and undergo screening. The purpose of this report was to determine characteristics associated with better osteoporosis knowledge in women 65 years old.
METHODS: Women were recruited from 12 academic internal medicine clinics as part of a multi-site study examining the effect of patient and physician education on osteoporosis screening rates. Women were eligible to participate if they were age 65 and had been seen in the clinic at least once in the previous 2 years. Women were excluded if they were acutely ill, cognitively impaired, or in a hospice program. Participants completed a questionnaire, which included demographic questions and 30 items testing their knowledge of osteoporosis and related risk factors. An osteoporosis knowledge score was calculated for each respondent by assigning 1 point for each correct answer and 0 points for an incorrect answer, an answer of "don't know", or a blank response. Stepwise multiple linear regression was used to determine which factors were predictive of a higher osteoporosis knowledge score. A p-value of .20 was used to add independent variables to our regression model.
RESULTS: The results from 369 women with a mean age of 74.3 (SD 6.21) are presented. Thirty-nine percent of women were White, 49% were African American and 10% were Hispanic. The mean osteoporosis knowledge score was 15.9 (SD 5.74) of a possible 30. Factors included in the regression model were age, education level, income, race/ethnicity, history of fracture in previous 10 years, physician

counseling regarding osteoporosis prevention, personal history of osteoporosis, source of health information (doctor, media, other persons), ability to name primary care doctor, and whether patient usually saw the same provider. In the regression analyses, variables associated with a lower osteoporosis knowledge score were African American race ($p < .001$), Hispanic ethnicity ($p = .022$), and education < high school ($p < .001$), ($R2 = 0.195$). There was a trend for older women to have lower knowledge scores, but it did not reach statistical significance ($p = .076$).
CONCLUSIONS: The findings suggest that women at risk for osteoporosis have limited knowledge about osteoporosis and its risk factors, with the women, on average, able to answer only half of the questions correctly. Additionally, racial, ethnic, and educational disparities in women's osteoporosis knowledge exist. Further research is needed into optimal strategies for improving women's osteoporosis knowledge and concomitantly screening and prevention. Educational interventions for women who are African American, Hispanic, and with less formal education appear warranted.

PREGNANCY AND BIRTH OUTCOMES IMPACT MENOPAUSAL SYMPTOMS. R. Hess[1]; R.B. Ness[1]; C.L. Bryce[1]; E. Olshansky[1]; W.N. Kapoor[1]; C.H. Chang[1]; K.A. Matthews[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173420)*

BACKGROUND: As women enter the menopausal transition, they leave the reproductive phase. Women with multiple pregnancies and no live births have more negative attitudes towards menopause, which are associated with more menopausal symptom reporting. We examine the cross-sectional impact of pregnancy and birth outcomes on menopause symptoms.
METHODS: STRIDE is a 5-year cohort study of 728 women designed to elucidate the impact of the progression through menopause on quality of life. In addition to sociodemographic characteristics, menopausal status and symptoms (presence or absence of hot flashes and vaginal dryness), and quality of life, women were asked about satisfaction with childbearing choices, number of pregnancies and live births, if they would have preferred fewer or more children, and attitudes towards menopause. Participant characteristics were summarized using frequencies and measures of central tendency. Univariable comparisons were made using student's t-test for continuous variables and Chi-2 techniques for categorical variables. Multivariable logistic models were constructed for our primary outcome variables, hot flashes (HF) and vaginal dryness (dryness).
RESULTS: Women were 50.8±6.4 years, 25% were nonwhite, 58% had at least a college education, 54% were married, 20% were pre-, 29% peri-, and 34% post-menopausal; 17% had a hysterectomy. Women reported 2.4±2.0 (0–24) pregnancies and 1.7±1.5 (0–14) live births; 71% reported ≥1 live birth; 20% had no pregnancies or births; 9% reported ≥1 pregnancy and no births. Most women (57%) were happy with their number of children and were very satisfied (55%) with childbearing choices; 10% were very dissatisfied. attitudes towards menopause were generally neutral (1.7±.4). Women with no live births were less likely to report HF and dryness ($p = .007$ and $p = .001$ respectively). Women who wanted more children were also less likely to report HF ($p = .04$). There was no difference in symptom reporting based on satisfaction with childbearing choices. In fully adjusted models, women with ≥1 pregnancy and no live births remained significantly less likely to report HF ($p = .03$). Compared to unmarried women with ≥1 live birth, unmarried women with no pregnancies and no births were less likely to report dryness ($p = .004$) while married women with no pregnancies and no births were more likely to report dryness ($p = .04$).
CONCLUSIONS: In our sample of women during the menopausal progression, pregnancy and birth outcomes are correlated with the reporting of menopausal symptoms. It is unknown if this is primarily psychologic or physiologic in nature; this is an area that merits further study.

PREGNANCY AND BIRTH OUTCOMES IMPACT SATISFACTION WITH CHILDBEARING CHOICES AND ATTITUDES TOWARD MENOPAUSE. R. Hess[1]; E. Olshansky[1]; R.B. Ness[1]; C.L. Bryce[1]; W. Kapoor[1]; C.H. Chang[1]; K.A. Matthews[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173384)*

BACKGROUND: As women enter the menopausal transition, they leave the reproductive phase and may reflect on childbearing choices. For women without children, menopause may alternatively represent a time of loss for what will never be or relief from pressure to reproduce. Pregnancy and birth outcomes (fertility) may impact satisfaction with childbearing choices and attitudes towards menopause (ATM).
METHODS: STRIDE is a 5-year cohort study of 728 women designed to elucidate the impact of the progression through menopause on QOL. During the first, women were asked about 2 primary outcomes, satisfaction with childbearing choices (satisfaction) and ATM, as well as number of pregnancies and live births, if they would have preferred fewer or more children or were happy with the number they had. Participant characteristics were summarized using frequencies and measures of central tendency. Univariable comparisons were made using student's t-test for continuous variables and Chi-2 techniques for categorical variables. Multivariable linear regression models (ATM) and ordered logistic models (satisfaction) were constructed.
RESULTS: Women were 50.8±6.4 years, 25% were nonwhite, 58% had at least a college education, 54% were married, 20% were pre-, 29% peri-, and 34% post-menopausal; 17% had a hysterectomy. Women reported 2.4±2.0 (0–24) pregnancies and 1.7±1.5 (0–14) live births; 71% had ≥1 live birth; 20% had no pregnancies or births; 9% had ≥1 pregnancy and no births. Most women (57%) were happy with their number of children and were very satisfied (55%) with childbearing choices; 10% were very dissatisfied. ATM were generally neutral (1.7±.4). Women who were happy with the number of children they had and had ≥ 1 live birth were more satisfied ($p = .001$ and $p < .001$ respectively). Among women with no children, there was no difference in satisfaction based on pregnancies (0 vs. ≥1). Women with ≥1 pregnancy and no births had more negative ATM than women with a live birth and those with no pregnancies or births ($p \leq .01$ for both). Compared with women who were happy with their number of children, women who wanted more children had more negative ATM ($p < .001$). Women who were < very satisfied with childbearing choices had more negative ATM ($p \leq .02$ for all comparisons). In multivariable models, we see the same significant trends.
CONCLUSIONS: In our sample of women during the menopausal progression, those who had no children were less satisfied with childbearing choices. Women with ≥1 pregnancy and no births, those who wanted more children, and those who reported being less than **very** satisfied with childbearing choices had more negative ATM. As women conclude their reproductive years, pregnancy and birth outcomes may impact their experience of menopause.

PRIMARY CARE VISITS MEDIATE GENDER DIFFERENCES IN UTILIZATION OF HOSPITAL SERVICES AT THE END OF LIFE. A.C. Kronman[1]; K.M. Freund[1]; A. Ash[1]; E. Emanuel[2]. [1]Boston University, Boston, MA; [2]National Institutes of Health (NIH), Bethesda, MD. *(Tracking ID # 173584)*

BACKGROUND: Medical care at the end of life is often expensive and ineffective. Cuts in Medicare spending are more likely to affect women than men, because women not only live longer, but do so with lower functional status. Women tend to use more primary care services than men, though it is not known if these differences affect their use of hospital services at the end of life. We asked if differential receipt of primary care mediates gender differences in end of life hospital utilization.
METHODS: Retrospective analysis of a national sample of Medicare beneficiaries over 65 years of age who died in the second half of 2001; Blacks and Hispanics were over-sampled. We excluded beneficiaries not in the fee-for-service program, and those in the End Stage Renal Disease Program. Outcomes were measured during the final 6 months of life: hospital days, hospital admissions, and 2 Prevention Quality Indicators (admissions for congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD)). Our key predictor was the number of primary care physician visits during the 12 month pre-period. We stratified the population by gender, and used multivariate analyses to address Hospital Service Area geographic variations in healthcare utilization, and to adjust for nursing home use, Medicaid receipt, comorbidity, and demographics.
RESULTS: Study sample ($N = 78{,}356$) characteristics: mean age, 81 (range 66–98); female, 56%; White, 40%; Black, 36%; Hispanic, 11%; Other, 14%: 38% had 0 primary care visits; 22%, 1–2 visits; 19%, 3–5 visits; 10%, 6–8 visits; and 11%, 9+ visits. More primary care visits in the pre-period were associated with fewer hospital days at end of life (15.3 days for those with no primary care visits vs. 13.4 for those with > 9 visits, $P < 0.001$) When stratified by gender, this association remained significant in women (15.9 days for those with no primary care visits vs. 13.2 days for those with > 9 visits, $P < .001$). The association was not significant for men (14.4 days for those with 0 visits, 14.1 for those with > 9 visits ($P = 0.33$). For both men and women with a diagnosis of CHF or COPD, those with more preceding primary care visits were less likely to have a preventable hospitalization for CHF ($aOR = 0.82$, 95% CI 0.74–0.92) or COPD ($aOR = 0.81$, 95% CI 0.68–0.97) respectfully. More primary care visits were also associated with a lower likelihood of any admission for women ($aOR = 0.78$, 95% CI 0.72–0.84) but not for men ($aOR = 0.96$, 95%CI 0.87–1.0).
CONCLUSIONS: Prior receipt of primary care is more strongly associated with lower use of hospital services at the end of life for women than for men. More access to primary care at the end of life may improve quality of life by decreasing hospital time, especially for women. Increased payment for primary care by Medicare could improve the quality of care at the end of life. Understanding gender differences in the use of healthcare services at the end of life could improve the effectiveness of healthcare delivery.

RISK OF PREGNANCY AMONG WOMEN TREATED WITH POTENTIALLY TERATOGENIC MEDICATIONS. E.B. Schwarz[1]; D.A. Postlethwaite[2]; Y. Hung[3]; M.A. Armstrong[3]. [1]University of Pittsburgh, Pittsburgh, PA; [2]Kaiser Permanente, Oakland, CA; [3]Kaiser Permanente Division of Research, Oakland, CA. *(Tracking ID # 171469)*

BACKGROUND: Certain medications are identified by the US FDA as class D or X because they increase risk of birth defects if used during pregnancy. Nationally, it is estimated that women receive contraceptive counseling less than 20% of the time they visit a doctor who documents that the woman is using a class D or X medication.

METHODS: To estimate risk of pregnancy among women treated with class D or X medications, we conducted a retrospective cohort study of 488,175 Californian women, aged 15–44 years, who filled class A, B, D or X prescriptions in 2001. We assessed whether contraceptive counseling, contraceptive dispensing and pregnancy test results differed by FDA drug class, using multivariable generalized estimating equations (GEE) to account for clustering of outcomes by provider. Potential clustering by patient was felt to be negligible, as compared to clustering by provider, because relatively few women received more than one prescription during the study period.
RESULTS: A class D or X prescription was filled by one of every six women of reproductive age in 2001. Women who filled prescriptions for class D or X medications were not more likely to fill a contraceptive prescription than were women who filled prescriptions for class A or B medications (37.0% vs. 39.4%; OR = 0.90, 95% CI = 0.92–0.99; P < 0.001). Women filling a class D or X prescription were only slightly less likely to have a positive pregnancy test within 3 months than women filling class A or B prescriptions (0.95% vs. 1.43%). In multivariable models, women younger than 25 years (OR 1.30, 95% CI 1.21–1.40), and older than 35 years (OR 1.56, 95% CI 1.48–1.63), were more likely to receive a class D or X medication without contraception. Women using contraceptive methods of highest efficacy (e.g. intrauterine contraception, a contraceptive implant, or surgical sterilization) were least likely to have a positive pregnancy test (0.20%) within 3 months of filling a class D or X prescription.
CONCLUSIONS: Prescriptions for potentially teratogenic medications are frequently filled by women of childbearing age. Rates of pregnancy among women treated with potentially teratogenic, class D or X medications are similar to rates of pregnancy among women treated with safer, class A or B medications. Use of more effective contraception could reduce rates of pregnancy among women prescribed potentially teratogenic medications.

SEXUAL ASSAULT IN THE MILITARY AND ITS BIOPSYCHOSOCIAL SEQUELAE: IMPACT ON SEXUAL SATISFACTION IN WOMEN VETERANS. J.S. Mccall-Hosenfeld[1]; J. Liebschutz[2]; A. Spiro[1]; M.R. Seaver[1]. [1]VA Boston Healthcare System, Boston University, Boston, MA; [2]Boston University, Boston, MA. *(Tracking ID # 172413)*

BACKGROUND: Female sexual dysfunction (FSD), a prevalent, distressing condition, is usually treatable but often inadequately addressed in primary care. The role of sexual assault as a risk factor for FSD is incompletely understood. Women veterans, the fastest growing segment of the veteran population, commonly sustain sexual assault in the military (SAIM). SAIM is associated with decreased sexual satisfaction, a proxy for FSD, as well as myriad other adverse health consequences. Using data on women veterans, we tested the hypothesis that SAIM reduces sexual satisfaction directly and via associated adverse health consequences.
METHODS: Retrospective analysis of cross-sectional data collected for a national survey of women who used VA ambulatory services between 7/1/94 and 6/30/95. The survey included questions on demographic characteristics and self-reported medical comorbidities. The main independent variable, SAIM, was defined by an experience of "force or the threat of force to have sexual relations with you against your will" during military service. The primary outcome, sexual satisfaction, was a dichotomous response to, "Overall, how satisfied are you with your sex life?" Current partner was defined as a "spouse or partner you feel very close and intimate with." Physical (PCS) and mental (MCS) health-related quality of life were measured with the SF-36. Gynecological illness was a composite variable created by endorsing one of several gynecological conditions such as chronic pelvic pain. After determining the variables that were significantly associated with both SAIM and sexual satisfaction in age-adjusted models, we employed hierarchical logistic regression. Our first model included demographic variables; in a second model we added potential mediators of the association between SAIM and sexual dissatisfaction: MCS, PCS, gynecological illness and current partner.
RESULTS: Of the 3161 women (87%) who answered the sexual satisfaction question, the mean age was 45 (SD 15) years; 85% were white. Twenty-four percent reported a history of SAIM and 39% reported sexual dissatisfaction. In age-adjusted analyses, both SAIM and sexual dissatisfaction were strongly associated with each of the proposed mediators: lower MCS, lower PCS, more gynecological illness and absence of a current partner. In hierarchical models, after controlling for demographic variables (age, race, income, education, marital status), SAIM was highly associated with decreased sexual satisfaction (OR = 2.08, 95%CI: 1.74, 2.48). After inclusion of the proposed mediators, the association between SAIM and decreased sexual satisfaction was attenuated, but remained significant (OR = 1.48, 95%CI: 1.20, 1.82).
CONCLUSIONS: SAIM's negative impact on sexual satisfaction in women veterans operates both directly and through its physical and mental health sequelae. These sequelae include treatable medical and psychosocial problems such as depression, chronic pelvic pain, and disruption in interpersonal relationships. As the population of women veterans grows in the VA and the community, generalist clinicians versed in trauma-informed care and sexual medicine will be positioned to provide superior services. Future research should explore the role of sexual assault on sexual functioning in women in diverse venues, including those serving non-military populations.

UNDERSTANDING HEALTH-RELATED QUALITY OF LIFE: FACTORS ASSOCIATED WITH SEXUAL SATISFACTION IN THE WOMEN'S HEALTH INITIATIVE. J.S. Mccall-Hosenfeld[1]; S. Jaramillo[2]; C. Legault[2]; K.M. Freund[3]; B.B. Cochrane[4]; C.B. Eaton[5]; J.E. Manson[6]; S.G. Mcneeley[7]; B.L. Rodriguez[8]; N.K. Wenger[9]; D. Bonds[10]. [1]VA Boston Healthcare System, Boston, MA; [2]Wake Forest University, Winston-Salem, NC; [3]Boston University, Boston, MA; [4]University of Washington, Seattle, WA; [5]Brown University, Providence, RI; [6]Brigham and Women's Hospital, Boston, MA; [7]Wayne State University, Detroit, MI; [8]University of Hawaii, Manoa, HI; [9]Emory University, Atlanta, GA; [10]University of Virginia, Charlottesville, VA. *(Tracking ID # 172220)*

BACKGROUND: Satisfaction with sexual activity is an important component of health-related quality of life. Although women remain sexually active throughout the life cycle, little is known about the sexual health of postmenopausal women. We describe factors associated with sexual satisfaction among sexually active postmenopausal women.
METHODS: We conducted a cross-sectional analysis of baseline data from the Women's Health Initiative-Observational Study, in which 93,676 postmenopausal women were asked, "How satisfied are you with your sexual activity?" We excluded subjects who did not respond to the question or reported no partnered sexual activity in the past year. We performed bivariate analyses including demographic factors, baseline overall physical and mental health, and medical covariates reported in the literature to be related to female sexual health. Important covariates were included in a multiple logistic regression to generate odds ratios for individual factors associated with sexual satisfaction.
RESULTS: Among the 52% (n = 48,300) of the cohort who reported sexual activity with a partner in the past year, 96% (n = 46,525) of the sexually active respondents, ages 49–79, answered the sexual satisfaction question. In multivariable analysis increasing age was significantly related to increased sexual satisfaction (p < 0.001). Native American (OR 1.86, 95%CI: 1.22, 2.85), Asian (OR 1.51, 95%CI: 1.28, 1.78) and Hispanic (OR 1.19, 95%CI: 1.05, 1.34) women were more likely to report sexual satisfaction than white women. Married women were more likely to be satisfied than divorced (OR 0.63, 95%CI: 0.59, 0.68), widowed (OR 0.76, 95%CI: 0.69, 0.85) or never married (OR 0.63, 95%CI: 0.51, 0.78) women. Improved health status, measured by the SF-36, and lower levels of depressive symptoms, measured by the CES-D/DIS were strongly associated with increased sexual satisfaction (both p < 0.001). Parity of 5 or more births (OR 0.83, 95%CI: 0.74, 0.94) and no term pregnancy (OR 0.78, 95%CI: 0.66, 0.93) were associated with decreased sexual satisfaction, versus women who had never been pregnant. Those who reported no current SSRI use were more likely to be satisfied than SSRI users (OR 1.27, 95%CI: 1.13, 1.42). A past smoking history was associated with decreased sexual satisfaction versus never smokers (OR 0.88, 95%CI: 0.84, 0.92). Factors associated with sexual satisfaction in other studies, including income, education, employment, sexual orientation, history of a gynecological cancer or hysterectomy, oral contraceptive use, hormone replacement therapy use, exercise, hypertension, family history of early MI, diabetes, and BMI, were not significantly associated with sexual satisfaction in this cohort.
CONCLUSIONS: Among postmenopausal women, sexual satisfaction is associated with several nonmodifiable demographic factors. However, decreased sexual satisfaction is also associated with several potentially modifiable factors, including lower health status, more depressive symptoms and SSRI use. Physicians caring for older women should address sexual health-related quality of life, and discuss sexuality when addressing chronic diseases and medications that affect sexual functioning.

INNOVATIONS IN MEDICAL EDUCATION

A CASE-BASED PRE-CLINIC CONFERENCE CURRICULUM FOR COMBINED MEDICINE/PEDIATRICS RESIDENTS. J.S. Talwalkar[1]; A.M. Fenick[2]. [1]Yale University, Waterbury, CT; [2]Yale University, New Haven, CT. *(Tracking ID # 173138)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Adequately teaching core outpatient topics in both internal medicine and pediatrics is a unique challenge for combined Medicine/Pediatrics Residency Programs. While many internal medicine programs have developed curricula for use during weekly continuity clinic sessions, there is less experience with this intervention in pediatrics and no published examples for combined training programs. In addition, many residents wish to develop teaching skills but have limited structured opportunity to do so.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Improve teaching of core outpatient internal medicine and pediatrics topics to our medicine/pediatrics residents. 2. Provide opportunities for resident scholarship in medical education. 3. Promote academic mentorship between residents and faculty
DESCRIPTION OF PROGRAM/INTERVENTION: Our institution's Primary Care Internal Medicine Residency Program has an established outpatient medicine pre-clinic curriculum that is utilized by over 60 residency programs nationally. We sought to develop a parallel curriculum for pediatrics to create a comprehensive curriculum for our combined medicine/pediatrics residents. Starting in academic year 2005–2006, medicine/pediatrics and categorical pediatrics residents were invited to work with faculty mentors to author chapters for the curriculum. Residents were allowed to use this exercise to meet their ACGME scholarly activity requirement. Faculty also authored chapters independently. Detailed instructions were provided to create a uniform, case-centered, evidence-based curriculum to address common outpatient topics as well as issues relating to the ethical, legal, and business aspects

of pediatrics. In July 2006, the curriculum was distributed, in both paper and compact disc versions, and implemented in both the medicine/pediatrics and categorical pediatrics continuity clinics. Medicine/Pediatrics residents continued to receive the internal medicine curriculum. Each week prior to clinic, residents read a reference article included with the curriculum. Once in clinic, residents and faculty use the case vignettes and questions in each chapter as the focus of a 30 minute discussion of the topic. A moderator's version contains suggested answers, teaching pearls, and recommendations for group exercises. Residents were asked to complete surveys regarding the curricular change and authorship process five months after implementation. A survey measuring resident satisfaction, participation, and teaching skills will be distributed in June 2007.
FINDINGS TO DATE: Of twenty medicine/pediatrics residents, eighteen (90%) completed the survey. Eleven (61%) participated as authors. Eight of these eleven authors (73%) identified the project as their method for meeting their scholarly activity requirement. Authors found faculty mentors to be helpful in many aspects of the authorship process, including nine (90%) who valued their mentors' assistance in reviewing chapter drafts. Six (60%) believed that joint participation as authors had strengthened their relationship with faculty. Additionally, residents expressed satisfaction with the curricular change and the authorship process, and identified the curriculum as an important addition to their education.
KEY LESSONS LEARNED: Medicine/Pediatrics residency programs can improve the quality and content of outpatient didactic teaching with implementation of a structured, evidence-based curriculum. Allowing residents to participate in curriculum development provides opportunity for resident scholarship and fosters faculty mentorship.

A CROSS-SECTIONAL MEASUREMENT OF MEDICAL STUDENT EMPATHY. D.C. Chen[1]; J.D. Orlander[2]; R. Lew[3]. [1]Boston University School of Medicine, Boston, MA; [2]Boston VA Medical Center, Boston, MA; [3]VA Boston Healthcare System, Boston, MA. *(Tracking ID # 173017)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Empathy in the doctor-patient relationship is the ability of the physician to cognitively recognize the patient's perspectives and experiences and convey such an understanding back to the patient. Physician empathy is associated with increased patient satisfaction outcomes, but may decline with clinical training and may differ by specialty.
OBJECTIVES OF PROGRAM/INTERVENTION: Our study examines medical student empathy in a university-based medical school.
DESCRIPTION OF PROGRAM/INTERVENTION: This cross-sectional study of medical students at Boston University School of Medicine in 2006 targets entering students plus each class near the end of the academic year. The survey is self-administered and anonymous. Our primary outcome measure is the 20-item, validated Jefferson Scale of Physician Empathy (JSPE) which uses 7-point Likert scales. Additionally, we asked students to indicate their age, gender, future career interest and anticipated debt burden. Data was analyzed using ANOVA and post-hoc pairwise comparisons.
FINDINGS TO DATE: The survey was administered to the incoming ($n = 179$), and end of the first- ($n = 160$), second- ($n = 148$), third- ($n = 167$), and fourth- ($n = 154$) year classes. Percentages of the classes responding were 96.1%, 86.3%, 96.0%, 68.9%, and 59.1%, respectively. Overall JSPE scores were higher in the female medical students than in the male medical students, but the patterns of scores were not the same in the different genders among the classes. Scores for the female incoming students were 117.1; first-year, 121.8; second-year, 118.6; third-year, 116.5; and fourth-year, 108.8; while scores for the male incoming student were 114.0; first-year, 115.3; second-year, 117.7; third-year, 109.0; and fourth-year, 104.4. Students interested in "People-oriented" specialties are suggestive to have higher empathy than those interested in "Technology-oriented" specialties, but this pattern was not clearly seen in all classes. Male medical students were more likely than females to choose "Technology-oriented" specialties (51.5% vs. 26.9%, $p < 0.0001$). Age and financial indebtedness did not affect empathy scores and no relationship was noted between career preference and anticipated debt burden.
KEY LESSONS LEARNED: In this cross-sectional survey, empathy scores of medical students in the preclinical years are higher than empathy scores in the clinical years, although female and male students exhibit different empathy score patterns throughout the medical school years. Additional efforts need to determine whether the differences seen in empathy scores among the classes are cohort effects. Students preferring "People-oriented" specialties may have higher empathy scores than students preferring "Technology-oriented" specialties, but further research is need to clarify the different patterns seen in the different classes. Future research needs to look at whether or not clinical training impacts empathy negatively, and, if so, whether interventions can be designed to reduce this impact.

A FOUR YEAR MEDICAL SPANISH PROGRAM FOR INTERMEDIATE TO ADVANCED SPEAKERS AT ONE U.S. MEDICAL SCHOOL. D.S. Reuland[1]; L. M. Slatt[1]; P.Y. Frasier[1]; M.A. Aleman[1]. [1]University of North Carolina at Chapel Hill, Chapel Hill, NC. *(Tracking ID # 171470)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Previous medical Spanish courses have been limited by a lack of clear objectives, restricted duration, poor integration into existing curricula, high attrition, and lack of validated measures of language proficiency.
OBJECTIVES OF PROGRAM/INTERVENTION: To develop a 4 year medical Spanish program that (1) offers multiple modes of learning during the 4 years of medical school and integrates into existing curricula, (2) targets students with intermediate to advanced Spanish skills, who are near thresholds for providing clinical care in Spanish after finishing training, and (3) uses validated language proficiency metrics.
DESCRIPTION OF PROGRAM/INTERVENTION: Since 2004 we have invited incoming medical students who rate themselves as having intermediate or higher Spanish skills, to apply to a 4-year medical Spanish program. The Spanish Spoken Language Evaluation (SLE TM), a validated proficiency test that has been mapped to other standard proficiency scales, is used to confirm baseline proficiency and determine eligibility; students who test at intermediate to advanced level are accepted. A separate listening comprehension (LC) test is also given but is not used for eligibility. Participants are retested after 2 years. Curriculum in year 1 includes a for-credit course co-taught by a language instructor and a clinician; clinical content corresponds to the school's organ-system-based curricula. Teaching modes include classroom instruction, interactive digital materials, live simulated patients (SPs), and guest lectures (often in Spanish) on socio-cultural topics. The program makes use of existing medical school requirements to offer chances for language practice, such as placing students at clinical sites having a greater number of Spanish-speaking patients during their clinical skills course. Year two offers a series of SPs played by romance languages instructors who provide structured feedback on language and interpersonal processes. Between year 1 and 2, the program facilitates participation in one of several optional "immersions" in Latin America, where students study Spanish and participate in clinical service and/or research projects. Students also have a 20 hour minimum service-learning requirement in years 1 and 2. In the 3rd and 4th years the program facilitate clerkship placements where learners are likely to see Latino patients. Third year students also take part in an observed structured clinical examination (OSCE) in Spanish. We are developing an assessment similar to the Clinical Performance Examination (CPX) for the 4th year.
FINDINGS TO DATE: Over 3 years we have had 94 applicants (30–33 per class) and have accepted 74. Five participants (7%) have withdrawn from the program. Mean LC test scores increased from 78.7% to 86.5% ($p = 0.0048$) in the first cohort of 27 students after 2 years. The percentage meeting criteria for advanced proficiency on this test increased from 74% to 93% ($p = 0.0679$). Mean two-year speaking SLE scores did not change. Annual program costs have been approximately $125,000 during development.
KEY LESSONS LEARNED: Enhancing Spanish proficiency among medical students is challenging and resource intensive. Our program has overcome some of the limitations of earlier programs in being longitudinal, multimodal, and targeted to a specific language proficiency range. Integration into existing curriculum has been partially achieved. Use of validated metrics for language proficiency allows for target-learner-appropriate teaching, and should enhance measurement rigor in the field of medical Spanish education.

A LONGITUDINAL FACULTY DEVELOPMENT PROGRAM BASED UPON THE PRECEDE MODEL. J.M. Riddle[1]; M.H. Gelula[1]; J.E. Tulley[1]. [1]University of Illinois at Chicago, Chicago, IL. *(Tracking ID # 173044)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Conceptual framework: The PRECEDE model for health education planning guided the development of an on-going longitudinal program for faculty development. The PRECEDE model was chosen because it emphasizes reinforcing and enabling factors, which have been demonstrated to contribute to improvement in professional practice.
OBJECTIVES OF PROGRAM/INTERVENTION: Explicit program goals are to (1) create opportunities for faculty to acquire and practice new teaching skills; (2) encourage reflection on current and optimal teaching practices; and (3) stimulate collegial interaction among faculty in the section.
DESCRIPTION OF PROGRAM/INTERVENTION: The General Internal Medicine section consists of 28 attending physicians who work at either the University of Illinois Medical Center or at Jesse Brown VA. Faculty at the two sites share similar teaching roles within the internal medicine clerkship and residency program, however, they do not share teaching or clinical activities across the two sites. The faculty development program is composed of plenary sessions and workshops. In the initial plenary session, participants completed a needs assessment, used critical incident technique to initiate discussion of effective teaching and were introduced to Irby's model of knowledge domains relevant to clinical teaching. Faculty were divided into smaller groups for two 2-hour long interactive workshops. The first focused on the METRC model of brief clinical teaching ("one minute preceptor") and the second on giving effective feedback. The format for both workshops was identical - presentation and discussion of teaching skills, practice and video recording with standardized medical students, then review and discussion of video recordings. Compiled results from workshop evaluations, copies of PowerPoint presentations, a reading list and video recordings were returned to participants after the workshops. The plenary session and presentations during the workshops serve as predisposing factors - providing knowledge and skills that allow for teaching skill improvement. Review and discussion of video recordings during the workshop

served as reinforcing factors as did the materials that participants received after the workshop. The students who served as standardized students during the workshops act as enabling factors in clinical settings.
FINDINGS TO DATE: The plenary session and workshops were well received. Twenty-seven faculty attending the plenary session and twenty-five completed both workshops. Participants completed post-workshop commitment-to-change and self-efficacy instruments. Participants described learning from each workshop that was related to both the specific workshop objectives as well as to the discussion of the video recordings. Participants were able to list specific changes to teaching practice that they intended to make, but reported moderate levels of commitment to implement those changes. Using the self-efficacy instruments, participants reported greater changes in capabilities to perform feedback skills than METRC skills.
KEY LESSONS LEARNED: Initial activities in this longitudinal program have been well received and participants have reported changes in knowledge and skills as a result of the workshops. The self-efficacy instruments show promise as a method for assessing the impact of teaching skills workshops. Planned activities include plenary sessions exploring teaching experiences and workshops on evaluating learners and teaching procedural skills.

A MULTI-INSTITUTIONAL PERIOPERATIVE MEDICINE RETREAT FOR INTERNAL MEDICINE TRAINEES. P. James[1]; D.J. Pi[1]; C. Packer[2]; C. Kroen[3]; L. Spinelli[4]. [1]Case Western Reserve University, Cleveland, OH; [2]Louis Stoke Cleveland Veterans Affairs Medical Center, Cleveland, OH; [3]Cleveland Clinic, Cleveland, OH; [4]MetroHealth Medical Center, Cleveland, OH. *(Tracking ID # 172804)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Perioperative medicine has gained increasing importance in both academic and community hospitals, and has been identified as an area in which physicians feel inadequately prepared during training. Exposure to perioperative medicine continues to be highly variable in many institutions.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) To expose medicine residents to basic principles of evidence-based perioperative medicine 2) To break down the "silo mentality" existing in large city internal medicine training programs, by allowing residents from 4 different training programs to learn collaboratively 3) To increase the pool and diversity of qualified lecturers
DESCRIPTION OF PROGRAM/INTERVENTION: We developed and implemented a one-half day "retreat" style educational program in perioperative medicine, utilizing both large and small group settings, and didactic as well as interactive teaching. Faculty was chosen from the 4 participating institutions based both on topic expertise and effectiveness as communicators. Conference topics included perioperative cardiac and pulmonary risk reduction, postoperative fever, delirium, anticoagulation, corticosteroid treatment, and surgical risk reduction in patients with liver disease. A total of 66 residents from 4 local IM residency programs, both university and community based attended the retreat. All attendees were asked to evaluate the retreat.
FINDINGS TO DATE: Attendees indicated that they found the retreat a beneficial introduction to the topic. Qualitative and quantitative evaluation data suggested that both the succinct didactic presentations as well as the interactive portions of the retreat were viewed as useful, and that residents found the interaction with colleagues from other local institutions to be valuable.
KEY LESSONS LEARNED: Our experience may serve as a template for others seeking new strategies for teaching perioperative and consultative medicine, as well as an example of an inter-residency collaborative effort. Our citywide conference format provides important information to a large number of medical residents in a short period of time, and supports the use of local or regional conferences to train residents in perioperative medicine.

A MULTIMODALITY NUTRITION CURRICULUM TO IMPROVE THE KNOWLEDGE AND SKILLS OF MEDICAL STUDENTS. J. Zebrack[1]; S. Guven[2]. [1]University of Nevada School of Medicine, Reno, NV; [2]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 172937)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Although nutritional disorders are common, medical students usually do not receive adequate training in identifying and caring for patients with nutritional problems (e.g. obesity, metabolic syndrome, eating disorders, unintentional weight loss).
OBJECTIVES OF PROGRAM/INTERVENTION: 1) To develop nutritional knowledge and skill core competencies for medical students, 2) To implement a multidisciplinary, 1-month elective for M4 students interested in learning more about nutrition, and 3) To improve students' knowledge and skills in these nutritional core competencies.
DESCRIPTION OF PROGRAM/INTERVENTION: After review with local experts, 11 knowledge and 14 skill competencies were formulated. Examples of knowledge competencies include: "Describe the health risks of obesity; Discuss the indications for pharmacologic therapy for weight loss; Define the female athlete triad." Examples of skill competencies include: "Screen and identify a patient with a weight disorder; Counsel a patient about physical activity; Diagnose a patient with metabolic syndrome." Students on the rotation participate in multiple modalities to fulfill these competency goals. The students experience a wide variety of clinical settings, which include general medicine clinics, metabolic syndrome/obesity clinics, bariatric evaluation clinics, and an eating disorder treatment center. With the guidance of faculty preceptors, students evaluate and counsel patients about nutritional issues. They also work with outpatient dieticians, exercise physiologists, and psychologists and participate in multidisciplinary team meetings. Additionally, students evaluate adolescents with a nutritionist at a sports medicine center and participate in bedside rounds with an ICU nutrition team. Innovative learning activities include keeping and evaluating a personal 3-day food diary, calculation of one's own VO2 max at the sports medicine center, and student-driven evidence-based presentations. Students also participate in group classes for patients (i.e. diabetic education, weight management support group, eating disorder group). The course is rounded out with a few supplemental didactic topics including metabolic syndrome, how to keep a food diary, the new food pyramid, fad diets, enteral feeding, and the psychological aspects of weight issues.
FINDINGS TO DATE: To date, 11 students have rotated on the elective. Evaluations have been extremely positive with the overall quality of the rotation ranked at 4.5 (Likert scale, 1 = poor, 5 = excellent). Clinical experiences were rated at 4.2 (range 3.2–4.7) and didactics at 4.2 (range 3.7–4.7). Students also completed a retrospective, pre/post self-assessment questionnaire with significant improvements in all 11 knowledge and 14 skill competencies ($p < 0.001$, T-test). Open-ended qualitative comments were also solicited and included: "This is a important area that is not addressed elsewhere in our medical education," "I feel better prepared to counsel patients about how to lose weight," and "Great exposure to different disciplines that all work toward a common goal."
KEY LESSONS LEARNED: Students ranked the quality of these experiences high and perceived a significant improvement in their own knowledge and skills. The development of nutritional core competencies, which helped to shape the rotation, can be shared with other faculty. The main challenge in developing such a rotation is coordination between multiple sites. Future goals include expanding these types of experiences to medicine clerkship students and medicine residents on an ambulatory rotation.

A NOVEL INTERDISCIPLINARY QUALITY IMPROVEMENT PROJECT: LEARNER-LED INFLUENZA VACCINATION CLINIC. M.E. Guy[1]; S. Janson[1]; L. Kroon[1]; C.J. Lai[1]; M.D. Feldman[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 174012)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): There is growing interest in developing residency curricula on 1) quality improvement principles and 2) inter-professional collaboration. The challenge has been to develop a curriculum in which a group of interdisciplinary learners can learn and then directly apply QI skills to a clinically relevant project.
OBJECTIVES OF PROGRAM/INTERVENTION: To teach a group of interdisciplinary learners quality improvement (QI) principles by challenging them to plan, implement and evaluate an influenza vaccination clinic for at-risk patients in a general medicine clinic.
DESCRIPTION OF PROGRAM/INTERVENTION: We created a didactic and experiential curriculum for a group of interdisciplinary learners who practice together in a general medicine clinic. Primary care internal medicine residents (n = 22), pharmacy students (n = 8), and adult nurse practitioner students (n = 4), participated in weekly 1.5-hour workshops, to learn about quality improvement principles in the context of influenza prevention. Through these lectures as well as hands-on experience, learners planned, designed, implemented and evaluated four influenza clinics. The influenza vaccination clinics were staffed by the learner teams on two separate dates at two general medicine clinic locations.
FINDINGS TO DATE: In the planning stages, learners identified a need to assess 1) patient knowledge regarding the influenza vaccine, 2) patient satisfaction with the influenza clinics, and 3) need for pneumovax vaccination among the patients who presented for influenza clinic. The learners developed a survey based on evaluation techniques they learned in their QI workshops. In this survey, patients were asked to identify the "True Facts" about the flu vaccine. On average, patients identified 4 out of 7 true influenza facts on the survey. Two hundred sixteen patients received the influenza vaccine. Of the 92% of patients who responded to the 5-point Likert-scaled survey, 87% reported they were very to extremely satisfied with their experience in the learner-led influenza clinic. Forty patients were also identified as needing a pneumovax, which they received at the clinic. In a group debriefing after the influenza clinics, learners stated that they learned how to implement and evaluate a quality improvement project and enjoyed working as an interdisciplinary team. Both learners and patients felt strongly they would participate in such a project in the future.
KEY LESSONS LEARNED: Using a clinic-based project to teach quality improvement principles to primary care residents in inter-professional teams can be rewarding for learners and patients.

A "PROFESSIONALISM" COURSE FOR THE CLINICAL CLERKSHIPS: DEVELOPING A STUDENT-CENTERED CURRICULUM BY ASSESSING THIRD-YEAR MEDICAL STUDENTS' PERCEPTIONS OF THEIR PROFESSIONAL CLIMATE. C.A. Lee[1]; C.J. Lai[1]; A. Schickedanz[1]; J. Maa[1]; L. Hill-Sakurai[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172806)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Although pre-clinical medical students are introduced to classroom concepts of professionalism, these concepts take on new meaning in the third year as students become integral members of the health care team. Third-year medical school curricula on professionalism must be directly relevant to student experiences on the wards and in the clinics.
OBJECTIVES OF PROGRAM/INTERVENTION: To create a student-centered professionalism curriculum by: (1) Extracting themes from third-year students' written reports of personal experiences on their clerkships; and (2) Developing panels and small group curricula based on these themes.
DESCRIPTION OF PROGRAM/INTERVENTION: In 2005–06 and 2006–07, all third-year medical students at this university attended week-long courses after their first and third required clerkships. Students were required to write confidential, one page "critical incident reports" describing memorable experiences of both exemplary and unprofessional behavior they had witnessed during their rotations. Students discussed these reports in small groups and had the option of turning in their written reports to the course directors. Using an iterative consensus building process, investigators examined these reports to generate themes of exemplary and unprofessional behaviors witnessed by clerkship students. These themes were then used to pilot the first of two revamped panels on professional roles in mid-2006–07. Small group objectives were modified to include these themes.
FINDINGS TO DATE: One hundred eight-three students submitted their reports on exemplary and unprofessional behavior. Themes identified were similar across both years and time frames of submitted reports. The four themes of exemplary professional behavior were: (1) role modeling of accountability, humility, or passion for patient care; (2) inter- and intra-team collaboration; (3) student-centered education; and (4) patient-centered care, including display of empathy, compassion, effective communication, and respect for patients. The five challenges to professional behavior were: (1) poor communication, both amongst health care team members and with patients; (2) lack of professional role responsibility, both as patient care provider and educator; (3) compromised compassionate care; (4) disrespect, both as inappropriate humor and derogatory comments about patients or co-workers; and (5) student perception of resource allocation inequalities. These themes were used to create realistic case vignettes of challenging clerkship experiences. A discussion panel, in which faculty previously recalled personal anecdotes, was revised so that faculty panelists reflected on these vignettes. The moderator and student audience challenged the panelists to describe practical ways in which students might respond in the vignette. The pilot panel was successful by qualitative comments and quantitative report (4.22 on a 5-point Likert scale [1 = poor, 5 = excellent]). A small group following this panel was revamped so that the objectives addressed themes from the student reports. Future panels and small groups will be developed based on the themes identified in these incident reports.
KEY LESSONS LEARNED: Third-year medical students are exposed to multiple examples of professional and unprofessional behavior involving issues of communication, teamwork, and clinicians' role responsibilities. Developing structured curricula for reflection and discussion may help students to develop ways to approach professional challenges that arise during their training and careers.

A SUMMER PROGRAM IN LEADERSHIP, ADVOCACY, AND SERVICE FOR MEDICAL STUDENTS THE CU-LEADS (LEADERSHIP, EDUCATION, ADVOCACY, DEVELOPMENT, SCHOLARSHIP) SUMMER PROGRAM. M.A. Earnest[1]; S. Wong[1]; C.S. Kamin[1]. [1]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 171969)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): While health and illness primarily arise from social conditions, few physicians effectively act at a community level to promote health. Traditionally, medical schools have not emphasized these skills.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) Train medical students in leadership skills 2) Train medical students in legislative, media, and organizational advocacy 3) Partner with non-profit organizations to provide mentorship and guidance for medical students to complete a discreet advocacy project over two months
DESCRIPTION OF PROGRAM/INTERVENTION: Students applied competitively for eight positions in the CU-LEADS summer program. Stipends supported this 8-week experience. The summer program had two components. 1) The Leadership and Advocacy Curriculum took place each Monday from 8 AM until 1 PM. Each session was conducted as a small group, interactive session. Sessions included a) Effective communication b) Collaborative decision-making c) Dealing with conflict d) Ethical decision-making e) Emotional intelligence f) Legislative advocacy g) Media Advocacy. 2) Community Advocacy Project: Students partnered with community organizations to complete an advocacy project. Students participated in staff and board meetings of the partnering organizations, learned about non-profit management and completed a variety of scholarly projects.
FINDINGS TO DATE: Advocacy projects included: developing an online reference guide to safety net services for the Colorado Consumer Health Initiative, developing a Spanish promotora curriculum on nutrition for Clinica Tepeyac, revising a resource guide and developing new referral sources for Bright Beginnings, and through the Colorado Office of Rural Health, documenting the availability of mental health services in rural counties and developing a public information campaign around skin malignancies for rural Colorado. Students and participating organizations both rated the experience very highly. All participating organizations have asked to participate again in year two and all students have continued to be active in the CU-LEADS program. Portions of the leadership and advocacy curriculum are being considered for inclusion in the general curriculum for the school of medicine. Two students are developing an intervention and evaluation strategy for their promotora curriculum which they plan to publish.
KEY LESSONS LEARNED: This program provides a unique opportunity for students to actively engage in scholarly service for the community. Understanding health promotion beyond the individual patient has changed students perspectives on future practice and responsibilities. Funding is critical to the programs success. The program is funded under grants from HRSA, The Colorado Health Foundation, and the Rose Community Foundation. Stipends were funded by the Deans office.

A VERTICALLY INTEGRATED HEALTH LITERACY CURRICULUM FOR MEDICAL STUDENTS. W.R. Harper[1]; K. Johnson[1]; S. Cook[2]. [1]University of Chicago, Chicago, IL; [2]Duke University, Singapore, AA. *(Tracking ID # 173330)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): While limited literacy is extremely prevalent and has known adverse impacts on health, formal curricula are lacking to guide medical educators is this area as we train students for their patient encounters.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Students will know the prevalence of limited health literacy, the adverse health impacts of limited literacy and how using core communication skills can help with this vulnerable patient population. 2. Students will demonstrate the ability to use the 'teach back' method of patient education. 3. Students will use teach back more frequently in thier patient encounters.
DESCRIPTION OF PROGRAM/INTERVENTION: The health literacy curriculum was integrated into the introduction to clinical medicine courses in the MS1 and MS2 years, and during the internal medicine clerkship in the MS3 year. In didactic sessions, MS1s learned literacy demographics and how to assess literacy level, and talked with a patient with limited literacy. The core communication skill of 'plain language' was reinforced. Students then practiced interviewing (including uisng 'plain language') with trained patients while being videotaped. MS2s learned a new skill, the 'teach back' method of patient education. Use of teach back has been shown to improve patient outcomes. Students then practiced teach back with a trained patient in a communication skills workshop. In the medicine clerkship, MS3s did an online, self-directed exercise where they learned the final step of the patient visit, 'Closing the Encounter.' When we close the encounter, we summarize the visit, educate the patient, answer questions and discuss next steps. Teach back is embedded in this new task. Students then practiced closing the encounter (and teach back) with a patient in clinic with faculty preceptor feedback.
FINDINGS TO DATE: 1.We assessed students' confidence and attitudes with regard to health literacy behaviors before and after the MS2 curriculum and have presented this data at past SGIM meetings. We found that all students, no matter the class year, felt this issue was important and students self reported more confidence and higher use of health literacy behaviors after the curriculum. 2.With the MS3 curriculum implemented this year, we assessed whether students were able to perform the specific skill of the teach back method. When prompted to do so, all but one of the steps of teach back were performed by over 95% of the students. The one step performed less frequently was explaining medication side effects to the patient. (98% vs 88%. $P < 0.05$) 3. Finally, we assessed whether students used teach back more frequently during the end-of-MS3 OSCE when not prompted to do so. We found a trend toward increased use of teach back on a health literacy case (21% of students in 2005, 31% in 2006. $P = 0.137$).
KEY LESSONS LEARNED: Medical students feel that health literacy is an important issue. With this pilot data, we see that a curriculum directed at MS2s can have an impact on self-reported confidence and frequency of use of health literacy behaviors. Students are also capable of learning the skill of teach back and using it with patients when directed to do so in clinic. Yet students did not successfully identify the appropriate clinical situation to use this tool. While almost all of the students could do teach back, only 30% used it during the OSCE. We plan to further refine the curriculum to encourage universal use of this method of patient education. We plan to integrate literacy content into other MS3 clerkships as well.

ACADEMIC SOCIETIES: DEVELOPING THE PHYSICIAN-EDUCATORS OF TOMORROW. A.J. Mechaber[1]; C.B. Bohrer[1]; T. Steele[1]; H. Han[1]; W. Quirino[1]; D. Eapen[1]; J. Green[1]; M. O'Connell[1]. [1]University of Miami, Miami, FL. *(Tracking ID # 173520)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): One challenge of medical education is to develop students into physicians who will also be enthusiastic and competent future educators. With this in mind, the Academic Societies were created to provide a framework for peer-to-peer education.
OBJECTIVES OF PROGRAM/INTERVENTION: As a collaborative effort between students, faculty and administration, the program develops student-educators by 1) teaching student leaders professional skills in a seminar course, 2) designating areas of the curriculum as peer-taught, 3) providing structured lesson plans with faculty

support and supervision, 4) providing methods of evaluation and feedback to student-instructors, 5) promoting creativity and student involvement in medical education.
DESCRIPTION OF PROGRAM/INTERVENTION: The student body is divided into twelve societies comprised of members from all four years. Each society has designated upper class instructors who, after completing a professional development course, are trained in the physical exam via a standardized, web-based video tutorial and faculty supervised session. These student-instructors meet with first and second year students monthly to teach elements of the physical exam, integrating various aspects of the organ-based curriculum. All student-instructors are evaluated by fellow society members and this feedback is provided twice yearly to the instructors. The Anatomy Tutoring Program was developed to improve student success in Gross Anatomy. Third and fourth year student-instructors work with the course coordinator to pro-sect the cadavers and serve as teaching assistants within the laboratory. Prior to course examinations, the tutors design and administer mock practical exams for the students. "Student Report" is a monthly case report designed and presented by the upper class students in each society. These student-instructors lead a case-based presentation reviewing a topic currently being taught in the first and second year courses. Faculty and senior students are present to answer questions. "Introduction to the Wards" assists in the transition into the clinical clerkships. Skills taught include writing SOAP notes and patient presentations. The third year instructor accompanies the second year student to the hospital to practice these bedside skills. The second year student presents a patient to the third year instructor and receives constructive feedback.
FINDINGS TO DATE: Each year over 300 first and second year students are taught by upper class instructors through these programs. Students report that their student-instructors are well-trained, exceptionally prepared and provide clear instruction on the skills being taught. Initial data indicates that student confidence in physical exam technique and presentation skills increases after these sessions and students feel better prepared for their roles in the clinical clerkships.
KEY LESSONS LEARNED: Peer to peer structured teaching opportunities help provide instruction of important skills to underclass students in a non-threatening learning environment. These unique experiences also promote the development of the future physician-educators.

AN ACUTE CARE ROTATION FOR SECOND YEAR MEDICAL STUDENTS. J.H. Isaacson[1]; C. Kroen[2]; W. Christopher[2]; T. Christine[2]. [1]Cleveland Clinic Foundation, Cleveland, OH; [2]Cleveland Clinic, Cleveland, OH. *(Tracking ID # 173600)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Traditional boundaries between basic science and clinical medicine have lessened, with most medical schools now including some clinical training in the 1st 2 years. However, survey evidence suggests that clerkship faculty do not feel students are adequately prepared to begin traditional 3rd year rotations in the hospital.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Provide 2nd year medical students with an introduction to core skills related to acute care medicine to better prepare them for the 3rd year 2. Develop a system to document achievement of core skills in acute care
DESCRIPTION OF PROGRAM/INTERVENTION: We surveyed clerkship directors at our teaching hospitals during a series of curriculum planning retreats and identified core skills that were felt to be lacking in many students entering their 3rd year rotations. From this we developed "acute care" learning objectives relevant to all disciplines and integrated these objectives into our clinical skills curriculum for 2nd year students. We divided learning objectives into 3 broad categories; 1) initial care of a newly hospitalized patient including a history/physical, prioritized problem list and oral presentation, 2) assuming the care of the patient already hospitalized including focused history/physical, chart review and appreciation of ancillary services, and 3) transition of care including discharge planning, interaction with PT/OT and social services. Each student was assigned a faculty member to work with in the hospital for 3 afternoons to cover the learning objectives. Each afternoon focused on one of the 3 broad categories listed above. Skills lists, a guidebook to the inpatient environment and pertinent sample documents for each session were posted on the medical school web portal. Students entered patient logs for each session and faculty were expected to review the skills lists and provide comments for the student. Faculty development sessions were held to orient faculty to the program and review the importance of providing the students constructive feedback.
FINDINGS TO DATE: During course assessment at the end of the 2nd year, the majority of students agreed to strongly agreed that these sessions gave them a better understanding of acute care medicine (74%), showed them how to write admission/discharge orders (76%), and oriented them to components of the inpatient medical record (86%) Additional evaluation of the value of the program in preparation for the 3rd year is planned for March of 2007, when many students will have finished core rotations.
KEY LESSONS LEARNED: 1. An acute care curriculum appropriate for 2nd year students can be developed and implemented longitudinally. 2. Skills related to acute care can be tracked electronically through patient logs. 3. The ability of this curriculum to better prepare students for the 3rd year needs to be assessed in order to determine the long term value of such a program.

ASSESSING CARDIAC PHYSICAL EXAMINATION SKILLS USING SIMULATION TECHNOLOGY AND REAL PATIENTS. R. Hatala[1]; S. Issenberg[2]; B. Kassen[1]; G. Cole[3]; C. Bacchus[4]; R. Scalese[2]. [1]University of British Columbia, Vancouver, British Columbia; [2]University of Miami (Florida) Miller School of Medicine Gordon Centre for Research in Medical Education, Miami, FL; [3]Royal College of Physicians and Surgeons of Canada, Ottawa, Ontario; [4]University of Calgary, Calgary, Alberta. *(Tracking ID # 173645)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Competent and accurate bedside diagnosis is a fundamental skill of practicing internists. Frequently, assessment of bedside skills involves the use of standardized patients (SP) lacking physical abnormalities. Simulation technology provides additional opportunities to assess clinical performance by mimicking physical abnormalities. However, little is known about the comparability of clinical performance assessments using simulation technology compared to using real patients with or without abnormal findings.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. To examine validity issues pertaining to different simulation modalities used for assessment purposes. 2. To examine the relationship between internists' physical examination competence as assessed with simulation technology compared to real patients.
DESCRIPTION OF PROGRAM/INTERVENTION: We assessed internists' competence in cardiac physical examination skills and bedside diagnostic accuracy during a 12-station OSCE. The OSCE contained 3 modalities of cardiac patients: 4 stations using real patients (RP) with cardiac abnormalities, 4 stations using SPs combined with computer-based audio-video simulations of auscultatory abnormalities and 4 stations using a cardiopulmonary patient simulator (CPS). Four cardiac diagnoses were tested: normal, mitral regurgitation, aortic stenosis and mitral stenosis. Cardiac diagnoses and the specific cardiac findings for each diagnosis were matched across modalities. Participants were 28 volunteer internists, within 3 years of passing the Royal College of Physicians and Surgeons of Canada's (RCPSC) Comprehensive Examination in Internal Medicine. At each station, two RCPSC examiners independently rated a participant's physical examination technique and global clinical competence. Two investigators separately scored the accuracy of each participant's cardiac diagnosis.
FINDINGS TO DATE: Methodological limitations were apparent with each assessment modality. For real patients, standardization of clinical findings was difficult. For the simulation modalities, it was challenging to match clinical findings of equivalent difficulty to the RP findings. Global validity issues included variability between modalities in the components contributing to examiners' global ratings, a paucity of objective outcome measures, and restricted case sampling limiting the assessment of clinical competence within a modality. The inter-rater reliability between examiners for the global rating outcome ranged from 0.75–0.78 for the different modalities. Although there was no significant difference between participants' mean global ratings for each modality (effect size = 0.05, $p > 0.05$), the correlations between participants' performance on each modality were modest: RP vs. SP, $r = 0.19$; RP vs. CPS, $r = 0.22$; SP vs. CPS, $r = 0.57$ ($p < 0.01$).
KEY LESSONS LEARNED: Assessment of internists' clinical competence in cardiac physical examination is important in ensuring quality of patient care. However, each modality employed to assess these skills posed unique methodological problems. While patient findings and diagnoses were matched as closely as possible, variability among the real patients and limitations with the simulation stations affected the demonstrated correlations in clinical performance between modalities. These preliminary results suggest that no modality was ideal when used purely for assessment purposes. Future work will focus on improving the objective measurement of performance, setting standards for each assessment modality, and increasing the number of cardiac conditions assessed.

BECOMING A RESIDENT TEACHER COURSE. K.M. Johnson[1]; D. Scott[1]; J. Woodruff[1]; S. Cook[1]; D. Rubin[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 172918)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Residents have a critical teaching role in the current medical climate, yet many medical students enter residency with little training in clinical teaching. In response to this need, we developed an elective for senior medical students to provide them with the teaching skills necessary to be successful resident teachers.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) Senior medical students will apply adult learning theory and perform practical teaching skills relevant to the settings in which they will teach during residency. 2) Students will develop increased confidence in their clinical teaching skills.
DESCRIPTION OF PROGRAM/INTERVENTION: The Becoming a Resident Teacher (BART) course has been offered as a senior medical student elective since 2002. The components of the course include 8 two-hour interactive teaching sessions that provide opportunities for skill practice, supplemental reading materials, a teaching portfolio assignment, and participation in an observed structured teaching excercise (OSTE). The curriculum in 2006 included Introduction to Teaching and Role Modeling, Teaching Portfolios, Setting Goals, Adult Learning Theory, Feedback, One-Minute Preceptor: Microskills of Teaching, Technology to Teach, and Promotion of Understanding and Retention. This year we created a retrospective pre-post questionnaire to evaluate the course and assess students' confidence in their teaching skills.
FINDINGS TO DATE: 119 students have completed the course to date. In 2006, 33 of 34 students completed the retrospective pre-post questionnaire. On a 5-point scale (5 = definitely yes, 1 = definitely not), students indicated they were likely to practice

in a university-based setting (mean 4.4±0.6); that teaching would be the focus of their career (mean 4.1±0.8); and that the course would improve their teaching skills (mean 4.7±0.5). Students reported a statistically significant increase in their confidence in all 11 teaching skills assessed on the survey ($p < 0.05$, all skills, Wilcoxan Rank Sum). There was variability in the degree of improvement. For example, when asked to retrospectively rate their confidence in "giving useful feedback to learners", their pre-course mean was 2.7±1.0 and post-course mean was 4.4±0.6 on a 5-point scale with 1 = low confidence and 5 = high confidence. Their confidence in "creating a teaching portfolio" was quite low prior to the course (pre-course mean 1.4±0.7) and increased (post-course mean 3.9±0.8). Their confidence in "creating effective power point presentations" was fairly high prior to the course (pre-course mean 3.8±0.9) but still increased (post-course mean 4.3±0.7).

KEY LESSONS LEARNED: The BART course is a unique curricular innovation that addresses the recognized need for residents as teachers. The course is well-received by our senior medical students and they report an increase in confidence in their clinical teaching skills across a variety of domains. The BART course offers our students teaching skills they will need for their future roles as clinician educators.

BEYOND THE EXAM ROOM: A MEDICAL STUDENT ELECTIVE TO FOSTER QUALITY CARE THROUGH ADVOCACY. J.W. Fisher[1]; W.J. Riley[2]. [1]Baylor College of Medicine, Houston, TX; [2]Meharry Medical College, Nashville, TN. *(Tracking ID # 173738)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Although the precise role of physicians as public citizens is not clearly defined, physicians are often expected to become community leaders and advocates for the health of the public. There is a dearth of literature on fostering physician advocacy and only a few educational programs exist that are designed to prepare medical students to participate in advocacy roles.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. Each medical student will strengthen his/her potential as an advocate for the individual patient as well as for the community. 2. The students will develop fundamental skills necessary to parlay social awareness into substantive change such as health policy and community advocacy.

DESCRIPTION OF PROGRAM/INTERVENTION: The curriculum for this first year medical student elective course was developed and refined by a core group of medical students and faculty to increase knowledge and skills related to key elements of physician advocacy. While this elective offers a broad introductory overview of some public health issues ranging from homelessness to violence prevention to immigration to health insurance, the important replicable component involves local physician advocates sharing leadership skill sets such as community organizing, media advocacy, lobbying, and health services research to effect patient-oriented health policy. The course format includes invited speakers, journal clubs, and panel discussions. Speakers are asked to include details about supportive resources and strategies used to overcome barriers in advocacy. During the 2 month elective, participants divide into small groups and are required to develop and present for feedback a project proposal ready for submission to a potential funding source.

FINDINGS TO DATE: The course has received high ratings from participants reflected in the rapidly rising number of enrollees (8 to 27 students in past 4 years), qualitative feedback, and a 3 year mean overall score of 4.2 (scale 1–5, 5=excellent). All participants responded that they gained advocacy skills and will be more effective leaders after taking the course. All respondents have intentions of being a community advocate. Each year, some of the participating students have taken the initiative to complete at least one of the group project proposals. A number of course participants have held community and national leadership roles.

KEY LESSONS LEARNED: Student involvement in design, implementation, and maintenance of an elective course is critical. While some of the students are able to go on to complete the projects that they proposed, other students have reported barriers to completing an advocacy project such as lack of time, funding and other potentially supportive factors. There appear to be curricular and institutional (or structural) factors that can foster and facilitate medical student advocacy.

BRIDGING THE GAP: AN INNOVATIVE AND EFFICIENT METHOD OF TRAINING MEDICINE AND GYNECOLOGY RESIEDNTS IN AMBULATORY WOMEN'S HEALTH. A.L. Spencer[1]; M.A. Mcneil[2]. [1]University of Pittsburgh/VA University Drive, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172978)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Internal medicine (IM) and obstetrics-gynecology (OG) residents both provide primary care for women, yet multiple studies suggest that neither cohort of residents are trained adequately or are comfortable in providing this care.

OBJECTIVES OF PROGRAM/INTERVENTION: To develop an interdisciplinary IM/OG ambulatory women's health curriculum using peer teaching to: 1) improve residents' content-specific knowledge and comfort, and 2) foster dialogue and build community between trainees from different departments.

DESCRIPTION OF PROGRAM/INTERVENTION: Based on results from a targeted needs-assessment, we designed an interdisciplinary curriculum for both IM and OG residents to address curricular deficiencies in an efficient and effective manner. "Buy-in" from the 2 departments was achieved by reviewing overlapping competency requirements and results of the needs-assessment with the program directors. Logistical issues of bringing residents together from 2 different programs and training sites were managed by finding a neutral location and time convenient for all. Accountability of residents is achieved via faculty presence, sign-in, and mandatory attendance emphasized by both program directors. The curriculum consists of 6 ambulatory clinical cases which include osteoporosis, sexual dysfunction, thyroid disease, menopausal symptoms, diabetes, and polycystic ovarian syndrome. Each case leads 6–8 residents through a discussion of screening, diagnosis, prevention, and management. The cases use a modified problem-based learning (PBL) format. Residents sign up for one learning objective each week which allows them to serve as a content expert during the case, and to apply what they have learned from their literature review to help the group decide what next step to take in the case. This format facilitates discussion and participation across levels of learners as each resident has a turn to be the expert. Additionally, this format utilizes theories of adult learning including self-directed learning and timely application of newly acquired information. Each resident receives a reference list with recommended key articles for each topic at the onset of the curriculum.

FINDINGS TO DATE: Forty IM residents and 15 OG residents have participated in the curriculum since its inception in July 2006. Residents are enthusiastic about the case-based PBL format and the self-directed learning involved and have unanimously identified the curriculum as a positive learning experience. Qualitative feedback includes statements from IM residents who report the cases were their first opportunity to discuss health concerns of younger women (PCOS, abnormal menses); OG residents felt similarly about cases related to older women (menopause, osteoporosis, sexual dysfunction). Residents also enjoyed case discussions with colleagues from another discipline. Changes in residents' knowledge and comfort will be assessed at the end of the year-long curriculum. The challenges of implementation included accountability of residents and achieving optimal group dynamics. Difficulties identified by the residents are the timing of the 7a.m. sessions and clinical coverage requirements which preclude conference attendance.

KEY LESSONS LEARNED: 1) Interdisciplinary case-conferences focusing on shared curricular needs in ambulatory women's health are well-received by both IM and OG residents. 2) This format maximizes limited faculty time and resources by teaching IM and OG residents concurrently. 3) Residents enjoy and learn from PBL format which allows them to utilize components of adult learning theory.

COMMUNICATING WITH CONSULTANTS: AN OBJECTIVE STRUCTURED CLINICAL ENCOUNTER FOR THE SUB-INTERNSHIP. T. Vu[1]. [1]Indiana University Purdue University Indianapolis/Roudebush VAMC, Indianapolis, IN. *(Tracking ID # 173714)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Effective communication with consultants is an essential skill for residents and interns. Yet, this skill is not commonly taught on a formal basis in medical schools. The fourth-year sub-internship is an ideal rotation for medical schools to teach this critical skill.

OBJECTIVES OF PROGRAM/INTERVENTION: We developed an objective structured clinical encounter (OSCE) for the sub-internship rotation in the fourth year of medical school to: 1. Evaluate sub-interns' clinical skills-more specifically, information management skills. 2. Evaluate sub-interns' ability to concisely communicate a patient case to a specialty consultant. 3. Teach sub-interns to effectively request specialty consultation.

DESCRIPTION OF PROGRAM/INTERVENTION: The OSCE station contains a mock paper chart of a hospitalized patient. A recruited clinician-teacher (chief resident, fellow, or faculty) is trained/"standardized" to play a general surgeon-consultant. The scenario begins with the student cross-covering a patient for an intern colleague who forgot to sign out. The student is paged by nursing staff reporting that this patient has now developed a fever with worsening abdominal pain. S/he (student) is instructed to review the patient's chart which contains the necessary clinical information and additional instructions to cue the student to seek an urgent surgical consult. The surgical consultant makes him/herself available and allows the student to begin the consultation request-an interactive process allowing the consultant to assess students' clinical skills and knowledge and to provide feedback/teaching. At the OSCE's conclusion, students are given feedback on their performance and formal teaching on how to request a consult from a specialist colleague. The students then complete a survey anonymously to rate the instructional usefulness of this case.

FINDINGS TO DATE: Anonymous student feedback over three years on this consultation case has been overwhelmingly positive with a 4-to-1 ratio of "most useful" to "least useful". The students' feedback comments can be summarized into the following common themes: 1. They've never had to request a consult before and/or have never been formally taught; therefore, this case was quite useful. 2. This was a challenging set of tasks that were much different than the other traditional OSCE cases they've encountered (e.g., having to quickly review a patient chart and processing/prioritizing the clinical information, summarizing the information in an organized way for the consultant, etc.). 3. Students received useful feedback/teaching from a physician rather than a non-physician actor. 4. This was a realistic and common scenario that students will soon encounter in residency. 5. Very helpful to learn from mistakes now ("I crashed & burned, but I'll retain this the most.")

KEY LESSONS LEARNED: 1. This OSCE case is an effective method for evaluating sub-interns' competencies in information management & communication, and for clinician-teachers to provide immediate feedback/teaching. 2. This is an inexpensive

OSCE case (no need to train and pay for standardized patients or other expensive materials). 3. This OSCE case has been rated very highly by students with overwhelmingly positive feedback (three years' worth of data from a large medical school, with approximately 800 students thus far). 4. This OSCE was a graduation requirement, so finding sufficient faculty to participate on a monthly basis was a major barrier.

DEVELOPMENT AND IMPLEMENTATION OF AN ORAL SIGN-OUT CURRICULUM FOR HOUSE STAFF. L.I. Horwitz[1]; T. Moin[2]; M.L. Green[3]. [1]VA Connecticut Healthcare System, New Haven, CT; [2]Yale University School of Medicine, New Haven, CT; [3]Yale University, Waterbury, CT. *(Tracking ID # 173651)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Imperfect sign-out of patient information between providers has been shown to contribute to medical error. However, residents are inadequately trained in physician-physician communication and there are no available curricula to teach sign-out skills.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) To sensitize house staff to the concept of sign-out as an important component of patient care; 2) To improve house staff skills and attitudes in providing oral sign-out.
DESCRIPTION OF PROGRAM/INTERVENTION: No house staff had received sign-out skills training during medical school, and there were no departmental standards for sign-out. To address these gaps, we developed a one-hour curriculum and implemented it at three different hospital settings (academic, community and veterans' administration). The first part of the workshop was a facilitated large-group discussion about the importance of sign-out, the consequences of poor sign-out and the ideal content of sign-out. To emphasize a formal, structured approach to oral sign-out for which we developed an easy-to-remember mnemonic containing all the essential elements in a designated order: "SIGNOUT?" S = sick and status (highlighting unstable or DNR patients); I = identifying patient data (name, age, diagnosis); G = general hospital course (major hospital events since admission); N = new events of day (major events during the last shift); O = overall health status/current clinical condition; U = upcoming possibilities with plan, rationale (anticipating problems and providing potential solutions); T = tasks to complete overnight with plan, rationale; ? = eliciting questions to ensure information was clearly communicated. Facilitators modeled a sign-out in this format and participants received a laminated card containing this information for future use. During the second half of the workshop participants were divided into groups of less than six, each facilitated by a chief resident or faculty member. Each participant took turns to provide and receive a sign out as the remainder of the group observed and then provided immediate feedback.
FINDINGS TO DATE: All house staff on the wards were invited to attend the workshop. We received 34 evaluations. Feedback from participants was very positive (mean overall workshop rating 4.44±0.61 on a 5-point Likert scale). During the small group sessions we noted that interns tended naturally to employ a discursive, somewhat rambling format, which improved when they were prompted to use the SIGNOUT format. Participants rated sign-out as very important to patient care (4.88±0.33 on 5-point Likert scale) and believed the SIGNOUT structured oral communication format would be useful in practice (mean rating = 4.46±0.78). Their self-reported comfort with providing oral sign-out significantly improved after participation in the program (mean rating before = 3.27±1.0 versus after = 3.94±0.90; $p < .001$).
KEY LESSONS LEARNED: A brief oral sign-out curriculum that included time for directly-observed practice and feedback was well-received by house staff and resulted in increased comfort with sign-out skills. This curriculum is an important component of our attempt to improve and standardize sign-out, and would be a feasible addition to house staff training initiatives elsewhere.

DEVELOPMENT OF A CULTURAL COMPETENCE SMALL GROUP REFLECTION EXERCISE TO INCREASE THE AWARENESS OF UNCONSCIOUS ASSUMPTIONS AND STEREOTYPES AMONGST HEALTHCARE PROVIDERS. C.N. Degannes[1]; K. Woodson-Coke[1]; T. Bender Henderson[1]; K. Sanders-Phillips[1]. [1]Howard University, Washington, DC. *(Tracking ID # 173675)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Minority populations in the U.S. experience higher rates of many preventable chronic diseases, and often receive fewer healthcare services, even after controlling for socioeconomic status and insurance levels. Evidence suggests that unconscious assumptions, stereotypes, and biases made by healthcare providers play a contributing role in disparities. There is a need for curricular materials and educational strategies addressing awareness of unconscious assumptions and stereotypes amongst healthcare providers.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Increase the awareness of the influence that unconscious assumptions and stereotypes made by healthcare providers have on health disparities. 2. Foster the development of self-reflection practice. 3. Promote a behavior that reflects cultural competence as essential to providing appropriate comprehensive patient care.
DESCRIPTION OF PROGRAM/INTERVENTION: We set out to develop an evidence-based curriculum in cultural competence. After conducting a needs assessment of our institution's current curriculum by administering the Association of American Medical Colleges' (AAMC) Tool for Assessing Cultural Competence Training (TACCT) to both students and faculty, and a review of the literature for a description of best practices of cultural competence training, we developed educational strategies that were aligned with established goals and learning objectives as well as the findings of our institutional needs assessment. We designed and implemented a pilot curriculum in our sophomore medical student curriculum consisting of a 6-week didactic lecture series, small group discussion sessions, role-play sessions, and an innovative small group self-reflection exercise. The self-reflection exercise was developed from an exercise that is used in social science training programs, but is not known by the authors to be in use in the education of medical students, residents, or physicians. The exercise involved participants writing down stereotypes they were aware of regarding different racial, cultural, or ethnic groups and then anonymously placing these written stereotypes on posters of various groups that were displayed on the walls of the room. Through self- and group reflection, participants additionally became aware of the potential influence of unconscious stereotypes on healthcare delivery.
FINDINGS TO DATE: The small group self-reflection exercise was used in multiple small group sessions with a total of 114 second year medical students at our institution. Feedback from participating faculty and students has been positive. Students felt confidant that they were more aware of the influence of unconscious assumptions and stereotypes on providing effective patient care (mean = 4.37; 1-strongly disagree, 5-strongly agree), and that they were more aware of stereotypes and assumptions they personally had about groups different from themselves (mean = 4.39). Comparatively, students felt somewhat less confidant that the overall curriculum increased their awareness of health disparities (mean = 4.20), or that their cross-cultural communication skills were improved by the pilot curriculum (mean = 4.08).
KEY LESSONS LEARNED: In small group discussions, participants are often reluctant to reveal their views on race, cultural, and ethnicity. However, when engaged in an interactive exercise allowing for anonymous disclosure of stereotypes, participants' discussion and hence personal discovery are enhanced. The small group self-reflection exercise appears to be an effective first step in any cultural competence curriculum.

DIRECT OBSERVATION OF AND IMMEDIATE FEEDBACK TO WORK ROUND TEAMS. T.R. Comerci[1]; A. Headly[1]; W. Surkis[1]; E. Kupersmith[1]; D. Hyman[1]; B.A. Porter[1]; V. Rajput[1]. [1]University of Medicine and Dentistry of New Jersey/Robert Wood Johnson Medical School-Camden, Camden, NJ. *(Tracking ID # 173556)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Traditional resident-led work rounds ("pre-rounds") have been beset by multiple conflicting demands, including the increasing complexity of patient care, the growing demand from hospital regulatory agencies for compliance, and the emergence of hospitalists who provide more hands-on leadership, but patient-centered bedside learning from near-peers is an important part of medical education and should be encouraged.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. To assess the current state of resident-led work rounds 2. To develop guidelines for effective work rounds 3. To give immediate feedback to teams to promote team leadership skills and effective team behaviors.
DESCRIPTION OF PROGRAM/INTERVENTION: Residency directors and hospitalist faculty performed a needs assessment of our residents with respect to knowledge, skills, and attitudes regarding team-based resident work rounds. We created a Directly Observed Resident Work Round (DORWR) program in which key faculty who are not on service shadow floor teams during work rounds as silent observers. A checklist of ideal work rounds tasks and behaviors was constructed to provide consistency and focus to the evaluation process. Faculty observers give immediate brief feedback to the teams following rounds, then generate a qualitative one-page summary that is given to the residents and submitted to the program faculty leader.
FINDINGS TO DATE: During the needs assessment period, we found that traditional work rounds had become infrequent and fragmented and that residents perceived work rounds to be an obstruction to effective and efficient patient care. Often, residents would not meet as a team at all prior to attending rounds; this led to attending rounds becoming de facto work rounds. Through discussion among the program leaders, it was found that there was much agreement as to the goals of work rounds and the behaviors associated with effective work rounds. Direct observation of teams was a meaningful tool; though some residents may not have performed work rounds at all but for the presence of the observer, most reported that they did not think their behavior was significantly altered by the shadowing alone. Residents, though initially nonplussed, have found the DORWR program to be a welcome tool for developing their leadership abilities and team dynamics. In particular, residents appreciate the direct, immediate feedback; the assistance in articulating their own goals for work rounds; and the fact that they feel more empowered to take the reins in running their own teams. Residents have begun to see work rounds as vital to team-centered patient care rather than an unnecessary formality.
KEY LESSONS LEARNED: Direct observation of the behavior of resident teams is not only a useful tool in assessing the six core competencies but can also reveal deficiencies in resident teamwork skills and behaviors that otherwise would go unseen. Immediate, consistent feedback is a powerful method for inculcating effective teamwork and excellent patient care.

EFFICACY OF AN ABBREVIATED RESIDENT-AS-TEACHER AND MANAGER (RATAM) CURRICULUM: A PILOT STUDY. K.B. Feiereisel[1]; V.P. Luther[1]; A.M. Parkhurst[2]; P.R. Lichstein[1]. [1]Wake Forest University, Winston-Salem, NC; [2]University of Nebraska-Lincoln, Lincoln, NE. *(Tracking ID # 173776)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Residency training programs must prepare residents to become effective teachers and team managers in order to optimally interface with our complex healthcare system. Time limitations remain a significant barrier in residency education. The purpose of this study is to evaluate a 6 hour Resident-as-Teacher and Manager (RATAM) curriculum that utilizes a needs assessment to prioritize teaching material.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Prepare residents to become effective teachers and team managers. 2. Create an abbreviated curriculum (6 hours) that can be easily incorporated into the resident's education. 3. Tailor the RATAM curriculum to the educational needs of the participants.
DESCRIPTION OF PROGRAM/INTERVENTION: Twenty-five Internal Medicine residents completing their internship were randomized to the RATAM or the control group. All interns were administered a needs assessment survey regarding their satisfaction with and interest in developing their teaching and team management skills. Interns then completed an 8-station previously validated objective structured teaching evaluation (OSTE) to evaluate baseline skills and attended an orientation workshop on basic principles of team leadership. Those randomized to the RATAM group completed two additional 2-hour workshops, the curriculum of which reflected the results of the needs assessment surveys. All participants completed a follow-up survey and OSTE at the end of their second year of residency. Data were analyzed using a repeated measures mixed model.
FINDINGS TO DATE: Of the 25 interns enrolled, 13 were randomized to the RATAM group and 12 to the control group. Through the needs assessment survey, interns identified the areas of feedback and clinical teaching as the topics they were most interested in receiving further education. Participants in the RATAM group had consistently higher satisfaction scores on the follow-up survey when compared with the control group. Additionally, participants in the RATAM group had consistently higher scores compared to the control group in each of the 8 areas tested in the post-workshop OSTE. The differences between the groups were statistically significant in the area of feedback ($p = 0.036$) on the post-intervention OSTE. Additionally, there was a difference between the groups in the area of bedside teaching where the OSTE scores for the control group declined, but the scores for the RATAM group improved. This difference was statistically significant ($p = 0.045$). The scores for teaching a procedure followed this same pattern, but the difference was not statistically significant.
KEY LESSONS LEARNED: An abbreviated needs-assessment based curriculum can be an efficient approach to Resident-as-Teacher and Manager education and can be effective in improving skills in areas identified in the needs assessment.

EMPOWERING MEDICAL STUDENTS TO CARE FOR ACTIVE DRUG USERS - AN EARLY CLINICAL EXPERIENCE AT A SYRINGE EXCHANGE PROGRAM. M.R. Stein[1]; I.J. Soloway[1]; A. Rosen[1]; D. Brown[1]; A.H. Litwin[1]. [1]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 173837)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Medical students often lack experience and comfort working with drug users. There are few community-based opportunities for medical students to work with active injection drug users.
OBJECTIVES OF PROGRAM/INTERVENTION: The objectives of this program are to (1) teach medical students about the principles and practice of harm reduction; (2) provide students with an opportunity to gain skills in health counseling, vaccination, and phlebotomy; (3) increase students' knowledge of the daily lives and experience of active drug users; and (4) increase students' comfort working with drug users.
DESCRIPTION OF PROGRAM/INTERVENTION: We invited first and second year medical students to volunteer with the Viral Hepatitis Integration Project (VHIP), a program which integrates viral hepatitis testing and vaccination into community-based services for drug users. Through VHIP, participants in a community-based syringe exchange program are offered on-site health counseling, testing for hepatitis B and C, vaccinations against influenza as well as hepatitis A and B, and referral for further evaluation and treatment. VHIP outreach is co-located with a streetside, mobile syringe exchange site in the Bronx, NY in a neighborhood with a high prevalence of illicit drug use and prostitution. We held two training sessions for students, in which a project physician and physician assistant (PA) described VHIP, discussed basic information about Hepatitis C, explained the philosophy of harm reduction, and demonstrated safe vaccination techniques. Medical students attend outreach in pairs; each pair includes one experienced and one novice volunteer. Students are accompanied by the VHIP program coordinator and a health care provider (physician or PA) with expertise in addiction medicine. Through observation and from talking to project staff and participants, students learn about drug use, harm reduction and syringe exchange. Medical students work closely with the medical providers and project coordinator to recruit clients, provide counseling on the risks and benefits of hepatitis screening and vaccination, perform phlebotomy and administer vaccines to project participants. The medical providers deliver ongoing supervision and support of the students both on-site and in quarterly project meetings where students are encouraged to share their experiences.
FINDINGS TO DATE: Sixteen medical students have participated in the project. The role of a central student organizer evolved as an essential element in the success of the project. This student volunteer facilitates scheduling, serves as a liaison between students and VHIP staff, and generates enthusiasm among students. Students have provided vaccination, viral hepatitis screening and health counseling to over 120 syringe exchange participants. A self-administered, open-ended survey of student volunteers revealed that they particularly value learning about the lives of drug users, practicing skills in vaccination and phlebotomy, and the chance to work with underserved patients. All found the experience enjoyable and many expressed a wish to have more opportunities to volunteer in similar settings.
KEY LESSONS LEARNED: Students are enthusiastic participants in community-based activities and value opportunities to help and learn about participants in a syringe exchange program. Future plans for the project include medical student facilitation of Hepatitis C support groups and participation in opioid overdose prevention efforts.

ESTABLISHING A WEB-BASED OBESITY COUNSELING CME/ACCREDITATION PROGRAM FOR CLINICIANS COUPLED WITH A REIMBURSEMENT MECHANISM. K.M. Dauphinais[1]; Z. Faridi[2]; K. Shuval[3]; D.L. Katz[2]. [1]Yale University, Waterbury, CT; [2]Yale University, Derby, CT; [3]Yale Prevention Research Center, Derby, CT. *(Tracking ID # 173936)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Among the reasons cited for physicians not providing weight control counseling routinely is that they are not reimbursed for doing so. Providers claim lack of reimbursement as a reason not to counsel; insurers cite lack of counseling, and lack of evidence of the effectiveness of counseling, as a reason not to reimburse. This impasse has persisted for some time, and greatly attenuates the potential role of the health care setting in combating the obesity epidemic and attendant chronic diseases. Further, this impasse is directly at odds with recommendations of national organizations, including the US Department of Health & Human Services, the Institute of Medicine, and the US Preventive Services Task Force.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) Develop a self-study CME educational program for a standardized approach to routine obesity counseling and to establish standardized quality control indicators for tracking changes in counseling techniques and success in weight control 2) Utilize contacts throughout New England to create pilot programs in which insurers reimburse physicians 3) Evaluate whether reimbursing physicians increases obesity counseling, improves standardized techniques for obesity interventions, and has an impact on patient weight control
DESCRIPTION OF PROGRAM/INTERVENTION: We have created a 3-tiered modular, CME program that is being converted into a self-directed web-based program. The program is being piloted through direct marketing to select physician networks in order to best track changes in practice and for the purpose of developing chart reviews. Leading health officials are convening insurers. Initial access into the program requires a registration along with a brief survey of current practices. Follow-up surveys and chart audits will be utilized to evaluate the effect of the intervention and the standardization of care. After an initial evaluation period, a comprehensive cost-utility analysis of the initiative will take place over a 2 to 3 year pilot period. At the end of this trial, both providers and insurers will have information on the implementation and delivery of high-quality weight management counseling and the effects of reimbursing physicians on standards of care in obesity management.
FINDINGS TO DATE: This program is being developed as a component of the broader New England Consortium for Health, NECON, initiative to address overweight and obesity in the New England region. Initial feedback from the Connecticut Commissioner of Health, third-party payers and health department officials has garnered support for the further development of the project.
KEY LESSONS LEARNED: Lack of reimbursement has been cited as a primary reason for not counseling patients on lifestyle interventions and weight loss. Proposals for the introduction of a web-based CME program designed to create basic standards of care for obesity counseling have been well received. Physicians, health officials, and insurers are prepared to initiate a pilot during which trained physicians will be reimbursed by insurers for obesity counseling and management practices. This pilot will gather necessary data as to the effects of reimbursing physicians on the incidence of weight control counseling and obesity management.

ESTABLISHMENT OF A HOME VISIT PROGRAM FOR PRIMARY CARE INTERNAL MEDICINE RESIDENTS. M. Simone[1]; G. Berland[1]; S. Huot[1]. [1]Yale University, New Haven, CT. *(Tracking ID # 173779)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Despite increasing evidence documenting the impact of the social environment on a patient's health status, internal medicine residency programs provide limited opportunities for house officers to evaluate their patients outside of the traditional clinical arena. Home visit programs have demonstrated a significant impact on both the patient and the health care provider, yet few residency programs include home visits in the curriculum.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) Teach the unique set of skills required for performing home visits 2) To collaborate with Visiting Nurse Services and work as part of an interdisciplinary team to improve communication and patient care 3) Improve the delivery of medical care by identifying barriers to care and by performing assessments and interventions in the home setting
DESCRIPTION OF PROGRAM/INTERVENTION: We have created a home visit program for second and third year internal medicine residents in Waterbury, CT. Residents are asked to identify two to five individuals from their continuity clinic panel who meet the following criteria: 1) have a chronic medical problem which has either been difficult to treat, or that has been successfully treated, or 2) have

difficulty arranging office visits, or 3) are elderly. Residents participate in an orientation and training session prior to their first home visit. The first home visit is scheduled with the visiting nurse of one of their patients as a means to provide on-site instruction in home care. Subsequent visits are performed in resident pairs. Residents discuss their home visit patients with their continuity clinic preceptor, enter a note in the patient chart and participate in a debriefing and reflection session. Residents and patients complete surveys before and after involvement in the program, and residents are encouraged to record their impressions with pictures and/or creative writing.
FINDINGS TO DATE: To date eight of twenty-one eligible (38%) PGY 2 and 3 residents have participated in the program. All twenty-one (100%) residents are scheduled to participate in the program this year. Everyone involved has uniformly cited the value of the program and its positive impact on the doctor-patient relationship. Participants report in almost all cases identifying means of improving care, including: medication reconciliation, cognitive testing, depression screening, assessment of fall risk, and in one case, discussion of end-of-life issues previously attempted unsuccessfully in the clinic setting. Residents report gained insight into their patients' lives and support systems, their home and neighborhood environments, and social situations. Qualitative analysis of resident and patient experiences as well as quantitative assessment of specific aspects of the program (e.g., clinic show rate, medication error, etc.) is planned for the end of the academic year.
KEY LESSONS LEARNED: Developing and implementing a home visit program for internal medicine residents is feasible and does not require significant additional resources. Partnering with organizations and individuals who have expertise in home visits and who share in the care of residents' patients provides a valuable resource. Residents gain a better understanding of their patient's community, and patients may develop greater trust in their physicians and the health care system. Home visits foster a more personal and rewarding setting for the practice of outpatient primary care medicine, and should be incorporated into the training of internal medicine residents.

EVALUATING CURRICULUM CHANGE: THE CWRU EXPERIENCE. A.M. Hyson[1]; K. Papp[2]; O. Marina[2]; J. Stulberg[2]; A. Wilson-Delfosse[2]; T. Wolpaw[3]; D.R. Wolpaw[2]. [1]Montefiore Medical Center, Bronx, NY; [2]Case Western Reserve University, Cleveland, OH; [3]University Hospitals of Cleveland, Cleveland, OH. *(Tracking ID # 172932)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Important curriculum change requires meaningful curriculum evaluation - examination of guiding principles, educational process, and goals - that begins before the curriculum starts. These elements must align in a way that directly supports the curriculum and evaluation effort. CWRU School of Medicine recently engaged in a comprehensive curriculum reform that provided a unique opportunity to apply and document these key features of program evaluation.
OBJECTIVES OF PROGRAM/INTERVENTION: To apply a group of validated tools to evaluate the effectiveness of the curriculum in accomplishing the targeted core competencies, and compare these outcomes with prior medical school classes.
DESCRIPTION OF PROGRAM/INTERVENTION: The Western Reserve2 Curriculum (WR2) was introduced July of 2006 featuring an entirely redesigned plan for both pre-clerkship and the clerkship education. The foundation of these changes is a set of principles designed to promote a learner-centered, reflective, self-directed environment that promotes scholarship, personal and civic professionalism, clinical mastery, and lifelong learning. Key features include beginning with a unique five week "Becoming a Doctor" curriculum, concepts integration, inquiry-based small group learning, early clinical exposure including intensive experiences directly related to basic science content, a dedicated 16 week research block, longitudinal themes of civic professionalism, leadership, and sciences basic to medicine integrated over four years, and a reorganization of clerkship education based on learning objectives and developmental experiences. Based on these principles and educational designs, nine core competencies were identified to serve as the basis for program evaluation: Medical Knowledge, Clinical Mastery, Communication Skills, Civic and Personal Professionalism, Research and Scholarship, Leadership, Practice-Based Learning, Systems-Based Practice, and Lifelong Learning. An evaluation committee of faculty and students met prior to the start of the curriculum to identify methods and to assess these competencies and associated outcomes. In addition to USMLE Step 1 and 2, this evaluation toolbox includes the following measures: Year 2 and Year 4 OSCEs, Medical School Learning Environment Questionnaire (Moore 1989), Cognitive Behavior Survey (Mitchell 1992), Attitudes Towards Social Issues in Medicine (Parlow 1974), 360° Professionalism Tool (NBME 2006), Research and Scholarship Checklist (CWRU 2006), Case Scale of Lifelong Learning (CWRU 2006), ePortfolio evidence regarding mastery of clinical skills, reflection, practice-based learning, and systems-based practice.
FINDINGS TO DATE: Surveys were administered to the incoming Class of 2010 and the Classes of 2008 and 2009. The NBME professionalism tool, the product of a collaboration of the NBME and CWRU, began for the Class of 2010. Students are contributing to their portfolios, particularly through a formalized process of supervised Professional Learning Plans. Year 2 and Year 4 OSCEs have been standardized and will provide several years of comparison data.
KEY LESSONS LEARNED: • Meaningful curriculum evaluation requires an early start and careful alignment of guiding principles, curricular design, and identifiable outcomes. • Appropriate tools are available to support the assessment of a variety of outcomes, including the learning environment and non-traditional goals such as civic professionalism. • Students are interested in participating in the process of designing and carrying out curriculum evaluation.

EVALUATION OF A REFLECTIVE WRITING SEMINAR FOR SECONDYEAR MEDICAL STUDENTS. M.A. Tello[1]; R. Levine[1]; J. Ogborn[1]; W. Biddle[1]; E.B. Bass[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 172891)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): There is currently no consensus on methods to evaluate educational experiences that integrate medicine and the humanities. We developed and conducted a 3-part evaluation of a reflective writing seminar designed to promote specific components of personal and professional development in medical students, including self-awareness, reflection, and empathy.
OBJECTIVES OF PROGRAM/INTERVENTION: To pilot three evaluation methods of a reflective writing seminar designed to stimulate self-awareness, reflection, and empathy among medical students.
DESCRIPTION OF PROGRAM/INTERVENTION: Eleven 2nd-year medical students participated in the seminar in October 2006 as one of 8 electives that were part of the personal and professional development unit of our Patient, Physician, and Society Course. Before the first session, each student wrote a 1500 word narrative about a patient encounter or personal illness experience. In each of four 2-hour sessions led by a professor from the University's Writing Seminars Department and co-facilitated by faculty physicians, the group discussed 2–3 narratives and traditional aspects of literary narrative (character, setting, plot, structure, style) with the objective of helping students better organize and describe their experience. Each student submitted a final version of the narrative incorporating feedback from the group discussion. The evaluation included three major components: 1. student ratings of the seminar and the its impact on self-awareness, reflection, empathy for patients and understanding of colleagues using 4-point Likert scales, and self-assessment of the effect of the seminar on their personal and professional development, clinical insight, and writing skills using open-ended questions; 2. a qualitative analysis of the narratives using three independent raters to identify segments of text demonstrating self-awareness, reflection, and empathy; and 3. pre- and post- seminar measures of self-awareness, reflection, and empathy using previously validated questionnaires (the Mindful Attention Awareness Scale (MAAS) and the "perspective taking" and "empathic concern" portions of the Interpersonal Reactivity Index (IRI)).
FINDINGS TO DATE: 1. Students rated the seminar very highly (mean 3.8, 1 = would not recommend, 4 = would recommend as outstanding). Students reported that the seminar impacted their approach to self-awareness (mean 3.6, 1 = none, 4 = a lot); reflection (mean 3.8); ability to empathize with patients (mean 3.3); and understand colleagues (mean 3.8). All students reported that the seminar had some positive influence on their personal and professional development, clinical insight, and writing skills. 2. Qualitative analysis showed consistent identification of segments of text demonstrating self-awareness, reflection, and empathy across 11 final edited narratives. 3. There were no statistically significant pre-post differences in the students' scores on the MAAS, "perspective taking" or "empathic concern" portions of the IRI.
KEY LESSONS LEARNED: The student ratings, self-assessment, and qualitative methods analysis indicated that this writing seminar achieved the main learning objectives of stimulating self-awareness, reflection, and empathy in the students. Our experience suggests that evaluation methods such as student ratings, self-assessment, and qualitative analysis may be more appropriate than attitudinal questionnaires because of the small sample size and self-selected nature of the participants in elective medical humanities seminars.

EVALUATION OF AN INTIMATE PARTNER VIOLENCE EDUCATIONAL PROGRAM FOR MEDICAL RESIDENTS. R.K. Doshi[1]; B. Thomas[1]; R. Barreras[2]; D.M. Swiderski[3]. [1]Montefiore Medical Center, Bronx, NY; [2]Albert Einstein College of Medicine, Brooklyn, NY; [3]Montefiore Medical Center, Yonkers, NY. *(Tracking ID # 173316)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Health care providers are in a unique position to screen patients for intimate partner violence (IPV) and refer them to appropriate resources. However, practicing physicians frequently report feeling unprepared and uncomfortable with this issue, leading to low rates of screening and detection. Formal IPV training should be integrated into residency education in primary care fields.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Develop and implement a longitudinal, three-level educational intervention for internal medicine residents about IPV screening and management 2. Improve residents' comfort with IPV and increase frequency of screening
DESCRIPTION OF PROGRAM/INTERVENTION: Residents from the Primary Care and Social Internal Medicine programs will participate in one educational session per year. The educational sessions are led by internal medicine faculty and residents and also by an IPV advocate (either lawyer or social worker) who has had experience in an IPV services agency. Session 1 includes information on the effects of past and current IPV on various health indicators, screening techniques, and how to handle a "positive screen." Session 1 also includes role-play to facilitate practice with appropriate management of various scenarios involving IPV, based on an adaptation of the Prochaska model for assessment of a patient's readiness to change. For Sessions 2 and 3, each participant is asked to present a case from their own patient panel involving IPV, and the group and session leaders help to address management issues.
FINDINGS TO DATE: Our first session took place in December 2006, with a group of PGY-3 residents (n = 8). Questions for the baseline questionnaire were extracted and adapted from the PREMIS tool (Physician Readiness to Manage IPV; Short 2006). All participants scored 2 to 5 on a scale ranging from 1 (Not prepared) to 7 (Quite well prepared) on questions about feeling prepared to ask about and discuss various aspects of IPV with their patients. Participants rated their own knowledge of various IPV

management issues from 2 to 6, on a scale from 1 (Nothing) to 7 (Very much). The lower scores were for danger assessment, development of safety plan, and community referral resources. In the last 1 month, 2 residents reported screening 0 patients, and 6 reported screening fewer than 10 patients. In the last 6 months, participants reported screening between 1 and 48 patients for IPV. 1 participant screens all patients who are coming in for an initial visit to that provider. None reported annual screening. In the last 6 months, 4 participants detected 0 patients with current IPV, and 4 participants reported detecting 1 patient with current IPV. In the last 6 months, 7 participants reported detecting less than 10 patients with past IPV, and 1 participant found 24 patients with past IPV.
KEY LESSONS LEARNED: Despite this group of PGY-3 residents' strong interest in psychosocial factors affecting health, there are varying levels of comfort and knowledge about IPV screening and management, and the rates of screening and detection are extremely low in this high-risk urban population. The residency program should continue to structure time for residents to participate in this intervention on an ongoing basis.

FACULTY DEVELOPMENT PROGRAM TO PROMOTE EXCELLENCE IN TEACHING PROFESSIONALISM IN CONTEMPORARY PRACTICE. K.M. Hooper[1]; G. Stratos[1]; C.H. Braddock[2]; K. Skeff[1]. [1]Stanford University, Palo Alto, CA; [2]University of Washington, Palo Alto, CA. *(Tracking ID # 170444)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Changing roles in contemporary practice oblige physicians to not only define professionalism, but also teach and evaluate professionalism with residents and medical students. To meet these expectations, physicians must learn skills in areas such as reflective practice, patient-centered care, and working in teams. The Stanford Faculty Development Center's (SFDC) program in Professionalism in Contemporary Practice (PCP) addresses the ACGME's standards of professionalism, exploring professionalism from the abstract to the concrete, so that physicians are well equipped in today's medical field.
OBJECTIVES OF PROGRAM/INTERVENTION: PCP was originally supported by the Robert Wood Johnson Foundation. The Josiah Macy Jr. Foundation awarded the SFDC a 3-year grant (2005–07) to continue program dissemination. Train-the-trainer Project: This project uses a 'train-the-trainer' model to teach physicians the PCP competencies and improve their ability to teach these topics. The goal of the project is to begin broad scale dissemination of the PCP core curriculum. Facilitator-Training Program: Each year, medical faculty attend the SFDC's month-long, PCP facilitator-training program to master both content and facilitation skills to teach PCP's core curriculum. Facilitators teach the core curriculum to small groups of residents and faculty at their home-sites.
DESCRIPTION OF PROGRAM/INTERVENTION: The PCP facilitator-training program includes instruction in the PCP curriculum, review of literature, practice teaching of seminars, feedback on teaching and facilitation, and sessions on implementation and data collection for program evaluation. The program has two components: the core curriculum and the resource curriculum activities. The core curriculum modules are Defining and Teaching Professionalism, Reflective Practice, Effective Communication and Shared Decision Making, Cultural Competence, Evidence-Based Care, Patient Safety, Quality Improvement, and Working Effectively in Teams. The resource curriculum activities include teacher training by SFDC Co-Directors, guest speakers on PCP topics, and readings from the SFDC's PCP library.
FINDINGS TO DATE: Facilitator-Training Program: Trained facilitators ($n = 10$) reported the program was highly successful in achieving its goals. They gave high ratings to the curriculum's impact of the on their knowledge, skills and attitudes related to PCP topics. They reported increases in their competence and confidence to teach PCP, and were extremely willing to recommend the PCP seminars. Trained facilitators were more likely to conduct research/projects in PCP topic areas. They gave positive ratings to the impact of the program on their enthusiasm for the clinical teaching of PCP and the way they think clinically when considering a case. Home-site Implementation: Three 2006 alumni plan to implement PCP in Spring of 2007. Thus far, four of the six 2005 alumni have implemented the PCP seminars. We received evaluation data from 16 residents and 28 faculty members. Preliminary review of these data suggests the seminars were perceived as highly useful by the participants.
KEY LESSONS LEARNED: Train-the-trainer model has potential to benefit multiple generations of medical teachers. Alumni and participant feedback is valuable for our evolving curriculum. Building flexibility into delivery options assists facilitators tailor the curriculum to the local environment.

FALLING BACK TO A RETREAT MODEL OF GRADUATE MEDICAL EDUCATION. K. Pfeifer[1]; L. Moraski[1]; S. Davids[1]; M. Frank[1]; A. Maguire[1]; B. Connelly[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 172996)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Pressures to comply with work hour limitations and increases in patient volume and acuity are major challenges for internal medicine residency programs. Combined with increasing requisite skills and knowledge for practice and variability in resident abilities and experience, these factors make traditional educational venues insufficient for optimizing ACGME competency-based graduate medical education (GME).
OBJECTIVES OF PROGRAM/INTERVENTION: The Core Skills Program (CSP) is an innovative approach to residency training designed to overcome the current challenges faced in GME. The CSP has 3 primary aims: 1) assure a consistent clinical knowledge and skills base upon which advanced proficiencies can be developed; 2) provide a dedicated educational environment for teaching clinical subjects which are poorly compatible with current rotational and conference structures; and 3) promote faculty and curriculum development by serving as a venue for piloting new teaching methods and testing their effectiveness.
DESCRIPTION OF PROGRAM/INTERVENTION: Using resident and faculty feedback and in-training and board examination data, we created a series of 3-day to 5-day small group, interactive educational sessions for internal medicine residents in each year of training. Sessions focused on physical diagnosis, clinical test analysis, communication skills, systems-based practice, professionalism and underappreciated medical diseases, and were tailored to content most essential at each stage of training. Each course size was limited to facilitate small group interactive learning, and residents were relieved of all other duties to provide a distraction-free environment. Sessions were led by faculty previously recognized for both excellence in teaching and expertise in given topics.
FINDINGS TO DATE: On satisfaction surveys residents rated the course highly for overall effectiveness, and nearly all reported it as a better utilization of educational time compared to other teaching programs. Similarly, faculty found the course to be a better use of their teaching time and characterized the residents as more engaged in this program compared to other educational venues. Residents also completed pre- and post-course skills self-assessments and objective skills testing. A mean improvement of 1.1 was noted on 5-point Likert scale skills self-assessments ($p < 0.01$), and early data on objective skills testing shows a mean improvement of 20% in examination test scores ($p = 0.03$). Further evaluation of course effectiveness with OSCEs is ongoing.
KEY LESSONS LEARNED: The CSP is an effective means to achieve ACGME competency-based education within the constraints currently encountered in GME. Overall, we found that the CSP resulted in high satisfaction and more consistent, progressive acquisition of critical clinical skills and knowledge.

FEASIBILITY AND IMPACT OF A COLLABORATIVE PEER MENTORSHIP PROGRAM FOR ACADEMIC CLINICIAN-EDUCATORS. R. Karani[1]; A. Chun[1]; E. Chai[1]; D.C. Thomas[1]; A.U. Loengard[1]; R.P. Soriano[1]; H. Fernandez[1]. [1]Mount Sinai School of Medicine, New York, NY. *(Tracking ID # 172997)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): While mentorship is considered essential for career development, few CE's are able to identify mentors in medical education.
OBJECTIVES OF PROGRAM/INTERVENTION: CE's wishing to succeed in academic medicine face the daunting task of defining their contributions to promotional committees that have only recently developed criteria for them. In these difficult times, CE's have identified "having a mentor(s)" to be the most positive influence on their career development. Yet only 32% of CE's in one study were able to identify a mentor in medical education. Additionally, most published mentorship programs describe a dyadic mentor-mentee model, but there are environments where such relationships are not feasible. Our goal was to determine the feasibility and impact of a longitudinal, small group, collaborative peer mentorship program (CPMP) for junior clinician-educators (CE's) at an academic medical center.
DESCRIPTION OF PROGRAM/INTERVENTION: We developed a CPMP for junior CE's which focused on four areas: 1) Presentation (portfolios, CV's), 2) Communication (articles, presentations), 3) Exploration (research design, funding, data analysis) and 4) Inspiration (time management, negotiation). Monthly meetings included an hour long topic discussion followed by two, 30-minute work-in-progress presentations for review and feedback. Outcomes in 17 areas relevant to CE's were quantitatively compared pre- and post-program using a self reported questionnaire. Reasons for choosing the program and perceived benefits and challenges were obtained from individual participant interviews using a constant comparative method of qualitative analysis.
FINDINGS TO DATE: 8 internists and geriatricians (mean age 38) participated in, and completed, the 1.5 year program at Mount Sinai Medical Center. 75% were female and 87.5% were Assistant Professors. Compared to the 1.5 years preceding the program, there were significant increases in accepted abstracts, new curricula and products, accepted workshops, scholarly articles submitted, teaching awards and mentees following the program. There was no change in academic rank or grant funding. Experiences offered by, and general features of the program, were the most commonly coded reasons for participation. Opportunities to further individual work and collaborate on new projects were the most cited benefits of participation while the time commitment required was noted to be the most significant challenge.
KEY LESSONS LEARNED: The CPMP is a feasible and effective mentoring model for academic junior CE's. Further research is ongoing to assess the long term impact of the program, determine generalizability to other centers and elucidate features of successful peer mentorship teams.

HEALTH IMPROVEMENT PROJECT: TEACHING MEDICAL STUDENTS QUALITY IMPROVEMENT. K. Baum[1]. [1]University of Minnesota, Minneapolis, MN. *(Tracking ID # 173547)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): All physicians, including those in training, must be able to engage in quality improvement, however medical students currently receive little training in these techniques.
OBJECTIVES OF PROGRAM/INTERVENTION: Upon completion of the Health Improvement Project (HIP), students will be able to: 1. Identify instances where usual care and ideal care differ in the US healthcare system 2. Develop a plan to improve care (close the "care gap") through literature review, data collection, and discussion

with local quality improvement leaders 3. Develop confidence to improve the healthcare system

DESCRIPTION OF PROGRAM/INTERVENTION: As part of the required year-long Physician and Society (PAS) course, all second year medical students engage in the HIP. A group of 8–12 students works with a community mentor on a quality improvement project over a six-month period. Projects can be designed by student groups or chosen from a list of pre-developed topics. Areas of focus have included childhood obesity management in the office, improving local organ donation rates, colorectal cancer screening rates, and pediatric asthma care. Each group has a biomedical librarian available to aid in literative review, however they function largely independently. Groups develop an hypothesis as to the reasons for less than ideal care, design interventions, and present to their classmates and the community mentor.

FINDINGS TO DATE: Now in its third year, the number of student-designed projects had steadily increased from two to six (out of seventeen). As a learning experience overall, students rated the HIP as a 2.9 out of 5.0. They felt it was important to have a choice in project topics (3.6/5.0 in 2006). Comments included "geez, I learned so much I don't know where to start" and "I was shocked by the problems." Many students believed that it was difficult to accomplish much in the timeframe. Community contacts were quite pleased and nearly all have continued to "host" groups. Several of the students' suggestions and products have been implemented. Examples include screening forms for identifying patients at high risk for pressure ulcers, pamphlets to inform African-American women about their cardiovascular risk, and the creation of a video on Rapid Response Teams.

KEY LESSONS LEARNED: Pre-clinical students can effectively learn about and engage in quality improvement. Successful curricula should be designed keeping adult learning theory in mind, and allow for self-direction, implementation of plans, and personal accountability. These types of projects are an ideal method for partnering with community leaders, but may need to take place over more than six months. The effects upon patient outcomes should be further studied.

HELPING CLINICIANS FIND THE BEST GUIDELINE: A SYSTEMATIC REVIEW.
V. Palda[1]; J.M. Rogers[2]; K. Lang[1]; A. Kapur[1]; Y. Drazin[1]; D. Davis[3]. [1]Guidelines Advisory Committee, Toronto, Ontario; [2]Guidelines Advisory Committee (Ontario), Toronto, Ontario; [3]University of Toronto, Toronto, Ontario. *(Tracking ID # 172747)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): The individual physician does not have time to assess the extensive proliferation of clinical practice guidelines. Larger practice groups also face challenges in deciding on the optimal guideline to incorporate into computerized order entry systems. Since guidelines vary in quality, guideline consumers would benefit from a service which compares published guidelines by providing consistent, validated guideline methodologic rating as well as a summative opinion as to applicability and validity of content.

OBJECTIVES OF PROGRAM/INTERVENTION: To present best practice recommendations, from guidelines endorsed through a rigorous process, in a clear format which highlights supporting evidence.

DESCRIPTION OF PROGRAM/INTERVENTION: The Guidelines Advisory Committee uses a systematic search strategy to identify guidelines on topics appropriate for Ontario physicians. Guidelines which use systematic search criteria and have recommendations directly linked to levels of evidence are sent for rating by 4 independent reviewers using the validated, six-domain AGREE instrument. Giving particular consideration given to the domains of Rigour of Development and Editorial Independence, guidelines with highest AGREE scores are reviewed by a lead committee member and medical advisory staff, and are brought to the entire committee for discussion. The guideline(s) which are felt to a) best reflect the evidence, and b) have recommendations most appropriate for the physicians of Ontario are endorsed by committee vote, a decision that may be sent to appropriate practice groups for additional comment. Endorsed guidelines are summarized in a structured summary format which is published on the GAC website and/or in written form in a provincial medical association publication.

FINDINGS TO DATE: Initial guideline searches for a topic typically identify 47.5 (range 7–105 results) guidelines, of which Medical Advisors typically select 9.75 (range 6–13) for appraisal by reviewers. On average, 3 or 4 guidelines are sent to the GAC Committee for consideration for endorsement. The AGREE scores for rigour of development [average 55%] (range from 20% to 80%), for editorial independence [average 42%] (range from 4% to 83%), for clarity of presentation [average 68.5%] (range from 19% to 90%) and for applicability of endorsed guidelines [average 41.4%] (range from 11% to 69%). The GAC has adopted a standard format for summary reports , designed to outline clearly the key points of the endorsed guideline(s), followed by scope, background, recommendations in the active tense including level of supporting evidence, and finally hyperlink reference to the actual guideline for interested readers.

KEY LESSONS LEARNED: GAC provides a structured guideline review and endorsement process which employs validated review instruments, a sufficient number of reviewers to decrease bias, and independent committee review to provide practice-specific expertise and health system input, and summarizes these guidelines in a brief format for easy access by clinicians.

HOW ACCURATE ARE MEDICAL STUDENTS IN SELF-ASSESSING CLINICAL SKILLS?
A. Ekpenyong[1]; T. Uchida[2]. [1]Rush University Medical Center, Chicago, IL; [2]John H. Stroger, Jr. Hospital of Cook County, Chicago, IL. *(Tracking ID # 172986)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Some educators have argued that accurate self-assessment is necessary for the life-long learning required of physicians. At the same time, many medical educators have found that self-assessment does not correlate with objectively measured performance.

OBJECTIVES OF PROGRAM/INTERVENTION: The objective of this study was to determine medical students' ability to accurately self-assess their basic clinical skills as compared to their performance on an objective structured clinical examination (OSCE).

DESCRIPTION OF PROGRAM/INTERVENTION: In May of 2006, 118 third year medical students participated in a 6-station OSCE using standardized patients (SPs) to evaluate performance in 4 basic clinical skills: communication/interpersonal skills (CIS), history-taking, physical examination, and note-writing. At the end of the OSCE, students were asked to self-assess the 4 clinical skills using a Likert scale from 1–10, with 1 being poor performance and 10 being excellent performance. Self-assessment scores were divided by 10 to make them comparable to the objective scores. Objective performance of CIS was scored by the SPs using a previously-validated instrument. History-taking and physical examination were scored by the SPs using an expert-designed checklist, and notes were scored by clinical faculty using predetermined scoring rubrics. Based on students' objective performance the class was divided into quartiles for each of the 4 clinical domains. In each domain, the difference between the objective scores and the students' self-assessed scores was determined. Using ANOVA the performance of the students across quartiles was compared within each of the four clinical skills domains.

FINDINGS TO DATE: Overall, students rated their CIS higher than the other clinical skills with an average score (std dev) of 8.30 (1.13) as compared to 7.79 (1.23) for history-taking, 7.43 (1.23) for note-writing, and 7.32 (1.27) for physical examination. Their objective scores were also highest for CIS (78.6% (3.4)) and lowest for physical exam (46.8% (12.1)). In general, the students over-estimated their performance across all 4 of the clinical skill domains so that the difference between the objective score and the self-assessed score was a negative number. The mean difference between these scores was calculated. For the CIS domain, students in all quartiles overestimated their performance (1st (-0.027), 2nd (-0.046), 3rd (-0.066), 4th (-0.386)), with no significant difference between quartiles ($p = 0.600$). For history-taking, students overestimated their performance across all quartiles in a linear pattern with the lowest-performing students overestimating their performance the most and the highest-performing students overestimating their performance the least (1st (-0.116), 2nd (-0.085), 3rd (-0.047), 4th (-0.031), ($p = 0.035$)). A similar pattern was noted for the physical exam (1st (-0.405), 2nd (-0.320), 3rd (-0.216), 4th (-0.031), ($p < 0.001$)). For note-taking, the 1st and 2nd quartiles overestimated their performance (-0.086 and -0.051, respectively) while the 3rd and 4th quartiles underestimated theirs (0.029 and 0.072, respectively, $p < 0.001$).

KEY LESSONS LEARNED: This group of M3 students tended to overestimate their performance of basic clinical skills, particularly CIS. Although the groups were small when divided into quartiles, for history-taking and physical examination, higher-performing students appeared to be more accurate in their ability to self-assess their clinical skills than lower-performing students.

HOW WELL HAVE WE TAUGHT INFORMED CONSENT? A PATIENT SURVEY.
T. Uchida[1]; C. Schaeffer[1]; M. Charles-Damte[1]. [1]John H. Stroger, Jr. Hospital of Cook County, Chicago, IL. *(Tracking ID # 173860)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Obtaining informed consent is a routine process on inpatient medicine wards, yet our previous work has found that residents in our program feel they have received less than adequate training in informed consent.

OBJECTIVES OF PROGRAM/INTERVENTION: 1. To improve residents' informed consent skills 2. To elicit patients' impressions of the informed consent process after having a bedside procedure

DESCRIPTION OF PROGRAM/INTERVENTION: This project was conducted on the medicine wards at a large, urban, public teaching hospital. Our residents are predominantly international medical graduates and are randomly assigned to one of three Firms. For this project, Firm A served as the "intervention" group, while Firms B and C served as the "control" groups. Residents in Firm A participated in a one-hour interactive workshop on informed consent and were given pocket cards with reminders about the process. Firms B and C received their usual inpatient curriculum with no particular emphasis on informed consent. After the workshop, trained research assistants administered an 8-item survey to patients who had had one of the following bedside procedures: central venous catheterization, paracentesis, thoracentesis or lumbar puncture. Due to the generally low level of literacy among patients at our hospital, survey questions were read aloud to patients by the research assistants.

FINDINGS TO DATE: As of 1/1/07, 46 patients had participated in the survey. The subjects were 46% female with a mean age of 53. Twenty-three patients (53%) had undergone the same procedure previously, and for 14 patients (30%) English was not their primary language. Five patients (11%) said they did not understand why they needed the procedure, 8 (17%) said they did not understand the risks of the procedure before it was done, 10 (22%) said they did not understand what would happen if they refused the procedure, 6 (13%) said they felt they could not ask all of their questions before the procedure, 3 (7%) said they felt "forced into" having the procedure, and 3 (7%) said that the discussion with the doctor before the procedure went poorly. Although the numbers are small in this interim analysis, so far there is no appreciable difference in any of the survey items between patients in Firm A compared to patients in Firms B and C. For Firms B and C, however, in 9 of the 27 procedures (33%) informed consent was obtained by someone other than the person who performed the procedure. In contrast, for Firm A, all 19 of the procedures were performed by the

same person who obtained informed consent which follows the guideline that whoever performs a procedure should also obtain consent.
KEY LESSONS LEARNED: Consistent with our previous work, this interim analysis revealed that 7–22% of patients said they did not understand some of the basic risks and benefits of a common bedside procedure even after the procedure was performed. Once we have a larger sample size, we plan to see whether there is any systematic difference between the patients on Firm A (whose residents received extra training in informed consent) and the patients on Firms B and C (whose residents received no specific training.) So far, these preliminary results show no appreciable difference in the responses from patients regardless of their Firm. If this trend holds true in the final analysis, it may mean that a single educational workshop may not be sufficient to impact the informed consent process in the eyes of our patients.

INNOVATIVE HEALTH CARE DISPARITIES CURRICULUM FOR INCOMING MEDICAL STUDENTS. M. Vela[1]; K. Kim[1]; H. Tang[1]; M.H. Chin[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 173627)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Despite Liaison Committee on Medical Education requirements, most U.S. medical schools struggle to provide adequate instruction about cultural issues and health disparities.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) To pilot a health disparities curriculum for incoming first year medical students and evaluate changes in knowledge, skills, and attitudes 2) To inspire medical students to become aware of personal biases regarding racial and ethnic minorities 3) To inspire medical students to make a commitment to serve indigent populations.
DESCRIPTION OF PROGRAM/INTERVENTION: First year students were invited to participate in a 5-day elective course held one week prior to orientation week, which included didactic lectures, small group discussions, role play, and site visits to local emergency rooms, hospitals, community clinics and community health organizations. Curriculum topics included defining race and culture, an exploration of racial and ethnic biases and stereotypes, historical mistrust, health literacy, language barriers and use of interpreters, and an overview of the resources and needs of the South Side Community in Chicago. The students filled out a quantitative and qualitative pre-post survey designed to evaluate their knowledge, skills and attitudes regarding healthcare disparities.
FINDINGS TO DATE: Sixty-four students participated, representing 60% of the matriculating class. Over 80% of students reported having "some" or "a lot" of pre-course experience working with both racially and socio-economically diverse patients. Despite this, 39% lacked awareness of literacy issues and 17% were unaware of the Tuskegee study. After course completion, 100% of students reported that their knowledge of health disparities was "somewhat "or "a lot better." Students reported an improvement in their skills in caring for patients at risk for health disparities. Over 80% felt that their ability to screen low health literacy and work with interpreters was "somewhat" or "a lot better". Students noted a significant change in their attitudes regarding health disparities issues. Over 90% of students felt that their awareness of personal weaknesses that affect their ability to care for diverse patients was "somewhat" or "a lot better". Over 40% listed those weaknesses to be biases, stereotypes, and a lack of cultural awareness. 50% felt a significant commitment to become involved in community clinics and programs on the South Side of Chicago. This curriculum received the highest rating given to any course at the medical school (overall rating 4.9, 1 = poor, 5 = excellent), and will now be fully integrated into the first year curriculum for all students. Qualitative analysis suggests that key strengths were the passion and expertise of the speakers and the diversity of teaching modalities and settings.
KEY LESSONS LEARNED: These results suggest that direct clinical exposure to underserved patients is not enough to cultivate an awareness of health disparities issues. Targeted educational programs designed to address healthcare disparities issues are essential. The unique timing of this course: 1) provided an opportunity for learning and exploration uninterrupted by other academic pressures, and 2) exposed students to disparities issues at a critical formative time in their careers. One student commented, "The course...provided us with a compass bearing that I hope we will return to again and again."

INTEGRATING GERIATRICS INTO THE MEDICINE CLERKSHIP CURRICULUM USING AN INTERACTIVE WED-BASED LEARNING MODULE. M. Ziebert[1]; A. Maguire[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173221)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): The progressive aging of our population together with the critical shortage of physicians trained in geriatrics demands that the health care of the elderly become an important focus of the medical school curriculum. Future physicians can be better prepared to care for the elderly if they acquire the necessary geriatric skills and knowledge during medical school. There exist barriers, however, to implementing optimal geriatric teaching such as insufficient curricular time and resources.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. To develop an interactive web-based learning module targeting medical students in the ambulatory medicine clerkship that will highlight geriatric specific knowledge and skills and complement the existing medicine core curriculum. 2. To provide an evidence-based, web-based geriatric resource that will be utilized for self-paced independent study.
DESCRIPTION OF PROGRAM/INTERVENTION: We added a geriatric focus, known as a Senior Moment, to selected topics from the weekly medicine clerkship core curriculum lectures. After attending the lectures, medical students in the ambulatory portion of the clerkship are asked to pause for a Senior Moment and consider whether the same concepts as emphasized in the lecture topic can now be applied to the primary care of the elderly. The Senior Moments are web-based, located in ANGEL (our institution's web-based course management portal) and developed for self-based independent study as well as self-testing. Each Senior Moment consists of a case scenario and then a series of questions in an unfolding case format. With their focus on the primary care of the elderly patients, the Senior Moments respond to changes in the medicine curriculum that call for a greater emphasis on care of the elderly patient. Furthermore, the Senior Moments meet the patient care objectives as outlined in the M4 global curriculum objectives, especially medical problem solving and the professional behavior objectives of self-directed learning. The Senior Moments also places special emphasis on evidence based-medicine as well as systems-based practice resources.
FINDINGS TO DATE: To date, four topics from the current two-month, rotating medicine clerkship core curriculum have been adapted for e-learning with the Senior Moments. These topics include heart auscultation, COPD, anemia and cancer screening. Four more topics are currently under development: CHF, atrial fibrillation, joint pain and diabetes mellitus. Fifty M4 students have piloted at least two Senior Moments and thirty students completed the ambulatory clerkship survey. Only 2 students did not feel that the Senior Moments would help them better care for their geriatric patients. The majority of respondents did not feel that further face-face small group discussion of the Senior Moments was needed in addition to the ANGEL module.
KEY LESSONS LEARNED: A web-based, integrated educational experience on the primary care of elderly patients addresses the barrier of limited curricular time by adding a geriatric perspective to the existing medicine core curriculum. Further assessment of how the web-based learning module impacted the geriatric specific knowledge and skills of medical students in the ambulatory medicine rotation is needed. A pre-and post- intervention will be developed. A geriatric focused OSCE station will be developed and utilized at the conclusion of the ambulatory clerkship.

INTRODUCING QUALITY IMPROVEMENT IN AN INTERNAL MEDICINE RESIDENCY PROGRAM: GETTING FROM PLAN TO ACTION. W. Wiese-Rometsch[1]; I. Modak[1]. [1]Wayne State University, Detroit, MI. *(Tracking ID # 172768)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): The Accreditation Council for Graduate Medical Education requires that residents demonstrate knowledge in quality assurance and demonstrate competency in systems based practice (SBP) and practice-based learning and improvement (PBLI). Residency programs struggle to find ways to integrate and teach quality improvement (QI) and fulfill requirements for SBP and PBLI.
OBJECTIVES OF PROGRAM/INTERVENTION: The objectives of the required month-long rotation for first year internal medicine residents were to: 1.) introduce QI concepts 2.) design a quality improvement project. 3.) submit their project to the institutional review board (IRB) 4.) collect data and 5.) present their findings and recommendations for improvement in an oral format.
DESCRIPTION OF PROGRAM/INTERVENTION: Interns participate in a series of workshops on conducting QI projects using the Plan-Do-Study-Act problem solving cycle. In weeks one and two interns participate in an introductory session about QI techniques and generate ideas for improvement in ambulatory practice, inpatient setting, and medical education. Groups of four are formed according to areas of interest. Additional workshops include understanding the IRB process, data collection strategies, and presentation techniques. Next, they conduct a relevant literature review. Groups meet with a facilitator and/ or mentor weekly to discuss their progress, identify barriers and solutions. By the end of the second week project proposals are submitted to Wayne State University's IRB. In most cases, the projects receive exempted approval since these are mainly retrospective chart reviews. During weeks three and four trainees collect data and perform data analysis. On the last day of the rotation teams present their preliminary findings and recommendations for QI in a 20-minute PowerPoint presentation followed by an informal and formal feedback session.
FINDINGS TO DATE: This rotation has been in existence for 3 years with a total of 24 groups. Forty-two percent (10/24) of these groups have presented their QI projects at conferences, invited lectures and/or hospital comittees. All ten groups presented at the local level. Eight of ten groups presented at regional meetings. One group presented at a national meeting and three projects have been submitted to the upcoming SGIM national meeting. Five groups have presented their projects at the Department of Medicine Grand Rounds. One project was published in a peer-reviewed journal and two others have been submitted for publication. The rotation has been rated highly by all participants.
KEY LESSONS LEARNED: In a structured four week rotation interns can learn about quality improvement, design a QI project with IRB approval, collect and present preliminary data, and develop strategies for improving health care. These projects not only help meet the scholarly requirements for trainees but have resulted in meaningful changes to the practice of medicine and resident education at our institution. This innovation also allows our residency program to meet the requirements for SBP and PBLI.

LEARNING THROUGH EXPERIENCE: A RESIDENT TEACHING SKILLS PROGRAM BASED UPON KOLB'S EXPERIENTIAL LEARNING THEORY. J.M. Riddle[1]; R. Yudkowsky[1]; M.H. Gelula[1]. [1]University of Illinois at Chicago, Chicago, IL. *(Tracking ID # 173113)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Resident physicians are important teachers and role models for medical students. We

provide formal teaching skills preparation for all PGY-1 residents through a program of workshops based upon Kolb's experiential learning theory. This model was chosen because it emphasizes prior experience, reflection and active experimentation - all of which facilitate transfer of learning into practice.
OBJECTIVES OF PROGRAM/INTERVENTION: Program objectives are to provide instruction and opportunities for practice of teaching skills for PGY-1 residents from all programs.
DESCRIPTION OF PROGRAM/INTERVENTION: The University of Illinois at Chicago - College of Medicine conducts a yearly series of workshops to enhance our residents' teaching skills. The first workshop, held during resident orientation, introduces first-year residents to brief clinical teaching and giving feedback. Subsequent workshops reinforce this material and focus on other teaching skills including case-based learning, teaching at the bedside, teaching procedural skills, lecture skills, teaching on rounds, teaching professionalism, teaching in small groups, and advanced clinical teaching. PGY-1 residents from all programs are required to attend two 1.5-hour long workshops of their choice, in addition to the orientation workshop. Workshop structure is based on Kolb's Experiential learning theory. Each workshop begins with activities that allow residents to reflect upon their experiences as learners through critical incidents, trigger tapes, cases and games. Discussion of experiences highlights opportunities and challenges for teaching skill development. A set of practical teaching skills that are relevant to residents' work in inpatient and outpatient settings is taught during each workshop through presentations, demonstrations and role-play. Active experimentation is encouraged through role-play, cases, and practice of teaching skills using models and actual students as learners. Each session concludes with the group reflecting on what had been learned and what they intend to put into practice. All workshops reinforce key skills - understanding learner's needs, establishing expectations, asking questions, creating opportunities for learners to work with content, providing constructive feedback, acting professionally, managing both learner's needs and patient's needs in the clinical encounter.
FINDINGS TO DATE: On end-of workshop evaluations, residents list learning points for each workshop that reflect achievement of the objectives of the workshop. Program evaluation results indicate that residents value the interactivity of the workshops, the opportunity to practice new skills, and the opportunity to work with residents from other specialties. Residents find spending 90 minutes away from their clinical responsibilities challenging.
KEY LESSONS LEARNED: Conducting teaching skills workshops for PGY-1 residents demonstrates the value that the university places on teaching. All residents are highly involved in teaching medical students, and our program provides early exposure to skills that our housestaff will need as interns and as senior residents. Residents prefer activities - role-play, demonstration, games, and buzz groups - to even the most interactive lecture. Incorporating these workshops into busy PGY-1 schedules is challenging. The workshops offer an opportunity to focus on ACGME competencies of interpersonal skills and communication and professionalism as well.

MEASURING THE STRUCTURE OF KNOWLEDGE IN MEDICAL EDUCATION: RELIABILITY OF CONCEPT MAPPING ASSESSMENT. M. Srinivasan[1]; M. Macelvany[1]; J.M. Shay[1]; R.J. Shavelson[2]; D. West[1]. [1]University of California, Davis, Sacramento, CA; [2]Stanford University, Stanford, CA. *(Tracking ID # 173894)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Beyond mere fund of knowledge, developing an appropriate organization that clinical knowledge ("knowledge structure") facilitates decision-making, and is a critical step towards becoming an expert clinician. Despite its potential importance in the education of physicians, knowledge structure usually goes unmeasured because of difficulties in designing and administering objective measures. Concept mapping is an assessment method in which learners demonstrate their knowledge structure. However, the reliability of concept map scores in medical education is not known.
OBJECTIVES OF PROGRAM/INTERVENTION: To develop a reliable scoring system of concept maps in the assessment of medical learners.
DESCRIPTION OF PROGRAM/INTERVENTION: In 2002, pediatric and internal medicine senior residents and fourth year medical students an academic institution created four concept maps after a 2 hour training session. Learners created maps, on two clinical topics (diabetes [DM] and asthma) on two occasions (one month apart). A core set of clinical concepts per topic were identified clinical experts (61 for DM, 56 for asthma), and given to learners to create their maps. Learners created the maps by linking concepts together with phrases ("linking phrases") that described the linked concepts' relationship. Maps were abstracted, and scored independently by two raters. A two-step scoring method was modified from previously reported methods, emphasizing the relationship between concepts. Step A rated the relative "closeness" of concepts based on comparison with expert maps. Step B assessed the quality of the linking phrase connecting concepts together. Three scoring methods were tested: Method 1 (sum of Step B scores, tallying all concept-concept link scores), Method 2 (sum of Step A score multiplied by Step B per link) and Method 3 (Method 2 score x complexity factor per link). We tested each scoring system's reliability across persons, raters, and occasions using GENOVA, based on generalizability theory.
FINDINGS TO DATE: Of 55 learners, 47 completed all four concept maps. True score variance (score variance attributed to differences among persons) ranged from 31% of total variance (asthma maps, Method 1) to 49% (DM, Method 2). Interactions between person and occasions accounted for 30% (DM, Method 1) to 41% (DM, Method 3) of score variance. Rater variance was highest for DM (1–1.6% [asthma]; 6–11% [DM]). For both topics, true score variance was greatest with Method 2, on two occasions, with maps scored by two raters (generalizability coefficient: 0.74 [DM] and 0.66 [asthma]).
KEY LESSONS LEARNED: We found that rater variation accounted for only 1–11% of total learner score variation, and that reliability of rating was good (0.66–0.74). Scoring method 2 maximizes trure learner score variation. This method rates the quality of linking phrases and the relative importance of concept links to understanding the topic. A large person-occasion variance suggests a substantial learning effect in creating concept maps. This study suggests that concept mapping may be a reliable assessment method for understanding a learner's knowledge structure in medical education as they transition from novice to early expert.

MEETING THE NEEDS OF UNDERSERVED PATIENTS: A UNIQUE CURRICULAR DESIGN AND CLINICAL EXPERIENCE. M.M. Fitz[1]. [1]Loyola University of Chicago, Maywood, IL. *(Tracking ID # 173703)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): While medical schools have traditionally valued placing students in resource-poor communities in an effort to expose them to underserved medicine or recruit them for future employment, Loyola Stritch School of Medicine developed an underserved elective within its Internal Medicine Clerkship that attempts to provide students with both a far-sighted perspective on their role as future physicians and a skill set to deliver quality care to underserved populations.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) Collaborate with faculty from local allopathic and osteopathic schools to enrich the curricular design and clinical experience. 2) Demonstrate that student outcomes such as knowledge of and communication skills with underserved patients are improved from the curriculum and clinical experience. 3) Demonstrate that patient outcomes such as hemoglobin A1C and blood pressure show improvement under the care of students, with supervision from attendings, entered in the elective.
DESCRIPTION OF PROGRAM/INTERVENTION: The Loyola Stritch School of Medicine, in partnership with faculty from local allopathic and osteopathic medical schools, developed an underserved elective within the Internal Medicine Clerkship. In parallel with a clinical experience at an underserved site, students participate in formal case-based small group seminars facilitated by faculty and additional health care personnel on topics salient to the underserved community. These topics include but are not limited to access to care, pharmaceutical access, immigration policy, and stereotype and bias. Approximately 8 small group seminars are held for about 1 hour each during the 12-week Clerkship. These seminars are held after the core lectures within the Clerkship.
FINDINGS TO DATE: A total of 46 students have participated in this elective since its inception, July 2005. We began collecting standardized and clinical patient data from this academic year. 12 students who completed the elective within the Internal Medicine Clerkship thus far served as the study group. They were compared to 57 students, the control group, who have completed the Internal Medicine Clerkship this year without enrolling in the elective. We analyzed the students' effectiveness in standardized patient exercises. Students participating in this elective were more knowledgeable about medication cost, scored higher on standardized patient communication checklists, and were willing to offer more strategies for delivering care to underserved patients compared to the control group who had not entered the elective. To eliminate selection bias, we surveyed students enrolled in the program and compared their attitude responses before and after the elective to the control group. Patient data regarding hemoglobin A1C and blood pressure measurements showed improvement, but were not statistically significant than matched patient groups being cared for by resident-attending physician pairs in the same underserved clinic.
KEY LESSONS LEARNED: 1) This curriculum and clinical experience can be seamlessly meshed into current ambulatory clerkships: Internal Medicine, Pediatrics, or Family Medicine 2) In addition to cultural awareness, students are provided tangible, practical information and strategies to ensure quality care for underserved patients. 3) Students recognized the importance of continuity of care with underserved patients. 4) Case management skills, however, were inadequately addressed in the curriculum and represent an opportunity for improvement.

MULTIDISCIPLINARY SERVICE-LEARNING: A MEDICAL-LEGAL COLLABORATION FOR THE URBAN UNDERSERVED. C. Peabody[1]; E. Pham[2]; S. Jain[1]. [1]University of California, San Francisco, San Francisco, CA; [2]University of California System, San Francisco, CA. *(Tracking ID # 172946)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): The UCSF Student Homeless Clinics (USHC) have provided medical care to underserved individuals for over 12 years. Because of the complexity of their circumstances, many homeless and low-income patients might benefit from access to integrated medical and legal services. Additionally, medical students have little training and opportunity to interact with their colleagues from different disciplines despite the growing trend towards multidisciplinary care models.
OBJECTIVES OF PROGRAM/INTERVENTION: The objectives for this program are to (1) establish a legal services program in conjunction with UC Hastings at USHC, and (2) create collaborative learning relationships between medical and law students through a joint seminar series.
DESCRIPTION OF PROGRAM/INTERVENTION: The legal services program is based on the medical service-learning model established previously at USHC. Under the guidance of supervising attorneys from local non-profit organizations and the global law firm Orrick, Herrington and Sutcliffe, law students provide weekly on-site legal advice aimed at navigating the web of San Francisco's legal safety-net. The joint

seminar series is composed of medical and law students who volunteer at USHC, and its curriculum is focused on areas where the fields of medicine and law intersect. The seminar meets weekly for eleven weeks; topics include foster care, prisoner health, and homeless health-policy issues.
FINDINGS TO DATE: Initial needs assessment for the legal services program was conducted in December 2005 in a focus group format, which included the shelter manager and 12 shelter residents. Participants reiterated the need for a program to provide education and outreach focused on criminal and benefits law. With such goals in mind, Homeless Legal Services began formally in August 2006 and has seen 57 total clients, approximately 6 clients per week. Eleven law students and 13 medical students enrolled in the seminar series. Satisfaction data was gathered through a written evaluation at the end of the course from 20 participants (response rate 83%). On a 5-point scale ranging from "excellent" (5) to "poor" (1), the overall seminar topics averaged a score of 4.72. Students were also asked on a 5-point scale to "strongly agree" (5) or "strongly disagree" (1) whether the course exposed students to role models working with the underserved; nineteen students (95%) marked 5 and one student (5%) marked 4.
KEY LESSONS LEARNED: The framework of a student-run clinic augmented by a joint seminar is a very unique medical and legal collaboration. Private, public, and academic spheres are integrated to provide a multidisciplinary service model for the underserved of San Francisco. Thus, medical and law students are exposed to different approaches and solutions to providing their essential services. Furthermore, students are creating opportunities to work within a multidisciplinary team early in their training, so that as future professionals, they will have access to an extended network of peers and mentors.

PATIENTS AS TEACHERS: BENEFITS TO STUDENTS, FACULTY, AND PATIENTS. S. Waldman[1]; D.L. Stevens[1]; K. Hanley[1]. [1]New York University, New York, NY. *(Tracking ID # 173602)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Most preclinical students have limited opportunities to work with patients with substance abuse problems or life threatening illness. Understanding the patient's perspective is critical to promoting behavior change and helping patients to adapt to life with chronic or life-threatening illness.
OBJECTIVES OF PROGRAM/INTERVENTION: We designed an innovative curriculum using active "patient teachers" that develops students' awareness of and empathy for patients with substance abuse problems and life threatening illness, and skills in discussing a patient's experiences and barriers to care. We also assessed the impact of the program on participating students, faculty, and "patient teachers."
DESCRIPTION OF PROGRAM/INTERVENTION: The curriculum consisted of 3 small group sessions that actively involved patients as teachers to facilitate discussion about breaking bad news (BBN) and alcohol and substance abuse (A&SA) in the 1st year and smoking cessation (SC) in the 2nd year. With faculty supervision, groups of 8–25 students interviewed patients about challenges of living with their problem, barriers to healthcare, and how physicians have helped or hindered their adjustment to or perception of their illness. Patients for the A&SA seminars were recruited from the Bellevue Alcohol Treatment Program. The BBN seminars engaged patients with cancer and HIV from support and advocacy organizations. Smokers were recruited via word of mouth for the SC seminars. In-depth teaching manuals provided faculty with guidelines for involving patients in the teaching process. Participants completed an attitude survey to assess the impact of the curriculum's components.
FINDINGS TO DATE: The A&SA seminar had a student response rate of 91% (N = 160), faculty response rate of 83%(N = 36), and a patient response rate of 76% (N = 18). The BBN seminar had a student response rate of 95% (N = 160), faculty response rate of 69% (N = 36), and a patient response rate of 75% (N = 20). The SC seminar had a student response rate of 79% (N = 150), faculty response rate of 100% (N = 9), and a patient response rate of 100% (N = 8). Student surveys: Students were highly satisfied and felt the curriculum would have a lasting impact: 96% agreed it was a valuable part of their medical education; 97% agreed that the patient teachers should become a permanent component of the curriculum. 92% felt they were more likely to discuss the psychosocial aspects of problem with future patients, and 85% felt better equipped to care for individuals with these problems. 81% felt more motivated to learn about the health issue after the seminar. Patient surveys: 93% thought the session was a valuable use of their time, and 80% indicated they would feel more comfortable discussing their health problem with their doctor as a result of the session. Faculty surveys: 93% agreed that the patient interview improved students' understanding, and 76% agreed the experience improved their own understanding of patients' perspectives.
KEY LESSONS LEARNED: A curriculum incorporating patients as teachers benefited a) students' attitudes and awareness of critical issues surrounding difficult health problems, b) faculty members' understanding of patients' perspectives on alcohol, substance abuse, and life threatening illness and c) patients' comfort discussing their health problem with physicians.

PILOTING A CURRICULUM IN 'PRACTICE MANAGEMENT': TEACHING NEW DOGS OLD TRICKS. A. Kinderman[1]; K. Julian[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 171537)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Despite an increased proportion of Internal Medicine residency training devoted to ambulatory medicine, many graduating residents report feeling inadequately prepared to practice primary care. One potential explanation is that ambulatory education has traditionally focused on the diagnosis and management of disease, rather than the core practice management skills needed to care for a panel of patients.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) To enable residents to function effectively as members of a multi-disciplinary ambulatory team, 2) To instruct residents in organizing patient data, accessing system resources, and communicating effectively with patients between visits, and 3) To introduce essential time management skills, including agenda setting and efficient charting.
DESCRIPTION OF PROGRAM/INTERVENTION: Based on published reports of recent graduates' practice experiences, forty-eight second and third year Internal Medicine residents at the University of California San Francisco were surveyed regarding their experiences with ambulatory education, and their satisfaction with professional support and personal performance in clinic. Based on preliminary results, we developed a series of nine seminars to address deficiencies identified by residents. These seminars concentrate on time management, tracking patient data, working with clinic team members, controlled substance prescription, specialty referrals, and efficiently accessing social and psychiatric services. Experienced clinician-educators present these topics to interns in a small group, interactive setting. We plan to survey second year residents again in one year, to measure their satisfaction and self-assessed effectiveness in managing an ambulatory patient panel, as compared to their predecessors who did not receive this educational intervention.
FINDINGS TO DATE: We are mid-way through the nine-session curriculum, which is being presented at two separate clinic sites. To date, twenty-five categorical and primary care interns have participated in one or more of the sessions. Feedback from interns has been uniformly positive. Educators appreciate having written outlines to teach these topics, which in previous years had often been presented inconsistently, or had not been presented at all. Constructive feedback from educators is being integrated into the curriculum on an ongoing basis.
KEY LESSONS LEARNED: Residents look primarily to their clinic preceptors for guidance in navigating complicated clinic systems. While they are able to learn some skills on a case-by-case basis, this approach often leaves residents feeling unprepared to manage an ambulatory patient panel. By defining certain essential panel management skills and providing education in this area, we hypothesize that residents will feel more effective as primary care physicians, and may therefore be more likely to enter into primary care practice.

PRECEPTING FOR CULTURAL COMPETENCE. M.M. David[1]; C. Mostow[2]; J. Crosson[3]; L. Delgado[3]; S.E. Chapman[4]; S. Gordon[2]. [1]Boston University, Chestnut Hill, MA; [2]Boston Medical Center, Boston, MA; [3]Boston University, Boston, MA; [4]Boston Medical Center, Milton, MA. *(Tracking ID # 173459)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): The 2000 census has shown that the US is more diverse than ever. Socio-cultural differences between patient and providers influence communication and clinical decision-making. In Unequal treatment, the IOM has shown that disparities exist in health care. In 2002, the IOM issued a report citing cross-cultural training as a mechanism to address racial and ethnic disparities in health care. In 2005, a study by E. Park et al revealed that residents experienced mixed messages regarding learning cross-cultural care. They are told of its importance, but report little formal training in this area.
OBJECTIVES OF PROGRAM/INTERVENTION: To address this issue as well as insure that learning translated into clinical care, we designed a study to test, refine and disseminate our RESPECT model into the clinical setting, making cultural competence a basic and routine aspect of medical care at our clinics; to define a sustainable, replicable and transformative cultural competence model for ambulatory precepting; to identify and pilot teaching interventions resulting in increases of skill and comfort for targeted faculty and residents regarding cross-cultural medical care and positive outcomes for preceptor teaching.
DESCRIPTION OF PROGRAM/INTERVENTION: This initiative enabled 8 Precepting faculty to design, practice and teach interventions to teach cross-cultural care, and to increase the skill and comfort of residents in providing cross-cultural medical care. Faculty Development Project group. This group was designed to provide support for a racially diverse physician workforce at BMC and to enhance their teaching skills. Project preceptors reviewed relevant literature, and improved observational skills by watching resident encounters for evidence of successful cross-cultural interactions. The preceptors met for 16 monthly 3-hour sessions during which they set goals, practiced applying the RESPECT model to challenging patients and teaching effective cross cultural encounters and developed new teaching interventions.
FINDINGS TO DATE: We administered a pre and post survey to the residents. We conducted a focus group of the participating faculty members. We were able to demonstrate the utility of the RESPECT model, to describe successful cross-cultural encounters, to help preceptors design teaching interventions for challenging learning encounters. The medical residents learned to address challenging cross-cultural communications using the model.
KEY LESSONS LEARNED: As attention has increased about how to assure physician mastery of multiple competencies beyond medical knowledge, the RESPECT model also holds promise as a model for preceptor-resident interactions. Part of the "new revolution" in medical education to address the power of the hidden implicit curriculum to shape physicians' attitudes and behaviors, the model focuses preceptors' attention on the parallel process of communication with their learners. By using Respect and Empathy to address the residents' Explanatory process, Social context, and underlying Concerns, preceptors can build the Trust necessary for residents to share patient care dilemmas, emPowering residents to approach the challenges of treating diverse patients with renewed confidence and interest. An unexpected result of this project was that all the participating preceptors, who had

extensive prior success engaging with a racially and culturally diverse patient population, cited improved communication with their own patients suggesting that achieving cultural effectiveness is a long term process for all clinicians, regardless of experience.

PREPARING FIRST YEAR MEDICAL STUDENTS FOR INTERNATIONAL SERVICE. G.A. Jae[1]; C. Defillipo[1]; J. Zeidman[1]; D.C. Thomas[1]. [1]Mount Sinai School of Medicine, New York, NY. *(Tracking ID # 173759)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Medical students are traveling to developing countries in increasing numbers. Recognizing the value of practical and theoretical preparation for providing health care abroad, some medical schools offer a curriculum in international health, even requiring that students complete such a course before traveling.
OBJECTIVES OF PROGRAM/INTERVENTION: To design and implement a relevant and effective global health curriculum to prepare medical students for a short-term international service learning experience.
DESCRIPTION OF PROGRAM/INTERVENTION: Thirty-three first-year medical students from a single institution participated in a 9-session preparatory curriculum from January through April in 2006. All of the students attended a one-week medical service trip in Belize after the 7th session. The eighth session occurred while in Belize, and a wrap-up session took place upon return to the United States. Learning goals and objectives were predetermined by the curriculum committee based on prior global health curricula as well as available faculty experience. These topics and themes included: 1. A critical examination of the impact of medical missions, 2. Identifying local and international factors that influence healthcare in Belize, 3. Review of common diseases encountered in Belize, 4. Cultural competency, 5. Conceptualizing student public health projects in Belize, 6. Review of physical exam skills with specific emphasis on pediatrics and dermatology, 7. Medical Spanish, and 8. In-country and post-project reflection and evaluation, including recommendations for future projects. Teaching modalities included small group discussion of readings, clinical skills practice, didactic lectures, and role-playing. Sessions were led by experienced faculty and students, and most had participated in prior medical service trips.
FINDINGS TO DATE: Participating students completed an anonymous attitudes and beliefs survey prior to the first class and a post-project survey during the wrap-up session. In addition, anonymous satisfaction surveys were administered following each session. Each satisfaction survey solicited reaction to the quality of instruction and assigned readings according to a Likert scale and included an open-ended call for comments. Pooled means of students' attitudes toward feeling prepared significantly increased based on the pre-curriculum and post-project surveys ($p < 0.05$). Results from the satisfaction surveys indicated that students overall were satisfied with the curriculum content and felt the content was relevant to their preparation.
KEY LESSONS LEARNED: We feel that this data demonstrates the importance of offering a focusing curriculum prior to sending medical students abroad. Implementing a global health curriculum can be a feasible and effective means for preparing medical students participating in a short-term international service experience. In response to student feedback, future iterations of this curriculum will include more specific in-country information and an expanded review of common diseases encountered during the clinical skills training.

PROFESSIONALISM: GETTING COMFORTABLE TALKING THE TALK. R. Stark[1]; R. Karani[1]; D.R. Korenstein[1]. [1]Mount Sinai School of Medicine, New York, NY. *(Tracking ID # 173532)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): The Accreditation Council on Graduate Medical Education (ACGME) has identified professionalism as a key competency of residency education. Despite significant dialogue about professionalism among educators, faculty may be uncomfortable giving feedback to trainees in this area.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. To implement a comprehensive evaluation of professionalism in to the Internal Medicine (IM) residency program at Mount Sinai Hospital; 2. To determine how a professionalism assessment evaluation and feedback tool impacts faculty attitudes toward feedback.
DESCRIPTION OF PROGRAM/INTERVENTION: A 360-degree assessment of professional behaviors, designed by the National Board of Medical Examiners, was implemented in the ambulatory IM clinic at Mount Sinai Hospital during the 2006–2007 academic year. All categorical IM residents were evaluated by faculty, nurses, medical assistants, and registration staff at the end of their 4-week outpatient rotation. A summary of professionalism "scores", including free text comments by evaluators, was provided to the faculty advisor of each resident at the end of each rotation. Faculty were advised to use the professionalism summaries as a guide to provide feedback to each resident upon completion of the rotation, although instructions were not specific and faculty did not receive any special training. Prior to implementation, we conducted a needs assessment survey of all clinical General IM faculty to understand attitudes about feedback, and frequency and content of feedback sessions. Self-reported skills, attitudes, and behaviors were measured on a 7-point Likert scale. Six months after implementation, we re-surveyed faculty to determine the impact of the professionalism evaluation tool on feedback delivery.
FINDINGS TO DATE: 92% of clinical General IM faculty ($n = 22$) completed the pre-intervention survey. Post-intervention data collection is ongoing; to date 46% ($n = 11$) of faculty have completed post-intervention surveys. Both before and after the intervention, a majority of faculty reported comfort in giving general feedback (86% vs. 82%) with more identifying themselves as skilled following the intervention (59% vs. 73%). Less than half (45%) reported comfort giving feedback about professionalism prior to the intervention, with few (32%) reporting skill in this area. Following the intervention, 82% reported being comfortable giving feedback about professionalism and a majority (64%) identified themselves as skilled. More faculty members reported comfort giving feedback to trainees about medical knowledge (82% vs. 64%) following the intervention while comfort in giving feedback about interpersonal communication skills remained similar (70% vs. 68%). Faculty reported that feedback sessions were more likely to include a discussion of professionalism (91% vs. 59%), interpersonal communication skills (91% vs. 77%), and medical knowledge (100% vs. 77%) following the intervention.
KEY LESSONS LEARNED: Data collection in this study is ongoing and will be complete by February, 2007. Early analyses suggest that using a professionalism assessment instrument to guide feedback may improve faculty's self-reported comfort and skill with feedback about professionalism.

PROFESSIONALISM: WHAT DOES IT MEAN? A QUALITATIVE ANALYSIS. R. Stark[1]; J. Jue[1]; D.R. Korenstein[1]; R. Karani[1]. [1]Mount Sinai School of Medicine, New York, NY. *(Tracking ID # 173463)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): The ACGME has identified professionalism as a key competency of residency education. This recent emphasis on professionalism in medical education has stimulated an effort to create a precise definition of the term.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) To understand how Internal Medicine (IM) residents define professionalism; 2) To understand how IM faculty define professionalism; 3) To understand how perceptions of professionalism may be different between house staff and faculty; 4) To use information in this study to develop curricula, assessment tools and faculty development about professionalism.
DESCRIPTION OF PROGRAM/INTERVENTION: This qualitative analysis is part of a longitudinal medical education project to determine the impact of a professional behaviors assessment tool on feedback delivered to IM house staff. As part of a survey conducted in July, 2006, all categorical IM residents and faculty members of the Division of General IM at Mount Sinai Hospital in New York City were asked to define the term "professionalism". Themes and sub-themes were derived inductively by one author and independently verified by two others using grounded theory and a constant comparative method of analysis. The units of analysis were words and phrases.
FINDINGS TO DATE: 92% of clinical GIM faculty ($n = 22$) and 81% of IM residents ($n = 88$) completed the survey. A total of 224 resident phrases, and 87 faculty phrases were coded. Respondents' definitions of professionalism fell into two categories of behaviors (248) and principles (63). For both groups, more comments related to behaviors than to principles (178 vs. 46 for residents, 70 vs.17 for faculty). Residents most commonly identified behaviors pertaining to workplace or profession (72), followed by behaviors pertaining to patients (55), to colleagues (37), and to self (14). Similarly, faculty most commonly identified behaviors pertaining to workplace or profession (29), followed by behaviors pertaining to patients (22), to colleagues (15), and to self (4). Being respectful to patients was the behavior most commonly noted by residents (18), followed by being respectful to colleagues (16), and being appropriate in the workplace (14). Faculty also identified being respectful to patients (6) and to colleagues (6) more frequently than other behaviors. Among principles noted by residents, those with respect to workplace or profession were most commonly noted (24), whereas faculty more commonly identified principles with respect to self (10). Upholding the standards and expectations of a group was the most commonly coded principle among residents (9). This principle was not identified by faculty, nor was there a single principle identified by a majority of faculty responders.
KEY LESSONS LEARNED: Residents and faculty agree that professionalism is better defined as a set of behaviors than as a set of principles. Both groups include respectful behavior toward patients and colleagues in their definitions of professionalism. Residents were more likely than faculty members to identify principles of professionalism. As part of a larger study, the findings in this analysis will be compared with those collected following an educational intervention.

QUALITATIVE ELDERLY SEXUALITY AND PRIMARY CARE UTILIZATION. I. Heinrich[1]. [1]University of Haifa, the Laboratory for Gerontology and Geriatric Investigation, Kiryat - Bialik,. *(Tracking ID # 166690)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Elderly sexuality is one of the mainstay hallmarks that define life quality in old age. Maintaining sexually content old people can shed positive light into their perceived health and encourage their compliance in adopting healthy life style modifications and compliance to current medical regimens. Dynamic exploration of elderly oriented sexuality needs, beliefs and expectations with regard to social and medical support networks can help primary care providers in helping their veteran customers achieve the target of successful aging.
OBJECTIVES OF PROGRAM/INTERVENTION: a. Establish the proper terminology of sex, intimacy and sexuality for physicians, caregivers and the elderly and define their significance for successful aging. b. Conduct a survey in order to estimate the attitudes of self- sufficient elderly living in Northern Israel with regard to sexual behavior and sex - life satisfaction in old age, ideas and thoughts concerning social acceptance of elderly sexuality both by the younger and the elderly society and primary care utilization. c. Define the impact of elderly qualitative sexuality upon patient- family physician encounters in primary care.

DESCRIPTION OF PROGRAM/INTERVENTION: 148 elderly persons aged 65 and above (55% aged 75+) were screened by a constructed modified questionnaire (based upon the Aging Sexual and Attitude Scale - ASKAS, and the Sexual Life Quality Questionnaire - SLQQ) in 5 rural primary care clinics in Northern Israel. Participants shared their opinions concerning: 1. Ability to expect, start, implement and enjoy an intimate encounter. 2. Importance of mutual pleasure. 3. Elderly sexuality projecting upon social appreciation. 4. Sexual interest as trivial continuous need in old age. 5. Modified sexual education as a life style necessity in our society. 6. Overall current content from present sexuality. Statistical analysis inquired the issue of satisfactory elderly sexuality along with various financial and social parameters with regard to primary care utilization.
FINDINGS TO DATE: "The Israely elderly sexuality experience" demonstrated positive relationship between sexually content elderly individuals and frequent encounters with their family physicians. 66% revealed moderate to high satisfaction from their current sexuality enjoying their ability to execute and perform in an intimate sexual encounter taking care of the partner's needs (71%). 62% regarded sexuality as a continuous drive throughout the aging process. Differences of opinions were held concerning required social esteem from younger populations and their fellow elderly, and to the issue of required constructed sexual education initiatives.
KEY LESSONS LEARNED: a. The basic "ageless" right for persons to enjoy qualitative sexuality in our society. b. Elderly are actively interested and engaged in pursuing this objective. c. Result analysis raised a hypothesis that according to which sexually content elderly "bothered" their physicians more, but for trivial and relatively milder "health events" just to stay on guard and diagnose early, medical conditions that might endanger their satisfactory life status. The compliance for drug treatment, life style modifications and preventive medical recommendations seemed significantly higher for those persons. d. Medical care - givers should be well educated for a discrete frank, non judicious, honest and supporting verbal communications encouraging the old to express their feelings, hesitations and anxieties regarding "late life sexuality".

QUALITY PARTNERS: A UNIVERSITY-TEACHING HOSPITAL PARTNERSHIP FOR IMPROVING QUALITY. E. Etchells[1]; C. Bell[1]; J.M. Holroyd-Leduc[2]; W. Levinson[1]. [1]University of Toronto, Toronto, Ontario; [2]University of Calgary, Calgary, Alberta. *(Tracking ID # 173027)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Quality of Care is a central component of the University of Toronto Department of Medicine 2005–2010 strategic plan; the challenge is to promote quality of care as an academic activity for faculty working in our six affiliated adult teaching hospitals.
OBJECTIVES OF PROGRAM/INTERVENTION: The objectives of the program are to develop: 1. academic physicians for leadership in safety and quality improvement. 2. local expertise in design of improvement studies. 3. advanced skills in measurement for improvement.
DESCRIPTION OF PROGRAM/INTERVENTION: The Quality Partners Program is an innovative partnership between the University of Toronto Department of Medicine and affiliated adult academic hospitals in Toronto. The Quality Partners Program provides funding to project teams for quality and safety improvement initiatives. Teams must include members from at least two affiliated hospitals. The first call for proposals for the Quality Partners Program was in January 2006. The eight funded projects for 2006–7 are focused on the following clinical areas: diabetes, congestive heart failure, emergency room care of patients with infections, automation of discharge summaries , myocardial infarction, outpatient geriatric care , prevention of hospital acquired decubitus ulcers in critical care, and care of inpatients with critical laboratory abnormalities. Teams include over 40 faculty from the Department of Medicine, as well as over 50 members from other disciplines including nursing, pharmacy, social workers, rehabilitation, nutrition, laboratory services, and medical informatics specialists. We created a series of monthly half-day sessions in safety and quality improvement, including design and measurement, physician leadership, rapid cycle improvement, and clinical microsystems. We also invited speakers from the Ontario Ministry of Health and Long Term Care to outline their system-level quality of care framework and improvement strategies. In April 2006, we conducted a needs assessment for participating physicians. We obtained participant ratings for each half day session. In December 2006, we conducted debriefing sessions with team leaders.
FINDINGS TO DATE: 1. The needs assessment identified several areas where additional knowledge and skill were needed, including: (a) Changing physician behavior, (b) Knowledge translation, (c) Why change efforts can fail, (d) Clinical microsystem leadership, (e) Teamwork and communication (f) Characteristics of high performance teams 2. The monthly half day sessions were highly rated. The speaker effectiveness scores range from 9.07–9.84 (out of 10). 3. The debriefing sessions revealed that i. The monthly sessions were highly valued opportunities to meet, analyze, discuss and critique with academic colleagues. ii. Project teams were hampered by the lack of an academic quality improvement infrastructure. Ethics applications, hiring capable part time personnel, and data management were all barriers to timely completion of project goals.
KEY LESSONS LEARNED: Our academic faculty value a forum for scholarly discussion of quality improvement. They value the opportunity to regularly meet with colleagues from other teaching hospitals. The major barrier for successful sustainable quality improvement activity is the lack of an infrastructure for project management at the hospital level. We plan to work with partner hospitals to create an integrated system for conducting quality improvement studies.

REAL-TIME EBM: FROM BED BOARD TO KEYBOARD AND BACK. R. Stark[1]; I.M. Helenius[1]; N. Takahara[2]; I.M. Kronish[1]; L. Schimming[1]; D.R. Korenstein[1]. [1]Mount Sinai School of Medicine, New York, NY; [2]Columbia University, New York, NY. *(Tracking ID # 173447)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): To practice Evidence-Based Medicine (EBM) in real-time, physicians must quickly retrieve evidence to inform their management decisions. Internal Medicine (IM) residents receive little formal education in electronic database searching, and have identified poor searching skills as a barrier to their evidence-based practice.
OBJECTIVES OF PROGRAM/INTERVENTION: To improve IM residents': 1. Skill searching PubMed and filtered EBM resources, and 2. Comfort searching for primary evidence to guide inpatient care.
DESCRIPTION OF PROGRAM/INTERVENTION: We performed a randomized controlled trial of a curriculum designed to teach IM residents techniques to effectively search EBM databases in real-time. The EBM Searching Tutorial was integrated into inpatient ward rotations for IM residents at Mount Sinai Hospital during the 2005–6 academic year. All second- and third-year residents were randomized to participate in the tutorial ($n=40$) or attend unrelated control conferences ($n=35$) occurring simultaneously. Residents randomized to the searching tutorial met in groups of 3–6 for one hour weekly, for up to six sessions. The EBM tutorials were supervised by a medical research librarian and 1–3 members of the General Internal Medicine faculty. Each session began with residents orally presenting an active patient on their inpatient service and developing a clinical question about diagnosis, treatment, or prognosis. Using 3 computers in the room, participants then searched the literature to find answers to their clinical questions. Faculty supervised all searches, emphasizing PubMed searching techniques (including the use of Clinical Queries, Limits, Related Articles, and Medical Subject Headings), and the appropriate use of ACP Journal Club and the Cochrane Library. Residents in both groups were evaluated using a timed library Objective Structured Searching Evaluation (OSSE), searching for primary evidence to answer 5 clinical questions. The mean time between attending the last tutorial session and participating in the OSSE was 112 days (SD 57) for residents in the intervention group. OSSE outcomes were the number of successful searches, search times, and techniques utilized. An overall OSSE score combining these variables was calculated for each resident. Participants also completed post-intervention self-assessment surveys measuring frequency and comfort using EBM resources. Differences in performance between groups were analyzed using the Wilcoxon rank sum test.
FINDINGS TO DATE: Mean OSSE scores were higher in the intervention group than in the control group (4.0 vs. 2.3, $p<.01$). Residents who participated in the searching tutorial scored more points for searching techniques on the OSSE than control residents ($p<.01$). Intervention participants used Clinical Queries more ($p<.001$) and, unlike controls, reported increased comfort using PubMed ($p<.05$) and the Cochrane Library ($p<.05$) on post-intervention surveys. There was a non-significant trend toward increased comfort using ACP Journal Club by tutorial participants.
KEY LESSONS LEARNED: A real-time resident database searching tutorial improved searching skill and success and increased participant comfort with searching.

RESIDENT CLINIC STAFFING MODEL IMPROVES SATISFACTION, CONTINUITY AND BILLING. G. Beck[1]; W. El Maraachli[1]; S. Vogelgesang[1]; C. Goerdt[1]. [1]University of Iowa, Iowa City, IA. *(Tracking ID # 173407)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Our traditional staffing model for our residents' continuity clinic created little time for resident education and faculty evaluation of patients. Patient continuity was also poor.
OBJECTIVES OF PROGRAM/INTERVENTION: Improve resident education, quality of patient care, patient continuity and resident, faculty and patient satisfaction.
DESCRIPTION OF PROGRAM/INTERVENTION: We replaced our traditional system, where faculty precepted up to 4 residents, with a 1:1 staffing model. In the new model, residents work one on one with faculty who also see their own patients during clinic. For example, both residents and faculty will see patients at 8:00 a.m. after which there is dedicated time in the schedule for staffing and education regarding the resident patients. At 8:40, residents and faculty see their next patients and the cycle continues. Faculty members see each of the residents' patients allowing for improved care, better education and higher billing. Faculty and residents work in clinical care teams that include ancillary staff. Faculty members maintain long-term continuity for patients as they transition to new residents or when residents are unavailable. Competency-based expectations are used for evaluation of the residents. We instituted the change in July, 2004. We did resident and patient satisfaction surveys before and after the change. We surveyed faculty after the change. We also collected data regarding continuity and billing.
FINDINGS TO DATE: Resident satisfaction significantly improved in the areas of continuity, opportunity for procedures, ancillary support and overall educational value. The majority of faculty (70–90%) believed that the new model improved

continuity, quality of patient care, quality of education, ability to evaluate residents, and overall work enjoyment. Patient satisfaction remained stable, but more patients reported waiting less than 15 minutes in the waiting room after the change, $p = 0.025$. Measured continuity also improved from 43% to 56% of patients always seeing the same resident. Billing increased from 77% level III before to 81% level IV after the change.
KEY LESSONS LEARNED: This resident clinic staffing model exposes residents to a more educational and overall enjoyable continuity clinic experience while improving continuity, billing and likely the quality of patient care.

SHAREPOINT — AN EFFECTIVE AND EFFICIENT METHOD TO SHARE DIGITAL MEDICAL INFORMATION RESOURCES AMONG RESIDENTS. R.J. Magliola[1]; D.C. Kaelber[2]. [1]MetroHealth Medical Center, Cleveland, OH; [2]Harvard University, Cambridge, MA. *(Tracking ID # 173151)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Residents receive information from a variety of digital sources including PowerPoint presentations, PDF files, Word handouts, emails and websites. There is no efficient way to centrally organize, share and archive this information in real-time.
OBJECTIVES OF PROGRAM/INTERVENTION: Centralize and organize digital medical information resources for residents. Facilitate near real-time sharing and archiving of digital information for residents. Improve resident communication and efficiency.
DESCRIPTION OF PROGRAM/INTERVENTION: In 2005, we adopted Windows SharePoint software to provide a digital platform to centralize information for an Internal Medicine and Pediatrics Residency program of 24 residents. SharePoint software is available as a free add-on to Windows Server 2003 and uses a familiar web-based interface to allow users to access and input digital information. Content is password protected and, therefore, HIPAA compliant and can be easily uploaded and maintained without knowledge of website (HTML) programming. Content areas on the Med-Peds SharePoint website encompass three key areas-departmental policies and practices, resident orientation information and educational resources. Departmental information includes announcements, schedules and policies. An interactive area was setup to allow discussions and to conduct on-line surveys. The resident orientation section incorporates clinical guidelines (e.g. blood exposure procedures), rotation specific information (e.g. MICU orientation manual), patient protocols (e.g. inpatient sickle cell crisis protocol) and general orientation information (e.g. intern survival handbook). Educational resources provide achieving and easy retrieval of lectures and journal articles, best practice guidelines and scholarly resources (e.g. *Rational Clinical Exam* and *Users' Guide to the Medical Literature*). A section for links to intranet and internet resources (such as call schedules and professional societies) was also created.Previous to this intervention, digital information was distributed to residents through e-mail, intranet website, and network drives. Each method was found to be inefficient for various reasons. E-mail did not offer effective archiving capability. Intranet websites needed web (HTML) programming and were difficult to update routinely, so lacked near real-time dissemination of information. Network drives were too complicated for most trainees and only adopted by a minority of residents.
FINDINGS TO DATE: The SharePoint software has become the premier means by which information is distributed to residents in the Internal Medicine and Pediatrics Department. Based on usage tracking, all residents have accessed the SharePoint system and 15 of 24 residents (63%) accessed the system in December 2006. In a survey to all residents, a majority found the Med-Peds SharePoint site very useful to them and improved their efficiency. Based on our success experience, SharePoint sites were develop for categorical pediatrics and internal medicine residency programs as well (approximately 100 additional residents).
KEY LESSONS LEARNED: Real-time sharing and archiving of digital information with SharePoint is preferable to other systems. Residents are more likely to utilize and benefit from information when it is centralized and easy to use. Web based technology, both from a creation and use perspective, can be employed to improve communication and increase department collaboration.

SIMULATION, AN EDUCATIONAL APPROACH, TO FOSTER COLLABORATIVE INTERDISCIPLINARY EDUCATION. L. Kaplan[1]; P.M. Dillon[1]; J. Cripe[1]; K.A. Noble[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173369)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Today, to meet the increasing challenges of healthcare, a more integrative approach is needed to achieve high quality, efficient and cost effective care that ultimately will improve patient care and results in positive outcomes. Assuring that students' have exposure to critical clinical experience is often a challenge. Simulation is ideal for high risk, low incidence situations. In these situations, there is little opportunity to practice with no room for error. Simulation provides students the opportunity to perfect skills through repeated practice in a safe environment.
OBJECTIVES OF PROGRAM/INTERVENTION: Collaboration was combined with simulation as a learning experience with the goal of facilitating interdisciplinary collaboration in a crisis situation. The purpose of this study was to analyze students' perceptions of collaboration, and to determine the usefulness of an interdisciplinary approach using simulation as an educational strategy.
DESCRIPTION OF PROGRAM/INTERVENTION: A pre-test post-test design was used to assess students' perceptions of interdisciplinary collaboration with a simulation learning experience. The sample was a convenience sample of third year medical students and fourth year nursing students from a large urban city university. Total participants who completed pretest were 82 (nursing students, $n = 68$ and medical students, $n = 14$). Total participants who completed post-test were 40 (nursing students, $n = 31$ and medical students, $n = 9$). Both quantitative and qualitative data were collected to describe students' perceptions of collaboration. The Jefferson Scale of Attitudes Towards Physician-Nurse Collaboration, a 15 item Likert-type scale was used with permission to obtain students' perceptions on collaboration (Hojat, et al, 1999). Demographics were obtained to describe the sample. Qualitative data were obtained with open-ended questions that provided meaning to the quantitative findings. Upon receiving IRB approval, using Laerdal's Sim Man, a human patient simulator, medical and nursing students worked together as a team in a "mock code" scenario. Data were collected prior to the simulation and again after the simulation. Descriptive statistics were used to describe the demographic data of the sample. Reliabilities were established on instrument pre and post-testing ranging from $r = 0.84$ to 0.96. Analysis of variance (ANOVA) was used to detect differences between medical and nursing students' pre/post test scores. The anecdotal data were examined using a quasi-statistical analysis with manifest content analysis.
FINDINGS TO DATE: The nursing students had higher pre-test score than the medical students reflecting a more positive attitude towards collaboration. There was an increase in medical students' mean post-test scores reflecting a more positive attitude towards collaboration. Statistically significant difference ($p = 0.05$) were seen in medical students' post-test scores for two factors, collaboration and nursing autonomy. The qualitative data analysis identified common themes of communication, teamwork and patient outcomes. The nursing students' perceptions of the nurse-physician relationship became more collaborative after this exercise.
KEY LESSONS LEARNED: The use of stimulation technology allowed a multidisciplinary collaborative educational program to be successful, and successfully changed preconceived notions that medical and nursing students had of each other and their relationships.

SYSTEMATIC OUTPATIENT SCREENING (SOS) FOR THE ELDERLY. S.L. Shaffer[1]; H. Day[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173528)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): The ACGME post-graduate medical education accreditation guidelines include requirements for geriatric medicine training, and three of the six ACGME residency program competency domains direct residency programs to go beyond the building of the resident's knowledge base to preparing residents for practice in the current health care environment. Residency program efforts to evaluate the effectiveness of geriatric curricula often focus on knowledge-based exams, and programs lack real-life assessments of medical trainees' clinical performance with the older population.
OBJECTIVES OF PROGRAM/INTERVENTION: 1.Evaluate how well internal medicine residents perform geriatric health screening in their resident continuity clinic using a novel quality assessment tool developed by the ABIM called the "Care of the Vulnerable Elderly" Practice Improvement Module (PIM). 2. Determine the effectiveness of an educational intervention targeting an area identified by the PIM.
DESCRIPTION OF PROGRAM/INTERVENTION: We conducted a pre/post-intervention quality improvement study called Systematic Outpatient Screening (SOS) for the Elderly at the University of Pittsburgh. The study included a chart review using the ABIM's "Care of the Vulnerable Elderly" Practice Improvement Module (PIM), a targeted educational intervention based on the data collected in the chart review, and a follow-up chart review using the aforementioned PIM. Individual medical residents used the PIM to review the outpatient medical records of 5–10 of their continuity clinic patients over the age of 65. Participants were divided into an educational intervention group and a non-intervention group. Both groups received the same lecture, and the intervention group alone received follow-up in the form of academic detailing over the span of one month to reinforce the information presented in the lecture. Definition of performance was based on the aggregate percentage of charts documenting completion of specific geriatric screening measures. Demonstration of $\geq 90\%$ documentation was designated "Very Good", and $\leq 30\%$ documentation was designated "Poor".
FINDINGS TO DATE: 39 subjects enrolled and completed the initial PIM. There were 17 first year and 20 second year residents. The subjects performed "Very Good" in the following areas: screening for chronic medical conditions; screening for smoking; measuring height, weight, and systolic blood pressure; documentation of medications; smoking cessation counseling; alcohol cessation counseling; and assessing if urinary incontinence is "bothersome". The subjects performed "Poor" in the following areas: screening for fall risk; hearing assessment; assessing postural hypotension; balance evaluation; rigidity testing; bradykinesia testing; preventative care with home safety evaluation and seat belt counseling; and documentation of code status and surrogate decision maker. Screening for and the initial diagnostic evaluation of falls was designated as the target area for intervention. The second PIM data collection is currently underway.

KEY LESSONS LEARNED: First and second year residents at the University of Pittsburgh performed very well in screening measures that are applicable to the general adult population, but the residents performed poorly in screening areas specific to the geriatric population. To further investigate the utility of the PIM as an educational tool for residency programs, we will compare the data collected in the follow-up PIM to that collected in the initial needs-assessment PIM.

TEACHING AND ASSESSING RESIDENTS' SKILLS IN MANAGING OPIOID ADDICTION WITH OBJECTIVE STRUCTURED CLINICAL EXAMS. S.J. Parish[1]; M.R. Stein[1]; U. Goldberg[1]; J.H. Arnsten[1]. [1]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 173596)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Opioid abuse is a significant problem in the US, and opioid abusing patients present a challenge in medical settings. Standardized patient (SP) encounters during Objective Structured Clinical Exams (OSCEs) offer skills practice by exposing trainees to realistic clinical scenarios and providing feedback.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) Teach about opioid addiction in an OSCE station 2) Evaluate residents' communication, assessment, and management skills 3) Deliver immediate feedback.
DESCRIPTION OF PROGRAM/INTERVENTION: In a five station OSCE, actors portrayed SPs with various substance abuse disorders and readiness to change stages. The opioid abusing patient was a 23-year-old precontemplative, heroin injector in acute withdrawal. Station tasks were to establish rapport, take a drug use history, diagnose and explain opioid withdrawal, and counsel an active injection drug user. Faculty observers completed a 17-item instrument assessing three domains (six communication, six assessment, and three management items) and two global items (general organization and overall performance). Residents assessed their own overall performance, and SPs provided a global satisfaction rating. All items were rated on a four-point Likert scale. Faculty provided feedback and delivered standardized teaching points.
FINDINGS TO DATE: From 2003–2006, 180 residents in an urban university hospital participated during PGY-3 ambulatory rotations. Faculty and SP scores were significantly lower for the opioid station than for the most similar station, which portrayed a precontemplative crack user with chest pain ($p < 0.001$). Faculty total and global rating scores were highly correlated ($r = .80$, $p < 0.001$), as were faculty and SP scores ($r = 0.59$, $p < 0.001$). Residents rated themselves lower (mean±sd = 2.19±.70, $p < 0.001$ for both comparisons) than faculty (2.88±.49) or SPs (2.79±.86). Residents performed better ($p < 0.001$ for both comparisons) in communication (3.14±0.53) than either assessment (2.69±0.59) or management (2.73±0.78). Residents' scores for assessing high risk behaviors (multiple sex partners, sharing needles) were lower than overall assessment scores (faculty rating 2.29±.08 vs. 2.69±.02, $p < 0.001$), and their scores for recommending appropriate treatment (harm reduction, return visit) were lower than overall management scores (2.56±.91 vs. 2.73±.78, $p < 0.001$). SPs comments reflected the same weaknessess in assessment and management skills. SPs reported that residents were judgmental about drug use and inappropriately encouraged treatment programs, while neglecting alternative approaches to withdrawal symptoms. One third (35%) of residents reported no prior exposure to a similar case. The majority (81%) stated that the degree of difficulty of the station was "just right," and 95% agreed that the educational value was moderate or high.
KEY LESSONS LEARNED: Our opioid abuse OSCE station provided important information about resident performance in this competence. Assessment and management of opioid abuse were more challenging for residents than general communication skills. However, residents need to develop skills to interact nonjudgmentally with patients who are injection drug users. Residents perceived this station to teach skills not commonly addressed in training. Faculty and SPs agreement about residents'need to improve in discussing high risk behaviors and counseling about harm reduction identified areas for curricular enhancement.

TEACHING HEALTH POLICY TO RESIDENTS. R. Gregory[1]; A. Barbour[1]; F. Mullan[1]. [1]George Washington University, Washington, DC. *(Tracking ID # 173213)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Can an intensive, one-month elective in health policy positively effect residents' attitudes towards research and teaching in health policy and increase their knowledge of specific health policy topics?
OBJECTIVES OF PROGRAM/INTERVENTION: 1) Educate residents on frequently-encountered health policy topics and equip them with specific facts and concepts applicable to daily practice as physicians. 2) Encourage critical thinking about problems at critical intersections of health care and policy and application of knowledge to daily practice. 3) Expose residents to real-world settings of policy research, advocacy, and implementation through visits to local and federal administrations, non-governmental organizations, and private and university researchers.
DESCRIPTION OF PROGRAM/INTERVENTION: Residents from a broad range of specialties (internal medicine, obstetrics and gynecology, pediatrics, emergency medicine, and psychiatry) registered for a 4-week course in health policy offered through George Washington University's Department of Health Policy. Course format includes daily small-group seminars where required reading is discussed, interactive lectures with policy experts from private, university, and governmental agencies, and "field trips" to local institutions in Washington, DC which impact local and national health policy research and implementation. Each resident must chose a topic to research and present to the class during the final week of the course. Thirty-five (35) residents have completed the course over the 18 months it has been offered (one session each fall and spring since 2005) and were surveyed regarding their health policy knowledge before and after the course as well as their attitudes towards teaching (to students, interns, peers) and future involvement in health policy research or advocacy.
FINDINGS TO DATE: Results from survey of course participants: Residents were asked to self-assess their overall knowledge of health policy. Before the course 70% indicated they had poor or no understanding. After completion of course 75% claimed good or excellent understanding. Specifically, the following percentages of participants self-assessed their knowledge of particular topics as "poor" before the course and "good" or "excellent" after completing the course: Medicare/Medicaid - 65% poor before, 55% good-excellent (0% poor) after; Access to Care - 50% poor before, 70% good-excellent (0% poor) after; Mental Health - 45% poor before, 40% good-excellent (10% poor) after; Safety/Quality of Care - 45% poor before, 60% good-excellent (10% poor) after; Role of Federal Government - 85% poor before, 50% good-excellent (0% poor) after. Likelihood of teaching health policy to students, interns, peers: Before completing course 35% unlikely, 40% likely. Afterwards, 5% unlikely, 95% likely. Before the course, 47% of residents indicated they were "likely" or "very likely" to pursue future involvement in health policy through research, teaching, or advocacy - this percentage increased to 76% after completion of the course.
KEY LESSONS LEARNED: Residents from a broad range of specialties are interested in health policy. Residents' knowledge of specific health policy topics can dramatically increase during an intensive seminar and experiential elective. Residents' attitudes towards research, advocacy, and teaching in health policy can also improve dramatically during an intensive elective.

TEACHING INTERNAL MEDICINE RESIDENTS QUALITY IMPROVEMENT TECHNIQUES USING THE ABIM'S PRACTICE IMPROVEMENT MODULES. J.L. Oyler[1]; L.M. Vinci[1]; V. Arora[1]; J. Johnson[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 172666)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Standard curricula to teach residents about quality assessment and improvement, an important component of the ACGME core competency Practiced-Based Learning and Improvement (PBLI), are lacking.
OBJECTIVES OF PROGRAM/INTERVENTION: Our goal is to implement a longitudinal curriculum using the ABIM's Clinical Preventative Services Practice Improvement Module (CPS PIM) to teach residents quality assessment and improvement.
DESCRIPTION OF PROGRAM/INTERVENTION: We have incorporated a quality assessment and improvement curriculum (QAIC), which centers on the use of the ABIM's CPS PIM, into the four one-month ambulatory rotations during the PGY2/3 years. The ABIM's CPS PIM includes resident completion of chart reviews, patient surveys and a system survey. The PIM then instructs reidents to reflect on data and develop a plan for improvement. To evaluate this curriculum, we will use: 1) the Quality Improvement Knowledge Assessment Tool (QIKAT) developed by Orginic at Dartmouth, which asks residents to assess personal QI skills and uses quality improvement scenarios to assess resident QI knowledge; 2) questions from the Community Tracking Survey, to assess resident self-rated ability to provide quality patient care; and 3) CPS PIM to help residents' self evaluate both process and outcome quality measures for their clinic patients.
FINDINGS TO DATE: From July to December 2006, 34 PGY2 residents participated in the first portion of the QAIC. The residents completed the pre-test QIKAT and a clinic satisfaction survey. The residents' each performed five patient chart reviews, asked five patients to complete the ABIM CPS PIM Patient Survey, and met with clinic leadership to complete the ABIM Systems Survey. A total of 170/170 (100%) chart reviews were performed and 130/170 (76%) patient surveys were elicited. During a formal feedback session, the residents received group level data regarding the quality of care they provided and their patient's opinions of the quality of care the clinic provided. Group level data included 18 patient demographic data points, 9 outcome measures, 49 processes of care measures and 107 systems enhancements. Outcome measures noted as potential improvement targets by the residents included BMI at goal of < 25 only 6% of the time and tobacco cessation counseling documented in 29% of relevant charts. The residents specifically highlighted documentation of height as a process measure target for improvement. Although weight was universally (96%) recorded in the charts, height was recorded only 28% of the time. Patient survey results demonstrated very low rates of patients who read nutrition labels (18%), while nearly all patients (97%) reported knowing their blood pressure. With preceptor guidance and PIM data, residents brainstormed quality improvement goals which included; teaching patients to read nutrition labels, increasing percentage of charts that had height recorded as a step to increase BMI screening, and increasing percentage of patients receiving smoking cessation counseling. Residents will pursue these goals through a structured QI project to be carried out during the second block of their ambulatory rotation which begins in January 2007.

KEY LESSONS LEARNED: The ABIM CPS PIM can be used by internal medicine residency programs to introduce quality improvement concepts into their residents' outpatient practice through encouraging practice-based learning and improvement.

TEACHING PRESENTATION SKILLS: RESURRECTION OF GERIATRICS GRAND ROUNDS AND CYCLES OF IMPROVEMENT. L.J. Morrison[1]; R.E. Roush[1]. [1]Baylor College of Medicine, Houston, TX. *(Tracking ID # 173844)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Although many physicians eventually "teach" in some capacity and are required as trainees to present clinical conferences and grand rounds, structured teaching of presentation skills during residency and fellowship training is often absent.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) Implement a formal presentation skills curriculum for geriatrics fellows in conjunction with the resurrection of the annual Geriatrics Grand Rounds requirement 2) Measure progress annually with outcomes and process data using Plan-Do-Study-Act (PDSA) cycles of continuous quality improvement (Cleghorn and Headrick, 1996)
DESCRIPTION OF PROGRAM/INTERVENTION: In Year 1 (2004–2005), a two-hour Presentation Skills curriculum was implemented in the spring and fellows received guidelines to direct preparation for their upcoming grand rounds presentation. An evaluation form for the two-hour session was collected. Based on these evaluations and observations of the process and quality of fellows' grand rounds, the curriculum and guidelines were revised. In Year 2 (2005–2006), the two-hour session was moved to the fall with content modifications. Evaluation strategies were added and guidelines were revised. Further changes were made for Year 3.
FINDINGS TO DATE: PDSA Cycle #1: In Year 1, five fellows attended the teaching session and the mean usefulness score was 4.2 on the 1–5 scale. Participant feedback suggested adding more interactive components to the curriculum. For Year 2, role play was added to the teaching session. Changes to the grand rounds guidelines included: faculty mentor requirement, specific deadlines, and checklist of steps. Changes to the evaluation approach included addition of a pre/post 15-item self assessment, fellow evaluation of the experience, and faculty evaluation of each grand rounds with creation of a Grand Rounds Portfolio. PDSA Cycle #2: In Year 2, four fellows participated with a mean usefulness score of 4.8. Participant feedback suggested expanding the session and using videotaping. For the pre/post survey (Likert scale 1–5 strongly disagree to strongly agree), average increases in responses were highest for questions concerning components of a presentation ("I know what features make an effective slide"), followed by those concerning the presentation itself ("I am a confidant speaker") and feedback ("I will seek feedback from colleagues on future presentations"), respectively. Fellows rated the overall learning experience 4.75 (1–5 not very useful to extremely useful). Faculty grand rounds evaluations were overall favorable but each fellow had presentation weaknesses needing further attention to achieve basic competence.
KEY LESSONS LEARNED: The Presentation Skills curriculum for geriatrics fellows has been successful as evidenced by high usefulness scores and notable pre/post increases in some self-assessment ratings. However, our data suggest that fellow performance can improve further. Serial PDSA cycles have been a useful model for directed, annual revision of our curriculum, and we will continue this into Year 3 (and PDSA#3) with expansion to two sequential, two-hour teaching sessions using microteaching techniques with videotaping of presenter and moderator role play followed by group review and feedback (Roush and Holcomb, 2000).

TEAM-BASED LEARNING IN AN INTERNAL MEDICINE RESIDENCY PRIMARY CARE CURRICULUM. S.A. Call[1]; N. Kubiak[2]; P. Haidet M.D.[3]. [1]Virginia Commonwealth University, Richmond, VA; [2]University of Louisville, Louisville, KY; [3]Baylor College of Medicine, Houston, TX. *(Tracking ID # 173945)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Implementing adult learner-centered instructional methods in the delivery of core content curriculum at the graduate medical education level is challenging. Team-based learning is a small-group teaching strategy that promotes active participation of learners while covering desired content effectively and not utilizing increased faculty resources. The approach emphasizes individual and group accountability.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Implement a graduate medical education primary care curriculum taught in a team-based learning format 2. Engage learners in a team-based approach to learning, fostering accountability for learning and an appreciation for the importance of effective teamwork 3. Enhance learners' satisfaction with core curriculum conferences while effectively delivering core material.
DESCRIPTION OF PROGRAM/INTERVENTION: We implemented a team-based learning strategy in a series of core Internal Medicine resident primary care conferences. In a randomized controlled trial to assess the effectiveness of the teaching strategy, residents were randomized to either team-based learning or traditional didactic lectures. Two facilitators were trained in the teaching technique. The same instructor taught the team-based learning session and the didactic session for each topic. Several outcome measures were used to assess effectiveness of the team-based learning strategy as compared with traditional lecture format: 1) knowledge of general internal medicine topics covered - assessed by a multiple-choice knowledge assessment pre- and post-intervention, 2)satisfaction with teaching format - learner survey, 3)attitude towards teamwork - validated survey instrument, 4)learner engagement - validated survey instrument, 5)learner self-rated competency in content areas.
FINDINGS TO DATE: Fifty-five residents participated in the randomized controlled trial assessing effectiveness of the teaching strategy. For the 38 residents completing both a pre- and post-intervention knowledge assessment, there was a significant increase in knowledge after delivery of the core curriculum material (mean increase in % correct = 5.41%, p 0.019); however, there was no statistically significant difference in knowledge assessment score between the two groups either pre- or post-intervention. Similarly, self-assessed competency ratings in the core curriculum topic areas all increased pre- to post-intervention but again there was not statistically significant difference in the increase in self-rated competency between groups. We also did not observe statistically significant differences in responses to previously validated questions on a survey assessing a learner's attitude towards teamwork between the two groups, either pre- or post-intervention. Data from the engagement survey, however, did identify that team-based learners felt more engaged than did traditional learners throughout the study (p values on multiple survey questions and in multiple sessions less than 0.05).
KEY LESSONS LEARNED: It is feasible to implementing a team-based learning strategy in an Internal Medicine core primary care conference curriculum. The teaching strategy was as effective as traditional lecture in improving knowledge in the content areas and learner-rated competence. As anticipated, team-based learners feel more engaged in the learning session although they do not rate the value of working in a team higher than individuals who are not engaged in team-based learning.

THE EFFECTIVENESS OF MULTIDISCIPLINARY PRIMARY CARE MORNING REPORT. S.U. Rehman[1]; F.N. Hutchison[2]. [1]Ralph H. Johnson VA Medical Center/Medical University of South Carolina, Mt. Pleasant, SC; [2]Medical University of South Carolina/Ralph H. Johnson VA Medical Center, Charleston, SC. *(Tracking ID # 171888)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): IOM recommends a multidisciplinary approach to patient care. Despite the increasing numbers of health care professionals who recognize the benefits of a multidisciplinary approach to patient care, this philosophy is rarely taught to students/residents. Physicians teach medical students and pharmacists teach pharmacy students. "Morning Report" (MR) has been a cornerstone of training programs. The review of the published literature, however, suggests that this will be the first description of a "MR" offering a multidisciplinary approach to medical education.
OBJECTIVES OF PROGRAM/INTERVENTION: The addition of a pharmacist to the multidisciplinary team has been shown to improve the effectiveness and safety of therapy, improve patient care and decrease health care costs. Objectives of our educational interventions are: 1. To determine the teaching effectiveness of Pharm D's contribution in Primary Care Morning Report. 2. To determine the preference of learners regarding the format of educational activity i-e. "prepared and worked up cases" vs "unprepared cases" (as in the case of traditional "inpatient Morning Reports").
DESCRIPTION OF PROGRAM/INTERVENTION: Multidisciplinary Primary Care Morning Report has been established at the RHJ VAMC in Charleston, SC. These one-hour sessions are conducted once weekly for all trainees who are rotating through primary care clinical training program. Participants include residents and interns in medicine, neurology, and psychiatry; pharmacy residents; and medical, pharmacy, and physician assistant students. Supervising faculty includes attending physicians and pharmacists. The residents and students of the college of medicine and college of pharmacy present patient cases focusing on topics pertinent to primary care. A case based, interactive learning format is utilized and is often supplemented with brief didactic presentations. Physicians provide insight regarding physical assessment and differential diagnosis. Pharmacists provide insight regarding drug interactions, indications, contraindications, doses, and cost of medications as it relates to the clinical presentation. Respondent's opinion towards the primary care morning report is measured on a five-point Likert scale by using 14 items in the survey questionnaire.
FINDINGS TO DATE: 400 subjects completed the survey. Most respondents found Pharm D's contribution to have a great educational value (94%, $p < 0.0001$); most repsondents were in favor of a prepared case presentation compared to sponntaneous case presentation (93%, $p < 0.0001$). Overall participants' satisfaction on a five-point scale has averaged 4.7 on the 5-point Likert scale, which represents ratings between very good and outstanding. Logistic regression analyses are being performed and will be presented at the meeting.
KEY LESSONS LEARNED: The program has been very popular among the learners. The Pharm D's contribution is found to be statistically significant. Over 90% of residents and students rated features of the conference as very helpful or extremely helpful (equivalent to a 4 or 5 on a 5-point Likert scale), including the learning atmosphere, the case based interactive teaching format, knowledge of presenters, the practicality of the cases, discussion of evidence base literature, and the ability of conference to meet personal learning needs and to cover topics not covered elsewhere in their training. Seventy percent participants wrote in their comments to add more such courses in their curriculum.

THE EFFECTS OF AN INTERN CURRICULUM ON THE QUALITY OF HOSPITAL DISCHARGE SUMMARIES. N.S. Mohta[1]; E.E. Barsky[1]; P. Vaishnava[1]; R. Ishizawar[1]; J.L. Schnipper[1]. [1]Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 173731)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): The discharge summary is critical to safe transitions from the inpatient to the outpatient setting. However, there are few educational models on how best to teach housestaff, who write the majority of discharge summaries in academic medical centers, to write concise, yet complete discharge summaries.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Develop a focused educational curriculum on how to write an effective discharge summary. 2. Assess interns' baseline practices and knowledge of the elements of a well-written discharge summary. 3. Assess the impact of an intern curriculum on the quality of discharge summaries using explicit criteria.
DESCRIPTION OF PROGRAM/INTERVENTION: In July 2005 senior residents led a one-hour, small-group, interactive session on transitions of care, half of which was devoted specifically to the discharge summary. The case-based discussion focused on the key elements and organization of an effective discharge summary, as defined in a national workshop on ideal hospital discharges. Interns were surveyed immediately prior to the curriculum regarding the frequency with which they included certain key elements of discharge summaries, and immediately after regarding what they had learned. We developed an abstraction tool to objectively evaluate the inclusion of key data elements such as medication changes and follow-up plan. To measure the durable effects of the intervention, three physicians explicitly reviewed a sample of discharge summaries written by end-of-year interns in June 2005, prior to the new curriculum, and again in June 2006. Results were dichotomized and analyzed using Fisher's exact test. The curriculum content and evaluation tools will be made available to those interested in similar initiatives.
FINDINGS TO DATE: Only 47% of the interns surveyed reported having received prior instruction on how to complete a discharge summary. Only 38% reported always writing a summarized (as opposed to complete) version of the admission history and physical. Only 56% reported always including medication changes in their discharge summaries. When surveyed after the session, the two most common lessons learned were (1) the importance of writing concise discharge summaries containing information pertinent to continuing care and (2) including pre-admission medications and highlighting medication changes at discharge. Of the 28 metrics evaluated in the explicit review of 80 discharge summaries, two were found to be statistically different after the intervention compared with baseline: pertinent admission history and physical succinctly stated (80% vs. 58%, $p = .05$); and preadmission and discharge medications documented (72% vs. 36% $p = .002$). No changes were found in the following: documentation of mental status at discharge when relevant (12% vs. 11%); documentation of pertinent lab results at discharge (45% vs. 50%); PCP contact information and follow-up appointments and plan clearly stated (42% vs. 36%). Overall, 50% vs. 56% ($p = 0.66$) of summaries reviewed met criteria for being of high or very high quality.
KEY LESSONS LEARNED: A focused educational curriculum was associated with improvements in certain key metrics, but overall the quality of discharge summaries did not change. Areas for improvement include emphasis on clinical status at discharge and specific follow-up plans. A focused intern educational session is helpful, but improving the quality of discharge summaries will likely require additional interventions, including ongoing, individualized feedback.

THE HARVARD MEDICAL SCHOOL CAMBRIDGE INTEGRATED CLERKSHIP-2 YEARS' EXPERIENCE. D. Hirsh[1]; M. Batalden[1]; C. Bernstein[1]; P.A. Cohen[1]; D. Elvin[1]; G. Martha[1]; E. Gaufberg[1]; S.V. Gaufberg[1]; A. Ghosh[1]; R. Meyer[1]; K. Shaffer[1]; D. Shtasel[1]; W.A. Gutterson[2]; B. Ogur[1]. [1]Harvard Medical School and Cambridge Health Alliance, Cambridge, MA; [2]Cambridge Health Alliance, Cambridge, MA. *(Tracking ID # 173661)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Can students learn all core disciplines longitudinally in the principal clinical year?
OBJECTIVES OF PROGRAM/INTERVENTION: To assess and continuously improve a longitudinal, integrated program for the principal clinical year.
DESCRIPTION OF PROGRAM/INTERVENTION: The Harvard Medical School-Cambridge Integrated Clerkship (HMS-CIC) teaches core Medicine, Surgery, Pediatrics, Obstetrics-Gynecology, Psychiatry, Radiology, and Neurology in an integrated, longitudinal experience instead of traditional block rotations. Students' cohorts of continuity patients and carefully chosen acute care encounters provide the experiential context for the year-long curriculum, structured around students caring for patients through "whole illness episodes." From early in the illness, students participate in evaluation, problem formulation, and therapeutic decision-making, then follow the patients across disciplines and venues of care. Faculty preceptors in each discipline work with students longitudinally in ambulatory clinic settings throughout the year. Attending rounds dedicated to students' inpatients provide a venue for learning acute care. A case-based tutorial program integrates clinical, basic, and social science learning, radiology, pathology, and patient simulator experiences. We compared HMS-CIC students with control students in traditional third year block rotations. We compared scores on content exams (National Board of Medical Examiners' Shelf Exams and the NBME Comprehensive Clinical Skills Self Assessment), on a skills exam (the HMS 4th year OSCE) and on attitudes (surveys). We also compared HMS-CIC students with the rest of the HMS third-year class on NBME Shelf exams and the 4th year OSCE.
FINDINGS TO DATE: HMS-CIC students and traditional students did not differ significantly on MCAT Step 1 scores, future practice choices, 2nd year OSCE or attitudes toward patient care. End of year surveys demonstrated that HMS-CIC students were more likely to see inpatients before diagnosis and after discharge than traditional controls, and more commonly received feedback from faculty than from residents, demonstrating that the program achieved 2 of its fundamental objectives. In measures of content knowledge, combined Shelf exams scores did not differ significantly between HMS-CIC students and controls. HMS-CIC students scored significantly higher than controls on the CCSSA during the 1st year, and higher, but not statistically significantly so during the 2nd year. On the fourth year OSCE, HMS-CIC students scores exceeded the controls and the rest of the HMS class both years, but only achieved statistical significance the first year. From survey results, HMS-CIC students in year 1 felt equally well prepared and, in year 2, better prepared than controls to practice evidence-based medicine. In both years, HMS-CIC students were more satisfied with their learning environment than controls. In measures of professionalism, HMS-CIC students felt more prepared than controls, including: to be truly caring with patients, to deal with ethical dilemmas, to see how the social context affects patients, to involve patients in decision-making, to relate well to a diverse population, and to be self-reflective practitioners.
KEY LESSONS LEARNED: Students in a year-long, longitudinal clerkship structured to teach all core disciplines through longitudinal care performed at least as well in measures of content knowledge, found their experience more satisfying and believed they were better prepared in measures of professionalism.

THE IMPACT OF AN EVIDENCE-BASED MEDICINE MORNING REPORT ON RESIDENT USE OF THE MEDICAL LITERATURE. S.R. Herrle[1]; R. Buranosky[1]; B. Lee[1]; M. Cunnane[1]; R. Granieri[1]; E. Weinstein[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173092)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Recently there has been emphasis on increasing the use of evidence-based medicine and the medical literature to guide clinical decisions and patient care. Morning report could serve as a forum to increase such practices amongst internal medicine residents.
OBJECTIVES OF PROGRAM/INTERVENTION: To examine how an evidence-based medicine morning report affects internal medicine residents' use of the medical literature.
DESCRIPTION OF PROGRAM/INTERVENTION: During a six month period, all second and third year residents at a large, university-based hospital who were assigned to a general medicine ward rotation that included a daily evidence-based medicine morning report ($n = 45$) completed an eleven-item questionnaire assessing their use of MEDLINE and UpToDate both at the beginning and at the end of their rotation. The questionnaire included questions on the frequency of use, comfort level with use, and impact of use on patient care. Each morning report session consisted of a single case presentation followed by a discussion of the case by the group in attendance. Each report session concluded with the group generating a single clinical question based on the patient presentation and resulting discussion. One resident was assigned to answer the question using MEDLINE while a second resident was assigned to answer the question using UpToDate. After performing the literature searches, the residents reported their findings to the group at a later session.
FINDINGS TO DATE: Residents used MEDLINE a mean of 6.7 times per week (95% CI = 4.8–8.7) prior to participating in the evidence based morning report compared to 8.0 times after participation (95% CI = 5.9–10.1, $p = 0.089$). Residents reported using UpToDate a mean of 20.3 times during their previous general medicine ward rotation (95% CI = 15.8–24.8) compared to a mean of 20.9 times at the conclusion of the study (95% CI = 16.7–25.1, $p = 0.39$). After participation in this morning report format, residents reported feeling more comfortable using MEDLINE databases ($p = 0.0026$). However, they did not feel any more comfortable using UpToDate ($p = 0.935$). Residents also did not feel that there was a significant change in how their use of MEDLINE or UpToDate influenced their patient care.
KEY LESSONS LEARNED: Residents used UpToDate more frequently than MEDLINE when obtaining clinical information related to the care of their patients. Residents used MEDLINE more frequently after participating in the evidence-based morning report. This difference approached statistical significance ($p = 0.089$). Continued participation in morning reports with emphasis on using the medical literature could lead to increased use of MEDLINE databases by residents.

THE IMPACT OF STANDARDIZED PATIENT INTERVIEWS ON THE DEVELOPMENT OF CLINICAL REASONING SKILLS IN THE PRE-CLINICAL YEARS. S. Zern[1]; P. Duke[1]; D. Novack[1]. [1]Drexel University, Philadelphia, PA. *(Tracking ID # 173631)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Drexel University College of Medicine's problem-based curriculum uses patient cases as the basis for learning the basic sciences and clinical reasoning. However, a weakness was noted by the faculty with student difficulty bridging hypothesis generation on paper cases into a Standardized Patient interview at the end of second year.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) To enhance students abilities to integrate clinical reasoning skills into their medical interviewing 2) To have clinical faculty model clinical reasoning to pre-clinical medical students 3) To teach and enhance student medical interviewing skills.
DESCRIPTION OF PROGRAM/INTERVENTION: Drexel University College of Medicine (DUCoM) has two curricular tracks, including the Program in Integrated Learning (PIL), a problem based track consisting of 43 students in six small groups. Also at DUCoM, we have a well-established standardized patient (SP) program. We trained SP's to portray our previous paper cases (five cases during the first two years of the curriculum). We recruited clinical faculty to serve as facilitators for these

sessions and met with these faculty before each of these small group sessions to ensure consistency of teaching across groups. These sessions occur every 10 weeks to provide reinforcement of these skills. One student at a time interviews the SP with interruptions or "time-out" periods called by the faculty or student. While the student is interviewing the SP, another student writes down pertinent information on the white board. During the time-outs the faculty and students engage in discussion on the communication skills used by the student, information obtained, hypotheses generated as well as a plan to test those hypotheses while interviewing.
FINDINGS TO DATE: The evaluative process consisted of a review of the students' mid-year faculty observed history and physical exam, as compared to the results of the previous year's assessment in which students learned through paper cases. To assess students' performances we assigned students a score of one point every time they asked predetermined pertinent positive, pertinent negative and associated symptoms. The identical case from the previous year in which students did not have these SP exercises to promote clinical reasoning was used as a control. In 2006 when students had the SP exercises throughout the year the mean score (n = 43) is 4.30(out of the total of 10 questions), SD 2.28, as compared to 2005 with a mean (n − 38) of 2.76(out of 10 questions), SD 2.34. This statistically calculated to a P = 0.004. Although this reflected a small class size, this is significant, with suggestion that this intervention helps students improve clinical reasoning skills.
KEY LESSONS LEARNED: By using standardized patients in place of paper cases, having students interview with think out loud discussion and providing clinical faculty support we saw overall improvement in the clinical reasoning process during the medical interview.

THE NEIGHBORHOOD HEALTH EXCHANGE: A NOVEL METHOD TO TEACH RESIDENTS TO TEACH PATIENTS. B.H. Freed[1]; T. Baker[1]; J. Kleczek[1]; K. Tartaglia[1]; J.W. Tang[1]; V. Arora[1]; M. Schwartz[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 172643)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Despite the focus on improving health literacy and patient understanding of their diseases, few residents are formally educated on how to counsel their clinic patients about preventive health and management of chronic diseases. Incorporating formal teaching of patient counseling into the current constraints of resident continuity clinics may pose additional challenges.
OBJECTIVES OF PROGRAM/INTERVENTION: Our objectives are to develop a curriculum to teach residents how to effectively educate patients about prevention and management of chronic diseases, assess the effectiveness of the curriculum on resident comfort and ability to deliver patient education in a community-based setting, and evaluate the effect of the curriculum on patient knowledge and perceived self-efficacy for promoting healthy behaviors and managing chronic diseases.
DESCRIPTION OF PROGRAM/INTERVENTION: We created the Neighborhood Health Exchange, an educational intervention, targeted at both internal medicine residents and members of the surrounding South Side of Chicago community. Internal medicine residents will receive educational seminars focused on topics identified as low confidence areas on our initial needs assessment. Residents will then participate in a field practicum to solidify their skills. These sessions or "exchanges" will involve leading a discussion about heart health and diabetic self-care for interested members at various venues throughout the surrounding community. The exchanges will be coordinated via the Office of Community Affairs, directed by Ms. Michelle Obama, or in partnership with the Hyde Park Neighborhood Club, directed by Peter Cassel. Community members will be asked to evaluate the effectiveness of each speaker on a structured feedback assessment.
FINDINGS TO DATE: To target our resident educational curriculum, we are conducting a baseline assessment of resident comfort level, attitudes toward, and practice behaviors pertaining to patient education regarding common disease processes. To date, 75% (88/118) of internal medicine residents at the University of Chicago Hospitals have completed the survey. Only a minority (25%) of residents have ever received any prior education in patient self-management. Yet, prior education in patient self-management was associated with improved comfort level and frequency of counseling patients in the areas such as the DASH diet (72% vs. 47%, p = 0.004). Despite this, perceived effectiveness of their diet and exercise counseling was low (< 15%) regardless of prior education. The most important barrier cited by residents was lack of time (80%). A pilot study using a convenience sample of 25 patients who presented to the urgent care clinic confirms the need to improve baseline understanding of our patient's knowledge of chronic disease processes. Patients were asked to define diabetes, hypertension, and cholesterol, how it affected their health, and how they can prevent or treat it. Sample responses such as "hypertension is when you're accelerated and high strung" and "diabetes is when your blood count is too high" highlight an overwhelming lack of knowledge regarding common diseases.
KEY LESSONS LEARNED: Our preliminary data confirm the need for resident education in patient counseling and the need for improving patient understanding of the fundamentals of their chronic diseases and methods for managing them. Through the Neighborhood Health Exchange, we hope to provide residents with a novel way to gain this experience, while enhancing their understanding of the community in which their patients live.

THE USE OF A REFLECTIVE WRITING BLOG TO ENHANCE LEARNING AND STUDENT PROFESSIONAL DEVELOPMENT DURING THE BASIC MEDICINE CLERKSHIP. K. Chretien[1]; E. Goldman[2]; C. Faselis[1]. [1]Veterans Affairs Medical Center, Washington, DC; [2]George Washington University Graduate School of Education and Human Development, Washington, DC. *(Tracking ID # 172203)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Reflection enhances the development of professional competence and is critical to learning from experience. Many medical schools have employed reflective writing programs to promote humanism and empathy in care giving, as well as to promote skill in narrative medicine. While positively received by medical students, these reflective writing programs could be strengthened by application of sound adult learning principles such as self-directed learning, integration with clinical work, effective facilitation, and the sharing of experience among peers for maximal educational impact.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) During the basic medicine clerkship, introduce a novel approach to eliciting reflection that is based on adult learning principles. 2) Promote the development of humanism, self-awareness, professionalism and empathy through a supportive community of peers and instructor mentoring. 3) Provide an enjoyable and practical complement to the curriculum.
DESCRIPTION OF PROGRAM/INTERVENTION: A private web-based reflective writing blog was piloted for third-year medicine clerkship students undergoing a four-week rotation at an academic teaching hospital. 24-hour access was available. During student orientation, guidance on reflective writing was given, and internet-based resources on reflective writing provided. Students were required to write at least two reflective posts during their rotation, length and subject per students' discretion in order to promote self-directed learning. To foster group exchange and experiential learning, students were encouraged to read and provide feedback on each other's posts. Instructor mentoring feedback comments were given with each post, stimulating further reflection with directed questioning and reinforcing positive examples of professionalism. Students could select an "anonymous" user name to create a safe environment for sharing personal reflections, although the instructor remained privy to student identity. Participation was required, but not graded.
FINDINGS TO DATE: During this initial pilot, 7 students participated. Students' blog posts explored topics of professionalism, the patient-physician relationship, the medical student role, empathy, and death and dying. Most posts adequately demonstrated reflective practice. For those that did not, the instructor's comments were able to stimulate reflection, as evidenced by elaboration of thoughts in subsequent comments. Student feedback to others was supportive. Evaluation of the activity using anonymous surveys that assessed attitudes on a 5-point Likert scale and group feedback sessions were similar. All students enjoyed writing posts (mean = 4.14, 1 = strongly disagree, 5 = strongly agree) and reading their classmates' posts (mean = 4.43). All would choose this activity again if it were available (mean = 4.14). Students felt that the class blog enhanced their educational experience on their medicine clerkship (mean = 4.00). The blog activity and data collection are ongoing. Future plans include applying qualitative research methods to obtain detailed student feedback and expanding to multiple clerkship sites.
KEY LESSONS LEARNED: A class reflective writing blog, grounded in adult learning theory principles, is an effective tool in stimulating and integrating reflection into the basic medicine clerkship. Through this interactive and novel approach, students are able to share their experiences with the instructor and each other in a safe and supportive environment. Students participating in this activity found it enjoyable, worthwhile and enriching.

THEMES OF LONGITUDINAL LEARNING. B. Ogur[1]; N. Baumer[1]; C. Casey[1]; M. Graubard[1]; L. Podgurski[1]; J. Radesky[1]; J. Siegel[1]; M. Tang[1]; W.A. Gutterson[1]; D. Hirsh[1]. [1]Harvard Medical School, Cambridge, MA. *(Tracking ID # 172849)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): How does following patients longitudinally impact third-year medical students' learning?
OBJECTIVES OF PROGRAM/INTERVENTION: To understand the value in anchoring third-year students' clinical education in the longitudinal care of a cohort of patients.
DESCRIPTION OF PROGRAM/INTERVENTION: The HMS Cambridge Integrated Clerkship (HMS-CIC) is a complete redesign of the third year, structured to teach all core disciplines longitudinally. The foundation for the year-long clerkship is each student's cohort of continuity patients and carefully chosen acute care encounters.. These clinical experiences allow students to follow patients through "whole illness episodes." Students meet patients early in their illness, participate in initial evaluation, problem formulation, and therapeutic decision-making, then follow the patient's clinical course and experience of the illness across disciplines and venues of care. A focus group of HMS-CIC students and faculty analyzed the major themes of learning through the longitudinal care of patients. Students' narratives of their most meaningful longitudinal relationships with patients are presented to illustrate these themes.
FINDINGS TO DATE: Students believed that longitudinal patient care fostered: 1) intellectual and multidisciplinary inquiry, as "the patient was the true site of integration" 2)improved patient care, with students bridging gaps between patients and providers and among venues of care 3)a fuller perspective on the illness course in both chronic and acute settings 4)insight into social determinants of illness and recovery 5)understanding the strengths and weaknesses of the healthcare delivery system, as seen from the patient's perspective 6)patient advocacy 7)student empowerment, as students uniquely and authentically contributed to patients' care 8) Preservation of idealism as students bore witness to patients' experiences over time. 9)An experiential context for longitudinal mentoring, as faculty members responsible for the patients' care were able to serially assess and guide students' developmentally appropriate acquisition of knowledge and skills throughout the year Above all, longitudinal patient care fostered deep emotional connections with patients and instilled a powerful sense of duty and commitment as students engaged tirelessly in the care of and learning about "their" patients.

KEY LESSONS LEARNED: Longitudinal patient care is a model for teaching in the principal clinical year that provides students with a structure for optimal learning, both of the content knowledge and the core professional skills of doctoring.

USING COMPUTER-BASED, SELF-DIRECTED MODULES AND COLLABORATION WITH A CERTIFIED LABORATORY TECHNICIAN TO TEACH FIRST-YEAR RESIDENTS HOW TO INTERPRET PERIPHERAL BLOOD SMEARS AND HOW TO EVALUATE PATIENTS WITH COMMON HEMATOLOGICAL CONDITIONS. L.R. Triano[1]; C. Solomito[2]; S.J. Huot[1]. [1]Yale University School of Medicine, New Haven, CT; [2]Waterbury Hospital Health Center, Waterbury, CT. *(Tracking ID # 172998)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Mastery of the approach to the evaluation and diagnosis of common hematological conditions is essential to the practice of primary care and general internal medicine. In addition, the Accreditation Council for Graduate Medical Education (ACGME) requires that residents develop competence in interpretation of peripheral blood smears. Review of the primary care internal medicine residency curriculum at our institution demonstrated that topics in hematology were covered to a lesser extent than topics in other areas of internal medicine during reports, conferences and other academic activities. An informal survey of residents indicated that many did not feel as comfortable with topics in hematology compared to other diseases.
OBJECTIVES OF PROGRAM/INTERVENTION: (1) Improve the consistency of teaching of common hematological conditions to first-year residents through computer-based, self-directed learning modules and hands-on laboratory experiences (2) Teach first-year residents how to prepare and interpret a peripheral blood smear with normal blood cell morphology and to recognize peripheral smear findings of common hematological conditions (3) Broaden our teaching resources through collaboration with laboratory personnel.
DESCRIPTION OF PROGRAM/INTERVENTION: We created a computer-based module consisting of a self-directed tutorial that reviews normal blood cell morphology and function, as well as a structured approach to the evaluation of anemia. The tutorial also includes interactive clinical cases with questions and immediate feedback highlighting key learning points. The tutorial is complemented by a second activity during which the residents attend a hands-on session led by a certified hematology laboratory technician. Residents are shown the technique for preparing and interpreting a peripheral blood smear, and using a teaching microscope, residents review peripheral smears representing common hematological conditions with the technician. At the end of the module, participants complete a survey and provide feedback about the experience. First-year residents are scheduled to participate in the module during a non-call rotation.
FINDINGS TO DATE: Residents began participating in the curriculum in October, 2006, and to date seven of 20 (35%) first-year residents (categorical plus preliminary) in the primary care internal medicine residency program have completed the module. All twenty residents (100%) have been scheduled to complete the module before the end of the academic year. Feedback from participants has been uniformly positive. Residents were able to identify specific learning points from both the tutorial and laboratory sessions. Residents also reported that they felt more comfortable interacting with the hematology laboratory staff after completing the module and that they were more likely to review peripheral smears on their patients. Residents also indicated that they would use the computer-based tutorial as a reference when evaluating patients with anemia or an abnormal complete blood count.
KEY LESSONS LEARNED: A combination of self-directed and hands-on activities is an effective approach for teaching first-year medicine residents about common hematological diseases and may be applicable to other content areas. Trained laboratory personnel have unique expertise and represent an important educational resource for residency training programs.

USING DIABETIC GROUP VISITS TO TEACH SUPPORT OF PATIENT SELF-MANAGEMENT. J.K. Mavromatis[1]; J.J. Zreloff[1]; K. Matthews[1]. [1]Emory University, Atlanta, GA. *(Tracking ID # 172265)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Is a program of diabetic group visits effective for teaching residents and faculty the skills of support of patient self-management and the elements of The Chronic Care Model?
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Teach learners The 5 A's Model for support of patient self-management and expose them to The Chronic Care Model. 2. Use the group visit format for learning and evaluation. 3. Use the Mini-clinical Exam of Self-management support to guide evaluation of resident performance.
DESCRIPTION OF PROGRAM/INTERVENTION: A diabetic group visit program was initiated in December, 2005. Its aim was to improve clinical outcomes and serve as a format to teach chronic illness care. The learner population was 10 Internal Medicine continuity residents and 9 faculty preceptors. A didactic session on self-management support was given to faculty, followed by a self-management support role-play workshop for all learners. The 5 A's construct for interviewing to promote behavioral change was taught: assess, advise, agree, assist and arrange. 1 to 3 residents participated in each of 8 group visits. A mini-clinical exam (mini-CEX) guided evaluation of resident skill in supporting patient self-management (J Bowen). The program evolved during implementation and specific learning objectives and roles were solidified after group visit 6. Faculty reviewed The 5 A's Model and the Mini-CEX for Self-management Support with residents in clinic prior to the group visit. Resident roles in the group included: discussion of the didactic topic, leading a group review of patients' disease registry data and medication lists, and facilitation of health management goal and action plan sharing. Residents were to adapt the 5 A's model to group format. A nursing faculty member was assigned as observer and to provide feedback based on the Mini-CEX.
FINDINGS TO DATE: 70% of residents and 33% of faculty have participated in group visits. All faculty and 56% of residents have been exposed to The Chronic Care Model through curriculum developed in this program's context (50% of faculty and 30% of residents at baseline). All learners have received teaching on support of patient self-management (10% of residents and 22% of faculty at baseline). 70% of residents have been evaluated with the Mini-CEX for Self-management Support. Of these, 57% were assessed based on participation in a group visit. 33% of preceptors have used the Mini-CEX to evaluate a resident's effectiveness in providing self-management support. In part, because of its use in this program for population management, decision support, and patient feedback, the skill of using a disease registry has spread to 90% of residents and 44% of faculty. Resident participants in the group visit program evaluated highly, rating it an average of 4.6 on a scale 1 (least useful) to 5 (most useful) as a learning experience.
KEY LESSONS LEARNED: Through a program of diabetic group visits learners were educated about The Chronic Care Model and support of patient self-management. Teaching these concepts is most effective when reinforced in various settings. This program used a didactic session, an interactive workshop and one-on-one instruction of residents prior to participation in a group visit. With this curriculum, along with careful framing of learning objectives and evaluation with The Mini-CEX for Self-management Support, residents who completed this program demonstrated their ability to understand and deliver optimal chronic illness care.

UTILIZATION OF AMBULATORY MEDICAL CLINIC FOR MEDICAL SPECIALTY EDUCATION. J.M. Ross[1]. [1]Lehigh Valley Hospital, Allentown, PA. *(Tracking ID # 172525)*

STATEMENT OF PROBLEM OR QUESTION (PREFERABLY ONE SENTENCE): Can resident education and patient access to care be improved by having a specialist supervise the specialty cases that present to ambulatory medical clinic?
OBJECTIVES OF PROGRAM/INTERVENTION: 1) Development of a new model of medical clinic education with the direct supervision of rheumatic medical clinic cases by a rheumatologist. 2) Assessment of improvement in access to specialty care delivered by this new model.
DESCRIPTION OF PROGRAM/INTERVENTION: An education model was developed utilizing an academic rheumatologist for direct supervision and education concerning rheumatic cases seen during internal medicine resident's clinic. The rheumatologist attended each resident's clinic monthly and supervised patients scheduled specifically for rheumatology and also non-scheduled rheumatic cases. Assessment of this educational experience included testing of general rheumatology knowledge with multiple-choice questions, an annual assessment of overall resident impression and assessment of utility of the experience using a 5 point scale. This assessment was performed at baseline and at one year. The cases seen in rheumatology clinic and in this medical clinic model were compared in regards to wait time, number of patient no shows, number of visits, and diagnoses.
FINDINGS TO DATE: PATIENT VISITS: There were 49 sessions attended by the rheumatologist over 16 months. 143 patients including 113 scheduled patients with rheumatology issues were seen and 12 of these cases were followed over time giving residents experience of continuity of care of rheumatic disorders. One hundred new patients were seen. Cases encompassed all aspects of rheumatology with the most common diagnoses being rheumatoid arthritis, osteoarthritis and soft tissue rheumatism. Forty four different residents were supervised in this model including 23 without previous rheumatology rotation experience. EDUCATIONAL ASSESSMENT: At baseline the majority of the first and second year groups of residents were slightly comfortable with rheumatic patients but scored poorly on basic rheumatology questions. On repeat assessment each of the resident groups demonstrated improvement in basic knowledge including those residents without a previous rheumatology rotation experience. They also reported an improvement in their level of comfort in dealing with rheumatic patients and performing arthrocentesis. The overall resident impression was that this model provided a useful clinical and educational experience. ACCESS TO CARE OUTCOMES: The show rate in this clinic was 88% for new patients. One hundred new patients were seen and 35 consultations were dictated by the rheumatologist. Waiting time for patient seen with this program was 0–40 days. This was compared to rheumatology clinic where the waiting time for a consultation was 18 months. The show rate for rheumatology clinic was 45% (40) for first time visits and 65% (165) for return patients.
KEY LESSONS LEARNED: This is the first study assessing the effects of providing specialist supervised care during resident's medical clinic. This study had positives effects of improving rheumatology education of medical residents and also improved patient access and care of rheumatic disease. Similar programs could be initiated by other medical specialties with similar results of improvement in resident education and patient access to care.

INTERACTIVE RESOURCES IN MEDICAL EDUCATION

AN ONLINE EDUCATIONAL MODULE TEACHING LEGISLATIVE ADVOCACY TO MEDICAL STUDENTS: THE CU-LEADS PROGRAM. S. Wong[1]; S. Federico[1]; M.A. Earnest[1]; C.S. Kamin[1]; L.J. Adams[1]; B. Steve[2]. [1]University of Colorado Health Sciences Center, Denver, CO; [2]University of Colorado, Denver, CO. *(Tracking ID # 173639)*

URL AND LOG IN INFORMATION: http://cophin.uchsc.edu/educational_programs/culeads/index.asp Logon and instructions are self-explanatory from the website.
BACKGROUND: The legislative process needs input from health care professionals yet few health care professionals are facile with the necessary skills to do so. The intended audience includes medical students, residents, and health care professionals interested in learning about legislative processes at the state level. Objectives: 1) Introduce medical students to the legislative process 2) Simulate the development and passage of a bill that directly relates to health care 3) Demonstrate the complexities of legislation and discuss effective strategies.
CONTENT: The program presents a practicing physician who identifies a barrier to achieving adequate vaccination in his practice. Students are led through the module by a series of questions and tasks. To complete the module students must develop a fact sheet outlining the problem and key talking points. In order to build the fact sheet, students are referred to a series of active websites with facts relevant to the topic. They develop an actual bill, develop a coalition of supporters and choose among key lawmakers for sponsorship. Students then follow the bill through committees, address and negotiate key compromises with opponents and the media. If appropriate choices are made, students complete the module with the successful passage of their bill. The class as a group then discusses each step of the module with an expert facilitator who discusses each step of the process.
DESIGN: The site consists of text, photographs, and weblinks. Students follow a narrative and select from a menu of choices to advance through the exercise. They receive feedback on the implications of each choice and in many cases can select hyperlinks to websites to collect additional information. In order to complete the entire module, they must navigate each of the steps and make appropriate choices that allow them to advance to the next stage.
EVALUATION: The module has been pilot tested on medical students and faculty in the CU-LEADS program. Evaluations to date have been qualitative. Participants have reviewed the experience very positively. The module will soon be offered to larger groups of students and to residents as a part of an evolving advocacy training program.
SUMMARY: Participants begin with a commonly encountered clinical dilemma that has a potential policy solution. The process of legislative advocacy is broken down into a series of discreet, approachable steps which create a legislative solution. Participants have commented that the module "demystified" the legislative process. Use of the module is too recent to evaluate long-term behavior and attitudinal changes and whether exposure to the module increases physician participation in legislative processes.

CHESS: THE CLINICAL HEALTH ECONOMICS SYSTEM SIMULATION. J.D. Voss[1]; J.M. Jackson[1]; J.M. Schectman[1]. [1]University of Virginia, Charlottesville, VA. *(Tracking ID # 173662)*

URL AND LOG IN INFORMATION: URL http://www.med-ed.virginia.edu/chess USER: jv4w@virginia.edu PASSWORD: dagger SELECT: guided discussion.
BACKGROUND: Few methods exist to teach residents and students about the structure and financing of the US health care system. CHESS is an interactive cognitive simulation that uses a team-based quasi-competitive simulator to teach the principles of health economics. The goals of CHESS are to teach learners to: 1. Identify key components, relationships and policies that comprise the structure, delivery and financing of US health care; 2. Understand how decisions health care professionals and patients make influence the costs of care for patients and society and the income of physicians; 3. Describe the concept of value in health care and the factors that lead physicians to provide care of greater or lesser value; 4. Identify, analyze and resolve potential ethical conflicts created by the US health care delivery and financing system.
CONTENT: CHESS simulates a primary care physician practice using 3 cases representing low, moderate and high patient illness severity. Learners in teams or individually act as physicians paid fee-for-service or capitation and view 'toss-up' cases with treatment options that are each medically acceptable but financially disparate. Treatment costs are extrapolated to project costs for a panel of patients. After selecting a treatment, learners receive feedback on patient and societal cost and physician income. Each case highlights selected issues in health economics including physician incentives, pay-for-performance, moral hazard, adverse selection, profiling, drug formularies and other issues.
DESIGN: CHESS was initially designed to be used with faculty-led small groups emphasizing shared learning as learners make treatment decisions, explore consequences and review associated educational topics. Financial outcome data presented by CHESS prompts faculty and learners to investigate educational content using learning questions embedded in each case. Individual learners may use a self discovery approach to knowledge acquisition or a more structured approach as designed by supervising faculty. Flash simulations illustrate major teaching points and provide visual interest and interactivity. The simulation features a summary section and a brief interactive quiz that can be printed for learner recognition.
EVALUATION: We previously evaluated an Excel-based version of CHESS with 523 medical students and internal medicine residents participating and 79% of learners completing our instrument. Those participants recorded high mean (4.4) and median (5) scores of learning (1-learned little, 5-learned a great deal), with slightly higher mean scores for residents than medical students (4.6 vs. 4.3, Mann-Whitney U p value = 0.004). Ninety percent of trainees preferred learning this information in simulation format. An insufficient number of learners have completed the web-based simulation to analyze formally but responses appear qualitatively similar. A detailed evaluation is in progress.
SUMMARY: CHESS uses interactivity and visual design features to gain and maintain interest and relevance for single or group learners generally reluctant to embrace health economics. CHESS also provides a method for organizing and presenting educational content for faculty who need to teach but are not content experts in health care delivery and financing. We continue to refine and update CHESS to reflect the dynamic nature of health economics.

CHRONIC NONMALIGNANT PAIN MANAGEMENT: AN ONLINE COMPETENCY-BASED CURRICULUM. L. Yanni[1]; J. Priestley[1]; J. Schlesinger[1]; C. Stephens[1]; B. Johnson[1]; L. Morgan[1]; S. Harrington[1]; M. Weaver[1]; C. Wolfe[1]. [1]Virginia Commonwealth University, Richmond, VA. *(Tracking ID # 172745)*

URL AND LOG IN INFORMATION: Access for abstract review only: http://www.pubinfo.vcu.edu/curriculum/painmanagement/vcu.asp Access for CME: http://www.vcu-cme.org
BACKGROUND: Despite the high prevalence of chronic nonmalignant pain (CNMP) and ACGME guidelines that require training in pain management, standardized educational programs are lacking. Surveys suggest persistent knowledge deficits, inconsistent documentation, and negative bias towards patients with chronic pain. The result is unsatisfactory outcomes, with legal risks for under- or over-treating pain. In developing Chronic Nonmalignant Pain Management, we sought to improve knowledge and standardize practice of CNMP through the use of evidence based content and accessible practice tools. Standardizing knowledge and practice will help to reduce provider bias, improve recognition of prescription drug abuse, and eventually improve patient outcomes. The CNMP curriculum targets an audience of medical students, residents, and practicing physicians in a number of specialties. Online access allows self-paced independent learning and continuous access to practice tools, resources, and references.
CONTENT: This curriculum is a comprehensive review of CNMP. A total of 20 ACGME competency-based objectives are covered in 6 modules: Overview and Assessment; Treatment; Fibromyalgia; Neuropathic Pain; Identifying and Meeting Challenges; and Legal and Regulatory Aspects of Prescribing Controlled Substances. Each objective is reinforced by a pre test question, a clinical self assessment question with feedback, evidence-based content information, and a post test question. Links to original pharmacology tables, practice tools, websites, and references are continuously accessible. Additionally, there are "Key Point" summaries for each module.
DESIGN: All questions are case-based; most are derived from direct patient care experience by the authors. Pre test, content, and post test questions provide immediate feedback to the user. Additionally, all didactic content is evidence based with direct Pub Med links to research abstracts. The curriculum is attractive to program directors with its competency based objectives and competency certificate for inclusion in academic files.
EVALUATION: 24 physician reviewers representing 18 academic institutions nationally have reviewed the curriculum. Comments have been overwhelmingly positive. 71% (N = 14) agreed they would make changes in their behavior or practice as a result of the curriculum. 100% (N = 14) agreed they would recommend the curriculum to their colleagues. Specific reviewer suggestions have been incorporated into the curriculum. Additionally, 79 3rd year medical students have completed the curriculum in an ongoing study. 96% (N = 74) agreed that the assessment and treatment of patients with CNMP is more important to them as a result of the curriculum. Student comments suggest increased awareness and improved attitudes toward patients with chronic pain syndromes. Over 400 residents in 3 institutions representing 14 GME programs are currently participating in a study of knowledge, attitudes, and skills before and after completion of the curriculum.
SUMMARY: Chronic Nonmalignant Pain Management is a successful online curriculum that fills a gap in required education for trainees and offers access to important tools for practicing physicians. Data from reviewers and student users to date confirm its potential impact on knowledge, attitudes, and practice. Further data from ongoing studies will determine its full educational benefit.

DEVELOPING A WEB-BASED ALCOHOL SCREENING AND BRIEF INTERVENTION MODULE. J. Lee[1]; C. Gillespie[1]; K. Hanley[1]; M. Jay[1]; S. Paik[1]; R. Richter[1]; M. Triola[1]; S. Waldman[1]; S. Zabar[1]; A.L. Kalet[1]. [1]New York University, New York, NY. *(Tracking ID # 173680)*

URL AND LOG IN INFORMATION: http://edinfo.med.nyu.edu/alcoholscreening; login = demo; password = demo
BACKGROUND: Substance use is ubiquitous. We hypothesize teaching physicians screening and brief interventions for alcohol use disorders via a web-based multimedia module is more effective than traditional didactics. Within a scalable and customizable java-based module, medical students and resident physicians are oriented to validated screening instruments, assessments of use and stages-of-change, and approaches to brief interventions and motivational interviewing. The module compliments supervised patient encounters within undergraduate and resident doctor-patient communication curricula.
CONTENT: The primary methodologies are contrasting video cases linked to free-text Q&A exercises. Two patients, a man with heavy drinking and pancreatitis and a woman who binges, are interviewed separately by a novice medical student and local senior physician. These interviews demonstrate AUDIT-C and CAGE, stage-of-change assessment, and brief intervention components (education, advice, motivational interviewing, follow-up). Q&A exercises highlight important principles, with free-text learner responses immediately compared to the expert's. A knowledge and attitude pre- and post-test, Flash animation, text, and hyperlinks further outline core information. Audio clips orienting or instructing the learner accompany each page.

DESIGN: The learner is self-directed to knowledge deficits by the pre-test items. Cursor-driven Flash animation with narration introduces the learner to a 'see-hear-do' environment. The cases are then shown via short clips running 1–3 minutes each with interspersed learner-expert Q&A. This multichannel input and frequent interactivity is intended to maximize learner activation, balance cognitive load, and provide constant feedback. Further rollover animation teaches medical consequences of heavy drinking using a sample progress note. A display of correct and learner responses after the concluding post-test provides a module summary via self reflection.
EVALUATION: The module will be tested in first-year medical students using a control trial design. Medical student knowledge and attitude assessments and scores on an OSCE alcohol case will be compared to those of lecture-exposed controls. Evaluations in medical residents will link module exposure to alcohol screening, diagnosis, and follow-up rates using the electronic medical records (EMR) of resident physician patients. Data from both a public and Veterans hospital EMR allows for piloting system-level adjustments. All patient-level outcomes of module-exposed learners will be compared to nonrandom controls offered traditional didactics.
SUMMARY: This screening and brief intervention module is adaptable to a range of behavioral health topics and varying levels of learner. The module forces interactive behavior and couples audio and visual input with prompt feedback and self-directed didactics. Flawed and model doctor-patient encounters are contrasted using brief clips. We hypothesize this is more effective than traditional text or in-person teaching due to a more balanced cognitive load, less extrinsic material, and the convenient, remote characteristics of web-based learning. Our evaluation design will assess both changes in learner knowledge and competence, while also measuring the module's impact on patient-level outcomes.

INFORMATION OSCE. R. Badgett[1]; D.K. Hunt[1]. [1]University of Texas Health Science Center at San Antonio, San Antonio, TX. *(Tracking ID # 173504)*

URL AND LOG IN INFORMATION: http://medicine.uthscsa.edu/osce/ (user: sgimguest; pass: sgim1)
BACKGROUND: The importance of evidence-based medicine to the ACGME core competencies emphasizes the need to create a feasible method to measure resident performance and provide feedback.
CONTENT: We developed a novel Information OSCE that combines a website and customized Internet browser to present a short clinical case, electronically record all resident searching behavior, and record the residents' responses to clinical questions. The OSCE is unique in not requiring raters or interviewers to administer or observe.
DESIGN: Using a dedicated testing computer, the resident logs into a custom version of Internet Explorer™ browser that electronically records selected Internet activity. The custom browser displays a summary of the clinical case and links to UpToDate, PIER, Google, Micromedex, and our clinical information Internet portal. After presenting the case, the resident answers two questions. One question requires free text entry and the other is multiple choice. The case involves subclinical hypothyroidism and queries the residents' knowledge of what lab test (thyroid antibodies) can help prognose the patient. After all residents have completed the case, the results are analyzed by a module in an Access ™ database. The database generates a templated report for each resident that can reviewed by the resident and a faculty member. The page contains the resident's search methods and responses to questions compared to the group's methods and results. In addition, the free text answer is parsed for strings such as 'anti' which are placed in a red font. Additional feedback is tailored depending on the residents' Internet activity and answers.
EVALUATION: We studied sixteen second year residents. In response to the clinical case, all residents choose to use UpToDate; 50% used PIER and 19% used Google. Residents averaged 10.5 minutes to answer the question about prognostic lab tests. 29% of residents correctly answered thyroid antibodies. Regarding use of UpToDate: 81% used the navigational links in the left-hand frame and 38% clicked the correct navigational link to the summary recommendation that gave the answer. Of the residents who clicked the navigation link to view the answer, only half correctly answered the question.
SUMMARY: This OSCE requires minimum time to administer and grade. In addition, the automated generation of feedback is structured so that a non-EBM director can give the feedback without special training. We also found that the group feedback can guide EBM faculty in identifying components of EBM that need increased local teaching. For example, the question we studied required the resident to infer that the antibodies is the correct test based on UpToDate's recommendation to treat patients with positive antibodies. The inability of some residents to make this inference has implications for teaching this skill and also for authors to write more explicitly. The limitations of the project are that we only studied one clinical question with a small number of residents at one institution. Logistical limitations are that OSCE administration requires a dedicated computer station and programming is needed to create additional.

TEACHING MEDICAL STUDENTS ABOUT BARRIERS TO CARE USING ELECTRONIC LEARNING MODULES AND A WIKI-BASED COMMUNITY RESOURCE GUIDE. H.S. Laird-Fick[1]; D.J. Solomon[1]; M. Ford[2]; S. Pletcher[3]. [1]Michigan State University, East Lansing, MI; [2]Henry Ford Hospital Detroit, Detroit, MI; [3]Dartmouth Hitchcock Medical Center, Lebanon, NH. *(Tracking ID # 173046)*

URL AND LOG IN INFORMATION: http://www.med-training.org/access and http://www.med-training.org/wiki
BACKGROUND: Enhancing physicians' knowledge, skills and attitudes about access to care is imperative for the success of Healthy People 2010's goal to improve health and eliminate health disparities in the US. The College of Human Medicine's Access to Care Presentation Series and Community Resource Guide were developed for a required third year internal medicine clerkship implemented in six communities across Michigan. By the end of the module series and clerkship, students should be able to identify common barriers to high quality care, address the impact of barriers on individuals and populations, assess for barriers in their patients, and identify financial health care resources for patients.
CONTENT: The Access to Care Series includes five modules. The introduction reviews the relationship between medical care and health and theories about access to care. The second module explores patient-level factors, techniques to assess barriers during patient interviews, and strategies to remediate barriers. The third module focuses on physician behavior, specifically factors affecting the provision of recommended care and preventive services. The fourth module addresses systems issues, particularly the financing of health care, its impact on access and care-seeking behaviors, resources for uninsured individuals, and system-level attempts to improve health care quality. The final module allows learners to apply their new knowledge to clinical scenarios in a multiple choice self-assessment quiz. The Community Resource Guide compliments the presentation series. It is a web-based clearinghouse of resources at the national, state and community levels. Each cross-referenced listing includes a description of the resource, contact information (including links to websites), and hours of operation.
DESIGN: Since the learning materials are accessed in many settings at a range of bandwidths, we selected a Flash format for the presentations to combine the slides, voice narration, and video clips. Feedback quizzes utilize a point and click Web-Based Examination System. The feedback quizzes and final assessment allows students to assess their own levels of mastery. The Community Resource Guide utilizes a collaborative software platform, or wiki, that allows multiple users to update the site with varying levels of password protection. Over time, this feature should allow the site to be continuously updated and accurate with a lower level of administrative oversight than is usually necessary with clearinghouses. We postulate that empowering users to be contributors reinforces active learning and promotes positive professional attitudes.
EVALUATION: At this time, pilot data regarding the curriculum is available. Four students reviewed the series before its full implementation and completed an anonymous survey. All agreed that the content was helpful and appropriate, and that the structure was accessible.
SUMMARY: The Access to Care modules provide students with the knowledge and skills to assess barriers to care for individual patients and populations. Students can review the material on demand and assess their own levels of mastery. The Community Resource Guide provides them with a tool to reduce barriers while reinforcing their commitment to underserved populations by submitting resources.

INNOVATIONS IN PRACTICE MANAGEMENT

"THE LEARNING–DOING MODEL". AN INNOVATIVE APPLICATION OF THE CHRONIC CARE MODEL USING AN INTER-DISCIPLINARY TEAM APPROACH FOR RESIDENT EDUCATION AND DIABETES MANAGEMENT IN PRIMARY CARE. J. Hariharan[1]; J. Kwiatt[1]; G.C. Lamb[1]; I. O'Shaughnessy[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173743)*

STATEMENT OF PROBLEM OR QUESTION The rising disease burden of diabetes mellitus necessitates new approaches to healthcare delivery in the United States. This is especially crucial in academic medical centers with their inherent complexity. An initial survey of 20 residents performed in Oct 2005 revealed that all residents had adequate exposure to diabetic patients, but only 40% were confident in managing a complicated diabetic. Wagner has proposed a new model of care, the Chronic Care Model which uses a team approach and redesign of healthcare delivery to improve both patient outcomes and quality of care. We have developed an innovative program to educate residents about the chronic care model while incorporating them in a "hands-on" intradiscipinary team using Wagner's approach for the management of Diabetes Mellitus
OBJECTIVES OF PROGRAM/INTERVENTION: 1) Enrich Diabetes management skills and systems based learning for residents 2) Improve patient outcomes via a coordinated interdisciplinary approach using the chronic care model
DESCRIPTION OF PROGRAM/INTERVENTION: The chronic care model involves 4 key areas: decision support, delivery system design, information systems and self management support. A pro-active multi-disciplinary team including an MD, medical assistant, diabetes educator, and data analyst was created. An Endocrinologist served as education expert. Residents participated in two clinic sessions a month dedicated to planned visits for diabetes during their ambulatory block beginning Jan 2006. Patients from a diabetes registry of 203 patients were invited to planned visits to discuss care. Each session incorporated a "Learning-Doing Model" involving inter-professional learning on the chronic care model and management strategies in a variety of formats followed by patient care under faculty supervision. Evidence based decision support tools were developed which included a step-wise medication algorithm to facilitate a standardized approach to management, a pocket card with Diabetes outcome measures and a progress note template. The learning approaches were inter-active and included didactic sessions, case based learning, role play, video demonstration on self-management support, practical information from diabetic educators and registry information. The new knowledge was then applied at the planned visit where outcome measures and engaging patients in self-management was addressed. Outcome measures of A1C, LDL and foot exams were tracked from Oct

2005 to Oct 2006. Residents were surveyed post-clinic to asses new knowledge learned and confidence in patient management.
FINDINGS TO DATE: (n = 25) residents responded to the survey. All residents reported new knowledge gained with the use of algorithm, self-management support and team roles. Confidence in diabetes management improved from 40% to 78%. Patients with A1C less than 7 improved from 38% to 57%. LDL less than 100 increased from 30% to 63%. Foot exam documentation improved from 47% to 89% over the year.
KEY LESSONS LEARNED: The chronic care model can be implemented in the setting of a resident teaching clinic. Being actively involved in care planning at the visit, residents improve their confidence in diabetes management while being exposed to systems based practice and decision support.The process was enhanced by providing decision support tools and redesigning the visit structure Patients showed a clear trend towards better A1C control and other outcome measures over the year. Redesigning the healthcare delivery and education engages both patient and provider which lead to improved outcomes.

A COMMUNITY APPROACH TO ADDRESS BREAST CANCER PREVENTION AMONG IMMIGRANT WOMEN IN BOSTON. N. Bharmal[1]; J. Bigby[1]. [1]Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 173863)*

STATEMENT OF PROBLEM OR QUESTION: Immigrant women in the Boston community underutilize primary care prevention screening tools and follow-up, such as mammograms for breast cancer screening.
OBJECTIVES OF PROGRAM/INTERVENTION: The community program a) identifies and trains bilingual, bicultural women to become peer health educators in breast cancer prevention workshops, b) conducts non-English workshops for different groups of immigrant women on cancer screening, c) provides resources for obtaining mammograms and follow-up.
DESCRIPTION OF PROGRAM/INTERVENTION: The OWFCP (office of women, family, and community programs) recruited five bilingual and bicultural women to become peer health educators for breast cancer prevention. After receiving workshop and medical knowledge training, the peer health educators conducted at least four workshops over one year. These workshops focused on the basics of breast cancer, including risk factors, prevention and treatment. They were targeted to immigrant women speaking spanish, portuguese, cantonese, and haitian-creole. The workshops not only provided awareness of breast cancer prevention, but also served to collect information on barriers/myths to breast cancer screening among these different groups.
FINDINGS TO DATE: The breast cancer prevention workshops have reached 211 immigrant women in the Boston area. The workshops have shown that over 50% of participants were not aware of the risk factors and/or prevention of breast cancer. Community women are now asking for more information on cervical cancer screening.
KEY LESSONS LEARNED: Bilingual and bicultural peer health educators may be an effective way to target difficult to reach immigrant women on breast cancer prevention and screening.

A HEALTH SYSTEM'S NOVEL APPROACH TO EVIDENCE-BASED PRACTICE. C.A. Umscheid[1]; K. Williams[1]; R. Agarwal[1]; G. Kuntz[1]; P.J. Brennan[1]. [1]University of Pennsylvania, Philadelphia, PA. *(Tracking ID # 173252)*

STATEMENT OF PROBLEM OR QUESTION: Variations in physician practice are well documented, despite the existence of best practices. Difficulty in translating published research into practice, as well as industry influence, may be factors responsible for such variation. For academic health systems, this may lead to inefficiencies resulting in lesser quality patient care and opportunity costs, such as the inability to reinvest in education, research, and patient care.
OBJECTIVES OF PROGRAM/INTERVENTION: The Center for Evidence-based Practice (CEP) was created on 7/1/06 and is funded by the Office of the University of Pennsylvania Health System (UPHS) Chief Medical Officer (CMO) to support patient care quality and safety at UPHS through the practice of evidence-based medicine (EBM). To that end, when a clinical issue of "high impact" arises at UPHS that requires an objective evaluation of a drug, device or process of care, CEP performs a systematic review (SR) of the issue alongside the key stakeholders to produce an actionable guideline for UPHS.
DESCRIPTION OF PROGRAM/INTERVENTION: CEP includes co-directors boarded in medicine with masters in public health and epidemiology who report directly to the UPHS CMO, as well as a research and administrative coordinator, and a clinical librarian. CEP evaluates issues referred from medical and nursing leaders, and 3 types of committees from each UPHS hospital: 1) Pharmacy and Therapeutics, 2) Technology, and 3) Quality Improvement. For each issue, CEP 1) forms a Task Force of clinical experts without financial conflicts to initially define the question, 2) performs a SR, 3) presents the SR to the Task Force qualitatively or quantitatively using meta-analysis, and 4) grades the quality of evidence. Next, input from outside experts is considered; such input from industry scientists assures industry representatives market their products at UPHS under the CEP guidelines. A consensus guideline balancing the risks and benefits of the technology is then developed, sent to the CMOs of each hospital for approval, and then introduced by CEP to the relevant departments where it is implemented. Later, CEP can use administrative data to measure practice changes occurring after guideline implementation, and the guideline can be revisited as needed. Faculty participants in CEP evaluations may receive CME. Residents may also elect to participate in a CEP SR as part of a structured 2–4 week EBM rotation.
FINDINGS TO DATE: CEP has completed a guideline on aprotinin use in cardiac surgery, and is completing guidelines on activated protein C use in the ICU, best practices for the inpatient discharge process, indications for the use of ultrasound in inpatient DVT surveillance, and an evaluation of cardiac catheterization labs to inform UPHS purchasing. Guidelines are posted on the CEP website and may also be submitted for publication. CEP recently accepted an invitation to publish its first review on aprotinin. To date, CEP has involved about 62 faculty and staff in 5 evaluations, and 5 industry representatives in 2 evaluations. Two residents have completed CEP rotations.
KEY LESSONS LEARNED: A small center funded by a corporate office of an academic health system can offer objective and systematic evaluations of "high impact" clinical issues efficiently under appropriately trained leadership. Such evaluations can facilitate constructive relations between industry and health systems, and offer educational and publishing opportunities for participants.

A RANDOMIZED CONTROLLED TRIAL TO IMPROVE PHYSICIAN'S AWARENESS OF MEDICATION ADHERENCE. S. Furney[1]; A. Schreiber[1]; E. Abernathy[1]; K. Dunn[1]; P. Hofferbert[1]. [1]University of North Carolina System, Charlotte, NC. *(Tracking ID # 170091)*

STATEMENT OF PROBLEM OR QUESTION: Patient adherence to medication regimens impacts control of their disease and can be difficult for physicians to adequately assess.
OBJECTIVES OF PROGRAM/INTERVENTION: To evaluate the impact of the presence of medications on physicians' ability to assess adherence, comfort in writing new prescriptions and accuracy of medication lists.
DESCRIPTION OF PROGRAM/INTERVENTION: We completed a randomized, controlled trial of phone calls to the intervention patients requesting that they bring their medications with them to clinic. The control group received "usual care", a call reminding them of their appointment. Residents and faculty completed a seven-item survey at the end of each encounter. Clinic show rates, medication presence, ability to judge adherence, accuracy of medication lists, and comfort in writing accurate prescriptions were assessed in both the intervention and control groups.
FINDINGS TO DATE: There were 1317 visits with data collected over the 10 weeks of the study. Survey response rates were equal at 97% in both groups. Clinic show rates in both groups were equal at 66% pre-intervention. There was no significant change in patient show rate in either group post-intervention. At baseline, more patients in the control group brought their medications (57% vs. 46%, $p = 0.018$). Post-intervention, the intervention group was significantly higher (53% vs 75%, an absolute increase of 29% in the intervention group, $p < 0.001$). Residents' confidence with prescribing medications was equal at baseline, with a mean ~4.0 on the 1–5 Likert scale. Post-intervention, residents reported higher confidence (4.25 vs 3.75, $p = 0.001$) in the intervention group. This effect was even stronger when looking just at the patients who brought their medications, with a mean score of 4.61 when medications were present and 2.91 when they were absent ($p = 0.0001$).
KEY LESSONS LEARNED: This was a resident-driven practice-based learning initiative that was successful in involving residents in quality improvement in their practice. In this project, we enacted a simple and reproducible process that allows physicians to better assess adherence in their patients.

A SUCCESSFUL STRATEGY TO IMPROVE INPATIENT PNEUMOCOCCAL VACCINATION. B. Sharpe[1]; T. Bookwalter[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173871)*

STATEMENT OF PROBLEM OR QUESTION: Achieving high rates of pneumococcal vaccination in inpatients with community-acquired pneumonia, a measure of hospital quality, is challenging.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) To improve the rates of pneumococcal vaccination in elderly patients (> 65 years old) admitted to an urban academic center with a diagnosis of community-acquired pneumonia. 2) To engage clinical pharmacists in improving vaccination rates.
DESCRIPTION OF PROGRAM/INTERVENTION: Our large urban academic medical center does not have CPOE and because of hospital-specific policies and procedures, we could not implement a standing-order policy to improve vaccination rates. After educational conferences for residents and attendings and "cheerleading" failed to improve vaccination rates, we engaged our clinical pharmacists. At our institution, each team on the Medical Service works closely with a staff pharmacist or pharmacy student. In 2003, we established a system by which all patients older than 65 years old admitted to the medical service (not just those with CAP) were screened for possible pneumococcal vaccination by clinical pharmacists. For those who had received the vaccine previously or had an absolute contraindication, the pharmacist would document this in the medical record. For those eligible for vaccination, the pharmacist would contact the physician responsible for the patient (typically the intern) and ensure ordering of the vaccine. Based on the success of this initiative, we engaged clinical pharmacists on all inpatient services at our hospital who began screening all patients > 65 years old. In conjunction with this

systematic screening, hospitalists led educational conferences for attendings, residents, nurses, and pharmacists to increase and maintain awareness of this quality improvement program.
FINDINGS TO DATE: With implementation of pharmacy-led screening, our inpatient pneumococcal vaccination rates of patients older than 65 with CAP increased from 8% in 2002 to 93% in 2006 (see figure for data from quarter 3, 2004 onward). In addition, we screened and vaccinated hundreds of other patients older than 65 years old admitted to the hospital with other diagnoses.
KEY LESSONS LEARNED: 1) Directed education and "cheerleading" were not effective interventions in improving inpatient pneumococcal vaccination rates. 2) Hospitals without CPOE should consider engaging other allied health professionals to improve inpatient pneumococcal vaccination rates. 3) At our institution, clinical pharmacists, in conjunction with hospitalists and nurses, were essential in improving our vaccination rates.

A TOBACCO CESSATION PROGRAM IN OUTPATIENT SUBSTANCE ABUSE TREATMENT CLINICS. S. Nahvi[1]; N.A. Cooperman[1]; J. Arnsten[1]. [1]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 173711)*

STATEMENT OF PROBLEM OR QUESTION: Tobacco use is the leading preventable cause of morbidity and mortality in the U.S. Despite reductions in tobacco use in the general population, particular populations, including drug users, continue to have a markedly high prevalence of cigarette smoking. We have previously reported an 83% prevalence of cigarette smoking in opioid-dependent methadone maintenance patients, with 70% of current smokers reporting interest in smoking cessation.
OBJECTIVES OF PROGRAM/INTERVENTION: To develop a comprehensive, multidisciplinary tobacco cessation program utilizing an existing infrastructure of integrated primary medical care and substance abuse treatment. This program includes behavioral and pharmacological therapy for interested patients and staff in our outpatient substance abuse treatment program, evidence-based smoking cessation training for physicians and physician assistants, and development of institutional and local non-smoking policies.
DESCRIPTION OF PROGRAM/INTERVENTION: A smoking cessation intervention was initiated at the Division of Substance Abuse (DoSA) operated by Albert Einstein College of Medicine and Montefiore Medical Center. DoSA is a twelve-clinic system in the Bronx, NY, offering co-located primary medical care, mental health services, and multidisciplinary substance abuse treatment, including pharmacotherapy with methadone or buprenorphine. Smoking cessation counseling is delivered by trained paraprofessional counselors, and focuses on motivational interviewing and cognitive-behavioral skills training. Interested patients are also offered telephone counseling via the New York State Quitline, which provides progress reports to referring healthcare providers. Prescriptions for pharmacotherapy, including nicotine replacement therapy, bupropion, and/or varenecline, are offered and available at no cost to most patients through New York State Medicaid coverage. In addition, all interested staff are offered smoking cessation services through a semi-structured, six-session group counseling program. All staff physicians and physician assistants received formal training in smoking cessation pharmacotherapy. The tobacco-free workplace policy was disseminated to all staff, and "no smoking" signs were displayed in all clinical sites.
FINDINGS TO DATE: To date, eighteen patients have received smoking cessation counseling. The median age of participants was 41 years old, 28% were black and 72% Latino, and 56% were female. The majority (61%) smoked over 10 cigarettes daily. Two-thirds of participants returned for scheduled follow-up counseling visits, and one third set a quit date. Among staff, six clinic staff members have participated in a smoking cessation counseling group. Twenty-seven staff members (including 16 physicians and 11 physician assistants) have participated in formal, evidence-based training in smoking cessation treatment. The institutional non-smoking policy has been disseminated, and "no smoking" signs are prominently displayed in all 12 clinical sites.
KEY LESSONS LEARNED: Multidisciplinary smoking cessation interventions are feasible in outpatient substance abuse treatment programs despite limited resources. Patients and staff are responsive to smoking cessation efforts. Research is ongoing to evaluate the effectiveness of this multidisciplinary program and to elucidate the optimum treatment duration and level of intensity.

AVOIDANCE OF ANGIOTENSIN-CONVERTING ENZYME INHIBITOR OR ANGIOTENSIN RECEPTOR BLOCKER USE AMONG WOMEN OF CHILDBEARING POTENTIAL IN A GENERAL INTERNAL MEDICINE CLINIC. B. Bryant[1]; A.B. Guirguis[1]; R. Malone[1]; M. Pignone[1]; T.J. Ives[1]. [1]University of North Carolina at Chapel Hill, Chapel Hill, NC. *(Tracking ID # 173587)*

STATEMENT OF PROBLEM OR QUESTION: Due to recent evidence regarding potential congenital risks associated with first trimester exposure to angiotensin-converting enzyme inhibitors (ACE-Is), a proportion of women of childbearing age may be at risk if prescribed these agents without contraception.
OBJECTIVES OF PROGRAM/INTERVENTION: This intervention aimed to: 1) identify women of childbearing age prescribed ACE-Is or angiotensin-II receptor blockers (ARBs) with no documentation addressing childbearing potential; 2) offer contraception or alternative antihypertensive therapy to these women; and 3) update childbearing status in their electronic medical record (EMR).
DESCRIPTION OF PROGRAM/INTERVENTION: The general internal medicine (GIM) clinic maintains a diabetes registry of clinic patients with known diabetes. Women in the diabetes registry were included for evaluation if they were less than 50 years of age and were prescribed an ACE-I or ARB. Comorbidities were recorded for each patient and included: a documented history of myocardial infarction, coronary artery bypass grafting, percutaneous coronary intervention, chronic angina, hypertension, microalbuminuria, and overt nephropathy. Additional data collected were history of tubal ligation, hysterectomy, bilateral salpingo-oopherectomy, menopause, hormonal contraception, alternative contraceptive methods, absence of childbearing potential documentation, and currently documented pregnancy. Women identified to be at risk based on a lack of childbearing potential documentation were screened for pending appointments in the GIM clinic; those visits were flagged within the registry so providers would be made aware of the need to address childbearing status, and update the EMR. Those patients without scheduled follow-up are being contacted to schedule a midlevel provider visit within the clinic to address their childbearing potential. Tracked interventions will include: the proportion changed to an alternative antihypertensive agent, the proportion for whom contraception was provided, and the proportion of patients who have contraception (surgical, pharmacologic, natural) not listed in the EMR. Additionally, an inservice was provided to attending physicians regarding the findings and planned interventions, and online hypertension guidelines for housestaff were updated with pregnancy categories for the antihypertensive medications most commonly used in clinic.
FINDINGS TO DATE: 124 patient charts of women who met eligibility criteria were reviewed. Sixty patients had no identified chart documentation regarding childbearing potential; of whom, 15% were 25 to 34 years old, 37% were 35–44 years old, and 48% were 45–49 years old. Also, 32 of these 60 patients (53%) had diabetes alone as a compelling indication for ACE-I/ARB therapy. Nineteen of these 60 patients (32%) had no scheduled follow-up with a GIM provider within 2 months; these patients are being contacted for an appointment with a midlevel provider within the clinic.
KEY LESSONS LEARNED: Providers should consider childbearing potential when prescribing ACE-I or ARB therapy. Current documentation regarding childbearing status is inconsistent within our hospital EMR. Improvements should be made to aid in safe prescribing of these drugs or any other potential teratogens. In the interim, questions regarding childbearing status will be included on diabetes registry healthcare maintenance reminder forms. Lastly, efforts are underway to perform a screening of women who have a diagnosis of hypertension but not diabetes, with the goal of performing similar interventions.

CARDIAC TELEMETRY: ARE WE OVERDOING IT?. M. Kanwar[1]; L. Saravolatz[2]. [1]St. John's Hospital, Harper Woods, MI; [2]St. John Hospital and Medical Center, Detroit, Michigan, Detroit, MI. *(Tracking ID # 173513)*

STATEMENT OF PROBLEM OR QUESTION: Cardiac telemetry is being over-utilized in hospitals and there is need to increase awareness amongst physicians about guidelines for ordering telemetry.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Assessing utilisation and indications for ordering telemetry for inpatients. 2. Increasing physician awareness about guidelines for ordering and discontiuing telemetry 3. Assessing the impact of educational measures for the same
DESCRIPTION OF PROGRAM/INTERVENTION: Retrospective data was collected for 1 month (May 2006) on all adult patients admitted to medical floors on telemetry in our 608-bed teaching hospital. Patients admitted to intensive care units, obstetric or surgical floors were excluded. Over the next three months, two educational lectures were given to emergency medicine and internal medicine attendings and residents. A colored sheet was inserted in each patient's chart, to be completed by the admitting physician, stating the indication for telemetry. Guidelines were made available to all physicians using reminder e-mails, distributing laminated telemetry-indication cards and posting the guidelines in various parts of the emergency department. Residents were encouraged to discontinue telemetry on in-patients once their indications had been addressed. Subsequent to these interventions, one month data was collected (September 2006) to see the effect of these educational tools. Telemetry indications were divided into class I or II (telemetry indication present) or class III (no indication of telemetry) based on the admitting diagnosis. Data collected included patient demographics, admission diagnosis and duration of telemetry.
FINDINGS TO DATE: RESULTS: Of the 1207 patients admitted to medical floors, 43% were placed on telemetry in May '06 (287/672) and 41% in September '06 (218/535). The percentage of patients appropriately placed on telemetry (Class I/II indication) increased from 56% (162/287) to 68% (149/218) after our interventions ($p = 0.01$). Of the patients with inappropriate initiation of telemetry (Class III indication), 34% (25/71) had their telemetry discontinued within 24 hours of admission in September, compared with 12% (15/125) in May ($p = 0.003$). Average duration of telemetry utilization decreased from 4.7±0.29 days in May to 3.5±0.19 days in September ($p = 0.007$). The age, sex and mean length of stay for the two groups was comparable.
KEY LESSONS LEARNED: Cardiac telemetry is being over-utilized and efforts to increase awareness among physicians can promote compliance with standard guidelines. This would ease the burden of limited telemetry bed availability and can lead to health care cost savings.

CLINICAL OUTCOMES OF PATIENTS WITH UPPER RESPIRATORY INFECTION AND ACUTE SINUSITIS MANAGED WITH A WEB-BASED PROTOCOL. T.G. Mcleod[1]; R.J. Stroebel[1]; S.M. Tulledge-Scheitel[1]; J.M. Kitsteiner[1]; H.K. Vanhouten[2]; R. Chaudhry[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN; [2]Mayo Clinic, Rochester, MN. *(Tracking ID # 172623)*

STATEMENT OF PROBLEM OR QUESTION: Management of upper respiratory infections (URI) and acute sinusitis consumes a significant amount of time and resources in primary care. It has become increasingly important to identify non-visit care opportunities for improving the efficiency of care delivery while maintaining high quality.
OBJECTIVES OF PROGRAM/INTERVENTION: Our program sought to improve efficiency in managing URI/sinusitis in primary care while avoiding the use of inappropriate antibiotic therapy for these conditions.
DESCRIPTION OF PROGRAM/INTERVENTION: An Institute of Clinical Systems Improvement (ICSI) guideline for management of patients with URI and sinusitis was adapted to a web-based form and incorporated into a patient-care website on our institutional intranet. Patients were sent an email announcing the initiation of the program and instructed to access, complete, and submit the web-form if they developed symptoms of URI or sinusitis. Submitted web-forms were reviewed by appointment secretaries and forwarded to a nurse-physician care team for processing. Patients were then contacted by the nurses via telephone to confirm their web-form responses, establish proper guideline-based management, review allergies, and identify pharmacy of choice (if antibiotic therapy was indicated). Demographic and clinical data for all participating patients were obtained through retrospective chart review. Diagnosis (viral URI vs. sinusitis), treatment (antibiotic therapy vs. self-care), antibiotic selection, and any necessary physician visit within 14 days (clinic, emergency room, or hospital) were noted. Time commitment required for processing of each patient web-form was sporadically checked and confirmed by direct observation. Results were compared to a control group of 77 patients who had been previously managed by an entirely telephone-based protocol utilizing the same ICSI guideline. Simple descriptive statistics were used to characterize the outcomes.
FINDINGS TO DATE: A total of 241 web-form submissions have been analyzed to date. Of these, 137 (57%) fulfilled guideline criteria for non-visit care. Clinical outcomes for patients with URI or sinusitis were compared with the outcomes for the historical control patients. A majority of patients with URI in the web-protocol and control groups were managed with self-care measures only (84% vs. 72%, $P = .13$). Comparable percentages of patients with sinusitis in both web-protocol and control groups received first-line antibiotics (80% vs. 81%, $P = .89$). Second-line antibiotics were used far less often for sinusitis patients of either group (web, 14%; control, 19%; $P = .56$). A minority of URI patients (web-protocol, 25%; control, 22%; $P = .68$) and sinusitis patients (web-protocol, 13%; control, 19%; $P = .46$) presented for in-office evaluation after initial contact with the nursing staff. None of the patients in either group required ER evaluation or hospitalization. Time commitment for processing of patient web-forms by appointment secretaries and nurses averaged 7 minutes for the web-protocol patients vs. 14 minutes for our historical control patients.
KEY LESSONS LEARNED: Our guideline-based web protocol appears to be a feasible, safe, and efficient means to provide non-visit care to primary care patients with URI and sinusitis. Clinical outcomes were comparable in comparison to our telephone-based program, and total time spent on each encounter was decreased by half. We believe web-based solutions for care offer tremendous potential for the future.

DEVELOPMENT OF AN OUTPATIENT PALLIATIVE CARE PROGRAM AT A UNIVERSITY HOSPITAL HEART CENTER. D. Bekelman[1]. [1]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 172607)*

STATEMENT OF PROBLEM OR QUESTION: Contemporary heart failure care neglects comprehensive physical symptom management, psychosocial care, and advance care planning. Can an outpatient palliative care program be developed in a university hospital heart center to address these needs?
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Identify and address physical symptom, psychosocial, and advance care planning needs in an outpatient heart failure population 2. Establish the program to serve as a "laboratory" for future research to develop a standardized outpatient palliative care intervention for patients with heart failure
DESCRIPTION OF PROGRAM/INTERVENTION: The program, called the "Supportive Care Program," is a referral-based one-half day per week clinic located in the University of Colorado Heart Center. The program director (David Bekelman, MD, MPH) is a board-certified internist, psychiatrist, and palliative medicine specialist. Patients with symptomatic heart failure are targeted. Prior to program initiation, Dr. Bekelman gave grand rounds in cardiology on palliative care and introduced the program, met with clinic providers to discuss the program, and gave providers laminated cards to suggest when a referral might be considered. Patients are given standardized assessment instruments at each visit. The program is a mix between consultative and collaborative care. For example, the program director will occasionally see patients at the same time as cardiology faculty or nurse practitioners. Patients are often seen with family members.
FINDINGS TO DATE: After 6 months, there were 25 patient visits and 12 different patients seen. Median age was 52 years, 45% were female. Administering standardized, validated instruments to assess heart-failure specific health status, physical symptoms, depression, and anxiety was feasible. Patients reported a median of 14 physical symptoms during the week prior to their visit (measured using the Memorial Symptom Assessment Scale-Short Form). Health status was significantly impaired (median Kansas City Cardiomyopathy Questionnaire Score, 52; range, 0–100, higher score indicates better health status). Patients reported high levels of depression and anxiety as measured by the Patient Health Questionnaire-9 and the Generalized Anxiety Disorder-7. The two most common reasons for referral were to evaluate and manage depression and physical symptoms. Patients struggled with living with heart failure. For example, one patient said, "Living with heart failure has been hell- it touches your spiritual life, sex life, family life it's kinda rough daily." Unless patients were seriously ill (NYHA Class III-IV with multiple hospitalizations), they were hesitant to talk about the future of their illness. Patients and providers were satisfied with the program.
KEY LESSONS LEARNED: 1) Longitudinal assessment of health status, physical symptoms, depression, and anxiety was feasible 2) Depression often stemmed from loss of function, coping with uncertainty, and fears of the future 3) Nurses initiated the majority of referrals 4) Advance care planning is challenging in this patient population (compared to patients who have cancer) for a variety of reasons 5) Clinic providers often express appreciation for this service, although referrals are limited

DIABETIC GROUP VISITS DESIGNED TO PROVIDE SELF-MANAGEMENT SUPPORT AND IMPROVE CLINICAL OUTCOMES. J.K. Mavromatis[1]; J.J. Zreloff[1]; K. Matthews[1]. [1]Emory University, Atlanta, GA. *(Tracking ID # 171984)*

STATEMENT OF PROBLEM OR QUESTION: Are diabetic group visits an effective care format to improve clinical outcome measures?
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Create a reproducible process for the diabetic group visit with an agenda that emphasizes support of effective patient self-management. 2. Improve diabetes outcome measures in group visit patients including glycemic, blood pressure, and LDL cholesterol control.
DESCRIPTION OF PROGRAM/INTERVENTION: From December 2005 to December 2006, 8 diabetic group visits were conducted at 6 week intervals. 50–70 patients were recruited for each visit from a disease registry of 450 diabetic patients of 5 attending physicians. The registry population served as the pilot population for participation in the Academic Chronic Care Collaborative. Recruited patients included patients with hemoglobin A1C greater than 9, those selected by their physician, and those who had attended prior group visits. An average of 8 patients attended each group, (range 4 to 12). Group visit attendees were primarily middle-aged women (82%), employed, and African American. The group visit process and structure evolved over the implementation period to the final version adopted after group visit 6. The two-hour visit agenda included: check-in and vitals, introductions, statement of confidentiality, a patient chosen didactic topic, group review of lab results and medications, and finally, sharing of self-management goals and action plans. Individual time with a provider was optional at the visits' end. Participants received their diabetes registry report and medication lists for use during the visit. Notebooks containing core information were provided to each patient. The "5 A's" self-management support technique of interviewing for behavioral change framed the visit: ask, advise, agree, assist and arrange. The group care team included the LPN coordinator, physician facilitator, nurse practitioner observer and resident learners.
FINDINGS TO DATE: Of the 39 patients who attended group visits, 59% attended one, 33% attended two, and one patient attended 7 visits. The average hemoglobin A1C before group visit(s) was 7.6, and was 7.4 after group visit(s). 41.6% had hemoglobin A1C less than 7 prior to the group visit compared with 58.3% after the visit(s). 42.3% had blood pressure less than 130 over 80 before compared with 65.4% after the group visit(s). The percentage of patients with LDL less than 100 improved from 71% to 79%.
KEY LESSONS LEARNED: Group visits are an effective delivery strategy for improving diabetes outcome measures in patients with suboptimal glycemic control. The small number of patients examined and the fact that most patients attended only one visit precludes statistically significant observation. The informal comparison group of 450 registry diabetics was subject to various improvement activities such as case-management.The percentage of registry patients with hemoglobin A1C less than 7 improved from 52% to 54.7% during the same period, and averaged 7.3. Possible explanations for better improvement in glycemic control in group visit patients include increased exposure to the medical team, its provision of social support, and its emphasis on collaborative care and self-management support strategies. Clarification of barriers to attendance and whether a group visit dose effect exists are factors that need to be further examined.

EFFECT OF ACADEMIC DETAILING ON PRIMARY CARE REFERRAL PATTERNS TO HIGH PERFORMING CARDIAC SPECIALISTS. K. Walkowski[1]; C. Peel[1]; L. Sandy[2]. [1]UnitedHealthcare, Edina, MN; [2]UnitedHealthcare and University of Minnesota, Edina, MN. *(Tracking ID # 173700)*

STATEMENT OF PROBLEM OR QUESTION: Little is known about how best to inform and influence referral patterns among primary care physicians (PCPs) to increase referrals to high performing specialists, especially in typical community-based PCP practices outside of organized delivery systems.

OBJECTIVES OF PROGRAM/INTERVENTION: Test the effect of different academic detailing strategies to (1) inform PCPs of the high-performing cardiac specialists in their community; (2) facilitate increased referrals to these specialists.
DESCRIPTION OF PROGRAM/INTERVENTION: In 2005 UnitedHealthcare implemented a national performance transparency and improvement program, (UnitedHealth Premium®) designation program) that provides both consumers and physicians information on physician performance against quality and efficiency of care criteria using national evidence-based and consensus standards. UnitedHealthcare's internal data indicate patients who receive care from a cardiac specialist designated for Quality and Efficiency of care in the UnitedHealth Premium®; designation program have better outcomes and lower risk-adjusted episode costs than patients treated by a non-designated physician. In the spring of 2006, UnitedHealthcare piloted the PCP Academic Detailing Program. This initiative involved sending letters to primary care physicians (including General Practice, Internal Medicine and Family Practice physicians) in 5 markets (Denver, Dallas, San Antonio, Austin and Dayton). Two control markets with similar populations and UnitedHealth Premium® penetration were also analyzed. Among intervention physicians, letters requested that when the physician had a UnitedHealthcare patient needing referral to a cardiac specialist or facility, that they refer them to a physician or facility that had earned the UnitedHealth Premium® designation for both Quality and Efficiency of care. To facilitate those referrals, the primary care physicians were also provided with a hard-copy referral list of cardiac specialists and hospitals in their community which could be posted at the referral desk or the receptionist desk. To determine the most effective approach to academic detailing, the pilot was divided into 4 test groups: 1. Letter/referral list (LRL) only (n = 3537) 2. LRL + follow-up phone call from the local health plan (n = 252) 3. LRL + email reminder (n = 1187) 4. LRL + in-person follow-up visit from the local Market Medical Director (n = 65)
FINDINGS TO DATE: Initial 3 month pilot data showed an overall 6.3% increase of patients referred to a UnitedHealth Premium® designated quality and efficient cardiac specialists overall compared to a baseline period of 12 months prior to the mailing. These results were based on evaluation of claims for the 3 months after the distribution of the letters. Intervention effects ranged from −17% change (letter + call) to +22% change (letter + visit), versus −0.3% change in the control group.
KEY LESSONS LEARNED: Academic detailing to community-based PCPs can increase referrals to high-performing specialists in open-access care models. The impact varies as a function of delivery method. Based on the data from this pilot, UnitedHealthcare is planning to expand the program to the 75 markets that have implemented the UnitedHealth Premium® designation program. The expanded initiative will also include neuroscience, orthopeadic and spinal specialties.

ENHANCING THE TRANSITION FROM HOSPITAL TO HOME FOR THE OLDER ADULT (SAFE S.T.E.P.- SAFE AND SUCCESSFUL TRANSITION OF ELDERLY PATIENTS). P. Dedhia[1]; E. Howell[1]; S. Kravet[1]; R. Hess[1]; E.B. Bass[1]; S. Wright[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 172495)*

STATEMENT OF PROBLEM OR QUESTION: When elderly patients are discharged home following an acute hospitalization, they are at high risk for having an unsuccessful transition with untoward healthcare outcomes. Our team has developed an interdisciplinary, comprehensive intervention to try to make this transfer of a higher quality and less dangerous.
OBJECTIVES OF PROGRAM/INTERVENTION: (1) To develop an effective and efficient discharge toolkit that serves to facilitate the safe transition of older patients from hospital to home. (2) To demonstrate that this discharge toolkit results in improved health care outcomes including; a. medication reconciliation resulting in reduced medication errors upon returning home, and b. a reduction in readmissions and emergency department visits within 30 days. (3) To increase patient satisfaction with the transition from hospital to home based on Coleman's "Transition Care Measures."
DESCRIPTION OF PROGRAM/INTERVENTION: Discharge starts at the time of admission and the quality of the discharge is promoted by a comprehensive evaluation. We developed a discharge toolkit, which is being used for all patients >65 admitted to the hospitalist service. It has multiple components, some of which are initiated upon admission: (i) a newly developed history and physical form [cues the admitting physician to consider geriatric domains and concepts], (ii) an interdisciplinary team worksheet [located at the front of the chart of all study participants and allows various team members to comment upon the barriers and facilitators for the safe discharge of the patient], (iii) medication appraisal [both home and inpatient regimens are reviewed by pharmacists who offer guidance and feedback], (iv) fax communication notifying primary providers of their patients' admission, and (v) a pre-discharge appointment wherein the provider explains the hospital course, counsels the patient, answers questions, reviews recommended follow-up, and a 'discharge contract' is signed by patient and provider. The study design employs a non-randomized two-group experiment comparing control and intervention periods at 3 hospitals in different states. In addition to data collection that occurs while patients are in the hospital, follow-up phone surveys are performed at 3 and 30 days after discharge.
FINDINGS TO DATE: Data from the control period confirmed that there is significant room for improvement. Specifically, of 114 patients, 31% disagreed or strongly disagreed that they were part of the decisions about their discharge, 63% did not know the potential side effects related to their medications, 31% felt that they did not know who to contact regarding problems with their medications, and 42% did not think that their PCP knew about what happened during their hospital stay. Further, during the control period, the 30 day readmission rate to our facility was 17% and to other facilities was 14%. The 30 day revisit rate to the emergency department was 38%. Evaluation of the number of medication errors noted at 3 days following discharge is ongoing. With the intervention period underway, comparative data will be available for presentation at the meeting.
KEY LESSONS LEARNED: With the aging of the population and the prolonged survival of patients with chronic illness, innovative approaches involving multidisciplinary coordinated care will be necessary to provide safe, high-quality care to the elderly. We hope that our intervention, now ongoing, will support this hypothesis.

GROUP DIABETES CLINIC AS A SOLUTION TO EXPAND PRIMARY CARE SERVICES. D. Nguyen-Khoa[1]; S. Sidhu[1]. [1]Olive View-UCLA Medical Center, Sylmar, CA. *(Tracking ID # 173143)*

STATEMENT OF PROBLEM OR QUESTION: In Los Angeles County the demand for primary care for chronic disease far exceeds the capacity to provide it, leading to unnecessary emergency room, urgent care visits and hospitalizations.
OBJECTIVES OF PROGRAM/INTERVENTION: Pilot a Group Diabetic Primary Care (GDPC) clinic that would: 1. Create additional capacity for patient's services by maximizing the utilization of staff, office spaces, and time. 2. Provide continuity care to diabetics who are at high risk for secondary complications thus reducing unnecessary emergency room, urgent care visits and hospitalizations. 3. Explore a new delivery care model for chronic disease patients.
DESCRIPTION OF PROGRAM/INTERVENTION: The targeted population for this pilot was diabetics with/without hypertension and/or dyslipidemia who did not have primary care service. Referrals were generated from the emergency room/urgent care clinics. A diabetic teaching curriculum was developed by a Health Educator, Case Manager and Nutritionist (Allied Health Staff) and Clinicians. Patients had to attend a 2-hour diabetic education class before they were assigned to their group clinic. The 4-hour GDPC clinic was divided into two 2-hour sessions. The GDPC clinic was staffed by one nurse practitioner, one physician, and had similar ancillary staffing as a conventional clinic (CC). During each 2-hour session, patients began participation in a 30-minute group visit led by Allied Health Staff. This is followed by a 15-minute group discussion facilitated by a physician. The rest of the 2-hour session patients had individual visit with a provider. The same numbers of patients were booked in each GDPC clinic's 2-hour session as in one 4-hour CC. GDPC's clinicians had time to see up to three more urgent patient cases per 2-hour session, during the time that their scheduled patients attended the group visit with Allied Health Staff. Allied Health Staff were available to provide same day services to prevent return visits and to reduce broken appointments.
FINDINGS TO DATE: Without requiring more ancillary staff, twice as many patients were seen in a 4-hour GDPC clinic as compared to a 4-hour CC. Preliminary performance improvement data evaluating the GDPC clinic against CC showed that they were comparable. In addition, findings showed: 1. 100% of GDPC patients vs. 80% of CC patients were appropriately placed on statins by the third visit. 2. 100% of GDPC patients vs. 50% of CC patients had foot exams by the third visit. 3. 100% of GDPC patients vs. 40% of CC patients were seen by Allied Health Staff by the third visit. 4. A greater decrease in Hemoglobin A1C in patients enrolled in GDPC clinic than those in CC over six months period (2.33% vs. 2.28%, respectively). The broken appointments rate in the GDPC clinic was lower than that in the CC. Clinicians noted that when patients had a better understanding of their diseases less time was required to conduct their individual visits.
KEY LESSONS LEARNED: Group clinic is an innovative way to increase the numbers of patients served, thus creating capacity in the system while maintaining quality care. This model of care has shown to be a cost effective and an efficient way to expand primary care to more patients by using existing resources.

IMPLEMENTATION OF A MEDICATION RECONCILIATION PROCESS IN THE DIVISION OF PRIMARY CARE INTERNAL MEDICINE CLINICS. C.L. Nassaralla[1]; J. Naessens[1]; R. Chaudhry[1]; M.A. Hansen[2]; S. Scheitel[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN; [2]Mayo Clinic, Rochester, MN. *(Tracking ID # 172638)*

STATEMENT OF PROBLEM OR QUESTION: An increasing number of patients with multiple medical problems are being cared for in the outpatient setting. The complexity of these patients poses a challenge for primary care physicians to maintain the quality and continuity of patient care, while minimizing medication errors. Updated and accurate medication lists would greatly minimize drug-related morbidity and improve patient health outcome.
OBJECTIVES OF PROGRAM/INTERVENTION: This prospective study was designed to evaluate the causes of medication list inaccuracy, and implement interventions to enhance the overall accuracy of medication lists.
DESCRIPTION OF PROGRAM/INTERVENTION: This study was an extension of the initial benchmark study to encompass 5 PCIM outpatient clinics housed in the same facility. The study setting was the division of primary care internal medicine which consisted of 5 clinics with 32 staff physicians, 6 fellows and 95 residents. The study took place over 8 months with one multi-intervention. Prior to the intervention, baseline data was collected and analyzed assessing the completeness and correctness of medication documentation in the electronic medical record. Completeness is defined as including medication name, dose, frequency and route, which was assessed by reviewing the medication list available in the electronic medical records (EMR) of randomly selected patients from a pool of all patients seen in the clinics during the study periods. Correctness is defined as having no discrepancy between the documented medication list and the medications the patient is actually taking at home which was assessed by calling the patients at home. The intervention consisted of: 1) communicating the results of the

baseline data collection to staff physicians and LPNs; 2) defining what constitutes a complete medication list to all physicians and LPNs; and 3) providing personalized feedback of baseline measures to LPNs. A second data collection was undertaken 1 month after the intervention to re-assess the accuracy of medication lists. Medication lists are defined as accurate when they are complete and correct.
FINDINGS TO DATE: : Completeness of individual medication items improved from 76.5% (baseline) to 84.7% (post intervention). However, the completeness of the entire medication lists only improved from 20.4% to 45.1%, $p < 0.001$. The major causes of incomplete documentation of medication lists prior to implementing intervention was the lack of frequency (15.4%) and route (8.9%) of medication items within a medication list. In addition, documentation of over-the-counter and "as needed" medications was often incomplete. The correctness of the entire medication lists improved from 29.5% to 48.1%, $P < 0.001$. However, the correctness of individual medication items worsened from 89.1% to 61.9%, $p < 0.001$. The major causes of incorrectness in a medication list were due to misreporting of medications by patients or failure of clinicians to update the medication list when changes were made.
KEY LESSONS LEARNED: We found it easier to improve completeness than correctness of a medication list. The improvement of completeness of a medication list can be accomplished by giving personalized feedback to the LPNs who are responsible to initially create a preliminary note with the patient's medication list. However, to improve the correctness of medication lists it is necessary to have an active participation of patients and physicians

IMPLEMENTATION OF OPEN ACCESS SCHEDULING IN PRIMARY CARE: A CAUTIONARY TALE. A. Mehrotra[1]; L. Keehl-Markowitz[2]; J.Z. Ayanian[3]. [1]University of Pittsburgh, Pittsburgh, PA; [2]Massachusetts General Hospital, Boston, MA; [3]Harvard University, Boston, MA. *(Tracking ID # 173787)*

STATEMENT OF PROBLEM OR QUESTION: The inability to obtain timely appointments impedes access to primary health care. Open access scheduling (also known as advanced access or same day access) is an increasingly popular quality improvement project whose goal is to allow patients to schedule an appointment in a more timely fashion including same day appointments. The hope is that the improved access will improve patient and staff experience as well as decrease no-shows and therefore improve practice efficiency, but few published articles have evaluated these effects.
OBJECTIVES OF PROGRAM/INTERVENTION: Our objective was to evaluate the impact of an open access scheduling implementation and to review the unexpected barriers faced in implementing the model.
DESCRIPTION OF PROGRAM/INTERVENTION: Implementation of open access scheduling was attempted at 6 primary care clinics (2 community health centers, 3 family practice clinics, 1 general medicine clinic) in the Boston metropolitan area from October 2003 through June 2006. Each clinic created a leadership team supported by an outside group of experts with experience in open access implementation. The major outcome measures were: (1) availability of appointments measured in days for both short visits (15 minutes usually) and long visits (30 minutes usually), (2) no-show rates, (3) patient satisfaction with appointment availability, and (4) staff satisfaction with appointment availability. The first two measures were determined from electronic scheduling databases, and the latter two measures obtained from patient and staff surveys. Appointment availability measures did not include urgent same-day appointments.
FINDINGS TO DATE: Before the implementation the average wait time across the six clinics was 19 days for a short visit and 36 days for a longer visit. Of the 6 clinics, 5 were able to implement the model and in the first 90 days after implementation these clinics improved appointment availability by 59% on average (short visits - 19 days to 7 days, long visits 36 days to 14 days, both $P < 0.001$). However, none of the 5 clinics was able to reach and sustain the goal of same day access and most of the gains were lost at three years of follow-up. There was limited and inconsistent improvement in no-show rates (17% pre-intervention vs. 15% post-intervention, $P = 0.08$) and the proportion of patients rating appointment availability highly (48% pre-intervention vs. 51% post-intervention, $P = 0.35$), and the proportion of staff rating appointment access tended to decline (37% pre-intervention vs. 33% post-intervention, $p - 0.60$). Seven unexpected barriers limited the ability to implement open access scheduling effectively, including instability of provider supply and unexpected demand for routine physicals.
KEY LESSONS LEARNED: Contrary to the limited published literature on open access scheduling, we describe only mixed success in improving access using this approach and find no significant improvements in no-show rates, patient satisfaction, or staff satisfaction. This might be due to our inability to fully implement the model successfully or might be due to the model itself. Key barriers to implementing open access scheduling in primary care must be addressed for this approach to achieve sustained improvements in patients' access to primary care appointments.

IMPLEMENTING A STANDARDIZED NURSING/PHYSICIAN TEAM TO ENHANCE PATIENT CARE, QUALITY AND SAFETY IN AN ACADEMIC PRIMARY CARE PRACTICE. R. Chaudhry[1]; M. Thomas[1]; M. Morrey[1]; R. Stroebel[1]; S. Tulledge-Scheitel[1]; J. Christensen[1]; K. Thomas[1]; E. Tangalos[2]; S.K. Houle[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN; [2]Mayo Clinic, Rochester, MN. *(Tracking ID # 172975)*

STATEMENT OF PROBLEM OR QUESTION: In an era of increasing health care costs and declining reimbursement and increasing quality expectations from the primary care practices, practice re-designs are needed to provide increasing number of services for all the patient encounters with physicians and nurses working as teams. In our Division of Primary Care Internal Medicine, we have 40 physicians, 96 residents and 20 LPN's. Prior to practice standardization in May 2005, LPN support was for only 30 staff physicians and there was no support for 10 staff physicians and 96 residents. For the physicians with LPN support, the LPN would screen the patient for preventive services and tee up the orders for the physician to complete and create a medication list. However, there were six different rooming processes and many different preventive services protocols being followed. Because of budget constraints, it was not possible to hire additional nursing staff to provide the same level of care for the remaining staff physicians and all the 96 resident physicians.
OBJECTIVES OF PROGRAM/INTERVENTION: Implementation of standardized care process utilizing LPN's as care team members for all the staff physicians and resident physicians. Objective also was to standardize the practice based on evidence-based guidelines.
DESCRIPTION OF PROGRAM/INTERVENTION: The different processes were flow charted. The time requirement and task performed by each process was measured. Based on whether or not the tasks added value to the care that the LPN staff were providing, as per evidence based guidelines , value-added time was calculated from each process. We then identified best practice element from each of the six processes and eliminated unnecessary and wasteful steps and maximized the efficiency for the LPN's and desk staff. The new proposed process, 100% was value-added and reduced time required from 17 to 13 minutes. Concensus-driven standardized preventive service protocol for assessment, scheduling, and delivery of all the preventive services including immunizations was developed. The new process consists of desk staff rooming the patient and LPN's doing vitals, creating a medication list in the EMR, reviewing and updating allergies in EMR ,utilizing a stub note with guidelines for age and sex specific preventive services integrated into the electronic application to assist the LPN to screen for the appropriate preventive services and then teeing up the electronic order system for any preventive services that the patient is due for and creating a note in the EMR about the preventive services for MD to review and doing other patient care activities like administering vaccinations or collecting urine sample for patients with urinary symptoms.
FINDINGS TO DATE: The process has been implemented across our entire practice and has provided standardized care to all of our patients whether seen by staff or resident physicians. By eliminating non-value-added steps, we now provide the same level of support for all of our staff and resident physicians without hiring additional nursing staff.
KEY LESSONS LEARNED: Variation is usually an arbitrary choice which leads to excessive cost. The standardized practice which is evidence based can help simplify the processes, reduce time required for the processes, and clarify the role of each team member caring for the patient. Standardization also helped improve quality and patient safety by having all the patients in our practice screened for all the preventive services and have a medication list created in a standardized manner.

IMPROVING ACCESS TO HEALTH CARE TO UNDOCUMENTED MIGRANTS. H. Wolff[1]; J.M. Gaspoz[1]. [1]Division of Primary Care Medicine, Department of Community Medicine and Primary Care, University Hospitals, Geneva,. *(Tracking ID # 172408)*

STATEMENT OF PROBLEM OR QUESTION: Illegal migration is an increasing problem worldwide. Because of their difficult living conditions, separation from their families, exploitation by their employers, the permanent threat of being caught by the police and exclusion from health care systems, undocumeneted migrants are at high risk of being in poor health.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Access to health care for undocumented migrants. 2. Prevention. 3. Epidemiologic research to improve knowledge about this hard-to-reach population.
DESCRIPTION OF PROGRAM/INTERVENTION: In 1996, to counter the problem of poor access to healthcare for marginalized social groups, especially undocumented migrants, the Geneva University Hospitals set up a Unit based on the low-threshold or easy-access approach. An estimated 8'000 to 12'000 undocumented migrants, defined as migrants without legal residency permit, of whom more than 90% lack health insurance, live and work in Geneva, representing 1.8 to 2.8% of the 434'500 resident population. The Unit is well known by the entire poverty network of Geneva and has political support. It's interdisciplinary team, comprising nurses, general practitioners and social workers, has developped means to facilitate access and integration of migrants into the regular public health care system: language and communication skills; financial agreements; and close cooperation with other departments of the University Hospitals for the most prevalent problems, such as women's health. Health care quality standards are the same as for patients with legal residency permit and health insurance. Prevention is the major focus of the Unit's work, helping to avoid emergency situations and serious - and generally expensive - disease progression.
FINDINGS TO DATE: The number of consultations reached 8'000 in 2006 and included 3'000 patients. Their socio-demographic profile corresponded to the typical profile of undocumented migrants in Geneva: 64% of them being women from Latin America, living in Geneva for a mean of 3 years, aged between 20 and 50 years (mean 36.5, + SD 11.4), and making a living by looking after children, the elderly, or as housekeepers. Most prevalent reasons for medical encounter were related to women's health (20%), osteoarticular (9.2%), dermatological (9.2%), psychological (8.5%), gastrointestinal (5.5%) and dental (5.4%) disorders. In relation to reproductive health, 83% of pregnancies were unintended and 70% of the women didn't take any contraception. Voluntary pregnancy interruption was frequent and chlamydia

prevalence (11.4%) in pregnant undocumented migrants was three times as high as in the general population. Access to and utilization of preventive measures, like cervical cancer screening or rubella vaccination, was poor.
KEY LESSONS LEARNED: Access to health care can substantially be improved for undocumented migrants by offering easy access to care in a trust-building environment. This allows to improve knowledge about their specific health-related needs, such as contraception, cervical cancer screening, rubella immunisation, psychological support or dental care. Future research should target on predictors of heath outcomes of this hard-to-reach population and on which programs best address its specific needs.

IMPROVING PATIENT SAFETY WITH A WEB-BASED MEDICAL ERROR/INCIDENT REPORTING SYSTEM. A.L. Sabel[1]; P.S. Mehler[1]. [1]Denver Health and Hospital Authority, Denver, CO. *(Tracking ID # 172816)*

STATEMENT OF PROBLEM OR QUESTION: Denver Health implemented University HealthSystem Consortium's (UHC) Patient Safety Net (PSN) in 2003 as an on-line adverse event reporting tool and for the first three years we merely summarized our occurrences with simple graphs available through the UHC database.
OBJECTIVES OF PROGRAM/INTERVENTION: Our objectives are to now better understand who uses our safety reporting system and when occurrences occur, what these errors entail, and to look for ways to make the reporting process more efficient and worthwhile.
DESCRIPTION OF PROGRAM/INTERVENTION: Our staff can access PSN from any computer in our hospital and complete a report on average in three minutes. The manager of that area immediately receives a notice that a report has been filed. This program is used by many other hospitals nationwide and thus allows Denver Health to compare itself to other similar hospitals in regards to patients safety.
FINDINGS TO DATE: Out of 6,962 reports filed from July 2004 to June 2006, 92% concerned possible harm against patients, 3.5% against staff, 1.1% against visitors, and 3.2% against other individuals. Half of the cases (53%) were reported during the daytime shift (6 A.M.–6 P.M.), one-third from the night shift (31%), and 16% did not indicate the shift when the event occurred. Only 11% of the reports were submitted anonymously and 19% of our staff requested feedback on their reports. Practitioners (physicians and mid-level providers) completed only 5% of the reports, nurses 58%, technicians 15%, and non-clinical staff 9%. Sixty-nine percent of the cases were near-misses or events that reached the individual but did not cause harm. Practitioners tended to report events with a higher severity score than nurses (52% vs. 36%). The occurrences most commonly cited overall were errors related to procedures/treatments/tests, medication errors, and falls (25%, 19%, and 11%, respectively). A similar trend applied to practitioners except that falls were rarely reported (<1%) and complications related to procedures/treatment/tests were 17% of their reports. There were no significant trends in these three error types after adjusting for the average daily census. Attending physicians reported 220 events, which was 3.1% of the reports over the two year time period. Residents and fellows reported 50 events (0.7%). Internal Medicine physicians (including subspecialists) completed 44% of the 270 reports, obstetricians 16%, pediatriacians 10%, family medicine doctors 8%, and surgeons 5%. Incidents were reported by physicians from all major departments of our hospital. Feedback was requested by 43% of the physicians and only 3 doctors submitted their reports anonymously.
KEY LESSONS LEARNED: Our patient safety system is used primarily for near-misses that are reported by nurses during the daytime shifts. Education should be focused on improving our processes related to procedures, medications, and fall prevention in an attempt to reduce their frequency. Physicians were twice as likely to request feedback for their relatively infrequent reports, indicating a concern for follow-up in events they deemed important. Training should be targeted towards increasing attending physician and resident use of our incident reporting system as this group infrequently uses the system yet they are more interested with the ultimate outcomes.

IMPROVING THE PROCESS IMPROVES OUTCOMES: HEDIS LDL CHOLESTEROL DIABETES PROGRAM. J.A. Melin[1]; S. Emro[2]; P.S. Sherry[2]; J. Cusolito[2]. [1]Lahey Clinic Medical Center, Burlington, MA; [2]Lahey Clinic, Burlington, MA. *(Tracking ID # 171206)*

STATEMENT OF PROBLEM OR QUESTION: Improving HEDIS measures of LDL cholesterol in patients with Diabetes: a streamlined process that improves cholesterol screening rates AND improves control of LDL cholesterol without an electronic point-of-care alert system.
OBJECTIVES OF PROGRAM/INTERVENTION: ·Improve rate of testing of LDL cholesterol in patients with diabetes (measured using HEDIS criteria) ·Improve control of LDL cholesterol in patients with diabetes (measured using HEDIS criteria) ·Implement the program to achieve these results without interrupting workflow of busy physicians
DESCRIPTION OF PROGRAM/INTERVENTION: A registry containing patients identified as due LDL testing based on their diagnosis of diabetes, using HEDIS criteria, was created. The registry was populated by lists from the health plans and by data available through the claims and laboratory system at our medical group. Laboratory request forms were completed for patients due LDL cholesterol testing, forwarded to the physician for review and signature, and if approved by the physician, entered into the laboratory order system. The patient was sent notice and instructions to come for testing within one month. Results of the testing were forwarded to the ordering physician and to a clinical pharmacist. If results were above goal, intervention was to be offered to the patient by the physician, or by the clinical pharmacist after consultation with the physician.
FINDINGS TO DATE: We previously found that our program produced improved rates of LDL cholesterol testing for the measured population. We now also show improved actual cholesterol control in a random sample of those measured patients, and continued improvement in rate of testing. Rates of testing of LDL cholesterol for the measured commercial age population improved by 8.7%, from a baseline of 85.7% to Year 1 = 92.8%, to Year 2 = 94.4%. Control of LDL < 130 improved 9.7%, from 71.7% at baseline, stable in Year 1 = 71.1%, to an increase to Year 2 = 81.4%. Control of LDL < 100 rose 20.2%, from Year 1 = 33.3% to Year 2 = 53.5%. (1st measured in year 1). Rates of testing of LDL cholesterol for the measured Medicare population improved by 7.4%, from a baseline of 87.1% to Year 1 = 93.1%, to Year 2 = 94.5%. Control of LDL < 130 rose 20%, from baseline = 62.1%, rose in Year 1 = 80.3%, and Year 2 = 82.1%. Control of LDL < 100 rose 12%, from Year 1 = 46.5% to Year 2 = 58.5. (1st measured in year 1). Data is aggregated by Massachusetts Health Quality Partners (MHQP), for commercial and Medicare patients insured by major health plans who contribute information to the statewide MHQP program. Baseline year is 2002, year 1 is 2003, year 2 is 2004. Analyses use standard NCQA (National Committee for Quality Assurance) HEDIS (Health Plan Data and Information Set) criteria. Results of testing frequency are based on claims data. Cholesterol test results level < 130 or < 100 are based on an aggregate of smaller random sample chart reviews by large health plans.
KEY LESSONS LEARNED: Important and sustained improvements can be made to the frequency of clinically important LDL cholesterol testing for patients with diabetes, without an electronic point-of-care decision support system or an electronic medical record. Improvement in control of LDL to target levels was simultaneous with or followed shortly after improvements in testing frequency in this program which provided results of testing both to physicians and clinical pharmacists. Most clinicians will respond positively to an efficient process that minimizes intrusion into daily practice activities and supports indicated testing.

IMPROVING THE RESIDENT CONTINUITY CLINIC EXPERIENCE THROUGH TEAMWORK. M. Kai[1]. [1]Providence Portland Medical Center, Portland, OR. *(Tracking ID # 173790)*

STATEMENT OF PROBLEM OR QUESTION: A major concern of current internal medicine residency training is that many continuity clinic experiences discourage residents from choosing a career in outpatient primary care practice.
OBJECTIVES OF PROGRAM/INTERVENTION: Our internal medicine residency clinic instituted a "team" system with the following objectives: 1) to improve resident satisfaction with their clinic experience, 2) to provide an experience more similar to an outpatient practice after graduation, and 3) to provide a stronger sense of continuity for residents, patients, and support staff.
DESCRIPTION OF PROGRAM/INTERVENTION: The Providence Ambulatory Care and Education Center is a general internal medicine practice associated with the Providence Portland Medical Center Internal Medicine Residency Program. In 2004, a team system was instituted in response to a resident satisfaction survey, in which 41% of responders suggested that their first priority for change in clinic would be to have more expectations and more help from the medical assistants (MA). Nine teams were established, with each team comprising of one general medicine faculty, 2 residents, an intern, and a MA. A key component of the system was to assign the same MA to a resident longitudinally over the year. Every effort was made to have each resident work only with his or her specific MA during each clinic session to develop a stronger working relationship. We re-allocated clinic resources to be able to provide one MA for each team. The team also functions as a group practice by providing cross-coverage for each other's patients in clinic and via phone.
FINDINGS TO DATE: After 6 months of the experience, we asked five items on a questionnaire using a Likert scale from 1 to 5, with one being "not at all", 3 being "neutral", and 5 being "greatly". Seventeen of the 18 residents responded (94%). The questions were as follows: 1)"By working with your own MA, do you feel that your time management skills have improved in clinic?" 2) "Has working with your own MA improved your patient care outside of clinic (i.e. patient phone calls, refill requests, paperwork, etc)?" 3)"Are you enjoying your clinic more since you started working with your own MA?" 4) "Do you feel that working with your own MA has helped you provide a higher quality of care to your patients?" 5) "Has working with you own MA increased your desire to practice outpatient medicine after graduation?" The average responses for each question were as follows: 4.2, 4.4, 4.5, 4.4, and 3.4. For questions 2, 3, and 4, the majority (53%) answered 5. Even for question #5, there were four residents who answered 5. When asked "What is the most satisfying aspect of working in the clinic?" in a follow-up qualitative survey in 2006, many residents wrote in "support from their MA" and "continuity with their patients".
KEY LESSONS LEARNED: Continuity with support staff was a key factor in increasing the satisfaction for residents in our general medicine residency clinic. By establishing a longitudinal relationship for residents with one specific MA, the residents felt more supported in their clinic-related tasks and patient care. A major source of frustration for residents with their continuity experience was the large amount of peripheral patient care related tasks such as paperwork, follow-up letters, handling refill requests, and test notification. The same personnel, who were perceived

as "unhelpful" in one organizational structure, became perceived as "very helpful" in a different system.

INTEGRATING OPIOID ADDICTION THERAPY WITH BUPRENORPHINE IN PRIMARY CARE. G.M. Sacajiu[1]; N. Sohler[1]; A. Giovanniello[2]; S. Whitley[1]; R. Beil[2]; P. Mund[2]; C. Cunningham[1]. [1]Albert Einstein College of Medicine, Bronx, NY; [2]Montefiore Medical Center, Bronx, NY. *(Tracking ID # 173678)*

STATEMENT OF PROBLEM OR QUESTION: Integrating medical care and drug treatment has shown great promise, but until recently, fully integrated opioid addiction treatment and medical care has been largely limited to substance abuse treatment settings. The availability of buprenorphine that can be prescribed in the primary care setting is likely to extend opportunities to develop novel programs that integrate opioid addiction treatment and medical care. To date, only a few programs have been described and evaluated.
OBJECTIVES OF PROGRAM/INTERVENTION: We describe an opioid addiction treatment integrated with primary medical care with three main objectives: (1) to expand public knowledge about opioid addiction, its association with the HIV epidemic, and the use of buprenorphine, (2) to provide intensive opioid addiction training and support to medical providers, (3) to establish opioid addiction treatment in a Federally Qualified Community Health Center in the South Bronx.
DESCRIPTION OF PROGRAM/INTERVENTION: An opioid addiction program was introduced into a Community Health Center located in the South Bronx. To ensure acceptability of the program, several preliminary steps were taken. First, knowledge and attitudes of medical providers and support staff were evaluated; then targeted, medical education sessions were developed and implemented on a regular basis. Second, a buprenorphine team of clinical providers was established. This team consisted of three physicians from the health center, a clinical pharmacist, and two substance abuse experts (from outside of the health center) with substantial buprenorphine experience. Third, monthly meetings with the buprenorphine team were established to tailor treatment guidelines specific to the health center's population, address problems identified by providers and patients, and discuss difficult cases. Fourth, space in the health center was designated for opioid addiction treatment and management. Fifth, program brochures, flyers, and educational materials were created and posted throughout the health center and in the larger surrounding community.
FINDINGS TO DATE: Since the program began in August 2005, three physicians were certified to prescribe buprenorphine. Based on interviews and observations, we noted positive attitudes' changes among the staff. To date, 63 patients have been evaluated for addiction therapy. Only 26 patients (41%) were already receiving primary care at the health center. Of the 63 patients 22(36%) were not eligible for Buprenorphine, 37(58%) were newly induced on buprenorphine and four (6%) were maintained on buprenorhpine after induction elsewhere. At present 35 (85%) have retained in opioid addiction treatment with buprenorphine between 0.5 to 23 months. Inquiries about buprenorphine treatment have continued to increase throughout the project period, with about two to four new patients presenting per month. Overall, few reports of disturbances to the usual flow at the health center have been noted after the establishing the integrated buprenorphine program, and all have been able to be addressed satisfactorily.
KEY LESSONS LEARNED: In a Community Health Center in an inner city neighborhood of the Bronx, we were able to establish and maintain a successful program of integrated opioid addiction treatment and primary medical care. Through this program, we have identified, treated, and retained patients who previously were not receiving integrated opioid addiction and medical care. Further detailed evaluation of patients' and providers' experiences is ongoing, and will help guide additional improvements in the program.

IT'S NOT ROCKET SCIENCE: RESPONDING TO PAY-FOR-PERFORMANCE IN UK PRIMARY CARE. B. Guthrie[1]. [1]University of Dundee, Dundee, Scotland. *(Tracking ID # 173242)*

STATEMENT OF PROBLEM OR QUESTION: Pay-for-performance implemented in April 2004 offered the opportunity to increase practice income by ~20% provided that we could consistently deliver high quality care defined by 147 clinical and organizational indicators
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Deliver high quality care, maximize income and perform well in public rankings. 2. Minimize fragmentation of care for complex patients
DESCRIPTION OF PROGRAM/INTERVENTION: ***Setting*** The Ferguson Medical Practice, an average sized UK General Practice (5500 patients, 3 physicians, 3 nurses) serving a socio-economically mixed population. Like most UK practices, we already: 1) Used an electronic medical record (but not to its full capabilities). 2) Employed nurses (but didn't fully use their skills). 3) Provided systematic care for diabetes. 4) Used clinical audit to examine topics we found problematic, although subsequent quality improvement activities were usually small scale, and not always sustained ***Response to pay for performance*** We would have achieved 50–60% of the quality targets with minimal change to existing practice, but chose to aim for maximum. This required system change to implement 'best practice' chronic disease care: 1) Reorganization led by a core team (physician, nurse, manager) but discussed with whole team in weekly practice meetings, and with a lead physician and/or nurse responsible for each disease. 2) Electronic medical record (EMR) used to create accurate disease registers and to record quality data. 3) Retraining of nurses and shift of simple work to a new healthcare assistant, to allow creation of nurse-led clinics 4) EMR used to identify patients requiring review. Fragmentation of care was minimized by a senior nurse making individualized decisions about appropriate review depending on complexity (eg telephone review, appointment in nurse-led clinic or with physician). 5) Review structured by EMR templates embedding relevant guidelines, and by electronic reminders in consultations. 6) EMR data used for regular monitoring of practice performance, with early intervention in problem areas
FINDINGS TO DATE: 1) Measured quality of care post-implementation has been consistently high (eg 41/43 clinical processes delivered to >90% of eligible patients; 100% compliance with organizational indicators). For diseases where we had prior audit data, most clinical measures improved 10–25%. 2) We achieved maximum pay-for-performance income and high ranking in public quality reports. 3) First year implementation required staff to work additional hours, and consumed our entire capacity for quality improvement. In year 2, workload reduced, but quality improvement work for the 90% of primary care that is not incentivized remained crowded out
KEY LESSONS LEARNED: 1) Systematic disease management isn't rocket science, but was hard work and required systems change. 2) We were motivated to work hard by the large financial incentives and concern for our reputation with public reporting of results. 3) Once we'd changed our systems, consistently delivering high quality care was much easier than we anticipated. 4) Much (but not all) change was achieved by more effective use of our existing staff and IT. 5) Our success in delivering 'quality' for an external payer means that internally generated quality improvement has been crowded out. 6) Many clinical guidelines and disease management systems ignore co-morbidity. Minimizing fragmentation of care across multiple clinics and guidelines is possible, but requires active planning to achieve, and is labor intensive because it defies full automation

MAN VS. MACHINE: INTERVENTIONS TO IMPROVE COMPLIANCE WITH CMS CORE MEASURES. R. Vattasseril[1]; L. Kogan[1]; H. Dosik[1]; S. Silber[1]; C. Rath[1]; S. Walerstein[2]; J. Heitner[1]; D. Conner[1]. [1]New York Methodist Hospital, Brooklyn, NY; [2]Nassau University Medical Center, East Meadow, NY. *(Tracking ID # 173004)*

STATEMENT OF PROBLEM OR QUESTION: Physicians strive to provide good quality care, however documented compliance with the Center for Medicare and Medicaid services (CMS) core measure quality indicators does not always reach the desired goals.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) To improve performance on the CMS core measures. 2) To minimize interference with physicians' decision making that might be encountered with a pro-active case-management intervention. 3) To prompt physicians to document compliance or valid reasons for non-compliance with the indicators.
DESCRIPTION OF PROGRAM/INTERVENTION: From January until September 2004, the NY Methodist department of medicine utilized a paper-based discharge form addressing compliance or reasons for variance with the quality indicators by check-off boxes or short answers to be filled out before the patient was discharged. In October 2004, the form was converted into a Cerner-based computer-physician-order-entry (CPOE) discharge order. The CPOE added an additional advantage that the discharge order could not be completed until all required fields were addressed. It also generated an informative discharge instruction sheet for the patient. In August 2005, we added an auditing component (CPOE+) with daily review of a sample of patients being discharged and provided real-time feedback to physicians when documentation did not reflect optimal quality. Physicians could respond by correcting their care or supplying appropriate documentation to support their variance. We used the data submitted to CMS to evaluate our performance. A chart abstractor trained and validated by a CMS designee retrospectively collected the data. We focused on CMS core measure indicators that were not primarily the responsibility of the emergency department. These were aspirin at discharge and beta-blocker at discharge for acute myocardial infarction, ejection fraction assessment for congestive heart failure and pneumococcal vaccination. We excluded indicators on ACE-inhibitors and discharge instructions for heart failure because CMS significantly changed the definition of compliance during the study period. These 3 groups (Paper-based, CPOE, and CPOE+) were analyzed with the Pearson chi-square test.
FINDINGS TO DATE: Pneumococcal vaccination compliance was 25% for the paper-based intervention, 47% for CPOE and 85% for CPOE+ ($p < 0.001$). Documentation of ejection fraction in CHF was 87% for the paper-based intervention, 89% for CPOE and 96% for CPOE+ ($p < 0.001$). Aspirin on discharge in AMI was 94% for the paper-based intervention, 93% for CPOE and 96% for CPOE+ ($p > .05$). Beta-blocker on discharge in AMI was 92% for paper-based intervention, 96% for CPOE and 92% for CPOE+ ($p > .05$).
KEY LESSONS LEARNED: Using forms to prompt compliance is a reasonable approach to quality improvement. Electronic records and CPOE may be more effective than paper-based forms in certain areas. However, the addition of an auditor to reinforce appropriate use of the electronic process was necessary for improvement on the more recalcitrant indicators. Interestingly, this is the kind of work intensive oversight that we hoped electronic records and CPOE would avoid.

MEDICAL CASE-FINDING FOR RECENT ARRESTEES: COLLABORATION BETWEEN A PRIMARY CARE PROVIDER AND A PUBLIC DEFENDER IN THE SOUTH BRONX. H.D. Venters[1]; J.P. Deluca[2]; E. Drucker[1]. [1]Montefiore Medical Center, Bronx, NY; [2]Montefiore Medical Center, Bronx, NJ. *(Tracking ID # 172904)*

STATEMENT OF PROBLEM OR QUESTION: Residents of the South Bronx contend with high rates of criminal justice involvement which may interrupt access to primary care.
OBJECTIVES OF PROGRAM/INTERVENTION: 1) To create a collaboration between a large primary care clinic of Montefiore Medical Center and a nearby public defender agency, Bronx Defenders. 2) To assess the healthcare utilization of these clients. 3) To explore the opportunities for improving access to primary care among Bronx Defenders clients.
DESCRIPTION OF PROGRAM/INTERVENTION: Two years ago a collaboration was initiated between Bronx Defenders and a Montefiore Medical Center clinic. Bronx Defenders clients (all of whom had been arrested in Bronx County and required state-appointed legal representation) were given the opporunity to speak with a medican resident on-site for any reason during weekly office hours. These meetings were conducted in private and clients were given assistance in connecting with already established primary care or if desired, registered as patients at the Montefiore Medical clinic across the street for an initial visit with the resident. Information recorded from these client contacts included chief complaint, time to last primary care visit, medical history, immediate outcome (ie appointment scheduled) and final outcome (ie appointment kept).
FINDINGS TO DATE: We now report a total of 89 client contacts over a 16 month period (preliminary results were reported one year ago from the first 27 clients). These contacts were made during 84 sessions with total physician time spent of approximately 220 hours. Chief complaints during the initial client contact included violent trauma, tooth pain, pelvic pain, release from jail without prescribed seizure, diabetes or HIV medicine, sexual assault, burns, suicidal plan, and chest pain. Of the 89 contacts, 33% (20/89) involved discussion only, 22%(20/89) involved assistance reconnecting a client with their prior medical care program, and 45%(40/89) resulted in new clinic appointments, of which 60%(24/40) were kept - similar to the kept appointment rate for the general clinic population. Women were more likely to keep their clinic appointment than men (76% vs. 44%) and averaged more recent contact with a non-emergency room physician than men (6.9 months vs. 9 months). The average time required for the resident to make a new clinic appointment by phone was 28 minutes. Of the 89 client contacts, 13 resulted in immediate action that had a positive outcome, such as emergency room visit, treatment of pelvic inflammatory disease, rape crisis counseling and having electric power turned back on (for medicine storage).
KEY LESSONS LEARNED: This collaboration has identified a novel method to provide primary care access to persons who have recently been arrested - an event that is often associated with disruption of health care. While other medical-legal collaborations have placed legal services within a medical clinic, this collaboration builds on the trust that clients place in their legal-aid lawyers and the advocacy oreintation of the Bronx Defenders. Given the amount of on-site physician time required to make contact with individual clients (over 2 hours per client contacted), this model may prove more feasible with the use of health promoters or other non-MD persons on-site.

NARCOTIC PRESCRIBING: AN RN DIRECTED PROGRAM. E. Mcneill Byrd[1]; T. Coltrain[1]; N. Pierson[1]; B.E. Johnson[1]. [1]East Carolina University, Greenville, NC. *(Tracking ID # 172702)*

STATEMENT OF PROBLEM OR QUESTION: Narcotic prescribing was inconsistent, piece-meal, and not in compliance with best practices and medical board guidelines in our faculty and resident continuity clinics.
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Bring consistency to chronic narcotic prescribing 2. Eliminate opportunities for abuse and diversion 3. Bring narcotic prescribing into compliance with best practices
DESCRIPTION OF PROGRAM/INTERVENTION: Our faculty and resident physicians were feeling besieged by patients demanding narcotics. This was due to: • A policy by local Pain Clinics not to provide narcotic refills (saying this was the duty of the primary care doctor) • An unwillingness by doctors in the community to prescribe chronic narcotics • A sense "on the street" that the clinics could be manipulated to provide narcotics without critical oversight. Our response to this problem was to initiate a RN-directed system to oversee narcotic prescribing within well-defined guidelines. We started by declaring a moratorium on accepting new patients into our clinics for the management of chronic pain with narcotics. We then began transferring established patients to a RN-directed system. The RN directed system was designed to implement guidelines for narcotic prescribing developed by the North Carolina Medical Board. These guidelines include: having an established diagnosis and appropriate specialty consultation, radiology and laboratory testing; periodic reassessment of need for chronic narcotic administration or a plan towards eventual discontinuation of narcotics; and a signed agreement between patient and primary care physician. The RN completes a comprehensive assessment both at patient intake and at 3–6 month intervals. She is consistent about confirming consultations, radiology, toxicology screens and noting progress towards discontinuation of narcotics (if appropriate). She is the only person in the clinic permitted to refill narcotics (with primary MD co-signature). Patients continue to receive all other medical care through their primary physicians. A licensed clinical social worker provides services for patients and providers.
FINDINGS TO DATE: Currently, there are over 250 patients enrolled in this program, with expectation of introducing the system into a second clinical site. New patient visits for chronic pain management have dropped from as many as 3–6/day to only a few per week. The word "on the street" is that our clinic is no longer "easy". We do not know where patients looking to abuse narcotics now receive their prescriptions. The system currently employs one full-time RN. While the program can be entirely RN-directed, we discovered that appropriate physician interaction can result in a Level 4 charge. Morale among staff and resident physicians has improved markedly. Anecdotal accounts suggest doctors now feel empowered to discuss both medical and pain management issues with greater openness. There is also a greater sense of comfort that Medical Board guidelines are followed and, presumably, liability reduced.
KEY LESSONS LEARNED: • A RN-directed system is feasible and acceptable to doctors • A clear, consistent protocol reduces the potential for abuse, incorporates best-practice models, and lessens liability • Our clinics can provide quality medical care, in conjunction with specialty consultation, for an otherwise challenging patient population.

POPULATION INTERVENTION FOR PNEUMOCOCCAL AND INFLUENZA IMMUNIZATION. M. Selna[1]; F.J. Bloom[2]; T. Anderer[2]; N.R. Shah[3]; B. Hamory[1]. [1]Geisinger Health, Danville, PA; [2]Geisinger Medical Center, Danville, PA; [3]New York University, New York, NY. *(Tracking ID # 173089)*

STATEMENT OF PROBLEM OR QUESTION: Despite the enormous health and cost benefits, pneumococcal immunization of elderly primary care patients is relatively low. We tested if a large multi-site group practice could use its electronic health record to automatically identify patients eligible for a pneumococcal immunization and to link that service with each patients' yearly influenza immunization.
OBJECTIVES OF PROGRAM/INTERVENTION: Improve the prevalence rates of pneumococcal immunization over 2 consecutive influenza immunization seasons.
DESCRIPTION OF PROGRAM/INTERVENTION: Geisinger Clinic has had an integrated Electronic Health Record (EHR) in use since 2001 in its 41 community-based practice sites across 31 counties in central and northeastern Pennsylvania. In general, we used the EHR to link the process for pneumococcal immunization to that for influenza immunization. Specifically, since September 2005, five integrated procedures were used in an effort to improve immunization rates. First, EHR data were used to identify those at high risk, defined as 65+ year old patients with specific comorbidities (COPD, CHF, DM, or ESRD) seen within the prior two years. Second, we used the EHR's data to generate letters from the patient's physician, emphasizing the importance of the immunizations and need to schedule a single visit to receive both of them. Third, an appointment "wait list" was auto-generated so that, at the time of scheduling, the centralized Call Center staff would know which immunizations were required for any given patient. Patients that did not respond were contacted by phone. Fourth, the clinic site work flows were redesigned to utilize standardized auto-populated order and documentation templates as well as automated point-of-care EHR alerts for the nurses. Fifth, each month, performance reports and lists of their unimmunized patients were provided to each of the clinic sites.
FINDINGS TO DATE: Of the 16,582 high-risk patients identified in August 2005, 40% were eligible to receive a pneumococcal immunization. After instituting the EHR-based identification-notification process and then operationally linking the intervention to the established seasonal influenza immunization process, the high-risk population that remained eligible to receive a pneumococcal immunization decreased to 21% by August 2006 and then to 13% by December 2006.
KEY LESSONS LEARNED: The EHR enables deployment of unique strategies that combine population-level management with efficient clinical care protocols. While primarily a result of deliberately linking pneumococcal immunization to the seasonal influenza immunization process, the substantial multi-year improvement in the pneumococcal immunization rate is also due to increased reliance on automated systems of care (i.e., identifying the target population, automated personalized communication, auto-populated orders and documentation templates, etc.) We expect the high immunization rate in this population rate to have positive downstream effects on hospitalization rates and mortality.

REDUCTION IN PREVENTABLE CODES BY IMPLEMENTATION OF A RAPID RESPONSE TEAM. K. Ramsey[1]; A. Kho[2]; D. Liebovitz[2]; G. Noskin[1]; D. Rotz[1]; W. Cardenas[1]; C. Watts[1]. [1]Northwestern Memorial Hospital, Chicago, IL; [2]Northwestern University, Chicago, IL. *(Tracking ID # 172234)*

STATEMENT OF PROBLEM OR QUESTION: Failure to quickly identify and respond to deteriorating patients can lead to increased morbidity and mortality in hospitalized patients. In response to this need, hospitals have created rapid response teams (RRT) for prompt assessment and intervention on this at-risk population. Despite initial success, controversy surrounds the evidence supporting implementation of RRTs.
OBJECTIVES OF PROGRAM/INTERVENTION: Our objective was to determine the efficacy of a RRT to decrease preventable codes within our hospital.
DESCRIPTION OF PROGRAM/INTERVENTION: We conducted a before and after interventional trial within a 750 bed academic tertiary care hospital. Our RRT consisted of 5 trained nurses with a total of 79 years of ICU experience. The RRT responded to calls from concerned clinicians (nurses or physicians) on all adult patients outside of the ICUs and audited all code calls beginning in January of 2006. Using predefined criteria, a team of experts categorized codes as preventable or non-preventable. We defined true codes as involving patients in any of four ACLS cardiac rhythms, or requiring intubation. We created a multiple logistic regression model to determine patient and provider factors which independently predicted death prior to discharge.
FINDINGS TO DATE: From January to November of 2006, the rapid response team was called 719 times. During the same period there were 203 code calls, of which 80 were deemed preventable. Total monthly codes and fraction of preventable codes steadily decreased during the intervention period (Figure 1). Both increasing age and a modified early warning score (MEWS) were independently associated with risk of in-hospital mortality ($P < 0.005$).
KEY LESSONS LEARNED: Our experience supports implementation of rapid response teams to reduce the number of preventable codes in hospitalized patients. We identified factors which independently predicted in-hospital mortality and are developing automated means to alert the RRT to at-risk patients based on these predictors.

SIGNIFICANT REDUCTIONS IN HEMOGLOBIN A1C VALUES AMONG CHRONICALLY UNCONTROLLED DIABETIC PATIENTS AFTER PARTICIPATION IN A NOVEL PRIMARY CARE PROGRAM. D. Morrison[1]; E.S. Spatz[1]; J. Stulman[1]. [1]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 172912)*

STATEMENT OF PROBLEM OR QUESTION: How effective is a multidisciplinary primary care intervention program in achieving and maintaining diabetes control among diabetic patients in an inner city, immigrant community?
OBJECTIVES OF PROGRAM/INTERVENTION: To determine the longitudinal success of a novel primary care diabetes program in improving hemoglobin A1c (HbA1c) values among patients with chronically uncontrolled diabetes.
DESCRIPTION OF PROGRAM/INTERVENTION: We describe a multidisciplinary program for patients with chronically uncontrolled type 2 diabetes that originated as a quality improvement initiative in an urban academic primary care clinic. Patients referred by their physicians were scheduled to attend the program, and those who attended were scheduled for follow-up sessions every two weeks over a 2 to 4 month period. Patients met with members of a multidisciplinary team consisting of residents supervised by a primary care attending, a licensed practical nurse, and a nutritionist. Visit content differed from usual primary care by exclusively focusing on diabetes. Time was allotted for the discussion of potential barriers to glycemic control and development of strategies to overcome them.
FINDINGS TO DATE: 157 patients have enrolled in the diabetes program. Patients were included in this analysis if they had type 2 diabetes for over one year and 2 consecutive HbA1c values greater than 8.0% (n = 89). Entry HbA1c was defined as the latest value recorded 6 months prior to the initial visit until 2 weeks after the initial visit. Follow-up HbA1c values were documented in the following time intervals: 3–6 months post program exit; 6–9 months post program exit; and 9 months–2 years post program exit. In all intervals, the first recorded HbA1c value was used. For patients lost to follow-up (n = 5), the last value recorded was used as the follow-up HbA1c. Baseline patient characteristics were as follows: 27% black, 65% hispanic, 72% immigrant, 38% not proficient in English, 8% uninsured, 57% with medicaid only, and 28% with medicare. The mean BMI was 34.7 and the mean number of program visits was 4. Mean entry HbA1c was 10.7%, which was a mean absolute increase of 0.2% ($p = 0.28$) from the previous value. Comparing HbA1c values at entry with those in the follow-up intervals, the mean absolute reduction was 1.2% at 3–6 months ($p < .0001$), 1.4% at 6–9 months ($p < .0001$), and 1.6% at 9 months–2 years ($p < .0001$). There were no statistically significant associations between reduction in HbA1c and race, immigrant status, English proficiency, or type of insurance. There were non-significant reductions in LDL and systolic blood pressure and no change in BMI.
KEY LESSONS LEARNED: Patients with chronically uncontrolled diabetes can achieve significant reductions in HbA1c through a brief, collaborative primary care program designed to address diabetes-related care. These reductions are sustained and compare favorably with reductions associated with individual pharmacotherapies available for diabetes. Patients continue to achieve further reductions for at least 9 months after completion of the program.

STRATEGIES FOR IMPROVING PROVIDER-PATIENT COMMUNICATION ABOUT MEDICATION ADHERENCE: CAN BEHAVIOR CHANGE BE EFFECTED? DOES IT AFFECT PATIENT OUTCOMES? N.R. Kressin[1]; M.B. Orner[2]; D.R. Berlowitz[3]. [1]Center for Health Quality, Outcomes & Economic Research, a VA HSR&D Center of Excellence, Bedford, MA; [2]United States Department of Veterans Affairs, Bedford, MA; [3]Boston University, Bedford, MA. *(Tracking ID # 173475)*

STATEMENT OF PROBLEM OR QUESTION: Patient behavior change is central to the efficacy of many therapies; medication adherence is a key example. Patients' medication adherence is influenced by doctor-patient communication, yet physicians rarely receive extensive training in strategies to help patients improve adherence. Poor medication adherence is known to contribute to poor blood pressure (BP) control, so we developed, implemented, and evaluated the effects of a physician communication skills training intervention oriented toward antihypertensive medication adherence.
OBJECTIVES OF PROGRAM/INTERVENTION: We sought to improve clinicians' skills in medication adherence counseling, in order to improve medication adherence and ultimately, hypertension control.
DESCRIPTION OF PROGRAM/INTERVENTION: We developed a communication skills training intervention based on the "Patient Centered Counseling" method, which was initially developed and proven effective for use in the context of smoking cessation, alcohol reduction, and dietary change. At the intervention site (one of 3 participating VA medical centers; the others were a control site and one where only a clinical reminder for BP management was implemented), we trained providers to ask patients about their beliefs about hypertension, and challenges to adherence that the patient faced. Providers were taught to advise their patients by explaining how hypertension works, health problems that might develop if BP is not controlled, and by specifically stating how important it is to take BP medications as prescribed. Then, providers were taught to assess the patients' prior experiences in changing behaviors, to identify barriers and facilitators to such change, as well as the patients' level of motivation to do so. Next, providers were taught to assist patients in making needed changes, by providing written information about BP, and developing a written agreement for behavior change. Providers were taught to work with the patient to develop methods for addressing potential barriers to adherence, and to agree to a follow up plan with the patient. Finally, providers were urged to address relapse, revisiting each of the above steps as necessary in order to help patients improve their medication adherence. In addition, because simply teaching providers a skill does not ensure that they will use it, we implemented several components of an office based support system, including an electronic hypertension reminder within the electronic medical record, posting in exam rooms a summary 'algorithm' of the counseling steps for providers to use, and providing BP educational materials for clinicians to give to patients.
FINDINGS TO DATE: Subsequent to the intervention, providers at the intervention site provided more counseling than providers at the control site. We also observed significant improvements in BP control at the intervention site- diastolic BP dropped 1 mm Hg more than at the control site and patients with very high BPs improved more than the other sites (all p's $< .05$).
KEY LESSONS LEARNED: We learned that it is feasible to train physicians to improve their skills in counseling patients about medication adherence, and that such training has small effects on physician counseling and on blood pressure outcomes. Our training session was brief (one hour), so the fact that we observed even these small improvements in physician counseling and BP outcomes suggests the potential value of more comprehensive training program in the future.

SUCCESSFULLY ENGAGING PHYSICIANS IN THE PRACTICE OF INPATIENT MEDICATION RECONCILIATION. B. Gavi[1]; M. Nepomuceno[2]; N. Szaflarski[2]; C. Cadet[2]; J. Krieger[2]; J. Ho[2]; J. Hopkins[2]. [1]Stanford University, Stanford, CA; [2]Stanford Hospital & Clinics, Stanford, CA. *(Tracking ID # 172364)*

STATEMENT OF PROBLEM OR QUESTION: Physician compliance to inpatient medication reconciliation has proven difficult to attain due to competing work loads, inadequate physician buy-in, and variability in physician practice patterns. Four months after implementing the medication reconciliation process at Stanford Hospital & Clinics, physician compliance to medication reconciliation on hospital admission and discharge was 19.5% and 17.8%, respectively.
OBJECTIVES OF PROGRAM/INTERVENTION: To improve physician compliance to inpatient medication reconciliation by altering system processes and changing role assignments using rapid cycle improvement methodology.
DESCRIPTION OF PROGRAM/INTERVENTION: From June 2005 to September 2005, we implemented three system changes to improve physician compliance: 1) simplification of the medication reconciliation form (removing the transfer process requirement from form and other information not essential to goal), 2) reducing duplication (physicians did not have to rewrite home medications on admission H&P if physicians completed medication reconciliation form on admission, and physicians did not have to rewrite home medications on discharge instruction form if physicians completed medication form on discharge), and 3) linking medication reconciliation to existing discharge workflow (placing prescription at the bottom of medication reconciliation form so that discharge reconciliation and prescriptions are on the same form). Three role assignment changes were also implemented in this timeframe: 1) a physician-driven audit process where a cross-covering resident would review the medication reconciliation form to ensure that the admission reconciliation was completed. If reconciliation was not performed, then the cross-covering physician reconciled the home medications or removed the form and handed the form to the primary team to complete, 2) a nurse-driven audit process which included daily review of charts by a unit clerk or nurse to ensure that the form was completed, and to flag the medical record if the form was not completed, and 3) the physician champion met with attending physician leaders on selected units to leverage their support of this initiative.
FINDINGS TO DATE: After implementation of these rapid cycle improvements, the average four-month rate of physician compliance to medication reconciliation on hospital admission and discharge was 77.3% and 65.8%, respectively. We found that on admission referring to the medication reconciliation form did not reduce duplication of work because physicians preferred to record their medication in their admission H&P. In contrast, process audits revealed that 89% of physicians referred to the medication reconciliation form when completing the discharge instruction form and avoided duplicating work. Furthermore, 89% of physicians used the prescription section of the medication reconciliation form. Interventions to change role assignments were less successful. Physician-driven audits declined after several weeks and were discontinued. Nurse-driven audits flagged only an average of 50% of incomplete charts (range: 0% to 80%). Meeting with unit physician leaders led to no observable gains over the following two months.
KEY LESSONS LEARNED: Physician compliance to medication reconciliation can be improved only with sustained efforts that reduce workload and avoid duplicative efforts. Reliance on nurses and cross-covering physicians to assist in this process did not result in consistent improvements. Process audits are helpful in analyzing what interventions contribute to the overall outcome.

USING AN ELECTRONIC HEALTH REGISTRY TO IMPROVE DIABETES CARE: AN INTERVENTION THAT WORKED. V. Weber[1]; K. Padigala[1]; D. Gutknecht[1]; F. Bloom[1]; C. Wood[1]. [1]Geisinger Medical Center, Danville, PA. *(Tracking ID # 172531)*

STATEMENT OF PROBLEM OR QUESTION: Despite physician awareness, significant gaps remain in performance as compared to optimal diabetes care in outpatient settings. "Bundles," or all-or-none measurements, are new patient-centered metrics to measure improvements in care across systems.
OBJECTIVES OF PROGRAM/INTERVENTION: This general internal medicine outpatient practice, beginning in January 2006, implemented an electronic health record based diabetes registry which allowed for monitoring of overall and individual physician performance in various diabetes measures. Regular feedback was given to physicians on their performance in diabetes measures, including individual and "bundled" measurements. In addition, enhancements to the electronic health record to assist with measure completion were implemented beginning in February 2006.
DESCRIPTION OF PROGRAM/INTERVENTION: We compared the overall clinic performance in various components of diabetes care from Jan' 06 to Oct' 06 at monthly intervals. All physicians were given feedback in the form of data sheets at monthly department meetings. A presentation highlighting the clinic performance

compared to ADA goals and a demonstration of electronic record enhancements to assist in fulfilling diabetes test ordering were given. The various components of the diabetes bundle we measured were: percentage of patients that received pneumococcal vaccine; percentage of patients that received influenza vaccine; percentage of patients with HbA1C order in the past 6 months; percentage of patients with HbA1C less than 7; percentage of patients with LDL order in the past 12 months; percentage of patients with LDL less than 100; percentage of patients with urine microalbumin order in the past 12 months; percentage of patients documented as non-smokers; and percentage of patients with BP less than 130/80. The overall diabetes "bundle" score was also tracked, which demonstrates the percentage of patients receiving all recommended components. Improvement in percent compliance was evaluated by examining and comparing 95% confidence intervals for binomial rates.
FINDINGS TO DATE: A total of 1,418 patients with diabetes were in the registry as of January 2006. The percentage of patients who met all the measures increased from 1.6% (95% CI 1.03-, 2.42%) in Jan'06 to 5.3% (95% CI 4.16%–6.61%) in Oct'06. The percentage of patients that met 8 out of 9 measures improved from 8.3%, (95% CI 6.88%–9.88%) in Jan'06 to 16.1% (95% CI 14.13% −18.14%) in Oct'06. Improvements were also seen in percentages with LDL order, microalbumin order in the past year, BP less than 130/80 and percent documented as nonsmokers. The three measures that exceeded the ADA goals were percent documented as nonsmokers, percent with LDL less than 100 and percent with BP less than 130/80.
KEY LESSONS LEARNED: Regular feedback to physicians improves their performance in meeting various diabetes measures. New patient-centric 'bundle' measurements, along with electronic registries and enhancements, can assist in optimizing routine care in diabetes and other chronic disease states.

VIRTUAL CONSULTATIONS; A NEW MODEL OF CARE FOR PROVIDING COORDINATED CARE TO PATIENTS IN AN INTEGRATED HEALTH CARE ORGANIZATION. R. Chaudhry[1]; T. Poterucha[1]; S.M. Tulledge-Scheitel[1]; J. Christensen[1]; M. Brennan[1]; R. Stroebel[1]; D. Wood[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 172765)*

STATEMENT OF PROBLEM OR QUESTION: Consultations between primary care physicians and specialists fall into two broad categories: knowledge exchange and procedural needs. Traditional knowledge exchange consultations are time consuming and expensive from a health system standpoint. In many instances, physical examination is not required to answer the question at hand. The documentation elements often required for compensation, e.g. past medical/surgical history etc, add limited value to the exchange of information. The electronic medical record offers an opportunity to more efficiently facilitate the exchange of knowledge between internists and specialists in appropriately selected situations.
OBJECTIVES OF PROGRAM/INTERVENTION: Develop a new model of care utilizing electronic consultations between primary care physicians and specialty physicians within the Department of Medicine of an academic medical institution.
DESCRIPTION OF PROGRAM/INTERVENTION: The primary care division developed a pilot with the cardiology division to develop a care model utilizing virtual consultations. A generic format and set of guidelines for the virtual consultation was developed. Virtual consultation was limited to situations in which knowledge exchange was desired and a physical examination was unnecessary. The program was limited to patients that were employees or dependents covered by our own insurance plan. The primary care physician requesting a consultation was instructed to order a "virtual consultation" in the electronic order system. They were then asked to dictate the critical question for the cardiologist in the "impression/report/plan" section of the electronic note. The desk staff was instructed to notify the specialty area desk once the initial note was dictated. The consultation was scheduled as a 15 minute slot on the cardiologist's calendar. The cardiologist reviewed the patient's record and the question from the primary care physician and dictated his recommendations as a consultation. The specialist's note was forwarded to the primary care physician for review. The initial trial with cardiology lasted approximately 6 months and was considered a success. Subsequently the process has been expanded to include other specialty areas.
FINDINGS TO DATE: The diagnoses and reasons for consultation were tracked. For cardiology, the most common consultations were for management of patients with established coronary artery disease, abnormal findings on echo or management of atrial fibrillation. For endocrine, these have been mostly for management of diabetes mellitus, osteoporosis, thyroid disease, testosterone replacement, and hypogonadism. For GI, the most common indications have been for management of abnormal LFT's, hepatitis, ulcerative colitis, and surveillance for colon polyps. So far a total of 69 consultations have been completed. For cardiology consultations, the mean time for virtual consult was 1 day, 6 hours versus 7 days, 20 hours for traditional consultation. The usual time required for virtual consultation was 15 minutes versus 40–60 minutes for traditional consultation. 90% of patients were satisfied or very satisfied with the virtual consultation modality of care. No adverse events (MI or stroke) were observed within 30 days of consultation, during the cardiology virtual consultation pilot.
KEY LESSONS LEARNED: Virtual consultations offer a timely, efficient and satisfying alternative to traditional face-to-face consultations for selected primary care Internal Medicine patients. We anticipate greater utilization of this model in the future.

WEB-BASED MANAGEMENT OF URINARY TRACT INFECTION IN ADULT FEMALE PRIMARY CARE PATIENTS. T.G. Mcleod[1]; R. Chaudhry[1]; S.M. Tulledge-Scheitel[1]; H.K. Vanhouten[2]; J.M. Naessens[1]; L.A. Davis[1]; R.J. Stroebel[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN; [2]Mayo Clinic, Rochester, MN. *(Tracking ID # 172668)*

STATEMENT OF PROBLEM OR QUESTION: Urinary tract infection (UTI) is a common problem for adult female patients in primary care practice. Despite the generally uncomplicated nature of this infection, in-office evaluation is time-consuming for medical staff and often inconvenient for patients.
OBJECTIVES OF PROGRAM/INTERVENTION: The aim of our program was to develop and implement a safe, convenient, and evidence-based protocol for non-visit management of uncomplicated UTI in adult female primary care patients.
DESCRIPTION OF PROGRAM/INTERVENTION: The Institute of Clinical Systems Improvement (ICSI) guideline for management of UTI in adult female patients formed the basis of our protocol. A patient questionnaire incorporating pivotal symptoms and past history elements of the ICSI guideline was developed and subsequently adapted for posting on a patient-accessible website on our institutional intranet. Empanelled practice patients were sent an email describing the program. Patients were instructed to access the site, complete, and submit a web-form if they developed symptoms compatible with UTI. Web submissions were reviewed and abstracted by an appointment secretary and forwarded on via email to a nurse-physician care team. A nurse then called the patient to confirm web-form responses, determine eligibility for non-visit care, establish guideline-based therapy, review allergies, and identify pharmacy of choice (if non-visit care with antibiotics was deemed appropriate). Patients with atypical or prolonged symptoms, comorbid conditions (e.g. diabetes, renal insufficiency, or immunosuppression), and/or advanced age did not meet criteria for non-visit care and were offered a clinic appointment for evaluation of their symptoms. Demographic and clinical data for patients managed with this protocol were obtained by retrospective chart review. Outcome assessments included percentage of patient submissions managed with non-visit care, antibiotic choice, and necessity for additional care (clinic, emergency room or hospitalization). Simple descriptive statistics were used to characterize the results.
FINDINGS TO DATE: Forty-nine web submissions were completed by patients over the first six months of our program. Of these, 27 (55%) patients met criteria for non-visit care. By definition, all protocol patients were adult females (average age 39.9 years). Most patients (20/27, 74%) were treated with short-course trimethoprim/sulfamethoxazole as directed by the guideline. A minority of patients (7/27, 26%) received ciprofloxacin. None of the patients who met non-visit care criteria required additional evaluation for a related problem in the 30 days following their initial contact with our nursing staff.
KEY LESSONS LEARNED: Our guideline-based web-protocol for management of UTI facilitated non-visit care for over half of the patients who contacted our practice with irritative urinary symptoms. The program was safe and encouraged adherence to recommended (e.g. first line) antibiotic therapy. Web-based, non-visit care options offer a convenient access alternative for carefully selected patients with uncomplicated conditions, and, in doing so, may preserve in-office appointment slots for patients with more complex medical issues.

WEB-BASED PROTOCOLIZED MANAGEMENT OF PATIENTS WITH FLU-LIKE SYMPTOMS. R. Chaudhry[1]; T.M. Jaeger[1]; P. Targonski[1]; L.A. Davis[1]; R. Stroebel[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 172805)*

STATEMENT OF PROBLEM OR QUESTION: 30,000–50,000 people die from influenza virus infection in the US every year. Once a patient is infected, treatment with anti-virals within 48 hours of onset of symptoms can reduce the length of illness. Patients with acute infections coming to health care organizations are an important source of transmission in health care settings. During an outbreak of influenza, the diagnosis can be established by clinical symptoms.
OBJECTIVES OF PROGRAM/INTERVENTION: To implement web-based protocolized care for patients with acute influenza to reduce the likelihood of transmission and to offer non-visit care to the patients.
DESCRIPTION OF PROGRAM/INTERVENTION: During the influenza outbreak of 2004–2005, a protocol was developed to allow the patients to seek phone care from RN's. Patients in the age group of 16–75 years and having sudden onset of fever, muscle aches, dry cough, and headache were advised to call the RN's. The RN's further evaluated the patient over the phone, and if they did not have exclusion criteria of severe symptoms; e.g., shortness of breath, chest pain, temperature more than 104, symptoms of dehydration, productive cough or mental status changes and the symptoms were less than 48 hours in duration, they prescribed anti-viral medication for patients. If the patient had exceeded 48 hours since the onset of symptoms and was not having any severe symptoms, over-the-counter measures were advised. Towards the latter half of 2004–2005 influenza season, once this protocol had been tested and found to be safe and effective for phone use, the questionnaire part was made available online for the employees and a notification was sent to them through their work e-mail. They were advised that if they were having flu symptoms, fill in the questionnaire, and then submit the form online. The form then came to the RN's who reviewed the responses and if the patient met protocol, anti-viral therapy was advised. If the patient was outside the 48-hour duration of symptoms, symptomatic measures were advised. For patients who had either severe symptoms or symptoms not suggested of influenza, physician visit was arranged.
FINDINGS TO DATE: 14 patients accessed the web-based influenza protocol. There were 11 females and 3 male patients. 12 of those patients did not meet protocol as 6 had symptoms suggestive of some other illness whereas the other 6 were outside the 48-hour time frame since onset of symptoms. The 2 patients who met protocol were advised antiviral therapy. The patients were tracked for 30 days beyond the initial web contact for any ER visits, hospitalizations, and none of the patients required either an ER visit or a hospitalization.
KEY LESSONS LEARNED: Web-based protocol can be utilized for management of patients with acute influenza; however, larger studies are needed to fully evaluate this modality of care.

WEIGHT LOSS THROUGH LIVING WELL (WILLOW): 1-YEAR DATA ON TRANSLATING A LIFESTYLE INTERVENTION INTO A CLINICAL PRACTICE SETTING. K.M. Mctigue[1]; M. Conroy[1]; L. Bigi[2]; C. Murphy[1]; J. Riley[1]; M.A. Mcneil[1]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA. *(Tracking ID # 173898)*

STATEMENT OF PROBLEM OR QUESTION: Although evidence-based guidelines recommend that primary care physicians screen and treat patients for obesity, health-focused lifestyle interventions with evidence for effectiveness are lacking in the clinical setting. Furthermore, most obesity intervention knowledge is based on efficacy studies involving select populations which are relatively healthy and only mildly/moderately obese.
OBJECTIVES OF PROGRAM/INTERVENTION: To translate a lifestyle intervention with known efficacy into a clinic-based program for a primary-care population.
DESCRIPTION OF PROGRAM/INTERVENTION: We implemented a version of the Diabetes Prevention Program (DPP) curriculum, modified for group delivery, into a large academic General Internal Medicine practice. Existing clinical resources were utilized to support the program and fully integrate Weight Loss Through Living Well (WiLLoW) into routine patient care. Patients access the program via provider referral through the electronic medical record (EMR). Scheduling is performed by the clinic's administrative staff. Participants attend 12 weekly group sessions based on a standardized curriculum and run by one of the practice's nurse educators. After that time, they may opt to enroll in blocks of 6 bi-weekly maintenance sessions. Throughout the program, weight is monitored on the clinic's calibrated scale, and recorded in the EMR, so the physicians can monitor their patients' progress, and provide support. The program is available on a fee-for-service basis, with a charge of $100 for the first 12 weekly session, and $50 for each 6 maintenance sessions. To evaluate the program, we examined weight change over approximately 1 year (10–14 months) among program participants, and among patients who were referred to the program, but did not enroll.
FINDINGS TO DATE: From 3/8/05 to 9/1/05, 106 participants were referred to the WiLLoW program, and 52 (49%) enrolled. Of enrollees, 5 were excluded from analyses because they pursued bariatric surgery (n = 3), started a weight-loss medication (n = 1) or became pregnant (n = 1) during the follow-up period; 3 additional enrolled patients had no charted weight during the follow-up window. Among patients who were referred but chose not to enroll, none were excluded, and 69% had an office visit with weight measurement during the follow-up period. At baseline, mean (SD) weight was 236.6 (59.4) pounds and 87% of referred patients were female. Sex and age did not differ by enrollment status. Enrollees were slightly older than non-enrollees [53.6 (1.5) versus 47.2 (13.4) years]. Over 1 year, mean weight change was −7.6 pounds (95% CI: −2.6, −12.5) among WiLLoW enrollees, and +1.3 pounds (95% CI: −5.0, +7.6) among non-enrollees. Among completers, 25% of enrollees and 5% of non-enrollees had lost 7% of their body weight at 1 year (OR 5.83, 95% CI 1.20–28.3)
KEY LESSONS LEARNED: An evidence-based lifestyle intervention can be effectively implemented in a primary care practice. Use of existing clinic resources may facilitate patient flow, and minimize cost. More effort is needed to assess financial implications for the practice.

WORKING SMARTER, NOT HARDER: REDESIGNING CLINIC VISITS. Y. Kim[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172274)*

STATEMENT OF PROBLEM OR QUESTION: How can a county primary care clinic reduce outpatient wait times while maintaining excellent care? What are some of the challenges in spreading and sustaining the model?
OBJECTIVES OF PROGRAM/INTERVENTION: 1. Complete 90% of visits within 45 minutes from door to door ("cycle times") 2. Improve staff and provider satisfaction 3. Share lessons learned in sustaining and spreading redesign to other clinics
DESCRIPTION OF PROGRAM/INTERVENTION: In November 2004, Willow Clinic, a FQHC-equivalent with 54 physicians and staff in San Mateo County began the training and implementation of a pilot to improve wait times and staff satisfaction. The principles of redesign included keeping the patient in one location, increasing staffing ratios, communicating directly, broadening work roles, using technology, and piloting multiple small trials to evaluate and modify changes. Innovations included pre-registering (verifying demographics, assets, income sources) during reminder calls, team huddles to anticipate patient needs before each day, using walkie talkies among all clinic employees to communicate, and adding a licensed nursing staff member to regulate flow. Weekly staff meetings by department helped evaluate changes, with a monthly clinic-wide meetings to voice concerns.
FINDINGS TO DATE: By September 2006, cycle times had diminished at Willow from 123 minutes pre-redesign to 71 minutes across all departments (−43.0%). Hourly productivity rose from 1.60 to 2.12 patients per provider (+32.5%). Time spent with the MD did not change significantly, from 16 to 15 minutes on average. Training the pilot team required six full days with consultants; adjusting the model took about 4 hours per week per staff member over six months. Many initial changes such as keeping the patient in one room and team huddles have not survived due to lack of computer support and staff resistance. Walkie talkies, popular with physicians and registration, were seen as distracting by nursing. However, improvements such as telephone pre-registration and use of procedure trays and simpler forms have been adapted by the entire clinic. Challenges included standardization among providers and departments, turnover in staff, and focus on productivity.
KEY LESSONS LEARNED: - ideal staffing ratios were 1 greeter: 3 MD: 3 medical assistants: 3 registration clerks with 6 or more rooms -cycle times decreased by 54% when fully-staffed, but not sustainably due to absences and vacations. -telephone pre-registration eliminated waits for registration, previously 33 minutes per patient -resident clinic cycle times were 15 minutes longer due to precepting -standarization problems: each department had its own variation of redesign and shared staff (pediatrics uses walkie talkies, Ob does not, etc) which required weekly mtgs -staff resistance to change (training nursing to do check out) were important challenges, and turnover rose initially -training pilot team requires significant time, coverage by other clinic members -keep the gems (pre-registration, simplified forms) and discard the rest -staff and provider satisfaction, quality of care are important goals that should be measured in future studies

CLINICAL VIGNETTES

A BROKEN HEART. I. Nasir[1]; F. Crock[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172555)*

LEARNING OBJECTIVES: 1) State diagnostic criteria and identify predisposing factors for TAKOTSUBO cardiomyopathy (TCM). 2) Name TCM in the differential diagnosis of chest pain syndrome. 3) Evaluate the pathophysiology of TCM.
CASE: A 78 year old female who was recently admitted to the psychiatry ward for severe depression, failure to thrive, and a 20lb weight loss presented with nonradiating, substernal chest pain that started at rest and was associated with difficulty breathing. An EKG revealed diffuse T wave inversions (I, II, aVF, V1-V6) and 2–3 mm ST elevations in V2-V6, which were new compared to an EKG done a few days prior. Patient was hemodynamically stable and was started on aspirin, beta blocker, and heparin drip. Troponin was elevated at 7. An emergent left heart catheterization showed no significant obstructive epicardial coronary artery disease. A left ventriculogram showed an ejection fraction (EF) of 35% with anteroapical and inferoapical akinesis, end-systolic apical ballooning, and normal remaining wall segments. Heparin drip was discontinued. A transthoracic echocardiogram (TTE) done the following day showed similar results. Given the history of severe depression and her catheterization results, a diagnosis of TCM was made. During hospitalization, patient was chest pain free, EKGs showed sustained diffuse T wave inversions and ST elevations. She was continued on antidepressants and nasogastric tube feedings. Remarkably, a follow-up TTE one week later revealed improved EF at 65% and no segmental wall motion abnormalities. Patient was transferred back to the psychiatric ward and the team was advised to avoid ECT as therapy for her refractory depression. An EKG done one month later was normal sinus rhythm with no STT changes and no Q's.
DISCUSSION: Tako tsubo (octopus trap in Japanese) cardiomyopathy is an increasingly recognized chest pain syndrome, which has been mainly described in postmenopausal females with minimal coronary risk factors and predisposing stress. Its presentation resembles acute myocardial infarction but has EKG changes of diffuse T wave inversions and dramatic ST elevations in no regional coronary artery distribution. It is characterized by an echocardiogram which shows reversible LV dysfunction with end-systolic apical ballooning resembling an octopus trap. It is often accompanied by mild elevations in cardiac enzymes. An emergent coronary catheterization reveals no obstructive coronary disease or acute plaque rupture. Although there have been case reports of severe heart failure requiring intraaortic balloon pump and dobutamine, most patients have complete recovery in days to weeks, as was the case with our patient. TCM is usually precipitated by severe emotional distress such as depression, earthquakes, unexpected death, or financial loss, but has also been described in physiologic distress such as withdrawal from alcohol or opioids. Many hypotheses have been proposed for the pathophysiology of TCM including catecholamine cardiotoxicity (70% patients have elevated levels), multivessel vasospasm, and an "aborted myocardial infarction" from spontaneous lysis of an intracoronary thrombus in a long wrap-around apical LAD. This has been supported by intravascular ultrasound studies revealing an eccentric plaque in a long wrap-around LAD indicating recent plaque rupture. This case highlights that internists should consider TCM in patients with chest pain, especially in postmenopausal females with recent emotional distress.

A POTENTIALLY LETHAL COMPLICATION AFTER MYOCARDIAL INFARCTION. H.S. Asghar[1]; D.A. Feldstein[1]. [1]University of Wisconsin-Madison, Madison, WI. *(Tracking ID # 173637)*

LEARNING OBJECTIVES: 1) Identify presenting symptoms of left ventricular pseudoaneurysm 2) Recognize the importance of differentiating pseudoaneurysm from aneurysm
CASE: A 72 year old man presented to the emergency department with progressive cough, dyspnea on exertion and paroxysmal nocturnal dyspnea. His medical history included hypertension, diabetes mellitus and coronary artery disease status post 3-vessel coronary artery bypass grafting (CABG). Physical examination revealed crackles at the lung bases. PMI was 5 cm in diameter and displaced laterally. He had a normal S1 and S2, regular rhythm with an S3 gallop and a grade II holosystolic murmur at the apex. Elevated venous pressure was also apparent. Electrocardiogram revealed sinus tachycardia with diffuse ST-segment and T-wave abnormalities. Chest radiographs suggested pulmonary vascular congestion with left ventricular chamber enlargement. The patient underwent a transthoracic echocardiogram (TTE) which revealed a large, postereolateral, left ventricular aneurysm and moderate mitral regurgitation. Coronary angiography demonstrated a completely occluded proximal circumflex artery which had not been grafted at the time of his CABG, 2 years ago. He was discharged from the hospital with a plan for elective surgery,,but returned in 2 weeks with increased dyspnea. A repeat TTE demonstrated enlargement of the aneurysm. The patient was taken to surgery and a posterior aneurysm with a laminated thrombus was found. He underwent mitral valve replacement with a posterior aneurymectomy and repair with a modified D'or procedure. Pathology confirmed a pseudoaneurysm and the patient did well post operatively.
DISCUSSION: Left ventricular pseudoaneurysms (LVPA) are formed by containment of a cardiac free wall rupture and can occur after MI, surgery, trauma, infection, or invasive medical procedures. LVPAs typically present with recurrent chest pain, congestive heart failure, syncope, arrhythmias or sudden death. Cardiac rupture as a complication of MI has an incidence of < 1%. Some series have reported a 0.23–0.5% incidence of LVPA in patients undergoing coronary angiography after MI. Factors

associated with cardiac rupture following acute MI include sixth decade of life or later, female sex, pre-existing systemic hypertension, first acute transmural infarct, repetitive unprovoked emesis,agitation, peak MB creatine kinase 150 IU/l, inadequate collateral circulation in the area of infarction, and delayed thrombolytic treatment. This patient's only risk factor was advanced age. It is critical to distinguish LVPAs from aneurysms given the high (30–45%) risk of rupture and sudden death in untreated pseudoaneurysms. The main methods employed to differentiate these two entities are echocardiography, MRI,and left ventricular angiography. LVPAs are most commonly located posterolaterally while true aneurysms are typically situated in the anterior and apical walls. Pseudoaneurysms have been described in the setting of clinically overt MIs, but there have been few case reports in the setting of a silent MI. In this case symptoms of congestive heart failure provided the first evidence of LVPA. Another feature of the case is that the left circumflex artery lesion was not addressed at the time of CABG and completely occluded causing a free wall rupture and pseudoaneurysm formation. We present this case because of the rarity of LVPAs and the high index of suspicion necessary to avoid missing this potentially fatal diagnosis.

A STRESSFUL SITUATION AND AN ACHING HEART. H.S. Singh[1]; A. Gaggar[1]; R. Rao[1]; A.J. Boyle[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172687)*

LEARNING OBJECTIVES: 1. Generate a differential diagnosis for non-ischemic sudden onset of myocardial dysfunction. 2. Recognize Tako-Tsubo or stress cardiomyopathy (CM) and its implications for therapy.
CASE: A 71-year old Chinese woman with Crohn's disease and chronic kidney disease presented with generalized weakness from one week of diarrhea and an acute gout flare. In the ER, she was found to be in a supraventricular tachycardia with a rate of 200. Initial lab values were notable for mildly elevated troponin I, peaking at 0.10 ng/ml and ionized calcium of 0.68 mmol/L. She was loaded with IV amiodarone, and given IV calcium gluconate. The SVT rapidly converted to sinus tachycardia with a prolonged QTc of 517 ms (prior QTc was 462 ms), which initially improved with calcium and fluid repletion. An echocardiogram on admission day showed normal biventricular size, wall motion, and an ejection fraction (EF) of 60%. Her weakness and gout related pain quickly abated. On hospital day 3, after an asymptomatic 5-beat run of polymorphic ventricular tachycardia, an EKG showed a prolonged QTc (592 ms) and the development of new deep symmetric T-wave inversions in the infero-lateral leads with 1 mm ST-segment elevations in the lateral leads. The patient denied chest pain or other cardiac symptoms. An urgent echocardiogram revealed global left ventricular systolic dysfunction (EF to 30–35%) with apical akinesis. She was taken emergently for cardiac catheterization which showed normal coronary arteries and a diagnosis of stress CM was made. Troponin I peaked at 0.43 ng/mL. Over the next few days, her QTc interval shortened to 508 ms, and the ST segment changes and T-wave inversion resolved. A final echocardiogram three days later showed normalization of her EF and improvement in apical wall motion. She was discharged home and remains well.
DISCUSSION: ST elevation and T wave inversion with regional wall motion abnormalities (WMA) are concerning for acute myocardial infarction (MI). However, these findings may also occur with coronary vasospasm, subarachnoid hemorrhage, myopericarditis, and stress CM. Stress CM accounts for ~1% of patients presenting with symptoms and investigations consistent with acute MI and usually affects post-menopausal women, typically after an intense emotional event. This case shows the evolution of stress CM that developed without a preceding emotional stressor, but rather multiple physical stressors including pain and hypocalcemia. In stress CM, EKG changes include ST-segment elevation, but can also present as T-wave inversions with QTc prolongation. On echocardiogram, there is typically apical akinesis with hyperkinesis of the basal segments, resulting in ballooning of the left ventricle during systole. Differentiation between acute MI and stress CM often requires coronary angiography; the absence of obstructive coronary disease in the setting of typical EKG and echocardiographic changes suggests stress CM as a diagnosis. The management of stress CM is supportive with cardiac monitoring and management of acute heart failure until resolution, typically in 1–4 weeks. Mortality is < 10% and long-term sequelae are minimal. While stress CM has increasing clinical recognition, our case illustrates the progression from onset to resolution of stress CM within a single seven-day hospitalization in the absence of acute emotional stressor or cardiac specific symptoms. This case highlights the need for clinicians to be aware of this clinical entity in hospitalized patients.

AN UNUSUAL CAUSE OF ANOREXIA AND WEIGHT LOSS. K.S. Awan[1]; N. Gupta[1]; A. Cooper[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173465)*

LEARNING OBJECTIVES: 1. To recognize the presentation of pericardial effusion with tamponade physiology in post myocardial infarction (MI) patients. 2. To diagnose pericardial effusion using clinical and radiological parameters and outline its management.
CASE: An 82 year old Caucasian male status post urgent open cholecystectomy for gangrenous gall bladder presented with chief complaints of anorexia and fatigue since his discharge 2 weeks ago. Review of systems was significant for a 15 pound weight loss over the same time period. He had no complaints of chest pain, palpitations, nausea or vomiting. There was no significant past cardiac history. His only medication was omeprazole for gastroesophageal reflux disease. On examination his heart rate was 105/minute and blood pressure was 120/60 mmHg. He appeared chronically ill and had distant heart sounds with jugular venous distension of 5 cm and lower extremity pitting edema. EKG showed sinus tachycardia with new anterolateral Q waves and ST segment abnormalities. Echocardiogram revealed significant anterior wall hypokinesis with an ejection fraction of 35% and a large hemodynamically significant pericardial effusion. Of note, patient had an unremarkable echocardiogram one month ago. He was admitted to the critical care unit. Pericardial window was created and fluid was drained. Pericardial fluid pathology was negative for infectious or malignant etiology. The patient recovered fully over the next few days.
DISCUSSION: Pericardial effusion without tamponade is a common early finding with an acute MI and has an incidence of 25–35%. The peak prevalence of pericardial effusion is between 3 to 5 days. It generally resolves spontaneously in 3 to 4 weeks but can persist for almost a year. Most post-MI pericardial effusions are mild to moderate and asymptomatic, and require only clinical follow up with serial echocardiograms until complete resolution. Isolated pericardial tamponade is a rare complication of MI. Patients not in cardiogenic shock predominantly have symptoms of fatigue and shortness of breath, and signs of sinus tachycardia and narrow pulse pressure. The classical signs such as pulsus paradoxus, elevated jugular venous pressure and pericardial rub may also be present. The specific causes of pericardial effusion including hypothyroidism, uremia, collagen vascular disease and infections should be considered as possible etiologies. Echocardiogram is the diagnostic modality of choice for pericardial effusion. Echocardiographic findings of right atrial and ventricular collapse are diagnostic of pericardial tamponade. In patients with hemodynamic compromise, initial stabilization includes intravenous fluids to increase preload, as well as afterload reduction with agents such as nitroprusside. Beta blockers, calcium channel blockers and anticoagulation should be held. Therapeutic pericardiocentesis should be expeditiously performed. Prognosis for pericardial tamponade is excellent with less than 10% in-hospital mortality.

BOVIS BACTEREMIA MEANS BOWEL BADNESS. E. Howe[1]; J. Wiese[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 173641)*

LEARNING OBJECTIVES: 1. Recognize the increased risk of colon cancer in a patient with Streptococcus bovis bacteremia. 2. Identify the current recommendations for endoscopic screening in a patient that presents with Streptococcus bovis infection. 3. Identify the post-colectomy screening recommendations for colon cancer
CASE: An 88 year-old woman presented with a two-day history of fever, chills, and hematuria. She denied weight loss, night sweats, constipation, diarrhea, melena or hematochezia. She had been diagnosed with colon cancer five years earlier and had undergone a colectomy at that time. She had no recurrent symptoms until this admission. She had a temperature of 101°F and appeared cachectic. There was a 2/6 systolic murmur loudest at the apex consistent with mitral regurgitation. The lung exam was normal. She had mild left and right lower quadrant tenderness but no masses. A colostomy was in place and functioning properly. Her genitourinary examination was negative for blood or rectal lesions. There were no Janeway lesions, Osler nodes, splinter hemorrhages, or roth spots. Her urinalysis had moderate leukocytes and nitrites, and a large amount of blood. She had a leukocytosis of 16,000 cells/mm3, and a microcytic anemia with a hemoglobin of 8 g/dl. She was admitted for treatment of her urinary tract infection and started on gatifloxacin to cover the proteus that grew out on her urine culture. Blood cultures were also drawn and grew out Streptococcus bovis that was sensitive to gatifloxacin. Transthoracic and transesophageal echocardiograms were performed and were negative for vegetations or abscesses. A barium enema was performed and showed a 5-cm circumferential mass in the transverse colon. Further imaging and biopsy confirmed a colon malignancy and a bone scan revealed multiple metastases along the thoracic and lumbar spine and right tenth rib. Following resolution of the infections, a discussion was had with the patient and her family regarding the results of her imaging. She elected to begin palliative radiation of the bone lesions and hospice care.
DISCUSSION: Streptococcus bovis is a Gram-positive cocci that is associated with endocarditis. It is associated with a higher rate of multiple valve involvement and larger vegetations. Importantly, it has a tendency towards affecting patients without previously known cardiac valve disease. Streptococcus bovis bacteremia, with or without endocarditis, is also associated with pre-malignant gastrointestinal and extra-gastrointestinal malignancies, and chronic liver disease. In epidemiologic studies, colon cancer is present in thirty-two percent of patients with Streptococcus bovis bacteremia. A higher frequency of colon cancer is associated with Streptococcus bovis endocarditis as compared to Enterococcus endocarditis (18 versus 2 percent). It is important that the general internists recognize the increased risk of colonic neoplasia in patients who present with Streptococcus bovis bacteremia or endocarditis. These patients should undergo immediate screening colonoscopy to evaluate for a possible GI malignancy that, if negative, should be repeated in four to six months. Our patient also illustrates treatment of colon cancer does not end with surgical resection; close monitoring of symptoms and regular endoscopies are important to detect an early recurrence of the malignancy. Streptococcus bovis bacteremia should also prompt suspicion of recurrent colonic neoplasia.

BROKEN HEART SYNDROME, MORE THAN A LOVE STORY. E.L. Vazquez Melendez[1]; K. Venable[2]; J. Rogers[3]; M. Barzallo[3]. [1]Med-Peds Resident University of Illinois at Peoria, Peoria, IL; [2]Resident University of Illinois at Peoria, Peoria, IL; [3]University of Illinois at Peoria, Peoria, IL. *(Tracking ID # 173935)*

LEARNING OBJECTIVES: 1. To present 2 cases of chest pain after a stressful situation mimicking myocardial infarction 2. To discuss the presentation and course of stress cardiomyopathy 3. To review the literature of Stress cardiomyopathy or Takotsubo cardiomyopathy
CASE: The first case is an 80-year-old woman who presented to the Emergency Department with cardiac chest pain that developed after she received the news that her son died. The patient developed the classical symptoms of acute coronary syndrome, including cardiogenic shock. The patient was taken emergently to the catheterization laboratory where she was found to have severe vasospasm of the coronary arteries, with TIMI grade III flow in all arteries. Left ventriculogram showed an ejection fraction (EF) of 15%. Initially she required support with vasopressors and an intra-aortic balloon pump. Twelve hours later, the patient started showing signs of improvement, with a repeat EF of 40% by echocardiogram. Medical management was initiated and patient recovered a normal heart function. The second case is a

76-year-old female who presented with symptoms of feeling "terrible all over", also occurring after her son died. Her symptoms included chest pain and dyspnea, and the evaluation was notable for elevated cardiac enzymes. She underwent cardiac catheterization, which revealed normal coronaries with mild anterior and inferior apical hypokinesis, and an EF of 45%. Medical management was also initiated. Her symptoms improved and she continues to follow with the cardiologist.
DISCUSSION: Broken heart syndrome, or stress cardiomyopathy, is transient myocardial dysfunction that mimics acute coronary syndrome. It was initially described in Japan where it was named "Takotsubo cardiomyopathy" because the affected left ventricle resembles a Japanese octopus pot, a takotsubo. Several cases have been reported in the literature since it was first described in the early 1990's. In this institution, we recently had two cases of broken heart syndrome with contrasting presentations. Stress cardiomyopathy typically presents in postmenopausal women after an emotional, psychological distress. Onset is usually associated with chest pain, elevated ST-T segments on EKG, elevated cardiac enzymes, and ventricular dysfunction typical of ischemic cardiomyopathy. Patients who undergo emergent cardiac catheterization will usually have normal coronaries. Recovery from stress cardiomyopathy is highly variable. It has been postulated that this condition is the result of an exaggerated catecholamine release secondary to stress, with resulting stunning of the heart.

CAN SORE THROAT KILL YOU? I. Singla[1]; S.R. Ganesh[2]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA. *(Tracking ID # 171981)*

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of sublingual hematoma. 2. Recognize life threatening complications of warfarin therapy. 3. Describe the management of sublingual hematoma related to warfarin therapy.
CASE: A 58 year old Caucasian male with history of hypertension, hypercholesterolemia, and atrial fibrillation on oral anticoagulation was brought to emergency room with odynophagia and sore throat. His symptoms started two days ago and have been gradually worsening. He had noticed a red swelling in the floor of his mouth, which has been increasing in size over last 48 hours. His home medications include warfarin, aspirin, atorvastatin and lisinopril. On exam he was afebrile, slightly hoarse but no stridor, lungs were clear to auscultation and normal cardiovascular exam. Examination of oral cavity revealed a soft, red, 5 cm submucosal swelling in sublingual area. His airway was not compromised and laryngeal mobility was normal on endoscopic examination. His hemoglobin was 14.9 gm/dl, International Normalized ratio was 2.0 and Prothrombin time was 43.1 seconds. His warfarin was stopped and fresh frozen plasma was given. A selective catheterization of the left lingual arteries was performed. A left lingual artery arteriogram showed supply to a hyper vascular mass near the anterior aspect of the tongue at the base of the tongue and coil remobilization of bilateral lingual arteries was performed. He tolerated the procedure well and his mass decreased in size and patient was discharged home.
DISCUSSION: Oral anticoagulation is commonly used for atrial fibrillation and carries risk of bleeding complications. Bleeding complication due to warfarin is commonly manifested in gastrointestinal tract, nose, intracerebral and retro peritoneum. The sublingual space is uncommon site for bleeding and only 11 cases of sublingual hematoma have been reported. Sublingual hematoma is a life threatening complication which can initially present with vague symptoms of sore throat and hoarseness. The signs commonly seen are cervical mass, sublingual swelling, tachypnea. Airway obstruction can complicate sublingual bleeding, if bleeding extends to submandibular space. The tongue is pushed upward and backward resulting in dyphagia, dyspnea and complete air way obstruction. This is also called pseudo Ludwig phenomenon. The management involves immediate reversal of anticoagulation with fresh frozen plasma and spontaneous resolution occurs once anticoagulation is reversed. Medical management may be sufficed, but it is desirable to maintain close monitoring of patient. Surgical drainage of hematoma has been described, but its effectiveness is doubtful. Sore throat should be taken seriously in patients receiving anticoagulation. To avoid acute airway obstruction both primary care physicians and emergency physicians should be able to recognize this life threatening complication.

CULLEN'S SIGN AFTER FEMORAL CARDIAC CATHETERIZATION - A RARE CASE OF INTRAPERITONEAL HEMATOMA. S.S. Dhawan[1]. [1]University of Tennessee Health Science Center, Memphis, TN. *(Tracking ID # 173416)*

LEARNING OBJECTIVES: Cullen's sign, although pathognomic for ruptured ectopic pregnancy and acute hemorrhagic pancreatitis, can be manifest due to other causes of intraperitoneal bleeding as well. Our case describes the rare scenario of a patient who developed an intraperitoneal hematoma two days after femoral cardiac catheterization, manifest as Cullen's sign.
CASE: A 58 year-old man presented to the Emergency Room with excruciating suprapubic, right lower quadrant and right groin pain of 5 hour duration. He reported that the pain did not radiate, was aggravated by movement and not relieved by any specific maneuvers. He denied any associated nausea, change in bowel habits, dysuria, chest pain or shortness of breath. Past medical history included asthma, degenerative joint disease, gout and recent myocardial infarction requiring right groin femoral cardiac catheterization 2 days ago and discharge the day before. Vital signs showed BP 88/50 mm/Hg, HR 96 bpm, R 18 bpm without fever. Physical examination was unremarkable except for periumbilical bluish discoloration, tenderness to palpation in the right lower quadrant and suprapubic area without evidence of rebound or guarding as well as tenderness in the right groin over the site of cardiac catheter insertion. Laboratory testing revealed hematocrit of 26.4% (dropped from 41.2% at discharge the previous day), BUN of 32 mg/dL, creatinine of 1.8 mg/dL (baseline 1.3) and troponin of 2.6 ng/mL (drop from 16 ng/mL the day before) along with normal amylase and lipase levels. Computed Tomography (CT) of the abdomen revealed a large intraperitoneal hematoma measuring 10.8 × 8.3 cm in size and displacing the bladder to the left. The patient was admitted for further monitoring and management. Clopidogrel, which was prescribed after the recent hospitalization for non-ST-elevation myocardial infarction, was withheld and two units of packed red blood cells administered. After two days of monitoring with serial hematocrit and repeat CT of the abdomen, the patient was deemed stable for discharge.
DISCUSSION: Cullen's sign - bluish discoloration of the periumbilical skin due to subcutaneous intraperitoneal hemorrhage was first described in association with ruptured ectopic pregnancy by an obstetrician, Dr. Thomas S. Cullen in 1916. Turner's sign - bluish discoloration and induration of the skin about the umbilicus and in the region of the loins due to extravasation of blood was first described in association with acute hemorrhagic pancreatitis (retroperitoneal hemorrhage) by a surgeon, Dr. George Grey Turner in 1920. Since then, both these signs have been commonly associated with acute hemorrhagic pancreatitis and ruptured ectopic pregnancy. However, it is important to recognize that broadly, Cullen's signs is seen in intraperitoneal hemorrhage and Turner's sign in retroperitoneal hemorrhage, thereby leading clinicians to look for causes other than those mentioned above that could lead to such presentation. Postcatheterization hematomas are of four distinct types: retroperitoneal hematoma, intraperitoneal hematoma, groin and thigh hematoma and abdominal wall hematoma. Although thigh and groin hematomas as commonly looked for after the procedure, the other types may be missed since their diagnosis is often elusive. In this day and age when femoral cardiac catheterization is frequently performed, it is important for clinicians to revisit this scenario.

GULP OF FEAR: DEGLUTITION NEUROCARDIOGENIC SYNCOPE. M.V. Jordan[1]; K. Pfeifer[2]; J. Aasbo[2]; H. Paydak[2]; M. Ezri[2]. [1]Medical College of Wisconsin, New Berlin, WI; [2]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 169931)*

LEARNING OBJECTIVES: 1. Recognize that excessive vagal tone initiated with swallowing can induce clinically significant sinus pauses, bradycardia, AV block and ventricular asystole resulting in syncope. 2. Describe the clinical presentation, evaluation and management of deglutition neurocardiogenic syncope.
CASE: A 50 year-old woman with a past medical history of hypertension, type 2 diabetes mellitus and anoxic encephalopathy secondary to cardiac arrest, presented to the hospital after being found at home unconscious with labored breathing. The patient's parents had noted several episodes of the patient "suddenly falling asleep" and being unresponsive during meals over the last several years, and her prior history of cardiac arrest was related to such an episode. In the emergency room, the initial exam showed the patient to be hypotensive, bradycardic, hypoxic and comatose. She was intubated in the emergency room and transferred to the intensive care unit. Chest radiograph revealed bilateral lower lobe infiltrates suspicious for aspiration pneumonia, and empiric intravenous antibiotics were started. Head CT ruled out significant intracranial pathology. Dopamine was initiated for hemodynamic support. The patient continued to improve and was extubated, and dopamine was discontinued. During her hospitalization, the patient was noted to have periods of sinus bradycardia with AV nodal block and several seconds of ventricular asystole when swallowing food or liquids. The patient had mild lightheadedness during these episodes. Echocardiography demonstrated normal biventricular structure and function. A swallow study and upper GI study excluded esophageal pathology, and a chest and neck CT was negative for a mediastinal mass. With correctable causes of her periodic hypervagotonia excluded, implantation of a dual chamber permanent pacemaker was performed to prevent recurrent syncope.
DISCUSSION: Deglutition neurocardiogenic syncope refers to the uncommon phenomenon of presyncope or syncope associated with deglutition. The classic symptoms include dizziness, lightheadedness, or fainting on swallowing. Cardiac monitoring may reveal sinus bradycardia, AV block and periods of ventricular aystole upon swallowing, which is vasovagally mediated. Esophageal and mediastinal evaluation may identify potentially treatable secondary causes. Barium swallow and intraluminal esophageal dilatation in conjunction with simultaneous rhythm monitoring may be used to identify specific areas of esophageal dysfunction. If an esophageal abnormality is identified, surgical correction may be curative. If treatable secondary causes are excluded, permanent pacemaker implantation is effective.

RADIATION-INDUCED HEART DISEASE- AN ON-GOING CLINICAL PROBLEM. M.J. Koti[1]; S.U. Nigwekar[1]; W. Henion[1]; M. Rao[2]. [1]Rochester General Hospital, Rochester, NY; [2]University of Rochester, Rochester, NY. *(Tracking ID # 172894)*

LEARNING OBJECTIVES: 1. Recognize the cardiotoxic effects of mediastinal radiation therapy (RT). 2. Recognize the need for comprehensive cardiac evaluation to detect RT-induced heart disease.
CASE: A 57 year old woman with well-controlled hypertension and early breast cancer status post lumpectomy, mediastinal radiation and chemotherapy 5 years ago, noticed sudden onset chest pressure along with paresthesias in her left upper extremity. She was formerly a 40 pack-year smoker and denied any illicit drug use. Her medications included letrozole, irbesartan, hydrochlorothiazide and aspirin. Physical examination revealed a soft systolic murmur at the apex, a soft diastolic murmur at the base and normal peripheral pulses. Myocardial infarction (MI) was ruled out by serial electrocardiograms and troponins. Stress echocardiography was negative and the electrocardiographic response was non-diagnostic. However, moderate to severe mitral regurgitation (MR) and moderate aortic regurgitation (AR) with an ejection fraction of 60% was noted. Subsequent coronary angiography revealed a left main coronary (LMCA) ostial lesion with ventricularization of pressure tracing on engagement of LMCA, and mild disease in the proximal left anterior descending artery (LAD). Further evaluation with intravascular ultrasound (IVUS) confirmed a slit-like LMCA ostium with more than 60% stenosis, and 50% stenosis in the proximal LAD with evidence of non-atherosclerotic aortitis. Intraoperative transesophageal echocardiography confirmed valvular disease as reported on stress echocardiography. Multivessel

coronary artery bypass grafting was performed without any complications. No valvular repair was done in view of preserved left ventricular ejection fraction and absence of heart failure. Patient was discharged home after an asymptomatic period of 5 days with a follow up visit after 2 weeks. Coronary ostial stenosis, aortitis and multivalvular dysfunction were attributed to RT-induced heart disease.
DISCUSSION: Mediastinal RT for breast cancer, Hodgkin's disease and seminoma is well known to be cardiotoxic. RT has a predilection to involve coronary ostia and causes LMCA disease more commonly than right coronary disease. Prevalence of valvular disease can be as high as 80% in RT-induced heart disease; moderate to severe AR being more frequent than moderate MR. Other manifestations of RT-induced heart disease include non-atherosclerotic aortitis, pericarditis, cardiomyopathy, conduction abnormalities and cardiac autonomic dysfunction. Silent MI tends to be more common due to damaged nerve endings and hence, a high index of suspicion is required to diagnose ischemia in patients with history of RT. Excessive fibrosis accounts for valvular dysfunction. Microvascular injury and acceleration of atherosclerosis are the suggested mechanisms for RT-induced coronary artery disease. Although newer techniques in RT have decreased the mortality associated with breast cancer, vascular mortality due to MI has increased. Stress testing and echocardiography may identify myocardial ischemia and valvular heart disease in the incipient stage, if instituted early after RT. As in our patient, IVUS may be used as an adjunct to angiography to accurately characterize proximal LMCA and ostial lesions. In conclusion, early initiation of surveillance for heart disease, a high index of clinical suspicion and low threshold for a detailed cardiac evaluation is required while managing patients who have undergone mediastinal RT.

SEEDS OF DESTRUCTION. Z. Khan[1]; K. Holder[1]; C. Miller[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 173664)*

LEARNING OBJECTIVES: 1. Recognize the importance of clinical reasoning in evaluating the intravenous drug user with a fever. 2. Understand the limitations of the modified Duke Criteria for evaluating endocarditis.
CASE: A 42 year-old man presented from the local prison with four days of a diffuse pleuritic chest pain and fever. He also had progressive shortness of breath, night sweats, and a cough productive of reddish-brown sputum. He was an intravenous heroin abuser, but had no access to narcotics since his arrest two weeks prior to admission. He had a temperature of 103.5°F , a heart rate of 110 beats per minute, a respiratory rate of 30 breaths per minute and a pulse oximetry reading of 93% on room air. His blood pressure was normal. He appeared ill, was using accessory muscles to breathe; he could not speak in full sentences. He had coarse breath sounds, but no signs of consolidation. He had a normal S1 and S2 and there were no murmurs. His left extremity had multiple track marks, as well as a small abscess on his superior forearm. Blood cultures grew methicillin-resistant Staphylococcus aureus. A chest CT showed multiple areas of cavitation and abscess formation consistent with septic emboli. A trans-thoracic echocardiogram revealed no evidence of vegetation or valvular insufficiency; a trans-esophageal echocardiogram was delayed because he had sputums positive for acid-fast bacilli. Despite the negative echocardiogram, he met one major and three minor criteria of the modified Duke Criteria and was diagnosed with endocarditis. However, his bacteremia did not resolve and his white blood cell count continued to climb despite antibiotic therapy with vancomycin. This prompted a search for other sources of infection. A large thrombus was identified by ultrasound, spanning the length of his basilic vein from his left shoulder to his left distal forearm. He was diagnosed with septic thrombophlebitis and underwent complete venectomy of his basilic vein. His white blood cell count immediately improved and his bacteremia cleared within 24 hours.
DISCUSSION: The modified Duke Criteria is a helpful guide to the diagnosis of endocarditis. Studies assessing the utility of the criteria have set a specificity ranging from 72%–99%. Unfortunately, the studies do not distinguish the three possible ways to meet the criteria: two major criteria, or one major and three minor criteria, or five minor criteria. Our patient fell into the category of definite endocarditis, by meeting an additional three minor criteria. Our patient brings into question whether there may be an important difference in specificity amongst the three ways of meeting the Duke Criteria for endocarditis. We recognized this possible disparity and relied on our clinical judgment when our patient did not improve. This case emphasizes the need for clinical reasoning to remain a guide in the rapidly expanding realm of evidence-based medicine.

SELENIUM DEFICIENCY AND CARDIOMYOPATHY FOLLOWING BARIATRIC SURGERY. S. Harris[1]; H.V. Naina[2]; T.J. Beckman[2]. [1]Mayo Clinic, Rochester, MN; [2]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 173908)*

LEARNING OBJECTIVES: 1. Recognize bariatric surgery as a potential cause of trace element deficiency 2. Identify selenium deficiency as a possible etiology of heart failure that is reversible with selenium repletion
CASE: A 66-year-old obese woman underwent Roux-en-Y gastric bypass (RYGB) in 2002 for obesity-related sleep apnea. With supervised dietary restriction she experienced a weight loss of 180 pounds over 3 years. In March of 2006, she developed oropharyngeal dysphagia leading to an additional 30 pounds weight loss. In September she was admitted to the intensive care unit with profound weakness, dehydration, and hypotension. BMI on admission was 18. The most remarkable finding on physical examination was bilateral pulmonary crackles and a corresponding chest x-ray showing findings of pulmonary edema. An echocardiogram showed decreased left ventricular systolic function with an ejection fraction (EF) of 25% and her BNP was elevated at 2000 pg/mL. Subsequently she developed respiratory failure requiring mechanical ventilation. This prompted an evaluation for cardiogenic shock. A coronary angiogram showed only a single 20% obstruction the proximal left anterior descending artery. A repeat echocardiogram showed an EF of 19% with severe global hypokinesis. Her blood selenium level was low at 41ng/ml (normal 95–165 ng/ml). Her copper was also below normal range. Her serum vitamin B12, vitamin E, folate, and zinc levels were within normal limits. Thiamine was not checked because the patient received intravenous thiamine on admission and had been taking a multivitamin. She was started on selenium replacement (50 mcg/day) and a multivitamin with elements was continued. In light of her dysphagia a PEJ tube was placed. Her heart failure was managed with lisinopril and diuretics. Ultimately her respiratory function improved, she was extubated and discharged from intensive care. One week later an echocardiogram revealed EF = 40% and selenium level was 93. Two months later an echocardiogram showed EF = 62% and selenium level was 108.
DISCUSSION: Patients undergoing RYGB are known to be at risk for iron, vitamin B12, folate, and calcium deficiencies. Appropriate prophylactic nutritional supplements are thus given to these patients. However, we found no reports of trace element deficiencies resulting from RYGB. Selenium deficiency has been reported primarily in patients with disorders, such as malabsorption, affecting the small intestine. Chronic selenium deficiency has also been demonstrated in individuals taking long term, selenium-deficient parenteral nutrition. Selenium deficiency cardiomyopathy, a recognized disorder, may present as an acute, subacute or chronic disease. Patients with selenium deficiency sometimes develop cardiogenic shock. Among selenium-deficient patients with cardiomyopathy, Ieft ventricular ejection fraction has been shown to correlate with serum selenium concentrations. Indeed, our patient's ejection fraction seemed to improve in proportion to her serum selenium concentrations. Physicians should be aware of the potential for cardiomyopathy associated with trace mineral deficiencies in patients status post RYGB.

SUBMASSIVE PULMONARY EMBOLISM: TO LYSE OR NOT TO LYSE? D.M. Rodrigues[1]; S.R. Pitta[2]; L. Afonso[3]. [1]Wayne State University, southfield, MI; [2]Wayne State University, Farmington Hills, MI; [3]Wayne State University, Detroit, MI. *(Tracking ID # 172379)*

LEARNING OBJECTIVES: Pulmonary Embolism (PE) is a life threatening situation that is frequently difficult to recognize and often missed by physicians. The presence of right ventricular dysfunction (RVD) or pulmonary hypertension resulting from PE, also referred to as submassive pulmonary embolism (SPE), is associated with adverse short-term clinical outcomes and higher mortality compared to PE without RVD (4% vs. 1%). While thrombolysis for acute PE with hemodynamically instability (massive PE) is strongly recommended, the clinical benefits of thrombolysis for SPE are less well defined and are the focus of this report.
CASE: A 26 year old African-American male with no previous cardiac, pulmonary or hematological history presented with intermittent, stabbing, nonradiating, retrosternal pain, 4 days prior to presentation. The chest pain was exacerbated with activity and associated with diaphoresis and shortness of breath. He was admitted to the cardiac intensive care unit for evaluation of acute coronary syndrome/ unstable angina. Cardiac evaluation revealed negative serial troponins. EKG was notable for sinus tachycardia with a S1Q3T3 pattern (fig 1). Echocardiography revealed normal left ventricular function without regionality, a dilated, hypokinetic right ventricle and a pulmonary artery pressure of 74 mm Hg, findings consistent with SPE (Fig 2). Contrast CT-thorax demonstrated a large saddle embolus extending into both pulmonary arteries (figure 3). Duplex ultrasound demonstrated deep venous thrombosis (DVT) of the right femoral vein. Our patient received bolus thrombolytic therapy (100 mg IV t PA over 2 hours), followed by heparin and coumadin with good symptomatic resolve. A repeat CT scan (48 h hrs later) demonstrated resolution of thrombus in right pulmonary artery and partial resolution of the thrombus in the contra lateral pulmonary artery. (Fig 4). BNP levels decreased from 624 pg/ml to 24 pg/ml. Repeat echo demonstrated resolution of right ventricular dilation and pulmonary hypertension (figure 5). Hypercoagulable workup was significant for Factor V-Leiden deficiency.
DISCUSSION: Much debate exists as to whether the benefits of thrombolysis outweigh the risks in patients with SPE. Goldhaber et al studied a small isolated group of patients with large PE and RV strain and demonstrated that thrombolytics improved RV function in hemodynamically stable patients without adverse affects. Grifoni et al found PE with persistent RV dysfunction at hospital discharge to be an independent predictor of recurrent DVT. A study by Konstantinides et al reported a lower incidence of treatment escalation in patients with SPE treated with alteplase plus heparin compared to heparin alone but no difference in mortality or in fatal or cerebral bleeding. While there are still no widely accepted recommendations for lytic therapy in patients with SPE, the available evidence supports the use of thrombolytics in these patients. A large randomized control study comparing the use of thrombolytics vs. heparin in patients with SPE is warranted to definitively elucidate treatment recommendations in these patients.

SYNCOPE AND INDUCIBLE VENOUS DISTENTION IN A 29 YEAR-OLD MALE: SUPERIOR VENA CAVA SYNDROME ATTRIBUTED TO PLACEMENT OF PACEMAKER WIRES. I. Marsh[1]; K. Gupta[1]; N. Key[1]. [1]University of Kansas, Kansas City, KS. *(Tracking ID # 173855)*

LEARNING OBJECTIVES: Learning Objectives: 1. Discuss the clinical presentation and etiologies of superior vena cava (SVC) syndrome 2. Recognize the importance of history and physical exam in the diagnosis of SVC syndrome 3. Discuss new treatment modalities for thrombotic causes of SVC syndrome
CASE: A 29 year-old male presented with worsening presyncope during straining or bending. His past medical history included a diagnosis of Wolff-Parkinson-White treated with ablation and resulting in iatrogenic sick sinus syndrome. A pacemaker was placed 7 years ago, and the presyncopal symptoms had developed gradually over the past 2 years. Physical exam was initially normal. However, when the patient was asked to perform a valsalva maneuver, marked venous distention of the neck and superficial abdomen were noted, making the clinical diagnosis of SVC Syndrome. Angiography displayed development of collateral circulation to the azygous system, and stenting of

his SVC was performed to restore native blood flow. His symptoms completely resolved post-procedure, and he had radiological evidence of stent patency one year later.
DISCUSSION: Superior vena cava (SVC) syndrome is defined as the obstruction of blood flow in the superior vena cava by invasion or external compression of the SVC or by thrombosis of blood within the SVC. Malignancies are associated with 85 percent of cases. The most common tumors seen are lymphomas and bronchogenic carcinomas, but thymomas, primary mediastinal germ cell tumors, and breast cancers have also been identified as etiologies. Recently, iatrogenic causes such as central venous catheters have been shown to initiate an occlusive thrombosis, and stenosis of the SVC is a well-recognized complication of pacemaker placement. Pacemaker wires are covered with a thick coating of polyurethane, and may endothelialize at areas that make contact with the blood vessel wall. The stress on the wires at the time of placement may cause the irritation required for clot formation and stenosis. SVC syndrome itself is a changing entity. Although usually thought of as an oncologic complication, recent case reports have shown that approximately 40% of cases arise from a benign etiology, such as fibrosing mediastinitis, sclerosing cholangitis, sarcoidosis, syphilis, histoplasmosis, or indwelling central venous catheters. Of benign cases, 71% were associated with an intravascular device. Treatment modalities previously focused on methods of tumor reduction, but newer treatment options include surgical bypass, angiographic stenting as in our patient, and lytic medications for clot dissolution.

TYPICALLY ATYPICAL: THE DIAGNOSTIC DILEMMA OF VARIANT ANGINA. R.W. Elder[1]; K. Vesio[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172667)*

LEARNING OBJECTIVES: 1. Describe risk factors for variant angina 2. Explain the diagnostic challenge in differentiating variant from classical angina
CASE: J.V. is a 52 year old Caucasian female who presented with episodic chest pain at rest. She has a history of coronary artery disease requiring stent placement and was treated with medical therapy including nitroglycerine. The patient is a former smoker and there is a family history of premature cardiovascular disease. Her initial EKG showed T wave inversions and small ST depressions in the antero-lateral leads with a mildly elevated troponin-I of 0.17 ng/ml. The patient underwent cardiac catheterization that showed a patent stent and mild-moderate stenosis of 25% at the LAD origin and 70% mid-RCA. During angiography of the RCA, she experienced similar chest pain with deep T wave inversions in the anterior leads. Review of the angiogram did not demonstrate a significant lesion in the LAD. The stenotic RCA was stented and the patient was successfully discharged the following day. J.V. continued to have chest discomfort at rest and one week later she returned with a nearly identical presentation that again required catheterization. This time, upon injection of contrast dye into the LAD, she developed intense arterial spasm at the LAD origin with near obliteration of flow corresponding with intense chest pain. Her symptoms and arterial flow were significantly improved by intra-coronary nitroglycerine. Based on the combined fixed and dynamic lesions, proximal LAD location, and failure of medical therapy, the patient underwent bypass surgery and did well post-operatively with complete resolution of her symptoms.
DISCUSSION: Variant angina, also known as Prinzmetal's angina, is an intense, episodic chest pain that should be differentiated from typical angina due to acute coronary syndrome (ACS). It is caused by the transient, significant reduction in diameter of a coronary artery that occurs without a preceding increase in cardiac demand. Arterial spasm usually occurs within 1 cm of an atherosclerotic plaque but, unlike ACS, is not associated with plaque rupture. Patients typically are younger than those with ACS, do not always exhibit the classic risk factors (with the noted exception of smoking), but may have a preceding history of Raynaud's phenomenon or other vasospastic diseases. In susceptible patients, variant angina may be triggered by cocaine use, exercise, hyperventilation or hand submersion in cold water. It may also occur without a known trigger. ST changes caused by coronary spasm are temporary and resolve as the angina dissipates, but residual T waves inversions may persist for a period of hours. Traditional diagnostic modalities used to detect fixed lesions (e.g. coronary angiography) are susceptible to the dynamic nature of spasm. One useful technique to diagnose spasm is an event recorder that documents transient ST elevation concurrent with symptoms. Once identified, variant angina can be treated with nitroglycerine or calcium channel blockers. If unresponsive to medical therapy, mechanical intervention may be of benefit if the spasm occurs around a visible lesion.

WAIT! THIS PATIENT'S SYMPTOMS ARE NOT CAUSED BY SPINAL STENOSIS. A. Jindeel[1]. [1]Harbor-UCLA Medical Center, San Pedro, CA. *(Tracking ID # 173806)*

LEARNING OBJECTIVES: 1. Identify clinical presentations and differential diagnosis of acute limb ischemia (ALI) 2. Recognize importance of prompt diagnosis and therapy
CASE: 75-year-old female with dementia and chronic low back pain was evaluated because of increasing bilateral leg pain and inability to ambulate. She resides in a nursing home and ambulates with a walker. Medications were vicoden and aspirin. Blood pressure was 157/72 with irregular pulse in the 80's. Her feet were cold and pale with weakness & loss of all sensation in the toes. She had absent bilateral femoral, dorsalis pedis and posterior tibial pulses with no Doppler signals in pedal arteries. ECG showed atrial fibrillation. She was started on intravenous heparin. Vascular surgery performed bilateral groin exploration, embolectomy of a saddle embolus at the aortoiliac bifurcation and bilateral leg fasciotomy. An echocardiogram showed a clot in the left atrium. Patient was discharged three weeks later on warfarin, atenolol and vicoden.
DISCUSSION: Internists have the responsibility of promptly identifying and initiating appropriate therapy for ALI. ALI results from sudden decrease in arterial blood supply to extremity secondary to embolism (from the heart as in atrial fibrillation or the aorta as in aortic aneurysm), in-situ thrombosis at atherosclerotic lesion, arterial trauma or vasculitis. ALI presents with pain, pulselessness, parasthesia, pallor and paralysis. Pain from ALI is not localized to distal forefoot and is not clearly affected by gravity, as in chronic critical limb ischemia. Unlike chronic limb ischemia, ankle-brachial index is not useful in ALI, but checking doppler arterial signals over pedal arteries is very helpful. Differential diagnosis of ALI includes radiculopathy, extensive acute DVT and vasospasm. Rutherford's three classes of ALI are: I. Viable with no sensory or motor deficit, audible doppler signals in a pedal artery. II. Threatened: a. Marginally with no or minimal toe sensory loss, no motor deficit b. Immediately with sensory loss above the toes, any motor deficit, persistent ischemic rest pain. III. Irreversible with profound sensory loss and muscle paralysis extending above the foot. Usually there are no audible doppler signals in any pedal artery in class II and III. Primary goals of ALI treatment are patient survival and limb preservation. Mortality rate of ALI is 10–20%. Amputation rate is 6%–20%. Heparin prevents clot propagation, further embolization and reduces morbidity and mortality in patients with ALI. Heparin should be started promptly unless contraindicated. Intra-arterial thrombolysis is commonly used as initial therapy in patients with class I and IIa. Thrombolysis usually uncovers underlying pathology that needs to be corrected by catheter-based intervention or open surgery. Percutaneous mechanical thrombectomy is an alternative to open surgical revascularization of ALI in high-risk surgical patients with class IIb and early class III ALI. Most class III ALI patients require amputation. 43% of patients with embolic cause of ALI will have recurrence without anticoagulation. Postoperatively, patients with ALI are at risk of compartment syndrome, hyperkalemia, metabolic acidosis, myoglobulinemia, renal and pulmonary dysfunction and usually require intensive therapy. Patients with ALI and underlying atherosclerosis need aggressive risk factor modification (smoking, hypertension, diabetes and dyslipidemia) and antiplatelet therapy.

WHEN A SEIZURE IS NOT A SEIZURE: A CASE OF ROMANO WARD SYNDROME. J.L. Torres[1]; L. Ward[1]; F. Deger[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 172241)*

LEARNING OBJECTIVES: 1. Review the meaning of the QT interval and the correct approach to calculating the QT and corrected QT (QTc) interval. 2. Recognize the features of congenital long QT syndrome such as Romano Ward syndrome.
CASE: A 41-year-old African American woman, with a history of hypertension and seizure disorder, presented to the emergency department with a new seizure. She noted that the episode was preceded by palpitations with associated dizziness for 3 days, and that this was similar to her past seizures episodes. Her current medications included phenytoin and amlodipine. There was no family history of syncope, seizures, cardiac disease or deafness. She denied smoking, alcohol or drugs use. Vital signs and physical examination were normal except for an irregular cardiac rhythm at a rate of 76. EKG showed a junctional rhythm at 65 bpm, normal axis, alternas T waves with notched T waves in leads V3-V4, QRS 72 ms, no QT dispersion, QT interval 554 ms. with QTc of 576 ms, with sporadic nonsustained polymorphic ventricular tachycardia. Her CBC, electrolytes, cardiac enzymes and drug screen were normal. CT of head was unremarkable. The echocardiogram showed a normal left ventricle ejection fraction, grade 2 diastolic dysfunction, with mildly increased left ventricular wall thickness. Cardiac pharmacologic stress test was also normal. Despite substituting levetitacetam for her phenytoin her EKG findings did not improve. In fact follow-up EKGs demonstrated widened QTs up to 596 ms. Prophylactic ICD implantation was undertaken and she was begun on atenolol 100 mg daily.
DISCUSSION: The QT interval reflects the time required for both depolarization (QRS complex) and repolarization (T wave) of the ventricles. The QT interval is the time from the onset of the QRS complex to the end of the T wave. The repolarization is the larger component of the entire QT interval, thus any QT prolongation generally reflects a repolarization abnormalities. Heart rate also affects the QT interval, so the Bazett formula was created to account for this in the form of the QTc, where QTc = QT interval ÷ square root of the RR interval. The normal values for QTc are between 0.43 to 0.47 ms. This patient had the characteristics features of a congenital long QT syndrome (LQTS), in this case Romano Ward syndrome. Congenital long QT syndromes although rare, are thought to be underdiagnosed in part due to the limited time most physicians spend carefully examining EKG tracings, as well as confusion over the specific diagnosis criteria for them. This case illustrates how a case was mistaken for an isolated seizure disorder, when she likely has had recurrent syncopal episodes due to LQTS. To diagnose LQTS, all other events that can also prolong the QT interval must be excluded, including; metabolic disorders, bradyarrhythmias, medicines, herbals, toxins and cardiac disorders. There is a LQTS score which is used to determine congenital QT prolongation. This score includes: QTc, heart rate, torsade de pointes, alternas and notched T-waves, syncope, deafness and family history. When patients present with ≥ 4 points, congenital LQTS should strongly be considered. In our patient the QT score was 6 points, making the LQTS very likely. In this case due to the pure cardiac phenotype and the absence of auditory impartment, the most likely type of LQTS was Romano Ward syndrome.

YOUR STANDARD NSTEMI. J.A. Carter[1]. [1]Dartmouth Hitchcock Medical Center, West Lebanon, NH. *(Tracking ID # 173807)*

LEARNING OBJECTIVES: 1. Establishing a Differential Diagnosis of Chest Pain 2. Understanding the Presentation of Spinal Infarct
CASE: 77 year old ski instructor was giving a ski lesson at 7:30 A.M. when he suddenly felt chest pain he described as sharp and band-like. This chest pain was accompanied by diaphoresis, dyspnea and bil leg unsteadiness. Patient quickly skied downhill and radioed for assistance. In the ambulance, patient received three nitroglycerin that relieved his chest pain, dyspnea and diaphoresis by the time he reached a small local hospital an hour later. Throughout his 24 hour hospital stay, however, patient remained weak in his lower extremity and could not ambulate independently. On interview, patient denied smoking history, family history of cardiac

disease, or recent trauma. Laboratories performed were notable for mild cardiac biomarker elevation, and sinus bradycardia with flattening of T waves laterally on EKG. These findings were shared with the accepting cardiologist at our institution and the patient was transferred the following evening for cardiac catheterization. On admission, exam findings included diminished strength bil in lower extremity, a thoracic temperature level, anuria, and markedly decreased rectal tone. An emergent MRI of the thoracic and lumbar spine was performed showing a T3-T8 spinal infarct. CT/angiogram of the thoracic and abdominal aorta was negative for dissection and patient was diagnosed with spinal cord ischemia secondary to atherosclerotic changes. The chest pain was recognized as referred back pain. After one week of intense inpatient rehabilitation, the patient regained much of his lower extremity strength and was discharged with home physical therapy.
DISCUSSION: Spinal cord infarction is a delicate and uncommon diagnosis occurring in 1–2% of stroke patients. Due to the increasing frequency of iatrogenic etiologies and spinal infections, it's rates are expected to increase. With a morbidity as high as 20% and clear quality of life risks, it seems imperative to recognize the clinical signs. As seen here, spinal cord infarction is most commonly thoracic and presents as acute paraparesis, paraplegia, numbness of the legs, and inability to void. The differential includes acute transverse myelopathy, viral myelitis, Guillain-BarrÅ Syndrome, acute inflammatory demyelinating polyneuropathy, and mass lesions. In spinal infarct, the culpit is typically an ischemic, aneurismal, or dissected branch of the thoracic aorta. While a one hour episode of chest pain, diaphoresis and dyspnea in a 77 yr old gentleman may have seemingly redundant origins, it seems important to emphasize the less obvious. Though the differential diagnosis for chest pain certainly includes the usual suspects including acute coronary syndrome, pulmonary embolism, pneumonia, and pleuritis, other diagnoses such as spinal infarct (particularly in a setting of leg weakness) should be explored. This case reminds us how subtle variations can greatly alter the clinical picture and underlines the responsibility as physicians to be wary of common case bias.

A CASE OF INSULINOMA DIAGNOSED IN A PATIENT WITH SEIZURE DISORDER. A. Shiloh[1]; A.P. Burger[1]. [1]Montefiore Medical Center, Bronx, NY. *(Tracking ID # 173207)*

LEARNING OBJECTIVES: 1. Review the diagnosis and treatment of insulinomas. 2. Recognize insulinomas as a possible cause of adult seizures.
CASE: A 60 year old male with documented epileptogenic cortical irritability visualized on EEG was admitted for continuous EEG/video monitoring as further workup for refractory seizures. A thorough history included reports of strange sensations, visual hallucinations, the inability to answer questions appropriately, and evening sweating that had started at age 45 occurring on average twice yearly until 2003. At that time the patient was started on antiepileptic medications after beginning to experience monthly events that included changes in mental status, amnesia, facial twitching, and periods of black out. The patient did not have a history of insulin or sulfonylurea use. On current hospitalization physical and neurological exam did not reveal any focal findings. Serum chemistries displayed low serum glucose levels, nadir of 34 mg/dl, although the patient never exhibited any autonomic or neuroglycopenic symptoms. Additional chemistry, CBC, LFTs, cortisol level and thyroid function were unremarkable. Relatively elevated C-peptide 3.5 ng/ml (normal 0.9–4.0 ng/ml) and insulin 5.9 UIU/ml (normal 5–30 UIU/ml) levels during an episode of hypoglycemia, glucose 48 mg/dl, established a diagnosis of insulinoma. Diazoxide therapy was initiated with improvement in blood glucose levels. CT scanning of the abdomen revealed a 1.4 cm hypervascular lesion in the body of the pancreas consistent with an islet cell tumor. MRI confirmed the results and the patient was referred for surgical removal of the tumor.
DISCUSSION: Diagnosis of insulinoma is often delayed by symptoms that are attributed to more common disease, such as neurological disorder and psychiatric illness. Insulinomas are insulin secreting tumors of the pancreatic islet cells. They clinically manifest as hypoglycemia associated with autonomic symptoms of weakness, sweating, tachycardia, or palpitations and may result in neuroglycopenic symptoms of amnesia, unconsciousness, and seizures. Insulinomas have an incidence of 4 cases per million patients a year. There is a slight female to male predominance (3:2). The median age of diagnosis of benign insulinoma is 47 years. Five to ten percent of insulinomas are malignant. Five to ten percent are associated with multiple endocrine neoplasia type 1 (MEN 1) and are often diagnosed at an earlier age (mid 20 s). Ten percent of insulinomas are multiple. Diagnosis of insulinoma is established with elevated concentrations of serum insulin during periods of hypoglycemia. Hypoglycemia may be missed on routine chemistry and a 72 hour observed fast may be required to illicit hypoglycemia. Measurement of C-peptide, proinsulin, and sulfonylurea levels rule out cases of fictitious hypoglycemia. Imaging with CT or MRI is utilized after diagnosis in order to localize the tumor. If unsuccessful, endoscopic ultrasonography, angiography, or surgical localization is required. Short term therapy may be administered with diazoxide, embolization, and other techniques but ultimately surgical removal of the tumor is required for resolution of the disease. Recurrence can occur but is more likely in cases of MEN 1. Insulinomas are important to keep in mind when confronted with patients with intractable disease to adequate medical therapy.

A NON-HEALING ULCER. S.U. Nigwekar[1]. [1]Rochester General Hospital, Rochester, NY. *(Tracking ID # 172292)*

LEARNING OBJECTIVES: 1. Recognize clinical features and management of calciphylaxis. 2. Recognize primary hyperparathyroidism as an etiology of calciphylaxis.
CASE: A 49-year-old, white woman was seen in the emergency room for non-resolving left leg ulcer and pain. Patient had history of uncontrolled type 2 diabetes mellitus, was evaluated by vascular surgery for leg ulcer prior to this presentation and the ulcer was thought to be a complication of uncontrolled diabetes mellitus. Physical examination was positive for an extremely tender oval violaceous ulcer measuring 8×5 cm with surrounding cellulitic changes. Laboratory workup revealed leucocytosis, normal serum creatinine, elevated glycated hemoglobin of 9.5% (4.6–6.0%) and elevated corrected serum calcium of 11.2 (8.5–10.2 mg/dL). Magnetic resonance imaging of left lower extremity showed no evidence of osteomyelitis. Patient was started on an aggressive local wound care program and antibiotic coverage which resulted in no significant improvement. Further evaluation showed serum phosphorous level of 2.1 mg/dL (2.2–4.5 mg/dL); intact parathyroid hormone, 82 pg/mL (14.0–72.0 pg/mL); and normal 1, 25 dihydroxy vitamin D3 concentration. She continued to have severe leg pain with intermittent fevers and a full-thickness skin biopsy was performed. Histologic examination revealed widespread septal panniculitis and calcifications in the adventitia of small and medium-sized vessels with luminal narrowing, consistent with calciphylaxis. Patient subsequently underwent a parathyroid exploration that showed left inferior gland adenoma weighing 0.6 g. These clinical and histomorphologic findings were consistent with the diagnosis of primary hyperparathyroidism. Following parathyroidectomy, the patient's serum calcium level returned to normal and near complete resolution of leg ulcer was achieved. She was sent home with outpatient follow up for uncontrolled diabetes mellitus.
DISCUSSION: Calciphylaxis is a rare but serious disorder characterized by small vessel mural calcification with or without endovascular fibrosis, extravascular calcification and thrombosis, leading to tissue ischemia. Though most commonly seen in patients with end-stage renal disease, it has been reported in a variety of other conditions. Primary hyperparathyroidism is a very rare cause of calciphylaxis with less than 10 cases reported in the English literature. Calciphylaxis is typically characterized by areas of necrosis that develop in the dermis, subcutaneous fat, and less often in muscle. These ischemic changes lead to violaceous, painful nodules on the trunk, buttocks or extremity, which are areas of greatest adiposity. Nodules subsequently progress to necrotic ulcers with eschars that often become superinfected. Early recognition is important since delay in diagnosis is associated with high mortality. Parathyroidectomy (surgical and medical) has been advocated as a mode of therapy for calciphylaxis, since it often leads to marked clinical improvement as seen in our patient. Other therapeutic options include hyperbaric oxygen, sodium thiosulfate, and corticosteroid therapy. There are no controlled studies of established calciphylaxis as specific therapeutic regimens have been limited to isolated cases. In conclusion, calciphylaxis from non-uremic etiologies should be considered in the differential diagnosis of non-healing skin ulcers and as demonstrated in our report, timely recognition with appropriate intervention has a favorable impact on patient outcome.

ALTERED MENTAL STATUS AND HYPONATREMIA IN THE SETTING OF SHEEHAN'S SYNDROME. L.G. Maffey[1]; C. Pham[2]. [1]UCLA San Fernando Valley Program, Sylmar, CA; [2]University of California, Los Angeles, Sylmar, CA. *(Tracking ID # 173923)*

LEARNING OBJECTIVES: 1. Manage severe hyponatremia in the setting of a patient with acute neurological symptoms. 2. Recognize the associations between hypopituitarism and hyponatremia.
CASE: A 63 year old female was brought to the emergency room by family because of 1 day of increasing somnolence. History was obtained from family as patient did not answer questions. There was no known recent trauma, loss of consciousness, fevers or chills. No prior medical problems were endorsed. Vital signs were body temperature, 36.1° centigrade, blood pressure, 154/74 mm Hg, pulse, 69 beats/min. Physical examination was significant for a thin female in mild distress. Mucous membranes were dry. Neurologically, the patient had slow mentation (oriented only to self; could not follow most commands) and tendon reflexes were diffusely decreased. Laboratories revealed sodium (112 mmol/L) and chloride (75 mmol/L). Isotonic saline was initiated, subsequently replaced by hypertonic saline. Additional studies included urinary osmolality 454 mosm/kg, urine sodium 138 mmol/dl and serum osmolality 228 mosm/kg. Endocrine tests revealed normal thyroid-stimulating hormone (2.28 uIU/ml) and low free thyroxine (< 0.40 ng/dl). Cortisol was 3.0 mcg/dl and 4.3 mcg/dl before and 1 hour after cosyntropin administration respectively. Serum adrenocorticotropin (ACTH) level was < 5 pg/ml. Given ACTH deficiency and secondary hypothyroidism, hypopituitarism was suspected and hydrocortisone and thyroxine therapy were commenced. After 24 hours, the patient was alert and oriented with sodium improved to 120 mmol/L. Further history revealed an episode of significant postpartum hemorrhage at the age of 33. The patient recalled oligogalactia and amenorrhea following this event. Brain Computerized Tomography suggested a partially empty sella. The diagnosis of postpartum hemorrhage related hypopituitarism or Sheehan's syndrome was made.
DISCUSSION: Management of hyponatremia is dependent on the electrolyte disturbance severity, duration and the presence of associated neurological symptoms. Severe hyponatremia has been suggested to range between < 110 mmol/L to < 115 mmol/L, with acute defined as < 48 hours. Neurological symptoms have been attributed to cerebral edema and include lethargy, mental aberration, grand mal seizures and coma. Patients with severe or moderate hyponatremia and associated neurological disturbances, warrant immediate management. Correction with hypertonic saline is recommended, though isotonic saline should be given initially if there is concern for hypovolemia. When severe hyponatremia is clearly acute or neurological symptoms are present, the recommended initial rate of correction has been suggested to be 1–2.4 mmol/hour. This is continued for 2–3 hours or until resolution of neurological symptoms. Otherwise, the correction rate should not exceed 0.5 mmol/hour, to prevent the development of osmotic demyelination syndrome. Once treatment is begun, the hyponatremia is further categorized and treatment tailored. One such category is euvolemic hyponatremia in the setting of hypopituitarism, with associated corticotroph and thyrotroph deficiencies. ACTH deficiency has been associated with increased vasopressin secretion, which leads to abnormal water metabolism and hyponatremia. In addition, hypothyroid patients have been described to have a diminished ability to excrete free water and may therefore be hyponatremic. Supplementing these deficiencies alone has been shown to correct the hyponatremia.

ANXIETY ABOUT AMIODARONE. I. Nasir[1]; S. Hodak[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172563)*

LEARNING OBJECTIVES: 1) Identify clinically significant amiodarone-induced thyroid dysfunction. 2) Specify appropriate treatment strategies for different forms of amiodarone-induced thyrotoxicosis (AIT). 3) State the effects of amiodarone in patients with underlying clinically silent nodular goiter.
CASE: An 81 year old female with history of multinodular goiter and rate-controlled atrial fibrillation on amiodarone for 5 years presented with restlessness, anxiety, tremulousness, weight loss, and increased bowel movements x4–5 months. She had no dyspnea but had dysphagia for solids. No fevers/chills/ nausea/ vomiting/ cough. She had attributed her symptoms to the recent death of her husband. Upon further questioning, she stated that her face flushed upon raising her arms above her head when reaching for things. On physical exam, she had a 120 g nontender goiter consisting of diffuse nodules, no bruit over goiter, no exophthalmos, no lid lag, irregularly irregular heart rate, 2+ reflexes throughout. Pemberton's sign (facial plethora signifying substernal extension of the goiter resulting in obstruction of the jugular veins) was positive. Labs revealed a TSH suppressed at <0.1, TT4 elevated at 18.8 and a urine iodine level elevated at 14,548. IL-6 levels were normal at 2.4. Both a CT scan of neck and chest without contrast and an ultrasound revealed a heterogenous thyroid with innumerable isoechoic nodules, bilateral substernal goiter with R deviation and mild tracheal compression. A diagnosis of AIT type 1 was made, patient was continued on metoprolol and was started on tapazole. After 4 weeks, our patient's thyroid was visibly smaller up to 100 g. She felt less anxiety, tremulousness, and had an overall improved sense of well-being. However, her TSH was still suppressed at <0.018 and FT4 was elevated at 5. Potassium perchlorate was added to induce depletion of intrathyroidal iodine and amiodarone was discontinued. Thyroidectomy was advised for definitive therapy.
DISCUSSION: Amiodarone is a common antiarrhythmic containing 37% iodine, which causes an increase in both T4 and rT3 due to its inhibition of 5'-monodeiodinase. There are two distinct types of AIT and a mixed variety. Type 1 results from an increased synthesis of thyroid hormones in the setting of preexisting clinically silent thyroid disease and type 2 results from direct amiodarone-induced thyroid damage and inflammation. Type 1 is treated with thionamides and potassium perchlorate and type 2 is treated with glucocorticoids and has high IL-6 levels. In patients such as the case, autonomous function in multinodular goiter does not autoregulate iodine and the addition of more iodine results in thyrotoxicosis from excessive thyroid hormone synthesis (Jod-Basedow effect). Also, pemberton's sign was positive as the thoracic inlet rises and becomes "plugged" by a large retrosternal goiter when both arms are elevated. It is unclear if there is any benefit to discontinuing amiodarone since it is very lipophilic and therefore, concentrated in adipose and thyroid tissues and can remain for 18 months. Thyroid dysfunction has a common association with amiodarone therapy. It is recommended that patients have TFTs checked before starting therapy, at 4 month intervals, and for 1 year after the drug is withdrawn. It is important to distinguish AIT type 1 from type 2 as each responds to different therapies. In refractory cases of AIT type 1, thyroidectomy is recommended to alleviate both the hyperadrenergic and obstructive symptoms.

DON'T EAT MY BONES: A CASE OF TUMOR INDUCED OSTEOMALACIA. J.S. Go[1]; L. Armas[1]; R. Recker[1]. [1]Creighton University, Omaha, NE. *(Tracking ID # 173289)*

LEARNING OBJECTIVES: 1. Recognize the clinical and laboratory features of tumor-induced osteomalacia (TIO); 2. Diagnose and manage patients with TIO.
CASE: A 60-year old caucasian female presented with a 6-year history of multiple non-trauma fractures, diffuse body aches, and osteoporosis. She did not have any history of childhood fractures nor any family history of bone disorders. Her medical history is negative for thyrotoxicosis, Cushing's syndrome, malabsorption, or menstrual disorders. In addition, she has not been on any chronic medications. She is a non-smoker and a non-alcoholic. Work up revealed a low serum phosphorus of 1.5 mg/dl (2.7–4.5 mg/dl), with an inappropriately normal serum 1,25(OH) Vitamin D of 22 pg/ml (15–60 pg/ml). Her 25(OH) Vitamin D was 23 ng/ml (20–100 ng/ml) and her bone-specific alkaline phosphatase was elevated at 114.3 ug/ml (<22.4 ug/ml). Other laboratory exams including serum calcium, aluminum, parathyroid hormone, parathyroid related peptide, thyroid, steroid and sex hormones were all normal. Serum and urine electrophoresis were unremarkable. Urine studies revealed phosphaturia. A bone scan revealed multiple areas of increased uptake representing fractures or pseudo-fractures and a pelvic x-ray had a moth-eaten appearance to the pelvis. Her hypophosphatemia persisted despite phosphorus replacement. A presumptive diagnosis of tumor-induced osteomalacia was made. A search for the tumor including whole body CT and MRI scans revealed a 1.5 cm contrast-enhancing parafalcine mass consistent with a meningioma. An octreotide scan showed uptake in the mass. Tumor removal will confirm the diagnosis.
DISCUSSION: This case represents an uncommon diagnosis to a common presenting sign. Tumor-Induced Osteomalacia (TIO) is an acquired paraneoplastic disorder of bone metabolism caused by substances known as phosphatonins. These phosphatonins decrease serum phosphate and inhibit the 1,25(OH) Vitamin D compensatory response. These metabolic effects lead to impaired bone metabolism manifesting as a clinical picture of non-trauma fractures and diffuse body pains. Currently identified phosphatonins include Fibroblast growth factor 23 (FGF23), Matrix extracellular Phosphoglycoprotein (MEPE), and Frizzled protein 4 (FRP-4). Most tumors that produce phosphatonins are connective tissue in origin and the most common causative tumors are hemangiopericytomas. Other tumors known to cause TIO include osteoblastoma-like tumors, ossifying and non-ossifying fibrous-like tumors. These tumors are usually small, slow growing, unobtrusive, and do not cause physical signs and symptoms. While they are detected by CT or MRI, care must be taken to look for these tumors in the extremities and soft tissues where they are usually found. Some of these tumors also express somatostatin receptors and have been detected on octreotide scans. Medical therapy for TIO includes phosphorus and calcitriol replacement. Somatostatin is an option for tumors expressing these receptors. Definitive therapy however, require tumor removal which results in cure. Most patients with TIO experience a delay in diagnosis of several years. Whether or not this meningioma will prove to be the source of this patient's TIO, it is the hope of this author that awareness of this entity will alert clinicians to the diagnostic possibility in any patient with hypophosphatemia and osteomalacia.

HOW LOW CAN YOU GO? A CASE OF HDL "IN LIMBO". H.F. Mechaber[1]; K.M. Mcshane[2]; A.J. Mechaber[1]; A.J. Mendez[1]; R.B. Goldberg[1]. [1]University of Miami, Miami, FL; [2]University of Miami, Miami Beach, FL. *(Tracking ID # 172561)*

LEARNING OBJECTIVES: 1) Recognize a paradoxical HDL-Cholesterol (HDL-C) decline in patients treated with fenofibrate.
CASE: A 71-year-old Colombian man was being treated for diabetes mellitus and dyslipidemia. Five years ago, he was well-managed with metformin, gemfibrozil, and pravastatin. Rosiglitazone was added when glycemic control worsened. After two years on this regimen, his lipid levels were: total cholesterol 158 mg/dl, LDL-C 89 mg/dl, HDL-C 39 mg/dl, and triglycerides (TG) 146 mg/dl, and his HbA1c was 5.6%. To minimize risk for rhabdomyolysis on his statin-gemfibrozil combination, he was changed to fenofibrate, and remained on metformin and rosiglitazone. All parameters were stable 4 weeks later. At 16 weeks his HDL-C level decreased precipitously to 5 mg/dl. Suspecting lab error, repeat testing two weeks later confirmed a low HDL-C of 4 mg/dl and TG of 295 mg/dl. Fenofibrate was discontinued. Over the next 6 weeks, while off the fenofibrate but still taking metformin, rosiglitazone, and a statin, his TG level decreased and his HDL-C levels increased back to 37 mg/dl. A review of the literature raised the possibility that the combination of fenofibrate and rosiglitazone may have caused this untoward effect. Given that his HbA1c was 4.4%, metformin was continued, rosiglitazone was stopped, and he was rechallenged with fenofibrate. Six weeks after restarting fenofibrate, despite no further use of rosiglitazone, he again experienced this idiosyncratic decrease in HDL-C to 9 mg/dl.
DISCUSSION: Patients with type 2 diabetes are at increased risk for cardiovascular disease (CVD), and low HDL contributes to this risk. Fibrates have been shown to reduce CVD events in diabetic subjects independent of the LDL-C, in part due to their HDL-raising properties. While rare, a paradoxical decline in HDL may occur as a result of treatment with specific fibrates. This case demonstrates one such reaction in a patient whose HDL-C was normal when treated with gemfibrozil and rosiglitazone, yet drastically declined with a switch to fenofibrate. The mechanism for this decrease in HDL-C is unknown. Previous reports have suggested that this may occur in patients concomitantly taking fibrates and a thiazolidinedione (TZD), for unknown reasons, though both drugs should cause an increase in HDL-C. In these cases the TZD was thought to be the provocative agent on a background of fibrate therapy. In our patient, the fibrate appeared to be the provocative drug. HDL-C dropped with initiation of fenofibrate, and increased upon its withdrawal, both with and without the use of rosiglitazone. Several case reports suggest that this effect may occur with fibrate treatment alone, though none implicate gemfibrozil. Fibrates act on the nuclear receptor PPARα, to increase synthesis of the major apoproteins of HDL, leading to an increase in HDL. Fibrates also increase expression of ABCA1, a protein critical in the maturation of HDL. TZD's are insulin sensitizers that act on the PPARâ receptor. They increase the activity of both ABCA1 and modulating enzymes involved in HDL remodeling and catabolism. The paradoxical fall in HDL-C may be representative of idiosyncratic reactions either inhibiting HDL production or interfering with enzymes involved in HDL remodeling, enhancing its catabolism. This decrease in HDL-C highlights the internist's need for awareness of a possible spurious reaction to these widely used drugs, since a low HDL-C may increase CVD risk.

HOW SWEET IT IS; EXAMINING AN UNCOMMON CAUSE OF CORTISOL EXCESS. S.G. Coe[1]; W. Tan[1]; F. Thomas[1]. [1]Mayo Foundation for Medical Education and Research, Jacksonville, FL. *(Tracking ID # 173775)*

LEARNING OBJECTIVES: 1. Recognize signs and symptoms of Cushing's syndrome. 2. Distinguish the causes of Cushing's syndrome and their evaluation.
CASE: A previously healthy 40 year old female developed resistant hypertension, hyperglycemia and hypokalemia requiring multiple hospitalizations over 2 years. One month prior to admission she developed diffuse swelling and a non-traumatic fracture of the right hip. An ultrasound showed three liver lesions of unknown significance. She had transient episodes of flushing, skin rashes and a 50–60 pound weight gain during the previous months. Hypertension and hypokalemia remained problematic and she eventually developed a hypertensive crisis requiring ICU admission. Fine needle aspiration of a liver lesion revealed metastatic carcinoid and she was transferred to us for further management. On arrival the patient was hypertensive, had moon facies, facial plethora, supraclavicular fullness, and a dorsal fat pad. She had a diffuse macular papular rash on her face and upper extremities. Her abdomen was centrally obese and firm with abdominal striae and multiple echymosis. Labs revealed hypokalmia, hyperglycemia and metabolic alkalosis. A 24 hour urine of 4175 cc contained 5219 micrograms of cortisol (normal limit 45 micrograms). Her serum cortisol was 39.5 μg/dl and plasma ACTH was 133 pg/ml. MRI of the brain, whole body octreoscan, and CT of the abdomen and pelvis failed to locate the primary carcinoid. Treatment involved bilateral adrenalectomy, endocrine replacement therapy and monthly octreotide injections.
DISCUSSION: Derived from neuroendocrine cells, carcinoid tumors have the ability to secrete a variety of peptides and amines. The most commonly secreted substance is serotonin however, a number of others are possible including ACTH. Excess ACTH results in hypercortisolism resulting in resistant hypertension, hypokalemia, and hyperglycemia. [1] A 24-hour urine cortisol more than 4 times the upper limit of normal is diagnostic for Cushing's syndrome.[3] Plasma ACTH levels are useful to distinguish ACTH dependent from ACTH independent causes of Cushing's syndrome. A plasma ACTH level <5 pg/ml with a serum cortisol level >15 μg/dl indicates an ACTH independent source. ACTH independent causes are primary to the adrenal glands and include adrenocortical adenomas and carcinomas, and less often bilateral micronodular dysplasia. A plasma ACTH level >10 pg/ml despite a serum cortisol >15 μg/dl indicates an ACTH dependant cause. ACTH dependant causes include pituitary hypersecretion of ACTH, ectopic ACTH

secreting tumors, and ectopic CRH secreting tumors. [3, 4, 5] One method to distinguish a pituitary source from an ectopic source is an overnight 8 mg dexamethasone suppression test. High dose dexamethasone overcomes feedback inhibition in pituitary tumors but does not in ectopic tumors. A greater than 68% suppression of serum cortisol offers 71% specificity and 100% sensitivity in identifying a pituitary source for ACTH dependant Cushing's syndrome. [2] Ectopic ACTH secreting tumors include carcinomas of the lung, thymus and pancreas, as well as carcinoid tumors. Secretion of ACTH results in bilateral adrenocortical hyperplasia, adrenal hyperfunction and resultant Cushing syndrome. [4, 5] Early recognition of the signs and symptoms of Cushing's syndrome resulting from ectopic ACTH leads to prompt intervention. Surgery combined with octreotide resulted in dramatic improvement in quality of life for our patient.

HYPERTHYROIDISM MASQUERADING AS VASOSPASTIC ANGINA. M.S. Go[1]; N. Swe[2]; D. Rosenberg[2]; R. Goldstein[2]. [1]Abington Memorial Hospital, Abington, PA; [2]Abington Memorial Hospital, Philadelphia, PA. *(Tracking ID # 173796)*

LEARNING OBJECTIVES: (1) Recognize that new onset hyperthyroidism can present with anginal symptoms secondary to severe coronary spasm (2) Prompt recognition of this condition can assist in early and appropriate treatment, avoiding unnecessary invasive procedures thereby decreasing morbidity and mortality

CASE: A 46 year old Korean male with newly diagnosed hyperthyroidism and dyslipidemia presented to the emergency department with a chief complaint of multiple episodes of severe, substernal crushing chest pain typically exertional and radiating to the left arm associated with dyspnea and diaphoresis. No significant family history of cardiac disease elicited and calculated risk factors include a 20 pack-year tobacco history and dyslipidemia. Admission vital signs were stable except for tachycardia of 103 bpm. Physical exam showed no exophthalmos or lid lag, no thyromegaly or thyroid bruit, but with tremor on out-stretched hands. Pulmonary and abdominal exams were unremarkable. Cardiac exam was significant for tachycardia with an EKG showing sinus tachycardia rate of 110 bpm and 3–4 mm ST segment elevation on the anterolateral leads. A metabolic panel, CBC, and cardiac enzymes were all normal. TSH was suppressed at 0.006 IU/ml. Symptoms were otherwise relieved with sublingual nitroglycerin. The patient was admitted to the cardiac care unit and managed as an acute coronary event. Serial cardiac enzymes were all negative. An echocardiogram revealed normal valves and LV function. Recurrent chest pain with similar EKG changes prompted percutaneous coronary angiography which demonstrated normal coronaries and possible coronary vasospasm as probable etiology of severe chest pain. Later during the hospital admission, freeT4 was found to be elevated at 5.39 ng/dl (normal 0.7–1.4 ng/dl) and freeT3 was also elevated at 13.9 pg/ml (normal 2.3–4.2 pg/ml). Thyroid stimulating immunoglobulins were positive at 2.2 (normal < 1.3) confirming Grave's disease. The patient's hyperthyroidism was suspected to be the cause of his coronary vasospasm and angina. The patient was stabilized with methimazole, calcium channel blocker, beta-blocker,and statins. A thyroid radioactive-iodine uptake and scan was deferred for at least 6 weeks due to the recent iodine load from cardiac catheterization.

DISCUSSION: Angina pectoris in the presence of normal coronary vessels can account for up to 10–20% of patients undergoing coronary angiography. Although atherosclerotic coronary artery disease is the most common cause of cardiac chest pain, severe coronary spasm triggered by the autonomic imbalance can produce similar symptoms in the setting of normal coronary anatomy. This case illustrates an atypical presentation of hyperthyroidism masquerading as an acute coronary event. The use of iodinated contrast for coronary angiography in this hyperthyroid patient was justified by his anginal symptoms and subsequent EKG changes. This case therefore serves to enlighten the medical health professionals that prompt recognition of this condition can lead to immediate institution of appropriate therapy.

HYPOKALEMIC PERIODIC PARALYSIS: A RARE OCCURANCE IN AFRICAN AMERICANS. A. Harish[1]; R. Anderson[1]. [1]Creighton University, Omaha, NE. *(Tracking ID # 173063)*

LEARNING OBJECTIVES: 1. Describe the epidemiology and etiology of Hypokalemic Periodic Paralysis (HPP). 2. Recognize triggers that cause Hypokalemic Periodic Paralysis in thyrotoxic patients taking regular potassium supplements.

CASE: We describe a 35 year old African American male with Graves' disease who presented with acute onset quadriparesis. History was significant for diarrhea for two weeks, and sudden-onset quadriparesis on the day of admission. On exam he was obviously thyrotoxic with tachycardia, proptosis, thyromegaly and tremors, along with loss of strength (1/5) in all four extremities. Labs revealed potassium of 2.0 mEq/L, blood glucose of 174 mg/dl, TSH of 0.01, T3 of 327, and T4 of 16.1. His medications included Methimazole (40 mg qday), Propanolol (20 mg qday) and Potassium Chloride (20 mEq qday). His hypokalemia was corrected with administration of intravenous Potassium Chloride. The doses of Methimazole and Propanolol were increased. The symptoms completely resolved in the next twenty four hours with the correction of hypokalemia.

DISCUSSION: HPP is well described in literature, especially in Asian people. It is uncommon in Caucasians and extremely rare in African Americans. Various hypotheses have been postulated to explain the disorder. This syndrome may be familial, with an autosomal dominant inheritance pattern of variable penetrance. It may or may not be associated with hyperthyroidism. The autosomal dominant disease is associated with point mutations in gene coding for L-type calcium channel (alpha 1 subunit) in the skeletal muscle. This channel's function is further compromised during thyrotoxic states. It is also hypothesized that thyroid hormone may increase Na-K-ATPase activity (which drives potassium into cells), thus precipitating hypokalemia during events (stress, exercise, large meals, high blood glucose, heat, and physical activity) that are associated with an increase in the levels of epinephrine and insulin. The episodes are typically described as sudden-onset, symmetrical paralysis mainly of the lower extremities, and rarely respiratory muscle involvement, with no symptoms or signs between attacks. This case illustrates HPP in a thyrotoxic patient, in spite of being on oral potassium. Triggers in his case could have been loss of potassium due to the diarrhea with inadequate oral supplementation, as well as stress and high glucose due to his impaired glucose tolerance, as suggested by high post prandial and fasting blood sugars during hospitalization. HPP has also been described in euthyroid patients, hence it is extremely important to recognize these potential triggers in such patients. This is an easily treatable condition with rapid response to appropriate therapy as illustrated in this case. Recognition of triggers and patient education on avoiding them will decrease morbidity by preventing further attacks.

HYPOKALEMIC PERIODIC PARALYSIS: NOT ALWAYS FAMILIAL. P. Bose[1]; D. Al-Romaihi[1]; K. Movva[1]. [1]Henry Ford Hospital Detroit, Detroit, MI. *(Tracking ID # 170813)*

LEARNING OBJECTIVES: 1. Recognize the classic presentation of hypokalemic periodic paralysis, and its usually dramatic response to relatively small replacement doses of potassium. 2. Recognize the important causative association of thyrotoxicosis with hypokalemic periodic paralysis, especially in young Asian males.

CASE: A 33 year-old Chinese male presented with several episodes of generalized muscle weakness over a two week period, mostly triggered by exercise. On closer questioning, he admitted to having similar episodes over the previous 2 to 3 years. On the morning of presentation, he was not able to move his limbs at all on awakening. Initial labs revealed a potassium of 1.8 meq/L. A repeat value was 1.5 meq/L, and serum phosphorus was 1.1 milligrams per deciliter(mg/dl). Serum bicarbonate was normal. Muscle power was only grade 2/5 in all limbs. Following the administration of 60 meq of potassium chloride(KCl) orally and 20 meq intravenously, 2 packets of NeutraPhos orally and 15 millimoles of KPhos intravenously, he had no residual weakness and was ambulating easily. Repeat potassium levels were 4.4 and 4.6 meq/L and the repeat phosphorus level was 1.5 mg/dl. His thyroid stimulating hormone (TSH) level came back at less than 0.04 international units per milliliter(uIU/ml) and his free thyroxine(T4) level was 3.99 nanograms per deciliter(ng/dl). On admission to the general medicine service, he was found to have a fine tremor of the outstretched hands and slightly brisk ankle jerks. There was no family history of periodic paralysis. Over the next two days, his electrolyte levels remained normal and there was no recurrence of weakness. An endocrinology consultation was obtained and the patient was started on a small dose of potassium and propranolol. Radioiodine ablation of the thyroid was recommended at discharge.

DISCUSSION: Hypokalemic periodic paralysis is a fascinating disorder of obscure etiology in which potentially fatal episodes of muscle weakness or paralysis can occur, coincident with sudden intracellular shifts of potassium. These are often precipitated by exercise, stress or a carbohydrate meal, perhaps due to the release of epinephrine or insulin. Plasma potassium concentrations can drop to as low as 1.5 to 2.5 milliequivalents per liter(meq/L), often accompanied by hypophosphatemia and hypomagnesemia. The disease can be familial with autosomal dominant inheritance, or acquired in patients with thyrotoxicosis. Our patient was diagnosed with thyrotoxic hypokalemic periodic paralysis, which may occur in 15 to 20% of hyperthyroid Chinese subjects. Thyroid hormone stimulates sodium potassium adenosine triphosphatase(Na-K-ATPase), thereby driving potassium into cells. Susceptible Asians may also have a mutated calcium channel, which is not sufficient to produce symptoms in the euthyroid state. Our case illustrates the importance of accurate diagnosis and appropriate treatment of this rare but dangerous disorder. The oral administration of 60 to 120 meq of potassium chloride usually quickly aborts acute attacks. Overreplacement of potassium in the acute setting may cause dangerous posttreatment hyperkalemia as potassium shifts out of the cells. Restoration of euthyroidism is crucial in prevention of hypokalemic episodes. Nonselective beta blockers also can minimize the number and severity of attacks and, in most cases, limit the fall in plasma potassium.

HYPOTHERMIA IN SUNNY SOUTHERN CALIFORNIA? Y.N. Chudasama[1]; S. Wali[1]; N. Mikhail[2]. [1]University of California, Los Angeles, Sylmar, CA; [2]Olive View-UCLA Medical Center, Sylmar, CA. *(Tracking ID # 173950)*

LEARNING OBJECTIVES: Recognize the pulmonary complications of myxedema coma. Recognize severe hypothyroidism as a cause of obstructive lung disease.

CASE: A 42 year old Hispanic female with restrictive lung disease due to trauma from a car accident in 1985 presents to the ED in late November with one week hx of shortness of breath, weight gain, fatigue, and severe chills. She also reported orthopnea, PND and daytime somnolence. She denied fever, night sweats, chest pain, any TB exposure, ill contacts, or prolonged exposure to cold water or weather. No medications prior to admission and her family history was unremarkable. She denied use of tobacco, EtOH or illicit drugs. PMHx and ROS were negative. T = 35 BP = 88/46 P = 60 R = 16 O2 sat = 60% on RA. She was obese, lethargic and cyanotic. Pertinent physical exam findings include macroglossia, non-pitting edema of all extremities, and loss of hair in her eyebrows. Lungs had decreased breath sounds with poor airflow. Neck was supple without elevated JVP. Cardiac exam was regular with no murmur, rubs or gallops. Abdominal exam was benign. Na = 146, K = 5.1, Cl = 102, Bicarb = 41, BUN = 9, Creatinine = 0.8, Glucose = 86 ABG: pH = 7.34, PCO2 = 78, PO2 = 83, Bicarb = 41 CXR: deformed thorax; poor inspiratory effort. CT Chest: cardiomegaly; large pulmonary artery; old rib fractures with bibasilar consolidation. The patient was started on O2 via facemask and hypoxia improved to 95%. However, the patient became apneic with high flow O2. ABG revealed CO2 retention and when her O2 flow was reduced the patient resumed breathing. The patient was admitted with sepsis from pneumonia and BiPAP and broad spectrum antibiotics were begun in the ICU with no improvement. The team considered HIV and thyroid disorder. Further workup revealed TSH = 68.03 [0.4–4.67] with undetectable levels of FT4 and TT3 and she was diagnosed with myxedema coma. Thyroxine 200 mcg IV was given for one day and then continued at 150 mcg IV daily while in the ICU. Upon transfer to the general medical floors 2 days later, the patient was switched to 200 mcg orally. Continued evaluation showed an anti-thyroglobulin Ab = 58 and anti-microsomal Ab = 8.5 and the patient was diagnosed with Hashimoto thyroiditis. ACTH stimulation test was negative. Her mental status

improved markedly by the second day of therapy and she had diminishing oxygen requirements. Five days after diagnosis her TSH had decreased to 25.96, Free T4 was 0.91 [0.8–1.45] and Total T3 was 0.79 [0.96–2.08] and the patient was sent home on daily oral levothyroxine.
DISCUSSION: Early recognition, diagnosis and treatment of myxedema coma are critical in saving lives as it is the most severe form of hypothyroidism and can rapidly progress to death. Once the clinical diagnosis of myxedema coma is made, using TSH and FT4 for confirmation, therapy with IV thyroxine should be prompt. Endocrinology should be consulted and adjunctive measures needed for survival may include ventilation, warming, fluids, pressors, and corticosteroids. We should always create a wide differential diagnosis when we see an acutely ill patient and endocrine causes should be considered in different settings, including pulmonary symptoms. This patient had significant pulmonary manifestations of hypothyroidism which were initially interpreted as pneumonia. Hypothyroidism, causing obesity and macroglossia, likely contributed to an obstructive airway disease in this patient. Without recognizing the pulmonary complications of myxedema coma, adequate therapy would not have been given.

HYPOTHYROID INDUCED COMPARTMENT SYNDROME. J. Roberts[1]; Y. Mishriki[2]. [1]Lehigh Valley Hospital and Health Network, Catasauqua, PA; [2]Lehigh Valley Hospital and Health Network, Allentown, PA. *(Tracking ID # 173380)*

LEARNING OBJECTIVES: 1. Recognize a rare complication of untreated hypothyroidism. 2. Diagnose and treat compartment syndrome in a painful, non-traumatic extremity.
CASE: Compartment syndrome results from one of two mechanisms: an increase in the volume of a compartment, or the decrease in size of a compartment relative to its contents. It is either, acute and most often due to trauma, or chronic and usually due to vigorous exercise with resultant muscle hypertrophy. Myxedematous muscle infiltration from severe hypothyroidism is one potential but rare cause of compartment syndrome. A 54-year-old woman with prior total thyroidectomy secondary to Hashimoto's thyroiditis, presented with severe bilateral leg pain. Six weeks prior, levothyroxine was discontinued as it was suspected that she had been abusing it in order to lose weight. The creatinine kinase (CK) level on presentation was 819 U/L, and the thyroid stimulating hormone (TSH) was 215 uIU/mL. The patient was admitted for pain control and was re-started on levothyroxine. The lower extremity pain improved, and at discharge the CK level had fallen to 315 U/L. Unfortunately, the patient returned one day later with worsening leg pain. The CK level had risen to 1155 U/L. The patient was re-admitted and more aggressive thyroid replacement was instituted. Her CK level continued to rise and peaked at 11,329 U/L. Bilateral lower extremity compartment pressures were found to be markedly elevated at 50–80 mmHg (normal <20 mmHg or >30 mmHg lower than diastolic pressure). The patient underwent bilateral lower extremity four compartment fasciotomies.
DISCUSSION: Compartment syndrome has a high morbidity and mortality if not diagnosed early. As the fourth case reported of hypothyroid associated compartment syndrome, this rare complication must be considered in any patient with non-traumatic compartment syndrome. This case illustrates the potential for severe hypothyroidism to cause compartment syndrome presumably due to infiltration of muscles with mucopolysaccharides. It is critical to minimize morbidity with early surgical intervention and thyroid replacement therapy. If thyroid replacement therapy must be discontinued, it is imperative to follow laboratory levels of thyroid stimulating hormone to prevent serious complications of hypothyroidism.

I'VE FALLEN AND CAN'T GET UP! A UNIQUE PRESENTATION OF A RARE DISORDER. R. Malhotra[1]. [1]Virginia Commonwealth University, Richmond, VA. *(Tracking ID # 172712)*

LEARNING OBJECTIVES: 1. Recognize hypokalemic periodic paralysis (HPP) and its rising incidence in the West. 2. Include HPP in your differential in African-American patients.
CASE: A 44 year-old African-American male with untreated hypertension, chronic back pain, dyslipidemia and cocaine abuse collapsed in his bathroom and was unable to rise until he was found by a friend four hours later. He was transported to the hospital via EMS and was complaining of inability to move his extremities. He denied any preceding illness or symptoms other than generalized weakness that developed the morning of his collapse. Upon presentation, vital signs were significant only for mild tachycardia. His physical exam revealed upper and lower extremity flaccid paralysis with 0/5 strength proximally and distally. He was able to move his head and neck and his sphincter tone was intact. His respiratory effort was normal, and he was able to protect his airway. His sensation was preserved and reflexes were absent. Imaging of his head and neck demonstrated no trauma or focal findings. Labs were significant for a potassium of 1.3 mmol/L, phosphate of 1.5 mg/dL, a blood glucose of 250 mg/dL and normal TSH and free T4. Additional history revealed that the patient had used cocaine the day before his symptoms began and had recently eaten candy and cookies. The patient also reported similar symptoms in his son and an uncle. An ECG demonstrated sinus tachycardia at a rate of 107, a QTc of 517 ms, diffuse ST-segment depression, T-wave flattening and a prominent U-wave. The patient was admitted to the ICU and was aggressively repleted with potassium. A diabetic diet was provided and insulin was withheld. His potassium levels and ECG gradually normalized and he was able to move his extremities by the next morning. The remainder of his hospital course was uneventful and he was discharged with an outpatient endocrinology appointment.
DISCUSSION: HPP is a rare autosomal dominant inherited disorder found mostly in Asians and Caucasians. Approximately 1 in 100,000 people are affected. The age of onset is usually prior to 20, and a first event later than 35 is extremely rare. The main differentiating factor from thyrotoxic periodic paralysis (TPP) is the lack of clinical features of hyperthyroidism. The underlying pathophysiology of HPP is a massive intracellular shift of potassium most likely from an excessive catecholamine-like or hyperinsulinemic state. Treatment includes avoidance of triggers such as cocaine, exercise and carbohydrate-rich meals. Monitoring of the airway and repletion of potassium is indicated. It is important to realize that this disorder, although rare, can occur in African-Americans. The late age of onset and race of the patient make this case particularly unusual. We suspect that the inciting factors in this gentleman were his recent cocaine use combined with his carbohydrate-rich diet.

IN THE ERA OF TIME POVERTY, ARE WE MISSING THE OBVIOUS? U. Yalavarthy[1]; S. Mannepalli[1]; M. Panda[1]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN. *(Tracking ID # 171560)*

LEARNING OBJECTIVES: 1. Recognize the clinical features and complications of thyroid storm. 2. Recognize that thyroid storm can be a fatal complication in patients with undiagnosed hyperthyroidism.

CASE: A 25-year-old African-American female presented with nausea, vomiting and diarrhea for 3 months. The patient has been to the emergency room (ER) five times in the past few months for similar complaints and was sent home with promethazine and pain medications for presumed gastroenteritis. The ER physician and medicine team evaluated the patient during her sixth ER visit. An attempt at detailed history taking revealed that she had a history that was significant for intermittent fever, heat intolerance and depression with suicidal ideations and 35 lbs weight loss in the last three months. She denied visual symptoms, chest pain, shortness of breath and palpitations. Vitals were normal except for pulse of 135/min and temperature of 99.3°F. Physical exam was significant for extremely thin young female, tachycardia and muscle strength 3/5 in all four extremities and neck muscles. Laboratory data sent during the sixth visit was significant for T4-26.90 (Normal −5.2–12.5 UG/DL), TSH <0.004 (Normal 0.4–4.0 mIU/L), and TSH receptor antibodies elevated at 91%(normal $<16\%$) consistent with thyrotoxicosis. Ultrasound of the thyroid gland revealed diffusely enlarged hyper vascular thyroid with two nodules on the right. The 24-hour radioactive iodine uptake was equal to 94% consistent with Graves' disease. Patient was treated with IV fluids, lopressor and methimazole. Her clinical symptoms improved significantly in the next 2 days.
DISCUSSION: Graves' disease is the well known and most common cause of hyperthyroidism. Thyroid storm is most often precipitated by an acute event such as surgery, trauma or infection in a patient with hyperthyroidism; however it can also develop in patients with untreated hyperthyroidism without any precipitating factor. It is a dreaded complication with a case fatality rate between 20–50%. Hyperpyrexia, tachycardia, diarrhea, agitation, delirium, psychosis, stupor and coma are common manifestations. Other complications include basal ganglia infarction, congestive heart failure, hepatic failure with jaundice and multi organ failure. Our patient at presentation met the diagnostic criteria for thyroid storm. Fortunately she survived this episode. She had multiple ER visits with symptoms suggestive of hyperthyroidism but was discharged home with a diagnosis of suspected gastroenteritis. This unfortunate episode could have been avoided had the patient been diagnosed at an early part of her illness. This case underscores the importance of detailed history taking and also emphasizes the dogma "patients will tell you what they have if we have the time to listen to them."

IS IT ALL IN HIS HEAD? M. Slater[1]; C.J. Lai[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173841)*

LEARNING OBJECTIVES: 1) Recognize that a careful history which includes "endocrinologic" symptoms can lead to the etiology of recurrent headaches. 2) Learn the diagnostic tests and treatment of panhypopituitarism.
CASE: A 22 yo man presented with 6 mo of debilitating headache (HA) and fatigue. He had been evaluated and discharged several times from the ER; during these visits, in the absence of physical findings and given his recent return from a military tour in Iraq, he was given the diagnoses of tension HA and depression-related fatigue. At this current visit, the patient described the HA as bifrontal, crushing, and constant. ROS revealed 15-pound weight loss and low energy, stamina, libido, ejaculate volume, and facial hair. VS and exam revealed no abnormalities, including breasts, testicles, neurology, and gross visual fields. The patient underwent a brain MRI, which revealed a $3\times2\times2$ cm pituitary mass. Labs confirmed panhypopituitarism: testosterone 0 (nl 15–25 nmol/L), cortisol 4 (>20), free T4 7.4 (nl 12–31 nmol/L), IGF-1 103 (182–780 g/L), and prolactin 34 (<20 pmol/L). Formal visual field testing revealed bitemporal hemianopsia. The patient was started on hydrocortisone 40/20 mg, and on day 3, levothyroxine and testosterone patch were added, and GH was discussed. He underwent transsphenoidal resection of the mass, which was a non-functioning Rathke's cleft cyst. All of his symptoms have since resolved, except for rare mild HA, and hormone levels have normalized with replacement.
DISCUSSION: Internists often face the dilemma of whether a patient's headache warrants imaging to rule out a mass lesion. A consortium recommends that imaging be done if there are "red flags": neurological findings; significant change in frequency/severity; HA worsened with therapy; orbital bruit; onset >40 yo; or onset with exertion, cough, or sexual activity. Although our patient's HA was increasing in severity, the MRI was obtained because physicians connected his seemingly disparate ROS into a possible unifying diagnosis of pituitary dysfunction. Pituitary masses most commonly are adenomas, but 1% are non-functioning Rathke's cleft cysts. Because of pituitary compression, panhypopituitarism is a more common presentation of masses than hypersecretion as was the case with our patient. Each hormone pathway should be evaluated: ACTH, cortisol, testosterone, LH, FSH, TSH, free T4, prolactin, IGF-1. Treatment is focused on hormone replacement. To avoid precipitating a hypermetabolic crisis, correction of adrenal insufficiency must occur prior to thyroid replacement. Growth hormone (GH) replacement is controversial; the established benefits of GH treatment in adults are an increase in muscle mass (2–4 kg), decrease in body fat (13–30%), and 2–4% increase in bone mineral density. The primary risk is the development of glucose intolerance, and the cost is prohibitive. If the mass is large enough to cause hormone abnormalities or visual field deficits, transsphenoidal surgery is indicated. Surgery has been shown to reduce adenoma size and hypersecretion in $>90\%$ of cases. Hormone replacement may need to be continued after surgery if panhypopituitarism does not correct. This case serves to remind internists about the importance of 1) a full endocrinologic review of symptoms, which can provide clues to panhypopituitarism and thus a pituitary mass, and 2) a low threshold to image if "red flags" are present in a patient with persistent headaches.

MIXED DRINKS AND DIABETES DON'T MIX. M. Cash[1]; J. Wiese[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 173181)*

LEARNING OBJECTIVES: 1. Identify hypoglycemia as a mimicking condition of a stroke 2. Recognize the consequences of delayed therapy for hypoglycemia-induced stroke 3. Recognize the association between acute alcohol ingestion and hypoglycemia.
CASE: A 56 year-old man presented after a syncopal episode that followed ingesting a half-gallon of hurricanes. He awoke hours after the syncopal event and found that he could not use the right side of his body. He had a long history of diabetes, but stated that he had been compliant with his medications; he had no other medical history. He was confused at the time of presentation, and opened his eyes only to voice. He withdrew to pain and his speech was manifest of a Broca's aphasia. He had a right seventh cranial nerve deficit, 3/5 strength in his right upper extremity, and 4/5 strength in his right lower extremity. His reflexes were hyperactive and he had an extensor plantar response on that side. The rest of the examination was normal. A computed tomogram of the head without contrast was normal. He was diagnosed with a superior division middle cerebral artery stroke. He had a glucose of 26 mg/dL and an albumin of 2.1 mg/dL; the remaining laboratory studies were normal. His hypoglycemia was treated successfully with 50% dextrose. His neurologic symptoms resolved an hour after the dextrose was given. The next morning he had an MRI and an MRA of the brain which only showed global atrophy of the cerebellar vermis without any evidence of ischemic insult.
DISCUSSION: Our case illustrates the axiom, "A stroke is not a stroke without 50 of D50." While acute stroke and hypoglycemia are common presenting complaints in the general internist's practice, the link between the two conditions is frequently missed. Acute hypoglycemia can cause focal loss of auto-regulation of the cerebral vasculature, inducing vasospasm and reduced blood flow to focal areas of the brain. Because neurons have a selective resistance to hypoglycemia, some neurons may be easily affected while others remain unaffected. The result is a focal neurologic deficit that precisely mimicks a stroke. The risk of hypoglycemia-induced stroke is especially pronounced in those who have pre-existing brain injury from trauma, alcohol, or previous strokes. Hypoglycemia-induced stroke is not trivial, and general internists must recognize the association: if unrecognized, hypoglycemia can cause permanent neurologic damage. Further, failure to recognize the association can lead to critical delays in instituting immediate therapy while the patient undergoes time-expensive imaging. Our patient also illustrates another important lesson: the association between excessive alcohol ingestion and hypoglycemia. We estimate that our patient ingested in excess of 100 grams of alcohol; this amount may have been sufficient to induce acute hepatotoxicity and impairment of the gluconeogenesis required to maintain normal glucose homeostasis.

SEVERE STARVATION KETOACIDOSIS IN A PATIENT WITH DUCHENNE'S MUSCULAR DYSTROPHY. D.W. Frost[1]; D.J. Klein[2]. [1]University of Toronto Department of Medicine, Toronto, Ontario; [2]St. Michael's Hospital, Toronto, Ontario. *(Tracking ID # 170476)*

LEARNING OBJECTIVES: 1) Recognize the complications of degenerative muscle diseases 2) Assess and manage severe ketoacidosis.
CASE: A 19-year old man with Duchenne's muscular dystrophy (DMD) presented to the emergency department with a 1-day history of decreased level of consciousness and dyspnea. At baseline, he was fed by gastric tube and used BiPAP. Apart from DMD, he had no other medical history and was on no medications. One day prior to this presentation, he had been discharged from another institution, where he was admitted for 3 days for aspiration pneumonia. During the preceding admission, feeds were withheld. On presentation to our institution, BP was 80/40 mmHg and HR was 120/min. Respiratory rate was 30/min, with oxygen saturation of 98% on room air. He was afebrile. He had clearly diminished muscle bulk. Physical exam was otherwise non-contributory. Chest X-ray was unremarkable. CBC revealed a WBC count of 25700/L. Electrolytes revealed the following (all units mmol/L): Na 135, K 4.7, Cl 101, total CO2 9. The anion gap was 25. ABGs showed pH 6.96, pCO2 18 mmol/L, HCO3 4 mmol/L, and PO2 127 mmHg. He was admitted to the ICU, where he was resuscitated with 3 litres of normal saline, was given 50 meq bicarbonate followed by infusion of isotonic bicarbonate at 100 cc/h, and broad-spectrum antibiotics were started. Within a few hours of arrival in the ICU, investigations revealed a blood glucose of 5.3 mmol/L, a serum lactate of 0.3 mmol/L and a serum creainine of 16 mol/L. The plasma osmolal gap was 6 mosm/L. A toxicology screen was negative for ethanol, methanol, salicylates, and ethylene glycol. Serum ketones were positive, which prompted initiation of insulin infusion at 0.1 u/kg/h with 5% dextrose at 100 mL/h. Within 8 hours, ABGs were as follows: pH 7.48, pCO2 36 mmHg, HCO3 26 mmol/L, pO2 97 mmHg. The anion gap was 11. He was more alert and not tachypneic. The next morning, plasma glucose was 13.9 mmol/L and anion gap was 10. Hemoglobin A1C was 0.049. Feeds were restarted. The insulin and dextrose infusions were discontinued, and he was discharged at his baseline level of functioning.
DISCUSSION: Ketoacidosis occurs due to the absence of insulin or suppression of its activity, generally with concurrent hyper-activity of counter-regulatory hormones. In starvation, a low plasma glucose and alpha-adrenergic stimulation secondary to volume contraction limit insulin secretion. This promotes lipolysis and the resulting free fatty acids are converted to ketoacids. This patient presented with anion-gap metabolic acidosis and serum ketosis after a relatively brief hiatus in feeds. His metabolic derangements responded to fluid resuscitation, likely a more important contributor to his recovery than the glucose and insulin given. His acidosis was most consistent with starvation ketoacidosis, although of a severity rarely seen. His low muscle mass likely made his starvation ketoacidosis more profound. Ketone bodies cross cell membranes and are buffered largely in muscle. Our patient was unable to buffer ketones in muscle normally. Lack of amino acids from muscle as substrate for gluconeogenesis prevented hyperglycemia which would have normally increased insulin secretion. This case of life-threatening starvation ketoacidosis after a short fast illustrates its potential in patients with diminished muscle mass. Attention to caloric intake and intravascular volume is critical in patients with decreased muscle mass, particularly in the face of physiologic stressors.

THE CHICKEN OR THE EGG? L. Wasson[1]; J. Wiese[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 173727)*

LEARNING OBJECTIVES: 1. Recognize the association between myasthenia gravis and thymoma 2. Identify the association between thymoma and Graves disease, and the implications for treatment.
CASE: A 24 year-old woman presented with two days of intermittent chest fullness. The pain was characterized as five-minute bursts of sharp chest pain. It was accompanied by shortness of breath and numbness and tingling in her left arm. She also noted palpitations, loose stools, and heat intolerance. She had discontinued all of her medications two months earlier due to financial constraints. Over the past year, she had also been plagued by progressive, cramping weakness and diplopia that greatly worsened at the end of the day or with exercise. She had no dyphagia. She relayed having had a history of hyperthyroidism, hypertension, and congestive heart failure since birth. Her blood pressure was 138/80 mmHg and her heart rate was 103 beats/min. She had a large goiter with no thyroid bruit; there was no cervical lympadenopathy, jugular venous distention, or carotid bruits. She had a hyperdynamic point of maximal impulse that was three cm. in diameter. Her TSH was less than 0.10; her free T4 and free T3 were both elevated (6.9 and 30); and she had a microcytic anemia. A troponin level was normal and a chest X-ray revealed mild cardiomegaly. Because of the weakness and diplopia symptoms, myasthenia gravis was suspected. An acetyl receptor antibody test was sent which was negative. A CT scan of her chest and thorax revealed a large mediastinal mass that was 7 by 4 cm in diameter. A left cervical lymph node biopsy revealed pericortical reactive hyperplasia and a CT-guided biopsy of the mass revealed thymoma. A total thymectomy was performed that revealed thymic hyperplasia. She was discharged to home four days after her surgery with propothyouracil and a beta blocker. At her follow-up appointment, all of her myasthenia gravis symptoms had resolved.
DISCUSSION: Thyroid disease is a common presenting complaint in the general internist's practice. Our patient typifies the challenging nature of the thyroid disease. She demonstrated the triad of hyperthyroidism, antibody-negative myasthenia gravis, and thymoma. The association between Graves disease and myasthenia gravis is well known, as the thymus is central to the antibodies that cause myasthenia gravis. Less well-known, however, is the thymic hyperplasia that can result due to Graves disease. Two distinct histologic types of thymic hyperplasia exist: lymphoid and true thymic hyperplasia. True thymic hyperplasia is defined as an increase of both size and weight of the gland while it maintains normal microscopic architecture. True thymic hyperplasia occurs in three different forms: (1) thymic hyperplasia without any other disease, (2) enlargement of the thymus gland as a rebound phenomenon following recovery from severe stress, and (3) association with endocrine abnormalities, sarcoidosis, and Beckwith-Wiedeman syndrome. In contrast to true thymic hyperplasia, the actual number of lymphoid follicles and germinal centers increases in lymphoid hyperplasia of the thymus. The condition most commonly associated with lymphoid hyperplasia of the thymus is myasthenia gravis. Immunologically-mediated diseases such as rheumatoid arthritis, lupus, and Graves disease also are associated with this condition.

THIGH PAIN IN A POORLY-CONTROLLED DIABETIC: RECOGNIZING DIABETIC MYONECROSIS. G.C. Alexander[1]; D.J. Sullivan[2]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Harvard University, Boston, MA. *(Tracking ID # 173862)*

LEARNING OBJECTIVES: 1. Recognize diabetic myonecrosis and the implications of the diagnosis 2. Review the appropriate diagnostic and therapeutic options.
CASE: A 47 year-old man with insulin-dependant type II diabetes mellitus, polysubstance abuse, hypertension, chronic renal failure, and coronary artery disease presented to the outpatient clinic one day after being seen in the ED for left thigh pain and swelling. The patient describes the pain as severe, aching, and non-radiating, located in the anterior aspect of his right thigh. It began abruptly one week prior to presentation. He denies any trauma or injection drug use. He reports that he saw his primary care physician for a similar pain in his right thigh three months ago, and was treated with oxycodone-acetaminophen with minimal relief. His previous right-sided pain resolved gradually over 1–2 weeks. In the ED, he had an ultrasound which was negative for deep venous thrombosis or hematoma, and was discharged with oxycodone-acetaminophen for pain control. Labs drawn in the ED were notable for a glucose of 300 and a CK of 606. An MRI was ordered and showed diffuse swelling of the left thigh, with an area of low signal consistent with necrosis within the vastus lateralis muscle. There was also perifascial edema involving the vastus lateralis, rectus femoris, vastus medialis, and intermedius muscles. This appearance was consistent with muscular infarction. The patient was placed on bed rest and a follow-up up appointment was made with his primary care physician to address his glucose control.
DISCUSSION: Diabetic myonecrosis is a rare complication of longstanding, poorly-controlled diabetes. It is more common in insulin-dependant diabetics, and presents in patients who have multiple vascular complications including diabetic nephropathy, retinopathy, and neuropathy. Patients present with acute onset of pain and swelling of the thigh or calf, with no history of trauma. Bilateral involvement occurs in nearly one-third of cases and up to half of patients have multiple recurrences, which can be on the original or contralateral side. The patient may have a mild fever, leukocytosis,

elevated CK, or elevated ESR although myonecrosis can occur in the absence of any of these findings. If the clinical picture is highly suggestive of myonecrosis, MR imaging of the affected and contralateral limb to assess for increased T2 signal can be used to confirm the diagnosis. However, in the presence of other signs or symptoms concerning for other diagnoses, other studies should be considered including: blood cultures, plain film radiograph to assess for gas or soft tissue swelling in the affected muscle, or Duplex Venous ultrasound to assess for DVT or hematoma. Definitive diagnosis requires a tissue biopsy. There is currently no specific treatment for diabetic myonecrosis. Treatment is thus supportive: bed rest, aspirin, NSAIDs, or narcotics for pain control. There is some evidence that physical therapy may worsen the condition. The infarction will resolve spontaneously, although there is a high likelihood of relapse. The long-term prognosis is poor. Most patients diagnosed with diabetic myonecrosis die within five years from vascular complications of diabetes.

THYROID DISEASE: A MOST UNUSUAL PROGRESSION. M.S. Kekan[1]; E. Stahl[1]; S. Presley[1]; A. Siegal[1]. [1]Baptist Health system, Inc., Birmingham, AL. *(Tracking ID # 170041)*

LEARNING OBJECTIVES: To present a case of the rare progression from hyperthyroidism to hypothyroidism and then back to hyperthyroidism (Graves' disease).

CASE: A 40 year old Caucasian female with no significant past medical history presented to her physician after a syncopal episode and trauma to her neck. She was found to have an enlarged tender thyroid. At that time her T4 was 12.2 micro g/dl (normal 4.5–12) with a TSH of <0.01 micro IU/ml (normal 0.49–4.67). She was taking "Prempro" 0.625/2.5 mg daily. T3 uptake and free thyroxine index were normal. Thyroid scan showed multiple cold nodules. Fine needle aspirate indicated lymphocytic thyroiditis. Three months later she was referred to an endocrinologist who found her to be hypothyroid (FT4 of 0.6 ng/dl (normal 0.8–1.8) and TSH 35.1 micro IU/ml). Levothyroxine was begun and then discontinued after 3 weeks. Six weeks later, her FT4 was 0.5 ng/dl and TSH was 53.01 micro IU/ml. Levothyroxine was resumed and thyroid function normalized (TSH 2.40). Approximately one year after initial presentation (6 months after levothyroxine therapy), she complained of alopecia, "eyes not focusing", and palpitations. On examination, her goiter had increased in size. The TSH was found to be undetectable and levothyroxine was discontinued once again. Her T3 was 353 ng/dl (normal 60–181). The 4 and 24 hour I 131 uptakes were 37% and 57% respectively. The patient was given RAI131 (16 mCi) approximately 2 years after initial presentation. She became hypothyroid (TSH 39.7) and levothyroxine therapy was re-initiated. She has been euthyroid on levothyroxine since that time.
DISCUSSION: Graves' disease and Hashimoto's thyroiditis are a part of the autoimmune thyroid disease spectrum. Histologically these diseases present with lymphocytic infiltration and a varying clinical outcome of hypothyroidism, hyperthyroidism, or euthyroidism depending on the impact of the antibodies which the patient develops. In Hashimoto's thyroiditis, the thyroid antibodies are anti-TPO, antithyroglobulin and thyrotropin blocking antibodies. Most, but not all patients with Graves' disease develop thyroid stimulating immunoglobulins. Patients with lymphocytic thyroiditis and hypothyroidism may have a spontaneous remission and become euthyroid. Patients with Graves' disease may spontaneously become euthyroid or even hypothyroid. These changes are thought to be the result of changes in the blocking and/or stimulating antibodies. There are only a few cases in the literature of patients evolving from hypothyroidism to Graves' disease. Commonly in post-partum thyroiditis, patients evolve over about 6 months from hyperthyroidism to hypothyroidism and frequently they return to the euthyroid state. This case is, as far as we know, very unusual for the evolution from hyperthyroidism to hypothyroidism and then back to hyperthyroidism. It is not clear what accounts for the pathogenesis of this evolving series of thyroid abnormalities. It is possible that she had hyperthyroidism prior to the neck trauma, which was resolving and the return of TSH to baseline lagged behind the reciprocal decrease in the T4. It is also possible that her initial episode of hyperthyroidism was traumatic thyroiditis which is transient.

A BUG'S LIFE, FOR WHOM THE TOILET TOLLS: DISCOVERING THE UNEXPECTED CAUSE OF CHRONIC DIARRHEA IN A YOUNG, HEALTHY MAN. A. Casillas[1]; C. Lai[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 172676)*

LEARNING OBJECTIVES: 1) Learn the initial outpatient evaluation of chronic diarrhea, and recognize the importance of a detailed social history, including sexual practices, to detect risk factors for parasitic disease. 2) Identify the pathogenesis and clinical features of Entamoeba hystolytica/dispar.
CASE: A 28 yo man with self-diagnosed irritable bowel syndrome (IBS) presented with 3 weeks of rectal soreness and diarrhea. He recently had oral and anal intercourse with a male partner who tested positive for syphilis. Our patient was treated empirically for syphilis; RPR, HIV, and rectal swab for GC/Chlamydia returned negative. His symptoms did not resolve, and he returned to clinic 1 month later with persistent diarrhea ~8 stools per day with occasional blood and foul smell, epigastric pain and rectal pruritis. He denied fever or weight loss, diet changes, laxative use, sick contacts, or travel/camping. Exam revealed a thin man with normal vital signs, abdomen/rectum and GU region. Labs were normal: FOBT, UA, bacterial urethral and rectal swabs, TSH, CBC, lytes, and albumin. Stool cultures for bacteria, Giardia, and Cryptosporidium were negative, and O and P returned positive for Entamoeba hystolytica/dispar. He was treated with 10-days of metronidazole, and reported improved symptoms two weeks later. Because of his long-standing bowel symptoms, he underwent a colonoscopy, which ruled out inflammatory bowel disease (IBD). He was educated on hygienic anal and oral sex practices to prevent future fecal to oral acquisition and transmission of the parasite.
DISCUSSION: In industrialized countries, the most common causes of chronic diarrhea (duration >4 weeks) in immunocompetent persons are IBS, IBD, and malabsorption syndromes. The American Gastroenterology Association recommends that initial evaluation include CBC, TSH, lytes, total protein, albumin, and FOBT (all normal in our patient); stool microbiology is also recommended. Although parasitic infections are not a common cause of diarrhea in the U.S., a study in the year 2000 found that 1/3 of 5,792 fecal samples sent for diarrhea work-up tested positive for intestinal parasites. Entamoeba hystolytica/dispar, the culprit for our patient's diarrhea, causes symptoms in 10% of infected patients. Although Entamoeba hystolytica/dispar consists of two different parasites, they are reported as one, because they cannot be morphologically distinguished. Clinically, E. hystolytica is assumed the organism in all symptomatic disease, since E. dispar is non-pathogenic. In the U.S., all patients with Entamoeba-positive stool are treated with metronidazole. The amoeba is transmitted fecal-orally as cysts, and is predominantly seen in migrants from and travelers to endemic areas, institutionalized patients, and men who have sex with men (MSM). Amebiasis usually has a subacute onset (1–3 weeks) with mild diarrhea to severe dystentery; fever and weight loss are common. Untreated infections are characterized by years of diarrhea, pain, and weight loss- and may be confused with IBD. To prevent fecal-oral spread, travelers should avoid unboiled water and uncooked produce. Pertinent to our patient, a recent study of MSM HIV-negative males demonstrated that cleansing of the anus and penis before and after sex was independently associated with a lower prevalence of parasitic infection. This case is a reminder that primary care physicians should take detailed social histories to ascertain patients' risks for parasitic diseases.

A CASE OF ZIEVE'S SYNDROME - A RARE DIAGNOSIS IN A COMMON DISEASE. P.K. Cheema[1]. [1]University of Toronto, Toronto, Ontario. *(Tracking ID # 173279)*

LEARNING OBJECTIVES: 1. Recognize Zieve's syndrome as part of the differential diagnosis for hemolytic anemia in patients with alcoholic cirrhosis. 2. Diagnose Zieve's syndrome by clinical and laboratory findings and understand the management and prognosis of this syndrome.
CASE: A 44 year old Sri Lankan man presented with three weeks history of jaundice, tea colored urine and constitutional symptoms consisting of fevers, night sweats and 6 kg weight loss. He had a five day history of severe upper abdominal pain. He had no significant past medical history and was on no medications. He denied alcohol abuse despite a serum ethanol level of 129 mmol/L. On exam his vitals were stable with a fever of 38.2 °C. He had marked scleral icterus with hepatomegaly and RUQ and epigastric tenderness. He had clubbed fingers with no other liver stigmata. Laboratory analysis showed macrocytic anemia with a Hg of 112 g/L, MCV 100.1 fL with laboratory evidence of hemolysis (haptogloblin undetectable, reticulocytes 149×10^9/L, LDH 305 U/L, indirect bilirubin 216 μmol/L with a negative Coombs test, Hg electrophoresis and G6PD assay). Peripheral blood smear showed fragments, spherocytes, and target cells. He had mild elevation in transaminases (ALP 144 U/L, AST 103 U/L, ALT 36 U/L). His total bilirubin peaked at 468 μmol/L, with direct bilirubin at 252 μmol/L. Amylase was normal. He was found to be dyslipidemic with a fasting lipid profile as follows: cholesterol 6.45 mmol/L, TG 4.48 mmol/L, HDL 0.28 mmol/L, LDL 4.13 mmol/L. Triphasic CT Abdomen revealed a heterogeneous liver with marked fatty infiltration. Liver biopsy showed extensive macrovesicular steatosis involving approximately 75% of the biopsy, findings consistent of severe steatohepatitis with early cirrhosis. All further workup for liver disease was negative. Eventually, a history of chronic alcohol abuse was elicited. This patient had clinical and laboratory evidence of Zieve's syndrome. He was managed supportively and did not require blood transfusions. He was discharged 22 days later with minimal abdominal pain, a stable Hg and a total bilirubin of 118 μmol/L.
DISCUSSION: Zieve's syndrome was first described in 1958 and consists of jaundice, hyperlipidemia and transient hemolytic anemia in the setting of alcoholic liver cirrhosis. This diagnosis is rare with only a few published case reports. It seems to occur mainly in younger adults. Hemolytic anemia is found with either macrocytosis or spherocytosis with osmotic fragility of RBCs and reticulocytosis. Constitutional symptoms, and upper abdominal pain with no evidence of pancreatitis are found to be common and fever appears universal. Although marked hepatomegaly is present on presentation it often recedes with management. In the original description of Zieve's syndrome, of the 20 patients described, 90% of those biopsied showed steatosis, often severe, and mild to moderate cirrhosis. Related complications have been documented such as intracranial hemorrhage, severe myalgias, and retinal injury. Mechanisms for this syndrome have been postulated and include vitamin E deficiency-induced increases in RBC membrane cholesterol and polyunsaturated fatty acids. This then, may lead to instability of RBC enzymatic function, particularly pyruvate kinase. Treatment of this syndrome is supportive care as provided for acute alcoholic hepatitis with blood transfusions as needed. With abstinence from alcohol it carries a good prognosis with a predictable rapid recovery rate.

A MIDDLE AGED WOMAN WITH ABDOMINAL PAIN. A. Das[1]; L. Lu[1]. [1]Baylor College of Medicine, Houston, TX. *(Tracking ID # 173286)*

LEARNING OBJECTIVES: 1)Consider atypical presentation of appendicitis in patients presenting with abdominal pain of unclear etiology. 2)Review the sensitivity

and specificity of the radiographic studies in diagnosing appendicitis/appendiceal rupture.
CASE: A 50 year-old female presented with a 4 day history of intermittent left lower quadrant pain (LLQ). The pain was dull, non-radiating, variable in intensity, and worsened by lying on the left side or walking. She reported some decreased appetite with an episode of bilious vomiting, but was able to tolerate oral intake. She denied weight loss, fever, chills, diarrhea, constipation, dysuria, hematuria, past history of abdominal surgeries, or prior history of similar abdominal pain. Vital signs showed temp100.3^{0}F, BP 108/46, pulse 65, and respiration 12. Physical exam revealed normal bowel sound with tenderness to palpation in the lower abdomen, left more than right and mild rebound tenderness. Rectal exam was nontender with guaiac negative stool. Laboratory results including CBC, basic metabolic panel, liver function tests, amylase, lipase, and urinalysis were normal. Abdominal/pelvic CT revealed proximal small bowel distention without evidence of diverticulitis or appendicitis. A pelvic ultrasound followed by a trans-vaginal ultrasound showed left adnexal cystic lesions consistent with benign adnexal cyst. On the second day of admission, she developed small bowel obstruction with an acute abdomen and underwent an exploratory laparotomy revealing pelvic abscess with a perforated appendiceal tip. After appendectomy and pelvic abscess drainage, she recovered uneventfully with complete resolution of her abdominal pain.
DISCUSSION: Appendicitis is a common cause of an acute abdomen. The diagnosis is usually based on well-established clinical symptoms and physician experience. The typical clinical presentation of appendicitis is the gradual onset of vague periumbilical abdominal pain shifting to the right lower quadrant over approximately 24 hours associated with nausea, vomiting, and anorexia. Epigastric pain, non-specific abdominal pain, LLQ pain or pain in other locations may be initial presentation of appendicitis due to different evolving stage or abnormal appendiceal position. Approximately one third of patients with appendicitis present with localized pain outside of the right lower quadrant. However, LLQ pain as the manifestation of appendicitis is relatively rare and can be misleading. Rare causes of left sided appendicitis include situs inversus totalis, midgut malrotation, and right sided appendicitis with abnormal length projecting into left lower quadrant. The first two causes of left sided appendicitis are very rare, and only a few cases have been reported in the literature. For patients presenting with atypical symptoms of appendicitis, clinical observation with serial abdominal examination should be done. Computer tomography is often used to assist physicians in making diagnosis, but its sensitivity is 0.94 (95% CI 0.91–0.95) and specificity is 0.95 (95% CI 0.93–0.96). The sensitivity and specificity of ultrasonography are 86% and 81%, respectively. As illustrated in our case, the patient's CT did not reveal appendicitis nor appendiceal rupture. There have been numerous citations for malpractice law suits mainly in the emergency department for missed appendicitis. Thus, high suspicion for atypical presentation of appendicitis and careful observation are indicated in patients with abdominal pain of unclear etiology.

A PAIN IN THE GUT: FATAL NECROTIZING PANCREATITIS FROM SEVERE HYPERTRIGLYCERIDEMIA. M. Lammi[1]; L.D. Ward[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 172883)*

LEARNING OBJECTIVES: 1.Recognize the importance of hypertriglyceridemia as a cause of acute pancreatitis and the use of plasmapharesis as a therapeutic modality. 2. Utilize various systems to predict the severity of acute pancreatitis, with special focus on the CT Severity Index.
CASE: A 45 year old diabetic male presented with one day of 10/10 sharp epigastric pain radiating to his back. On physical exam he was afebrile, had a HR of 106, BP of 144/96. He was extremely obese with midepigastric tenderness to deep palpation without peritoneal signs. Lab values were a WBC 14000 with 90% PMNs, hematocrit of 35.2, albumin of 3.0 with normal LFTs, BUN 6 and an amylase of 169. His triglyceride level was 9601 mg/dL and extreme lipemia did not allow assessment of lipase or creatinine levels. Calcium was normal at 9.3. He was treated with IVFs, and plasmapharesis was initiated for the hypertriglyceridemia. A CT without contrast on day 2 showed peripancreatic infiltrative changes without fluid collection. At 48 hours: hematocrit 31.4, BUN 18, calcium 6.2, base deficit −5. He became febrile and was started on Ciprofloxacin and Metronidazole. He also developed worsening respiratory and mental status and was intubated. A CT with IV contrast on day 7 showed an enlarged pancreas with lack on enhancement in the body and tail, massive peripancreatic inflammation, fluid in the left paracolic gutter, and obliteration of fat planes. There was 50% necrosis of the pancreas, giving him a CT severity index of 9/10. He became oliguric, was febrile up to 110F, and was vasopressor-dependent. He was felt to be too unstable for surgery and soon died.
DISCUSSION: Severe acute pancreatitis (SAP) accounts for 20% of acute pancreatitis cases (42000/year). SAP is defined as any one of the following: organ failure (shock, GI bleed, pulmonary or renal insufficiency), >2 of Ranson's criteria or 7 on the APACHE II score, or local complications (pseudocyst, necrosis, or abscess). Early staging is important in SAP. Clinical assessment can predict up to 44% of SAP correctly. Ranson's criteria is limited because 48 hours are needed to fully risk stratify and the APACHE II score is too cumbersome for routine use. CT scanning with IV contrast has emerged as an attractive staging system. The CT severity index (CTSI) is a composite score of degree of necrosis, inflammation, and fluid collection. Initial trials showed a 3% mortality with a CTSI < 3, and 17% mortality with a CTSI > 7. A retrospective review demonstrated that a CTSI > 5 yielded 8× greater mortality, 17× prolonged length of stay, and 10× more necrosectomies. Hypertriglyceridemia is the 3rd most common identified cause of acute pancreatitis, accounting for up to 7% of cases. The level of hypertriglyceridemia needed to induce pancreatitis is usually 1800 mg/dL.The pathogenesis is hypothesized to be due to large lipoproteins which may impair circulation of the capillary bed of the pancreas, causing ischemia, disruption of the acinar structure, and exposure of the triglyceride particles to lipase. Pancreatitis in patients with hypertriglyceridemia rarely develops unless there is another precipitating condition such as diabetes, pregnancy, hypothyroidism, or certain drugs. Plasmapharesis can be used to acutely treat the hypertriglyceridemia, as in our patient, to directly remove circulating chylomicrons. This case demonstrates that hypertriglyceridemia can be a cause of SAP, that plasmapharesis is a treatment option, and that the CTSI can help risk stratify the patient.

A SHOCKING BOWEL PREP. J. Ho[1]; R.B. Cavalcanti[1]. [1]University of Toronto, Toronto, Ontario. *(Tracking ID # 172289)*

LEARNING OBJECTIVES: 1. Raise awareness of electrolyte abnormalities as a complication of bowel preparations for colonoscopy 2. Review the incidence of electrolyte disturbances following bowel preparation for colonoscopy and potential adverse cardiac outcomes in the elderly.
CASE: A 79-year-old man was admitted to hospital with recurrent rectal bleeding and a 10-lb weight loss. His hemoglobin level was 129 g/L and he was hemodynamically stable. He was noted to have a history of iron deficiency anemia for the past 2 years. Electrolytes and creatinine were within normal range. Plans were made for a colonoscopy to identify the source of his rectal bleeding. His medical history included coronary artery disease, with a myocardial infarction in 1979 and coronary artery bypass in 1999, with subsequent grade 3 left ventricular function. In 2000 he had an automatic cardioverter-defibrillator (AICD) implanted. Other medical history included mild emphysema, hypothyroidism, benign prostatic hypertrophy, previous surgery for peptic ulcer, and Parkinson's disease. His medications included synthroid, hydrochlorothiazide, detrol, sotalol, ferrous gluconate, sinemet, acetaminophen, omeprazole, nortriptyline, spiriva, clopidogrel, atorvastatin, cilazapril, and budesonide. The patient drank 4 L of polyethylene glycol-electrolyte (PEGlyte) preparation to cleanse his bowel for a colonoscopy the next morning. Overnight he experienced 6 shocks from his AICD. Blood-work was sent and revealed significant abnormalities in serum potassium and magnesium levels (K = 2.4 mmol/L Mg = 0.53 mmol/L). Intravenous supplementation of potassium and magnesium was initiated, as well as transfer to an intensive care unit with ECG and frequent electrolyte monitoring. Interrogation of the AICD device revealed atrial pacing as well as defibrillation in response to polymorphic ventricular tachycardia. Following a total supplementation of 75 g of KCl and 8 g of MgSO4, serum electrolytes remained stable and the patient went on to undergo colonoscopy. The only potential source for the rectal bleeding identified were internal hemorrhoids.
DISCUSSION: This case highlights the potential for adverse events due to electrolyte abnormalities following bowel preparation for colonoscopy. A review of the literature reveals several reports of electrolyte disturbances following bowel preparation, especially in the elderly and mostly associated with oral sodium phosphate solutions. Associated adverse events include ventricular ectopy due to hypokalemia, symptomatic hypocalcemia and seizures due to hyponatremia. Our patient received PEGlyte, which has been shown to cause less electrolyte shifts than other preparations. Despite this, significant hypokalemia and hypomagnesemia followed the bowel preparation, leading to polymorphic ventricular tachycardia. Fortunately, our patient was already equipped with a defibrillator, which prevented a cardiac arrest. Underlying intracellular potassium depletion has been identified as a risk factor for hypokalemia following bowel preparation and may have been a factor in our case. The current literature shows that PEGlyte formulations are regarded as the most effective and safest for bowel cleansing for colonoscopy. However, the majority of these studies have been performed in younger individuals. This case study highlights that elderly patients, especially those with underlying heart disease, should be monitored more closely for electrolyte disturbances as they prepare for colonoscopy.

ALL THAT FLATTENS VILLI IS NOT CELIAC SPRUE: CHRONIC DIARRHEA AND MALNUTRITION SECONDARY TO A PERIPHERAL T-CELL LYMPHOMA. P.M. Mckie[1]; A.S. Oxentenko[1]; K.M. Swetz[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 173034)*

LEARNING OBJECTIVES: 1) Understand the evaluation and typical presentation of celiac sprue. 2) Recognize cases of refractory sprue and construct an appropriate differential diagnosis of alternative or secondary causes.
CASE: A previously healthy 69-year-old male presented with a 1-year history of persistent diarrhea. Small bowel biopsies elsewhere revealed villous atrophy suggestive of celiac sprue, although serologic markers were negative. His diarrhea did not improve with a gluten-free diet, and he subsequently developed significant malnutrition associated with weight loss and peripheral edema. On presentation to our institution, he was cachectic and debilitated. He had a diffuse xerotic, hyperkeratic rash over his entire body and scalp. Additionally, he had prominent lymphadenopathy, anasarca, and loss of pubic hair. Laboratories revealed anemia, prerenal azotemia, hypoalbuminemia, and multiple vitamin deficiencies. Tissue transglutaminase (IgA and IgG) and endomysial antibodies were negative. Dermatologic evaluation suggested acquired ichthyosis secondary to underlying malignancy. CT enterography revealed bulky adenopathy in the mesentery, retroperitoneum, and inguinal regions. Upper endoscopy revealed scalloped duodenal folds, and repeat small bowel biopsies showed marked villous atrophy similar to prior biopsies. Pathology showed lamina propria lymphocytosis with CD3 positive T cells, without intraepithelial lymphocytosis. Cytogenetic analysis revealed clonal T-cell receptor gene rearrangement, consistent with a low-grade peripheral T-cell lymphoma. An inguinal lymph node biopsy showed an anaplastic T-cell lymphoma of the same T-cell phenotype, suggesting aggressive transformation. The lamina propria (versus intrae-

pithelial) lymphocytosis, low-grade (versus high-grade) morphology and the immunophenotyping were all consistent with a peripheral T-cell lymphoma rather than an enteropathy-associated lymphoma. Hematology consult was initiated but the patient expired of multiorgan system failure prior to treatment.
DISCUSSION: While small bowel villous flattening and intraepithelial lymphocytosis are the histologic hallmarks of celiac disease, clinical history, serologic markers and a response to a gluten-free diet help to substantiate the diagnosis. Herein, we present the case of a patient with chronic diarrhea and malnutrition, with villous atrophy and "lymphocytosis" suggestive of celiac disease, who had an unexpected clinical course. Gastrointestinal involvement by a peripheral lymphoma accounted for this patient's chronic diarrhea and malnutrition. Instead of the intraepithelial polyclonal lymphocytosis seen in celiac disease, this patient exhibited a monoclonal CD3 positive T-cell expansion of the lamina propria consistent with lymphoma. The presence of lymphadenopathy and acquired ichthyosis were additional features suggestive of an underlying malignancy. The low-grade (versus high-grade) T-cell morphology and the immunophenotyping were all consistent with a peripheral T-cell lymphoma rather than an enteropathy-associated lymphoma. Serologically-negative celiac disease not responding to a gluten-free diet should raise the suspicion for other pathologic processes that can cause small bowel villous flattening and lymphocytosis, namely lymphoma.

ALL THAT GLITTERS IS NOT GOLD:ASCITES IN A CHRONIC ALCOHOLIC-ITS NOT ALWAYS CIRRHOSIS. B. Arora[1]; S.S. Ketha[2]; P. Koneru[3]; M. Bollineni[4]. [1]St. Francis Hospital, Evanston, IL; [2]Saint Francis Hospital, Evanston, IL; [3]University of Illinois at Chicago, Evanston, IL; [4]St. Francis Hospital, Evanston, IL, Evanston, IL. *(Tracking ID # 173873)*

LEARNING OBJECTIVES: 1.)To recognize that Pancreatic Ascites is an uncommon complication of chronic pancreatitis. 2.)To distinguish this condition from other causes of ascites in a chronic alcoholic because of associated high mortality.
CASE: A 46 y/o male presented to the emergency department with complaints of palpitations and epigastric pain that started day before presentation. Past medical history was significant for multiple episodes of acute pancreatitis and heavy alcohol use (30 beers /day for 30 years). On physical examination he was tachycardic with a pulse rate of 130. His abdomen was distended, diffusely tender and dull to percussion. Initial blood work showed a serum amylase over 1000 and lipase of 96. A CT scan of the abdomen showed ascites and diffuse calcific pancreatitis. The patient then underwent diagnostic paracentesis that returned turbid fluid. Ascitic fluid amylase was 9500, lipase was 2000, albumin was 1.4 with a serum to ascites albumin (SAAG) gradient of 0.5. A diagnosis of pancreatic ascites was made based on the fact that ascitic fluid amylase was more than 6 times the serum amylase.Subsequent ERCP showed a stricture causing narrowing of distal end of pancreatic duct which was stented. Filling defects, representing calculi, were seen within the pancreatic duct The patient was managed conversatively with bowel rest,TPN(total parenteral nutrition) and his serum amylase and lipase levels came down to normal limits within a week and he clinically improved.
DISCUSSION: The most common underlying cause of pancreatic ascites is chronic pancreatitis secondary to alcohol abuse.Since many patients are alcoholics, cirrhotic ascites seems the obvious diagnosis. It can also occur after an episode of acute pancreatitis or following traumatic injury to the pancreas.The underlying abnormality is extravasation of amylase rich pancreatic fluid from a ruptured pancreatic duct or pancreatic pseudocyst.Serum amylase concentration is always lower than that of ascitic fluid since the blood levels depend on the absorption of the enzyme from the peritoneal fluid.ERCP should be performed to identify the site of fistula.Initially the patients should be managed conservatively with TPN and antisecretory agents such as octroetide. About a third will respond to conservative management but early surgery is indicated in patients who fail to respond to medical therapy as this condition is associated with a high mortality.

CHRONIC DIARRHEA AND ABDOMINAL PAIN -PIN THE PINWORM. A. Rajamanickam[1]; A. Usmani[1]; V. Dimov[1]; S. Suri[1]. [1]Cleveland Clinic Foundation, Cleveland, OH. *(Tracking ID # 173175)*

LEARNING OBJECTIVES: 1)Recognize early on that E.vermicularis (the most common helminthic infection) is an important differential diagnosis in patients with symptoms of colitis and is not as blameless as is commonly thought 2)Recognize that the simple and inexpensive "Scotch Tape" test and direct visualization are the only ways of confirming diagnosis as the worms and eggs are not passed in the stool.
CASE: An 84 year old female patient from an assisted living facility (ALF) was admitted with complaints of abdominal pain and diarrhea [7–8 episodes/day, watery, non-foul smelling] for 2 months. She denied nausea, vomiting, fever, chills, anal pruritus, melena or rectal bleeding. She also denied recent travel, hospitalizations, antibiotic use or exposure to sick contacts. Both outpatient and inpatient work up of stool for C.Difficile, fat, blood, ova and parasites, culture and sensitivity were negative. Computed Tomography Abdomen/Pelvis was unremarkable. Outpatient courses of Loperamide and Lomotil were unsuccessful. She was admitted for further workup including a possible GI consult and colonoscopy. Scotch tape test was positive for E. vermicularis (pinworm) infection. She was given a dose of albendazole. Her diarrhea and abdominal pain resolved and she remained symptom free on discharge.
DISCUSSION: Enterobius vermicularis is the most common helminthic infection in the United States affecting about 20–40 million people in the US and about 200 million people worldwide. Infection occurs in all socioeconomic groups.It occurs more commonly in closed, crowded living conditions. Humans are the only natural host for the parasite and transmission occurs via the feco-oral route or via airborne eggs. Most infections with E. vermicularis are asymptomatic. Review of the literature shows the pinworm to be the causative agent of cases of eosinophilic enterocolitis, appendicitis , vulvovaginitis, Pelvic Inflammatory Diseases, conditions mimicking Inflammatory Bowel Disorders, perianal abscesses ,perianal granulomas and shows several case reports of colitis secondary to E. vermicularis where patients presented with pain, rectal bleeding, fever, nausea, vomiting and diarrhea with symptoms resolving with antiparasitic therapy alone. In a retrospective study, the symptom profile of patients in whom E. vermicularis infestation was confirmed by direct visualization of the adult worms at colonoscopy, were abdominal pain (73%); rectal bleeding (62%); chronic diarrhea (50%) and weight loss (42%). The confirmatory "scotch tape" test to collect the eggs, is done at night or first thing in the morning. Female adult worms may be found in the perianal area. A single dose 400 mg of albendazole or 100 mg of mebendazole repeated at two weeks (to prevent reinfection) achieves a cure rate close to 100% and 95% respectively. E. vermicularis is generally considered a blameless nematode, which at the most causes perianal pruritus. Although the pinworm's entire life cycle is the human gastrointestinal (GI) tract, GI symptoms have seldom been reported. The frequency of this occurrence is probably higher than previously suspected and probably underreported. It is important to consider early on pinworm as important differential diagnosis in patients presenting with symptoms of colitis even in the absence of anal pruritis. This avoids unnecessary and expensive work up and definitely improves patient satisfaction.

CIRRHOSIS AND THE HEART-LIVER CONNECTION. J. Nasr[1]; *J. Tran*[1]; D. Mcadams[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 171954)*

LEARNING OBJECTIVES: 1. Recognize that cirrhosis can be caused by a cardiac source. 2. Recognize that cardiac causes of cirrhosis are uncommon but significant.
CASE: A 79 year old male is admitted with recurrent ascites. One year ago the patient started having swelling in his abdomen, and he was found to have cirrhosis without any clear cause. Despite multiple therapeutic paracenteses, he started developing shortness of breath three months after being diagnosed. He was found to have a hydrothorax and thoracentesis was done. He was ultimately admitted for re-investigation of his liver disease. Liver function tests, Hepatitis B and C, ceruloplasmin, alpha-1 antitrypsin, anti-smooth muscle antibody, INR, and iron studies were normal. The serum ascites albumin gradient (SAAG) was calculated at 2.2, consistent with nonperitoneal ascites. Pleural fluid was transudative. Abdominal duplex ultrasound showed cirrhotic liver morphology and incidental findings of cardiac dysfunction. Transthoracic echocardiography was done and showed evidence of right heart failure with severe right atrial enlargement, severe tricuspid regurgitation, moderate pulmonic regurgitation and right ventricular volume overload. Liver biopsy was done and showed evidence of irregular predominant micronodular cirrhosis and mixed irregular fibrosis with portal, periportal, perivenular, and pericellular compromise. This biopsy was suggestive of a cardiac cause of the disorder. The patient was considered as having cirrhosis secondary to the right sided heart failure. The patient was discharged home on furosemide and spironolactone.
DISCUSSION: The diagnosis of cardiac cirrhosis (CC), or congestive hepatopathy, can be a challenging one. Overall, it is an uncommon, but significant cause of cirrhosis. Its presence is usually confirmed by the signs and symptoms accompanying heart failure, however since the diagnosis of cirrhosis is so complex it is usually overlooked as a cause. The chief causes of CC are ischemic heart disease (31%), valvular heart disease (23%), restrictive lung disease (15%), and pericardial disease (8%). In the majority of patients liver function tests are within the normal range. Ascites fluid protein content is usually more than 2.5 g/dl and is probably a manifestation of the relatively normal serum protein level in these patients. Cardiac ascites is relatively unique in that it is characterized by high protein content and high serum ascites albumin gradient. Right heart failure, restrictive cardiomyopathy, or constrictive pericarditis may induce hepatic congestion with or without cardiac cirrhosis. In either situation, cardiac ascites may be present. Portal flow studies and liver biopsy may help establish the diagnosis of the hepatic disorder associated with any of the cardiac disorders mentioned. Clinically, the diagnosis of CC is suggested by the triad of right heart failure with hepatomegaly, ascites with high protein content, and high SAAG. Additionally, cardiac ascites may be refractory to diuretic treatment that contrasts with the resolution of the peripheral edema with diuretics. Treatment of CC is usually similar to heart failure, along with paracentesis for refractory ascites. There is no need to replace the albumin lost during paracentesis because synthetic function is preserved in CC. TIPS are contraindicated in cardiac ascites because shunting the portal blood to the right heart may increase the pulmonary arterial pressure and precipitate heart failure.

CROHN-IC CONSTIPATION. J. Chen[1]; S. Dea[2]. [1]Olive View-UCLA Medical Center, Sylmar, CA; [2]University of California, Los Angeles, Sylmar, CA. *(Tracking ID # 173897)*

LEARNING OBJECTIVES: 1. Recognize constipation and obstruction as part of the scope of presentations in Crohn's disease. 2. Attain a better understanding of the diagnosis and management of Crohn's disease.
CASE: A 43-year old man presented with one month of left lower quadrant abdominal pain, constipation, fever, and weight loss. He had 20 very small bowel movements a day. Straining led to tenesmus and hematochezia. He also reported a 20 pound weight loss. He denied recent travel or dietary changes, decreased oral intake, sick contacts, history of anal intercourse, or HIV risk factors. He also denied any arthritis, eye problems, skin rashes, or family history of colorectal cancer or inflammatory bowel disease. A few weeks earlier, he had presented to an outside hospital and underwent colonoscopy where he was told he had what appeared to be C. difficile colitis. He was

given oral metronidazole and oral methylprednisolone, but he could not tolerate the metronidazole and did not complete his course. He reported no improvement after steroid use. The colonoscopy biopsy results were not available to us at the time of presentation. Initially, his vital signs were notable for heart rate 133, blood pressure of 80/52, and fever of 38.4 Celsius. He had a soft abdomen, diffusely tender in the left lower quadrant, without rebound. Rectal exam showed no hemorrhoids, anal fissure, or fistula. Labs included albumin of 1.9, hemoglobin of 12.1, 2+ fecal leukocytes, and occult blood positive stool. His HIV test, stool culture, C. difficile toxin, and stool ova and parasites were all negative. CT abdomen and pelvis showed thickening of the colon wall from the ascending colon through the rectum, with marked dilatation proximal to an area of narrowing in the sigmoid colon. He was empirically treated with levofloxacin and metronidazole. His CT findings were consistent with partial obstruction from a possible mass, so colonoscopy was performed, which showed continuous colitis and a sigmoid stricture. He was started on prednisone therapy with subsequent improvement.
DISCUSSION: This case demonstrates an atypical presentation of Crohn's disease. Our patient had predominantly constipation-type symptoms more suggestive of malignancy, especially with reported lack of benefit from outpatient steroid administration. We hypothesize that while his abdominal pain may have improved from steroids, that improvement was likely overshadowed by his persistent partial obstruction. Stricture formation is more common in Crohn's disease than in ulcerative colitis. Patients with Crohn's may form strictures even without associated luminal disease, making isolated partial obstruction presenting as constipation a potential presentation for Crohn's. Diagnosis is dependent on history and physical, index of suspicion, and confirmation by colonoscopy. Treatment of Crohn's disease includes steroids for severe symptoms or flares, antibiotics, and 5-ASA compounds (especially for treatment of ileitis). Immunosuppressive therapy for refractory patients include azathioprine, 6-MP, methotrexate, and newer agents such as infliximab. Crohn's is a chronic disease that may have a relapsing and remitting course. Surgery is indicated for management of fistulas or strictures; unlike ulcerative colitis, total colectomy is not curative. Inflammatory bowel disease is a risk factor for colorectal cancer, and requires increased surveillance.

DIFFUSE RETROPERITONEAL RECURRENCE OF ESOPHAGEAL CANCER MIMICKING PANCREATITIS: A CASE REPORT. N.C. Ravindran[1]; W.R. Geddie[2]; D.W. Hedley[3]; P.G. Rossos[4]. [1]University of Toronto, Toronto, Ontario; [2]University Health Network, Princess Margaret Hospital, Toronto, Ontario; [3]Princess Margaret Hospital, Toronto, Ontario; [4]University Health Network, Toronto General Hospital, Toronto, Ontario. *(Tracking ID # 173808)*

LEARNING OBJECTIVES: 1) To discuss an unusual presentation of recurrent esophageal adenocarcinoma as retroperitoneal infiltration mimicking pancreatitis. 2) To educate the clinician about epithelial mesenchymal transition, a mechanism of spread implicated in several malignancies, now including esophageal adenocarcinoma, with impact on prognosis.
CASE: A 67-year-old man within one year of therapy for moderately to poorly differentiated adenocarcinoma of the distal esophagus presented with a two week history of constant, dull, midline low back pain, central abdominal pain, global weakness, marked regurgitation and anorexia. Review of systems (including neuropathic features) was negative. Significant findings on physical examination were tachypnea (20/minute) with oxygen saturation of 96% on room air and bibasilar crackles on pulmonary auscultation. The patient had received neoadjuvant chemotherapy, radiotherapy and surgery with curative intent for his esophageal cancer. Post-operative resection margins were clear. He had been abstinent from alcohol for the past year. Routine CT abdomen the month prior showed new-onset pancreatic edema, peripancreatic stranding extending into Gerota's fascia and mild swelling of the psoas and iliacus muscles. Extensive laboratory investigations including amylase, lipase, liver enzyme tests, endocrine and autoimmune panels, and blood and urine cultures were unremarkable. CBC showed a pre-existing anemia. MRI spine, bone scan, CT Head, and pelvic x-ray ruled out spinal cord compression and metastases. CT thorax showed moderate-sized pleural effusions. Esophagogastroduodenoscopy revealed a significant amount of liquid in the esophagus and stomach, and extrinsic compression of the second and third parts of the duodenum. Gastroscopy biopsies were negative for malignancy. Biopsy of the psoas muscle and mesenteric fat, and MRI pancreas were recommended but could not be done because the patient was unable to tolerate these procedures. Pleural aspirate was positive for signet ring carcinoma cells. The patient was not a chemotherapy candidate. He rapidly deteriorated and died upon transfer to the palliative care unit.
DISCUSSION: In this case, retroperitoneal infiltration in the context of previously treated esophageal adenocarcinoma can be explained by epithelial-mesenchymal transition (EMT). This presentation of esophageal cancer recurrence is uncommon and has not been clinically described. Validation of our hypothesis via further immunohistochemistry analysis is pending. EMT is an orchestrated series of events in which cell-cell and cell-extracellular matrix interactions are altered to release epithelial cells from the surrounding tissue. It is essential for embryonic development. Inappropriate utilization of EMT mechanisms is an integral component of the progression of many tumours and has been observed in ovarian cancer, malignant melanoma, hepatocellular carcinoma, colorectal carcinoma and breast cancer. Loss of E-cadherin expression on the cell surface strongly invokes EMT. Esophageal adenocarcinoma is a disease with extremely poor prognosis and rising incidence. This case may contribute to our understanding of the natural history of this condition, and potentially impact current methods of staging and treatment.

DROPPED GALLSTONE ABSCESS: A DELAYED AND UNUSUAL COMPLICATION OF CHOLECYSTECTOMY. B. Aijaz[1]; A.S. Arora[2]; T.J. Beckman[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN; [2]Mayo Clinic, Rochester, MN. *(Tracking ID # 170092)*

LEARNING OBJECTIVES: 1) Recognize dropped gallstone abscess in the differential diagnosis of right- upper-quadrant abdominal pain. 2) Manage patients with dropped gallstone abscess.
CASE: An 82 year woman with a history of laparoscopic cholecystectomy performed 13 years earlier presented with 3 months of right-upper-quadrant abdominal pain, low-grade fever and mental status changes. The only remarkable findings on a complete physical examination were mild confusion and tenderness to palpation in the right-upper-quadrant of the abdomen. Murphy's and peritoneal signs were absent. Laboratory studies demonstrated anemia (Hemoglobin 7.9 g/dL normal range 12–15.5 g/dL); leukocytosis (21.1×109/L normal range $3.5–10.5\times109$/L); and an elevated aspartate aminotransferase (37 U/L normal range 12–31 U/L). All other laboratory studies, including cultures of blood and stool, were negative. A computed tomography (CT) of the head showed no intracranial abnormalities. Chest x-ray revealed a small right pleural effusion. Empirical broad spectrum antibiotic therapy was initiated, but the patient failed to improve. Consequently, an abdomen CT with intravenous contrast was performed. This revealed a fluid collection inferior to the right hepatic lobe containing several small calcifications consistent with a post-cholecystectomy dropped gallstone abscess. The abscess was treated with a drain placed under fluoroscopic guidance, resulting in resolution of the patient's abdominal pain, confusion and leukocytosis.
DISCUSSION: Abscess formation from dropped gallstones is a rare complication of laparoscopic cholecystectomy (approximately 0.3% of cases). This condition is caused by gallstones that are misplaced or "dropped" in the peritoneal cavity prior to surgical closure. The resulting abscesses usually form in the sub-hepatic or sub-diaphragmatic regions, but they may exist anywhere in the abdomen. Dropped gallstone abscesses typically occur with infected stones, as seen in the setting of acute cholecystitis. Presenting symptoms include fever, nausea, vomiting, abdominal pain, and signs of peritoneal irritation. Diagnosis is made by ultrasound or CT scan showing stone material within the abscess. The preferred treatment is percutaneous abscess drainage, which is usually effective. Laparotomy is sometimes necessary. Remarkably, this condition usually presents months to several years following cholecystectomy. This case was challenging because it represented an unusually late (13 years) presentation of an uncommon disease. Clinicians and radiologists should always consider dropped gallstone abscess in their differential diagnosis of right-upper-quadrant pain in patient's who have previously undergone cholecystectomy.

EXPANDING THE USUAL DIFFERENTIAL DIAGNOSIS-A RARE CAUSE OF RIGHT UPPER QUADRANT PAIN. A. Bachuwar[1]; K.M. Swetz[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 173024)*

LEARNING OBJECTIVES: 1) Identify a rare cause of right upper quadrant abdominal pain. 2) Discuss the typical presentation and epidemiology of polyarteritis nodosa.
CASE: : A previously healthy 20-year-old female presented to an outside hospital with right upper quadrant abdominal pain radiating to the epigastrum. For one month prior to presentation, she complained of intermittent myalgias, arthralgias, and cold intolerance in her fingers. She described her abdominal pain as cramping, dull, and worst post-prandially. Initial ultrasonic evaluation revealed a thickened gallbladder wall, and she underwent laparoscopic cholecystectomy. Gallbladder histopathology demonstrated necrotizing vasculitis and fibrinoid necrosis - suggestive of polyarteritis nodosa (PAN). The patient's abdominal pain initially improved following surgery, but progressively returned to her preoperative condition over the following two weeks, necessitating transfer to our facility for further evaluation. Laboratory evaluation demonstrated a leukocytosis of 13,500, an elevated sedimentation rate of 40 mm/hr, and an elevated C-reactive protein of 7.5 mg/dL. Abdominal CT angiogram was consistent with PAN, demonstrating moderate narrowing of the proximal celiac artery, thickening of the descending and sigmoid colon, and multiple small wedge-shaped renal infarcts. The patient was started on systemic corticosteroids, and cyclophosphamide therapy was considered given potential for clinical deterioration (i.e. mesenteric ischemia). Given that the patient was young and nulliparous, it was decided to commence prednisone and azathioprine as a steroid sparing agent. To date, patient has remained relatively asymptomatic without clinical progression or deterioration.
DISCUSSION: Polyarteritis nodosa is classically described as a systemic vasculitis primarily affecting medium-sized arteries. Prevalence estimates are limited to single to double digits per million. Hepatitis B infection has been linked to some presentations of PAN, but most cases are idiopathic. Common presenting symptoms include fever, malaise, weight loss, arthralgias, myalgias, neuropathy, renal insufficiency, hypertension, and livedo reticularis. 25% of patients with PAN have gastrointestinal (GI) symptoms, such as bowel ischemia/perforation or abdominal angina, often predominant after meals. GI manifestations of PAN have been described in the literature. However, a limited number of case report/series describe a presentation involving the gallbladder mimicking cholecystitis (three references describing 1, 9, and 3 cases respectively). In one series, fewer than 1/3 of localized presentations evolved into systemic presentations. Mortality of PAN and specifically that of GI manifestations has been disputed. Initial 5-year mortality estimates ranged from 20–50%, but poor outcomes usually correlate with severity of surgical presentations. Early recognition of PAN, whether systemic or localized to the GI tract, is critical as early aggressive treatment has been shown to improve outcomes and reduce morbidity.

GIANT CELL HEPATITIS IN A PREVIOUSLY HEALTHY TEENAGER. K. Ahmed[1]; S. Zucker[1]. [1]University of Cincinnati, Cincinnati, OH. *(Tracking ID # 171574)*

LEARNING OBJECTIVES: 1. Understand the histopathologic features of giant cell hepatitis and discuss a possible mechanism leading to liver injury seen in giant cell hepatitis. 2. Identify that response to treatment with corticosteroids and other immune mediated therapies such as Azathioprine suggest a likely autoimmune etiology.
CASE: A healthy 19 year old woman presented with a 3 day history of jaundice and fatigue. She denied travel, illicit drug use, tattoos, or sexual intercourse. She took no medications. Physical examination demonstrated scleral icterus, hepatomegaly, and abdominal tenderness. There were no stigmata of chronic liver disease. Laboratory evaluation revealed AST 343 IU/L, ALT 127 IU/L, total bilirubin 23.8 mg/dl, direct bilirubin 16.7 mg/dl, alkaline phosphatase 125 IU/L, and INR 1.5. Hepatitis A, B, C, EBV, and CMV serologies were negative. Anti-nuclear, anti-smooth muscle, anti-mitochondrial, anti-liver kidney microsomal, and anti-nuclear cytoplasmic antibody titers were negative. Serum ceruloplasmin was normal. A transjugular liver biopsy revealed GCH with submassive hepatocyte necrosis. Prednisone was initiated and the patient's liver enzymes rapidly declined. At discharge, her abdominal pain and jaundice were resolving. Azathioprine was initiated and corticosteroids were tapered. Liver enzymes remain normal at 5 month follow-up.
DISCUSSION: While common in neonates, GCH is extremely rare in adults. It has been described in association with autoimmune disorders, adverse drug reactions, and viral infections with paramyxovirus, CMV, HSV, hepatitis A, B, C, and EBV. In many cases, the etiology remains unknown. The histopathologic hallmark of GCH is the presence of multinucleated syncytial giant hepatocytes, either diffusely or in isolated clusters. Additional histologic features include diffuse inflammatory infiltrates (predominately lymphocytic or plasmacytic) within the portal and lobular regions, interface hepatitis, fibrosis, and varying degrees of acinar inflammation. Hepatocellular necrosis is frequently observed, ranging from isolated hepatocytes to large zonal expanses. A proposed mechanism of liver injury is a hyperstimulated immune response leading to cytokine production by T-cells and Kupffer cells. Hepatocyte fusion or nuclear proliferation without cell division is a likely next step. Giant cells are functional hepatocytes and are believed to contribute to the progression of liver injury by releasing proinflammatory mediators that lead to further inflammation and fibrosis. In adults, autoimmune hepatitis is the most common cause of GCH, which has also been associated with other autoimmune disorders such as SLE, hemolytic anemia, and ulcerative colitis. Once a viral etiology has been excluded, corticosteroids are the mainstay of therapy, with response supportive of an underlying autoimmune process. Some patients have responded to ribavirin, suggesting a possible viral etiology. GCH has been reported to recur after liver transplantation.

KLEBSIELLA LIVER ABSCESS: A IMPORTANT SHIFT IN THE TREATMENT OF LIVER ABSCESS. M. Lammi[1]; G. Sharma[1]; L.D. Ward[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 172539)*

LEARNING OBJECTIVES: 1. Recognize the changing epidemiology of liver abscesses in the United States, specifically the rise of those caused by Klebsiella, and its significance in antibiotic choice. 2. Associate Klebsiella liver abscesses with diabetes mellitus, septic complications, and a lack of intra-abdominal pathology.
CASE: A 59 year-old Taiwanese male with hypertension presented to the ER with altered mental status where he was found to be unresponsive and was intubated. His temperature was 106F, with a HR of 156 bpm and BP of 109/54. Exam revealed a male without hepatosplenomegaly but with right upper quadrant tenderness. Labs revealed a WBC count of 3000, a random blood glucose of 363, and an anion gap acidosis with a bicarbonate of 17 and a lactate of 4.4. His hepatic profile revealed a mixed cholestatic and hepatocellular pattern and an ammonia level of 84. He was started on broad spectrum antibiotics but soon developed severe septic shock requiring maximum doses of Norepinephrine and Phenylephrine. Acute renal failure and DIC soon followed. Activated protein C was initiated, as were high-dose steroids. A CT scan showed multiple hepatic abscesses, so a catheter was placed with drainage of purulent fluid, which grew out Klebsiella pneumoniae resistant only to Ampcillin. This organism also grew from blood cultures. His antibiotics were changed to Piperacillin/Tazobactam and his clinical condition improved. For the workup of his liver abscess, he had an MRCP that showed cholelithiasis with a normal CBD and an abscess in the superior aspect of the right hepatic lobe. During his hospitalization he had persistently elevated blood sugars and was started on Glipizide and Pioglitazone. He was discharged and completed a 14 day course of antibiotics with Ciprofloxacin.
DISCUSSION: 75% of liver abscesses in the US are pyogenic in nature, traditionally due to E. coli and polymicrobial infections. There recently has been an epidemiologic shift, with Klebsiella liver abscesses (KLA) becoming more important. This was first noted in Taiwan in 1998 with a study of 182 reported abscesses, of which 160 (88%) were Klebsiella and only 22 (12%) were polymicrobial. An examination of the literature from 1992 to 2002 revealed more than 900 cases of KLA in Asian countries and 23 outside of Asia. A 2004 report from New York demonstrated that, of 54 cases of liver abscess at one institution, 41% were due to Klebsiella, making it the most common causative agent. There are distinct differences that have been noted between KLA and non-KLA. In contrast to non-KLA, KLA is heavily associated with diabetes, the presence of metastatic infections including endophthalmitis, the lack of intra-abdominal abnormalities, and a lower mortality. Antibiograms have universally revealed that Klebsiella causing liver abscesses is resistant only to Ampicillin and Ticaricillin. This is important to note because the traditional empiric coverage for a liver abscess has been Ampicillin and Gentamicin. Various authorities advise that initial coverage be with Gentamicin plus a 2nd/3rd generation cephalosporin or Piperacillin. Duration of treatment ranges from 2–8 weeks with varying periods of IV and oral antibiotics. Klebsiella has emerged as a common causative organism of liver abscesses with septic complications especially in the diabetic population. It is usually non-fatal and responds to broad spectrum antibiotics other than ampicillin, as was the case in our patient.

LOSING WEIGHT AND LOSING CONTROL. M. Mohan[1]; J. Wiese[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 173526)*

LEARNING OBJECTIVES: 1. Recognize an uncommon etiology for a serious hypoglycemic state. 2. Recognize a rare, but increasingly more common medical complication of gastric bypass surgery.
CASE: A 55 year-old woman presented following a syncopal episode that results in a motor vehicle accident. Prior to losing consciousness, she noticed feeling dizzy, but had no chest pains, palpitations or seizure activity. During the previous year, she noted having had similar episodes of dizziness, though she had never lost consciousness. An hour before the accident, she had eaten a banana and mocha drink, with the intention of boosting her energy to preempt the dizziness. She had a history of hypothyroidism, depression, non-alcoholic steatohepatitis, and a gastric bypass surgery eighteen months earlier. Since then she has had early satiety, a 100 1b weight loss, occasional episodes of hypoglycemia and episodic diarrhea. Her vital signs were normal and she was alert and oriented. She had no neurological deficits, and there was no evidence of loss of bowel or bladder function or evidence of tongue biting. An blood glucose en route to the ER was 52 g/dl, rising to 66 g/dl after a glucose bolus. Her electrolytes and CBC were normal. Her AST was 113, the ALT was 111, and the alkaline phosphatase was 166. Her urine toxicology was positive for benzodiazepines. An EKG, CXR and a non-contrast head CT were normal. A was negative for an insulinoma. After excluding an insulinoma with a spiral CT of the abdomen, she was treated with intravenous dextrose until her symptoms resolved.
DISCUSSION: With obesity becoming an increasing crisis, the number of post-bariatric surgery patients in the internist's clinic will continue to increase. Recognizing the complications of this surgery is an important component of general internal medicine. Our patient illustrated one such complication, as she succumbed to a paradoxical hypoglycemic crisis as a result of her bariatric surgery. A careful history revealed that she had multiple episodes of moderate to profound hypoglycemia. As is typical of this condition, the symptoms worsened after ingesting foods with high simple sugar loads, such as the banana and mocha drink. Pancreatic nesidioblastosis refers to hyper-functioning pancreatic beta cells (with enlarged or normal-appearing islets) following gastric bypass surgery. This is especially prevalent following the Roux-en-Y gastric bypass procedure. The mechanism by which beta cells hypertrophy appear to result from normal eating habits following the surgery. The clinical features are a product of the hyperinsulinemic hypoglycemia: dizziness, palpitations and loss of consciousness. The syndrome is distinguishable from the dumping syndrome in that there are no vasomotor symptoms, nausea or diarrhea following ingestion of meals. The diagnostic evaluation involves selective calcium stimulation of pancreatic arteries to target areas of the pancreas with augmented function. In some cases, partial pancreatectomy has been used to treat the condition. The diagnosis of nesidioblastosis was established in our patient due to the classic history of hypoglycemia, weakness and dizziness within hours after eating glucose-rich meals. A low-sugar diet abated her symptoms during the course of her in-patient stay, and she was prescribed this diet. as well as close monitoring of her blood sugar levels, upon discharge. She was advised to follow-up with her bariatric surgeon, since persistence of symptoms would likely require pancreatectomy.

MEDIASTINAL PANCREATIC PSEUDOCYST- A CASE REPORT. R. Gupta[1]; L.R. Lambiase[1]; J.C. Munoz[1]; N.S. Nahman[1]. [1]University of Florida College of Medicine, Jacksonville, FL. *(Tracking ID # 173377)*

LEARNING OBJECTIVES: 1. Pancreatic pseudocyst, a common complication of acute or chronic pancreatitis in rare instances may also extend to the mediastinum. 2. Symptoms from mediastinal pseudocyst are caused by compression of the surrounding structures like esophagus and cardiac chambers and may manifest remotely from an attack of pancreatitis due to slowly progressive fluid collection.
CASE: 67 year old female presented with triad of non exertional chest pain, solid food dysphagia and dyspnea for three months. The patient had an episode of acute alcoholic pancreatitis a year prior to presentation for which she was discharged without any complications. She continued to drink and had occasional episodes of self limiting pain. On examination she was afebrile with normal vital signs. Cardiopulmonary and abdominal examination were unremarkable. Laboratory work revealed normal complete blood count, elevated amylase at 149 mg/dl (normal 28–100), a normal lipase and an elevated aspartate aminotransferase of 72 mg/dl (normal 14–33). Chest X ray showed retrocardiac opacity. An echo lucent mass compressing the left atrium was seen on two dimensional echocardiogram. Subsequent barium swallow for her dysphagia showed extrinsic compression of the distal esophagus. A definitive diagnosis was made by a computed tomography scan which revealed a 19 cm by 12 cm pseudocyst extending from the body of pancreas into the thorax and compressing the esophagus and the cardiac chambers. The pseudocyst was successfully treated using endoscopic ultrasound guided (EUS) transesophageal drainage. 250 ml of serous amber colored fluid was removed. The fluid had a very high amylase (4980 mg/dl) and normal tumor markers. She reported immediate improvement in her symptoms.
DISCUSSION: We have located approximately fifty cases of mediastinal extension of the pancreatic pseudocyst in world literature. It is only for the second time that we are reporting successful drainage of mediastinal pseudocyst using transesophageal approach under endoscopic ultrasound guidance. It is postulated that mediastinal pseudocysts are caused by rupture of the pancreatic duct posteriorly into the retroperitoneal space. The pancreatic fluid then tracks through the diaphragmatic

hiatuses into the mediastinum. Symptoms are primarily the result of compression or invasion of mediastinal structures (dysphagia, dyspnea, odynophagia, pseudoachlasia, weight loss, chest pain or heart failure). Cases presenting as acute airway obstruction and causing life threatening tamponade have also been reported. The diagnosis of mediastinal pseudocyst should be suspected in a patient presenting with any of the above symptoms with a history of pancreatitis. Chest X ray may be non diagnostic but can show retrocardiac opacity. Definitive diagnosis is usually made by a CT scan. Treatment options for this entity are dictated by the symptomatology caused by compression of mediastinal structures, the size of the pseudocyst, the ductal anatomy and the surgical expertise available. Spontaneous regression is rare. Medical management is includes bowel rest and stomatostatin analogues. Drainage options include percutaneous CT guided drainage, ERCP with stent placement or EUS guided drainage. We emphasize here, that one should have high level of suspicion for mediastinal extension of pseudocyst in a patient with a history of pancreatitis presenting with thoracic symptoms.

PARALYTIC ILEUS: THE CAUSE THAT EVADES PHYSICIANS TIME AFTER TIME. H. Rudrappa[1]; H. Friedman[2]; H. Gupta[3]. [1]Saint Francis Hospital, Evanston, IL; [2]St. Francis Hospital, Evanston, IL; [3]University of Illinois at Chicago, Evanston, IL. *(Tracking ID # 173713)*

LEARNING OBJECTIVES: First case report of West Nile encephalitis causing paralytic ileus Besides electrolyte imbalances and post operative period one should consider the central nervous system as a cause in parlytic ileus.
CASE: This is a 75 yr old male presented with fever and vomiting of 3 days duration. The fever was subjective, intermittent and relieved promptly with Tylenol. He had 4–5 episodes of vomiting containing the food. The vomitus contained no blood.. On examination, he had a temperature of 101F. The patient was drowsy, bed bound, with loss of recent memory, intact remote memory and had no focal neurological deficits. He had distension of abdomen with scant bowel sounds without tenderness, guarding or rigidity. The complete blood count showed WBC 18.7 K/mmcu with neutrophils of 75% The basic metabolic panel revealed sodium 131 mmol/dL, potassium 3.1 mmol/dL, corrected calcium of 8.32 mg/dL, albumin 3.2 g/dL and magnesium of 2.2 mg/dL. He had a CT abdomen with oral contrast, which showed diffuse distension of intestines and the contrast had reached the rectum ruling out dynamic intestinal obstruction. The hypokalemia was thought to be result of vomiting. Hypocalcemia and hypokalemia were corrected. The paralytic ileus was getting severe. He underwent a colonoscopy on 8th day of admission, which showed normal mucosa. The colon was decompressed. He was observed in Intensive Care Unit for 10 days before he was diagnosed to have West Nile Encephalitis by serology. He had a prolonged course of ileus that did not resolve with simple correction of electrolytes. A less severe ileus persisted over 20 days of hospital stay. He was subsequently discharged to nursing home. The paralytic ileus had resolved in one month time when he revisited hospital with a urinary tract infection. He was more alert and mobilizing well during the next visit to the hospital.
DISCUSSION: Paralytic ileus is reported in many meningitis, encephalitis notably in Guillain Barre Syndrome and Herpes encephalitis. These CNS causes of paralytic ileus tends to evade the physicians. Recognition of CNS causes particularly the encephalitis, as a cause of paralytic ileus is critical in solving mystical causes of ileus, which helps us in instituting a plan of management. The mechanism of action is not well described in medical literature. However, the theory of the vagal nerve involvement resulting in ileus shows promise.

RIFAXIMIN - A NEW PANACEA FOR C.DIFFICILE COLITIS. I. Sachar[1]; T. Chandak[1]; J. Kocher[2]; M. Sapienza[1]. [1]Mount Sinai School of Medicine (Englewood Hospital), Englewood, NJ; [2]Mount Sinai School of Medicine (Englewood), Englewood, NJ. *(Tracking ID # 172579)*

LEARNING OBJECTIVES: 1. To recognize the emergence of Vancomycin and Metronidazole-resistant Clostridium difficile associated diarrhea (CDAD) 2. To explore newer therapeutic options like Rifaximin for refractory CDAD
CASE: A 57-year-old woman was referred to a gastroenterologist's office with 6 months of chronic non-bloody diarrhea. She denied any nocturnal symptoms, fever, weight loss, abdominal pain, nausea, vomiting or change in appetite. Her symptoms dated back to a dental infection, treated with penicillin 6 months ago. She used OTC loperamide with partial relief. Her past medical history included osteoporosis, anxiety and depression controlled with medications. She denied smoking or alcohol use. Her physical examination revealed a benign abdomen. Her hematological and biochemical investigations were unremarkable including a normal TSH. Colonoscopy revealed normal colonic mucosa but biopsies revealed non-specific mild focal acute and chronic colitis. The stool aspirate was negative for ova, parasites and other bacteria but was positive for Clostridium difficile toxin (A/B). She was started on metronidazole, lactobacillus and counseled about contact precautions to prevent faeco-oral transmission and avoidance of antibiotics. With no improvement after 8 weeks, treatment with oral vancomycin (250 mg QID) was commenced. After four weeks of therapy, diarrhea resolved and Vancomycin was tapered over two weeks. But her diarrhea promptly recurred. The dose of Vancomycin was escalated back and cholestyramine was added; but yielded no response. With increasing severity of symptoms, an infectious disease consultation was sought. Repeated stool testing confirmed the persistence of C.difficile toxin and absence of other pathogens. Serum immunoglobulins were normal. Rifaximin (200 mg TID) was begun and within three days, her diarrhea abated with complete resolution after 20-day course of Rifaximin. The patient continues to be relapse free now for over 3 months.
DISCUSSION: CDAD in hospitalized patients in the US is associated with an incidence of 1%, an annual mortality rate of 2% and a 50% increase in hospital costs due to prolonged hospital stays. C. difficile is a ubiquitous, spore-forming, gram-positive, anaerobic bacterium that proliferates when gut flora is altered, commonly due to antibiotic use. It produces two toxins, A and B, which cause inflammation, fluid loss and diarrhea that may be complicated by dehydration, sepsis and toxic megacolon. Standard therapy consists of discontinuation of the inciting antibiotic, fluid resuscitation, avoidance of antimotility agents and 2-week course of oral metronidazole or vancomycin. Increasing incidence of severe and refractory CDAD may be multi-factorial due to resistance to metronidazole or vancomycin, the occurrence of strains that hyperproduce toxin, or generation of novel toxins. Rifaximin, from the Rifamycin family of drugs, approved by the FDA for the treatment of Travelers' diarrhea, has shown promise as a treatment for CDAD both in vitro and in early clinical testing. The mean MIC of rifaximin has been found to be 10 fold lesser than metronidazole and 100 fold lesser that vancomycin. A recent pilot study in Italy with 20 patients demonstrated comparable efficacy of rifaximin to vancomycin. This case illustrates the efficacy of rifaximin in CDAD refractory to months of standard therapy. An ongoing multi center, double blind, randomized trial of rifaximin and vancomycin will hopefully provide more insights.

SECRETORY DIARRHEA: A PRESENTATION OF HEPATOCELLULAR CARCINOMA? OR IS IT IT'S OWN PARANEOPLASTIC SYNDROME? J. Lafreniere[1]; J. Wiese[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 173694)*

LEARNING OBJECTIVES: 1. Recognize secretory diarrhea as a potential paraneoplastic syndrome. 2. Identify the clinical presentation of secretory diarrhea. 3. Understand the pathophysiology and appropriate treatment of secretory diarrhea associated with hepatocellular carcinoma.
CASE: A 61 year-old man presented with six months of watery diarrhea and two weeks of abdominal distension. The diarrhea was non-bloody, occurred fifteen times per day, and continued at night. It was unrelieved by decreasing his oral intake. He had no recent travel or exposure to high-risk foods. He had no abdominal complaints prior to six months ago. He reported drinking twelve beers per day for thirty-five years, though he had stopped five years earlier. He had an 80 pack-year history of tobacco use. He denied intravenous drug use. A recent colonoscopy had revealed multiple benign polyps. He appeared jaundiced with scleral icterus, but there was no asterixis. The JVP was not elevated and the PMI was non-displaced. The abdomen was tense with bulging flanks and a fluid wave was present; the liver and spleen were not palpable. There was no peripheral edema, but there was a confluent, bilateral, macular, hyper-pigmented rash over his ankles and shins. His INR was 1.2, the albumin was 2.5, the total bilirubin was 5.0, and, the alkaline phosphatase was 300. The ALT was 40 and the AST was 225. Hepatitis serologies were negative. Stool studies were negative for fat, blood, leukocytes, ova and parasites; the osmotic gap was normal. Peritoneal fluid revealed a SAAG of 2.0. By CT, the liver was nodular and contained multiple intraparenchymal lesions, the largest measuring 8 cm. Serum AFP levels were 128,000 ng/ml. He was diagnosed with clinical stage IIIA hepatocellular carcinoma, and palliative care was recommended. He was treated with octreotide at a starting dose of 50 mcg intravenous three times a day for his diarrhea. This resulted in a decrease in the number of stools.
DISCUSSION: Diarrhea is a common presenting complaint in the general internal medicine clinic, and it is important that internists recognize secretory diarrhea as a paraneoplastic syndrome. Secretory diarrhea has been documented in as many as fifty percent of patients with hepatocellular carcinoma (HCC). HCC tumors can secrete vasoactive intestinal peptide and gastrin and stimulate a secretory diarrhea similar to that associated with carcinoid or VIP-omas. Somatostatin analogs, including octreotide, have been suggested for the treatment of diarrhea associated with neuroendocrine tumors. Considering this recommendation and the fact that forty percent of HCC tumors express high-affinity somatostatin receptors, we expected the improvement in our patient's diarrhea following treatment with octreotide. Resolution of the diarrhea has also been seen with tumor ablation, and this is an additional therapeutic option. Because octreotide has minimal anti-neoplastic activity, the subjective improvement of our patient's diarrhea was likely related to octreotide's antagonism of the secreted hormones rather than a direct affect on the tumor itself.

THE ABDOMINAL MIGRAINE: ADULT CYCLIC VOMITING SYNDROME TREATED WITH SUMATRIPTAN. M. Kowalczyk[1]; L. Ward[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173255)*

LEARNING OBJECTIVES: 1. Recognize cyclic vomiting syndrome as an infrequent but know cause of chronic vomiting in adults. 2. Manage a patient with cyclic vomiting syndrome, including the use of triptan medications.
CASE: A 47 year old man with hypertension presented with recurrent episodes of vomiting for one year and 50 lb weight loss. Symptoms were acute in onset, usually starting in the early morning hours, but with a prodrome of abdominal discomfort. There were no clear precipitating factors, and vomiting was exacerbated by drinking water and eating large meals. Up to thirty episodes of vomiting occurred per day, often associated with severe diffuse abdominal pain and an urge to defecate. Trials of antiemetics, nutritional supplementation, H2-receptor blockers, and proton pump inhibitors failed to alleviate his symptoms. Vomiting would continue for 4–7 days, often requiring hospitalization for IV hydration, and then would end abruptly. Symptom free periods would then last from one week to a month, at which time the symptoms would return exactly as before. There was no personal history or family history of chronic headaches. Social history was significant for tobacco use, but negative for alcohol or drug use. On physical exam he was afebrile, BP:122/78, P:94, and otherwise unremarkable with a benign abdominal exam. An extensive workup was

undertaken including CT, MRA, MRI of abdomen, MRI of brain, and upper and lower endoscopy which all failed to reveal any abnormality to explain his symptoms. Symptoms resolved after a trial of intranasal Sumatriptan given during the prodromal phase. He continued to get prodromal symptoms but has not vomited or needed hospitilazation since.
DISCUSSION: Adult cyclic vomiting syndrome (CVS) is defined as two or more periods of intense nausea and vomiting lasting hours to days, with return to usual health between episodes. Despite its severe and debilitating consequences, CVS often goes undiagnosed for years as it is more commonly attributed to children. However, in adults it may occur more often than previously thought and is postulated to be the cause of multiple hospital and emergency department visits for chronic vomiting, unnecessary diagnostic tests, surgeries and substance abuse. An idiopathic disorder, and a diagnosis of exclusion, CVS may be linked to mitochondrial disorders of fatty acid oxidation, food allergy, metabolic and endocrine disorders. An association of CVS with migraine headaches also suggests that there may be a common pathophysiologic process and it has been theorized to be a form of "abdominal migraine". A history or family history of migraine headaches supports the diagnosis. The treatment of CVS depends on the phase of the cycle. When the patient is asymptomatic, the goal is to prevent episodes by controlling triggers such as menstruation, stress, excitement, or infection. Antimigrane prophylaxis should be considered, especially in patients with history or family history of migraines. During the prodromal phase, which may include nausea, sweating, abdominal pain, heat or cold intolerance, urge to defecate, food aversion, irritability, and panic, appropriate medications may include standard antiemetics as well as selective serotonin receptor agonists (triptans). Similar to their use in migraine headaches, in some patients their use can abort a full constellation of symptoms from occurring. If vomiting begins, dehydration may need to be corrected with IV fluids.

THE BEAST FROM WITHIN: DETECTION OF VENTRAL HERNIAS IN MORBIDLY OBESE PATIENTS. B.J. Shah[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA. *(Tracking ID # 173893)*

LEARNING OBJECTIVES: 1. Review risk factors, physical exam maneuvers, and imaging for abdominal wall hernias 2. Recognize abdominal wall hernias as a cause for paroxysmal abdominal pain, especially in obese patients
CASE: A 35 yo F with hypertension, morbid obesity (wt = 412 lbs), history of fibroids, right ovarian cyst, G6P2, and a recent vaginal birth, presented to clinic with paroxysmal abdominal pain. The pain localized to the center of her abdomen, lasting up to five hours. Notes from one year prior described a similar pain in the periumbillical area with debilitating skin sensitivity. Workup over the last year, while the abdominal pain continued, included normal LFTs, negative right upper quadrant (RUQ) ultrasound, and a pelvic ultrasound which showed a small right ovarian cyst and a fibroid uterus. In clinic, she stated that the pain was "knife like," felt like "something is scratching or stabbing me from the inside." Meals did not affect her pain. Abdominal exam showed an obese, non tender abdomen with a negative Murphy's sign. On standing there was a change in the contour of her abdomen but no discreet mass was present. Gynecologic exam did not show a change in the size of her fibroids, which was confirmed by a pelvic ultrasound. Two weeks later, the patient presented to the ED with worsening abdominal pain similar in quality. A CT scan showed a 4.2 cm intra-abdominal wall defect just superior to the umbilicus containing a 4.3×4.8 cm infarcted omentum and a small amount of edema around the adjacent jejunal loop, suggesting prior incarceration. Laproscopic surgery showed omental fat herniating up into the hernia sac which was repaired with mesh.
DISCUSSION: The case highlights the challenges facing physicians as the nation's population becomes increasingly obese. Incisional and ventral hernias, occurring where aponeurosis and fascia are devoid of protecting support of striated muscle, account for 10% of all hernias. Most patients are unaware of hernias; when symptomatic, the nonspecific complaints relate to pressure of the sac and its contents on adjacent structures. Pain may be described as worse at the end of the day and improved with reclining. Severe paresthesias, as described by this patient, have been noted in cases of inguinal hernias. Risk factors for ventral hernias include prior surgery, obesity, advanced age, malnutirition, ascites and pregnancy, although data include quantifying these risks is scant. Physical exam entails palpation of a mass while the patient stands and strains or coughs. However, this patient's obesity precluded performing an accurate physical exam, delaying the diagnosis. CT scan was considered but the indication was not clear. Barium swallow, ultrasound, and CT scan have been used to detect hernias; little data is available about the rate of detection in patients without prior abdominal surgery. In patients with prior abdominal surgery, 5–10% of incisional hernias are not detected by physical exam; a series of 14 post-op patients with paroxysmal abdominal pain showed 100% detection of incisional hernias with CT scan. In obese patients, ventral hernias should be considered in the work up of chronic abdominal pain; the threshold to obtain a CT scan should be lower when the physical exam is equivocal given their higher risk. This case highlights an important area for further research in risk factors and evaluation for hernias in obese patients without prior abdominal surgery.

THE GUT STOPS HERE- AN INTERESTING CASE OF CHRONIC INTESTINAL PSEUDO-OBSTRUCTION. D.D. ÖLveczky[1]; J. Potter[2]. [1]Beth Israel Deaconess Medical Center, Cambridge, MA; [2]Harvard University, Boston, MA. *(Tracking ID # 172716)*

LEARNING OBJECTIVES: 1.Discuss the differential diagnosis of chronic intestinal pseudo obstruction (CIP). 2.Recognize pseudo-obstruction as a presenting symptom of primary amyloidosis
CASE: An 82-year-old woman presented with 2 months of anorexia, dysphagia, constipation and weight loss, and one episode of non-bloody, non-bilious emesis. Imaging revealed a partial small bowel obstruction. PMH was notable only for a salpingotomy for an ectopic pregnancy 53 years prior. She was treated conservatively and failed multiple feeding trials; subsequent exploratory laparotomy revealed dilated proximal small bowel and thickening of the distal small bowel without a clear obstruction or transition point. The biopsy was negative for inflammatory bowel disease, lymphoma or amyloid but showed increased numbers of plasma cells, consistent with a reactive process. She remained TPN-dependent with worsening anasarca and proteinuria. Radiology studies demonstrated persistent pseudo-obstruction. Six weeks later she developed hematemesis: EGD demonstrated distal esophageal erosions and a nodular, firm, friable pyloric mucosa. Congo red staining of samples from the pylorus revealed amyloid. Serum and urine immunofixation electrophoresis revealed free Bence Jones Kappa protein consistent with primary amyloidosis.
DISCUSSION: CIP is a rare syndrome that presents with symptoms and signs of bowel obstruction and radiographic evidence of intestinal dilation; however, no anatomic obstruction is found. Primarily due to an underlying neuromuscular disorder impacting small bowel motility, CIP can affect any part of the gastrointestinal tract. The primary process may be myopathic (eg. scleroderma), neuropathic (eg. diabetes mellitus, multiple sclerosis, Parkinson's disease, amyloidosis, paraneoplastic), or both (eg. scleroderma, amyloidosis). Medications that affect the enteric nervous system, e.g. anti-cholinergic antidepressants, calcium channel blockers, and alpha-2 adrenergic agonists, may also be implicated. Evaluation consists of: radiographic studies to exclude mechanical obstruction and alternative diagnoses e.g. Crohns disease; nutritional assessment; and confirmation of dysmotility using a transit test. Management options include: nutritional support; antibiotics for bacterial overgrowth; prokinetic agents; immunomodulator therapy;and surgery. Primary or immunoglobulin light chain-related (AL) amyloidosis is a rare plasma cell proliferative disorder in which fibrils of monoclonal light chains are deposited in various tissues. Presenting symptoms such as weight loss and fatigue are often non-specific. Other manifestations depend on the organs involved, most commonly heart, liver, kidneys, autonomic and peripheral nervous systems. Although amyloid deposits are frequently seen in the gastrointestinal tract, pseudo-obstruction occurs rarely. Diagnosis is made by tissue biopsy with Congo-red staining: if positive, serum and urine electrophoreses and immunofixation electrophoreses are performed. Treatment consists of oral melphalan and prednisone; response is usually limited. Young patients with high performance status may be offered high-dose, intravenous melphalan with autologous blood stem-cell support. Survival ranges from 6–21 months: multi-system involvement is a poor prognostic sign. Given the poor prognosis and frequent localized involvement, clinicians need to maintain a high index of suspicion to pursue the diagnosis even if initial biopsy of the affected organ is negative.Oncologist2006:11;824.

VARICEAL BLEEDING: A TWIST FROM THE USUAL STORY. C. Messick[1]; *S.L. Crowder*[1]. [1]Wake Forest University Baptist Medical Center, Winston-Salem, NC. *(Tracking ID # 173922)*

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of sinistral portal hypertension. 2. Review the pathophysiology of splenic vein thrombosis. 3. Explore therapeutic options for isolated gastric variceal bleeding.
CASE: A 53-year-old man with chronic low back pain and recurrent pancreatitis presented to the Emergency Department with a four hour history of dark bloody stools. The patient was taking ibuprofen 800 mg three times a day and admitted drinking one 40 ounce malt liquor daily. On arrival, he was hypotensive but the physical examination was otherwise unremarkable. Initial labs revealed a hemoglobin of 9.7 g/dl which rapidly declined to 7.6 g/dl. Liver function tests and coagulation studies were within normal limits. Serum Helicobacter pylori antibodies were present. He was treated with IV fluids, pantaprozole, and blood transfusions. After stabilization, he underwent panendoscopy. Esophagogastroduodenoscopy demonstrated large isolated gastric varices. Review of past abdominal CT scans revealed splenic vein thrombosis, but no evidence of cirrhosis which was confirmed on a repeat scan. Surgical splenectomy was considered, but judged too risky. Review of the literature suggested splenic artery embolization with Gianturco coils as a noninvasive option, but also included a possible complication of splenic infarction. Interventional radiology was consulted and they recommended an alternative procedure using microspherical polyvinyl alcohol particles for selective splenic artery embolization. After the procedure, normalization of the portosystemic pressure gradient by hepatic venography was demonstrated and flow to the gastric varices was eliminated. There has been no evidence of splenic infarction or recurrent bleeding.
DISCUSSION: Sinistral or regional left-sided portal hypertension occurs in the setting of splenic vein thrombosis and can result in gastric varices with associated hemorrhage. The pathophysiology involves a primary process in the pancreas such as chronic pancreatitis or malignancy that compresses the pancreatic veins causing retrograde pressure to the splenic vein. After formation of a thrombus, the elevated venous pressures directly flow into short gastric veins ultimately creating gastric varices. Of patients with chronic pancreatitis, 7–10% develop splenic vein thrombosis and 4–5% of those have gastric variceal bleeding. Historically, these patients have been treated with anticoagulation for the underlying thrombosis and/or surgical splenectomy after varices develop to decompress the left portal venous system. Since both of these options involve substantial risk, clinicians should now consider segmental splenic artery embolization for patients with splenic vein thrombosis and isolated gastric varices.

WHEN INVESTIGATIONS PREEMPT CLINICAL REASONING: A MISSED CASE OF CARDIAC CIRRHOSIS. S. Madhwal[1]; A. Atreja[1]. [1]Cleveland Clinic Foundation, Cleveland, OH. *(Tracking ID # 173886)*

LEARNING OBJECTIVES: 1. To recognize the clinical manifestations, diagnostic strategies and treatment of cardiac liver cirrhosis. 2. To learn isolated right- side

heart failure as an important cause of liver cirrhosis. 3. To recognize CA- 125 as a nonspecific marker that can be elevated in a number of benign conditions.
CASE: A 64 year-old-obese woman with past medical history of uncontrolled asthma, diabetes mellitus, renal insufficiency and anemia was admitted from outside hospital with six months history of abdominal bloating and distension. Review of systems was positive for ten pound weight gain in the last six months. Computed tomography of abdomen done at the outside hospital revealed moderate ascites and liver that was nodular in contour and mildly heterogeneous in echo texture -consistent with cirrhosis. Her ejection fraction, liver function and acute and remote hepatic panel were normal but CA-125 levels were elevated at 224 units/ ml. Esophagoduodenoscopy, colonoscopy and ascitic fluid cytology were negative for malignancy and patient underwent exploratory laparotomy for further evaluation of raised CA-125. The laparotomy confirmed nodular liver but did not reveal any lesion concerning for malignancy. When patient arrived to our hospital, she was noted to have pitting edema in legs bilaterally. She had extremely obese abdomen that precluded detailed examination for organomegaly or ascites. A transjugular biopsy to evaluate cause of nodular liver showed no sinusoidal gradient, widely patent right hepatic vein and central lobular hepatocyte atrophy and fibrosis consistent with venous outflow obstruction such as congestive heart failure. Repeat transthoracic echocardiogram revealed normal ejection fraction but markedly elevated right ventricle systolic pressure of 65 mm Hg. Pulmonary function tests showed extra thoracic restrictive and obstructive pattern. A final diagnosis of cor pulmonale leading to cardiac cirrhosis was made and patient was aggressively treated with diuretics with good improvement in clinical condition.
DISCUSSION: Cardiac cirrhosis (congestive hepatopathy) includes a spectrum of hepatic derangements that occur in the setting of right-sided heart failure. Clinically, the signs and symptoms of congestive heart failure dominate the disorder. These include dependent edema, weight gain, increased abdominal girth, nocturia, fatigue, right upper quadrant pain. Treatment is aimed at managing the patient's underlying heart failure. In this patient, clinical signs of jugular venous distension and hepatomegaly were missed because of her morbid obesity and short neck. A normal ejection fraction in the echocardiogram report falsely reassured physicians of a non- cardiac cause of nodular liver. A careful look at elevated right ventricle systolic pressure may have led to early recognition right sided heart failure. CA- 125 is a biomarker for ovarian cancer but is not advised in the routine work up for cirrhosis since it can be elevated in a number of benign conditions such as endometriosis, pregnancy, ascites, pleural effusion and other inflammatory conditions of the abdomen. An elevated CA- 125 in this patient led to unnecessary work up including laparotomy. This case reminds internists that each investigation has its limitations and that clinical suspicion and pre-test probability should guide investigations, not vice versa.

A HEALTHY WOMAN WITH ACUTE DYSPNEA AND CHEST PAIN: THE IMPORTANCE OF FAMILY HISTORY. F. Mcallister[1]; K.L. Kraemer[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173050)*

LEARNING OBJECTIVES: 1. To generate an appropriate differential diagnosis for spontaneous hemothorax in healthy young individuals. 2. To illustrate the complications of costal exostoses.
CASE: A healthy 19-year-old Caucasian woman presented to the emergency department with 3 weeks of progressive chest pain and 2 days of dyspnea. The chest pain was right sided and radiated to the right upper quadrant of the abdomen. She had no prior medical or surgical conditions and denied a history of trauma. Family history was positive for deafness in both parents. Her only medication was oral contraceptives. On initial exam, she was tachypneic and tachycardic. A chest X-ray showed a right pleural effusion and multiple exostoses at the proximal end of the left humerus. Computed tomography of the chest confirmed a massive right pleural effusion. Initial hematocrit was 42%. Electrolytes, liver enzymes, and coagulation parameters were normal. Within 12 hrs, her hematocrit dropped to 30%. A diagnostic right thoracentesis showed bloody fluid consistent with hemothorax. On subsequent right thoracoscopy, the thoracic cavity contained a large amount of non-clotted blood and a congenital defect in the diaphragm. A single exostosis originating from the dorsal aspect of the fourth right rib was identified and resected without difficulty. The patient had an uneventful postoperative course. A follow-up chest X-ray on the second postoperative day demonstrated resolution of her pleural effusion and her chest tube was removed. Two days after surgery, the patient's parents arrived and stated the presence of Multiple Hereditary Exostosis (MHE) in the family.
DISCUSSION: Etiologies of spontaneous hemothorax include neoplasia (primary/ metastatic), endometriosis, pulmonary embolism with infarction, coagulopathies (hemophilia, thrombocytopenia and von Willebrand's syndrome), anticoagulation therapy, bullous emphysema, necrotizing infections, tuberculosis, pulmonary arteriovenous fistula, non-pulmonary intrathoracic vascular conditions and abdominal pathologies (pancreatic pseudocyst, splenic artery aneurysm, hemoperitoneum). Differential diagnosis of spontaneous hemothorax in young people has been mainly attributed to native coagulopathy and endometriosis in women. MHE should be considered in cases of non-traumatic hemothorax in young otherwise healthy patients. MHE is an autosomal dominant genetic disorder characterized by the formation of osteochondromas in multiple body locations, but most commonly in long bones. The condition derives from mutations in genes of the EXT gene family. There are a few reported complications, including popliteal aneurysm, pericardial effusion, hemarthrosis, central or peripheral nerve compression and urinary obstruction. Hemothorax is a rare complication of MHE that has only been described in around 20 patients. The proposed mechanism is shearing of the pleura induced by long standing respiratory motion friction between the costal exostoses and the pleura, followed by spontaneous rupture of the dilated vessels and hemothorax. A review of all previous reports of patients with spontaneous hemothorax secondary to MHE revealed age of less than 25 years at presentation and favorable outcomes with no significant complications. To our knowledge, this is the first MHE patient to present with chest pain radiating to the abdomen. The presence of the right-sided diaphragmatic congenital defects could explain the radiation of the pain to that side of the abdomen.

HEMOCHROMATOSIS PRESENTING AS PORPHYRIA CUTANEA TARDA IN A PATIENT WITH A "BLEEDING RASH". *J. Betancourt*[1]; R.R. Cader[1]. [1]Sepulveda VA Ambulatory Care Center, North Hills, CA. *(Tracking ID # 169922)*

LEARNING OBJECTIVES: 1. Identify the clinical presentation of porphyria cutanea tarda. 2. Generate a differential diagnosis for secondary causes of porphyria cutanea tarda. 3. Recognize the link between porphyria cutanea tarda and the hemochromatosis gene mutations.
CASE: A 59 year old Caucasian male presented to a primary care clinic with a chief complaint of a new "bleeding rash" on the sun-exposed areas of his arms and hands of several months duration which was painless and non-pruritic. The lesions started as "fluid filled bubbles" on his hands and arms, which then erupted, bled and crusted over. He also complained of a dark rash on his face. On exam, he had various sub-centimeter lesions on his arms and hands with peripheral pink hypertrophy and central erosions, in addition to multiple tense bullae on his hands. His arms, hands and face revealed hyperpigmentation. His face also showed hypertrichosis around the temples. The remainder of his physical exam was unremarkable. Porphyria cutanea tarda was the initial diagnosis. Laboratory studies revealed hemoglobin 17 g/dL, glucose 114 mg/dL, ALT 88 U/L and unconjugated bilirubin 1.5 mg/dL. Iron studies revealed ferritin 3288.5 ng/mL, iron 230 mcg/dL, TIBC 281 mcg/dL and transferrin 210 mg/dL with an iron/transferrin saturation of greater than 80%. Alpha fetal protein was elevated, hepatitis B and C serologies were negative, serum porphyrins were elevated and urine porphyrins were also elevated including uroporphyrin, hepatacarboxylporphyrin, hexacarboxylporphyrin, and pentacarboxylporphyrin. Abdominal ultrasound revealed diffuse fatty metamorphosis of the liver and mild hepatomegaly but no focal lesions or cirrhosis. The patient was screened for hemochromatosis, which revealed that he was homozygous for the HFE C282Y gene mutation indicating a diagnosis of hereditary hemochromatosis. He was referred to Liver Clinic for definitive treatment and phlebotomy was initiated. Liver biopsy is pending.
DISCUSSION: Porphyria cutanea tarda (PCT) is the most common form of porphyria. It is due to decreased uroporphyrinogen decarboxylase, which leads to excess deposition of porphyrins in the skin, manifested as a vesiculobullous rash, which can develop on the sun exposed areas of skin, chiefly the arms and hands. Laboratory studies may indicate an iron overload syndrome. PCT has been associated with chronic alcohol ingestion, estrogens, hepatitis C infection and mutations in the HFE gene. Hereditary hemochromatosis is a disorder of iron metabolism which leads to iron deposition in the skin and various tissues which can lead to hypogonadism, cardiomyopathy, diabetes and cirrhosis. It can be screened for with iron studies as well as by genetic testing to identify mutations in the HFE gene. In one study, 73% of patients with porphyria cutanea tarda had defined mutations in the HFE gene. Most patients with hereditary hemocrhomatosis also have mutations in the HFE gene. As such, screening for hereditary hemochromatosis in a patient with PCT is warranted because phlebotomy initiated in a patient with hemochromatosis prior to the development of cirrhosis or diabetes has been shown to improve a patient's life span.

"BYSTANDER HEMOLYSIS": AN UNUSUAL CAUSE OF ANEMIA. S. Surapaneni[1]; C. Hake[1]; *K. Pfeifer*[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 170056)*

LEARNING OBJECTIVES: 1.Diagnose "bystander hemolysis" based on clinical and laboratory data. 2.Describe the possible pathophysiology and treatment options for this rare but severe cause of hemolysis
CASE: This is the case of a 61-year-old Caucasian gentleman with a past medical history of peripheral vascular disease and coronary artery disease for which he underwent off-pump coronary artery bypass graft surgery (CABG). He received one unit of packed red blood cells (RBC) perioperatively and was discharged home without any complications five days after surgery. The patient returned to the hospital four days later with dyspnea, fatigue and a hemoglobin level of 8.2 g/dl, decreased from 10.4 g/dl prior to hospital discharge. Despite subsequent blood transfusions his hemoglobin continued to decline, reaching a nadir of 5.3 g/dl eleven days after his surgery. In addition to worsening anemia, laboratory evaluation was pertinent for a total bilirubin of 11.8 mg/dl, direct bilirubin of 0.4 mg/dl, peak lactate dehydrogenase level of 1880, reticulocyte count of 0.8, haptoglobulin level less than 30 and an INR of 3.27. Basic metabolic panel and liver function tests were otherwise normal, but DAT was 2+ positive for anti-kell antibodies. Review of the patient's medications, surgical record and prior hospital course did not reveal any potential causes of this degree of hemolysis. Based on his history of blood product exposure and the timing and severity of hemolysis a diagnosis of bystander hemolysis was made and treatment with oral prednisone and plasma exchange initiated. Despite this therapy, he continued to require packed RBC transfusions until rituximab was finally used with an excellent response.
DISCUSSION: Bystander hemolysis may be defined as the destruciton of antigen-negative RBCs during immune-mediated hemolysis of antigen-postive RBC. Also called delayed hemolytic transfusion reaction (DHTR) with hyperhemolysis, this condition is mostly described in sickle cell patients with a history of multiple transfusions and is thought to be mediated by over activation of the compliment cascade by circulating antibody complexes from hyperactive B-Cell lymphocytes This patient exhibited not only features of DHTR with hyperhemolysis but also had evidence of lysing his

reticulocytes, as evident by his consistently low reticulocyte count and bone marrow biopsy with a high amount of erythroid precursors. We hypothesize that this could be secondary to destructions of the erythroid precursor cells in the bonemarrow before they can be released outside as reticulocytes. While he did not respond to steroids or plasma exchange, he did respond to rituximab, an anti-CD20 monoclonal antibody. This case is an example of DHTR with hyperhemolysis in a patient without hemoglobinopathies. Clinicians need to think about bystander hemolysis if the anemia is getting worse with blood transfusions, since delay in diagnosis can lead to serious complications.

"EOSINOPHILIA": IDIOPATHIC CAN BE NEUROPATHIC. M. Arif[1]; N. Surapaneni[1]; K. Pfeifer[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173258)*

LEARNING OBJECTIVES: 1) Recognize neurologic symptoms as a manifestation of hypereosinophilic syndrome (HES). 2) Identify and treat eosinophilia-associated neuropathy early to avoid progression of the neurologic symptoms.
CASE: A 60-year-old man with no significant past medical history presented with new-onset weakness and pain in the left hand. About four weeks prior to admission, he had developed tingling and numbness of the upper extremities which later involved the lower extremities. His neurologic symptoms worsened progressively and became accompanied by weakness and pain of the left hand. The patient was unable to grasp things with his left hand and had problems performing coordinated movements, such as writing and buttoning his shirts. He also reported three episodes of diplopia during this period. The patient denied any headaches, dizziness, speech difficulties, fevers, loss of consciousness, incontinence or trauma. On physical examination, he had significantly decreased motor strength in the left hand with decreased sensation in both hands and feet in a glove and stocking pattern. Initial laboratory evaluation demonstrated leukocytosis (20.1×103/mm3) with marked eosinophilia (46.3%). Erythrocyte sedimentation rate and C-reactive protein levels were normal, and his peripheral blood smear was remarkable only for leukocytosis with distinct eosinophilia. Chest radiograph was normal and stool studies showed no evidence of parasitic infection. Computed tomography of the head showed no acute intracranial pathology, and MRI of the brain and spine was unremarkable. Electromyoneurography showed severe, acute, asymmetric sensorimotor polyneuropathy of a predominantly axonal type, consistent with mononeuritis multiplex. The patient then underwent bone marrow biopsy which demonstrated increased cellularity with significant eosinophilia (41%) without blastic activity consistent with a diagnosis of HES. Given the rapid onset and progression of the neurologic deficits, he was started on corticosteroids which resulted in normalization of his eosinophil count and marked improvement of his neurological symptoms.
DISCUSSION: The HES is a rare hematologic disorder marked by sustained overproduction of eosinophils. The diagnosis of HES is based on the following criteria: sustained eosinophilia (more than 1,500/mm3) for more than six months; the absence of other causes of eosinophilia, including parasitic infections and allergies; and signs and symptoms of organ involvement, most frequently the heart, nervous system, lungs and skin. Neurologic complaints, including cerebral thromboemboli, encephalopathy, or peripheral neuropathy, are occasionally the presenting symptoms of HES. The mechanism of the neurologic deficits is presumed to be related to eosinophilic infiltration of the motor neuron. The neuropathy may be symmetric or asymmetric, involve sensory with or without motor neurons, and may produce paresthesias, mononeuritis multiplex or radiculopathy. Affected patients can also present with embolic strokes or transient ischemic episodes, vision problems, memory loss, and upper motor neuron signs. In patients with organ involvement, initial therapy consists of corticosteroids. If eosinophilia is suppressed, daily doses are slowly tapered to the lowest dose that maintains control of the eosinophil count. Prognosis is variable, and factors associated with an improved prognosis in HES include early diagnosis, intensive management, and prolonged eosinopenia in response to corticosteroids.

A CASE OF B19, NOT B12, ANEMIA. D. Kim[1]; L. Romero[1]; L. Ward[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173739)*

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of parvovirus B19 red cell aplasia. 2. Review the pathophysiology and treatment of parvovirus B19 red cell aplasia.
CASE: A 35 year old African-American man with a history of HIV/AIDS (diagnosed in 1994, last CD4 count two years ago was 17, non-compliant with HAART), HSV encephalitis and MAC, presented with several days of fatigue and lightheadedness. He reported subjective fevers, chills, and symptoms of upper respiratory tract infection over the last week. He also reported shortness of breath, but denied chest pain, or a history suggesting gastrointestinal bleeding. On further history, the patient stated he had been transfused several months prior for a low hemoglobin. On physical exam, the patient was afebrile and tachycardic to 106. He was thin, with pale conjunctiva. There was no oral thrush, nuchal rigidity, or lymphadenopathy. Cardiothoracic and abdominal exams were unremarkable. He had no focal deficits on neurologic exam. On laboratory evaluation, the patient had a hemoglobin of 3.3, MCV 86, and normal platelet count, WBC, PT and PTT. LDH, haptoglobin, total and direct bilirubin were all normal, and no schistocytes were noted on a peripheral blood smear. B12, folate, and erythropoietin levels were normal, though his reticulocyte count was low. The patient was transfused four units of packed red blood cells, and was treated with three doses of intravenous immunoglobulin. His hemoglobin increased to 8.4 and remained stable thereafter, while his reticulocyte count also increased. The patient's serologies eventually returned positive for parvovirus B19 by PCR.
DISCUSSION: Acquired pure red cell aplasia (PRCA) is a rare disorder in which patients generally present with a significant anemia, reticulocytopenia, and normal white blood cell and platelet lines. Often idiopathic or associated with an early myelodysplastic syndrome, it is also caused by parvovirus B19. Unlike other acquired red cell aplasias in which the proposed pathophysiology is an immune-mediated destruction of red cell precursors, PRCA secondary to parvovirus is due to direct attack of the virus on proerythroblasts. Severe anemia induced by parvovirus B19 usually occurs only in patients who have either an underlying hematologic abnormality (e.g., sickle cell, thalassemia, spherocytosis), or who are immunosuppressed, as in this case of an HIV patient. Immunocompromised patients have depressed parvovirus-specific cellular immunity, allowing the virus to replicate relatively unchecked and cause profound anemia. In such patients the virus may also persist in a latent form, causing chronic infection and relapses. However, if the immune system is reconstituted, as in an HIV patient successfully treated with HAART, the patient may effectively clear the infection and have resolution of the anemia. Treatment for parvovirus B19 PRCA is supportive transfusions of packed red cells, and in cases of chronic infection evidenced by chronic anemia, infusions of IVIG should be administered. Response to treatment with IVIG should result in an increased reticulocyte count and ultimate correction in the anemia.

ABDOMINAL PAIN AND JAUNDICE: A FAMILY AFFAIR. J.C. Singh[1]; H.S. Singh[1]; P.J. Rosenthal[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 171203)*

LEARNING OBJECTIVES: 1) Appreciate the manifestation of gallstone disease as a sequala of hemolytic anemia. 2) Recognize the importance of family history in diagnosis of hereditary spherocytosis.
CASE: A 30 year old Guatamala-born male presented with severe, non-radiating, epigastric and right upper quadrant abdominal pain, intermittent for the past two years, requiring several prior hospitalizations. Pain was accompanied by moderate nausea, vomiting, and his "skin turning yellow." He also reported several episodes of his four year old son turning yellow when sick. Physical examination revealed an afebrile jaundiced young man with scleral icterus, right upper quadrant tenderness, and marked splenomegaly. Laboratory examination revealed microcytic anemia with an elevated reticulocyte count, mean corpuscular hemoglobin concentration, total and direct bilirubin, aspartate aminotransferase, alanine aminotransferase, alkaline phosphatase, and lipase. A blood smear was notable for anisocytosis and numerous spherocytes. Right upper quadrant ultrasound showed gallstones with common bile duct dilation. Computed tomography showed massive splenomegaly, gallstones, and obstruction of the common bile duct with evidence of early pancreatitis. The stones were radio-opaque, suggesting pigment composition. An osmotic fragility test was also positive in both our patient and his son, supporting our clinical suspicion of hereditary spherocytosis. Laparoscopic cholecystectomy and splenectomy were carried out and the patient was discharged after four days without complications. Follow up tests after 2 weeks of surgery revealed that his liver function, lipase, and bilirubin levels had returned to the normal range.
DISCUSSION: Hereditary spherocytosis is the most common hemolytic anemia due to red cell membrane defects. It can present with anemia, jaundice and splenomegaly. Cholelithiasis and choledocholithiasis are common complications, especially in adults with severe hemolytic disease. This case illustrates that hyperbilirubinemia caused by hemolytic anemia can present with signs and symptoms of gallstone pancreatitis. In one prior study, 20 of 54 patients with hereditary spherocytosis developed gallstones over 25 years of follow-up. Our case highlights the importance of a suggestive family history, which redirected the investigation towards a disease that was relatively unlikely in a Hispanic patient. It has been concluded by some authors that, for patients with hereditary spherocytosis, combined prophylactic splenectomy and cholecystectomy may provide a substantial gain in quality-adjusted life expectancy, both for asymptomatic patients under age 39 with gallstones and for patients under age 52 with gallstones accompanied by occasional episodes of biliary colic. In summary, patients presenting with hemolytic anemia (jaundice, anemia, and splenomegaly) or pigment gallstones should be investigated for red cell membranopathies. In such instances, a complete family history and peripheral blood smear can be enough to yield the diagnosis of hereditary spherocytosis.

ACHROMOBACTER XYLOSOXIDANS - AN UNUSUAL CAUSE OF LUNG ABSCESS. S.J. Thomas[1]; G. San Pedro[1]. [1]Louisiana State University Medical Center at Shreveport, Shreveport, LA. *(Tracking ID # 172930)*

LEARNING OBJECTIVES: 1. Recognize the potential for unusual organisms causing infections in the immune compromised host. 2. Add Achromobacter xylosoxidans to the list of unusual pathogens causing lung abscesses in immune deficient patient. 3. Recognize the high case fatality rate for undiagnosed and therefore inappropriately treated infection with Achromobacter xylosoxidans.
CASE: A 41 year old female patient presented with malaise, anorexia, 10 lbs weight loss and productive cough of two weeks duration. She had a history of chronic kidney disease and osteosarcoma right proximal fibula which had been treated by an above knee amputation 5 months ago. She had since then received chemotherapy with Adriamycin and Cisplatin. Her chemotherapy has thus far been without complications. On initial presentation the chest radiograph showed a poorly defined oval pulmonary lesion in the right mid lung field suspicious for a metastatic lung lesion. Follow up CT scan thorax revealed a cavitary pulmonary parenchymal lesion measuring 5×3.3 cm in the peripheral superior segment of the right lower lobe with an internal air fluid level. This was followed by a CT guided biopsy which led to isolation of Achromobacter xylosoxidans from the tissue obtained. In the interim, multiple sputum cultures were negative for acid fast bacilli as well as fungi and bacterial pathogens. Blood cultures were negative for bactreria, and fungi. Patient was treated with a 4 week course of Ertapenem based on cultures and removal of intravenous access leading to good response to therapy.

DISCUSSION: Achromobacter xylosoxidans is a catalase and oxidase positive, motile, gram-negative rod that oxidizes xylose and glucose. A wide variety of infections with this organism have been reported in the immunecompromised host. The most common type of infection appears to be catheter related bacteremia although pneumonia, endocarditis, meningitis, endopthalmitis and septic shock caused by this organism have been described (1). The reported case fatality rate in adults with A.xylosoxidans infection is 30% and in infants as high as 80% (2). There have been 3 reported liver abscesses (3) caused by this organism but to our knowledge no documented case of lung abscess has yet been reported. At this time there are no established treatment recommendations for cavitary pulmonary parenchymal disease caused by this organism although long term carbapenems and search and removal of possible source such as indwelling vascular access catheters appears to be effective. REFERENCE:- 1. Bacteremia caused by Achromobacter and Alcaligenes species in 46 patients with cancer (1989–2003).Aisenberg G, Rolston KV, Safdar A. Cancer. 2004 Nov 1; 101(9):2134–40. 2. Achromobacter xylosoxidans bacteremia: report of four cases and review of the literature. Duggan JM, Goldstein SJ, Chenoweth CE, Kauffman CA, Bradley SF. Clin Infect Dis. 1996 Sep; 23(3):569–76. 3. A novel bacterium Achromobacter xylosoxidans as a cause of liver abscess: three case reports. Asano K, Tada S, Matsumoto T, Miyase S, Kamio T, Sakurai K, Iida M. J Hepatol. 2005 Aug; 43(2):362–5.

ACUTE LIVER FAILURE DUE TO MULTIPLE MYELOMA INFILTRATION. N. Korde[1]; M. Smith[2]; L.D. Ward[3]. [1]Temple University, Philadelphia, PA; [2]Fox Chase Cancer Center, Philadelphia, PA; [3]University of Pennsylvania, Philadelphia, PA. *(Tracking ID # 172656)*

LEARNING OBJECTIVES: 1. Recognize that abnormal liver function tests demonstrate distinctive patterns that implicate disease process and pathophysiology 2. Recognize that direct infiltration of multiple myeloma cells can cause clinically significant liver failure

CASE: A 70-year old male with past medical history of multiple myeloma s/p VAD therapy suffered an acute change in mental status while undergoing an evaluation for spinal metastases and palliative radiation. The patient was initially admitted for right hip and back pain and started on narcotics and steroids for symptom control. On physical exam, vitals were stable and the patient showed signs of jaundice and somnolence with no hepatomegaly. Despite administration of naloxone and tapering of narcotics and steroids, the patient's mental status showed no signs of improvement. Hepatic function tests demonstrated liver failure consistent with a cholestatic pattern where alkaline phosphatase reached 190 IU/L, total bilirubin peaked at 21.3 mg/dL and direct bilirubin peaked at levels of 12.7 mg/dL. ALT and AST levels remained normal to high normal. An ultrasound of the right upper quadrant demonstrated a contracted gallbladder containing sludge. The liver was homogenous in echo texture without focal abnormality and no intra or extra hepatic biliary ductal dilatation was noted. Ammonia levels peaked at 126 ug/dL. The patient's mental status change was attributed to hepatic encephalopathy, and supportive therapy with lactulose was initiated. As the patient's clinical course deteriorated, family decided to withdraw care and initiate comfort measures. The patient expired 7 days after initial mental status change was noted. A limited autopsy of the liver showed diffuse infiltration of plasmacytoid cells in the portal tract area and perilobular region. Extensive portal fibrosis and expansion was noted in these areas. Hepatic parenchyma also demonstrated plasmacytoid cells infiltration with marked sinusoidal congestion and cholestastis. The plasma cells were neoplastic and consistent with the patient's original lambda chain restricted and CD3/CD20 negative multiple myeloma.

DISCUSSION: The above case illustrates that abnormal liver tests demonstrate distinctive patterns that reflect the disease process taking place within the hepatobiliary system. Our patient's normal ultrasound and predominant lab elevations in alkaline phosphatase and bilirubin levels suggest an intrahepatic cholestatic process consistent with an infiltrative pattern. Autopsy findings confirm this process by showing direct invasion of malignant cells in the liver causing marked portal triad fibrosis and bilirubin congestion with little hepatocyte necrosis. The classic systemic manifestations of multiple myeloma include osteolytic lesions within the skeletal system and myeloma kidney or light chain deposition causing renal failure. Although plasma cell infiltration of the liver has been noted in 25–40% of multiple myeloma patients on autopsy, these patients rarely demonstrate actual signs of clinically significant hepatic failure. In fact, most of the clinically significant liver failure cases linked to multiple myeloma describe the deposition of light chain material rather than direct plasma cell infiltration. The above case highlights that direct neoplastic infiltration can disrupt the hepatic architecture enough to cause clinical features consistent with liver failure, such as progressive jaundice and signs of encephalopathy.

ACUTE RESPIRATORY FAILURE IN A PATIENT WITH ACUTE MYELOID LEUKEMIA. J. Hill[1]; S. Ayyoub[1]; L.J. Staton[1]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN. *(Tracking ID # 172176)*

LEARNING OBJECTIVES: 1) Recognize that respiratory failure may develop as a result of leukostasis in acute myeloid leukemia (AML) 2) Recognize that blood transfusion may precipitate leukostasis in patients with AML

CASE: We report a fifty-nine year-old male who presented with a six-month history of fatigue and weight loss. On physical examination patient was in no respiratory distress. Significant physical finding included pallor, systolic ejection murmur at the right sternal border, and massive hepatosplenomegaly. Initial labs were significant for white blood cell count of 25,000/ul, hemoglobin of 4.7 mg/dl, and platelets 270,000/ul. Complete metabolic profile was within normal limits. Peripheral smear showed myeloid and erythroid precursors with greater than 30% blasts. Three units of packed red blood cells were transfused over 9 hours with 20 mg of lasix between each unit. Five hours following transfusion, the patient developed acute hypoxic/hypercapnic respiratory failure requiring mechanical ventilation. Lung auscultation revealed diffuse bilateral crackles. Eighty milligrams of lasix were administered with no clinical improvement. Chest radiograph revealed diffuse reticulonodular opacities in both lungs. White cell count following transfusion was 95,300/ul and 2 grams of hydroxyurea were given. A repeat white cell count on the second day was 8,000/ul which correlated with clinical resolution of respiratory failure. Follow-up chest radiographs started to improve two days following extubation. Flow cytometry and cytogenetic analysis of bone marrow aspirate was consistent with acute myeloid leukemia.

DISCUSSION: Leukostasis is a known complication of acute myeloid leukemia. In the presence of hyperleukocytosis, blood flow can be impeded in the microcirculation due to decreased flexibility of the leukemic blasts. Red blood cell transfusions can rapidly increase blood viscosity, further compromising microcirculation. Leukostasis most commonly presents with symptoms related to pulmonary and central nervous system involvement. Symptomatic hyperleukocytosis is a medical emergency requiring immediate cytoreduction using chemotherapy. Leukopheresis is an alternative treatment option when immediate chemotherapy can not be administered, although data regarding its effectiveness is limited. In our patient, respiratory failure was likely a result of leukostasis precipitated by blood transfusion in the presence of hyperleukocytosis. Our speculation is based on the temporal relationship between the transfusions, rapid increase in white cells, and the development of respiratory failure. Lack of improvement with diuretics and rapid response to hydroxyurea further support our diagnosis. Therefore, in patients with acute myeloid leukemia and hyperleukocytosis who develop respiratory or neurologic symptoms, a clinician should maintain a high level of suspicion for leukostasis as the underlying cause. Furthermore, it is strongly recommended in these patients that transfusions be administered slowly in order to avoid the risk of rapidly precipitating leukostasis.

ACUTE SPONTANEOUS TUMOR LYSIS SYNDROME WITH RENAL FAILURE IN A PATIENT WITH BRONCHOGENIC CARCINOMA. C. Shenoy[1]. [1]Guthrie/Robert Packer Hospital, Sayre, PA. *(Tracking ID # 173874)*

LEARNING OBJECTIVES: Recognize the presentation and management of acute spontaneous tumor lysis syndrome with renal failure.

CASE: A 74-year-old male presented to the emergency room after he had not urinated for over 24 hours. He had noticed decreasing urine output over the last couple of days. He had been diagnosed a week earlier with stage IV squamous cell carcinoma of the lung and was scheduled to start chemotherapy later in the week of his presentation. He had a history of COPD, heart disease, hypertension and tobacco abuse. His medications were aspirin and metoprolol. Vital signs were temperature of 99.5 F, pulse of 102, respiratory rate of 18 and blood pressure of 166/74. The physical examination was remarkable for lethargy and generalized weakness. Labs revealed a white count of 60.3 K/microL, hemoglobin of 9.6 mg/dl and a platelet count of 326 K/microL. The differential count showed 63% segmented neutrophils, 22% banded neutrophils, 5% lymphocytes, 6% monocytes, 1% basophils and 1% metamyelocytes. Chemistries showed significant hyperuricemia with a serum uric acid of 15.4 mg/dl, hyperphosphatemia with a serum phosphate of 4.7 mg/dl, hyperkalemia with a serum potassium of 5.2 mmol/L and acute renal failure with a serum creatinine of 4.7 mg/dl, with the baseline being 0.8 mg/dl. Acute spontaneous tumor lysis syndrome with uric acid nephropathy was diagnosed. Given the anuria, the patient was urgently started on hemodialysis. He was also promptly initiated on vigorous hydration and allopurinol. The uric acid level normalized after one cycle of hemodialysis, the electrolyte imbalances were corrected by the next morning and the renal dysfunction resolved to normal over the next 3 days. The leukocytosis resolved after the patient was started on chemotherapy for his bronchogenic carcinoma a few days later, and was attributed to a leukemoid reaction.

DISCUSSION: Acute tumor lysis syndrome is a catastrophic oncologic condition caused due to a rapid destruction of tumor cells with massive release of cellular breakdown products, typically seen after initiation of chemotherapy for hematologic malignancies. This condition is characterized by hyperuricemia, hyperphosphatemia, hyperkalemia, hypocalcemia, metabolic acidosis, and often, acute renal failure from uric acid precipitation within the tubules and calcium phosphate deposition in the renal parenchyma and vessels. Acute spontaneous tumor lysis syndrome is rare and describes the occurrence of acute tumor lysis syndrome prior to the institution of therapy. A few cases of the spontaneous type have been described in patients with hematologic malignancies and rarely, solid tumors of advanced stage with rapid proliferation or a large tumor burden. Management after the onset of acute renal failure consists of rasburicase and attempting to wash out the obstructing uric acid crystals with a loop diuretic and vigorous fluids. Hemodialysis to remove the excess circulating uric acid should be considered in anuric patients and in those patients in whom a diuresis cannot be induced. Our patient had advanced bronchogenic carcinoma with a bulky and necrotic tumor burden, precipitating acute spontaneous tumor lysis syndrome with renal failure. Acute spontaneous tumor lysis syndrome should be considered in the differential diagnosis of patients with malignancies who present with acute renal failure. Poor outcomes in patients with this condition make early recognition and aggressive management mandatory.

AN ODD COUPLE - GERM CELL TUMORS IN MEN AND HYPERTHYROIDISM. J. Sra[1]; K. Ramani[1]. [1]Guthrie/Robert Packer Hospital, Sayre, PA. *(Tracking ID # 173686)*

LEARNING OBJECTIVES: 1. Recognize the association between germ cell tumors in men and hyperthyroidism.
CASE: A 30 year old caucasian male with history of embryonal carcinoma of the testis, post right radical orchiectomy two years ago, presented with palpitations, heat intolerance and weight loss of ten pounds over one month. On examination, the patient was tachycardic with ECG showing sinus tachycardia. The patient also had hepatomegaly and a hard non tender left testicle. CT scanning revealed extensive pulmonary nodules, liver metastases and retroperitoneal lymphadenopathy. The liver biopsy revealed metastatic embryonal carcinoma. Initial lab studies incuded TSH level of 0.02 (normal 0.3–5.0 uIu/ml) , free T4 of 2.22 (normal 0.71–1.85 ng/dl), AFP of 1819 (normal less than 0.61 ng/ml) and beta-HCG of 1,490,000 (normal less than 5.0). Thyroid stmulating immunoglobulins and anti-thyroid antibodies were checked and were negative. The patient received three cycles of chemotherapy and the subsequent beta-HCG and AFP were markedly reduced with resolution of clinical symptoms and normalization of TSH to 1.88 and T4 to 0.8. The patient has remained asymptomatic and euthyroid since the completion of chemotherapy and follow up CT scans showed marked improvement of pulmonary nodules and a decrease in the size of the liver lesions.
DISCUSSION: The association between the subunits of TSH and HCG is well documented. The biochemical similarity between these hormones allows them to crossreact and stimulate receptors of other hormones within the group. Beta HCG dependent hyperthyroidism is commonly seen in pregnancy with hyperemesis gravidarum , hydatidiform mole and choriocarcinoma in women, and rarely in embryonal carcinoma in men. In our patient , there was complete reversal of hyperthyroidism after the initiation of chemotherapy confirming that the patient had secondary hyperthyroidism due to embryonal carcinoma. This phenomenon is believed to be due to an acidic variant of beta HCG which has greater thyroid stimulating potential than the non acidic counterparts. Our patient had tachycardia which has been described as being the commonest and often the only clinical sign of hyperthyroidism in germ cell tumors in men. There is a direct relation between the beta HCG level and serum T4. In conclusion , our case illustrates the importance of recognizing the association between hyperthyroidism and germ cell tumors in men and its appropriate management.

CASE OF PAGET-SCHROETTER SYNDROME TREATED WITH CATHETER-DIRECTED TISSUE PLASMINOGEN ACTIVATOR. E.A. Laib[1]; V.T. Martin[1]. [1]University of Cincinnati, Cincinnati, OH. *(Tracking ID # 173540)*

LEARNING OBJECTIVES: To learn the clinical presentation and management of Paget-Schroetter Syndrome.
CASE: Upper extremity venous thrombosis accounts for up to 10 percent of all cases of venous thromboembolism. Thrombosis of upper extremity veins can occur as a complication of indwelling catheters or spontaneously, called Paget-Schroetter Syndrome (PSS). PSS is a rare syndrome resulting in spontaneous or effort-induced thrombosis in the axillary or subclavian vein, often due to anatomic predisposition or a hypercoagulable state. We report a case of PSS to make clinicians aware of this uncommon disease. A 32-year-old healthy Caucasian male presented to an Emergency Department with a two day history of right arm pain and swelling. The pain was constant and unrelated to movement. He denied recent trauma, overexertion, infections, insect bites, or intravenous drug use. He denied personal or family history of blood disorders or thromboses. He was afebrile with stable vital signs. Exam of the right arm showed dark red discoloration from shoulder to fingertips. There was non-pitting edema and minimal tenderness to palpation. Pulses and function were intact. CBC, Renal panel, PT/PTT were normal. Doppler ultrasound demonstrated DVT of the axillary and subclavian veins. Coagulation studies were sent and patient was started on IV heparin. Interventional radiology was consulted and initiated catheter-directed continuous tissue plasminogen activator (tPA) within twelve hours of admission. The patient returned to radiology after 14 hour infusion for repeat venogram which showed marked improvement in thrombus and patency. After an additional 10 hours of tPA infusion, the patient was transitioned to low molecular weight heparin and coumadin. All coagulation studies returned normal (Antithrombin III, Protein C and S, Factor V Leiden, DRVVT, Prothrombin Gene Mutation, Homocysteine, Anti-Cardiolipin antibodies and Phos Serine antibodies). At the time of discharge, the patient was symptom free and instructed on appropriate follow up.
DISCUSSION: Paget-Schroetter syndrome (PSS) is a rare but potentially disabling condition that mainly afflicts young healthy individuals with spontaneous or effort-induced axillary and subclavian vein thrombosis (ASVT). ASVT only accounts for 2–4% of all DVTs and most are secondary to hypercoagulable states or indwelling venous catheters. Primary ASVT or PSS, is rare and linked to overexertion in approximately half of cases. Recurrent disabling symptoms such as edema, venous distention, venous insufficiency, pain and weakness of the affected limb occur in 33–85% of those treated only with anticoagulation and elevation. Prompt thrombolysis within 10 days of onset has been shown to improve venous patency and reduce symptoms, but 20% of cases fail to restore patency. As demonstrated in this case, one should consider prompt thrombolysis in cases of PSS to potentially prevent the morbidity of this syndrome.

CHIN NUMBNESS: SIMPLE CLUE TO A COMPLEX DIAGNOSIS. A.J. Tafur[1]; R. Oeckler[1]; T.J. Beckman[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 170097)*

LEARNING OBJECTIVES: 1. Recognize that Numb Chin Syndrome (NCS) is an important clue to specific diagnoses. 2. Identify malignancies and other disorders that are commonly associated with NCS.
CASE: An 81 year-old-male presented with several months of chin pain and numbness, drenching night sweats, 40 pound weight loss and intermittent confusion. The patient denied prior history of malignancy, jaw claudication, difficulty swallowing, change in bowel habits, ataxia, urinary incontinence, or cardiopulmonary symptoms. Physical examination was remarkable for decreased sensation to pinprick over the left chin without deformity or overlying skin changes. There was no palpable lymphadenopathy or organomegally. Pertinent laboratory studies included: Anemia and thrombocytopenia (hemoglobin: 8.7 g/dl and platelets 48,000/mL); a peripheral blood smear showing large, atypical blasts; LDH 3808 U/L (normal 122–222 U/L); beta-2 microglubilin 4.8 ug/ml (normal 0.70–1.80 ug/mL); and bone marrow biopsy demonstrating sheets of large cells with a starry sky pattern comprising approximately 90% of the marrow. Flow cytometry performed on both the bone marrow and peripheral blood revealed findings diagnostic of atypical Burkitt's lymphoma. After discussing the patient's prognosis with him, he declined palliative chemotherapy and elected to pursue hospice care.
DISCUSSION: This patient's presenting complaint was consistent with Numb Chin Syndrome (NCS), which is a sensory neuropathy of the inferior alveolar nerve. Malignancy, from either infiltration of the inferior alveolar nerve sheath, or compression of the nerve by jaw metastases or local tumor, is the prevailing cause of NCS. Notably, this patient's unique complaint of chin pain and numbness prompted additional reading, which revealed the patient's likely diagnosis with remarkable specificity, even before confirmatory studies were obtained. Malignancies most commonly associated with NCS are lymphoma, leukemia, and cancers of breast, lung, prostate, head and neck. Among the lymphomas, NCS occurs most frequently with American Burkitt's lymphoma and Burkitt-cell acute lymphoblastic leukemia. Benign diseases are less commonly associated with NCS and include dental abscess, dental anesthesia, oral trauma, osteomyelitis, amyloidosis, sickle cell disease, sarcoidosis, multiple sclerosis, HIV, and diabetes mellitus. Unfortunately, NCS often indicates a poor prognosis, as the life span from diagnosis is usually measured in months. Patient's with NCS and without an underlying diagnosis should undergo a chin radiograph to rule out mass, and if negative, an MRI should be performed. This case highlights the importance of considering unusual symptoms during the initial stages of diagnostic decision-making.

COULD AN INFORMATION LOAD PREVENT IRON OVERLOAD? A CASE OF HEREDITARY HEMOCHROMATOSIS. J.M. Barbieri[1]; L. Ward[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173878)*

LEARNING OBJECTIVES: 1. Recognize the spectrum of clinical presentations of hereditary hemochromatosis. 2. Appreciate the importance of screening for Hereditary Hemochromatosis in order to prevent long term sequelae.
CASE: A 48 yo Caucasian man diagnosed with diabetes mellitus six months prior presented complaining of sudden shortness of breath. He became acutely hypoxic and was intubated. His hemoglobin was high normal at 15.7 with a MCV of 104 and an elevated TSH of 6.85. Liver tests revealed only mildly elevated transaminases: ALT 74 and AST 89. Echocardiogram revealed cardiomyopathy with left ventricular ejection fraction of 5–10% so labs screening for an infiltrative disease were sent. Iron studies revealed a 90% transferrin saturation, ferritin was > 5000 and genetic studies were positive for homozygous presence of C282Y mutation in the HFE gene. Hematology was consulted and phlebotomy was discussed, but hematology felt it would be ineffective given the severity of end organ damage. Unfortunately, he developed multi-organ failure and expired.
DISCUSSION: Hereditary Hemochromatosis is a common, treatable condition. It is an autosomal recessive disorder linked to the short arm of chromosome six. Homozygosity for the C282Y mutation of the HFE gene is associated with iron overload and is a common genetic mutation, occurring in 0.3 to 0.5 percent of white persons of northern European descent. The classic findings of hemochromatosis are diabetes, bronze pigmentation of the skin and cirrhosis, which were first described in the 19th century. However, symptoms are often nonspecific, such as fatigue or joint pain which can begin in midlife. The natural history of hereditary hemochromatosis is often of a gradual and highly variable progression. All people who are homozygous for the C282Y mutation are genetically predisposed to gradual iron overload that can result in severe multi-organ damage. The phenotypic expression is difficult to predict. The early diagnosis of this disease today has made the classic triad of cirrhosis, bronze skin and diabetes rare at the time of diagnosis. The most common symptoms at presentation in middle-aged adults are fatigue, malaise, arthralgia and sometimes hepatomegaly with mildly increased aminotransferase levels. Lab findings often include increased transferrin-saturation values, which can be found when symptoms are absent. When symptoms or signs of hereditary hemochromatosis are identified, a fasting transferrin saturation above 45%, or above 35% in premenopausal women, on at least two consecutive occasions, even with a normal serum ferritin level, are suggestive of hereditary hemochromatosis. The next step is testing for the HFE gene. If these genetic tests are not available an alternative test is a liver biopsy. Biopsy findings of parenchymal iron distribution, with a periportal-to-central-gradient and a hepatic iron index greater than 1.9 are highly suggestive of hereditary hemochromatosis. Phlebotomy treatment can prevent some of the major complications of iron overload and patients have normal life expectancy if they are treated prior to the occurrence of organ damage. Therefore, eliciting a history of any first degree relatives with hemochromatosis may prompt genetic testing. Likewise, in patients reporting symptoms of fatigue or arthralgias, screening for hereditary hemochromatosis with transferrin saturation should be considered.

HIV AND DECREASED PEE:AN OMINOUS SIGN. L. Degregoria[1]; M.D. Landry[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 172557)*

LEARNING OBJECTIVES: 1 Establish differential diagnoses for neck mass with diffuse lymphadenopathy 2 Recognize the increased incidence of cancers in HIV infection 3 Consider earlier prostate cancer screening in HIV patients
CASE: A 45 year old African American man presented with 1 month of dull lower back pain with bilateral lower extremity numbness; abdominal pain, anorexia, early

satiety, nausea and constipation. He complained of left testicular pain and swelling, urinary hesitancy, nocturia, dysuria and incomplete bladder emptying. Review of systems included a 25 pound unintentional weight loss, subjective fevers and night sweats over the prior month. He noted a swelling to his neck for several months. Past medical history included prior TB exposure, prior incarceration, prior cocaine abuse, current tobacco and alcohol use. Physical exam was significant for: mild scleral icterus; 12×4 cm firm nonmobile mass to left lateral neck; cervical, supraclavicular and axillary lymphadenopathy; systolic ejection murmur; tenderness to left upper quadrant of abdomen, hepatomegaly; left testicular enlargement with tenderness to palpation and a palpable spermatic cord. Physical exam was otherwise unremarkable. Diagnostic testing was significant for: hemoglobin 7.7; alkaline phosphatase 324; PSA 667. Scrotal ultrasound revealed bilateral orchitis and left epididymitis. CT of neck, chest, abdomen and pelvis with contrast revealed: 4×4×6 cm soft tissue mass in the left neck, extensive retroperitoneal, mesenteric, iliac, pelvic and axillary adenopathy; extensive hepatic metastatic disease; diffuse osseous metastatic disease; bilateral pleural effusions. Fine needle aspiration of neck mass revealed poorly differentiated carcinoma staining positive for PSA. Bone scan revealed metastatic disease in skull, spine, scapulae, clavicle, pelvis and extremities. HIV test returned positive. The patient was treated with antibiotics, casodex and pamidronate, and narcotics for pain. Patient was referred to Hospice for palliative care.

DISCUSSION: Differential diagnoses of a neck mass can be broadly divided into congenital, infectious/inflammatory, and neoplastic etiologies. A number of neoplasms are increased in HIV including those which are AIDS-defining conditions: non-Hodgkin's lymphoma, primary brain lymphoma, Kaposi sarcoma, and cervical carcinoma. This higher incidence has been attributed to abnormal cell-mediated immunity, cytokine dysregulation, and inadequate tumor surveillance. HAART has decreased the incidence and improved outcomes in Kaposi's sarcoma and non-Hodgkin's lymphoma; however, this is not true for other cancers. Prostate cancer usually occurs after the age of 55. Current guidelines recommend prostate cancer screening starting at 40 for African American men and 50 for men of other races. In HIV positive patients, the incidence of prostate cancer is higher and is significantly correlated with age and duration of HIV infection. However, no relationship has yet been demonstrated between the use of HAART, CD4 cell count and the development of prostate cancer. In HIV positive young men ages 40–45, there have been several published cases of prostate cancer with advanced metastases at diagnosis. The association between earlier onset aggressive metastatic prostate cancer and HIV should prompt physicians to consider earlier screening for prostate cancer in all HIV patients. Future studies should investigate initiation of earlier cancer screening for breast, colon and prostate cancers in HIV.

HYPOMAGNESEMIA AND HYPOCALCEMIA RESULTING FROM CETUXIMAB THERAPY. H.A. Shirazi[1]; K. Sandhu[1]. [1]Saint Francis Hospital, Evanston, IL. *(Tracking ID # 172931)*

LEARNING OBJECTIVES: 1. Recognize and distinguish the classic features of hypocalcemia and hypomagnesemia. 2. Manage severe hypocalcemia and hypomagnesemia. 3. Diagnose renal mineral wasting secondary to cetuximab.

CASE: A 55-year-old male with a history of metastatic colon cancer presented to the ED with a one day history of rapidly progressive generalized weakness, nausea, and paresthesias of the face and distal upper and lower extremities. His past medical history was significant for colon adenocarcinoma diagnosed two years before with metastases to the liver at initial presentation. Medications included carvedilol and enalapril. The patient was treated with hemicolectomy and adjuvant 5-FU and oxaliplatin-based chemotherapy. He experienced a partial response of his metastatic disease to the chemotherapy, but approximately one year later the patient had disease progression. He was started on cetuximab to which he had a good response. Six weeks prior to his presentation in the ED, the patient began to experience mild, intermittent paresthesias, at first only in his face but later involving his hands and feet as well. When he arrived in our ED, the patient's fingers and wrist were in a flexion position and he had a positive Chvostek's sign. Diagnostic studies showed a QT-corrected interval of 623 ms on ECG, a total serum calcium of 4.0 mg/dl (8.7–10.5 mg/dl), ionized calcium of 0.64 mmol/L (1.15–1.29 mmol/L), serum magnesium of 0.5 mg/dL (1.7–2.8 mg/dL), serum phosphorus of 4.4 mg/dl (2.4–4.3 mg/dL), an elevated PTH level, a normal TSH, and a normal 1,25-dihydroxy Vitamin D level. 24-hour urine studies demonstrated calcium and magnesium wasting, but no urine sodium and potassium wasting with a normal urine pH. Intravenous calcium gluconate and magnesium sulfate treatment was initiated. The patient's symptoms and physical findings began improving within several hours of starting mineral replacement and were completely resolved within 48 hours. His serum ionized calcium and magnesium levels did not return to a normal range even after a week of aggressive mineral replacement, though he remained asymptomatic.

DISCUSSION: Hypomagnesemia and hypocalcemia are often caused by impaired gastrointestinal absorption or increased renal excretion of magnesium or calcium. In addition, hypomagnesemia itself may cause hypocalcemia through hypomagnesemia-induced end-organ resistance to PTH. In our patient, PTH hormone was appropriately elevated in response to a dangerously low serum calcium, making hypoparathyroidism an unlikely source of the patient's hypocalcemia. To date, 21 cases of cetuximab-induced hypomagnesemia have been reported. Cetuximab is a monoclonal antibody to epidermal growth factor receptor (EGFR). EGFR is strongly expressed in the loop of Henle and the distal convoluted tubule, which are also the sites of the majority of magnesium and calcium reabsorption in the kidney. The findings of elevated urine calcium and magnesium in our index case are consistent with a cetuximab-induced mineral-wasting nephropathy. In cases of mild hypomagnesemia and concordant mild hypocalcemia, correction of serum magnesium alone is sometimes adequate to raise serum calcium levels to a normal range; our patient required emergent correction of both his calcium and magnesium. Oncologists using cetuximab should be aware of the possible effects of this drug on serum magnesium and calcium levels.

MICROCYTIC ANEMIA, TELL ME WHAT'S YOUR JOB? A. Emadi[1]; L. Coberly[1]. [1]University of Cincinnati, Cincinnati, OH. *(Tracking ID # 172187)*

LEARNING OBJECTIVES: 1) To appreciate the importance of a detailed social and occupational history in anemic patients. 2) To recognize the utility of reviewing the peripheral blood smear in anemic patients.

CASE: A 47-year-old male with a history of alcohol and polysubstance abuse was admitted for fatigue, dizziness and dyspnea on exertion. The patient had recently been working for two months in a non-ventilated old house (built around 1850) for 10–12 hours per day. He was scraping paint off "all the way down to the wood". He did not use a mask. On physical exam the patient had pale conjunctiva, mild epigastric pain without any mass or hepatosplenomegaly. There was 1–2+ edema in lower extremities. Lung, heart and complete neurological exam were normal. Lab results revealed a hemoglobin of 7.8 g/dL with MCV of 69.7 fL, MCH 22.0 pg (low), MCHC 31.6 g/dL (low), WBC 5600, PLT 203,000. Serum iron, TIBC, ferritin, soluble transferrin receptor, B12, folate, LDH and hemoglobin electrophoresis were normal. Reticulocyte count was 3.21% (0.5–2%). Stool was negative for occult blood. Peripheral blood smear showed marked basophilic stippling and target cells. Serum lead and free erythrocyte protoporphyrin levels were 59 mcg/dL and 158 mcg/dL (0–35), respectively. He was transfused 2 units of packed red blood cells and a post-transfusion hemoglobin was 9.5 g/dL. Two weeks later at outpatient follow-up, repeat labs revealed a hemoglobin of 10.1 g/dL with MCV of 72.4 fL and a reticulocyte count of 1.3%. His lead level was unchanged at 59 mcg/dL.

DISCUSSION: In the US lead-based paint was banned in 1978. The 1986 amendments to the federal Safe Drinking Water Act banned the use of lead solder and leaded pipes from public water supply systems and plumbing. The use of leaded gasoline was phased out during the early 1990s. However, today there are still about 38 million homes that contain lead paint - about 40% of all US houses. Although this is an old story, with the signs and symptoms of lead poisoning known for millennia, it is also a new story. Center for Disease Control (CDC) set an objective in "Healthy People 2010" to reduce the number of persons who have elevated blood lead concentrations from work exposures from 93 per million persons aged 16 to 64 years with blood lead concentrations of 25 mcg/dL or greater in 1998 to Zero persons per one million in 2010. Blood lead level is the most commonly accepted and verifiable biomarker for lead exposure. THERE IS NO TOXIC TRESHOLD FOR LEAD. CDC and the American Pediatric Association consider blood levels 10 mcg/dL to be excessive for infants, children, and women of childbearing age. Occupational exposure is unsafe when worker's blood levels exceed 30 mcg/dL. Diagnosis of lead poisoning in an adult requires a high index of suspicion and a careful history. The infrequency of classic diagnostic signs and the nonspecific nature of the symptoms frequently contribute to misdiagnosis. Obtaining comprehensive social and occupational history (e.g. manufacturing of auto batteries, demolition or sanding of lead-painted houses, bridges, environmental exposure to paint chips, house dust (in home built <1975), etc) can serve as a sensitive and inexpensive tool for increasing the suspicious of lead toxicity in a patient with microcytic anemia, normal iron studies and presence of basophilic stippling in peripheral blood smear.

PANCYTOPENIA: AN UNCOMMON PRESENTATION OF B12 DEFICIENCY. A. Mackenzie[1]; S.H. Ward[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173264)*

LEARNING OBJECTIVES: 1. Review the diagnostic algorithim for pancytopenia 2. Recognize pancytopenia as a rare but significant presentation of B12 deficiency.

CASE: A 95 year-old African-American woman with mild dementia was brought to the emergency department by her neighbor for increasing somnolence. At baseline, the patient was alert and active but on the day of presentation, her neighbor found her minimally responsive and reported poor PO intake over the prior 24 hours. The patient had no history of trauma, and denied dizziness, palpitations and chest pain. She formerly smoked and drank alcohol occasionally. On physical exam, she was awake and alert with a BP of 98/42. She was cachectic with temporal wasting. Neurologic exam revealed 4/5 strength in the extremities which was equal bilaterally, and intact sensation throughout. Rectal exam found heme positive brown stool. Laboratory data revealed a hemoglobin of 6.7, a WBC of 2.7 and platelets of 75. The MCV was 121 and the RDW was 23.5. The absolute reticulocyte count was 35.6 (30–150). Iron studies, B12, and folate were measured with results as follows: Fe 191 (60–120), TIBC 299 (225–410), %Fe Sat 64, Ferritin 717 (5–277), Folate 16.6 (2–14) and B12 6 (200–1200). The patient was transfused 2 units of PRBCs for her anemia, and started on cyancobalamin 1 mg IM daily for B12 deficiency.

DISCUSSION: The differential diagnosis of pancytopenia is extremely broad. One approach is to classify the underlying etiology based on the degree of marrow involvement. Pancytopenia can be seen in patients with hypocellular bone marrow, resulting from decreased hematopoietic cell production in the bone marrow, as seen in infiltrative processes such as malignant cell infiltration. Alternatively, it may be present in patients with normocellular marrow, as occurs in hypersplenism when cells are sequestered peripherally. Common causes of pancytopenia include aplastic anemia (both acquired and inherited), primary bone marrow disorders such as myelodysplastic disease, systemic illness including SLE and hypothyroidism, and infectious causes such as HIV and tuberculosis. Although not a common cause of pancytopenia, Cobalamin

deficiency must be considered in the evaluation of patients with pancytopenia. Cobalmin deficiency results in deranged purine synthesis and is typically characterized hematologically by a severe macrocytic anemia (MCV > 100, often > 115), and a low to low-normal reticulocyte count. The peripheral blood smear shows macroovalocytes, megaloblasts and hypersegmented neutrophils. In severe B12 deficiency, as seen in this case, patients may become pancytopenic with all hematologic cell lines affected. The diagnostic approach to pancytopenia begins with history and exam, peripheral blood smear, reticulocyte count and iron studies. In B12 deficiency, the smear should reveal the diagnostic granulocytes and lead to serum B12 and folate measurements. If the initial evaluation is unrevealing, bone marrow biopsy is appropriate, including karyotyping and cytogenetics as indicated. Treatment of pancytopenia involves treatment of the underlying disorder with transfusions of blood and platelets as dictated by the clinical scenario.

PRIMARY CNS LYMPHOMA IN THE IMMUNOCOMPETENT. G. Suneja[1]; V. Jegapragasan[1]; R. Gupta[1]; D. Paggioli[1]; A. Birnbaum[1]. [1]Brown Medical School, Providence, RI. *(Tracking ID # 172544)*

LEARNING OBJECTIVES: 1. Explore the etiology and pathogenesis of PCNSL in the immunocompetent population. 2. Investigate the various modalities and integrated approaches for PCNSL treatment.
CASE: A 53-year-old Tibetan female with a past medical history of cerebral malaria presented to the ER with a seizure following several days of progressively worsening headaches. Evaluation with MRI revealed a right frontal lobe mass suspicious for high-grade glioma, and the patient underwent right frontotemporal craniotomy. Pathology revealed a diffuse large B-cell lymphoma with tumor cells positive for CD45, CD20, bcl-2, and bcl-6. Subsequent work-up revealed no lymphadenopathy, no ocular involvement or bone marrow infiltration, and HIV negative status. Laboratory values were as follows: Creatinine 0.5, LDH 182, ALT 145, AST 87, WBC 7.9, Hg 12.2, Hct 35.4, Platelets 150. The patient started chemotherapy with high dose IV methotrexate at 6 g/mˆ2. After two rounds of chemotherapy, the patient developed a wound infection at the surgical incision site requiring debridement and treatment with oral antibiotics. Following resolution of infection, the patient completed 2 more cycles of chemotherapy. MRI preceding the 4th cycle showed decreased enhancement of tumor cavity.
DISCUSSION: Primary central nervous system lymphoma (PCNSL) is an extranodal non-Hodgkin's lymphoma limited to the CNS and eye. Once exceedingly rare in immunocompetent individuals, the incidence of PCNSL has grown more than 10-fold over the past three decades in the United States, and now represents approximately 4–7% of newly diagnosed primary CNS tumors. Although predisposing factors such as flu-like or GI illness and demyelinating disease have been suggested, the etiology remains unclear. Currently, it is not known whether malignant transformation occurs locally within lymphocytes traveling through the CNS, or if it occurs systemically in a subset of lymphoid aggregate-bearing tissues with CNS tropism. Alterations in enzymes necessary for folate metabolism are likely involved in oncogenesis. Additionally, it is unclear whether the patient's history of cerebral malaria contributed to the development of PCNSL. There is no evidence to date linking this type of CNS insult with subsequent development of malignancy. At present, no consensus has been reached on optimal treatment for PCNSL. The role of surgery is generally limited to stereotactic biopsy to acquire pathologic specimens. Methotrexate (MTX) has become a mainstay of therapy in newly diagnosed disease as several phase II studies have shown MTX-containing regimens to confer the best survival to patients. Patients considered unfit for treatment with high dose MTX can instead be treated with alternative chemotherapy, steroids, and/or radiation. Whole-brain radiation as a primary treatment modality has fallen out of favor as the burden of subsequent neurotoxicity has become more apparent. The role of radiotherapy as an adjunct to chemotherapy or medically refractory disease is the topic of ongoing research. Though currently available treatment protocols are not curative, they confer a survival advantage over untreated PCNSL, which has a rapidly fatal course. The patient discussed above will continue treatment in accordance with the NCI/MGH protocol - MTX dose will be increased to 8 g/mˆ2 for maximal tumor response, followed by leucovorin rescue every 14 days until complete remission is achieved or up to a maximum of 8 cycles.

PULMONARY EMBOLISM (PE) IN HIV DUE TO INCREASED LEVEL OF FACTOR VIII. M. Singh[1]; S. Thomas[1]; R. Jackson[1]. [1]Louisiana State University Medical Center at Shreveport, Shreveport, LA. *(Tracking ID # 173326)*

LEARNING OBJECTIVES: 1) Consider PE in the differential diagnosis in a patient with HIV and chest pain 2) Recognize the various causes of PE/Venous Thrombotic Disease in an HIV patient.
CASE: 58 yo AAM with HIV and CD 4 count of 226 presented to the ER with left sided chest pain for two days and was diagnosed with acute coronary syndrome in the ER. His vitals were stable. He had excellent performance status. Pertinent lab work showed normal EKG and negative troponins. His pulse ox was 96% on RA. He had an elevated D dimer of 20. CXR showed left sided pneumonic process. His CT chest showed left sided PE with lung infarction. Venous Doppler of both lower extremities was negative for deep vein thrombosis. The hypercoagulable work up showed decreased levels of Protein S (34%) and increased levels of Factor VIII (389%). AT III, Protein C, Factor V levels were normal. Lupus anticoagulant and Anticardiolipin antibodies were negative. The Prothrombin mutation was absent. The urine drug screen was negative. The patient was initially treated with fragmin and coumadin. After achieving therapeutic INR, he was treated with oral coumadin.
DISCUSSION: The incidence of venous thrombotic disease is two to ten folds more in patients with HIV as compared to healthy population of the same age. The factors associated with VTE in HIV are age more than 45 yrs, opportunistic infections like CMV, hospitalization, immobility, use of Megace or Indinavir, malignancies, autoimmune hemolytic anemia, Protein C and S deficiency, deficiency of Heparin cofactor II , abnormalities in fibrinolysis, decreased levels of AT III and increased levels of Factor VIII. HIV is a chronic inflammatory state. Both acute and chronic inflammation cause activation of the coagulation pathway and down regulation of expression of numerous proteins necessary for fibrinolysis via the cytokines like TNF alpha, IL 1 and IL 6. Inflammation also leads to decrease in functional Protein S, the cofactors necessary for Protein C activity and elevated factor VIII levels. Elevated factor VIII is associated with increased incidence of DVT/PE in HIV negative patients and the incidence increases seven times when the factor VIII level is above the 90th percentile. Abnormal levels of factor VIII and Protein S associated with inflammation do not show relationship with CRP levels (a marker of inflammation). Low level of Protein S in this case could be due to acute PE. The duration of treatment with oral anticoagulant depends on the risk of recurrent thromboembolism and risk of bleeding.

RARE PRESENTATION OF EXTRANODAL CHRONIC LYMPHOCYTIC LEUKEMIA. S. Chalasani[1]; S.V. Bhupathi[1]; H. Parameswaran[2]. [1]Marshfield Clinic, Marshfield, WI; [2]Medical College of Wisconsin, Milwaukee, Milwaukee, WI. *(Tracking ID # 172506)*

LEARNING OBJECTIVES: Chronic lymphocytic leukemia (CLL) is the most common form of adult leukemia among Caucasians accounting for approximately 30% of all leukemias. Most pulmonary complications associated with CLL are secondary to infections. Leukemia infiltrates are rare, however, they should be considered in the differential diagnosis.
CASE: A 56-year-old-male with a history of rapidly progressing CLL (Rai stage IV) which was previously treated with Fludarbine, Campath, Cytaxan and steroids presented with a four week history of worsening dyspnea and cough. Physical examination revealed BP of 122/76 mm Hg, temperature of 97.8°F, pulse of 110 beats/min, respiratory rate of 26 breaths/minute, and oxygen saturation of 94% on 6 L oxygen. The patient appeared fatigued and diaphoretic with nasal congestion. Lung examination showed expiratory wheezes and diminished breath sounds. Matted lymph nodes were present bilaterally in cervical, axillary, and groin regions. Abdominal examination showed no organomegaly. Initial laboratory investigations revealed a hematocrit of 35%, platelet count of 251,000/mcl, and WBC of 19,400/mcl with 18% neutrophils and 47% lymphocytes. Chest x-ray showed diffuse bilateral parenchymal opacities. Chest CT revealed massive retroperitoneal, mesenteric, pelvic, axillary, mediastinal, and neck lymphadenopathy with diffuse bronchial and peribronchial wall thickening suggesting endobronchial infection in the setting of profound immunosupression. Initial management included antimicrobials, bronchodilators, and oxygen. Blood and bronchioalveolar lavage cultures returned negative for bacteria, fungi, and viruses. Endobronchial biopsy showed atypical lymphoid infiltrates suspicious for Non-Hodgkin's lymphoma. Paraffin markers suggested B-cell phenotype CD5 and CD20. Prior to admission, the patient underwent bilateral sinus biopsies for recurrent sinusitis which also returned positive for CLL infiltration. A diagnosis of CLL infiltration of the sinuses and endobronchial region was made and was thought to be causing the patient's symptoms. He was treated with steroids and chemotherapy (i.e., Hyper-CVAD with fractionated Cyclophosphamide, Vincristine, Adriamycin, and Dexamethasone), which resulted in symptomatic improvement. A 1-month follow-up CT showed resolution of the pulmonary parenchymal infiltrates and reduced lymphadenopathy.
DISCUSSION: CLL primarily involves bone marrow and lymphoid tissue. Organ infiltration is extremely is rare. Autopsy studies have shown 40% CLL infiltrates of the lung. However, in most patients, leukemic cell infiltrates are clinically insignificant. Chronic sinusitis as a presenting complaint for nasal infiltration of CLL has only been reported in one prior case report. Exclusion of the infectious etiology together with tissue diagnosis is necessary to establish leukemic infiltration. Steroids and chemotherapy are the primary treatment. We present a unique case of extranodal CLL infiltration of the sinuses and lungs showing a rapid response to steroids and chemotherapy.

RECURRENT HEMATEMESIS AS AN ATYPICAL PRESENTATION OF MULTIPLE MYELOMA: THE AMYLOID CONNECTION. E. Nagrant[1]; D. Mcadams[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172299)*

LEARNING OBJECTIVES: 1. To recognize the clinical manifestations of systemic amyloidosis. 2. To diagnose the underlying cause of systemic amyloidosis.
CASE: A 64-year-old female presents with recurrent hematemesis. Five months prior, the patient developed a DVT after a long car ride and was admitted and anticoagulated. Hematemesis began two weeks later, prompting cessation of anticoagulation and inferior vena cava filter placement. Endoscopy revealed gastritis with H. pylori positive biopsy for which treatment was initiated. During hospitalization, she developed a second DVT and anticoagulation was reinstated. Hypercoagulable studies were negative. One week prior to transfer, a second episode of hematemesis prompted admission to an outside hospital. Also discovered were transudative pleural effusions. After transfer, endoscopy showed hemorrhagic, nodular mucosa in the proximal stomach. Amyloid was noted on biopsy, positive for transthyretin with a kappa/lambda ratio of 3.07. Multiple Myeloma (MM) was considered as a cause of systemic amyloidosis, confirmed by the following labs: IgA monoclonal (M-) spike of 1.12 g/dL on serum protein electrophoresis, 26% plasma cells, kappa-chain restricted, on bone marrow biopsy, and hemoglobin = 9.5. During admission

she developed sinus bradycardia with periods of junctional rhythm with heart rates as low as 34. EKG showed low voltage. Echocardiogram showed left ventricular hypertrophy (LVH) with diastolic dysfunction. Pleural effusions responded to aggressive diuresis. Subsequently she began treatment for MM with thalidomide and pulse dexamethasone with resolution of LVH and decrease in her M-spike to 0.2 g/dL. She is currently receiving melphalan and undergoing stem cell transplantation.
DISCUSSION: Amyloidosis is a term referring to extracellular tissue deposition of fibrils composed of various low molecular weight serum proteins. Systemic amyloidosis can involve many organ systems and present in various ways: kidney (proteinuria), liver (intrahepatic cholestasis, coagulation factor deficiencies), heart (LVH, systolic or diastolic dysfunction, arrhythmia, infarction), musculoskeletal (pseudohypertrophy, macroglossia, arthropathy), gastrointestinal tract (pseudo-obstruction, hemorrhage), nervous system (neuropathy), skin (waxy plaques, ecchymoses, purpura) and rarely lungs (transudative pleural effusions, nodules). Definitive diagnosis is made with biopsy of suspected tissue or commonly involved sites such as the abdominal fat pad or rectum demonstrating positive Congo Red stain and Amyloid P immunostain. Discovering amyloid deposits on biopsy prompts investigation to find the underlying source and direct treatment accordingly. Additional immunostains further classify amyloid type. Types may include AL (primary) alone or in association with MM, AA (secondary or reactive), heredofamilial, age-related and hemodialysis associated. Transthyretin is typically associated with age-related amyloid, but may be positive in other forms such as AL. An elevated kappa/lambda ratio is consistent with AL amyloid. The three criteria for MM include an M-spike on serum or urine protein electrophoresis, $>10\%$ clonal plasma cells in bone marrow, and end organ damage (anemia, hypercalcemia, lytic bone lesions, renal failure). Treatment is targeted at underlying MM with thalidomide and pulse dexamethasone. High-dose melphalan with subsequent stem cell transplantation is used in patients with significant amyloid involvement.

RIGHT UPPER EXTREMITY PAIN AND NUMBNESS: AN UNUSUAL PRESENTATION OF NON-SMALL CELL LUNG CANCER (PANCOAST'S TUMOR). M.P. Rose[1]; D. Nicolo[1]; L.D. Ward[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173858)*

LEARNING OBJECTIVES: 1) Recognize upper extremity weakness, pain and numbness as a presentation of Non-Small Cell Carcinoma, 2) Review the manifestations and treatment of Pancoast's tumor
CASE: 73 y/o African American female with a past medical history significant for hypertension, osteoporosis and hypercholesterolemia presented to the outpatient clinic with right arm pain for approximately one month. The pain was described as an aching pain, worse at night, and not relieved with acetaminophen or ibuprofen. She reported only right arm pain and weakness and denied any trauma to the arm. Medications included risedronate, quinapril and simvastatin. Social history was notable for a 30 plus pack year smoking history, and the patient was currently smoking 1/2 a pack/day. Physical examination was notable for mildly decreased grip strength in the right hand and numbness in the tips of her 4 fingers with sparing of the thumb. After failing, conservative treatment with NSAIDs and physical therapy, she returned two months later with continued numbness of her four digits. MRI of the cervical spine was ordered and was negative for stenosis. Eight weeks later the patient returned to the office with continued numbness and significant hand weakness manifested by appreciable decreased grip strength. She was referred to physical medicine and rehabilitation and scheduled for CT thorax. CT thorax was notable for a mass that violated the pleural membrane and invaded the right sternocleidomastoid, consistent with a Pancoast's tumor. The mass was biopsied and identified as Non-Small Cell Lung Carcinoma (NSCLC). At the time of diagnosis the patient was noted to have developed a Horner's syndrome.
DISCUSSION: Pancoast's tumor, or superior sulcus tumor describes neoplasms located at the superior pleuropulmonary groove and adjacent to the subclavian vessels. Most Pancoast's tumors are NSCLC, mainly squamous cell carcinoma but can also be adenocarcinoma. Shoulder pain, produced by invasion into the brachial plexus, parietal pleura, or bony structures, is the most common initial symptom of superior sulcus tumors and reported in 44–96% of cases. Upper extremity neurological findings, including weakness, pain and paresthesia of the arm and digits, occur in 8–22% of cases as the tumor extends to the C8 and T1 nerve roots. Invasion of the intervertebral foramen may result in spinal cord compression and paraplegia. Other findings can include supraclavicular lymph node enlargement, weight loss, phrenic and recurrent laryngeal neuropathy, and superior vena cava syndrome. Due to the location of superior sulcus tumors, most tumors are diagnosed by percutaneous needle biopsy. Pancoast's tumors and NSCLC are staged using the same TNM system. Pancoast's tumors are usually T3 or T4 at diagnosis, because extension of the tumor into surrounding structures results in the presenting symptoms. Accurate staging and identification of tumor metastasis are essential to proper treatment. The most common treatment of Pancoast's tumors is radiotherapy, which decreases the size of tumors, followed by surgical resection. In patients treated with preoperative radiotherapy and extended surgical resection, the overall five-year survival rates average about 30% (3). Systemic metastasis is the most common cause of death, usually with brain involvement. With advanced metatastic tumors, combined modality therapy involving chemotherapy, radiation and surgical resection may improve survival outcomes (4).

SILICONE PROSTHESES-A FORGOTTEN CAUSE OF LYMPHADENOPATHY. D.L. Wahner-Roedler[1]; M.J. Morton[2]; C.A. Reynolds[2]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN; [2]Mayo Clinic, Rochester, MN. *(Tracking ID # 171567)*

LEARNING OBJECTIVES: To recognize silicone lymphadenopathy (SLA) as a sequela of silicone breast implants (SBIs).
CASE: A 37-year-old female presented with left axillary lymphadenopathy of two weeks duration. She had a positive family history for breast cancer (mother at age 48). Past medical history: Bilateral SBIs at age19 for augmentation, replacement with a smaller set of SBIs at age 22. Physical exam: Status post bilateral SBIs, two 1.5 cm left axillary nodes. Radiologic studies: mammogram: subglandular bilateral SBIs. On right MLO view small sliver of silicone outside confines of SBI. Ultrasound (US) of palpable axillary nodes: classical appearance of SLA with bright echogenic hili and "snow storm" appearance of microscopic silicone. MRI: intact SBIs. Procedure: US-guided biopsy of axillary lymph nodes. Pathology: coalescent groups of histiocytes and foreign body giant cells consistent with SLA.
DISCUSSION: SBIs have been used for breast reconstruction following mastectomy and for breast augmentation for more than 40 years. Morphologic changes in regional lymph nodes from patients with SBIs, collectively designated SLA, were first described in 1978. Etiology of SLA: SLA is caused by leakage of silicone to axillary lymph nodes. The two mechanisms by which silicone can escape from SBIs are rupture (median life span of SBIs 16 years with 49% of implants being intact at 15 years) and gel bleed by seepage of silicone gel through the semipermeable outer membrane (estimated rate of gel bleed from intact implants up to 100 mg per year for older implants). Pathology: Characteristic findings include lymphoid hyperplasia with scattered histiocytes and multinucleated giant cells, some containing refractile and non-birefringet particles, scattered throughout the lymph node, with concentration in the sinusoidal region. Histologic evidence of SLA has been reported in 91% of 96 patients with SBIs, palpable lymphadenopathy is much less frequent. Diagnosis: Although breast MR imaging is highly accurate in identifying implant rupture and outperforms US and mammography in the detection of intracapsular implant rupture and extracapsular spread of silicone, it is not clear that MR imaging is superior to these imaging modalities in the detection of SLA. Extracapsular silicone contained in granulomata and lymph nodes has a characteristic "snowstorm" appearance on sonography. Clinical significance: The clinical significance of SLA has different facets. In the patient presented with a positive family history of breast cancer there was concern about a small cancer not visualized on mammography and already spread to axillary nodes. In a patient who has had postmastectomy reconstructive surgery using SBIs, the clinical differential diagnosis of regional lymph node enlargement should include SLA as well as metastatic breast cancer. In a series of 23 patients with SBIs and palpable SLA who underwent axillary lymph node biopsy, changes of SLA were seen in all patients, 7 of these patients also had metastatic cancer. There are further several case reports describing coexistent SLA and lymphoma in the same node. Clinical implications: when evaluating a patient with SBI and axillary lymphadenopathy, SLA should be included in the differential diagnosis. The characteristic sonographic appearance may be more accurate than MR imaging for diagnosing SLA. Detection of silicone in the axilla does not rule out cancer and US guided lymph node biopsy is indicated.

SINISTER ATAXIA. N. Kumar[1]; M. Scheidt[2]; K. Kutty[2]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]St. Joseph Regional Medical Center, Milwaukee, WI. *(Tracking ID # 173866)*

LEARNING OBJECTIVES: 1. Recognize the clinical signs and metastatic manifestations of rare malignancies. 2. Emphasize the importance of multidisciplinary approach and good communications when dealing with complicated disease processes.
CASE: A 51-year-old African American woman presented to the hospital with a two-week history of headache, gait imbalance and dizziness. She described her headache as progressive, constant, located in the back of her head and associated with nausea. She also noted unsteadiness of gait with swaying more towards the right side and intermittent blurred vision. She was previously healthy except for type 2 diabetes mellitus, a 60-pack-year smoking history and detection of two small masses in her left breast about 1 month ago. Her physical examination revealed abnormal right-sided cerebellar function, including dysdiadokinesia, abnormal heel-shin/finger-nose test and broad-based, unsteady gait. She had two firm, non-tender, freely movable, 2–3 cm masses in the medial upper quadrant of the left breast without nipple discharge or axillary lympadenopathy. Chest radiograph showed a 2 cm nodule in the right mid-lung, confirmed by chest CT. Imaging of the brain showed a 4×2 cm, multiloculated, cystic mass in the right cerebellar hemisphere with some surrounding edema and distortion of the 4th ventricle but no evidence of hydrocephalus. Ultrasound-guided core biopsy of the breast masses showed a poorly differentiated small cell neuroendocrine tumor. She then underwent resection of her cerebellar mass which showed similar histopathology. The patient's symptoms improved significantly after craniotomy, and she was started on whole brain radiation with chemotherapy. A subsequent PET also showed some retroperitoneal metastasis. Two months following these interventions, she is doing well and still undergoing radiation therapy.
DISCUSSION: Metastatic malignant lesions to the breast are exceedingly rare and account for 0.4–2% of all breast malignancies. However, their recognition as metastases rather than primary breast cancer is important to obviate a mastectomy and institute appropriate evaluation and treatment. The most common malignancies that metastasize to the breast are melanoma and small cell lung carcinoma. Small cell neuroendocrine tumors of the lung are among the most aggressive of all neuroendocrine tumors, and breast metastasis from these is exceedingly rare, with only one case reported in the literature. They have a very poor prognosis and in one report eighty percent of patients with breast metastasis from carcinoids died within 1 year of diagnosis. Cases of primary small cell neuroendocrine tumors of the breast have been reported in the literature but these were in the absence of lung lesions. As reported previously in the literature, a neuroendocrine tumor in the breast warrants evaluation for a primary lung cancer.

SIX PLUS SIX DOESN'T ALWAYS EQUAL TWELVE. K. Widmer[1]; M.D. Landry[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 172402)*

LEARNING OBJECTIVES: 1 Identify mixed anemia with microcytic and macrocytic components 2 Recognize multiple clinical sequelae of B12 deficiency 3 Diagnose and treat pernicious anemia causing B12 deficiency

CASE: A 49 year-old woman presented with generalized weakness for six weeks. She reported new tingling sensations in her extremities and intermittently dropping things. MRIs of the brain, thoracic and lumbar spine were normal. Her only laboratory abnormality was a normocytic anemia. She deferred workup of her anemia. She presented to the emergency room three weeks later with progression of her neurologic deficits and inability to ambulate. She complained of sporadic bowel and bladder incontinence without a sense of fullness. She noted a 35 pound weight gain over three weeks. Vital signs showed tachycardia and tachypnea. She had conjunctival pallor and appeared uncomfortable. Her abdomen was distended with a positive fluid wave. Her neurologic exam showed significant decline in motor function with a sensory level localized to T10, clonus of the right ankle, and decreased proprioception. She had stool spilling from her anus with normal rectal tone. Physical examination was otherwise unremarkable. A catheter was placed for a neurogenic bladder with 380 cc urine obtained. Three days prior, outpatient testing revealed anemia, MCV 100, normal renal function and potassium level. Current studies revealed a hematocrit of 21%, MCV 103, creatinine 7.1 and potassium 6.2. Peripheral smear showed anisocytosis, hypochromasia, schistocytes, and hypersegmented neutrophils. B12 level was undetectable. Methylmalonic acid and homocysteine levels were elevated. Anti-parietal cell antibody and anti-intrinsic factor antibodies were positive. Folate levels and ferritin were normal; iron saturation was low and transferrin was high. Follow-up MRI revealed hyperattenuation of the spinal cord from T6-L2 consistent with B12 deficiency. During her hospital course, her creatinine and potassium corrected, and her ascites resolved after catheter placement. Her hematocrit reached a nadir of 15% and her MCV peaked at 108. She received 1000 micrograms of intramuscular cyanocobalamin daily for two weeks, followed by oral supplementation. Her reticulocyte count responded to iron and B12 treatment. She received inpatient rehabilitation regaining some ability to ambulate but incontinence and sensory deficits persist.

DISCUSSION: When iron deficiency and B12 deficiency present concurrently, a normal MCV may be obtained. Common causes of macrocytosis include folate and B12 deficiency; iron deficiency is the most common cause of microcytosis. Peripheral smears should always be reviewed in anemia workups for additional data. Neurologic sequelae of B12 deficiency vary, but often include paresthesias (vibratory sensation classically), gait abnormalities, and visual disturbances. Neurogenic bowel and bladder leading to volume overload and ascites are rare. Some sequelae are reversible with B12 replacement but deficits are potentially permanent. Pernicious anemia causes B12 deficiency with antibodies against intrinsic factor and parietal cells. Because B12 is necessary for DNA synthesis, hematopoiesis may be affected resulting in pancytopenia. Pernicious anemia requires lifetime B12 replacement. B12 can be replaced orally, although initial treatment in severe depletion is via the intramuscular route. Long term oral B12 replacement requires higher doses of B12 (1–2 milligrams daily) compared with the intramuscular route.

TESTICULAR CANCER: AN UNLIKELY ETIOLOGY FOR IRON DEFICIENCY ANEMIA. C.H. So[1]; N. Karlin[1]; J. Miller[1]. [1]University of California, Los Angeles, Sylmar, CA. *(Tracking ID # 173815)*

LEARNING OBJECTIVES: 1. Recognize that metastatic testicular cancer may present as iron deficiency anemia. 2. Germ cell tumor should be considered in the differential diagnosis of any midline lesion.

CASE: A 34 year old man without any significant past medical history presented to the emergency room complaining of dizziness with exertion for two weeks. He denied any shortness of breath, fevers, abdominal pain, or melena, but did admit to a 5-pound weight loss, poor appetite, and night sweats. On presentation to the emergency room he was afebrile, tachycardic to 122, and normotensive without orthostatic changes. His physical examination was significant for pale skin and tachycardia. Significant laboratory values included: Hgb 5.3, MCV 67.5, RDW 20.5, iron level 11 (nl 40–190), TIBC 330 (nl 250–400), transferrin 258 (nl 188–341), ferritin 7 (nl 30–330), and negative fecal occult blood. Peripheral smear showed microcytosis with cigar cells and nucleated red blood cells. Further studies revealed normal expression of CD 55/59, and normal coagulation studies and DIC panel. CT imaging revealed a 7.4 cm segment of irregular thickening and enhancement of the third and fourth portion of the duodenum, as well as a 3.2 cm retroperitoneal lymph node. Upper endoscopy revealed a multilobulated friable mass of the duodenum which was biopsied and initially interpreted as adenocarcinoma of unknown primary. His testicular exam revealed fullness of the right testicle. Therefore, a testicular ultrasound was performed and revealed non-specific hypoechogenicities of the right testicle. Tumor markers were subsequently ordered and returned elevated: AFP 1210 (nl 0–2) and tumor HCG 9045 (nl <2). Given these findings and concern for a potential midline metastasis from a testicular cancer, we then asked the Pathology service to re-examine the duodenal biopsy sample. Upon repeat review by several pathologists, the biopsy was then interpreted as metastatic embryonal carcinoma. The patient subsequently underwent a right orchiectomy, which closely resembled the histology of the duodenal biopsy. He was immediately started on bleomycin, etoposide and cisplatin and his tumor markers have decreased to normal after several cycles of chemotherapy.

DISCUSSION: We present a rare case of metastatic testicular cancer, initially presenting as occult gastrointestinal bleeding and iron deficiency anemia. Testicular cancer accounts for approximately 1% of all cancers in men and represents the most common solid malignancy in men 15–35 years of age. Although the most common presenting symptom is a painless testicular mass, one third of patients have symptoms relating to metastases to the lung and retroperitoneal lymphadenopathy at the time of diagnosis. Cases of symptomatic gastrointestinal bleeding have been reported, but account for less than 5% of cases. Metastases to the gastrointestinal tract are thought to be secondary to lymphovascular spread. Depending on the chemosensitivity and the location of the primary tumor, metastatic germ cell tumor may still have a high remission and survival rate. Therefore, it is important to consider screening for testicular cancer in a young man with occult gastrointestinal bleeding. It is also important to consider metastatic germ cell tumor in the differential diagnosis of any midline lesion.

THE CLUE IS IN THE COUGH. B. Phillips[1]; S.A. Haist[1]. [1]University of Kentucky, Lexington, KY. *(Tracking ID # 172798)*

LEARNING OBJECTIVES: 1) Recognize the causes of secretory diarrhea 2) Diagnose paraneoplastic syndromes that cause diarrhea

CASE: A 76 y/o female with a history of end-stage renal disease, hypertension, and emphysema presented with one month of diarrhea. She described the diarrhea as large volume watery stools occurring ten times per day. The diarrhea did not change with food intake and did occur at night. She denied fever, chills, but reported a 30 lb weight loss and cough. The patient denied alcohol use and quit smoking ten years ago after a thirty pack-year history. Her end-stage renal failure was secondary to diabetes mellitus and had required hemodialysis for two years. She was oxygen dependent for her emphysema. She had a recent trial of antibiotics and was thus empirically treated for clostridium difficile with no change in symptoms. At admission, pertinent physical exam findings included an obese abdomen with hyperactive bowel sounds. Rectal exam revealed liquid stool in the rectal vault which was positive for occult blood. Stool studies showed absence of white blood cells, negative culture, negative ova/parasites, negative clostridium difficile toxin times three, and TSH was normal. Stool osmotic gap was 35 mOsm/kg, consistent with secretory diarrhea. At this point, the etiology of the diarrhea was still uncertain. A chest x-ray was performed as the patient was also complaining of a cough. This demonstrated a left lower lobe mass concerning for neoplasm. Calcitonin was ordered and the level was extremely elevated level at 1087 pg/ml (normal 0–4.6). CT of the chest ,abdomen, pelvis showed many liver lesions consistent with metastatic disease. In light of her poor prognosis, the patient decided on palliative care.

DISCUSSION: Secretory diarrhea presents with large volume stools that continue despite fasting, and occurs throughout the day and night. The work-up for secretory diarrhea includes stool cultures, ova/parasites, giardia antigen, imaging of the small and large intestine, and selective testing for secretagogues. The distinction between an osmotic and a secretory diarrhea can be established by measuring stool electrolytes and calculating an osmotic gap. Etiologies of secretory diarrhea include villous adenoma, laxative abuse, bile acid malabsorption, and secretagogues. Some of the secretagogues include gastrin in Zollinger-Ellison syndrome, vasoactive intestinal polypeptide in VIPoma, calcitonin in medullary carcinoma of the thyroid, somatostatin, and serotonin in carcinoid. Although elevated calcitonin is most commonly associated with medullary thyroid carcinoma, it is also seen as part of a paraneoplastic syndrome with lung, colon, and breast cancer. Several case reports describe large cell carcinoma of the lung presenting with secretory diarrhea and elevated calcitonin (1). The diarrhea typically improves with treatment of the underlying cause. In conclusion, hormonal causes should be evaluated when a patient presents with secretory diarrhea. Although uncommon, secretory diarrhea can present as a paraneoplastic syndrome. 1) Pratz KW, Mas C, Aubry MC, Vritiska TJ, Erlichman C. Large cell carcinoma with calcitonin and vasoactive intestinal polypeptide-associated Verner-Morrison syndrome. Mayo Clin Proc. 2005 Jan;80(1):116–20.

WHAT THE HEH IS THAT? K.S. Farnam[1]; A. Morrow[1]. [1]Baylor College of Medicine, Houston, TX. *(Tracking ID # 172491)*

LEARNING OBJECTIVES: 1) Generate a differential diagnosis of a liver mass in a young woman. 2) Recognize clinical features of hepatic epithelioid hemangioendothelioma.

CASE: A 27 year old woman presented with a 1.5 year history of abdominal pain that occurred weekly, lasted five minutes, and was associated with nausea and monthly nonbilious nonbloody vomiting. The pain was sharp, located in the right upper quadrant of the abdomen and did not radiate. The patient denied fever, chills, night sweats or weight loss. She had no sick contacts or TB exposures. She denied trauma or taking oral contraceptives. Physical exam was notable for hepatomegaly. An ultrasound performed revealed multiple large hypoechoic hepatic masses and she was admitted for further workup. Upon admission her liver enzymes and hepatitis panel were within normal limits. Her AFP was 3.5, CEA 1.21, and WBC 7.2. A CT of her abdomen was performed and showed atrophy of the right lobe of liver, hypertrophy of left lobe and an ill-defined mass involving a large portion of the right lobe and small portion of the left with multifocal calcifications scattered throughout. Core needle biopsy of the mass showed tumor cells positive for CD 34, CD 31 and Vimentin which was histologically consistent with epithelioid hemangioendothelioma. Patient was referred to oncology for further treatment with Interferon-alpha.

DISCUSSION: Clinical history, laboratory studies and imaging are important starting points for workup of a liver mass and can reveal the correct diagnosis in the majority of patients. Infectious etiologies are suggested by travel history or signs and symptoms such as fever, diarrhea, or leukocytosis. Premenopausal status may indicate hepatic adenoma or focal nodular hyperplasia. However, the majority of cases of hepatic

adenoma involve a history of prior oral contraceptive use and focal nodular hyperplasia usually presents as solitary lesions in women in their 30 s and 40 s. Malignant etiologies include metastatic disease and hepatocellular carcinoma. Thus in addition to history, tumor markers and a hepatitis panel should be checked. This information, along with features suggested on radiographic scans, often yields the diagnosis. However, as in this patient, when clinical history and studies are nondiagnostic a liver biopsy is often needed. This patient's biopsy revealed the diagnosis of hepatic epithelioid hemangioendothelioma (HEH), a rare malignant tumor of vascular origin with unknown etiology and a variable natural course. This tumor is reported in the literature to have an incidence of <0.1 per 100,000 people. There is a greater incidence of HEH in women than in men with peak incidence between 30 and 40 years. This disease usually presents as right upper quadrant pain but can be asymptomatic. Other signs or symptoms include hepatomegaly, weight loss, and weakness. A common laboratory abnormality is increased alkaline phosphatase but tumor markers are in normal range. Findings on CT scan are multilobar, multiple hypoattenuating tumors with calcification, retraction of overlying liver capsule, and focal atrophy. Definitive diagnosis involves biopsy with immunohistochemical evidence of endothelial differentiation (presence of factor VIII, CD 34, and CD 31). Liver transplantation remains the most common treatment modality with the best outcome. Other treatment modalities include chemotherapy, liver resection, and observation.

WHY ARE WE GETTING "HIT" AGAIN AND AGAIN? M. Pierini[1]; A. Duarte[1]; P. Cheriyath[1]. [1]Harrisburg Hospital, Harrisburg, PA. *(Tracking ID # 173037)*

LEARNING OBJECTIVES: Although heparins are in widespread use as anticoagulants for the prophylaxis and therapy of thromboemboli, thrombocytopenia can be a dangerous side effect. A meta-analysis of available studies showed the overall risk of developing heparin induced thrombocytopenia (HIT) after the use of unfractionated heparin as 2.6%.
CASE: A 53-year-old caucasian female was admitted for exacerbation of congestive heart failure. Past medical history was significant for congestive heart failure, hypertension, mitral and aortic valve replacement, coronary artery disease and atrial fibrillation. Vital signs were stable, and the examination was unremarkable, with the exception of irregular rhythm, tachycardia and bibasilar rales. The patient's initial laboratory evaluation revealed a hemoglobin level of 10 gram per deciliter and a platelet count of 175,000 per cubic millimeter. She was started on heparin for atrial fibrillation, and on day 12 of the hospital stay, routine laboratory examination revealed a platelet count of 75, 000 cells per cubic millimeter. Heparin was stopped immediately and argartroban was started. PF4/Heparin complex antibody was found to be positive, and a repeat platelet count after two days was 120,000 cells per cubic millimeter.
DISCUSSION: HIT is classified into types 1 and 2. Type 1 occurs early and usually manifests as a moderate decrease in the platelet count. Type 2 is a rare, immune-mediated, serious form of HIT. The diagnosis is initially made on clinical grounds. Antigen assays can detect binding of heparin-induced thrombocytopenia antibodies to heparin-platelet factor 4 complexes. Various alternative anticoagulant options include leptirudin, argartroban and danaparoid sodium. Mortality can be reduced from more than 30% to less than 10% with early recognition of the syndrome. This case illustrates the need for hospital-wide protocol to measure the platelet count before and periodically after the start of heparin and regularly after that to monitor for HIT.

WILL THE REAL DIAGNOSIS PLEASE STAND UP? A BENIGN APPEARING NASAL POLYP TURNED OUT TO BE LYMPHOMA. J.Y. Nguyen[1]; M. Singh[2]; L. Powell[3]. [1]UCLA-Olive View Medical Center, West Los Angeles, CA; [2]UCLA-San Fernando Valley, Sylmar, CA; [3]Olive View-UCLA Medical Center, Sylmar, CA. *(Tracking ID # 173832)*

LEARNING OBJECTIVES: 1. Formulate complete differential diagnosis for nasal polyps and pursue appropriate diagnostic workup. 2. Understand unique aspects of nasal NK/T cell lymphomas with regards to epidemiology, clinical presentation, and treatment.
CASE: A 62 year old El Salvadorian female was evaluated in ENT clinic for a three-month history of gradually growing left nasal mass causing pain without any respiratory problems, visual changes, hyposmia, or epistaxis. Physical exam revealed a pink mass arising from the left lateral nasal wall. A CT scan of the nasal sinuses showed a lobulated thickening mass on the lateral wall of the left nare without bony destruction. A biopsy showed an atypical lymphoid infiltrate with extensive ulceration and necrosis, but no evidence of neoplasm. The patient was reassured the mass was a benign nasal polyp and no treatment was initiated. Two months later, the patient returned with increasing pain, now associated with obstructive symptoms. A repeat deeper biopsy demonstrated sheets of monomorphic lymphocytes which, on immunostaining lacked the B cell marker CD20 but expressed the T cell marker CD2, along with EBV-EBER, establishing a NK/T cell lymphoma, nasal type. A staging evaluation indicated the patient was stage IE. She was treated with an initial course of radiation therapy concomitantly with cisplatin, followed by two cycles of systemic chemotherapy. Two years later she remains in complete remission.
DISCUSSION: Nasal masses are commonly thought of as benign polyps associated with conditions such as asthma, allergic rhinitis, cystic fibrosis, aspirin and alcohol intolerance, nonallergic rhinitis, and Churg-Straus syndrome. However, a complete differential diagnosis includes tumors such as NK/T cell lymphoma. NK/T cell lymphoma is classified into three categories: nasal, non-nasal and aggressive lymphoma/leukemia suptypes. These lesions may present as polyps, as in this case, or as ulcerative lesions, mimicking Wegener's granulomatosis. Nasal-type, NK/T cell lymphoma is more prevalent in Asia, Central and South America affecting predominantly males in their fifth decade. Patients with tumor localized to the nasopharynx often present with nasal obstruction or epistaxis. In some cases, the disease disseminates to various sites including skin and GI tract, manifesting as ulcerated skin nodules or perforated GI tract. Etiologically, EBV has been demonstrated in these tumor cells making it a primary causal suspect. Initial biopsies frequently demonstrate only chronic inflammation secondary to superinfection, as in this case, and repeat biopsies may be needed to establish the diagnosis. Currently, no validated method can satisfactorily stage NK/T cell lymphomas. Hence, a loosely adapted system based on tumor size, age, performance status, and LDH level is utilized. Radiotherapy has proven to be superior to chemotherapy alone for the treatment of localized lesions, but with a high relapse rate. Combined therapy with radiation and chemotherapy is preferred, although randomized data are lacking. Additionally, owing to its high relapse rate even after chemo-radiotherapy, several cycles of adjuvant chemotherapy should be considered.

A 25-YEAR OLD MEXICAN MAN WITH FEVER AND GENERALIZED JOINT PAIN. S. Tchernodrinski[1]; S.N. Khan[1]. [1]John H. Stroger Hospital of Cook County, Chicago, IL. *(Tracking ID # 173368)*

LEARNING OBJECTIVES: 1. Diagnose Adult-onset Still's Disease (AOSD) 2. Recognize AOSD as an important cause of fever of unknown origin (FUO).
CASE: A 25-year old Mexican man was admitted complaining of generalized joint and muscle ache, skin rash and fever for 1 week. His oral temperature was 103° F and later was noted to have fever spikes twice daily (a double quotidian pattern), the highest being in late evenings. There was a maculopapular salmon-pink rash on the trunk and limbs, which during the hospital stay was observed to subside but not completely disappear when the patient was becoming afebrile. The rest of the exam was non-contributory. There was no synovitis. Laboratory studies showed neutrophilic leucocytosis (WBC 21000, 89% neutrophils), elevated transaminases (AST 82 U/L, ALT 144 U/L), LDH (594 U/L) and ESR (81 mm/h) and markedly increased ferritin (13,132 ng/ml). He underwent extensive work-up for fever of unknown origin (FUO). Several sets of blood cultures and urine culture showed no growth, Q-fever serology was negative and an echocardiogram was normal. PPD was negative; sputum smears didn't show AFB and thoraco-abdominal CT scans were normal. ANA and rheumatoid factor serologies were negative. Viral studies for hepatitis, HIV, CMV and EBV were also negative. The patient was diagnosed with adult-onset Still's disease (AOSD). Treatment with NSAIDs produced significant improvement.
DISCUSSION: AOSD is a rare disorder with unknown incidence and prevalence. It typically presents with a triad of spiking quotidian fevers, characteristic rash and arthralgia or true arthritis. Other manifestations include myalgias, splenomegaly, pleuritis, pericarditis and rarely ARDS. Laboratory findings consist of leucocytosis with neutrophilia, elevation of ESR, transaminases and LDH and striking elevations of serum ferritin. ANA and rheumatoid factor (RF) are negative. Several sets of diagnostic criteria are used. Of these, Yamaguchi's criteria are the most sensitive. They include arthralgias, typical salmon-pink evanescent rash, fever and increased WBC as major criteria and sore throat, splenomegaly, abnormal transaminases and negative ANA and RF as minor criteria. A limitation is that exclusion of an extensive list of other conditions should be done. These can be grouped into bacterial infections, viral (rubella, CMV, EBV), malignancies (lymphoma, leukemia) and autoimmune disorders. The work-up can be extensive and costly and frequently follows the algorithm for evaluation of FUO, as illustrated in this case. A recent study included elevated serum ferritin and low glycosylated ferritin fraction in addition to the classic criteria and achieved a specificity of 98.5%. This may indicate an important advance towards confidently ruling in AOSD, thus diminishing the need to rule out other diseases but remains to be prospectively validated. Treatment consists of NSAIDs, with addition of steroids and antirheumatic agents if the disease is not controlled.

A 72 YEAR OLD MAN WITH TONGUE BURNING. M.K. Duggirala[1]; K.F. Mauck[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 172760)*

LEARNING OBJECTIVES: Recognize atypical manifestations of temporal arteritis.
CASE: A 72 year old man was referred for evaluation of a two month history of left sided tongue burning. The sensation occurred only with eating and would worsen, turning into an ache with continued chewing. Resting for few minutes would promptly relieve this. Because of this, he resorted to liquid diet and lost 5 pounds. There was no history of visual changes, headache or scalp soreness. He denied any jaw pain or pain in the muscles of mastication with chewing. There was no history of fevers, chills, dry mouth or any allergies. Three months prior to the visit he made a blood donation. Since that time he had been feeling fatigued and thinks that he never recovered completely. He also reported myalgias involving upper back and neck. Patient was a farmer and continued to be active. His past medical history was otherwise negative except for bilateral total hip arthroplasties and he took no medications. He did not smoke, chew tobacco, use alcohol or drugs. Examination showed a well built man in no acute distress. There was no scalp or temporal tenderness. No oral thrush, lesions or ulcers on the tongue were noted. Reminder of the examination was normal. Initial laboratory testing showed a white count of 12,000 ($3.5–10.5 \times 10^9$), hemoglobin 11.8 (13.5–17.5 gm/dl), platelet count 640 ($150–450 \times 10^9$), ESR 78 (0–22 mm/hr), CRP 10.6 ($<$ 0.8 mg/dl), creatinine (0.8–1.3 mg/dl). Patient was started on prednisone 60 mg daily and a temporal artery biopsy was requested. Pathology from left temporal

artery showed Temporal Arteritis (TA). He had a dramatic response to therapy and had complete resolution of fatigue and tongue symptoms within several days.
DISCUSSION: Our patient was an otherwise healthy 72 year man, who had been experiencing fatigue for few months. He also had vaguely described myalgias, but the most prominent of his symptoms was left sided tongue burning. The disorder of burning tongue has been associated with various conditions such as dry mouth, oral thrush, and nutritional (B-complex vitamin) deficiencies. Other causes include neuropathies, irritating dentures, ulcers and allergies. While most of these cause generalized tongue or mouth burning, our patient had problems involving only the left half. Moreover, he complained of ache with chewing and prompt relief with rest, suggesting possible tongue claudication from ischemia. This raises concerns for the possible diagnosis of TA. The history of his fatigue and myalgias could in fact be from polymyalgia rheumatica (which is closely linked to TA) and the findings of elevated ESR and CRP support this. Certainly, he did not have classic symptoms of TA, such as headache, jaw claudication or visual blurring. However, tongue pain can be an atypical manifestation of TA. In severe cases patients may even develop tongue necrosis from ischemia. Dry cough, sore throat and choking sensation can also be atypical manifestations of TA. In patients with suspected TA, treatment should not be delayed because ischemic optic neuropathy is a dreaded complication. Establishing the diagnosis usually requires temporal artery biopsy and positive yield is increased with obtaining a biopsy segment of 1–2 inches. They are reported to show vasculitis even after 14 days of corticosteroid therapy. The presenting symptom of tongue burning in this case is a good illustration of an atypical manifestation of TA.

A CASE OF ASYMMETRIC WEAKNESS AND FAILURE TO THRIVE N.G. Reddy[1]; B.M. Schneeberger[1]; K. Pfeifer[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173317)*

LEARNING OBJECTIVES: 1) Demonstrate that myasthenia gravis should be included in the differential diagnosis of asymmetric weakness, dysphagia, and ptosis. 2) Review clinical features, diagnostic tests, and treatment options for myasthenia gravis. 3) Reinforce that myasthenia gravis can result in life-threatening respiratory distress.
CASE: A 39-year-old woman presented with a two-month history of progressive weakness, dysarthria, dysphagia, anorexia, and 50 pound weight loss. She denied fever, chest pain, dyspnea, cough, or diarrhea but had a syncopal episode three days prior to admission and was treated at an outside emergency department for dehydration. On initial examination she was afebrile and normotensive with pronounced cachexia. Additionally, she had mild bilateral ptosis, multiple white oral plaques, impaired gag reflex, and markedly decreased air movement on respiratory exam. Her strength was 4/5 in the right upper extremity, 3/5 in the left upper extremity and right lower extremity, and 4/5 in the left lower extremity. Laboratory evaluation was within normal limits, including negative HIV and syphilis testing, and brain and cervical spine MRI were unremarkable. As HIV and multiple sclerosis were excluded from the differential and serial physical exams showed progressive decline in her strength, myasthenia gravis (MG) was suspected. Subsequent negative inspiratory force (NIF) and bedside vital capacity were significantly decreased at −20 cm H2O and 0.4 liters, respectively. Due to her worsening respiratory effort, she was transferred to the ICU and stabilized with non-invasive ventilation. A Tensilon test was performed and confirmed the diagnosis of MG. She was started on pyridostigmine, and her respiratory status and strength returned to near baseline.
DISCUSSION: MG is a neuromuscular disorder characterized by weakness and fatigability of skeletal muscles. It is caused by formation of antibodies to acetylcholine receptors in the postsynaptic membrane, thus resulting in targeting and destruction of these receptors. The clinical manifestations range from ocular muscle weakness to severe generalized muscle weakness potentially leading to respiratory failure. The characteristic feature of the disease is weakness that worsens with repetition and improves with rest. Symptoms, which often include double vision and ptosis secondary to ocular muscle weakness, are typically better upon awakening. Differential diagnoses include amyotrophic lateral sclerosis and periodic paralysis, which like myasthenia gravis, are associated with fluctuating weakness. Diagnostic studies include the acetylcholine receptor antibody test, which is the most specific test for myasthenia gravis, and single fiber electromyography. The latter is the most sensitive test for disorders of the neuromuscular junction. Transient improvement of symptoms with administration of an acetylcholinesterase inhibitor such as edrophonium (known as the Tensilon test) can aid in making the diagnosis. Treatment consists of a long-acting anticholinesterase agent such as neostigmine or pyridostigmine. It should be emphasized that myasthenia gravis is a treatable disease and that earlier treatment generally leads to better clinical outcomes. Untreated disease results in a greater risk of requiring mechanical ventilation or developing severe, irreversible muscle weakness.

A SIGN OF WEAKNESS. G. Lynn[1]; S. Chandrasekaran[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173329)*

LEARNING OBJECTIVES: 1. Review the clinical presentation and diagnostic findings of polymyositis. 2. Recognize the association of malignancy with dermatomyositis and polymyositis.
CASE: A 57 year-old male with chronic obstructive pulmonary disease presented to the emergency room complaining of acute dyspnea. The patient was treated for presumed exacerbation of his underlying lung disease. On review of systems, the patient reported upper extremity weakness with inability to raise his hands above his head for one week. He denied lower extremity weakness or other focal neurological symptoms. On examination, there was 3/5 symmetric proximal upper extremity weakness and 4/5 symmetric proximal lower extremity weakness. No rash was identified. Laboratory testing revealed creatine kinase of 6595 units/L, erythrocyte sedimentation rate of 41 mm/hour, aldolase of 119.6 units/L, lactate dehydrogenase of 536 units/L, alanine aminotransferase of 108 units/L, and aspartate aminotransferase of 84 units/L. Polymyositis was suspected and electromyogram revealed increased membrane irritability consistent with myositis. Magnetic resonance imaging of the right femur showed edema and enhancement of the vasti muscles, adductors, rectus femoris, and gluteal muscles. Open biopsy of the right quadricep muscle showed inflammatory cell infiltrate and fiber necrosis typical of inflammatory myopathy. The patient was treated with corticosteroids and a three-day course of intravenous immune globulin with slight symptomatic improvement. Computed tomography of the abdomen demonstrated thickening of the bladder wall. Urinalysis was normal, but urine cytology showed atypical cells. Transurethral surgery exposed multiple bladder tumors containing grade-three transitional cell carcinoma.
DISCUSSION: Polymyositis is a rare inflammatory myopathy which typically presents with symmetric proximal muscle weakness. In the general population polymyositis and dermatomyositis have a combined incidence of approximately 1 in 100,000. Affected adults are most commonly 40 to 50 years of age with 2:1 female to male predominance. Nearly all patients have an elevation of at least one, if not all, routinely measured muscle enzymes including those noted in the case. Electromyogram is helpful in confirming the presence of myopathy and the muscles involved; however, normal electromyography can be seen in 11% of patients. Muscle biopsy is used for definitive diagnosis. The association between malignancy and myositis has long been suspected based on case reports and has more recently been confirmed by population based-studies. One large study noted a diagnosis of malignancy in 15% of patients with dermatomyositis and 9% of patients with polymyositis, twice the rate in the general population. Malignancy may be evident prior to the clinical presentation of myositis, be diagnosed at the time of presentation, or not be clinically evident until later, typically within two years. There is consensus that patients with myositis should have a complete physical examination, age-appropriate cancer screening, chest radiography, and laboratory testing including complete blood count, liver function tests, serum calcium, and urinalysis at time of diagnosis. Some recommend computed tomography of the thorax and abdomen as well. Patients without evidence of malignancy at time of diagnosis should be followed closely with further testing based on clinical findings. The biological link between inflammatory myositis and malignancy remains unclear.

A YOUNG MALE WITH A RIGHT TEMPLE HEADACHE AND RIGHT VISUAL LOSS. S. De Golovine[1]; L. Lu[1]. [1]Baylor College of Medicine, Houston, TX. *(Tracking ID # 172273)*

LEARNING OBJECTIVES: 1. Consider pursuing a vasculitic work up in young patients presenting with severe diffuse vascular diseases. 2. Review an unusual case of polyarteritis nodosa (PAN) resembling giant cell arteritis (GCA) with fatal outcome.
CASE: A 38 year-old male presented with one week history of fever, chills, right temporal tenderness, jaw claudication, and one episode of right visual loss. He had diffuse abdominal pain with eating and ten pound weight loss over 1 year. Past history included severe bilateral femoral artery stenosis requiring an aorto-bifemoral bypass a year ago. Patient denied family history of premature vascular disease and had a 20 pack-year smoking history. Vital signs were normal. Physical examination was significant for right temple tenderness with left carotid, right renal and bilateral femoral bruits. Patient had normal vision and fundoscopic exam. Laboratory studies showed ESR 61 mm/hr (0–15), CRP 15.8 mg/dl (0–1), ANA 1:40 speckled, and low complement levels. Rheumatoid factor, HIV and Hepatitis panel were negative. ANCAs were not performed. Carotid angiography showed 80% stenosis of left carotid artery. Abdominal MRA revealed significant stenosis of the celiac ostium, supra and infra mesenteric arteries, and right renal artery. A temporal artery biopsy showed chronic lymphocytic inflammation of the intima, adventitia and muscularis with no giant cells identified. These findings suggested a nonspecific vasculitis. He responded to intravenous steroids with corresponding ESR and CRP being 21 and 0.8 respectively and was discharged on oral maintenance prednisone with a diagnosis of vasculitis, unknown type. Two months later, he was readmitted for hypertensive urgency and developed mesenteric ischemia with evolution into sepsis and cardiac arrest. Autopsy showed vasculitis of large and medium size arteries involving aorta, cerebral, carotid, coronary, celiac, superior mesenteric, renal and iliac arteries. No Giant Cells were seen. No veins or pulmonary vasculature were involved. There was diffuse necrotic and ischemic bowel. His autopsy results with involvement of arteries sparing the lungs were consistent with polyarteritis nodosa.
DISCUSSION: Premature peripheral vascular disease (< 50 years of age) is rare; the etiology is unknown. Some cases have been thought to be due to genetic factors and associated with smoking, hyperlipidemia, and hypercoagulable states. However, in young patients presenting with diffuse vascular diseases, a vasculitic process should be considered. PAN is a necrotizing vasculitis involving medium and small arteries of almost any organ except the lungs. There have been 30 case reports of PAN affecting temporal arteries and one case involving the aorta. It mainly affects middle aged men. Patients usually present with symptoms of tissue ischemia. The pathogenesis is unknown. The classic histopathology shows segmental transmural inflammation of muscular arteries with fibrinoid necrosis. P-ANCA is not diagnostic since its sensitivity and specificity are not well studied. Without treatment, the 3 month survival of PAN is 50%; the majority is a result of renal failure with a 5 year survival of 13%. With optimal therapy, the 5 year survival is 83%. Glucocorticoid achieves remission in 50% of cases, and the rest requires the addition of cyclophosphamide. In our case, if the

patient had a vasculitic work up one year ago for his severe vascular disease, perhaps the fatal outcome could have been prevented.

AN UNCOMMON DISEASE DIAGNOSED BY A VERY RARE EXAM FINDING. H. Nisar[1]; D. Mcadams[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172783)*

LEARNING OBJECTIVES: 1. Recognize polytenosynovitis as an indicator of potentially serious underlying disease. 2. Recognize an atypical presentation of sarcoidosis.
CASE: A 32 year old male presents with progressive neuropathic pain, numbness, stiffness, and edema involving the hands, wrists, and shoulders bilaterally. One year prior to admission the patient had these symptoms, and cervical spine MRI demonstrated central canal stenosis from C3-C7. His symptoms were short lived and therefore no intervention was pursued. Four months prior to admission, his symptoms returned and were much worse. He endorsed decreased range of motion of the wrists and digits, limited hand grip, and C5-T1 numbness. He underwent anterior vertebral fusion at C5-C6 and was treated perioperatively with steroids. He improved markedly, but two weeks after steroid discontinuation his symptoms recurred. At this time he began having bilateral lower extremity involvement as well. He denied HIV exposure, drug use, or any other symptoms. His neuromuscular exam demonstrated decreased strength in wrist and digit flexion and extension; decreased hand grip; rotator cuff weakness; decreased sensation in the median nerve distribution; and pain with palpation over the biceps tendon and subacromial space. His exam was most consistent with tenosynovitis of the shoulders and wrists. The rest of the exam was normal. Complete blood count, basic metabolic panel, TSH, ESR, serum and urine protein electrophoresis, ANA, rheumatoid factor, and complements were normal. Microbial cultures were negative. Extensive imaging, including upper extremity and chest X-rays, CT scans, and CT myelogram, were normal. Upper extremity MRI revealed polytenosynovitis involving extensor compartment as well as flexor tendons of the carpel tunnel extending into the hands. Electromyography (EMG) demonstrated bilateral median neuropathies at the wrists. Muscle and nerve biopsies demonstrated noncaseating granulomatous infiltration of the tenosynovium consistent with sarcoidosis. An ACE level was elevated at 87 IU/L. The patient had marked improvement with corticosteroids and was discharged.
DISCUSSION: Polytenosynovitis is a very uncommon presentation, usually one that indicates a serious underlying disorder. The most common cause is Calcium Pyrophosphate Deposition (or pseudogout). However, other entities including thyroid disorders, tuberculosis, HIV disease, lupus, histoplasmosis, brucellosis, rheumatoid arthritis, psoriasis, and sarcoidosis are known causes as well. Sarcoid is a multisystem disease of unknown etiology histologically characterized by multiple noncaseating granulomas. Most commonly it involves the lungs and perihilar lymph nodes. Involvement of the skin, bones, and joints is less common, and tenosynovitis is extremely rare. Extensor tendons have been reported to be involved more commonly than the flexors. The diagnosis is usually made from a compatible clinical history with histological evidence of typical sarcoid granulomata. Sarcoid tenosynovitis of the hand if untreated can cause complications such as flexor and extensor tendon rupture, subchondral bone erosions, and joint subluxsations. Serum ACE level can be elevated but is neither sensitive nor specific in diagnosing sarcoid. Systemic steroid therapy remains the primary treatment of choice. Severe cases may require tenosynovectomy. Alternatives to steroids are often introduced either because of steroid intolerance or to reduce steroid side effect.

CHEST PAIN, ELEVATED TROPONINS AND EOSINOPHILIA IN A YOUNG FEMALE. A.A. Imtiaz[1]; P. Cheriyath[2]; A. Al-Laham[3]. [1]PinnacleHealth Hospitals, Harrisburg, PA; [2]Harrisburg Hospital, hershey, PA; [3]Harrisburg Hospital, Harrisburg,. *(Tracking ID # 172848)*

LEARNING OBJECTIVES: 1) Discuss the occurrence of cardiac manifestations in Churg-Strauss Syndrome. 2) Discuss diagnostic criteria for Churg-Strauss Syndrome.
CASE: A 36-year-old woman presented to the emergency department (ER) with the complaint of chest pain and shortness of breath on exertion for 3 days. She also noted palpitations, sweating and nausea. Past medical history was significant for asthma and recurrent sinusitis. Vital signs were stable. Examination of the cardiovascular system revealed no murmurs, rubs, gallops, jugular venous distension or carotid bruits. The white-cell count was 13,890 per cubic millimeter with 25% eosinophils. Cardiac markers revealed initial CK and CKMB levels of 289 u/l and 30.1 ng/ml respectively, a Relative Index of 10.4% and serial Troponin values of 3, 5.08 and 4.52 ng/ml. EKG revealed T wave inversions in lateral leads. Cardiac catheterization revealed no abnormality. Her symptoms improved and she was discharged from the hospital. Three weeks later, the patient presented to the ER again complaining of fever with a rash on her hands and feet, nasal discharge and numbness of the left foot. Vital signs were stable. Physical examination was normal except for a petechial rash on the hands and feet and sensory loss in the distal left foot. The white blood cell count was 18,000 with 50% eosinophils. Echocardiogram showed moderate pericardial effusion. Erythrocyte sedimentation rate was 33 mm/hr. Anti nuclear antibody, anti- double stranded DNA, antineutrophil cytoplasmic antibody, lyme titers and rocky mountain spotted fever antibodies were negative. CT scan of the paranasal sinuses showed pansinusitis. The diagnosis of Churg-Strauss Syndrome was made based on clinical findings. The patient was started on prednisone and her symptoms resolved after a few days.
DISCUSSION: Churg-Strauss Syndrome (CSS) may lead to cardiac involvement in up to 60% of patients. Manifestations include acute pericarditis (32% of patients), constrictive pericarditis, myocarditis, myocardial infarction and heart failure (47% of patients). This results in significant morbidity and mortality, accounting for 48% of deaths due to CSS. In this case, the patient had a non-ST segment elevation MI caused by small vessel vasculitis. Diagnostic criteria for CSS include asthma, eosinophilia of greater than 10%, mononeuropathy or polyneuropathy, migratory pulmonary opacities, paranasal sinus abnormalities and a positive biopsy, with the biopsy specimen containing a blood vessel. According to American College Of Rheumatology, the presence of 4 out of 6 of these criteria yields a diagnostic sensitivity of 85% and a specificity of 99.7%. Our case describes a young woman with 4 positive criteria. Most patients with CSS respond favorably to high-dose corticosteroid therapy.

CLASSIC PREECLAMPSIA. WAIT . . . DON'T BE SO RASH. A.N. French[1]; E. Wasson[2]. [1]Olive View-UCLA Medical Center, Sylmar, CA; [2]Olive-View Medical Center, Sylmar, CA. *(Tracking ID # 173793)*

LEARNING OBJECTIVES: 1. Differentiating preeclampsia from a systemic lupus erythematosus (SLE) flare during pregnancy. 2. Outline the appropriate follow-up of SLE patients during and immediately after pregnancy.
CASE: A 30-year-old G1P1 with a history of SLE presented to the emergency room complaining of dyspnea. SLE was diagnosed 8 years previously and historically manifested with malar rash, oral ulcers, alopecia, arthritis and positive ANA. Two months prior the patient had surgical delivery of a 36-week infant. Pregnancy had been complicated by presumed preeclampsia heralded by new hypertension and proteinuria. Onset of a classic malar rash was also described two weeks prior to delivery. One week after delivery exertional dyspnea and ankle edema began which, over the next two months, progressed to resting dyspnea and anasarca. Alopecia, oral ulcers and hand arthritis joined the malar rash thus completing the syndrome of complaints at presentation. Examination revealed a hypertensive woman with jugular venous distension seen at the angle of the jaw while upright. She had diffuse pulmonary crackles and pitting anasarca. Echocardiogram revealed marked systolic failure (EF of 30%) with a small pericardial effusion. ESR was 60, C3 and C4 levels were low, and serum albumin was 2. Urine studies revealed nephrotic range proteinuria without active sediment. The patient was intubated for hypoxic respiratory failure due to pulmonary edema. Repeated echocardiography showed an enlarged pericardial effusion and declining systolic function. Extubation was possible only after net diuresis of 10 liters. Heart failure was thought due to either SLE myocarditis or peripartum cardiomyopathy; no test could reliably differentiate between the two. Fortunately, an imprecise cardiac diagnosis did not change management as a SLE flare was independently established by scrutinizing the case details. The onset of malar rash shortly before delivery provided a subtle but important clue. More convincing was the subsequent development of arthritis and oral ulceration. Low complement factor levels and an elevated ESR confirmed SLE. The patient was treated with pulse glucocorticoids, hydroxychloroquine, and mycophenalate mofetil with subsequent improvement in SLE associated findings. Follow up echocardiography documented near normal systolic function without residual pericardial effusion; she had no symptoms of CHF.
DISCUSSION: As many as 30% of SLE patients flare or have complications during pregnancy. Most flares occur anytime during pregnancy but also, and importantly, in the first few months following delivery. Expert guidelines urge checking complement levels, DNA antibodies, anti-cardiolipin antibodies, creatinine, CBC and urine protein during each trimester. Practitioners should monitor for rash, arthritis, and fever during pre-natal visits. Postpartum follow up should include review of classic symptoms, assessing vital signs, and monitoring renal function. Biochemical markers of SLE activity should be sought when suggestive signs or symptoms are present. Preeclampsia and active SLE share common features: hypertension, edema and proteinuria. In this case, consideration of the pre-delivery malar rash might have avoided premature closure on the diagnosis of preeclampsia. Additionally, heightened attention to the onset of classic SLE features during the early postpartum period may have averted the life-threatening course which followed.

EXTRACOLONIC MANIFESTATIONS OF CLOSTRIDIUM DIFFICILE INFECTIONS-A CASE REPORT AND REVIEW OF LITERATURE. S. Potu[1]; M.J. Mohanty[1]. [1]Wayne State University, Detroit, MI. *(Tracking ID # 173846)*

LEARNING OBJECTIVES: 1)Generate a differential diagnosis for polyarthritis 2) Understand different causes of reactive arthritis 3)Recognize the extra-colonic manifestations of C.difficile infection so that they may be diagnosed early and treated appropriately.
CASE: 24-year old female with history of hypertension and end stage renal disease on hemodialysis was discharged from hospital one month earlier on cefazolin for two weeks for dialysis catheter related line sepsis. She presented on this admission with fever and pain in the left knee for one week. She also complained of diarrhea for two weeks prior to admission. She denied any skin rash or vaginal discharge. On examination, she was febrile at 101.4oF and the left knee was warm, swollen, and tender with limitation of movement. Labs revealed elevated white blood cell count (18,000/mm3), erythrocyte sedimentation rate of 74 mm/hr and C-reactive protein (474 mg/l). Synovial fluid of the left knee revealed 72,000/mm3, white blood cells with 92% neutrophils, few polymorphonuclear leukocytes on gram stain and no crystals. She was empirically started on vancomycin and cefepime without any improvement and progression of joint pains to ankle and wrist. X rays of the joints were normal. Blood and urine cultures remained negative. Cultures and DNA probes for gonorrhea and Chlamydia from cervical swabs were negative. Antinuclear antibody, rheumatoid factor, ENA profile, antibodies to hepatitis B surface antigen and hepatitis C and serum for immunoglobulin were negative. Complements C3 and C4 were normal.

Epstein-Barr-virus and Parvovirus B 19 serologies were negative. Eye examination showed no evidence for iritis. Angiotensin converting enzyme and 1, 25 dihydroxy Vitamin D were not elevated. 2D Echo was negative for any vegetations. MRI of the left ankle showed joint effusion with evidence of synovitis. However, stool examination was positive for leukocytes and C.difficile toxin. With other causes of arthritis ruled out, it was believed the most likely etiology of the polyarticular arthritis was C-difficile reactive arthritis. The patient was switched to oral metronidazole. The diarrhea, fever and leukocytosis improved. At the same time she was started on non-steroidal anti-inflammatory drug and steroids. The joint pains improved over two months with a slow course.
DISCUSSION: C-difficle infection is generally manifested as diarrhea, fever and leukocytosis. However occasionally it can also present as reactive arthritis. C. difficile-related reactive arthritis is frequently polyarticular in nature and is not related to the patient's underlying HLA-B27 status. The most commonly involved joints are the knee and wrist. The proposed mechanism is that C. difficile enterotoxin, toxin A, and the presence of the HLA-B27 antigen both independently predispose the bowel to become more permeable, allowing bacterial antigens to gain access to the systemic circulation which then triggers the joint infection. Reactive arthritis begins an average of 11 days after the onset of diarrhea and is a prolonged illness, taking an average of 68 days to resolve. Management of this form of reactive arthritis is unclear. Treatment with NSAID and vancomycin or metronidazole seems sufficient. As with all forms of reactive processes, the primary objective of therapy is to control the underlying causative problem, namely, in these cases, the colitis.

FEVER AND DELIRIUM OF UNKNOWN ETIOLOGY: THE DIAGNOSIS BECOMES CRYSTAL CLEAR M. Martin[1]; P.J. Grant[1]. [1]University of Michigan, Ann Arbor, MI. *(Tracking ID # 173702)*

LEARNING OBJECTIVES: Recognize the various clinical presentations of calcium pyrophosphate dihydrate (CPPD) deposition disease in the elderly to prevent unnecessary diagnostic testing or delay.
CASE: An 81-year-old male with a history of hypertension, stroke, osteoarthritis, and mild cognitive impairment developed lethargy, confusion, and temperatures up to 102.8 F at his subacute rehabilitation facility. Upon presentation to the emergency department he denied any specific complaints, including dysuria, cough, headache, myalgias, nausea, vomiting, or diarrhea. Physical exam revealed a temperature of 101.6 F, normal blood pressure and pulse. He was alert and oriented with no focal neurologic deficits. The remainder of his exam was normal. Laboratory evaluation demonstrated a WBC of 3.0 K/mm3 with 68% neutrophils, ESR of 71 mm/hr, negative urinalysis and blood cultures and a chest x-ray without infiltrate. The patient was admitted and antibiotics were withheld given his hemodynamic stability and lack of localizing signs or symptoms of infection. Hospital course was significant for persistent fevers in the 103 to 104 F range. An extensive work-up including abdominal and CNS imaging, repeat blood and urine cultures, and testing for tuberculosis, HIV, viral hepatitis, and clostridium difficile were all negative. On hospital day #7, a tagged WBC scan was obtained which revealed increased leukocyte activity in the left knee. An arthrocentesis was performed revealing weakly positive birefringent rhomboid crystals under polarized microscopy consistent with CPPD deposition disease. Synovial fluid gram stain and cultures were negative. An intra-articular steroid injection was given and oral cholchicine was initiated. The patient's fevers defervesced within 24 hours, his mental status remained at baseline, and he was discharged back to his subacute rehabilitation facility.
DISCUSSION: CPPD deposition disease is a common condition primarily affecting the elderly. Initially termed "pseudogout syndrome" in 1963, CPPD disease typically manifests as an acute mono or polyarthritis. Many less common presentations of this disease exist, including altered mental status, fever, and leukocytosis. CPPD crystals generate an inflammatory process resulting in the release of several mediators including bradykinin, interleukin-1, interleukin-6, platelet activating factor, prostaglandin E2, and tumor necrosis factor. Many of these mediators are pyrogenic cytokines and are thought to be responsible for the fevers patients may experience with CPPD disease. Our patient's persistent fever proved to be a diagnostic challenge. Although a thorough musculoskeletal exam was performed, no significant joint pain, erythema, or effusion was appreciated. The physical exam was likely limited by our patient's severe osteoarthritis, a condition that commonly coexists with CPPD disease. A tagged WBC scan was useful in this case despite its questionable value in the work-up for fever of unknown origin. Had this noninfectious etiology of our patient's fever been considered sooner, a lengthy and expensive hospitalization may have been prevented.

GOT IRIS? DON'T LOSE HAART. A. Small[1]; S. Krishnan[1]; C. Miller[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 173218)*

LEARNING OBJECTIVES: 1.Understand the clinical presentation of Kaposi's sarcoma. 2.Recognize that an acute exacerbation of pulmonary Kaposi's sarcoma can be induced by the immune reconstitution inflammatory syndrome. 3.Identify the treatment for immune reconstitution inflammatory syndrome.
CASE: A 30 year-old HIV-positive man presented with a two-month history of progressive shortness of breath and swelling of his lower extremities and genitalia. The beginning of his symptoms coincided with the initiation of highly active antiretroviral therapy (HAART) two months earlier. His CD4 count at that time was 150 cells/mm3 and he had developed lesions on his lower extremities confirmed to be Kaposi's sarcoma (KS). His heart rate was 110 beats/min.; the respiratory rate was 30 breaths/min; and his SaO2 was 94% on room air. He was afebrile and his blood pressure was normal; he was unable to speak in complete sentences. He had crackles throughout his lungs and edema involving his abdomen, genitalia, and lower extremities. He had prominent nodular purple to brown plaques on his lower extremities and small, newly formed lesions on his chest, arms, and face. His chest X-ray showed large bilateral asymmetric opacities in the mid-lung fields and hilar regions, sparing the bases. Considering the spread of his skin lesions to the chest, his characteristic X-ray, and lack of active infection, he was empirically diagnosed with pulmonary Kaposi's sarcoma; this diagnosis was later confirmed by bronchoscopy. His CD4 count was 518 cells/mm3. Based upon the rapid progression in the face of an improving CD4 count, he was diagnosed with immune reconstitution inflammatory syndrome (IRIS). HAART was continued with the addition of prednisone and doxorubicin. He showed clinical improvement and was discharged to a nursing facility.
DISCUSSION: Immune reconstitution inflammatory syndrome is the paradoxical worsening of a preexisting disease following the initiation of HAART. IRIS is the direct result of the host's re-acquired ability to produce an inflammatory response to antigens that, while previously present, could not induce an inflammatory response due to the patient's immune suppression. While there have been a small number of case reports of IRIS exacerbating herpes simplex 8, the general internist who manages HIV-infected patients should be aware of IRIS potentially leading to the rapid progression of Kaposi's sarcoma. As was the case with our patient, the risk for IRIS is especially high in patients who are HAART naŶve. Patients with higher CD4 counts and tumor-associated edema appear to have an increased risk for IRIS-KS. The treatment for IRIS-KS is continuation of HAART and commencement of chemotherapy directed at Kaposi's sarcoma. Corticosteroids have been used in adjunct for IRIS-KS, but the benefit is questionable. It is important for general internists to recognize that IRIS-KS is a possible consequence of HAART, and not an indication of failure of anti-retroviral therapy. This awareness will prevent unnecessary and often costly changes of HAART regimens, as well as enable early initiation of chemotherapy.

IDENTIFYING AN EPONYM: ANKLE PAIN DIAGNOSED WITH A CHEST RADIOGRAPH. J. Mcneely[1]; L.T. Matthews[1]. [1]Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 173047)*

LEARNING OBJECTIVES: Attendees will learn to (1) diagnose LÎfgren's syndrome based on the classic clinical presentation and (2) counsel patients on the prognosis for sarcoidosis presenting as LÎfgren's syndrome.
CASE: A 52 year-old Puerto Rican woman with a history of hypothyroidism, low back pain, and depression presented in April to urgent care with a complaint of six days of bilateral ankle pain and swelling. She described the sudden onset of ankle pain and swelling, accompanied by redness of the anterolateral aspect of the leg extending from ankle to mid-calf. Her legs felt hot and were painful to the touch. Symptoms were bilateral, but more pronounced on the left. She had a low-grade fever of 100 degrees at home, but had no other systemic symptoms. Her chronic low back pain was unchanged and review of systems was otherwise negative. On exam, she was afebrile and well-appearing. Ankles were swollen bilaterally and symmetrically; particularly pronounced on the anterior and lateral aspects of both ankles and lower legs. Warmth was noted over both ankles and lower shins; neither erythema nor nodules were appreciated. Patient experienced tenderness with palpation of articular and non-articular surfaces of the ankles. Pain was present with active but not passive movement of the ankles. Pertinent negatives included no other areas of rash or joint abnormalities, absence of pitting edema, normal HEENT exam, and lungs clear to auscultation. LÎfgren's syndrome was suspected and a chest x-ray then obtained, revealing bilateral mediastinal and hilar lymphadenopathy with clear lungs. The patient was treated initially with naproxen and oxycodone for pain with little relief. She returned four days later to her primary physician who prescribed prednisone 10 mg daily. Her symptoms then improved markedly within 1 day, and completely resolved after 2–3 weeks of treatment.
DISCUSSION: LÎfgren's syndrome is an acute and benign form of sarcoidosis. It is characterized by the triad of erythema nodosum, acute polyarthritis (typically periarticular ankle or knee inflammation), and hilar lymphadenopathy. These symptoms may be accompanied by fever, arthralgias, anterior uveitis, and pulmonary disease. It is classically described in young white women of Nordic or Irish descent and is uncommon in blacks; it has also been reported as the most common form of sarcoidosis in Spain. For reasons that are not well understood, the syndrome almost always presents during the spring months. LÎfgren's syndrome is an internist's diagnosis, since it typically presents acutely in otherwise healthy patients who do not carry a diagnosis of rheumatologic disease. Recognition of this syndrome in the generalist's office allows for prompt treatment and avoids unnecessary testing. In young women presenting with erythema nodosum and/or ankle inflammation, a chest x-ray should be ordered to look for hilar lymphadenopathy. With the classic constellation of findings, histologic confirmation is usually not necessary. LÎfgren's syndrome carries a good prognosis and is usually self-limited, becoming inactive within the first year. Patients can be reassured that only a small minority have recurrent disease or go on to develop chronic sarcoidosis.

IMPORTANCE OF PERIPHERAL SMEAR IN RHEUMATOID ARTHRITIS. C. Venkata[1]; R. Basham[1]; A. Kerkvliet[1]; A. Polich[2]. [1]Creighton University, Omaha, NE; [2]Creighton University/ Veterans Affairs Medical Center - Omaha, Omaha, NE. *(Tracking ID # 170027)*

LEARNING OBJECTIVES: 1) Report a case of anemia, neutropenia and rheumatoid arthritis with large granular lymphocytes noted upon peripheral smear. 2) Discuss about the large granular lymphocyte syndrome, and its treatment and complications. 3) Acknowledge the importance of obtaining a peripheral smear in patients with rheumatoid arthritis and neutropenia.

CASE: A 71-year-old Caucasian male was admitted for one-week history of worsening fatigue. His past medical history included rheumatoid arthritis, hypertension and hyperlipidemia. He was started on 20 mg of prednisone for rheumatoid arthritis two months ago, which was tapered down to a maintenance dose of 7.5 mg daily. Vital signs were normal except for blood pressure of 88/51 mm Hg, this improved with intravenous fluids. His left hand and fingers had diffuse swelling and ulnar deviation. Rest of the physical exam was normal except for some residual left side weakness from the old stroke. Workup for infections and adrenal insufficiency were negative. His baseline hemoglobin was known to be 13.5 gm/dl and it dropped to 8.6 gm/dl on this admission. His absolute reticulocyte count was 0.4% and stools were guaic negative. Iron studies were consistent with anemia of chronic disease. In addition, he had neutropenia with leukocyte count reaching a nadir of 2500 cells per microliter and the absolute neutrophil count ranging from 0.7 K/μL to 1.6 K/μL. This roused a suspicion for Felty's syndrome, but abdominal ultrasound did not show splenomegaly. However, upon examination of peripheral smear, thirty percent of lymphocytes had abundant cytoplasm with azurophilic granules. These laboratory and clinical findings suggested the patient had large granular lymphocyte syndrome. He was given rescue doses of prednisone at 15 mg/day and started on methotrexate 10 mg/week, following which there was a significant improvement in his symptoms, neutropenia and anemia.

DISCUSSION: Large granular lymphocyte (LGL) syndrome is a clonal disease characterized by neutropenia, anemia, and/or thrombocytopenia. It is also often associated with autoimmune disorders, such as rheumatoid arthritis. LGL cells include both natural killer cells and cytotoxic T cells, and they usually demonstrate abundant cytoplasm with azurophilic granules. Clonal expansion of these cells in the bone marrow inhibits myelopoiesis directly by local production of cytokines, antibody-mediated mechanisms, and Fas-ligand driven apoptosis. Diagnosis is suggested by peripheral smear, flow cytometry and confirmed by T-cell gene rearrangement studies. While this condition is rare in the normal population, it is found in approximately 33% of patients with rheumatoid arthritis (RA). LGL syndrome can be distinguished from Felty's Syndrome by identification and immunotyping of typical LGL cells, and in addition patients with LGL syndrome often lack splenomegaly. The mainstay treatment for LGL syndrome is methotrexate, although steroids, cyclphosphamide, and cyclosporin A have also been used. Morbidity and mortality within this syndrome are most often attributed to neutropenia and consequent infection rather than progression to malignant leukemia. As the correlation between LGL syndrome and RA is significant, it is imperative that patients with RA and neutropenia should be recommended for peripheral blood smears in order to rule out LGL syndrome.

LINGERING LYMPHADENOPATHY. H. Nisar[1]; D. Zalenski[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173320)*

LEARNING OBJECTIVES: 1. To outline a diagnostic approach to systemic lymphadenopathy in a young adult 2. To recognize the prognostic significance of diffuse lymphadenopathy as a presenting symptom in lupus

CASE: A 19 year old Asian female presented to student health clinic following a recent provoked lower extremity DVT. On initial physical exam she was found to have extensive lymphadenopathy. She denied fever, joint pain, skin rash or weight loss. Her father died of leukemia at age forty. The initial work up included PPD, HIV, CMV, and EBV serology. CT scan of the chest abdomen and pelvis and fine needle aspiration of two cervical lymph nodes were also undertaken. The fine needle aspiration and an outpatient excisional axillary lymph node biopsy were reported as reactive cellular change. Shortly thereafter the patient developed dyspnea, weight gain and described "foamy, dark" urine. She was admitted for further evaluation. Physical examination was notable for normal mental status, blood pressure of 120/84, and temperature of 99.0F. She had extensive, bulky lymphadenopathy involving cervical, supraclavicular, submandibular, axillary and inguinal regions and mild anasarca. Pertinent laboratory findings showed normocytic anemia, albumin <1.0, total cholesterol 329, urine had $+3$ blood and 12.8 grams of protein in a 24 hour collection. ANA titer was 1:640, with anti-double stranded DNA level of 1:1280, low complement levels and positive anti-phospholipid antibodies. The renal biopsy demonstrated lupus nephritis with mixed focal proliferative and membranous features. The segmental necrotizing lesions involved 7% of the glomeruli. She clinically responded to mycophenolate mofetil and aggressive steroid dosing. Her hospital course was complicated by serositis, heparin induced thrombocytopenia, gram negative bacteremia, hemodialysis, pulmonary hemorrhage and a second lower extremity DVT. She was discharged to home after a two-month hospitalization.

DISCUSSION: Systemic lupus erythematosus (SLE) is a classical autoimmune disease that usually affects women of childbearing age. The clinical manifestations vary widely, from mild isolated dermatological involvement to life threatening disease activity. Generalized lymphadenopathy (LAD) as the only presenting feature is rare. A number of other infectious and neoplastic disease processes must be considered. These include lymphoma, mycobacterial infection, HIV, Epstein Barr, sarcoidosis, serum sickness, Castleman's Disease and Kikuchi-Fujimoto's disease (KFD) which is a histiocytic necrotising lymphadenitis occurring in young women causing fever, lymphadenopathy and leukopenia. Thorough history and physical exam, CBC and chest X-ray narrow the diagnostic possibilities. Removal of an entire lymph node at four weeks is indicated if no etiology has been identified. Lympadenopathy (LAD) in lupus is associated with more constitutional symptoms, lower complement levels and more extensive use of immunosuppressants. It is present more commonly with diagnosis and flares. It does not reflect increased frequency of renal or neurological involvement. The uses of high-dose corticosteroid hormones and cytotoxic agents have significantly improved patient survival, but they are also associated with major infection, infertility, osteoporosis, and secondary malignancies.

LOOKING BEYOND THE JOINTS IN A CASE OF POLYARTHRITIS. L. Raman[1]; K. Pfeifer[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173813)*

LEARNING OBJECTIVES: 1) Recognize polyarthritis as a rare presentation of multiple myeloma. 2) Describe the appropriate diagnostic evaluation of patients suspected of having paraproteinemia.

CASE: A 64-year-old Caucasian male with a past medical history of surgically cured prostate, renal and colon cancer presented with a two-day history of multiple joint pains. His symptoms began with bilateral wrist pain and swelling which resolved in a few hours except for the left wrist. The following day, he noticed pain and swelling of the left knee, right ankle and right hip with associated difficulty walking. These symptoms also resolved except for the right ankle. A week prior to the onset of these complaints, the patient sustained an abrasion to his left hand and was given a course of cephalexin to treat cellulitis around the site of injury. He had no other new medications, fevers, chills, night sweats, rash or other symptoms. On examination, significant findings included erythema, swelling and restricted active and passive range of motion of his left wrist, left knee and right ankle. Pertinent laboratory studies included hemoglobin 10.3 mg/dl, creatinine 3.1 mg/dl, BUN 21 mg/dl, ESR 50 mm/hr, CRP 11 mg/dl, uric acid 7.5 mg/dl, total protein 6.7 g/dl, albumin 3.8 g/dl and urinary protein 30 mg/dl. Arthrocentesis of the left knee and synovial fluid analysis were unremarkable. Subsequent sulfosalicylic acid testing of the urine revealed $4+$ proteinuria, and 24-hour urine collection showed $>11{,}000$ mg/dl of protein. Urine and serum protein electrophoresis revealed the presence of a monoclonal gammopathy consisting of kappa and lambda light chains respectively. Further workup included a normal skeletal survey and bone marrow biopsy which showed greater than 50% plasma cells and negative staining for amyloid. The patient subsequently underwent chemotherapy for multiple myeloma and is currently doing well without any joint symptoms.

DISCUSSION: Multiple myeloma is a neoplastic proliferation of plasma cells leading to formation of monoclonal immunoglobulins. Arthritis rarely presents as a sole manifestation of this condition. On review of the literature, only a few case reports of polyarthritis have been described in patients with monoclonal gammopathy. The postulated mechanisms include amyloid/immunoglobulin deposition and metabolic complications like hyperuricemia leading to secondary gout. It has been suggested that immunological reactions against light chain molecules or humoral antigens can result in synovial deposition and polyarthritis. Treatment consists of prompt initiation of corticosteroids and chemotherapy. Thus, it is important to recognize multiple myeloma as a differential diagnosis in patients presenting with polyarthritis in the setting of renal failure and anemia.

METHOTREXATE INDUCED ACCELERATED NODULOSIS (MIAN): MULTIPLE NCIDENTAL ALARMING NODULES IN A PATIENT WITH RHEUMATOID ARTHRITIS (RA). V.A. Richlin[1]; N. Henig[1]; P. Aronowitz[1]. [1]California Pacific Medical Center (CPMC), San Francisco, CA. *(Tracking ID # 172686)*

LEARNING OBJECTIVES: 1. Generate a differential diagnosis for pulmonary nodules in a patient with RA. 2. Recognize MIAN as a potential diagnosis for pulmonary nodules 3. Differentiate MIAN from RA associated nodules.

CASE: An 84 year old male with a 30 year history of RA presented to the emergency department with a 6 week history of severe mouth pain. On admission, he had a 2–3 week history of odynophagia, a non-productive cough, and decreased oral intake, a 1 day history of fevers and chills, and a 30 pound weight loss over the past 6 months. His RA was well controlled for over 15 years with 7.5 mg methotrexate (MTX) weekly. He has never smoked tobacco. Physical examination revealed a 2x3 cm necrotic area of the right posterior hard palate, with exposed bone. He also had multiple subcutaneous nodules on his back, mild bony deformities of his hands without active synovitis, and no palpable lymphadenopathy. The leukocyte count was 9,400/dl with 83% neutrophils. Rheumatoid antigen was low (10, nl <15), complement levels, ANA and p- and c-ANCA were within normal limits. Facial CT revealed findings consistent with osteomyelitis of the right alveolar ridge and pansinusitis. Chest radiograph revealed multiple, round bilateral pulmonary nodules of varying sizes. Chest CT showed bilateral, innumerable noncalcified, well-circumscribed masses, the largest measuring 2.3x3.5 cm, with defined air bronchograms through some. Mild mediastinal and left axillary lymphadenopathy was also present. Two biopsies of

the hard palate and two CT guided fine needle aspirations of different lung nodules were performed with inconclusive pathologic readings. A video-assisted thoracoscopic surgery was subsequently performed for excisional biopsy of a left upper lobe nodule. Histologic examination revealed a necrobiotic granuloma consistent with a rheumatoid nodule. The painful palatal lesion was believed to be a secondarily infected rheumatoid nodule and the patient was treated with appropriate antibiotics.

DISCUSSION: The differential diagnosis for pulmonary nodules in a patient with RA includes malignancy, infection, vasculitis, vascular malformations, and non-infectious granulomas such as RA associated nodules and MIAN. A tissue diagnosis is usually necessary. In this case, the histologic findings are consistent with rheumatoid nodules, which can be either RA associated or methotrexate induced (MIAN). Pulmonary rheumatoid nodules occur in <0.5–1% of RA patients, and usually in those with long-standing seropositive disease or poorly controlled disease. As our patient was seronegative and without active symptoms, MIAN was considered. The incidence of MIAN is 8–11% in RA patients on MTX, and is not associated with seropositivity, gender, or disease duration. MIAN is most often described in the digits, making the profound pulmonary nodulosis in this case a rare manifestation. Methotrexate induced nodules are usually asymptomatic, except when the lesions' bulk is interfering or the lesion becomes secondarily infected, as it did in this patient. It is postulated that methotrexate stimulates the adenosine A1 receptors leading to unfettered giant cell formation. The treatment is to discontinue methotrexate.

NEW ONSET SYSTEMIC LUPUS ERYTHEMATOSUS PRESENTING WITH DILATED CARDIOMYOPATHY. T.J. Toloczko[1]; S. Atencio[1]; G.J. Misky[1]. [1]University of Colorado Health Sciences Center, Aurora, CO. *(Tracking ID # 172792)*

LEARNING OBJECTIVES: 1. Recognize dilated cardiomyopathy as rare but potential complication of Systemic Lupus Erythematosus (SLE). 2. Diagnose and treat patients with Congestive Heart Failure (CHF) secondary to SLE.

CASE: KJ is a 32 year old African-American female admitted with a one month history of progressive rash, dyspnea, and edema. Symptoms began with a pruritic rash on sun-exposed areas, as well as profound dyspnea, orthopnea and lower extremity edema severely limiting her physical activity (NYHA class IV). On physical examination, she was febrile, tachycardic and appeared uncomfortable with a malar rash and painless lingular ulcerations. She had jugular venous distention, a third heart sound, bilateral rales, hepatomegaly and bilateral lower extremity edema. Chest x-ray revealed cardiomegaly, pulmonary edema and a right-sided pleural effusion. Electrocardiogram confirmed sinus tachycardia and also noted poor R wave progression with diffuse T wave flattening. Troponins were negative. Labs revealed increased lactate dehydrogenase and schistocytes on peripheral smear consistent with hemolytic anemia as well as anemia of chronic disease. Low albumin and elevated liver transaminases were also seen. Urinalysis showed mild proteinuria. A strongly positive ANA, positive anti-ds DNA antibody and anti-SM antibody returned correlating with low complement levels. Thoracentesis revealed a transudative effusion. Finally, echocardiogram and a cardiac magnetic resonance image confirmed global hypokinesis and severely reduced systolic function.

DISCUSSION: SLE rarely presents with clinically symptomatic cardiac dysfunction. However, review of the literature suggests that subclinical myocardial involvement in SLE may be more common than previously thought. Approximately 40% of patients with SLE demonstrate myocarditis postmortem. Anywhere from 5–10% of SLE patients demonstrate myocardial disease on non-invasive testing. In our patient, the combination of clinical symptoms and laboratory findings were diagnostic of SLE. The definitive diagnosis of myocarditis is made by cardiac biopsy, but non-invasive testing such as echocardiography and MRI can provide evidence of cardiac involvement in the setting of SLE. The pathophysiology of cardiac damage in SLE is likely mediated by immune complex deposition in the myocardial blood vessels and myocyte bundles. Complement is then activated leading to inflammation and myocardial injury. There can be abrupt ventricular dysfunction and dilated cardiomyopathy within weeks to months, as noted in our patient. Although a myocardial tissue diagnosis was not sought in our patient, echocardiogram and MRI provided evidence of myocardial damage and severe dysfunction. Our patient was treated appropriately for CHF secondary to a dilated cardiomyopathy with diuresis, ACE inhibitor and eventual beta blocker. Her SLE was treated initially with high dose intravenous steroids. Significant improvement in the patient's symptoms was noted. The inflammatory and autoimmune abnormalities associated with SLE provide a constellation of symptoms that can present the clinician with a myriad of clinical scenarios. Our patient presents with symptoms consistent with the clinical diagnosis of SLE and concomitant dilated cardiomyopathy resulting from SLE-induced myocardial damage. Only a few similar cases have been reported in the literature.

REFRACTORY ORAL ULCERS IN FEMALE: A CASE OF PEMPHIGUS VULGARIS
I. Singla[1]; R. Aggarwal[1]; A. Raina[1]; S.R. Ganesh[2]. [1]University of Pittsburgh, Pittsburgh, PA; [2]University of Pittsburgh Medical Center, Pittsburgh, PA. *(Tracking ID # 171982)*

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of Pemphigus vulgaris. 2. Recognize the management of Pemphigus vulgaris. 3. Recognize that Pemphigus has high mortality rate and require high clinical suspicion for Diagnosis.

CASE: An 80 year old Caucasian female with no prior medical problems presented to primary care clinic with a 2 week history of mouth ulcers, throat pain and difficulty swallowing. She has not taken any new medications; there has been no change in her diet. She was then treated with nystatin swish and swallow for presumed thrush. She was then started on vitamin supplements. Without any improvement after 1 month of empirical treatments, her mouth ulcers were biopsied. Biopsy of the lesion revealed acantholysis and direct immunofluorescence microscopy showed intercellular deposits of IgG and C3 in the epidermis. She then developed blisters and ulcers on lower part of her abdomen and thighs. Her examination revealed crusted erythematous lesion on buccal mucosa and lips with positive Nikolsky's sign. She was treated with prednisone and her lesions showed significant improvement in 2–3 days.

DISCUSSION: Pemphigus is a rare, autoimmune, intraepidermal blistering disease. Pemphigus was potentially fatal in pre-steroid era. The annual reported incidence in US is about 0.42 per 100,000 people. It typically occurs in 50–60 years of age and has been observed equally in both men and women. It is more common in people of Jewish and Mediterranean and Jewish descent. Pemphigus is characterized by bullous lesion on skin and mucous membranes. Lesions usually appear first on oral mucous membranes presenting as painful oral ulcers, throat pain or difficulty swallowing and skin becomes affected later. Rubbing the finger on uninvolved skin may cause easy separation of epidermis leading to either bullae or erosion (Nikolsky's sign). The lesions usually persist for weeks before the accurate diagnosis is made. About 75% of the people see more than 4 practitioners before the diagnosis is confirmed and pemphigus is diagnosed in only about 57% of the cases in first 6 months in patients presenting with oral lesions. The pemphigus is caused by autoantibody against intercellular adhesion molecules like desmolgein 1 and desmolgein 3. These intercellular antibodies interfere with cell adhesion and cause intraepidermal split leading to acantholysis. The diagnosis of Pemphigus requires high clinical suspicion and is confirmed by biopsy of the lesion and adjacent healthy skin. Microscopically characterized by intraepidermal split with acantholysis, eosinophilic infiltration and direct immunofluorescence microscopy usually reveals intercellular deposits of IgG and C3 in the epidermis. Treatment of pemphigus is divided into initial control treatment with drugs that act rapidly to control disease activity and delayed maintenance treatment to prevent relapse. Systemic steroids are the mainstay of initial control treatment, but other options are plasmapheresis. Immunosuppressive agents like azathioprine, cyclophosphamide and methotrexate have delayed response and are used in maintenance phase, usually along with steroids. It is important to consider pemphigus as cause of refractory mouth ulcers, as timely diagnosis can decrease mortality of this potentially life threatening disease.

SPONTANEOUS PUBIC OSTEOMYELITIS-A RARE CAUSE OF GROIN PAIN.
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LEARNING OBJECTIVES: 1) Recognize the clinical presentation of osteomyelitis of pubic bone. 2) Differentiate osteomyelitis of pubis from osteitis pubis - a common clinical confounder.

CASE: A thirty-one year old male presented to the emergency room with left groin pain, fever and pain with hip motion, especially abduction of the left leg. He had an antalgic gait and difficulty in weight bearing. He was discharged three weeks earlier from our hospital with similar complaints, when methicillin-sensitive Staphylococcus aureus was isolated from blood culture. The source of infection was not identified despite workup during prior admission including negative Computed Tomography of the abdomen and pelvis, Magnetic Resonance of the hip and trans-esophageal echocardiogram. He was treated with intravenous vancomycin for one week. Evaluation of risk factors revealed involvement in strenuous activity during construction work, occasional use of marijuana and high-risk sexual behavior. He denied intravenous drug use and did not have any history of pelvic trauma or surgery. He required incision and drainage of an olecranon bursitis two years ago which was treated with oral antibiotics. On examination, his temperature was 38.3° C, pulse 109/minute, and significant tenderness was found at the left adductor region, especially with resisted adduction. Laboratory evaluation revealed a peripheral white blood count of 11.3 mg/dL with 14 percent bands, a sedimentation rate of 80 mm/hr and unremarkable urinalysis. Blood culture grew Staphylococcus aureus sensitive to methacillin. Gadolinium-enhanced MRI was positive for abnormal intensity within left pubic bone adjacent to the symphysis and Tc-99 three phase bone scan was positive for increased isotope activity in left pubic bone. Fluoroscopic guided needle aspiration and culture of left suprapubic abscess confirmed methicillin-sensitive Staphylococcus aureus. He was treated with six weeks of intravenous nafcillin with resolution of symptoms and pyrexia.

DISCUSSION: Osteomyelitis of the pubic bone is extremely rare in patients without risk factors. Predisposing factors include genitourinary surgery (female incontinence surgery most common), intravenous drug abuse, pelvic malignancy and strenuous physical activity in athletes. Typical features of pubic symphysis infection are fever, pubic pain, painful or waddling gait, pain with hip motion and groin pain. A long delay between onset of symptoms and diagnosis is typical (mean: 29 days). In young athletes, culture usually grows Staphylococcus aureus resulting from minor skin abrasion leading to bacteremia. Diagnosis is based on

MRI or bone scan and confirmed by culture of affected area. Treatment requires intravenous antibiotics based on culture and sensitivity for a period of six weeks. Almost half the cases require surgical debridement and curettage. The diagnosis must be differentiated from osteitis pubis, a self-limiting inflammation of the symphysis pubis secondary to trauma, pelvic surgery, childbirth, or overuse (usually in athletes). To distinguish between osteomyelitis and osteitis, a biopsy and culture of the affected area is essential, especially since both disorders may exist in the same patient. Providers caring for patients at risk should be familiar with both disorders and their management.

STILL FEELING ILL: DIAGNOSIS OF ADULT STILL'S DISEASE. V. Rachakonda[1]; G.S. Fischer[2]. [1]University of Pittsburgh School of Medicine, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173876)*

LEARNING OBJECTIVES: 1.Recognize the clinical manifestations of adult Still's disease (ASD). 2.Consider ASD in the differential diagnosis of fever of unknown origin.

CASE: A 52 y/o Caucasian man with childhood rheumatic fever was transferred with a 4-week history of fever. He presented to an ED with 2 days of fever, sore throat, and myalgias. In the next month, the fever persisted, except when treated with prednisone doses greater than 10 mg/day. The fever occurred nightly, peaked to a maximum of 103° F, and resolved in 3–4 hours. He twice developed a pink macular rash on the torso and upper arms with fevers; it cleared with defervescence. Febrile episodes were accompanied by fatigue, chills, cough, LUQ discomfort, myalgias and arthralgias. During the month, he lost 10 pounds. He denied travel abroad or sick contacts. Studies for infectious agents were negative, including blood cultures, PPD, RPR, C. dificile stool antigen, antibodies to CMV, ELISA for HIV, viral hepatitis serologies, peripheral smear for P. falciparum, EBV heterophile antibody, and Lyme antigen. Chest and abdominal CTs revealed bilateral lower lung infiltrates and mild fatty liver infiltration. Echocardiogram, bone marrow biopsy, serum/urine protein electrophoresis, ANA and anti-LKM antibodies were negative. On transfer to our facility, the patient was afebrile with leukocytosis to 31.6 with left shift, mild thrombocytosis, and normocytic anemia (Hct 29.3). ANCA, ANA, ASO titers and RF were negative. ESR was elevated to 75. LFTs were mildly elevated; LDH was 254. Ferritin was 13,259 with normal TIBC, iron concentration, and % saturation. A repeat echocardiogram revealed a small pericardial effusion; repeat abdominal CT was normal. Given his quotidian fever, macular rash and laboratory anomalies abating temporarily on high-dose steroids, the patient was diagnosed with ASD. Once prednisone was started, his symptoms resolved.

DISCUSSION: ASD is an inflammatory condition of unknown etiology characterized by fevers, polyarthritis, and evanescent rash. It may present as either new illness or recrudescence of previous juvenile rheumatoid arthritis. ASD has a bimodal age distribution, with peak incidences in the 2nd and 4th decades. Major diagnostic criteria include fever for at least one week, arthralgias/arthritis for at least two weeks, macular/maculopapular rash, and leukocytosis greater than 10,000/mL with at least 80% granulocytes. Minor criteria include sore throat, lymph node enlargement, hepatosplenomegaly, abnormal LFTs, and negative ANA and RF. ASD is diagnosed when more than four criteria are present, with two major criteria at minimum. The fever is quotidian, often with early-evening onset. A pink, evanescent rash involving the trunk and proximal extremities is most apparent during febrile episodes. Koebner phenomenon and dermatographism may be present. Musculoskeletal manifestations include myalgias, arthralgias, and arthritis. The arthritis may be mild or severe; the knees, wrists, and ankles are commonly affected. Hematologic findings include normocytic anemia, leukocytosis, and thrombocytosis. Marked hyperferritinemia without iron excess may suggest ASD. The clinical course of ASD varies from single episodes to both relapsing/remitting chronically progressive patterns. First-line therapy for ASD includes NSAIDs and aspirin. Corticosteroids and methotrexate are used for severe arthritis, high fevers, and internal organ involvement. No controlled trials of immunomodulating agents for ASD exist.

THE PAINFUL RED LEG: MORE THAN A REFLEX DIAGNOSIS. R.T. Brown[1]; C.J. Lai[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173346)*

LEARNING OBJECTIVES: 1. Expand the differential diagnosis for unilateral lower extremity pain; 2. Learn the diagnostic criteria and therapy of complex regional pain syndrome (CRPS).

CASE: A 60 yo woman with Type 2 DM and HTN presented to the ER with 3 months of left lower extremity (LLE) pain and redness. She denied trauma, bites, or risks for DVT. At the time of initial symptoms, the patient saw her PCP who attributed the symptoms to diabetic neuropathy and treated her with NSAIDs and amitryptyline, with no improvement. During this current ER visit, the patient's exam revealed erythema, warmth, allodynia to light touch, and 2+ pitting edema over the left foot and ankle. CBC and lytes were normal, and LLE US was negative for clot. Because her LLE exam appeared c/w cellulitis, the patient was started on vancomycin. When no improvement was noted over 48 hours, the possibility of complex regional pain syndrome (CRPS) was raised. A plain film of the left foot was obtained, showing non-acute fractures of the 2nd-4th metatarsal necks. A 3-phase bone scintigraphy revealed increased uptake in the 2nd-4th metatarsals on blood flow and blood pool phases, and diffuse uptake in the foot and calf bones on delayed phase imaging. Based on the presentation and imaging, she was diagnosed with CRPS triggered by a prior fracture, though she could not recall foot trauma. Antibiotics were discontinued. Because the patient had already failed a trial of NSAIDs and tricyclics, prednisone and IV pamidronate were initiated for CRPS. Over the next 48 hours, her symptoms improved significantly, and she was discharged home with a 6-week course of prednisone. The patient followed up with her PCP, who reported that her symptoms had resolved.

DISCUSSION: Although it is an uncommon cause of unilateral extremity pain, CRPS can be mistaken for cellulitis, osteomyelitis, venous insufficiency, DVT, or neuropathy. Formerly known as reflex sympathetic dystrophy, CRPS is characterized by burning or stinging pain (81%), edema (80%), hyperesthesia (65%), and vasomotor changes (~83%). The etiology is unclear, but is thought to involve autonomic dysregulation. Diagnosis is based on 4 clinical criteria: (1) presence of an initiating noxious event or immobilization, (2) disproportionate continuing pain and allodynia, (3) edema, changes in skin blood flow or sweat production; and (4) the absence of an alternative diagnosis. While these criteria are very sensitive for CRPS, they are only 36% specific; imaging, however, can help support the diagnosis. Plain Xrays may show asymmetric osteopenia in the affected limb (73% sensitivity, 57% specificity), and bone scintigraphy reveals increased periarticular activity (97% sensitivity, 86% specificity). Therapy is aimed at symptom control and is most effective when initiated early. Although the evidence is poor, first-line therapies include NSAIDs, tricyclics, and capsaicin cream. Second-line therapies include oral glucocorticoids (prednisone 30–80 mg/day for 2–12 weeks) and IV bisphosphonates, both of which have shown improved pain outcomes. Randomized controlled trials support the use of steroids, which are superior to placebo and to NSAIDS for pain control. Several small trials also show that bisphosphonates provide effective analgesia relative to placebo, perhaps by inhibiting osteoclastic hyperactivity and local acidosis. The diagnosis of CRPS should be considered in any patient with unilateral limb symptoms which do not improve rapidly with treatment of other disorders.

THROMBOTIC THROMBOCYTOPENIC PURPURA: VAGINAL BLEEDING WITH A TWIST. S. Adatya[1]; E. Kim[1]; I. Mamkin[1]. [1]University of Connecticut, Farmington, CT. *(Tracking ID # 173310)*

LEARNING OBJECTIVES: 1) Recognize the clinical characteristics, conditions, and causes associated with TTP. 2) Overview treatment of TTP 3) Review of Catastrophic Antiphospholipid Syndrome.

CASE: A 37-year-old Hispanic female was referred to the emergency department(ED) for blood transfusion of a hematocrit of 20 g/dl after initially presenting to her primary care physician with heavy vaginal bleeding for three days. History obtained in the ED was significant for menorraghia and a family history of systemic-lupus-erythematosus(SLE). Physical examination in the ED was pertinent for fever and malar rash with laboratory findings significant for acute renal failure(ARF), anemia, and thrombocytopenia. Diagnostic work confirmed the presence of microangiopathic hemolytic anemia; therefore, plasma exchange and pulse dose corticosteroids were initiated within 12 hours of admission. On day three of hospitalization the patient subsequently developed status epilepticus and respiratory distress, was intubated and then transferred to the intensive care unit. Magnetic resonance imaging was interpreted as irreversible diffuse encephalopathy. Rituximab and intravenous immune globulin(IVIG) were initiated on day 4 of hospitalization, with complete resolution of symptoms by day 15 and discharge to a rehabilitation facility. Further diagnostic evaluation revealed the presence of lupus anticoagulant and a mild reduction of ADAMTS-13.

DISCUSSION: Thrombotic Thrombocytopenic Purpura (TTP) is classically diagnosed by the pentad of microangiopathic hemolytic anemia, thrombocytopenia, ARF, neurologic abnormalities and fever. TTP is a clinical diagnosis with a myriad of underlying pathogenesis. ADAMTS-13 deficiency may be important for understanding the pathogenesis of the acquired and hereditary forms of this disease; however, it should not be relied upon to obtain a diagnosis. The major causes of TTP can be divided into idiopathic(37%), drug toxicity(13%), autoimmune disease(13%), pregnancy/postpartum(7%), and infectious, namely HIV, sepsis(9%) and enterohemorrhagic enteric pathogens (6%). In patients with the antiphospholipid syndrome(APS) or SLE, the distinction from TTP may not be possible. In addition, a minority of patients with APS may present acutely with thrombotic microangiopathy affecting small vessels of at least three or more organ systems termed catastrophic antiphospholipid syndrome. Clinical features include ARDS, bone marrow deficiency, cerebral, renal, and cardiac microthrombi. This condition should be clinically suspected in a patient with multiorgan failure of unknown origin. With the advent of plasma exchange therapy mortality decreased from 90% to 20%. Plasma exchange reverses the platelet consumption which is responsible for the thrombus formation. In addition, where there is a deficiency of ADAMTS-13, plasmapheresis may remove the large von Willebrand factor multimers and circulating autoantibodies, while plasma infusion replaces the missing enzyme. Therapy consists of plasma exchange combined with corticosteroid treatment. In refractory disease, adjunctive therapy with IVIG or other immunosuppressive agents such as rituximab, cyclosporine, cyclophosphamide and azathioprine have been reported as being successful in anecdotal reports. TTP is a syndrome that potentially has a high morbidity and mortality and requires a high index of clinical suspicion with prompt early aggressive treatment in order to have improved outcomes.

BITING OFF MORE THAN WE COULD CHEW-A SURPRISING FIND ON BIOPSY! P. Sharma[1]; R. Sahni[2]; A. Aneja[1]. [1]Cleveland Clinic Foundation, Cleveland, OH; [2]St Vincent Charity Hospital (Case Western reserve University), Cleveland, OH. *(Tracking ID # 173917)*

LEARNING OBJECTIVES: Recognize complications of unexplained eosinophilia before initiation of immunosuppression. Appreciate the association of gram negative sepsis with Strongyloides stercoralis hyperinfection syndrome
CASE: A 63 year old Asian male presented to the hospital with malena and progressively worsening functional status. He had also been experiencing intermittent nausea, vomiting, diarrhea and decreased appetite over the past 2–3 years. He had a past medical history of ischemic cardiomyopathy, asthma, stage 3 CKD, peptic ulcer disease and gout. Among other medications, he was taking short courses of prednisone for his gout and asthma. The patient originally hailed from Sri Lanka (last visit 2002). He reported extensive travel history to Kentucky, Missouri, Indiana, Virginia and Florida and had lived 20 years in Nebraska. On admission, the patient looked cachectic but comfortable with stable vitals and exam. No rash was noted on exam. He had a white cell count of 16,700 cells per microliter with 22% eosinophils. An endoscopy revealed mild gastritis and retained biliary food debris. Biopsies from the procedure revealed Strongyloides stercoralis in the mucosa of the gastric antrum. A subsequently reported ELISA was positive for strongyloides antibodies. He subsequently developed hypotension. Bacteremia and sepsis associated with strongyloides larvae penetrating the GI mucosa was suspected. Broad spectrum antibiotic coverage with vancomycin and ceftazidime was initiated. The patient was stabilized over the next 36 hours and he received two doses of Ivermectin 24 hrs apart. Blood cultures were negative and antibiotics were stopped after 2 days. The patient was subsequently discharged home. After two months, the patient expired secondary to co-morbid conditions.
DISCUSSION: Strongyloides stercoralis is an endemic infection in the Southeast Asia, Eastern Europe and parts of Appalachian and south-east USA. It is a difficult diagnosis unless the index of suspicion is high. We present a case where it was detected on biopsy specimen of the gastric mucosa. We believe that its presence in the stomach (rather than in the duodenum or jejunum) may be secondary to a high burden of infection or iatrogenic achlorhydria. The hypotension seen in our patient may have been secondary to transient bacteremia with the penetration of the larvae through the mucosa of the gastrointestinal tract. Almost all deaths due to helminths in the United States result from S. stercoralis hyperinfection. These can be prevented by early detection and treatment of asymptomatic chronic infections. However, the patient can present with a number of non-specific presentations. The Strongyloides infection can last for decades due to a low grade auto-infection cycle and make it a difficult diagnosis unless the suspicion is high. A workup of eosinophilia is necessary before immunosuppressive therapy.

"BUT I WAS VACCINATED!"-THE IMPORTANCE OF HEALTH HYGIENE WHEN TRAVELING IN FOREIGN COUNTRIES. E. Thibodeau[1]. [1]Tufts-New England Medical Center, Boston, MA. *(Tracking ID # 173318)*

LEARNING OBJECTIVES: 1. Recognize the possibility of typhoid vaccine failure when evaluating patients who have recently traveled to high-risk areas. 2. Emphasize the importance of hygiene in addition to vaccination when traveling in typhoid-endemic regions.
CASE: 25-year-old healthy man presented to the Emergency Department with 6 days of fever 39 C, myalgias, fatigue, and a rash on his chest. He returned to the United States 3 weeks ago after 5 months of travel in India. Of note, the patient received vaccinations for Hepatitis A, Hepatitis B, polio, and typhoid, prior to travel but did not take malaria prophylaxis. In the ED he was given ceftriaxone and sent home with ampicillin for possible Lyme disease. He returned the next day with persistent symptoms and new development of non-bloody diarrhea. On admission his temperature was 40.2 C and he remained hemodynamically stable. Examination was significant for a macular rash on his chest and a diffusely tender abdomen. Data revealed a WBC of 1.6, a blood smear negative for malaria and babesia and a lumbar puncture negative for infection. Preliminary blood cultures grew gram-negative rods. Abdominal scan showed pancolitis without perforation. He was started on doxycycline and ciprofloxacin with a presumed diagnosis of typhoid fever, dengue fever, or other tick-borne illness. On hospital day #3 blood cultures grew Salmonella paratyphi A. He was discharged on day #4 with 14 days of ciprofloxacin.
DISCUSSION: Salmonella typhi is the primary cause of typhoid fever, however, less common pathogens also exist, such as S. paratyphi A, B, and C. All strains are clinically indistinguishable. The pathogenicity of the illness is affected by the virulent properties of the bacteria and the infectious dose. Infection is typically contracted indirectly from the human reservoir 5–21 days after ingestion of contaminated food or water. Patients present with fevers, fatigue, diarrhea or constipation, and rash. Complications such as splenomegaly with neutropenia, intestinal perforation, and sepsis can occur. While clinical outbreaks in the United States have been reported, advances in hygiene have nearly eliminated infection in the developed world. Typical cases in the United States occur in travelers to endemic areas such Asia, Africa, and Latin America. Vaccination is recommended prior to travel. Currently 2 vaccines are used: the oral attenuated Ty21a strain of S. typhi and the parental capsular polysaccharide vaccine. Both vaccines are relatively equivalent in efficacy, though neither is completely protective. The oral vaccine has an overall protective efficacy of 67–80%. It is important to note neither vaccine protects against paratyphi strains. Proper identification should not delay empiric antibiotics if infection is suspected since blood cultures are positive in 40–60% of cases and can take days for isolation. Stool culture results are faster, but negative in 60–70% of cases. Bone marrow biopsy is more sensitive and can be positive even after initiation of antibiotics. In summary, typhoid fever is a systemic febrile illness encountered in the United States typically in travelers to endemic areas. While the vaccine is recommended for travelers, it is not 100% effective and does not protect against some strains. Therefore, proper hygiene should be emphasized. When suspecting typhoid fever, it is important to recognize, diagnose, and empirically treat individuals who fit the clinical scenario, even if they have received the vaccine.

A 21 YEAR OLD AFRICAN AMERICAN FEMALE WITH MULTIPLE, RECURRENT 'STERILE' BREAST ABSCESSES. I.R. Sankara[1]; M. Rodriguez[1]. [1]University of Alabama at Birmingham-Montgomery Internal Medicine Residency Program, Montgomery, AL. *(Tracking ID # 173852)*

LEARNING OBJECTIVES: To report the clinical presentation, histopathological features, and optimal treatment of chronic granulomatous mastitis.
CASE: A 21 year old African American female was admitted to the hospital for recurrent breast abscesses. One month prior to admission she developed a painful right breast mass. This lesion progressed and at the time of the first evaluation by a physician she had an area of induration and erythema in the right upper breast quadrant. She was given oral dicloxacillin without improvement. She was then referred to a breast surgeon who incised and drained purulent material from the lesion; routine cultures of which were negative. With no improvement a week later, the patient was admitted to the hospital. Review of systems was positive for mild bilateral galactorrhea since her last child birth 2 years ago and mild weight loss. She denied any antecedent trauma or breast disorders. Family history was noncontributory. On examination she was afebrile, had a tender 5 cm right breast mass with erythema. She received intravenous cefazolin and metronidazole for 4 days without improvement. Vancomycin was started for presumed resistant Staphylococcal infection. Ultrasound showed diffuse interstitial edema with fibroglandular tissue consistent with inflammation. A repeated I&D showed multiple undrained purulent fluid pockets with subcutaneous extensions. Tissue was sent for histology, special stains, aerobic, anaerobic, mycobacterial and fungal cultures. Cultures were all negative except one culture that grew some coagulase-negative Staphylococcus colonies; it was considered a contaminant. Pathology report showed chronic mastitis and microabscess formation. The patient was stable for 4 days and was discharged on linezolid. Two days later the patient was readmitted with a new tender 4 cm left breast mass. Ultrasound revealed a very complex heterogeneous mass, with few areas of hypoechogenicity suggesting an infectious process. The patient had a left side I&D done with pathology and cultures repeated. The pathology report of left breast showed granulomatous mastitis with micro- abscesses and dense fibrosis, and the review of right breast biopsy showed similar changes. All cultures were consistently negative. The patient received prednisone and was discharged home 3 days later after a very rapid clinical response.
DISCUSSION: Granulomatous mastitis is a rare, idiopathic granulomatous inflammatory breast disease affecting women of childbearing age. Patients usually are young, lactating women, with child birth within last five years. They present with a progressive onset of a breast lump without infection or trauma history. The breast lump is of variable size, usually unilateral, sometimes bilateral and located in any quadrant. The lesion is usually firm, ill defined, tender, and associated with locally inflammatory reaction and/or nipple retraction. It can mimic a malignant tumor or breast abscess and requires thorough pathology review. Histopathology usually reveals noncasseating granulomas with multinucleated giant cells, and usually a neutrophilic background without necrosis. Sometimes high numbers of epithelioid histiocytes are seen, even in the absence of granulomas. Differential diagnoses include tuberculosis mastitis, fungal infections, sarcoidosis, Wegener's granulomatosis. Sterile cultures and the lack of casseous necrosis favor GM diagnosis. Treatment modalities include surgical resection and steroid therapy.

A FORGOTTEN DISEASE MAKES A COMEBACK. A. Niyogi[1]; J. Wiese[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 173534)*

LEARNING OBJECTIVES: 1. Recognize the clinical signs and symptoms of tetanus 2. Identify the general internal medicine patients at greatest risk of acquiring tetanus. 3. Identify the treatment of tetanus.
CASE: An 83-year -old man presented with two weeks of difficulty swallowing. The symptoms began shortly after he had had a dental abscess drained. He denied pain with swallowing foods or liquids, but did note the progressive inability to move food from the pharynx to the esophagus. Three days prior to admission he began to have problems opening his mouth and pain in his neck, and noted pooling of secretions in his throat. He noted that he had recently begun to use a rodenticide in his house due to a rat problem. He denied voice changes, fever, headaches, photophobia, or recent trauma. He had a history of peripheral vascular disease, chronic osteomyelitis, a below-the-knee amputation of his left leg, and a history of tetanus at the age of seven. He had a temperature of 99°F, a heart rate of 113 beats/min., respirations of 22 breaths/min., and a blood pressure of 168/82 mmHg. There was hypertonicity of his muscles of facial expression and mastication, as well as hypertoncity of his sternocleidomastoids and tongue. He had an 8x5 cm ulcer on his right medial malleolus with no purulence or surrounding erythema. His left leg was amputated below the knee. The remainder of his examination was normal. His white blood cell count was 9,000 cells/mm3, and the hematocrit was 31%. The remaining laboratory values were normal. A CT scan of the head and neck was normal. An MRI the right ankle showed no evidence of abscess of acute osteomyelitis. Over the course of the next day, his muscle tetany progressed to involve the muscles of respiration. He was diagnosed with tetanus, admitted to the intensive care unit, intubated and paralyzed. After weeks of mechanical ventilation, the tetany relented. He was transferred to the medical ward and then subsequently discharged to a rehabilitation facility.
DISCUSSION: Clostridum tetani is ubiquitous in the environment. Because the spores can easily enter cuts, puncture wounds or open sores, tetanus is a consideration not only for new lacerations, but should be considered for chronic open ulcers. The exotoxins travel through the peripheral nerves to the central nervous system, inhibiting

the release of the inhibitory neurotransmitters, GABA and glycine. This causes activation of opposing muscles groups and the characteristic muscle rigidity. Patients present with trismus, neck stiffness, and reflex spasms. As the disease progresses, the muscle rigidity extends to the extensor muscles of the limbs and respiration. Dysphagia and autonomic instability occur with more severe forms of tetanus. Treatment is directed towards the prevention of spasms with the use of benzodiazepines and avoidance of tetany-inducing stimulation within the environment. Neutralization of unbound toxin with tetanus immune globulin and removal of the source of spores with surgical debridement of wounds are the definitive treatment. Tetanus remains an important consideration for the general internist who provides care for elderly patients and those with peripheral vascular disease. The elderly are at ten-fold increased risk of acquiring tetanus due to impaired immunity with aging, and a waning response to previous immunizations. As with our patient, those with peripheral vascular disease are predisposed to ulcerations and an anaerobic tissue environment conducive for tetanus.

A QUESTION OF HETEROGENEOUS VISA IN A PATIENT WITH PERSISTENT RESPIRATORY ALKALOSIS. M. Chin[1]; G. Luciano[2]; S. Li[2]; M.J. Rosenblum[2]. [1]Tufts University, Springfield, MA; [2]Baystate Medical Center, Springfield, MA. *(Tracking ID # 172533)*

LEARNING OBJECTIVES: Recognize the disease of heterogenous vancomycin intermediate resistant S. aureus and recognize the possibility of the development of this in certain clinical settings.
CASE: A 44-year old diabetic female presented to the ED in extremis with labs significant for hyperglycemia, ketonuria, an elevated white count of 44,000 (24% bands) and an ABG of pH 7.07, pCO2 14, pO2 74, and HCO3 4. On exam, she had decreased breath sounds in the left lower lung field. She was admitted to the ICU for diabetic ketoacidosis and pneumonia and was started on ceftriaxone and azithromycin. A sputum culture revealed Streptococcus pneumoniae and coverage was then narrowed to penicillin G. Her ICU course was complicated by ARDS and an empyema of the left lung requiring decortication. She developed right-sided ventilator associated pneumonia (VAP), and piperacillin-tazobactam and vancomycin were subsequently initiated. Sputum culture showed methicillin-resistant Staphylococcus aureus sensitive to vancomycin. Following ICU transfer she had intermittent episodes of tachypnea resulting in a marked and persistent respiratory alkalosis with a pH of 7.54. CT of the head and CXR did not reveal a clear etiology. However, CT angiography done less than 24 hours after the CXR demonstrated a left lower lobe consolidation without evidence of a pulmonary embolus. It was postulated that her tachypnea was caused by vancomycin failure to treat the right-sided pneumonia as other potential foci had been excluded. Sputum cultures again demonstrated vancomycin susceptible MRSA. Vancomycin was stopped and empiric linezolid and levofloxacin were started with excellent effect. Her hypoxia, tachypnea, and mental function gradually improved and she was discharged to a rehabilitation facility.
DISCUSSION: There have been increasing reports of VISA and heterogeneous VISA. Although most labs now evaluate for VISA, heterogeneous VISA is not tested for routinely. With the increasing incidence of MRSA infections development of glycopeptide resistance should not be surprising. Although, lab testing did not reveal hVISA in this patient, the prompt response to linezolid and the failure of vancomycin suggests the possibility of heterogeneous VISA as the etiology of this patient's pneumonia. It has been proposed that heterogeneous VISA could be a precursor to VISA, but short term vancomycin treatment in vitro has not shown this to be the case. However, our patient had significant vancomycin exposure during her hospitalization possibly contributing to in vivo development of glycopeptide resistance. Thus, in patients who are failing vancomycin treatment of MRSA, clinicians need to be aware of the possibility of VISA or hVISA and should consider adjunctive or replacement antimicrobial therapy.

A TALE OF TWO RASHES IN PREGNANCY: ERYTHEMA MULTIFORME TRIGGERED BY DISSEMINATED HERPES ZOSTER INFECTION. D. Telio[1]; W.L. Gold[1]; A.V. Page[1]. [1]University of Toronto, Toronto, Ontario. *(Tracking ID # 173260)*

LEARNING OBJECTIVES: 1. To develop a classification scheme and differential diagnosis for new-onset rash in pregnancy. 2. To recognize Varicella-zoster virus (VZV) infection as a rare trigger of erythema multiforme (EM).
CASE: A previously healthy 32 year-old woman developed a pruritic, vesicular rash involving her trunk and extremities during the first trimester of her second pregnancy. She denied a history of previous dermatoses, but did report having had chickenpox as a child. After two days, she presented to her family physician's office where she was diagnosed with presumed primary VZV infection and prescribed a seven-day course of therapy with acyclovir. Two days later, she presented to the Emergency Department for evaluation of a new rash. On examination, she had a temperature of 38.0oC, a heart rate of 120/minute (regular) and a blood pressure of 90/60 mmHg. The chest was clear to auscultation and neurologic examination was normal. The original vesicular lesions were present but healing. Distinct target lesions were seen over the trunk and extremities, including the palms and soles. There was no desquamation or involvement of the mucous membranes. The rash was diagnosed as EM and the patient was managed conservatively. New lesions were noted on the face two days later, but subsequent evaluation after twelve days revealed regression of most lesions. Direct fluorescent antibody staining of vesicular fluid from the original lesions was positive for VZV. Varicella IgG, but not IgM, antibody was detected in the patient's serum in both the acute and convalescent phases suggesting disseminated herpes zoster rather than primary varicella infection as the cause of the initial rash. Three weeks after her initial presentation, both exanthems had largely resolved and the patient's pregnancy continued without further complications.
DISCUSSION: The differential diagnosis of new-onset rash in pregnancy includes clinical conditions specific to the pregnant state as well as those occurring coincident with the pregnancy. Amongst the pregnancy-specific dermatoses are intrahepatic cholestasis of pregnancy, pemphigoid gestationis (PG), and pruritic urticarial papules and plaques of pregnancy (PUPPP). A proposed fourth category, atopic eruptions of pregnancy, encompasses both pruritic folliculitis and prurigo of pregnancy. Of these dermatoses, only the lesions of PG are vesiculobullous in nature and only the lesions of PUPPP may be considered targetoid. Unlike our patient's lesions, however, both of these dermatoses occur most commonly in the second and third trimesters of pregnancy. Typical target lesions, as were seen in our patient, consist of three concentric, erythematous rings, and are characteristic of EM. EM is an acute, usually self-limited, rash that is most often triggered by a viral infection. Herpes simplex virus (types 1 and 2) is the most common infectious trigger, although other viruses and Mycoplasma species have also been reported. HSV-associated EM is thought to result from an HLA-restricted cell-mediated immune response against keratinocytes expressing viral proteins. VZV has only rarely been reported as an infectious trigger. To our knowledge, only three cases of VZV-associated EM have been reported in the adult literature, none of which occurred in pregnancy. In our patient, both rashes were likely coincident with the pregnancy, rather than pregnancy-specific dermatoses.

AN "APPY" A DAY DOESN'T KEEP MENINGITIS AWAY. J. Zsohar[1]; L.K. Hunter[2]. [1]University of Texas Southwestern Medical School, Dallas, TX; [2]Program Director Internal Medicine Residency Program Methodist Hospital, Dallas, TX. *(Tracking ID # 169834)*

LEARNING OBJECTIVES: 1) Review the pathogenesis of tuberculous enteritis and the natural history of untreated disease. 2) Recognize the presenting manifestations and complications of tuberculous meningitis and osteomyelitis.
CASE: This previously healthy 29 y/o Hispanic woman with history of appendectomy 10 months prior to admission presented with 1 month of incapacitating headaches and severe back pain following a fall with a blow to the head. Associated symptoms included neck pain, nausea, vomiting, fever, anorexia and weight loss. Physical examination revealed a woman in severe distress with diaphoresis, tachycardia, hypotension, nuchal rigidity, and point tenderness over the lumbar vertebrae. Significant laboratory data included: WBC 7000/uL, Hg 12 g/dL, Plt 279,000/uL, Na 133 mEq/L and K 3.2 mEq/L. CSF was clear and colorless with WBC 470/cmm, glucose 23 mg/dl, protein 301 mg/dL, and negative gram, fungal, and AFB stains. HIV was negative and CXR was unremarkable. CT head demonstrated a possible thalamic mass lesion. The patient was admitted to the ICU and empiric antibiotic therapy was initiated. Her symptoms persisted and repeat CSF on day 2 was unchanged. MRI of the brain showed multiple ring-enhancing lesions with associated cerebral edema. CT chest showed bilateral apical scarring with small pleural and parenchymal nodules; sputum AFB smears and cultures were negative. CT spine revealed lytic lesions in L2/L3; needle biopsy demonstrated granulomatous inflammation with positive AFB smears. Therapy with INH, Rifampin, Ethambutol, and Pyrazinamide was initiated and cultures of spine and CSF grew M. tuberculosis. Review of appendiceal pathology from 10 months prior demonstrated necrotizing granulomas with negative AFB smears which had not been addressed by the surgical team. Also, review of her abdominal CT from that time showed a small L2 lytic lesion which was not appreciated. She responded well to anti-tuberculous treatment with resolution of all symptoms.
DISCUSSION: Extrapulmonary tuberculosis (Tb) may have varied and insidious presenting symptoms as exhibited by our patient. Her initial presentation was consistent with acute appendicitis which is a recognized syndrome associated with tuberculous enteritis. In addition, she had concomittant spinal involvement (Pott's Disease) likely secondary to hematogenous spread to her lumbar vertebrae resulting in caseous necrosis, bone destruction, and eventual collapse. Finally, CNS Tb encompasses 3 disease categories: meningitis, intracranial tuberculoma, and spinal arachnoiditis. All are the result of scattered Tb foci which are established in the brain, meninges and adjacent bone during the bacillemia that occurs with primary disease. The critical event resulting in Tb meningitis is rupture of a subependymal tubercle into the subarachnoid space. Head trauma may play a role in this process as is proposed in our patient. The clinical presentation and ultimate outcome of Tb meningitis are dictated by the rapidity of diagnosis and institution of anti-tuberculous therapy. In addition to our patient's radiologic, pathologic, and microbiologic images, we will review the pathogenesis of Tb enteritis, osteomyelitis, and meningitis along with the clinical presentations, prognoses, complications and treatment of these syndromes.

AN EYE FOR INFECTION. E.C. Fajardo[1]; C. Coffey[2]. [1]Olive View-UCLA Medical Center, Sylmar, CA; [2]University of California, Los Angeles, Los Angeles, CA. *(Tracking ID # 173349)*

LEARNING OBJECTIVES: 1. Recognize the clinical significance of a hypopyon in an ill patient without history of ocular trauma or surgery. 2. Review the differential diagnosis and management of endogenous bacterial endophthalmitis.
CASE: A 58 year old morbidly obese man with hypertension, diabetes, and congestive heart failure (CHF) was recently discharged two weeks prior to admission for a CHF exacerbation. After discharge, he developed an antecubital mass the "size of a golf ball" at a former IV site. He was admitted to another hospital for 5 days with fever. He then presented to our Emergency Room hypotensive, hypoxic, and with focal tenderness of his left shoulder and lumbar spine. He stabilized overnight with empiric antibiotics, hydration and pressors. Three days after admission, the intern noticed a hypopyon (a layer of pus in the anterior chamber), with a concomitant complaint of vision loss. His blood cultures (2/2 sets) grew methicillin resistant staphylococcus aureus (MRSA). IV vancomycin was started and Ophthalmology was consulted; they performed an

emergent vitrectomy with an intraocular vancomycin injection. The patient remained bacteremic for 5 days with 7/7 sets of positive blood cultures. Further workup for a source of infection included a transesophogeal echocardiogram that was negative for endocarditis, and a left arm MRI and indium scan that were negative for abscesses. The patient did not tolerate an MRI of the lumbar spine due to shortness of breath and instead, a bone scan was done to rule out osteomyelitis. Finally, a left upper extremity ultrasound was positive for a left basilic vein thrombus, which was likely the source of a septic thrombophlebitis. Approximately eight days after admission, the patient's hypopion resolved, his vision returned, and his left shoulder and lumbar pain abated.
DISCUSSION: A hypopion refers to the physical finding of layering pus in the anterior chamber of the eye. It is a manifestation of endophthalmitis, or infection of either the aqueous or vitreous humor. This diagnosis carries with it a high risk for vision loss, and is considered a medical emergency. Most commonly, endophthalmitis is acquired post-cataract surgery with exogenous inoculation of the humor. In a patient without history of previous ocular surgery or trauma, a hypopyon is suggestive of bacteremia and requires further workup to identify a source. Endocarditis is a major cause of endogenous endophthalmitis in the U.S., with streptococci species and staphylococcus aureus making up a majority of the responsible organisms. Other sources of infection include abdominal abscess, septic thrombophlebitis, meningitis and osteomyelitis. To preserve vision of the affected eye, management of endogenous endophthalmitis should begin with an emergent Ophthalmology consult for vitrectomy and intraocular antibiotics. Unlike exogenous endophthalmitis, systemic antibiotics should also be included to treat the primary source of infection. A transesophageal echocardiogram and blood cultures should be expedited given the likelihood of endocarditis. CT scans, MRI, bone scans and indium scans may also be necessary, depending on clinical suspicion for other sources of infection, particularly if the echocardiogram is negative for endocarditis. Both intraocular and systemic antibiotics should broadly cover gram-positive bacteria, and the spectrum of activity may be narrowed if an organism is identified from either the vitreous sample or blood cultures.

AN INOPPORTUNE VIRUS: PROGRESSIVE MULTIFOCAL LEUKOENCEPHALOPATHY IN A HEART TRANSPLANT RECIPIENT. S.M. Shirvani[1]; A.Kanagasundram[1]; H.A. Valantine[1]. [1]Stanford University, Stanford, CA. *(Tracking ID # 173924)*

LEARNING OBJECTIVES: 1. Recognize the clinical presentation and natural history of progressive multifocal leukoencephalopathy (PML) 2. Describe radiographic and biochemical data that support the diagnosis. 3. Identify options for treatment of PML, particularly in the transplant population.
CASE: A 63 year-old woman with an orthotopic heart transplant secondary to dilated cardiomyopathy presented to clinic with 2 week history of left-sided facial droop and upper extremity weakness. Prior to these symptoms, the patient complained of upper respiratory symptoms including nasal drainage and cough. The patient's anti-rejection medications at the time of evaluation included mycophenolate mofetil and tacrolimus. At presentation, the patient was afebrile and her vital signs were stable. Physical exam was notable for asymmetric smile with left-sided facial droop. She also demonstrated hyperreflexia and 4/5 strength in the left upper extremity. An MRI was performed which demonstrated multiple T2 hyperintense lesions predominantly in the supratentorial white matter. A lumbar puncture was performed to evaluate for opportunistic infections. Genetic sequences for JC virus in the cerebrospinal fluid were successfully amplified by polymerase chain reaction. Unfortunately, the patient underwent swift neurological decline soon thereafter and died prior to initation of therapy.
DISCUSSION: Progressive multifocal leukoencephalopathy is a fatal demyelinating disease of the central nervous system that occurs in immunosuppressed individuals as a result of reactivation of JC virus, a polymavirus. Although the large majority of patients with PML have AIDS, transplant recipients already account for five percent and this percentage is likely to grow as doctors become more facile with transplantation. The course of PML is characterized by subacute neurological deficits including delirium, seizures, motor deficits, and ataxia. Sadly, the disease is rapidly progressive and median survivial is only 2.6 months. For diagnosis, brain biopsy demonstrating enlarged amphophilic nuclei in oligodendrocytes is the gold standard. Alternatively cerebrospinal fluid PCR analysis can be performed as this test carries a sensitivity and specificity of 80% and 95%, respectively. Diagnosis is often supported by characteristic neuroradiologic findings which include asymmetric multifocal white matter lesions that do not conform to cerebrovascular territories.respectively. Data guiding treatment for PML in the context of organ transplant is sparse (this case represents one of just a handful of reported instances of PML in heart transplant recipients). For these patients, recommendations include discontinuation or reduction of immunosuppressive therapy despite the risk of organ rejection. Survival has been achieved in a few renal transplant patients in whom this strategy was undertaken. The use of cytarabine has also demonstrated modest benefit in an open-label study and so experts suggest a trial of this medication as well. Overall, however, there are no proven treatments and prognosis is generally bleak. Investigations of other experimental treatments will hopefully result in novel therapies in the near future. This case illustrates a rare but serious complication of organ transplantation and highlights the need for continued clinical research in the emerging field of transplant medicine.

AN INTERESTING TWIST IN A YOUNG MAN WITH ALTERED MENTAL STATUS. N. Dubowitz[1]; C.J. Lai[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173343)*

LEARNING OBJECTIVES: 1. Recognize acute HIV as a rare but possible cause of meningoencephalitis. 2. Identify the typical presentation and diagnostic workup of acute HIV.
CASE: A 33 yo male with no known PMH was found lying naked in his room, unresponsive and surrounded in urine while residing at a drug rehabilitation facility. On admission, the patient was non-verbal with a GCS of 11. The only obtainable history was via a friend, who noted that the patient had been sick for the past 1–2 wks with a cough. The patient had a history of methamphetamine use and was a man who has sex with men. Vital signs were notable for a fever (38.2), with normal HR and BP. Exam revealed altered mental status and agitation, but the patient was responsive to painful stimuli and was moving all extremities. Labs were remarkable for WBC 12 and CK 2426. LP showed a lymphocytic meningitis, with glucose 61, protein 82, WBC 100 (62% lymphs, 23% PMNs). The patient was empirically started on ceftriaxone, vancomycin, ampicillin, and acyclovir. On day 2, the patient was more alert and able to follow commands, and by day 4, the patient appeared at baseline. All CSF and blood cultures were negative. On day 5, the pt's HIV viral load returned as > 500,000 with a positive ELISA antibody and CD4 count of 900. These findings and the patient's improving clinical picture were consistent with meningoencephalitis due to acute HIV. All antibiotics were stopped and the patient fully recovered from his meningoencephalitis. He was discharged on day 7 in good condition with close outpatient follow-up.
DISCUSSION: Our patient's presentation with severe AMS and fever was a classic yet rather dramatic presentation of meningoencephalitis, commonly caused by HSV, TB, and neurosyphilis. Acute HIV is an often unrecognized cause of meningoencephalitis. More commonly, however, acute HIV presents to internists with a less dramatic presentation, frequently described as a mono-like illness. In one large study, up to 90% of new HIV cases were associated with clinical signs and symptoms, including fever (>80%), fatigue (>70%), pharyngitis (>50%), maculopapular rash (>40%), lymphadenopathy (>40%), and headache (>30%). The diagnosis of acute HIV requires a high index of clinical suspicion and the appropriate use of tests and lab studies. It is critical to order an Antibody (Ab) test as well as HIV viral load (VL) and CD4 count. Depending on timing of exposure, the Ab test is often negative in the setting of acute HIV. Therefore, the VL is a more reliable test for acute HIV, becoming detectable within 4–10 days of acquiring HIV; it is most often >100,000 and continues to rise for weeks after acquiring the virus. The CD4 is usually within normal range (800–1200) in an acute HIV infection. In our pt's case, the HIV Ab was positive and the VL was >500,000. When the pt's mental status had cleared, the history revealed a high-risk sexual exposure with an HIV-positive person 3 weeks prior to admission. In addition, the pt had been suffering from a fever, cough and flu-like illness for days prior to presentation. He also had a history of other STDs, including syphilis. Maintaining a high clinical suspicion for HIV and taking a thorough history that includes high-risk behavior will enable the diagnosis of acute HIV to be made.

AN UNUSUAL CASE OF STOMATITIS WITH A USUAL PATHOGEN. J.C. Singh[1]; H. S. Singh[1]; P.J. Rosenthal[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 171202)*

LEARNING OBJECTIVES: 1) Recognize stomatitis as an important presentation of Mycoplasma pneumoniae infection. 2) Diagnose Mycoplasma stomatitis using appropriate clinical and serologic parameters.
CASE: A 21 year old local college student with no prior medical history, presented with progressive odynophagia, dysphagia and facial swelling. Her symptoms started 1 week prior to admission with a progressive cough, purulent yellow expectorate, and fevers to 38.3° C. Two days prior to admission, she noted difficulty in swallowing with the development of multiple painful mouth sores. She denied rash, genital ulcers, sexual activity, or any prior eruption. She noted recent ibuprofen and acetaminophen use but denied other medications, smoking, alcohol, or illicit drugs. On the day of admission she developed fevers to 39.3°C. Her cheeks and neck appeared swollen, with tender bilateral submandibular lymphadenopathy. Multiple, dime-sized, white-tinged ulcerations, ~5 mm deep, tender, with an erythematous base, were scattered across her buccal mucosa, gums, lips, palate, and posterior pharynx. The remainder of the physical examination was unremarkable. Laboratory studies revealed an elevated white cell count with predominant neutrophilia and an elevated erythrocyte sedimentation rate, with normal serum electrolytes, liver, and renal function tests. Direct laryngoscopy showed lesions confined to the upper pharynx, sparing the epiglottis, esophagus, and trachea. She was initially treated with parenteral fluids, acyclovir, azithromycin, and ampicillin/sulbactam. Blood and throat bacterial cultures were negative, and at 48 hours ampicillin/sulbactum was discontinued. A buccal punch biopsy showed generalized neutrophilic inflammation without giant cells. A mononucleosis antibody titer was negative, and acyclovir was discontinued. On the second day, there was improvement in neck swelling, but marked dysphagia persisted. Subsequent serology showed markedly elevated Mycoplasma IgM titers (2830 U/ml) on hospital day 6 and negative herpes simplex, cytomegalovirus, HIV, syphilis, and antinuclear antibody studies. The patient was discharged after a seven day course of azithromycin with marked improvement in her oral lesions.
DISCUSSION: Stomatitis is an important extrapulmonary manifestation of M. pneumoniae infection. The pathogenesis of M. pneumoniae stomatitis is controversial, and it probably has an immunologic basis. Mycoplasma species, including M. pneumoniae, can nonspecifically stimulate B lymphocytes, which form antibodies against glycolipid antigens of M. pneumoniae. These, in turn, may act as autoantibodies. Current diagnostic methods primarily rely on serologic confirmation. Culture of respiratory or blood samples, although time consuming and variable in yield, remains the gold standard for diagnosis. IgM enzyme linked immunosorbent assay (ELISA) is the most sensitive and specific method for diagnosis and Mycoplasma specific antibody detection. Acute and convalescent IgM titers are required, although a single titer >1:64 is suggestive of an acute infection. Newer diagnostic techniques such as Mycoplasma antigen detection using antigen capture-enzyme immunoassay and PCR are being evaluated. Mycoplasma associated stomatitis responds to supportive care and antibiotic therapy, preferably with

macrolides. In summary, a strong association between mucositis and Mycoplasma should be considered when evaluating patients with unexplained severe oral lesions.

AN UNUSUAL PRESENTATION OF PNEUMOCYSTIS JIROVECI PNEUMONIA (PCP) IN HIV-INFECTED PATIENTS. I.R. Sankara[1]; P. Bajaj[1]; S. Khan[1]; M. Rodriguez[1]. [1]University of Alabama at Birmingham at Montgomery, Montgomery, AL. *(Tracking ID # 173882)*

LEARNING OBJECTIVES: Recognize an unusual presentation of Pneumocystis jiroveci pneumonia (PCP) in HIV-infected patients.
CASE: A 53-year old African-American HIV infected female on HAART for about 6 months presented with chronic dry cough and pancytopenia. She denied chest pain, fever or chills. Review of systems revealed anorexia, mild weight loss, dyspnea on exertion, and palpitations. She had a past medical history of disseminated Mycobacterium avium complex diagnosed 10 months prior and was on ethambutol and azithromycin treatment. She was receiving trimethoprim-sulfamethoxazole thrice a week for prophylaxis. On examination, she was tachycardic, afebrile, alert, oriented, and in no distress. She had pallor, and diminished breath sounds in right upper and lower lobes. CBC revealed hematocrit of 23.6 and WBC of 1700 with absolute neutrophil count of 1000. Chemistry panel showed Sodium 127, Potassium 4.5, BUN 34, and Creatinine 2.1. Her CD4 count was 95 and viral load < 50 copies/mL. CXR revealed right paratracheal calcified granuloma. CT chest showed a soft-tissue mass surrounding the right upper lobe bronchus with mediastinal lymphadenopathy, and bilateral multiple nodules raising metastatic bronchogenic carcinoma possibility. Retrospectively, this right upper lobe mass was present 6 months prior to admission and had increased in size. Bronchoscopy with BAL was non-diagnostic. Open lung biopsy showed granulomatous inflammation and immunohistochemistry was positive for abundant Pneumocystis organisms; no acid-fast bacilli or fungal organisms were identified with special stains or cultures. Blood cultures, cryptococcal serum antigen, and histoplasma urinary antigen were negative. Bone marrow biopsy showed granulomatous myelitis, active trilineage haematopoisis, with increased iron stores. There was no evidence of any malignancy. GMS and AFB stains of bone marrow granuloma were negative for any organisms. The patient was diagnosed to have granulomatous PCP and started on I.V trimetroprim-sulfamethoxazole. The patient responded well and was discharged home with follow-up.
DISCUSSION: PCP pneumonia is one of the commonest opportunistic infection in HIV/AIDS. Radiologically looks as bilateral, predominantly perihilar, hazy,ground-glass like infiltrate. 10–15% of patients' CXRs are normal and 5–10% cases have spontaneous pneumothorax. Atypical presentations include peripherally located asymmetric interstitial/alveolar infiltrates, lobar or segmental consolidation, upper lobe infiltrates, solitary/multiple pulmonary nodule(s). Classic histological features of PCP include foamy,eosinophilic PCP abundant intra-alveolar exudates accompanied by type II cell hyperplasia, scattered interstitial lymphocytes and plasma cells. In about 5% of the cases it manifests as granulomatous disease. The pathogenesis of the granulomatous response to P.jiroveci has been attributed to host factors than to agent factors as similar serotypes of P.jiroveci were isolated in the PCP presentations. On histological staining, granulomas show PCP dense central eosinophilic material surrounded by a chronically inflamed fibrotic wall, with occasional multinucleated giant cells. Bronchoscopy, even with BAL is usually non-diagnostic. The reason for low-yield of bronchoscopy is unclear. PCR in BAL is a suggested alternative, but is not universally accepted. It seems possible that the histologic response in this case was related to a degree of immune reconstitution inflammatory syndrome after starting HAART therapy.

ANTIBIOTIC-ASSOCIATED DIARRHEA. H. Sheth[1]; B. Cross[1]; A. Thong[1]; S.B. Glick[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 170621)*

LEARNING OBJECTIVES: 1. Recognize the causes of antibiotic-associated diarrhea; 2. Recognize the clinical presentation of antibiotic-associated diarrhea due to s. aureus; 3. Understand the approach to the patient with antibiotic-associated diarrhea.
CASE: A 36 year old woman presented to a local ER with diarrhea for one week. She had undergone ventral herniorrhaphy and abdominoplasty 7 weeks prior. Postoperatively, she developed a superficial infection of the abdominal wound that was treated with amoxicillin-clavulanate. Subsequently she developed watery, nonbloody diarrhea. She received a presumptive diagnosis of clostridium difficile infection and was treated with metronidazole. Three days later, she presented to our emergency room with complaints of worsening diarrhea, nausea, vomiting and lightheadedness. Last menstrual period was 2 weeks prior; the patient did not use tampons. Past medical history included gastric bypass. The only medication was metronidazole. On examination, BP 80/48, HR 140 and T 39.9°C. Bowel sounds were hyperactive. The abdomen was soft, non-distended, and mildly tender. The skin revealed erythroderma of the neck and anterior chest. Laboratory studies included white blood cell count 18.2 with 71% neutrophils and 24% bands. Obstructive series and abdominal CT were unremarkable. Blood cultures were negative. Stool cultures for campylobacter, salmonella, shigella, ova and parasites were negative. Assay for C. difficile toxin was negative. The patient was admitted to the ICU and was treated with aggressive volume resuscitation and broad spectrum antibiotics. Her hemodynamic status improved rapidly and she was transferred to the medical ward. The diarrhea persisted and the patient developed desquamation of the neck and palms. Stool culture subsequently grew s. aureus. Oral vancomycin was begun. Two days later the diarrhea resolved.
DISCUSSION: Antibiotic-associated diarrhea, defined as diarrhea temporally related to antibiotic use without other explanation, may be caused by enteric pathogens or antibiotic-related alterations in gastrointestinal motility or fecal flora. Antibiotic-associated diarrhea caused by enteric pathogens is more severe than that due to the effects of the antibiotics themselves, and is often accompanied by fever and leukocytosis. It persists after antibiotic discontinuation. Of the enteric pathogens that cause antibiotic-associated diarrhea, Clostridium difficile accounts for the majority of all infections. S. aureus, C. perfringens and Salmonella also cause this disease; their prevalence is unclear. Patients with antibiotic-associated diarrhea due to s. aureus typically present with numerous watery, green stools, often 5–12 per day. Fever is common (median temperature 38.4). Peripheral white blood cell count is usually > 12000. Elaboration of endotoxin in the small bowel may result in toxic shock syndrome with fever, hypotension, erythroderma, multiorgan failure and ultimately, desquamation. Bacteremia is uncommon. Patients with antibiotic-associated diarrhea thought due to an enteric pathogen should be tested for C. difficile toxin or treated empirically for C. difficile infection with oral metronidazole. Patients whose stool assays are negative for C. difficile on two or more occasions or who fail to respond to oral metronidazole therapy should undergo stool culture including culture for s. aureus. In this setting, moderate or heavy growth of s. aureus in the stool requires treatment with oral vancomycin.

ASYMPTOMATIC DISSEMINATED COCCIDIOIDOMYCOSIS PRESENTING WITH ELEVATED PROSTATIC SERUM ANTIGEN. L.C. Lu[1]; L.G. Davis[1]. [1]Greater Los Angeles VA Medical Center, Los Angeles, CA. *(Tracking ID # 172354)*

LEARNING OBJECTIVES: 1.Generate an appropriate differential diagnosis for an elevated PSA along with a prostate nodule. 2. Recognize disseminated Coccidioidomycosis in an asymptomatic patient.
CASE: A 65 year old Latino male with type 2 diabetes, hypertension, status post aortic valve replacement for severe aortic stenosis, and hyperlipidemia presented for his annual visit. He had no complaints, and a review of system was negative. His medications included benazepril, hydrochlorthiazide, glyburide, gemfibrozil, simvastatin, and felodipine. He was a retired naval engineer who had resided in Bakersfield, California since 1984. His most recent travel was to Texas one year prior. He drank wine occasionally, but denied any history of tobacco or illicit drug use. Physical exam was significant for a 1.0 cm firm, non-tender nodule palpable on digital rectal exam. Labs were remarkable for a PSA of 5.5, an increase from 1.9 one year prior. Urinalysis demonstrated 2 RBCs and 1 WBC/hpf, with urine culture negative for organisms. Repeat PSA remained elevated at 5.6. The patient was then referred to urology for a prostate biopsy, which revealed granulomatous prostatitis due to Coccidioides immitis. Serum coccidioides titer was 1:256. The patient refused a lumbar puncture. Chest X-Ray was normal, and bone scan did not reveal abnormal uptake. The pt declined treatment, and continues to remain asymptomatic.
DISCUSSION: The concern for prostate cancer is high when an elderly patient presents with a prostate nodule along with an elevated PSA. The differential diagnosis includes benign prostatic hypertrophy, prostatitis, prostatic cyst, and perineal trauma. Coccidioidomycosis from the fungus Coccidioides immitis causes more than 100,000 infections annually in the United States, mostly where it is endemic in the Southwest. Infection occurs by inhalation of the spores, and primary infection often goes undetected. Dissemination of Coccidioides occurs in less than one percent of cases. The most common extrapulmonary sites are the skin, central nervous system, and the skeletal system. There is an increased risk for disseminated disease in males, Filipino and African ancestry, and immunocompromised hosts. C. immitis rarely infects the prostate, but is a known site of disseminated disease. It may present with symptoms of prostatitis, bladder outlet obstruction, or a prostatic nodule. It may also be an incidental finding during evaluation for an elevated prostate specific antigen or during a fine needle biopsy for a palpable prostatic nodule. The diagnosis of prostatic coccidioidomycosis requires biopsy or culture. Serologic testing may also aid in diagnosis and monitoring of disease activity. It should be considered in any patient presenting with persistent prostatitis or epididymitis who has been to an endemic area. The diagnosis is an indication for medical treatment and sometimes adjunctive surgery. Pharmaceutical treatment options include oral azoles and intravenous amphotericin B.

BOATS, BEACHES AND WHAT ELSE? N. Basu[1]; J. Potter[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA. *(Tracking ID # 173734)*

LEARNING OBJECTIVES: 1. Recognize the presentation, clinical manifestations, and complications of babesiosis 2. Treat babesiosis and its frequent coinfections
CASE: A 59 year old female with a history of insulin dependent diabetes mellitus presented to the emergency department with fatigue and imbalance for two weeks. She was well and vacationing on Nantucket until two weeks prior to presentation when she noticed that she had excessive fatigue and was requiring more insulin than normal. Five days prior to admission, she noticed that she was not able to drive her car straight and had a minor accident. Exam on presentation demonstrated a fever to 101.3. Neurologic exam was notable for intact language without slurring. Cranial nerves II-XII, visual fields, motor, and sensory exams were normal. She had slight ataxia on finger-to-nose, right greater than left. Labs were notable for a WBC of 3.1 K/uL, hematocrit of 28%, a platelet count of 79 K/uL, and evidence of hemolysis. Babesiosis was diagnosed by visualization of intraerythrocytic parasites on peripheral blood smear. Cerebrospinal fluid had one RBC and no WBCs present. Magnetic resonance imaging of her head showed a subacute hemorrhage within the left putamen. She was treated with azithromycin and atovaquone for seven days and doxycycline for a 28 day course. Workup for structural causes of bleeding including repeat MRI after one month and conventional angiogram were unrevealing. Pancytopenia and ataxia resolved in one month, however fatigue continued for another three months.
DISCUSSION: Endemic in the coastal areas and islands of Massachusetts, New York, and Connecticut, ***Babesia microti*** is a parasite borne by the tick ***Ixodes scapularis***. The merozoite form infects erythocytes which then induces a variety of clinical manifestations ranging from an asymptomatic presentation to a rapidly progressive, fatal disease.

Most commonly, babesiosis presents with fatigue, fever, and headache. Physical findings may include jaundice, hepatosplenomegaly, or petechial or purpuric rash. As in this case, laboratory studies may reveal hemolysis and pancytopenia. The small intraerythrocytic parasites can be seen on Giemsa-stained thick and thin blood smears. Complications include cardiac and renal failure, disseminated intravascular coagulation, and acute respiratory distress syndrome. Because silent parasitemia may cause prolonged fatigue, treatment is recommended for all patients with parasitemia. Those with hemolysis can be treated with atovoquone and azithromycin or quinine and clindamycin. Erythrocyte exchange transfusion is reserved for critically ill patients. Treatment with doxycycline for co-infections with ***Borrelia burgdorferi*** and Ehrlichia species is necessary as 10% of deer tick nymphs carry both ***B. burgdorferi*** and ***B. microti***. In addition, 20% of ticks infected with Erlichia are coinfected ***B. burgdorferi***. This patient's intracranial hemorrhage was thought to be due either to cerebral babesiosis or to thrombocytopenia induced hemorrhage. Mainly described in cattle and dogs, very little is known about cerebral babesiosis. However, the pathogenesis is thought to be similar to cerebral malaria. Infected erythrocytes develop sticky knobs that adhere to capillary endothelium leading to intracranial hemorrhage and brain edema.

BREAK THE MOLD: INVASIVE ASPERGILLOSIS OF THE EAR. K.N. Dewar[1]; Q. Sherrod[1]; P.P. Balingit[1]. [1]UCLA San Fernando Valley Program, Sylmar, CA. *(Tracking ID # 173359)*

LEARNING OBJECTIVES: 1) Recognize Aspergillus as an atypical middle ear infection in an immunocompetent host. 2) Identify pathologic features of Aspergillus and current management guidelines.
CASE: A 54-year-old Filipino woman with a history of hypertension presented to an urgent care clinic with constant, right-sided headache for 6 months progressively worsening in the two weeks prior. At age fourteen, she underwent right ear surgery in which her tympanic membrane was removed with a subsequent complication of right facial palsy. The patient was afebrile with normal vital signs. Examination of the right ear revealed a normal external auditory canal, absence of the tympanic membrane, and no purulent drainage visualized from the middle ear. No pain was elicited on palpation over the mastoid area. The left ear exam was within normal limits. No cervical lymphadenopathy was appreciated. A right-sided facial motor palsy was present, and sensation was symmetric and intact over the face bilaterally. Laboratory results included normal WBC count and differential, normal serum electrolytes, and ESR 51. CT scan of the temporal bones showed destruction of the right temporal bone by a soft tissue density. The patient was admitted to the hospital with the presumptive diagnosis of temporal bone osteomyelitis. Antibiotic therapy with vancomycin and piperacillin/tazobactam was initiated, and otolaryngology consultation was obtained. MRI of the brain demonstrated findings consistent with cholesteatoma with surrounding enhancing granulation tissue versus extensive fungus ball. Debridement was subsequently performed and pathology results revealed necrotic material, bone fragments, and fungal hyphal elements. Rare mold, suspicious for Aspergillus, was isolated from culture. The patient was diagnosed with aspergilloma of the middle ear and antifungal treatment was started. Additional diagnostic evaluation was negative for HIV, tuberculosis, malignancy, and rheumatologic disease.
DISCUSSION: Aspergillus species are ubiquitous molds found in organic matter. Aspergillus may cause a broad spectrum of disease primarily affecting the lungs. Extrapulmonary dissemination primarily occurs in immunocompromised patients. Many species of Aspergillus produce toxic metabolites that inhibit macrophage and neutrophil phagocytosis. This may lead to invasion, infarction, and necrosis of local tissue. Three classes of antifungal agents are available for the treatment of aspergillosis: polyenes, azoles, and echinocandins. Historically, amphotericin had been the favored drug in patients with invasive aspergillosis. Voriconazole is now considered the drug of choice for invasive aspergillosis given better tolerance and improved survival with its use when compared to amphotericin. Unlike amphotericin, voriconazole is well absorbed orally, allowing patients to be switched between intravenous and oral administration. Our patient was treated successfully with oral voriconazole with slow resolution of symptoms. We present this case to illustrate the importance of considering atypical organisms such as mycobacterial and fungal in the setting of a cold abscess, an infection unattended with the calor, dolor, and rubor characteristic of ordinary abscesses. This case also highlights Aspergillus species as a cause of chronic necrotizing infection of the middle ear in immunocompetent patients.

CHELONAE-THE FORGOTTEN MYCOBACTERIUM. R. Shah[1]. [1]University of Medicine and Dentistry of New Jersey, East Brunswick, NJ. *(Tracking ID # 172887)*

LEARNING OBJECTIVES: 1. Recognize mycobacterium chelonae as a significant cause of chronic human pulmonary infections in immunocompetent individuals. 2. Understanding the management of this rare, highly resistant nontuberculous mycobacterium (NTM).
CASE: A 53 y/o Caucasian, nonsmoking female with a history of pneumonia in 1997 and yearly bouts of a nocturnal dry cough since childhood presented with complaints of a nonproductive cough of one month duration, which was worse at night and with activity. She denied alleviating factors and any additional symptoms. In 1998, the patient had a similar persistent cough that did not abate with various therapies. An extensive pulmonary evaluation was deemed negative at the time. On 5/8/2006, a chest xray revealed a LLL cavitary lesion. CT chest confirmed a 3 cm cavitary lesion in the superior segment of the LLL with multiple areas of bronchiectasis and a 6 mm RUL nodule. The patient was admitted to the hospital on 5/17/2006 and placed in respiratory isolation. She appeared frail and older than her stated age. Her pulmonary exam was only significant for mild bilateral expiratory wheezing. The patient was PPD negative and her sole exposure to tuberculosis was fifty years prior. A fine needle aspiration of the lung lesion was positive for acid fast bacilli (AFB), which grew within 24 hours on blood and chocolate agar. The standard four-drug regimen for presumed tuberculosis infection was immediately implemented. Three consecutive negative AFB smears were obtained by 5/28/2006, her date of discharge. That same day, the patient developed nausea and elevated ALT of 453 and AST of 421, indicative of medication induced hepatitis. Treatment was discontinued. On 5/30/2006, cultures of the lung aspirate revealed a NTM, Mycobacterium chelonae. Soon after, as per sensitivities, treatment was initiated with imipenem and amikacin.
DISCUSSION: Mycobacterium chelonae is a rapidly growing NTM and a rare human pathogen that is ubiquitous to dust, soil, and water. Typically, this bacterium is implicated in localized cutaneous lesions. Its prevalence is 0.93–2.64 cases per million. Favoring middle aged to older women, M. chelonae is emerging as a significant cause of slowly progressive pulmonary infection in immunocompetent individuals who do not have coexisting parenchymal lung disease. A history of chronic cough and CT chest findings of diffuse bronchiectasis and lung nodules are suggestive of NTM infection in non-immunodeficient individuals without known malignancy. Yet, the above case illustrates the difficulty of recognizing this uncommon clinical entity. It is often initially misdiagnosed as tuberculosis or nocardia, which confer a different treatment regimen than this highly resistant NTM. In this setting, it is preferable to await culture sensitivities and initiate a long course of therapy with two antibiotics, usually amikacin and clarithromycin. Proper identification and management of this atypical mycobacterium can prevent potential pulmonary complications and possible disseminated disease.

CRYPTOCOCCAL MENINGITIS IN TWO PATIENTS WITH IDIOPATHIC CD4 LYMPHOCYTOPENIA. W.K. Stribling[1]; J. Pirkle[1]; P.R. Lichstein[2]. [1]Wake Forest University School of Medicine, Winston-Salem, NC; [2]Wake Forest University, Winston-Salem, NC. *(Tracking ID # 173561)*

LEARNING OBJECTIVES: 1.Recognize the existence and clinical features of cryptococcal meningitis in patients without HIV 2.Recall the entity of idiopathic CD4 lymphocytopenia (ICL).
CASE: Case 1 A previously healthy 36 year old male presented with 2–3 weeks of headache with sinus pressure, intermittent blurred vision, neck stiffness, and a brief episode of aphasia and disorientation. Head imaging was unremarkable and lumbar puncture revealed an opening pressure of 65 cm H2O. CSF cryptococcal antigen was positive and CSF culture grew Cryptococcus neoformans. CD4 count was 110 cells/uL. HIV antibody and viral load were negative. He was treated with IV fluconazole followed by amphotericin and flucytosine. A ventriculo-peritoneal shunt was placed for persistently elevated intracranial pressures. His hospitalization was complicated by seizures but the patient improved and was transitioned to oral fluconazole. The patient was hospitalized for 17 weeks and was discharged with a CD4 count of 270 cells/uL. Case 2 A previously healthy 44 year old male presented with 3 weeks of progressive headache and associated vision changes. Funduscopic examination revealed significant optic disc edema. Head imaging was unremarkable. Lumbar puncture revealed a high opening pressure, and CSF cryptococcal antigen was positive. CSF culture grew Cryptococcus neoformans. CD4 count was 80 cells/uL. HIV antibody and viral load were negative. Treatment was initiated with amphotericin and flucytosine. A lumbar drain was placed for persistently elevated intracranial pressures followed by placement of a ventriculo-peritoneal shunt. His hospitalization was complicated by cryptococcal pneumonia but he improved and was transitioned to oral fluconazole. The patient was hospitalized for 7 weeks and was discharged with a CD4 count of 130 cells/uL.
DISCUSSION: Idiopathic CD4 lymphocytopenia (ICL) was defined in 1992 by the US Centers for Disease Control and Prevention as a low CD4 T lymphocyte count (<300 cells/ul or $<20\%$ of total T cells) on two occasions at least six weeks apart in the absence of HIV, other reasons for immunodeficiency, or therapy associated with low levels of CD4 T cells. It is a rare condition which usually becomes apparent when the affected patient presents with an opportunistic infection. Cryptococcosis is the most common presenting infection described in the literature. ICL affects males and females equally and may occur at any age during adulthood. While relatively few studies have examined the etiology of this syndrome, it has been proposed that ICL is caused by an altered cytokine environment leading to diminished generation of T cell precursors. Increased TNF-Ä and decreased IL-2 are among the cytokine disturbances that have been implicated. In any case of CD4 lymphocytopenia, secondary causes must be excluded before diagnosing ICL. Besides HIV infection, mycobacterial and other viral infections have been known to cause CD4 lymphcytopenia. While it is not widely accepted that cryptococcal infections cause CD4 lymphocytopenia, some controversy regarding this point does exist in the literature and should be considered before making the diagnosis of ICL. Physicians classically associate cryptococcal meningitis with HIV/AIDS or other causes of severe immunocompromise. These cases demonstrate that cryptococcosis can occur in patients who do not have obvious pre-existing immunodeficiencies and may indicate underlying idiopathic CD4 lymphocytopenia.

DAPTOMYCIN-INDUCED RHABDOMYOLYSIS. P. Bose[1]; S. Nakadar[1]; A.Y. Ali[1]; M.P. Reyes[2]. [1]Henry Ford Hospital Detroit, Detroit, MI; [2]Wayne State University, Detroit, MI. *(Tracking ID # 171798)*

LEARNING OBJECTIVES: 1. Recognize that daptomycin can cause rhabdomyolysis in the absence of muscle pain, even with once-daily dosing. 2. Recognize the importance of routine monitoring of creatine phosphokinase(CPK) levels for the early recognition of daptomycin toxicity.
CASE: A 68 year old male on salvage chemotherapy with gemtuzumab(a monoclonal antibody to CD 33)for relapsed secondary acute myeloid leukemia status post induction with idarubicin and cytarabine followed by consolidation with three cycles of high dose cytarabine was admitted to the hospital for febrile neutropenia. Infectious diseases was consulted for repeated blood cultures positive for vancomycin resistant

Enterococcus fecium. Linezolid was avoided because of the patient's severe thrombocytopenia. Quinopristin-dalfopristin(Synercid) was avoided because of its high incidence of disabling myalgias, arthralgias and thrombophlebitis at infusion sites. Therapy was hence begun with daptomycin, 6 mg/kg once daily by intravenous infusion. This resulted in clearing of the bacteremia within three days. Serial CPK levels were followed and continued to rise. All this while, the patient denied any muscle pain, but complained of generalized muscle weakness coinciding with the initiation of daptomycin. The serum creatinine also steadily rose from 1.1 to 1.6. Daptomycin was stopped when the CPK level hit 535, more than ten times the patient's baseline of 44, one week after initiation of therapy and treatment begun with tigecycline. Urine myoglobin came back at greater than 8000 nanograms per milliliter(ng/mL). Unfortunately, soon after this, the patient developed marked abnormalities of his liver function tests and went into disseminated intravascular coagulation with bleeding from various sites, after which care was withdrawn.
DISCUSSION: Rhabdomyolysis is a syndrome characterized by muscle necrosis and the release of intracellular muscle constituents into the circulation. Daptomycin is a novel cyclic lipopeptide antibiotic with rapid bactericidal activity against most gram positive organisms, including methicillin sensitive and resistant Staphylococci, vancomycin resistant enterococci and penicillin-resistant pneumococci. It is approved at a dose of 4 mg/kg daily for skin and soft tissue infections by intravenous infusion and is used off-label for serious infections such as endocarditis and bacteremia at a dose of 6 mg/kg daily. Daptomycin is generally well tolerated. In clinical trials, CPK elevations occurred in 2.8% of patients and skeletal muscle myopathy in 0.2% of patients. The latter was readily reversible after discontinuation of the drug. Studies in dogs have shown that the skeletal muscle toxicity of daptomycin is related to the dosing interval and not the plasma concentration, leading to the recommendation of once-daily dosing. The literature contains only two reports of rhabdomyolysis with daptomycin. In our patient, the diagnosis of daptomycin-induced rhabdomyolysis was made by the temporal relation of the rise in CPK levels and the onset of acute renal failure with the administration of daptomycin, and the markedly elevated urine myoglobin level. Our case illustrates that once-daily dosing of daptomycin may not be completely protective against rhabdomyolysis and that rhabdomyolysis may be ongoing in the absence of pain. It also highlights the importance of routine and frequent monitoring of CPK levels to avert the potentially disastrous consequences of this condition.

DENGUE IN THE USA. S. Noor[1]. [1]Cleveland Clinic Foundation, Cleveland, OH. *(Tracking ID # 173822)*

LEARNING OBJECTIVES: Distinguish between different forms of febrile illnesses occurring in travelers. Recognize the importance of epidemiology of a disease. Diagnose and manage Dengue fever.
CASE: A 31 year old Caucasian female with no past medical history presented to the hospital with complaints of fever upto 39 degree Celsius for 5 days accompanied with myalgias, generalized bone pain, arthralgias, bilateral retro-orbital pain, nausea, vomiting and diarrhea. She denied hematochezia and hematemesis. The fever followed no particular pattern. Patient gave history of recent travel to Northern India within the previous 2 weeks. She had received travel vaccinations and claimed compliance with Malarone for malaria prophylaxis. She denied use of any mosquito repellants but reported several mosquito bites. On the day of presentation she had developed a non-pruritic rash on her lower extremities. Her other travel companions did not have any symptoms. On physical examination she had a temperature of 102.6 but was hemodynamically stable. Her exam was unremarkable except for mild bilateral conjuctival injection and for presence of blanchable maculopapular rash on her hands and knees legs sparing the palms and soles. She had a negative Kernig and Brundzinski's sign and no hepatosplenomegaly. Her initial labs were significant for moderate thrombocytopenia of 89,000 and mild leucopoenia of 2600.Chest X-ray, Urinalysis and Comprehensive metabolic panel were normal. Blood and urine cultures were sent. Over the following 2 days she complained of occasional bloody bowel movements without significant drop in her hemoglobin. Stool was negative for Clostridium Difficile toxin. Thick and thin smear did not show a malarial parasite. However her serology confirmed elevated titers of Immunoglobulin G and M for dengue infection. Our patient was given supportive therapy and sent home after 4 days of hospital stay. At time of discharge her CBC had normalized and she had defferveseced. All her cultures remained negative.
DISCUSSION: Each year millions of people travel abroad and some return ill or become ill soon after return. Almost 90% of infections related to travel present within 6 months of return. Differential diagnosis most commonly includes tropical infections such as malaria, hepatitis, typhoid, meiosis and dengue fever. Dengue fever is caused by Flavivirus transmitted by the Aeides Aegypti mosquito bite. It is also known as 'Break-bone Fever'. Exposure is approximately 7–10 days before onset of symptoms. Symptoms of classic dengue include fevers, myalgias, arthalgias, headaches and rash. There are three clinical illnesses seen; classic dengue, dengue hemorrhagic fever (DHF) and mild dengue. Dengue Hemorrhagic Fever is potentially fatal characterized by high fevers, febrile convulsions and hemorrhage resulting in shock In patients with febrile illness with muscular and bone pain; that have had recent travel to South Asia or Africa; dengue fever is a potentially deadly illness that should be considered. Missing this may lead to severe consequences including death.

DIFFUSE INFILTRATIVE LYMPHOCYTOSIS SYNDROME IN AN HIV INFECTED WOMAN. P. Bajaj[1]; M. Rodriguez[1]. [1]University of Alabama at Birmingham, Montgomery, AL. *(Tracking ID # 173383)*

LEARNING OBJECTIVES: 1. Recognize Diffuse Infiltrative Lymphocytosis Syndrome (DILS) in HIV patients with features of SjÎgren's syndrome. 2. Recognize that anti-Ro/SSA and anti-La/SSB antibodies, although characteristic of SjÎgren's syndrome, could uncommonly be found in association with DILS.
CASE: A 33-year-old African American HIV-positive woman presented to the clinic with 6 months of weight loss, mild fatigue, dry eyes, and dry mouth. She admitted to occasional joint pains in her knees and elbows, and also occasional tingling in her fingers and feet. Her past medical history was only significant for HIV diagnosed 4 years prior, and chronic sinus allergies. Family history was significant for diabetes in father, and thyroid disease in brother. Medications included montelukast, fexofenadine, megestrol and multivitamins. Physical exam was unremarkable except for dry mouth, poor dentition, and bilaterally enlarged nontender parotid glands. Laboratory data showed mild anemia with hemoglobin of 10.7 gm/dL, plasma creatinine 1.6 mg/dL, creatinine clearance 32–36 ml/min, CD4+ count 547 cells/mm3, CD8+ count of 2682 cells/mm3, and viral load 18000 copies/mL. Serologic analysis revealed positivity for antinuclear antibodies (titer >1:160; speckled pattern), anti-Smith antibody (211; normal 0–99), anti-Ro/SSA antibody (477; normal 0–99), and anti-La/SSB antibody (637; normal 0–99). Complement C3 was slightly decreased at 82 (normal 90–180), C4 was low normal, and rheumatoid factor was negative. Schirmer's test confirmed the presence of xerophthalmia. These features were highly suggestive of SjÎgren's syndrome, however, the possibility of DILS was considered because of her HIV status. Nephrology referral and subsequent renal biopsy revealed chronic tubulointerstitial nephritis. Additional immunohistochemical stains showed a predominance of CD8+ cells, thus establishing the diagnosis of DILS.
DISCUSSION: DILS is a disorder characterized by persistent circulating and visceral CD8+ lymphocytic infiltration in HIV-infected individuals, mainly of the salivary and lacrimal glands causing parotid gland enlargement, and sicca symptoms (dry eyes and dry mouth) of varying intensity. Other manifestations include peripheral neuropathy, hepatitis, interstitial lung disease, myositis, and interstitial nephritis. DILS predominantly affects HIV-infected African American middle-aged men. The incidence of DILS remains unknown, although it is estimated between 0.8–7.8% of HIV-infected individuals. Clinical and phenotypic features of DILS mimic those of SjÎgren's syndrome; however unlike SjÎgren's it has frequent extraglandular manifestations. The inflammatory infiltrate in DILS is composed predominantly of CD8+ cells, while in SjÎgren's syndrome it is predominantly CD4+ cells. Anti-Ro/SSA and anti-La/SSB antibodies are not commonly found in association with DILS, and their presence is more characteristic of SjÎgren's syndrome. A few cases of DILS with these antibodies have been reported, and their presence appears to be associated with HLA-DR3. Treatment of DILS centers on starting highly active antiretroviral treatment (HAART), which decreases the proliferation of CD8+ cells by controlling viremia. Use of corticosteroids is recommended only in patients with significant clinical symptoms and end organ damage. Thus, as in our case, it is important to suspect DILS in HIV-infected patients with features of SjÎgren's syndrome, and to consider the use of antiretroviral therapy in such individuals.

EPSTEIN-BARR VIRUS GONE AWRY: AN INTERESTING CASE OF EPSTEIN-BARR VIRUS PNEUMONIA IN A 69 YEAR-OLD PATIENT. D. Dietz[1]. [1]Tufts University, Boston, MA. *(Tracking ID # 173750)*

LEARNING OBJECTIVES: 1) Identify patient populations commonly afflicted by Epstein-Barr Virus (EBV). 2) Review the common symptoms and clinical manifestations of EBV infection. 3) Appreciate an atypical and severe presentation of EBV infection in an elderly patient.
CASE: A 69 year-old female with past medical history of hypertension, osteopenia, and mitral valve regurgitation presented to her PCP with complaints of generalized fatigue, fevers, and chills. Physical exam was benign except for an irregular heartbeat. Electrocardiogram confirmed a diagnosis of new-onset atrial fibrillation. Her history of fevers, in the setting of mitral valve regurgitation and a recent dental procedure, added to new-onset atrial fibrillation, prompted admission for possible endocarditis. Early in her hospitalization she was consistently febrile. Initial blood cultures were negative. She then became hypoxic. Chest x-ray, initially negative, progressed to show bilateral infiltrates and effusions over the course of several days. CT of the chest confirmed a pneumonia/acute respiratory distress syndrome (ARDS) picture. Peripheral smear showed a lymphocytosis, with atypical lymphocytes. She was transferred to the MICU, electively intubated for worsening hypoxia and increased work of breathing, and need for bronchoscopy. She developed several complications, including nonoliguric renal failure secondary to acute tubular necrosis. A comprehensive infectious workup, including numerous blood cultures, sputum cultures, bronchoscopy washings, tests for legionella, rickettsial diseases, tularemia, cytomegalovirus, toxoplasmosis, influenza, amongst others were all negative. Monospot, EBV PCR and EBV IgG were positive. The patient was diagnosed with EBV pneumonia, and after a prolonged hospital course and rehabilitation stay, was discharged home.
DISCUSSION: The majority of EBV infections are subclinical and inapparent. Adolescents and young adults develop symptoms with the highest frequency, reportedly accounting for 50–70% of cases. The frequency with which older adults develop clinical disease is not well-documented, with the majority thought not to be susceptible because of prior exposure. It is reported that 90–95% of adults are EBV sero-positive. EBV primarily spreads through saliva and is classically characterized by the triad of fever, tonsillar exudates, and lymphadenopathy. Malaise, headache, splenomegaly, and rash are also common. Diagnosis is based on clinical suspicion. The diagnostic test of choice is the Monospot test, in which IgM heterophile antibodies sensitive and specific for EBV are detected. Peripheral blood smear typically shows lymphocytosis, and atypical lymphocytes are often present. Treatment is symptomatic. Most patients with primary EBV infection recover uneventfully and develop immunity to the virus. Acute symptoms resolve in one to two weeks. Fatigue and decreased functioning can last months. Most common complications are splenic rupture and

lymphoproliferative disorders. The clinical manifestations and infectious course of primary EBV in elderly patients is not well described. Although case reports of elderly patients with primary EBV infection presenting with pulmonary symptoms exist, conclusions have yet to be made on the course of this infection in older patients. Given the severity of this patient's course, EBV should perhaps be better appreciated when evaluating elderly patients.

FEVER, MISERY AND LOW BACK PAIN IN AN OLDER MAN. B.C. Ciobanu[1]; F. Touzard[1]. [1]John H. Stroger Jr. Hospital of Cook County, Chicago, IL. *(Tracking ID # 172926)*

LEARNING OBJECTIVES: Recognize brucellosis as a possible cause of vertebral osteomyelitis and acknowledge the risk factors for it.
CASE: We present a 70 year-old previously healthy Hispanic man with a one-month history of severe, continuous, low back pain, not alleviated by rest or treatment with anti-inflammatory agents. The patient was seen by a physician and given an intraspinal steroid injection, opioids, and physical therapy with mild improvement. He later developed fevers and night sweats with worsening lumbar pain and associated impaired functioning and depressed mood. Upon presentation to our hospital, patient was febrile with L5 point tenderness to palpation but no focal neurological deficits. Investigations showed normocytic anemia, high sedimentation rate, and splenomegaly. Degenerative spine disease was the only finding on plain x-rays. However, MRI of the lumbar spine revealed L5/S1 diskytis and osteomyelitis with a 5 mm phlegmon. Interventional radiology service was consulted but due to the small size of the phlegmon and the difficult location, drainage could not be done, and empiric treatment with follow up imaging was recommended. Since blood cultures were consistently negative, the infection was presumed to be secondary to the spinal steroid injection. Empiric intravenous antibiotics were started. Upon completion of 6 weeks of vancomycin and levofloxacin, patient achieved clinical improvement but was still symptomatic with back pain. Given history of recent travel from Mexico, tuberculosis and brucellosis were considered in the differential diagnosis. Patient denied any respiratory symptoms, tuberculin skin test was negative and chest x-ray normal. Brucella serology was sent out and came back positive with a 1:320 IgM titer. Patient was started on rifampin and doxycycline with resolution of symptoms.
DISCUSSION: Because the clinical picture of brucellosis is nonspecific, clinical misdiagnosis and treatment delay are common. Therefore, a high index of suspicion is required to make the diagnosis. Risk factors for brucellosis include travel from an endemic area, occupation (exposure to infected animals) and consumption of unpasteurized dairy products. Osteoarticular disease is the most common complication of brucellosis, and osteomyelitis commonly involves the lumbar vertebrae. Serological examination often provides the only positive laboratory finding, and isolation of the species from fluid or tissue is the definite diagnosis, although success rates are highly variable (15–70% of cases). Combination therapy with doxycycline and rifampin is the treatment of choice. Despite good in vitro activity, fluoroquinolone monotherapy has a high relapse rate. The duration of therapy for acute, nonfocal brucellosis is 6 weeks, whereas for focal disease, it is usually more than 3 months, with a 5–10% relapse rate.

HEPATITIS C ASSOCIATED LEUKOCYTOCLASTIC VASCULITIS WITH ANTICARDIOLIPIN ANTIBODIES CAUSING PENILE NECROSIS AND DEEP VENOUS THROMBOSIS IN THE ABSENCE OF CRYOGLOBULINEMIA: A CASE REPORT. A.H. Daniels[1]; C.L. Wilson[1]; R.A. Harrison[1]. [1]Oregon Health & Science University, Portland, OR. *(Tracking ID # 173802)*

LEARNING OBJECTIVES: Hepatitis C may present with extrahepatic symptoms, including skin lesions. Hepatitis C can cause leukocytoclastic vasculitis, with or without cryglobulinemia, which may lead to tissue necrosis. Antiphospholipid antibodies are associated with hepatitis C and can lead to thrombosis.
CASE: A 57 year-old caucasian man with PMHx of hepatitis C presented with 3 days of testicular and left thigh pain. Two days prior to admission he noted testicular and penile swelling, with penile blackening one day prior to admission. He denied trauma, new medications, fevers, chills, nausea, vomiting, dysuria, hematuria, abdominal, or penile pain. PMHx included remote injection drug use, hepatitis C infection, and hypertension. He denied any history of sexually transmitted diseases. He drank one glass of wine daily, used marijuana occasionally, and denied tobacco use. His medications included atenolol, hydrochlorothiazide, fish oil, and a multivitamin. He denied use of herbal supplements, over the counter medications, or erectile dysfunction medications. On physical exam, the patient was non-toxic appearing. Vitals: T 37.3°C, BP 155/80, pulse 100, O2 saturation 97% on room air. Groin exam revealed a 5 cm, indurated, erythematous lesion on his left thigh with tracking leg erythema, and an erythematous, indurated suprapubic region. His uncircumcised penis was edematous and black, with sharp demarcation near the base of the shaft. The remainder of the exam was unremarkable. A contrast CT scan showed edema of the scrotum, suprapubic soft tissues, and penis without thrombosis, gas or fluid collections. The bladder, prostate and seminal vesicles were unremarkable. A punch biopsy of the leg induration revealed leukocytoclastic vasculitis. Significant laboratory findings included: WBC 11.6 K/cu mm; platelets 96.0 K/cu mm; ESR 70 mm/hr; HCV PCR 1,200,000 IU/mL; Rheumatoid Factor 25 IU/mL; ANA and ANCA negative; Anticardiolipin IgM 128 PL units; Anti-B2GPI IgM 140 PL Units; Protein C Activity >2.50 U/mL; Protein S Ag, free 0.70 U/mL; cryoglobulin levels were negative on two seperate occasions. On hospital day two, the patient underwent surgery to remove the necrotic penile tissue extending down to the tunica albuginea, which was spared. Pathology studies revealed highly vascular subcutaneous tissue with hemorrhage and focal denudation consistent with necrosis. On hospital day six, the patient developed bilateral leg pain and swelling. Lower extremity dopplers revealed multiple, bilateral, occlusive venous thromboses. Anticoagulation with LMWH, followed by coumadin, was initiated. On hospital day eight, the patient underwent a penile tunneling procedure as an alternative to skin grafting. He recovered well from surgery, and was discharged on hospital day eleven.
DISCUSSION: This case illustrates two uncommon extrahepatic manifestations of hepatitis C: leukocytoclastic vasculitis and deep venous thromboses. To our knowledge, this is the first case of cryoglobulin negative leukocytoclastic vasculitis with anticardiolipin and anti-B2GP1 antibodies leading to necrosis of the penile prepuce in a patient with hepatitis C. Leukocytoclastic vasculitis is a rare complication of hepatitis C and is often accompanied by cryoglobulinemia, which our patient did not have, making this case unique. In addition, this case illustrates the association of antiphospholipid antibodies with chronic viral infections, and expands the differential for patients with cutaneous lesions who are HCV positive.

HIDING IN THE BELLY: IF NOT FOUND, IT'S FATAL! A. Tindni[1]; G. Dutta[1]; M. Panda[1]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN. *(Tracking ID # 171558)*

LEARNING OBJECTIVES: To discuss the differential diagnosis and work up of abdominal pain in an immunocompromised patient.
CASE: A 28 year-old female with a positive HIV screen six years prior without follow-up, presented with sharp severe abdominal pain worsening over 2–3 weeks, associated with fever, nausea and vomiting. She had not had any AIDS defining illness or siginificant past history. Physical exam was significant only for tenderness in RUQ that later became diffuse. Significant lab findings were: WBC 2.2 Th/mm^3, Hb 8.6 gm/dl, Hct 25.3%, Platelet 136,000/mm^3, Potassium 3.1 mmol/l, CO2 18 mmol/l, BUN 15 mg/dl, creatinine 1.3 mg/dl, AST 171 U/L, ALT 249 U/L, ALP 428. U/L.Urinalysis showed trace albumin. CXR showed fullness in the left base. An abdominal ultrasound revealed cholelithiasis without inflamation. A CT scan showed evidence of colitis in caecum and colon. Other serology revealed: HIV RNA by PCR 306385 copies/ml, CD4 count 5.0, urine Histoplasma Ag, hepatitis serology, CMV IgM, CMV IgG15.9 units, cryptococal and toxoplasma Ag were negative. A colonoscopy revealed multiple ulcerated nodules throughout the colon. A biopsy confirmed histoplasmosis. The patient was treated with Itraconazole and anti-retroviral regimen was started. She improved dramatically over the next three days and was discharged in a stable condition.
DISCUSSION: Severe abdominal pain is observed in approximately 15 percent of HIV infected patients and was associated with reduced survival in the pre-HAART era. Disseminated histoplasmosis is a progressive extrapulmonary infection that occurs mostly in immunodeficient patients. The most common extrapulmonary site is gastrointestinal tract however gastrointestinal manifestations are recognized clinically in less than 10 percent of cases as these are highly confounded with conditions like inflammatory bowel disease, malignancy or other intestinal disease. This can lead to inappropriate therapy and unnecessary surgical intervention. Histoplasma antigen can be detected in the urine in 90% and serum in 70% of cases, and less frequently in other sterile body fluids. The natural history of untreated acute disseminated infection is progressive and fatal but if treated is highly successful even in immuno-compromised patients. Our patient was unique that her urine antigen for histoplasmosis was negative despite disseminated gastrointestinal histoplasmosis. This case emphasizes the importance of early diagnosis of histoplasmosis which requires a high index of suspicion in endemic area even if urine antigen is negative.

HIS PAIN WAS NO FLUKE OR WAS IT? J. Chuang[1]; G. Mathisen[2]. [1]Olive View-UCLA Medical Center, Sylmar, CA; [2]UCLA San Fernando Valley Program, Sylmar, CA. *(Tracking ID # 173271)*

LEARNING OBJECTIVES: 1) Recognize the importance of a complete history and physical, especially with rare diseases. 2) Suspect parasitic infections as the cause of right upper quadrant pain if the patient comes from an endemic region.
CASE: A 21 year-old man with no past medical history presented to the emergency room with right upper quadrant abdominal pain. His pain was sharp and intermittent for the last five years and worsened with any type of food. He denied weight loss, fevers, chills, cough, chest pressure, acid reflux symptoms, diarrhea, constipation, hematochezia or melena. He denied taking medications, herbals or drugs. On exam, he had a positive Murphy's sign. The rest of his physical exam, including vital signs, was otherwise normal. Laboratory data showed an elevated leukocyte count with a normal differential. Liver enzymes and lipase were normal, except for an elevated alkaline phosphatase of 132. Chest radiograph was normal, but the abdominal ultrasound showed hepatomegaly with a dilated common bile duct (9 mm) with multiple tiny mobile echogenic foci. The patient's pain eventually subsided, and he was referred to general surgery clinic for choledocholithasis. Over the next four months, he returned to the emergency room several times with similar complaints. Due to his continued symptoms and increasing common bile duct dilatation (10.7 mm), he underwent ERCP, which revealed several flat oval worms that were consistent with liver flukes after cannulating the common bile duct. Two were sent to pathology where they were identified as Fasciola hepatica. Upon further questioning, the patient stated that he had previously lived in an agricultural setting in Pueblo, Mexico where he was exposed to sheep, cattle, pigs and chickens. He regularly ate unwashed vegetables and ingested plants from local lakes and rivers. Five years prior, he ingested dirt because he had a "craving for the scent".
DISCUSSION: Although rare, parasitic infections of the biliary system should be suspected in patients with chronic abdominal pain and a history of travel to endemic areas. Infection with Ascaris lumbricoides and Clonorchis sinensis are the most common causes of biliary tract infection; however, infection with Fasciola hepatica

may be seen, especially in rural areas with domestic sheep or cattle, the traditional hosts for the parasite. Fasciola hepatica is a brown, flat and leaf-shaped trematode. Humans become accidental hosts when they ingest aquatic vegetation (e.g. water cress) that contains the infective larvae. These larvae excyst in the duodenum and migrate through the peritoneal cavity to infect the biliary tract/liver. Clinical manifestations include an acute liver phase, consisting of fever, right upper quadrant pain with associated hepatomegaly, followed by a chronic biliary phase that is generally asymptomatic unless the common duct becomes obstructed. The diagnosis can be made by direct visualization of the fluke during ERCP, serological testing or finding ova in feces, duodenal aspirate or bile. The treatment of choice, triclabendazole, is not sold in the United States; however, nitazoxanide is available and has a cure rate of 82.4 percent. Praziquantel, albendazole, and mebendazole are not effective.

HSV HEPATITIS IN AN IMMUNOCOMPETENT PATIENT. J. Feagans[1]; J. Wiese[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 173193)*

LEARNING OBJECTIVES: 1) Identify the treatable cause of hepatic failure. 2) Understand the clinical and laboratory findings of HSV hepatitis. 3) Recognize that empiric treatment of HSV hepatitis reduces mortality.
CASE: A 49-year-old woman developed pedal edema and a generalized erythematous, pruritic rash secondary to poison ivy exposure. She began a course of oral prednisone; her symptoms improved. Her pruritus returned, however, and she was started on another course of steroids. She subsequently developed generalized weakness and malaise, anorexia, increasing abdominal girth, and epigastric and right upper quadrant abdominal pain. At presentation, her temperature was 38.9°C; her blood pressure was 128/80 mmHg and her heart rate was 107 beats per min. Her abdomen was moderately distended and diffusely tender. There were multiple vesicular lesions noted on her face, extremities, trunk, perianal, and perivaginal areas. She had a WBC of 2,500/mm3, a hemoglobin of 10.1 g/dL, a platelet count of 129,000/mm3, and an INR of 1.7. Her AST was 2105 U/L; her ALT was 1803 U/L, and her total billirubin was 4.1 mg/dL. Over the course of her hospitalization, her AST and ALT peaked at 6593 and 7053. A transjugular liver biopsy revealed acute hepatitis with peri-portal and mid-zonal necrosis and steatosis. Because of the combination of fever, leukopenia, elevated transaminases and a vesicular rash, intravenous acyclovir was empirically initiated prior to diagnosis and continued throughout her hospital course. She had progressive improvement of her clinical status and her transaminases and white blood cell count normalized. Prior to discharge, the viral culture for HSV-2, HSV-PCR and HSV-serology for IgG and IgM returned as positive. She was switched to oral valacyclovir at the time of her discharge.
DISCUSSION: Acute hepatitis is a condition commonly encountered by the general internist. There are few causes of acute hepatic failure for which specific therapy can be instituted. Because the mortality rate among patients with non-acetaminophen induced acute liver failure can be as high as eighty percent, it is important to recognize these conditions. These include acetaminophen toxicity, HSV hepatitis, Wilson's disease and hemochromotosis. Non-hepatitis viruses including HSV, EBV, VZV and CMV may all cause hepatitis, and when present, represent an opportunity for the physician to institute therapy that can be life-saving. The combination of fever, leukopenia, elevated transaminases and a vesicular rash are an identifying feature of HSV hepatitis. As illustrated in this case, it usually presents in immunocompromised patients, or those who have received immunosuppressive therapy such as steroids. Acyclovir is the treatment of choice, and because the definitive tests to establish the diagnosis are time-expensive, the general internist must recognize the importance of empiric treatment when the clinical symptoms are present. As the extent of immunosuppressive therapy expands, general internists should be aware of the potentially lethal diagnosis of HSV hepatitis and be prepared to diagnose and treat accordingly.

HUMAN GRANULOCYTIC ANAPLASMOSIS (EHRLICHIOSIS) MASQUERADING AS THROMBOTIC THROMBOCYTOPENIC PURPURA. M.A. Narasimhamurthy[1]; M. Peart[1]; P. Hart[1]. [1]John H. Stroger Hospital of Cook County, Chicago, IL. *(Tracking ID # 173107)*

LEARNING OBJECTIVES: Identify the common presentation of Human Granulocytic Anaplasmosis (HGA). Recognize HGA as a differential diagnosis in patients with Thrombotic Thrombocytopenic Purpura (TTP). Recognize the benefit of early diagnosis and treatment of ehrlichiosis.
CASE: 54 y/o male presented to the emergency department of a large urban teaching hospital with a two-week history of headaches, fevers and abdominal pain. Two days prior to the onset of symptoms, he had camped in Wisconsin and had several tick bites. Three days later, he removed 27 ticks from his skin, most of which were engorged with blood. On General examination, he was thin and pale with normal vital signs. Systemic examination was unremarkable except for diffuse abdominal tenderness and papules on calves and shins. Laboratory findings: Na: 127 mEq/l; BUN: 114 mg/dl; Creatinine: 8.3 mg/dl; HCO3: 15 mEq/l; Hb: 14.5 g/dl; WBC: 5500/mm3 with 38.3% neutrophils and 50.1% lymphocytes; Platelet: 11000/mm3, AST: 119 units/l; ALT: 64 units/l, ALP: 60 units/l, GGT: 34 units/l and LDH: 745 units/l. Urinalysis was normal. HIV and Hepatitis profile were negative. The Peripheral blood smear showed crenated RBC 3+, schistocytes 1+, neutrophilic toxic granulations and intraleukocytic morulae. The Serology for HGA was strongly positive. IgG 1: 2048; IgM 1: 640. A diagnosis of TTP due to HGA was made and the patient was started on doxycycline 100 mg BID for 10 days and prednisone 60 mg daily for 5 days. After 3 days of therapy, abdominal pain resolved, platelet count increased to 103,000/mm3 and renal function improved to a serum creatinine of 1.5 mg/dl. Two weeks later, he was seen in clinic and remained asymptomatic with normalised creatinine and platelet count.
DISCUSSION: Discussion: HGA is a tick borne zoonosis characterized by a febrile illness with cytopenias and altered liver function. It can be anywhere between a self-limiting illness to a fatal disease. In the US, cases are identified in the midwestern and northeastern states from April through December, peaking in June and July. Our patient presented in June after a recent trip to Wisconsin. Human ehrlichiosis is a notifiable disease since 1998 and due to the nonspecific clinical presentation, CDC has established a case definition. Our patient fits into the definition by his clinical presentation, presence of morulae and positive serology. He also had thrombocytopenia and acute renal failure with schistocytes, mimicking TTP, which resolved rapidly with doxycycline and steroids. Had ehrlichiosis been missed and plasmapheresis given, it would not only have been ineffective but would also have made the serological diagnosis of ehrlichiosis difficult. This could have even been fatal. Thus the common presentation of ehrlichiosis should be identified promptly and in patients presenting with TTP, especially from areas endemic for tick-borne illnesses, HGA should be suspected and treated empirically with doxycycline and steroids.

HYPOTHERMIA: AN UNEXPECTED TWIST. S. Tamrazova[1]; H. Hussain[1]; A. Cooper[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173339)*

LEARNING OBJECTIVES: 1) Identify sepsis as a possible cause of moderate to severe hypothermia and recognize the principles of management of hypothermia 2) Recognize the systemic side-effects of topical steroids.
CASE: A sixty-five year old African-American male with history of generalized eczema was brought to the emergency room in early winter with chief complain of lethargy of several hours duration. He did not have any other chronic illness. He did not use alcohol or elicit drugs, and was not recently exposed to cold. Review of systems was positive for generalized weakness which preceded lethargy for about 24 hours. His only medication was triamcinalone cream for eczema, that he has been applying all over his body daily for the last few months. Physical examination revealed a frail elderly male with a core body temperature of 29 Celsius (C), regular heart rate of 37 per minute, and blood pressure of 90/60 mmHg. He was responsive only to noxious stimulus. His skin was thick, with significant exfoliations and breakdowns, reflexes were diffusely suppressed, and muscle tone was decreased. The rest of the physical exam was unremarkable. Initial laboratory findings included a sodium of 155 mEq/L, random cortisol level of 15.9 ug/dL, and his glucose and thyroid stimulationg hormone levels were normal. Electrocardiogram showed sinus bradycardia, increased QT interval, J-waves in leads I, II, V3-V6. Computer tomographic scan of the head was negative for intracranial bleed. His torso was covered with warming blankets, warm normal saline was started intravenously, and he was shifted to the intensive care unit. High-dose corticosteroids, and vancomycin and cefepime were started for adrenal insufficiency, and possible sepsis respectively. Blood cultures revealed Methicillin Sensitive Staphylococcus Aureus, and his antibiotics were subsequently changed to nafcillin, based on the sensitivity profile. The patient recovered fully over the next few days.
DISCUSSION: Hypothermia is defined by core body temperature less than 35 Celcius (C) and is classified as mild (32 C-35 C), moderate (28 C-32 C) and severe (< 28 C). Possible etiologies of hypothermia are endocrinologic, neurologic and dermatologic disorders, alcohol use, medications such as phenothiazine and sedatives, and sepsis. In our case sepsis was the immediate cause. Generalized eczema, which alters the process of thermoregulation, and age, were predisposing factors, as elderly patients have decreased ability to generate heat because of reduced lean body mass and mobility, and impaired shivering mechanism. When dealing with mild hypothermia external rewarming is usually sufficient, but in moderate-to-severe cases, internal re-warming is essential. Extra care should be observed when handling patients to avoid life-threatening cardiac arrhythmias triggered by movement, which is the usual cause of death in hypothermia. Sepsis in our patient developed as a result of superinfection of the skin lesions. Adrenal insufficiency secondary to chronic steroid use contributed to both inability to mount an appropriate immune response to infection, and the development of hypothermia itself. This is an example of a systemic side effect of topical steroids, which happens in a significant amount of cases if moderate-to-potent steroid preparations are used on more than 25% of body surface area.

JAWS 3: A LIFE-THREATENING COMPLICATION OF BISPHOSPHONATE-ASSOCIATED OSTEONECROSIS OF THE JAW. P.E. Bunce[1]; M. Tunks[1]; A.V. Page[1]; W. Gold[1]. [1]University of Toronto, Toronto, Ontario. *(Tracking ID # 173205)*

LEARNING OBJECTIVES: 1. Recognize the emerging entity of bisphosphonate-associated osteonecrosis of the jaw (BAOJ), including its risk factors and suggested management. 2. Highlight Ludwig's angina as a potentially life-threatening consequence of delayed recognition of BAOJ.
CASE: A 54-year-old woman presented with a one-month history of facial pain and swelling over the right side of her mandible with associated fever and chills. Recent short courses of antimicrobial therapy with clindamycin were prescribed for presumed osteomyelitis of the jaw, each resulting in temporary improvement. Further history revealed two additional episodes of reported mandibular osteomyelitis over the last year both treated with antibiotic therapy and sequestrectomy. Past medical history was significant for type II diabetes mellitus and multiple myeloma for which she was receiving chemotherapy and monthly infusions of pamidronate. On examination, her temperature was 39.6°C. There was marked swelling, erythema and tenderness to palpation overlying the right side of the mandible, with tense induration of the submandibular space. There was purulent discharge at the site of a recent fine needle aspiration (FNA). There was no respiratory distress or stridor. CT scan of the head and neck revealed chronic osteomyelitis of the right hemimandible with submandibular abscess, resulting in mass effect on the floor of the mouth and upper aerodigestive tract compatible with the radiological features of Ludwig's angina. Culture of the

FNA grew a Streptococcus milleri group organism and Eikenella corrodens, both constituents of the normal oral flora. Emergent surgical drainage and antimicrobial therapy with ceftriaxone and metronidazole resulted in dramatic improvement. As the patient's history suggested a diagnosis of BAOJ complicated by mandibular osteomyelitis and submandibular space infection, the pamidronate was discontinued.
DISCUSSION: Bisphosphonates are used in the treatment of hypercalcemia and bone disease associated with multiple myeloma and metastatic solid tumors. An emergent body of literature suggests that osteonecrosis of the jaw is strongly associated with the use of intravenous aminobisphosphonates in this group of patients. Rates may be as high as 10%. Risk factors for the development of BAOJ include the total cumulative dose of bisphosphonate received, malignancy, in particular multiple myeloma or metastatic breast cancer, dental infection and oral trauma. The presumed mechanism of disease is suppression of bone turnover secondary to bisphosphonates. The mandible seems to be most at risk due to the thin protective barrier (oral mucosa and periosteum) separating it from the oral cavity, resulting in frequent exposure of bone to oral microbes. In patients with documented BAOJ, consensus recommendations suggest discontinuing bisphosphonates, conservative removal of dead bone and initiation of antimicrobial therapy. Cancer patients being considered for prolonged intravenous therapy with bisphosphonates should have dental work prior to initiation of therapy as well as frequent monitoring for signs and symptoms of this condition. Our patient's prior episodes of reported mandibular osteomyelitis likely represented episodes of osteonecrosis of the jaw with or without superinfection. Delayed recognition of this condition and continued administration of bisphosphonate therapy likely played a role in the development of her Ludwig's angina, a potentially life-threatening condition.

MORE THAN SKIN DEEP: UNILATERAL MYOSITIS IN A DIABETIC. J.J. Franco[1]; S.H. Ward[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173232)*

LEARNING OBJECTIVES: 1. Distinguish primary pyomyositis from diabetic muscle infarction. 2. Manage primary pyomyositis.
CASE: A 59-year-old female with a past medical history of type II diabetes mellitus, hypertension and dyslipidemia presented with 3 days of progressive, non-radiating "aching" pain and swelling of the right breast. She reported fever and chills as well as severe pain with light touch of the breast and with movement of her right arm. Acetaminophen provided minimal relief. She denied trauma, cough and nipple discharge. On physical exam she was afebrile, had dry mucous membranes and a moderately enlarged, asymmetric, erythematous, exquisitely tender right breast. There was no nipple discharge, induration or fluctuance. There was marked limitation in adduction of the right arm secondary to pain. Laboratory studies revealed a leukocyte count of 13,000 K/MM3. Magnetic resonance imaging (MRI) revealed diffuse thickening and high T2 signal of the right pectoralis major muscle. Within the muscle, there was a 11 cm by 2 cm lack of enhancement. The patient was empirically started on intravenous fluids, Vancomycin, Piperacillin/Tazobactam and narcotic analgesics. On hospital day 2, she developed fever to 103°F and the pain in her right breast became more severe. Blood cultures were persistently negative. On hospital day six a repeat MRI was found to be unchanged and surgical drainage was scheduled. Upon incision, purulent fluid was encountered and necrotic tissue and muscle was expressed. The patient had no further fevers and experienced rapid resolution of her pain. She was discharged home the following day with a fourteen day course of oral Linezolid.
DISCUSSION: The differential diagnosis of myositis is vast. However, true unilateral muscle inflammation has two main etiologies: primary pyomyositis and diabetic muscle infarction. Distinguishing these two discrete clinical entities can present a diagnostic challenge. Differences in treatment make their identification of vital importance. Primary pyomyositis is an uncommon complication of transient bacteremia, with Staphylococcus aureus being the most common pathogen. Diabetic muscle infarction is a non-infectious complication of chronic uncontrolled diabetes. Both primary pyomyositis and diabetic muscle infarction cause isolated muscle inflammation resulting in pain, swelling and erythema. Additionally, MRI will demonstrate high intensity on T2 weighted images. However, fever, leukocytosis and abscess are not characteristic of diabetic muscle infarction. Abscess is represented by lack of enhancement on MRI, as was seen in this patient. Early recognition of primary pyomyositis and timely surgical drainage and antibiotics usually lead to complete recovery. A delay in diagnosis may result in compartment syndrome, adjacent joint destruction, sepsis or death. Long-term sequelae of primary pyomyositis include osteomyelitis, residual muscle weakness and functional disability. Finally, this case demonstrates that recognizing pyomyositis as an intrinsic muscle infection is key to its early diagnosis. The loss of arm adduction in this patient is classical for the involvement of pectoralis major. The clinician should recognize that decreased range of motion and weakness in a muscle's action represents an intramuscular process as opposed to a more superficial skin or soft tissue source.

MUCORMYCOSIS: SUCCESSFUL TREATMENT OF AN INCREASINGLY COMMON INFECTION. E.N. Kahler[1]. [1]University of Colorado Health Sciences Center, Denver, CO. *(Tracking ID # 172106)*

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of mucormycosis 2. Recognize treatment alternatives to amphotericin B
CASE: A 58-year old female with acute lymphocytic leukemia (ALL) underwent induction chemotherapy with vincristine, prednisone, doxorubicin, and L-asparaginase. The chemotherapy regimen resulted in neutropenia, steroid-induced diabetes, and L-asparaginase-induced liver injury. She developed nodular skin lesions on her right shin and left posterior chest wall that were biopsied. She was started on broad-spectrum antimicrobials including liposomal amphotericin B at 5 mg/kg. Histology of the nodules was consistent with invasive mucormycosis, and the liposomal amphotericin B was escalated to 10 mg/kg. Computed tomography (CT) of the thorax demonstrated multiple pulmonary nodules. At thoracotomy the right lower lobe was necrotic and required removal. The pathology revealed fungal hyphae consistent with Mucor. On liposomal amphotericin her skin and pulmonary lesions improved, but her creatinine clearance decreased from 73 to 29 ml/min. As a result, after fifteen days of liposomal amphotericin, she was switched to posaconazole at a dose of 200 mg four times daily. Follow-up CT of the chest two months later showed resolving nodules and the patient was maintained on long-term posaconazole suppressive therapy. She was discharged 12/24/2005 and has undergone chemotherapy for her primary diagnosis.
DISCUSSION: Life threatening infections with unusual fungi are increasingly common in patients immunosuppressed by chemotherapy, by organ or stem cell transplantation, and in the settings of diabetes mellitus, neutropenia, and steroid therapy. The incidence of Mucor infections has increased over the past decade, and Mucor has been identified in up to eight percent of autopsied patients with leukemia. Mucormycosis commonly presents with pulmonary, gastrointestinal or rhinocerebral involvement. Clinically, tissue necrosis and thrombosis are evident. Pulmonary disease typically includes fever, dyspnea, hemoptysis and cavitary lesions. Treatment involves agressive surgical debridement, antifungal therapy, and reversing the underlying immunosuppression. Despite appropriate surgical and medical management, mortality remains high. Prior to the availability of liposomal preparations of amphotericin B, mortality rates of disseminated mucormycosis exceeded ninety percent. Nephrotoxicity often limits the utility of even the newer amphotericin compounds. Long-term treatment with amphotericin can be associated with adverse systemic reactions including renal toxicity and significant electrolyte abnormalities. Another broad-spectrum azole, voriconazole, has minimal in vitro activity against Mucor, and cases of Mucor have been reported during therapy with this agent. Posaconazole, the newest of the azoles, has shown promising activity against Mucor both in vitro and in limited case series. Here we report successful treatment of a neutropenic patiet with disseminated mucormycosis by employing surgery and compassionate- use posaconazole.

OH MY ACHING HEART! LYME CARDITIS IN A 36 YEAR OLD HEALTHY MALE. S.K. Mueller[1]; S. Luc[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA. *(Tracking ID # 172759)*

LEARNING OBJECTIVES: 1. Understand the early manifestations of Lyme disease. 2. Understand the presentation and management of Lyme carditis. 3. Understand the difference between diagnosis of acute versus latent lyme disease.
CASE: A 36 year old Caucasian man with a history of reported Lyme disease (based on physical exam findings of erythema migrans) treated one year prior to admission presented with a one month history of fevers, fatigue, and worsening arthralgias. One month prior to presentation the patient noticed an enlarged right inguinal lymph node. Multiple evaluations (CBC, Chem 7, CXR, and abdominal CT scan) by his PCP and the emergency room were within normal limits. The lymph node became more painful. He developed fevers to 101.4, night sweats, malaise and arthralgias. Two weeks prior to admission, a family friend who was a physician prescribed prednisone 10 mg daily for 5 days. Symptoms resolved, but returned when he stopped the prednisone. Social history was pertinent for recent diagnosis of Coxsackie B virus in his wife and son. He works on Cape Cod. On presentation to the hospital, his physical examination was noteworthy for a temperature of 101, pain with movement of his right shoulder, left elbow, and PIP joints, transient erythematous lacy rash on the right thigh and 4 cm macule on the chest wall. No enlarged lymph nodes were noted. Labs were significant for: Hgb/Hct 12.6/34.9, ferritin 481, and CRP 70.1. Preliminary diagnosis was Adult Still's Disease given his fevers, arthralgias, evanescent rash, and outpatient response to prednisone. On hospital day 2, telemetry revealed a high-grade AV block (5:1 block), with an escape rhythm in the 40 s. Treatment was started with Ceftriaxone 2 g IV daily. His heart rate and blood pressure dropped, requiring a temporary pacing wire, which was removed 4 days later once his conduction improved to 1:1. ANA and RF later returned negative. Serologies returned positive for Lyme disease and negative for coxsackie B virus, EBV, CMV. His discharge diagnosis was Lyme Carditis and he was scheduled to complete a 4 week course of Ceftriaxone.
DISCUSSION: One of the most common clinical manifestations of early Lyme Disease is erythema migrans, an erythematous skin lesion that can develop within 7–14 days of infection, but can be seen up to 4 weeks following a tick bite. In retrospect, given this time period, our patient's rash was likely erythema migrans. Other manifestations of Lyme include mono- or oligoarticular arthritis (60%), neurological complications (10%) and carditis (5%). Carditis usually develops 3–6 weeks after the initial onset of the illness. Those with high degree heart block, as with this patient, should be hospitalized, have cardiac monitoring and IV antibiotics. Patients demonstrating hemodynamic instability require temporary cardiac pacing. Lyme carditis carries a favorable prognosis. Heart block usually resolves within 3 days to 6 weeks. Clinical evaluation as well as serological testing is used to make the diagnosis of lyme disease. In the case of our patient, serologies (that showed IgM and IgG positivity) were difficult to interpret in lieu of his diagnosis of lyme disease 1 year ago, as titers can remain positive for years after treatment. Research has shown that 10% of patients with treated early lyme disease remain IgM positive at 10–20 years follow up. However, his manifestation of erythema migrans and lyme carditis suggested evidence of an acute reinfection, and the patient was treated as such.

PERSISTENT FEVER AND SPLENIC INFARCT DUE TO CYTOMEGALOVIRUS (CMV) MONONUCLEOSIS IN AN IMMUNOCOMPETENT HOST. L.K. Snydman[1]. [1]Tufts-New England Medical Center, Boston, MA. *(Tracking ID # 173842)*

LEARNING OBJECTIVES: 1. Raise awareness that CMV infection can cause a mononucleosis syndrome in immunocompetent hosts. 2. Recognize that acute CMV

can cause severe morbidity and mortality in immunocompetent hosts. 3. Recognize the potential use for valganciclovir in immunocompetent hosts with persistent systemic symptoms.
CASE: A 30-year-old male physician presented with one week of fevers, rigors, night sweats, malaise, myalgias, sore throat and headache. Three weeks prior to admission, the patient traveled to Ohio with his wife and two-year-old daughter. He hiked, swam in lakes and reported multiple "bug" bites. Three days prior to admission, the patient developed left-sided chest pain and self-prescribed azithromycin. He then developed a pruritic rash on his forearms and abdomen. In the Emergency Department, examination was remarkable for temperature 102 F, rigors, submandibular lymphadenopathy, left upper quadrant tenderness, a macular non-blanching erythematous rash on his lower extremities, abdomen and back, and a papular blanching confluent erythematous rash on his upper extremities. The rash spared his palms and soles. The patient developed 17% atypical lymphocytes and 14% bands. He had worsening left upper quadrant tenderness and CT revealed splenomegaly with a splenic infarct. Laboratory data was remarkable for anemia, thrombocytopenia and transaminitis. The patient's rash was thought to be secondary to azithromycin and resolved after stopping the medication. CMV IgG and IgM were positive and CMV DNA was detectable in plasma. The patient was discharged from the hospital, but continued to have high fevers 103 F and rigors. He was started on valganciclovir 900 mg PO twice daily for one week. Shortly after starting anti-viral therapy, the patient's fevers subsided and his symptoms improved. Repeat CMV DNA was negative and all of his laboratory data were normal ten days after the completion of anti-viral therapy.
DISCUSSION: This case demonstrates the protean manifestations of CMV infection in an immunocompetent host. CMV mononucleosis resembles Epstein-Barr Virus (EBV) mononucleosis and is the most common presentation of symptomatic CMV infection in immunocompetent adults. If testing for the EBV heterophile antibody is negative, clinicians should consider CMV. Ten percent of infectious mononucleosis is not caused by EBV. The differential for EBV-negative mononucleosis includes CMV, primary HIV, Toxoplasmosis, and Human Herpes Virus 6. Transmission occurs via sexual contact, blood or tissue exposure, occupational exposure (daycare/healthcare workers), or close contact with infected individuals. One third of patients with CMV mononucleosis have dermatologic manifestations and exposure to beta-lactam antibiotics has been associated with the development of a generalized maculopapular rash, similar to that seen with EBV. Subclinical transaminitis is a common finding in immunocompetent patients with CMV mononucleosis. Diagnosis is based on a positive CMV IgM and a positive CMV DNA viral load. Most immunocompetent patients with primary CMV mononucleosis have a self-limited illness without the need for therapy. Our patient was initially discharged without treatment, but his systemic symptoms persisted. Efficacy and toxicity studies for anti-viral CMV medication have only included immunocompromised hosts, so the clinical utility of anti-CMV therapy in immunocompetent hosts remains unproven. This case illustrates a potential use for valganciclovir in immunocompetent hosts.

POLIOMYELITIS-LIKE ILLNESS CAUSED BY WEST NILE VIRUS INFECTION. A. Aravapalli[1]; S. Chandrashekaran[1]. [1]University of North Dakota, Fargo, ND. *(Tracking ID # 173480)*

LEARNING OBJECTIVES: Acute painful flaccid paralysis is an uncommon manifestation of West Nile virus infection. Recognition of this condition is important as these patients may not demonstrate significant recovery in their neurological deficit.
CASE: A 52-year-old man presented with a five-day history of fever and severe low back pain that radiated down to both legs, more so on the right side. There was new weakness of the right lower extremity and patient required crutches to ambulate. Past medical history included hypertension for which he was on enalapril and hydrochlorthiazide. On examination blood pressure was 126/60 mmHg, heart rate was 90/min, temperature was 101.5 oF, respiratory rate was 16/min. Meningeal signs were absent. Motor examination revealed occasional fasciculations in the right thigh adductors and quadriceps. Power was 3/5 at the hip flexors, 1/5 at the Knee flexors, 1/5 at the ankle and toe dorsiflexors on the right side. Inversion and eversion were 2/5 on the right. Power was normal in the left lower extremity. Deep tendon reflexes were absent in the lower extremities. Tone was normal bilaterally. Sensation was intact. Babinski sign was negative bilaterally. White count was elevated at 13,000 with normal differential. ESR was 8 mm/hr.Blood cultures were negative. Lumbar puncture showed 205 white blood cells in tube 4 with 62% lymphocytes, 7% monocytes, 24% segments. CSF protein was 114 mg/dl and glucose was 44 mg/dl. CSF VDRL, enterovirus PCR were negative. MRI of the lumbar spine showed moderate central canal stenosis at L4-L5 level. Serum West Nile IgM antibody was positive. Patient was diagnosed with painful asymmetrical motor neuropathy secondary to West Nile virus infection. He was started on pregabalin for neuropathic pain and transferred to rehabilitation unit for physical therapy. Five months later, pain had improved but he continues to have weakness in his right lower extremity and uses a walker to ambulate. EMG and nerve conduction velocity studies done five months after the intial presentation revealed motor neuron process, axonal type, with involvement of the peroneal nerve bilaterally and tibial nerve on the right. There was no sensory involvement. This was thought to be consistent with West Nile myelitis.
DISCUSSION: West Nile virus is one of the several important Flaviviruses in North America transmitted by mosquito vector. Clinical manifestations of WNV infection include mild febrile illness, aseptic meningitis, encephalitis and rarely painful flaccid paralysis as seen in our patient. Flaccid paralysis is most likely caused by damage to the anterior horn cells in the spinal cord, similar to that caused by the polio virus. There is asymmetric weakness in contrast to Guillain-Barre syndrome (GBS) which causes symmetric involvement. Neurophysiologically, this is characterized by reduced compound muscle action potentials, with normal motor conduction velocities and normal sensory nerve action potentials as seen in our patient. The poliomyelitis-like illness caused by WNV infection has to be distinguished from GBS to avoid inappropriate testing and therapies. There is no treatment of proven efficacy for WNV infection.

POLYMORPHIC VENTRICULAR TACHYCARDIA AFTER TREATMENT OF SYSTEMIC COCCIDIODOMYCOSIS. M.A. Waxman[1]; G.E. Mathisen[2]; S. Lundberg[2]. [1]UCLA Combined Internal Medicine-Emergency Medicine Program, Los Angeles, CA; [2]University of California, Los Angeles, Sylmar, CA. *(Tracking ID # 173622)*

LEARNING OBJECTIVES: 1. To recognize the possibility of severe hypomagnesemia and hypokalemia in patients receiving Amphotericin 2. Ensure adherence to Infectious Disease Society of America guidelines for laboratory monitoring with outpatient Amphotericin B therapy.
CASE: A 32 year-old Hispanic female had been receiving one month of inpatient treatment for disseminated coccidiodomycosis. The patient initially presented with a severe headache, fevers and malaise. Lumbar puncture serology at diagnosis was consistent with coccidiodomycosis meningitis. Hospital course was complicated by persistent hypokalemia and hypomagnesemia with normal renal function requiring daily electrolyte replacement. After approximately four weeks of intravenous Amphotericin and fluconazole, the patient was improved but still remained symptomatic. Following this initial course, the patient was sent home on oral fluconazole, intravenous liposomal amphotericin B and oral electrolyte replacement. Her electrolyte values were normal at the time of discharge. Approximately two weeks after discharge the patient presented to an outside emergency department with palpitations, generalized weakness and near syncope. On arrival to the emergency department her pulse was 220 beats per minute and her systolic blood pressure was 90 mmHg. ECG revealed polymorphic ventricular tachycardia in a classic torsades de pointes pattern. Four grams of intravenous magnesium were empirically given and the patient returned to normal sinus rhythm. Serum magnesium was level was less than 0.5 mg/dL and the patient was also hypokalemic. During admission her magnesium and potassium levels were repleted and she was discharged with electrolyte supplements. At six month follow-up, the patient no longer requires electrolyte supplementation and is able to take high-dose fluconazole without evidence of cardiac disturbance. In retrospect, the episode of ventricular torsades was likely related to the electrolyte disturbance (due to the liposomal amphotericin B) associated with concomitant use of high-dose fluconazole for management of coccidioidomycosis meningitis.
DISCUSSION: Amphotericin B remained a mainstay of treatment in severe fungal infections. In coccidiodomycosis meningitis Ampotericin B is usually reserved for patients who do not respond to an azole antifungal agent. The patient in this case presentation had severe symptoms at presentation requiring hospitalization, and Amphotericin B and fluconazole were given empirically. The nephrotoxic side effects of Amphotericin B are well known but the mechanisms are poorly understood. It is thought that both direct tubular injury and renal vasocontriction play a role in electrolyte wasting and a decrease in GFR. Increased membrane permeability and distal potassium secretion are thought to mediate the hypokalemia and hypomagnesemia associated with Amphotericin. In general, studies suggest that liposomal Amphotericin is less likely to cause nephrotoxicity and electrolyte wasting than traditional amphotericin deoxycholate. Nevertheless, the patient developed profound hypomagnesemia and hypokalemia, with ventricular torsades. This case illustrates the risk of electrolyte disturbance in patients receiving liposomal amphotericin B. IDSA guidelines should be adhered to closely which state that potassium, magnesium, and creatinine should be measured twice a week in the outpatient setting in order to prevent dire complications such as the polymorphic ventricular tachycardia seen in this patient.

PROTRACTED PYREXIA PROVES PROBLEMATIC FOR PERPLEXED PHYSICIANS. E. Beaty[1]; J. Wiese[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 173157)*

LEARNING OBJECTIVES: 1. Identify the differential diagnosis of fever of unknown origin in a patient with HIV. 2. Recognize the decreased sensitivity of sputum acid-fast bacilli stains in the immunocompromised patient.
CASE: A 54 year-old man presented with the feeling that "I'm passing out." He denied full loss of consciousness, seizures, palpitations, chest pain, shortness of breath, or incontinence. He had lost thirty pounds over three months, and he noted subjective fevers and night sweats. He had no cough or hemoptysis. He had recently been released from prison. He denied unprotected sex or intravenous drug use. His vital signs were normal, but he was orthostatic. His cardiac examination was normal; there were no carotid bruits or signs of valvular obstruction. His EKG revealed a first degree AV block with Q-waves in the inferior leads. Diffuse lymphadenopathy was noted on exam, which prompted a CT scan of the chest and abdomen that confirmed lymphadenopathy in the cervical chain, right axilla, and mediastinum. Over the course of his hospital stay he had recurrent pyrexia. An HIV test was positive with a CD4 count of 55 cells/mm3. All blood cultures and urine cultures were negative. A PPD was negative, as were three AFB sputum smears. A trans-thoracic echocardiogram revealed no valvular vegetations. Broncho-alveolar lavage revealed no viral inclusions and no evidence of PJP. His CMV, histoplasma, and cryptosporidium test were negative. A lymph node biopsy of the right axilla revealed necrotizing granulomatous lymphadenitis that stained positive for AFB. He was empirically started on rifampin, isoniazid, pyrizinamide, and ethambutol therapy, as well as azithromycin and TMP/SMX for prophylaxis. He remained afebrile for the remainder of his hospital stay. Respiratory cultures became positive for Mycobacterium tuberculosis four days after discharge.

DISCUSSION: Fever of Unknown Origin (FUO) in an HIV-infected patient is a problem increasingly encountered by the general internist. It is defined as recurrent fevers (>101° F) greater than four weeks of duration as an outpatient, or three days as an inpatient, without a known diagnosis despite appropriate investigation. Eighty percent of cases of FUO in HIV patients are due to infection, although only seven percent are due to tuberculosis. The most common etiologies of FUO in the HIV-positive patient are Mycobacterium avium complex (MAC), Pneumocystis jiroveci pneumonia (PJP), cytomegalovirus and disseminated histoplasmosis. Diagnosis of FUO in HIV-positive patients should be performed in a stepwise fashion, starting with non-invasive techniques that focus upon the most common etiologies, including blood and sputum cultures for MAC, PJP, M. Tuberculosis and histoplasmosis, and serum cryptococcal and CMV antigen testing. Invasive tests such as bronchoscopy or biopsies should be performed only if these initial tests are negative. As our patient illustrates, smears for AFB are less sensitive in immunocompromised patients, and an initially negative test result should be interpreted with caution, especially if a high pre-test probability for tuberculosis exists. Culture results should be confirmed as negative before excluding the diagnosis. Since cultures for tuberculosis can take up to eight weeks to confirm, more invasive techniques such as bronchoscopy, lymph node biopsy, bone marrow biopsy, and midiastinoscopy should be considered if the pre-test probability for tuberculosis is high.

RAPIDLY ENLARGING REGIONAL LYMPHADENOPATHY IN A PATIENT WITH CHRONIC LYMPHOCYTIC LEUKEMIA: THE ENTITY OF HERPES SIMPLEX VIRUS LYMPHADENITIS. T.C. Lee[1]; W.L. Gold[1]. [1]University of Toronto, Toronto, Ontario. *(Tracking ID # 173529)*

LEARNING OBJECTIVES: 1. Generate a differential diagnosis for acute lymphadenitis. 2. Recognize herpes simplex virus (HSV) as a cause of acute lymphadenitis and the group of patients at greatest risk for this condition.
CASE: A 56-year-old man with a past medical history of chronic lymphocytic leukemia (CLL) on treatment with chlorambucil, presented with acute, tender right-sided submandibular lymphadenopathy. At presentation, he was currently experiencing a recurrence of right-sided orolabial HSV infection. There were no additional local skin lesions. He was born in Italy and immigrated to Canada in 1965. There was no history of tuberculosis or tuberculosis exposure. On examination, he was afebrile and appeared well. There was a right-sided orolabial HSV lesion. There was also a 3×3 cm tender right submandibular lymph node with erythema of the overlying skin. There was no other lymphadenopathy and no hepatosplenomegaly. The remainder of the examination was normal. Complete blood count revealed: hemoglobin, 114 g/L; white blood cell count, 19.9 x109/L; lymphocyte count, 16.9 x109/L; neutrophil count, 0.8 x109/L; and platelet count, 68 x109/L. A presumed diagnosis HSV lymphadenitis was made and the patient was prescribed famciclovir 250 mg po bid for 7 days. Within two weeks, the oral lesion had resolved and the lymph node dramatically reduced in size. Over, the next several years, there were recurrences of orolabial HSV infection but only one with associated acute regional lymphadenitis, which again resolved with famciclovir.
DISCUSSION: The differential diagnosis of rapidly enlarging regional lymphadenopathy includes both infectious and non-infectious causes. Non-infectious causes include lymphomas and regional spread from solid tumors. Infectious etiologies are often bacterial including common pathogens such as group A streptococci and Staphylococcus aureus. Other infectious etiologies include tuberculosis, toxoplasmosis and cat-scratch disease. While generalized lymphadenopathy may be seen with viral infections, viruses are an uncommon cause of regional lymphadenitis. Similarly, while HSV is a well-known cause of herpes labialis, genital herpes and encephalitis, the entity of HSV lymphadenitis is less commonly encountered. In the largest published series to date, patients with B-cell neoplasms, including CLL and lymphoma, accounted for >50% of cases. Most patients presented with associated orolabial or anogenital mucocutaneous HSV lesions, as was the case with our patient. Some cases of HSV lymphadenitis, however, occurred in the absence of other clinical features of HSV reactivation. The predilection for patients with CLL remains unclear but may be related to an increased number of HSV receptors found on the lymphocytes of patients with CLL or impaired immune status related to hypogammaglobulinemia and abnormal T-cell function. The rapidly enlarging lymphadenopathy associated with HSV lymphadenitis in patients with CLL may mimic Richter's transformation to lymphoma in this group of patients, especially in the absence of associated mucocutaneous lesions. As several patients in the published series experienced spontaneous resolution of their lymphadenitis, treatment with antiviral agents may not be necessary. Given the low toxicity of famciclovir and the significant discomfort our patient with each recurrence, a decision was made to treat with antiviral therapy.

READING YOUR PALMS (AND SOLES): THE IMPORTANCE OF ADDRESSING SEXUAL HISTORY IN THE ELDERLY. K. Desai[1]. [1]Tufts University, Boston, MA. *(Tracking ID # 173285)*

LEARNING OBJECTIVES: 1. Generate an appropriate differential diagnosis for rash involving palms, soles. 2. Raise awareness of sexually-transmitted diseases (STDs) in geriatric patients.
CASE: A 68 year-old Portuguese male with past medical history significant for hypertension, diabetes mellitus, and diffuse large B-cell lymphoma presented to the chemotherapy infusion center for cycle 6 of CHOP (cyclophosphamide, doxorubicin, vincristine, prednisone). Upon presentation, a diffuse rash of one-week duration was noted. He also reported fevers up to 38 degrees C several times a week for the past 2 months and an upper respiratory illness 3 weeks prior to presentation. The patient denied any new medications within the past 3 months and had not traveled outside of Boston in the past year. He denied any penile lesions. Sexual history revealed unprotected sex with multiple homosexual partners within the past year. Physical examination was significant for a maculopapular, hyperpigmented rash involving the chest, trunk, back, and extremities, including the palms of the hands and soles of the feet. The rash was non-tender and non-pruritic. GU exam revealed a similar hyperpigmented rash. Pertinent negatives included no lymphadenopathy, alopecia, vesicles, or oral, penile, or rectal lesions. Skin biopsies of several lesions were performed. Labs revealed a positive RPR (1:256). Of note, HIV test was negative. Because of the high likelihood of secondary syphilis, treatment with Benzathine Penicillin G 2.4 millions units IM was initiated prior to the positive FTA-ABS. The patient was observed for 2–3 hours for the Jarisch-Herxheimer reaction. Prior to discharge, the patient was counseled on safe sexual behaviors.
DISCUSSION: The differential diagnosis for rash involving the palms and soles can be divided into infectious and non-infectious etiologies. The most common infectious sources include a viral exanthem from enteroviruses (coxsackieviruses A and B, echoviruses and enteroviruses), Rocky Mountain spotted fever, secondary syphilis, and scabies. Non-infectious etiologies include atopic and contact dermatitis, drug eruption, erythema multiforme, psoriasis, tinea, acute neutrophilic dermatoses (Sweets syndrome), and cutaneous lymphoma. The rash of secondary syphilis is classically a symmetric papular eruption involving the entire trunk and extremities including the palms and soles. Systemic symptoms include fever, headache, malaise, anorexia, sore throat, myalgias, and weight loss. The diagnosis is usually clinical with minimal further work-up. Although primary and secondary syphilis in those 55 years and older is uncommon (<5%), these stages of syphilis are highly infective. Therefore, immediate diagnosis and subsequent treatment are essential to prevent transmission. However, diagnosing STDs in the elderly can be difficult for multiple reasons. First, geriatric patients usually have multiple co-morbidities that could be mistaken for alternate disease states, leading to under-diagnosis of STDs. Secondly, for various reasons, sexual health in the elderly is not frequently addressed by the medical profession. However, screening for STDs with a sexual history should be standard in the routine geriatric evaluation. It is simple, cost effective, and important.

RUPTURED MYCOTIC CAROTID ARTERY ANEURYSM. D. Taneja[1]; S. Eskapalli[1]; T.J. Kizhakekuttu[1]. [1]University of Illinois at Peoria, Peoria, IL. *(Tracking ID # 173865)*

LEARNING OBJECTIVES: 1. Recognize the potential for vascular involvement of head and neck soft tissue infections. 2. Management of mycotic aneurysm.
CASE: A 38 year old woman presented with a 3–4 day history of left sided neck swelling and odynophagia associated with fevers, chills, and night sweats. In the 10 days preceding admission, she was evaluated and treated for Strep. pharyngitis. Unresolved odynophagia without neck swelling and systemic symptoms prompted a second visit and treatment with analgesics. On evaluation, the patient had a low grade temperature of 99.8, HR 106 bpm, RR 18 bpm, BP 136/88 mm Hg. On exam, there was obvious extensive left sided neck swelling extending from the angle of the mandible antero-inferiorly to the suprasternal notch associated with erythema, warmth, tenderness, and deviation of the trachea to the right. Fiberoptic nasal laryngoscopy did not reveal airway compromise. Lungs were clear bilaterally. Cardiac exam was unremarkable except for tachycardia. Lab results were significant for leukocytosis with a left shift, ESR 68, and normal CMP. Viral studies (CMV, EBV, HIV) were unremarkable. Empiric antibiotic therapy with piperacillin/tazobactam and vancomycin was initiated. Computed tomography suggested an aneurysm of the left common carotid artery with extensive fluid collection in the carotid sheath. MRA confirmed the presence of an aneurysm of the left common carotid artery. The patient underwent exploratory surgery by ENT and CV services. Intraoperative findings revealed a loculated abscess within the carotid sheath. In addition, carotid artery wall was noted to have a defect consistent with rupture and thrombosis. A saphenous vein graft was utilized to maintain flow as a 2 cm mycotic section of the artery was resected. Intraoperative specimens were collected for cultures, all which were positive for S. aureus (MSSA). Blood cultures from admission were positive for S. aureus (MSSA) as well. Surveillance cultures prior to discharge were negative. The patient tolerated the procedure well and was discharged a few days after surgery to complete a 4 week course of Nafcillin.
DISCUSSION: Mycotic carotid artery aneurysm is a very rare condition with a reported average incidence of approximately 2 cases per year over the past several decades. The most common organism is Staphyloccocus aureus with Enterobacter, Salmonella, E. coli, and Klebsiella as distant followers. While most cases are associated with a known dental infection, dental procedure, or intravenous drug use, our patient was unique in that her inciting event was a case of streptococcal pharyngitis. As rare and as life threatening as mycotic carotid arteries are, ruptured aneurysms present an even more frightening scenario, emphasizing the necessity of swift and aggressive evaluation of head and neck soft tissue infections. The standard treatment includes surgery followed by antibiotics as our patient received.

SELL THEM SHORT AND YOU'LL BE IN TROUBLE. UNEXPECTED COMPLICATION AFTER SUCCESSFUL TREATMENT OF ATYPICAL PNEUMONIA. N. Nosaka[1]; N. Kondo[1]; Y. Sugino[1]. [1]Toyota Memorial Hospital, Toyota, Aichi. *(Tracking ID # 172688)*

LEARNING OBJECTIVES: 1: Know typical initial presentation and clinical course of atypical pneumonia. 2: Understand extrapulmonary complications of Mycoplasma pneumonia.
CASE: A 24-year-old male was admitted to the hospital with non-productive cough and fever starting 5 days prior to the admission. He visited his family physician on the day of onset. Oral cephalosporin was prescribed with no relief. His cough and fever got worse over next 3 days and visited our outpatient clinic. In outpatient clinic, he was in moderate distress and admitted to hospital. On admission, his temperature was 39.8°C, blood pressure was 107/60 mmHg, and pulse was 95 bpm. Physical examination showed clear lung sound and normal heart sound. His labs showed WBC 4700/L with 80.4% neutrophils. A chest X-ray showed an infiltrate in the left mid-lung, and a computed tomography (CT) of the chest showed a diffuse, granular infiltrates in the left lingular segment. The value of cold agglutinins was 1:4, and an IgM antibody specific to Mycoplasma pneumoniae was 1:5120. He was diagnosed as Mycoplasma pneumonia and started on intravenous (IV) minocycline. His symptoms gradually improved. On the fourth day of admission, although the infiltrate on his chest X-ray resolved, he developed fever again to 38.5°C with headache and vomiting. Antibiotic was changed to pazufloxacin (PZFX) to have broad spectrum coverage. On the fifth day of admission, his consciousness was declined with nuchal rigidity on physical exam. A lumber puncture was performed and revealed elevated opening pressure of 19 cm H2O. Cerebrospinal fluid (CSF) showed elevated cell count of 416 (monocyte : lymphocyte = 40% : 60%) and increased proteins of 110 mg/dL. He was diagnosed as Mycoplasma meningoencephalitis. IV predonisolone (PSL) was added to PZFX. By the 14th day of admission, his mental status was recovered completely. On the 29th day of admission, he was discharged home without any complications.
DISCUSSION: Though respiratory tract infections are the most common form of Mycoplasma pneumoniae infections, as many as 25% of patients may have extrapulmonary complications. Occasionally extrapulmonary symptoms occur without respiratory symptoms. Central nervous system (CNS) complications are recognized as one of the most common complications. Approximately 1–10% of patients with serologically confirmed M. pneumoniae infections that required hospitalization may experience neurological manifestations. There are several theories to explain the high incidence of CNS complication with M. pneumoniae infection. These theories include direct invasion of the CNS, immune phenomena, vascular injury, hypercoagulable state and toxic effects. Because our patient developed meningoencephalitis after successful treatment of pneumonia, immune complex injury is more likely than others as underlying mechanism. Knowing common extrapulmonary complication of Mycoplasma pneumonia will allow internists to provide appropriate care to the patients suffered by this relatively common atypical pneumonia.

SEVERE DISSEMINATED COCCIDIOIDOMYCOSIS IN A YOUNG IMMUNOCOMPETENT MAN. S.N. Khan[1]; P. Pina-Peguero[2]; S. Tchernodrinski[2]. [1]Society of General Internal Medicine, Chicago, IL; [2]John H. Stroger Hospital of Cook County, Chicago, IL. *(Tracking ID # 173797)*

LEARNING OBJECTIVES: 1. Recognize the rare occurrence of disseminated coccidioidomycosis in immunocompetent adults 2. Review the radiological manifestations of spinal fungal infection and the treatment of disseminated coccidioidomycosis
CASE: A 28 year old black man originally from Chicago moved to Arizona for a "new start in life". Soon after that he felt sick with progressive cough and dyspnea and was hospitalized for pneumonia. He subsequently developed respiratory failure and required intubation with mechanical ventilation for several days. At that time he was diagnosed with pulmonary coccidioidomycosis and improved with antifungal therapy. Two months later he presented again with worsening back and leg pain. Examination was significant for a gibus at the T8-T10 level with palpatory tenderness. Neurologic examination showed normal strength and sensation of the upper and lower extremities. CT chest was significant for diffuse bilateral reticulonodular pattern. MRI of the thoracolumbar spine revealed destruction of the T8 and T9 vertebrae, extensive diffuse bone marrow replacement and a large paravertebral mass from T7 to T10. A CT-guided needle biopsy of the mass revealed Coccidioides immitis. CSF examination was normal and coccidioides antibody complement fixation test was negative. Serum antibody immunodiffusion was positive. There was nothing to suggest immune deficiency in this patient and his HIV test was negative. The patient was treated with a Jewett brace and intravenous amphotericin B and fluconazole and is scheduled for a multistage procedure for spinal stabilization.
DISCUSSION: Infection with Cocciodioides immitis is primarily a pulmonary disease. Extrapulmonary dissemination occurs in less than 1% of symptomatically infected patients and more often in immunosuppressed (i.e. in AIDS, transplant patients, chronic steroid treatment) and during pregnancy. In the immunocompetent patient, disseminated disease is associated with inhalation of large amounts of arthroconidia. Virtually any organ can be affected, but skin, bone and joints are the most commonly affected extrapulmonary sites. When present, bone involvement results from hematogenous spread, is multiple and is associated with extensive disease. Approximately 20% of patients with disseminated disease have bone lesions, of which half will have vertebral osteomyelitis. The radiographic findings of multiple osseous lesions with predilection for the bony prominences and metaphyses, relative disc cartilage sparing with indiscriminate involvement of the appendages and symmetrical lesions are suggestive of fungal infection. In established cases, radiographs often will show lytic, destructive lesions that mimic primary or metastatic disease or bacterial osteomyelitis. Tissue biopsy and fungal cultures provide definitive diagnosis. Antifungal therapy seems to be beneficial in localized pulmonary disease, but not as effective in disseminated disease especially when it involves bone. Patients with spinal coccidioidomycosis benefit the most from a combination of medical and surgical therapy.

SICK FROM KAYAKING? A CASE OF LEPTOSPIROSIS. Z. Avram[1]; A.R. Gonzaga[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172232)*

LEARNING OBJECTIVES: 1. Recognize the presentation of infection with leptospirosis. 2. State the definitive diagnostic work-up 3. State the management of leptospirosis infection.
CASE: A 35-year old healthy male physician presented to a local hospital with a 7 day history of progressive myalgias, fever to 102°F, rigors, frontal headache, decreased urine output. Patient denied visual changes, chest pains, shortness of breath, cough, GI symptoms, or tick bites. He works as an ICU physician, has no promiscuous sexual activity, no drug or ETOH use. At least once a week he kayaks in nearby stream that passes through a cow farm. No recent travel history. On presentation, the patient was febrile (38.9oC), tachycardic, and hypotensive. Laboratory findings were significant for creatinine 2.5, ALT 234, AST 256. Empiric broad-spectrum antibiotics were begun and he was transferred to our institution for further management. On transfer, patient had icteric sclerae and a right subconjunctival hemorrhage. Transaminitis and ARF persisted through the first 5 days of treatment, after which they trended downwards. Babesiosis, Ehrlichoia, RMSF, typhoid titers were negative, while the Leptospirosis titer was positive (1:400). Antibiotic management was narrowed to doxycicline for a total of 2 weeks.
DISCUSSION: Leptospirosis is a bacterial disease that affects humans and animals and is caused by bacteria called Leptospira interrogans. Unicteric leptospirosis may present as an acute influenza-like illness, with fever, chills, severe frontal headache, nausea, vomiting, and myalgias. Muscle pain, which especially affects the calves, back, and abdomen, is an important feature of leptospiral infection. The most common finding on physical examination is fever with conjunctival suffusion. Weil's syndrome, or icteric leptospirosis, the most severe form of leptospirosis, is characterized by jaundice, renal dysfunction, hemorrhagic diathesis, and a mortality rate ranging from 5 to 15%. A careful history is often the key to the diagnosis - ask about recreational activities, in addition to occupations that place the patient at increased risk (camping, hiking, canoeing, fishing, rafting in particular). A definite diagnosis of leptospirosis is based either on isolation of the organism from the patient or on seroconversion or a rise in antibody titer in the microscopic agglutination test (MAT). In cases with strong clinical evidence of infection, a single antibody titer of 1:400 to 1:800 in the MAT is required. Antibodies generally do not reach detectable levels until the second week of illness. The first-line treatment is doxycycline and should be started within 48 h of illness. An oral agent such as amoxicillin or ampicillin is effective in mild-to-moderate infections, while intravenous penicillin-G or ceftriaxone are the therapy of choice for severely ill patients.

STERNOCLAVICULAR JOINT INFECTION IN AN INTRAVENOUS DRUG USER. M.R. Stein[1]. [1]Albert Einstein College of Medicine, Bronx, NY. *(Tracking ID # 173126)*

LEARNING OBJECTIVES: 1. To include sternoclavicular joint (SCJ) infection in the differential diagnosis of a patient with chest wall pain and swelling. 2. To recognize axial joint infections in persons who use injection drugs.
CASE: A 49 year old man presented to clinic complaining of right upper chest and shoulder pain for three days. The patient was an active injection drug user and had AIDS and cirrhosis due to Hepatitis C infection. He was on antiretroviral therapy and had CD4 count of 227 and HIV VL < 75 six weeks prior to presentation. Three days prior to presentation the patient injected cocaine into a vein in his right upper arm and immediately had uncontrollable shaking of his entire body lasting approximately two to three minutes. He did not lose consciousness during the episode but fell off his bike, striking his right clavicle and upper chest. On examination the medial third of his clavicle was swollen, erythematous and exquisitely tender. Range of motion of his right shoulder was limited by pain. The patient was sent to the Emergency Department, where he was noted to have low-grade temperature (100.0¢ª F) and severe pain. X-rays revealed no fracture or subluxation. He was admitted to the medical service for further evaluation and pain control. The following day the patient was seen by an orthopedist who performed sternoclavicular arthrocentesis, extracting pus from the joint space. The patient was started on vancomycin for empiric coverage of MRSA. A transesophageal echocardiogram was normal. Culture of joint fluid grew MSSA and the antibiotics were changed to nafcillin. He received 21 days of intravenous antibiotics and had near complete resolution of pain, swelling and erythema.
DISCUSSION: SCJ infections are uncommon, comprising approximately 1% of all septic arthridites. Among injection drug users, a population in which unusual joint infections are more common, 17% of joint infections are at the sternoclavicular joint. Risk factors for SCJ infection include intravenous drug use, diabetes mellitus, placement of central venous catheter and rheumatoid arthritis. Axial joint infections are often misdiagnosed. They are usually subacute and progressive with increasing pain, limitation in mobility and an absent or low-grade fever, as in our patient. Thus, the diagnosis of SCJ infection is often delayed until secondary complications have occurred. Potential complications include osteomyelitis, abscesses, fistulae, mediastinitis and superior vena cava syndrome. Staphylococcus aureus is the most common infectious agent in SCJ infections, but gram negative bacteria and mycobacterium tuberculosis have also been identified. Treatment of SCJ infection requires antibiotics, arthrocentesis, and in some cases, surgical intervention.

STREPTOCOCCUS MILLERI EMPYEMA PRESENTING AS BACK AND CHEST PAIN IN AN OTHERWISE HEALTHY YOUNG WOMAN B. Staub[1]; C.L. Spagnoletti[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172630)*

LEARNING OBJECTIVES: (1) Describe the clinical presentation, management, and prognosis of empyema (2) Recognize distinguishing features of ***Streptococcus Milleri*** empyema
CASE: Mrs. P is a previously healthy 38 year old female smoker with no past medical history who presented in respiratory distress. Three weeks prior, she sought care for upper back and chest pain at her local ED, was diagnosed with probable musculoskeletal injury, and sent home with analgesics. She sought further medical care when she developed symptoms of productive cough, fever, chills, anorexia, and dyspnea at rest. On transfer to our facility, her physical exam was notable for a temperature of 38.1, BP 80/58, HR 129, RR 38, oxygen saturation 95% on room air, and decreased breath sounds on her left side. Due to respiratory distress and hypotension, she was intubated and stablized. Her WBC was 24.5, and urine and blood cultures were negative. CXR revealed diffuse left sided pleural effusion. A left-sided pigtail catheter was placed which yielded purulent discharge with an LDH of 3,875 IU/L and a culture positive for ***Streptococcus milleri***. A diagnosis of empyema was made and the patient was started on continous infusion penicillin (PCN). After seven days of little clinical or radiologic improvement, video-assisted thoracic surgery (VATS) was performed for drainage of the empyema, partial decortication, and placement of two chest tubes. Two weeks later, Mrs. P was discharged and continued her four week course of continous infusion PCN and had attained near-complete clinical and radiographic recovery by her six week follow-up visit.
DISCUSSION: Empyema affects up to 60,000 people in the US annually, with a mortality rate as high as 15%. Since a primary lung infection such as pneumonia is the causative factor in up to 70% of cases, patients with empyema typically present with an acute onset of chills, high-grade fevers, diaphoresis, and cough. Dyspnea and pleurisy may also occur. Empyema can also develop after thoracic surgery, trauma, thoracentesis, or esophageal injury via introduction of organisms into the pleural space. Gram positive organisms cause the majority of infections, with ***Streptococcus milleri*** causing about 1/3 of cases. ***Streptococcus milleri*** is often considered normal oral, GI, and GU flora, but is also well-established as a common cause of pyogenic infection of the lung and other internal organs. However, its pathogenesis in causing such infections remains largely unexplained. Immunodeficiency, recent surgery, trauma, or instrumentation are risk factors for ***Streptococcus milleri*** empyema. Other common organisms that cause empyema include ***Streptococcus pneumoniae***, staphylococcal species, anaerobes and enterobacteriaceae. The diagnosis of empyema is made by finding purulent discharge with positive bacterial cultures, a pH less than 7.2, and an LDH of greater than 1000 IU/L on thoracentesis. First-line therapy includes sterilization of the empyema cavity with appropriate antibiotics for a 4–6 week period and complete pleural fluid drainage via chest tube. However, this treatment approach fails in up to 30% of patients, who then require VATS for decortication. Of note, a recent study demonstrated shorter hospital length of stay and decreased mortality with early operative treatment among patients with ***Streptococcus milleri*** empyema. The 3 month recurrance rate of empyema from all causes post-VATS is 2–4%. With medical treatment alone, the recurrence rate is slightly higher.

TB OR NOT TB, THAT IS THE QUESTION Y. Lam[1]; J.W. Fisher[1]. [1]Baylor College of Medicine, Houston, TX. *(Tracking ID # 173799)*

LEARNING OBJECTIVES: 1. Identify cold abscesses and generate a differential diagnosis for intramuscular fluid collections 2. Recognize the presentation, diagnosis and management of tuberculous abscesses
CASE: A 30 year old African American male with no past medical history first noticed mild chest and low back pain after heavy lifting at work eight months prior to presentation. He thought the pain was a muscle strain, however the pain became more severe and soft masses were enlarging in his anterior chest and lower back. He denied fevers, chills, night sweats, recent infections or trauma. He reported a five pound weight loss. Medication included ibuprofen as needed. He had a history of incarceration, marijuana and cocaine use. Family history was positive for breast cancer. Physical exam was significant for two large soft, non-tender, palpable masses in the anterior left chest and right lower back. He had a normal cardiopulmonary exam with no fever or lymphadenopathy. Chest x-ray showed a soft tissue mass over the left hemithorax. CT scan showed fluid collections measuring $14 \times 5 \times 12$ cm in the chest wall musculature and $10 \times 5 \times 11$ cm in the right paraspinal muscles. A bone scan was negative. An echocardiogram showed no masses or vegetations. The fluid collections were drained percutaneously. Fluid aspirate was negative for acid fast bacillus (AFB) smear, bacterial and fungal cultures, and malignancy. Serum cryptococcal antigen, HIV, and urine histoplasma antigen were negative. Tuberculin skin test was positive, so the patient was empirically discharged home on isoniazid, rifampin, ethambutol, and pyrazinamide. Four weeks later the Mycobacterium tuberculosis (M. tuberculosis) culture DNA probe test returned positive.
DISCUSSION: The differential for an intramuscular fluid collection includes malignancy, hematoma, and infectious etiologies, such as bacteria, fungi and mycobacteria. M. tuberculosis muscle abscesses are rare, and generally present as cold abscesses, which are less inflamed than expected for the degree of infection. The clinical presentation is crampy muscle pain followed by fluctuant fluid collections, but no fever or local skin erythema. The pathogenesis is thought to involve hematogenous spread of the organism. Patients often have a positive tuberculin skin test and negative chest x-ray. Abscesses have hyperintense signal on MRI T2-weighted images, and CT with contrast shows enhancement of the abscess wall. Fluid aspirate should be sent for gram stain, bacterial culture, AFB smear, M. tuberculosis culture, and fungal culture. If available, polymerase chain reaction for M. tuberculosis can be a useful diagnostic tool. Even if the AFB smear is negative, the culture may be positive four to six weeks later. Thus, if the internist has a concern for tuberculosis, especially in patients with history of health care employment, incarceration, birth in a country with high endemic tuberculosis, low socioeconomic status, or immunocompromised state, empiric therapy should be initiated. Treatment first entails surgical or percutaneous drainage of the abscess. The American Thoracic Society and Infectious Disease Society of America recommend two months of isoniazid, rifampin, pyrazinamide, and ethambutol, then four to seven months of isoniazid and rifampin. In patients with a cold abscess, the internist should maintain a high index of suspicion for tuberculosis and notify the local health department of new cases of tuberculosis as well as screen close contacts of the patient.

THE BITER AND THE BITTEN: THE APPROPRIATE ANTIMICROBIAL MANAGEMENT OF HUMAN BITE WOUNDS I.I. Bogoch[1]; W.L. Gold[1]; A.V. Page[1]. [1]University of Toronto, Toronto, Ontario. *(Tracking ID # 173486)*

LEARNING OBJECTIVES: 1. To define the bacteriology and appropriate antimicrobial management of human bite wounds. 2. To describe a common and serious complication of deep bite wounds.
CASE: A 56 year old woman presented to the Emergency Department within hours of receiving multiple human bite wounds to her left hand and right forearm from an acutely psychotic family member. Her wounds were irrigated and debrided, and she received both an intramuscular injection of tetanus toxoid and a prescription for 14 days of oral cloxacillin. Over the following two weeks, despite antimicrobial therapy, the wound on her left third finger became increasingly swollen and purulent. As a result, she was unable to work and returned to the Emergency Department. On examination, she was afebrile. The involved finger was swollen, with open wounds on both the dorsal and volar aspects of the middle phalanx. Bone was visible at the base of the wounds and there was restricted range of motion if the interphalangeal joints. Plain radiographs revealed irregular lucencies of the middle phalanx, consistent with osteomyelitis. Blood cultures were negative. A swab of the wound grew Pseudomonas aeruginosa. The wound was explored, irrigated and debrided by a hand surgeon, and a four-week course of intravenous piperacillin/tazobactam was initiated. The biter tested negative for HIV, hepatitis B and hepatitis C virus infections. Follow-up examinations at one and four weeks revealed progressive healing of the wounds. Following four weeks of intravenous therapy, the patient was prescribed and additional two-week course of oral amoxicillin/clavulanate and ciprofloxacin. At the completion of therapy, the wounds had healed and she was able to return to work with minimal residual disability.
DISCUSSION: Human and animal bite wounds account for 1% of all visits to the Emergency Department. Human bite wounds commonly result from occlusive bites or clenched-fist injuries. Initial management of the wound must include careful exploration, irrigation and debridement. All deep wounds should be referred to a hand surgeon, as septic arthritis and osteomyelitis are common infectious sequelae of these injuries. Bacterial contamination of bite wounds reflects the oral flora of the biter and the skin flora of the bitten. Oral flora includes streptococci, Haemophilus species, Eikenella corrodens, and anaerobes. Skin flora includes Staphylococcus aureus. Although Pseudomonas was isolated from our patient's wound, it was not likely part of the oral flora of the biter, but more likely represented a superinfection of the persistently open wound. Regardless of the appearance of the wound, prophylactic antimicrobial therapy that accounts for these microorganisms and their likely antimicrobial susceptibilities should be considered as early as possible to prevent the development of infection. Cloxacillin, as prescribed to our patient, has a narrow antimicrobial spectrum, without activity against ?-lactamase-producing oral anaerobes, or E. corrodens. Owing to a lack of activity against E. corrodens, monotherapy with clindamycin is also not recommended. Oral therapy with a ?-lactam/?-lactamase inhibitor combination, such as amoxicillin/clavulanate, is suggested. In the penicillin-allergic patient, the combination of clindamycin and a fluoroquinolone may substitute. In our patient, the early initiation of appropriate antimicrobial therapy may have prevented the development of osteomyelitis.

THE STORY FITS THE MOLD: INVASIVE PULMONARY ASPERGILLOSIS COMPLICATING MARIJUANA USE D.W. Cescon[1]; A.V. Page[1]; S.E. Richardson[2]; W.L. Gold[1]. [1]University of Toronto, Toronto, Ontario; [2]Hospital for Sick Children, Toronto, Ontario. *(Tracking ID # 172674)*

LEARNING OBJECTIVES: 1. Recognize risk factors for invasive ***Aspergillus*** infection. 2. Highlight invasive aspergillosis (IA) as a potential serious complication of marijuana use.
CASE: A 65-year-old man presented for a scheduled oncology follow-up appointment with a 4-week history of cough with associated shortness of breath and fever. Two years earlier, he had been diagnosed with colorectal cancer and treated with resection and adjuvant 5-fluorouracil chemotherapy. Nine months prior to his current visit, he was diagnosed with metastatic disease to his lungs and pelvis and had completed 8 cycles of combination chemotherapy (capecitabine, irinotecan and bevacizumab) with a good response. His course had been complicated by cancer-associated thromboembolic disease, treated with low molecular weight heparin. On the day of his visit, a restaging CT scan demonstrated a new 4.3 cm cavitary lesion in the left lower lobe with surrounding ground glass opacities. His scheduled chemotherapy was postponed and he was empirically prescribed a 7-day course of moxifloxacin for presumed bacterial pneumonia. Despite this, he experienced progressive fatigue, increasing dyspnea and occasional hemoptysis and presented to the Emergency Department. On examination, he was afebrile. Blood pressure was 95/60 mmHg, heart rate was 84/minute (regular) and Sa02 was 98% (room air). Chest was clear to percussion and auscultation. There was no clubbing. He denied a history of, or exposure to, tuberculosis. He had never smoked cigarettes, but had started smoking cannabis for the palliation of cancer-related symptoms approximately six weeks prior to the current presentation. A CBC revealed: WBC, 7.9×10^9/L; absolute neutrophil count, 5.2×10^9/L. Blood cultures were negative. Sputum cultures for bacteria, mycobacteria and fungi were negative. A CT-guided fine needle aspirate of the cavity showed necrosis, inflammation and masses of hyaline fungal hyphae with dichotomous branching and septations compatible with ***Aspergillus***. Fragments of plant matter, likely inhaled cannabis, were also seen. There were no malignant cells. PCR confirmed infection with ***A. fumigatus***. Therapy with voriconazole was initiated resulting in symptomatic improvement. Repeat CT scan revealed a reduction in the size of the cavity.

DISCUSSION: ***Aspergillus*** is a fungus found worldwide in water, soil, and in particular, decaying vegetation. IA is a major cause of morbidity and mortality in immunocompromised hosts, particularly in patients with hematologic malignancies. It is relatively rare in patients with solid tumors. Prolonged and profound neutropenia is the most important risk factor for the development of IA. Other risk groups include: patients receiving corticosteroid therapy or anti-TNF alpha agents, bone marrow and solid organ transplant recipients, and patients with HIV/AIDS. Inhalation of cannabis via smoking has also been recognized as a risk factor for the development of invasive pulmonary aspergillosis. Medicinal cannabis is used with relative frequency by patients with cancer for the palliation of nausea, pain and cachexia. In Canada, medicinal marijuana that is both tested for fungi and irradiated may be legally obtained, although many patients purchase their supply from street sources lacking these safeguards. This was the case in our patient. While our patient with cancer was not neutropenic, a detailed history revealing his use of marijuana suggested aspergillosis as the cause of his cavitary lung disease.

THE PERIPHERAL SMEAR IN BABESIOSIS A. Sheikh[1]; K. Pfeifer[1]; T. Mohyuddin[1]; U.M. Shakur[1]; M. Frank[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 172621)*

LEARNING OBJECTIVES: 1. Emphasize the importance of peripheral smear examination in patients with hemolytic anemia. 2. Describe the clinical presentation and treatment of babesiosis.

CASE: A 66-year-old woman with a history of hypothyroidism, pancreatic cystic adenoma and splenectomy presented with recurrent fevers, generalized weakness and fatigue over a three-week period. She reported traveling to northern Wisconsin and eastern Minnesota three weeks prior, when she developed a four centimeter patch of erythema without central clearing over her left ankle. However, she could not recall any tick bites, trauma or other unusual occurrences during this trip. The patient was seen by her primary care physician and treated with Keflex and indomethacin for leg cellulitis. However, her symptoms failed to improve, and she presented to our emergency department for further evaluation. On presentation she had a temperature of 99 F and normal vital signs, and her physical examination was unremarkable except for skin pallor. Laboratory findings of significance included a hemoglobin of 7.8 g/dL, platelet count 316×109/L, reticulocyte count 14.9%, LDH 1070 U/L, haptoglobin < 30 mg/dl and a positive direct Coombs test. A presumptive diagnosis of autoimmune hemolytic anemia was made based on an initial normal interpretation of her peripheral blood smear, and steroid treatment was initiated. Subsequent repeat examination of the peripheral blood smear revealed intraerythrocytic inclusions with morphology consistent with Babesia. The patient was given a 7-day course of oral clindamycin and quinine. She made a full recovery with no sequelae.

DISCUSSION: Babesiosis is a febrile illness caused by the protozoan Babesia microti in the United States and Babesia divergens in Europe. The deer tick, Ixodes scapularis, is responsible for transmission of the organism from domestic animals to humans, where Babesia sporozoites invade erythrocytes and cause hemolytic anemia. Although the parasite is considered endemic in certain areas of the northeastern United States there have also been reports in Minnesota and Wisconsin. Like malaria, the clinical findings include flu-like symptoms with fever, chills, headache, diaphoresis, arthralgias and fatigue. However, a lack of periodicity of symptoms differentiates babesiosis from malaria. Most patients have minimal symptoms and recover spontaneously, but asplenic, immunocompromised and elderly patients are at risk for serious illness. The definitive method of diagnosis involves Wright or Giemsa stain of the peripheral blood smear, which demonstrates intraerythrocytic parasites. However, peripheral blood smears may be negative in some patients, and direct Coombs testing may be positive, thus causing diagnostic confusion. In such cases, repeat peripheral smear examination and Babesia serology are useful to prevent delayed or inappropriate therapy. Treatment with atovaquone and azithromycin for 7 days is typically effective, but exchange transfusions have also been utilized in asplenic patients with severe infection. Severe cases may also be treated with 7 days of clindamycin and quinine. This case highlights the importance of a peripheral smear examination in a patient with hemolytic anemia. Additionally, babesiosis infection should be considered in the differential diagnosis even without a history of tick bites or residence in an endemic area.

A "NATURAL" SCARE A.L. Kolpakchi[1]; R. Cartin-Ceba[1]. [1]Baylor College of Medicine, Veterans Affairs Medical Center, Houston, TX. *(Tracking ID # 171777)*

LEARNING OBJECTIVES: 1. Develop rational differential diagnosis of hepatitis. 2. Recognize hepatotoxicity of kava-kava (or simply kava).

CASE: 32 year-old woman with a history of anxiety admitted with chief complaint of constant, nonradiating right upper quadrant pain, jaundice, nausea, and dark urine for 3 days. Her only medication was an OTC "natural" supplement kava, she started as treatment for anxiety two weeks prior to the onset of aforementioned symptoms. Patient denied past hepatitis, recent travel, eating uncooked food, exposure to animals, alcohol or drug abuse, familial liver disease. She was not sexually active. She denied fever, chills, SOB, rash, pruritis, hematemesis, arthralgia, or diarrhea. Exam revealed icteric sclera and skin without palmar erythema and spider angiomata. Cardiopulmonary exam was normal. Liver was 14 cm, tender and smooth. No ascites or splenomegaly. Laboratory studies: AST 1345 (NL 10–42), ALT 1458 (nl 10–63), ALP 147 (nl 32–126), total bilirrubin 7.2 (nl 0.2–1.2), direct bilirrubin 6.8 (nl 0.2–0.6), albumin 3.6 (nl 3.4–5.0). CBC, creatinine, BUN, electrolytes, amylase, lipase, PT, PTT, ceruloplasmin, iron studies all normal. HBsAg, Hep C Ab, HAVAb, ANA, Anti-LKM, anti SMA, RPR, HIV and AMA negative. Alcohol and acetaminophen levels undetectable. Abdominal ultrasound: increased size and echogenicity of the liver; no masses, ductal dilatation or lithiasis. Kava was discontinued. One week later AST, ALT, total bilirrubin and direct bilirrubin were normal at 34, 40, 1.1 and 0.5 respectively.

DISCUSSION: Hepatitis is a common problem for internists. If transaminases are elevated in the thousands, as in our patient, differential diagnosis include: toxic hepatitis due to drugs, viral infection, shock liver, fulminant Wilson's disease and autoimmune hepatitis. All suspicious drugs must be discontinued. The important clue is the temporal relationship between initiation of the offending drug and the presentation of the injury; also the resolution of symptoms with discontinuation of the drug. Kava (Piper methysticum) or "intoxicating pepper" is a plant in the pepper family from the South Pacific islands where aqueous kava has been used as a ceremonial drink and a medicinal to treat anxiety, insomnia, seizures, and menopausal symptoms. These effects are attributed to a class of compounds call kava lactones and their stimulation of GABA-A receptors in the hippocampus, amygdala, medulla oblongata and NMDA receptors in the hippocampus. Several cases of hepatotoxicity due to Kava in Europe and United States have been reported. Hepatotoxicity can range from mild elevation of transaminases to fulminant hepatitis requiring liver transplantation. The exact mechanism of liver toxicity due to kava is unknown. It has been proposed that the extraction process (aqueous traditionally vs. acetone commercially) results in increased concentration of kava lactones in commercial extract. In addition, traditional extract contains glutathione that protects hepatocytes from the toxicity of the kava lactones and plays a role in the conversion of lactones into excretable waste products. The commercial extract does not contain glutathione. This has been shown to be associated with hepatotoxicity. The Swiss and German governments withdrew all agents containing kava extracts from the market. Despite FDA warning regarding hepatotoxicity of kava extract, it remains the fourth most popular supplement in United States.

A CASE OF CARDIAC ARREST FROM NONCARDIAC DRUGS S.M. Domsky[1]; G. Sharma[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173849)*

LEARNING OBJECTIVES: 1. Recognize that many common and otherwise benign medications can prolong the QT interval, leading to life threatening consequences 2. Recognize other risk factors for Torsades de Pointes

CASE: A 53 year-old woman with a history of diabetes, coronary artery disease, chronic renal insufficiency, and heroin use presented with atypical chest pain, elevated blood sugar, and dysuria. Her only laboratory abnormalities on admission included glucose of 517 and creatinine of 2.1. Her admission electrocardiogram (EKG) showed old non-specific findings, left ventricular hypertrophy, and a corrected QT interval (QTc) of 479 ms (milliseconds). She ruled out for myocardial infarction, and had better controlled blood sugar with the initiation of insulin. On hospital day two, her EKG was unchanged with a QTc of 436 ms. She was started on fluconazole for a fungal urinary tract infection, and 100 milligrams of methadone every twelve hours after admitting chronic methadone use. On hospital day three, she complained of feeling "funny" after ambulating to the nursing station, and collapsed less then a minute later. Telemetry revealed Torsades de Pointes (TdP) and a ventricular fibrillation arrest. The patient was resuscitated after nine shocks, with infusions of magnesium and amiodarone. Her post-resuscitation labs showed severe hypokalemia to 2.9. After resuscitation, she was again ruled out for myocardial infarction, and a catheterization showed only mild diffuse right coronary artery disease and a 40% discrete mid-circumflex lesion. Her QTc over the next several days was noted to be generally 440's–470's ms. Her beta-blocker was increased, and a defibrillator was implanted.

DISCUSSION: Long QT Syndrome (LQTS) predisposes individuals to TdP; a form of polymorphic ventricular tachycardia that can lead to death. A prolonged QT interval is largely defined as greater than 450 ms in men, and 460 ms in women. This syndrome is typically classified further into congenital and acquired LQTS. There are several genes identified to cause congenital LQTS, with varying trigger events, manifestations, and outcomes among them. The mechanism of congenital LQTS appears to involve a potassium ion channelopathy, but is not fully understood. Acquired LQTS syndrome most often occurs with QT prolonging medications, potentiated by hypokalemia and hypomagnesemia. Acquired risk factors for QT prolongation and TdP include old age, female sex (conferring a two to threefold risk), cardiac ischemia, bradycardia, hypokalemia, and hypomagnesemia. Individuals with and without these genes have varying responses to QT prolonging drugs. The major classes of drugs known to prolong the QT interval include antiarrhythmics, some antihistamines, macrolides, flouroquinolones, antifungtals, antidepressants, and some antipsychotics. The incidence of methadone use with QT prolongation greater than 500 ms and TdP is 16 percent and 3.6 percent, respectively. LQTS is recognized most commonly in the setting of medications that alter cardiac repolarization, thus is an iatrogenic syndrome. Therefore, it is vitally important for medical practitioners to be aware of the drugs that can prolong the QT interval, as well as other risk factors.

A RASH TO REMEMBER : THE PHENYTOIN EFFECT L.V. Maramattom[1]; A. Patil[1]; K. Pfeifer[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173273)*

LEARNING OBJECTIVES: 1. Enhance clinician awareness of a potentially life-threatening adverse reaction to phenytoin. 2. Recognize the importance of immediate discontinuation of phenytoin when hypersensitivity is suspected. 3. Emphasize the importance of potential cross reactivity between different aromatic anticonvulsants.

CASE: A 68-year-old woman presented with high grade fevers, sore throat, facial swelling and a generalized, pruritic rash of 6-day duration. She had been started on phenytoin for possible seizures two months ago but had no other recent changes in medications. On admission, her temperature was 101.2F and blood pressure was 108/58. Physical examination revealed a generalized, diffuse, erythematous, pruritic, maculopapular rash over the face, trunk and extremities with marked facial edema. She had an injected pharynx with crusted lesions at the base of her nose and around the mouth. Scattered 1–2 mm pustules were also noted over the affected areas, which did not include the palms or soles. The remainder of the physical examination was unremarkable. Lab studies revealed a leukocytosis of 18,000/cu mm with 13% eosinophils and elevated liver transaminases. Empiric intravenous antibiotics and antihistamines were started on admission, but the pustules and facial swelling increased, and the rash spread to involve the palms and soles in the next 24 hours. Blood cultures and nasal

throat swabs were negative, and culture from the pustules grew normal skin flora. Skin biopsy showed a mild perivascular lymphocytic infiltrate with upper dermal edema, features reported to be consistent with a drug reaction. The diagnosis of phenytoin hypersensitivity syndrome was proposed on the basis of all the above findings. In addition to discontinuing phenytoin and antibiotics, high dose prednisone (1 mg/kg) was started along with triamcinolone body wraps. Her general condition markedly improved over the next several days, and her liver transaminases stabilized. Prednisone was tapered over the next 3 weeks, and she was discharged home with close outpatient follow-up of liver and renal function tests.
DISCUSSION: Anticonvulsant hypersensitivity syndrome (AHS) or DRESS (drug rash with eosinophilia and systemic symptoms) syndrome is a rare (1/1000 to 1/10,000 new exposures) and potentially life-threatening syndrome that occurs after exposure to an anticonvulsant, most commonly aromatic compounds such as phenytoin, carbamazepine or phenobarbital. It can present 3 weeks to 3 months after initiation of therapy, and cross sensitivity among the aromatic anticonvulsants occurs at a rate as high as 80%. The exact mechanism is unknown, but an inherited abnormality in detoxification of metabolites may be involved in the pathogenesis. Clinical features vary, but the most frequent manifestations are fever, skin rashes, hepatitis and lymphadenopathy. Patients often present with non-specific symptoms and signs, and hence the diagnosis requires meticulous drug history documentation coupled with a high degree of suspicion. Treatment is limited to discontinuation of the offending drug and supportive care. Most case reports suggest a positive response when steroids are begun early in the course of the illness; however, no controlled clinical trials have evaluated these agents in AHS. Of practical importance is the fact that re-exposure to the drug or a related compound may result in reactivation of the syndrome with a potentially fatal outcome.

A VERY DEADLY RASH. T. Chen[1]; P.M. Haidet[2]. [1]Baylor College of Medicine, Houston, TX; [2]Houston VA Medical Center, Houston, TX. *(Tracking ID # 172351)*

LEARNING OBJECTIVES: 1. Recognize the clinical features of toxic epidermal necrolysis (TEN). 2. Know the common causes of TEN.
CASE: A 42 y/o Vietnamese female in her usual state of health presented with a 3 day history of flu-like symptoms, fever, and generalized rash. She denied any recent travel, insect exposure, or sick contact. She had immigrated to the US about 10 years ago. She had a hysterectomy one year ago. She was seen by a private physician for cough, and was prescribed isoniazid (INH) due to an abnormal chest film. However, due to severe odynophagia, she stopped eating, drinking and taking INH 3 days prior to presentation. On admission, her temperature was 102.9; pulse 117; blood pressure 116/65; respiratory rate 18. She appeared uncomfortable but not in acute distress. She had notable desquamation and fiery erythema of her oropharyngeal and vulvar mucosae along with generalized confluent erythematous macules on the trunk and extremities but sparing palms and soles. Her CBC, electrolyte screen, and creatinine were normal. Urinalysis showed 2+ leukocytes and 1+ blood with many bacteria and epithelial cells. Blood culture was negative. HIV ELISA negative. Repeat CXR showed apical granulomas unchanged from previous films. Throat swab culture was negative for Group A strep. 6 hours after presentation, she developed multiple bullous skin eruptions and her BP dropped to 80–90's systolic but was responsive to IV fluids. The dermatology service confirmed the diagnosis of TEN based on her presentation and progression of disease. IVIg was started, and she was transferred to a nearby burn center for comprehensive care, where she died three days later despite intensive treatment.
DISCUSSION: Toxic epidermal necrolysis is a rapidly evolving mucocutaneous reaction characterized by widespread erythema and bullous detachment of the epidermis resembling scalding. TEN represents the most severe variant of a disease spectrum that consists of erythema multiforme and Stevens-Johnson syndrome. The clinical features that should alert clinicians to the diagnosis of TEN include recent use of suspected medication, development of high fever, rapidly evolving erythematous rash with bullous eruptions more than 30% of skin, and involvement of conjunctival, genitourinary, or vaginal mucosa. A severity-of-illness score that estimates the risk of death has been developed and validated (SCORTEN). It is based on age, heart rate, presence of cancer or bleeding disorder, body surface area involvement, BUN, serum bicarbonate, and serum glucose. Our patient's age and surface area involved would have placed her at 12% mortality rate based on SCORTEN. The most common causes of TEN are medications including anticonvulsants, sulfonamides, HIV anti-retrovirals, non-steroidal anti-inflammatory drugs, allopurinol, and corticosteroids. Once TEN is recognized, prompt withdrawal of suspected medication may decrease mortality rate. Use of high-dose corticosteroids is not recommended, and treatment with IVIg and plasmapheresis has yielded no promising results. Specialty care by dermatologists, burn center intensivists, pulmonologists, and ophthalmologists have been shown to decrease morbidity or improve survival rate; despite these, the mortality rate continues to approach 40%. In our patient, INH seems to have been the inciting cause; however there have been only 8 reported cases of anti-tuberculous drugs causing TEN, and these were all in HIV positive individuals.

CASE REPORT OF PECTORALIS MAJOR RUPTURE HIGHLIGHTING THE RISK OF FLUOROQUINOLONE RELATED TENDONOPATHY J.C. Kurylo[1]; B.B. Hoffman[2]. [1]Boston University, Boston, MA; [2]Harvard University, West Roxbury, MA. *(Tracking ID # 171903)*

LEARNING OBJECTIVES: - Highlight the risk factors for Fluoroquinolone related Tendonopathy. - Identify the at risk population for Fluoroquinolone related Tendonopathy. - Discuss prescribing practices of Fluoroquinolones and Corticosteroids in certain high risk Tendonopathy populations.
CASE: 80 year old gentleman with a past medical history of Chronic Obstructive Pulmonary Disease, Hypertension, Hyperlipidemia, above the knee amputation, and Coronary Artery Disease, presented with a community acquired pneumonia. To treat his community acquired pneumonia, he was placed on a treatment regime of Moxifloxacin 400 mg, Azithromycin 500 mg, and Prednisone 60 mg for 21 days. On day 16 of treatment the gentleman complained of severe axillary pain after he was transferred with the help of a technician from his wheelchair onto the x-ray machine. Examination revealed substantial swelling and ecchymosis over the pectoral and axillary areas, expanding to include the arm. MRI indicated an interstitial tear of the pectoralis major muscle. Pectoralis major rupture is a rare muscle injury with only approximately 200 cases reported. The injury occurs exclusively in males age 20 to 40 and is strongly associated with sports activity1. We describe a pectoralis major rupture in an 80 year old man after two weeks of Fluoroquinolone and Corticosteroid therapy to treat a community acquired pneumonia to highlight the risk of Fluoroquinolone related Tendonopathy.
DISCUSSION: The first case of tendon rupture associated with Fluoroquinolone use was reported in 1987. Since 1987, over 200 reports of Fluoroquinolone related tendonopathy have been reported with all reports involving the Achilles tendon (2). On average, these ruptures occurred after two weeks of Fluoroquinolone therapy and a majority of the ruptures occurred with concomitant corticosteroid use, seen especially in the elderly (3). The odds ratio for tendon rupture for recent Fluoroquinolone therapy has recently been placed at 20.4 for patients over 80 years old (4). With such a substantial increased risk of tendonopathy, it is critical to be judicious in one's prescribing practices of Fluoroquinolones and Corticosteroids in certain high risk populations for treatment of common medical conditions.
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CYCLOSPORIN INDUCED POSTERIOR REVERSIBLE LEUKOENCEPHALOPATHY SYNDROME A.M. Vanderwalde[1]; N. El-Farra[1]. [1]University of California, Los Angeles, Los Angeles, CA. *(Tracking ID # 172901)*

LEARNING OBJECTIVES: 1. To better identify the neurologic side effects of immunosuppressant agents 2. To demonstrate the rapid emergence of PRES as a treatable entity among internal medicine patients
CASE: The patient was a 29 year man with stage 4 follicular lymphoma admitted to an academic hospital's bone marrow transplant unit for allogeneic stem cell transplant. He was initiated on immunosuppressive agents for GVHD prophylaxis including cyclosporin, methotrexate, and prednisone. On day 9 post transplant he developed a significant rise in his blood pressure (systolic > 160) and acute renal failure with a rise in his serum creatinine to 1.3. This was associated with an elevated cyclosporin trough of 490 ng/ml mandating dose reduction. On day 11 the patient became acutely confused and disoriented and developed a generalized tonic-clonic seizure. Cyclosporin trough was measured at 289 ng/ml, which was within normal limits. The patient was treated with lorazepam and loaded with phenytoin with resolution of seizure activity. The following day, he complained of headache and a lumbar puncture was performed which was notable for a pleocytosis. Subsequently, an MRI of the brain was obtained which demonstrated abnormal hyperintensity in the cortices of both occipital lobes and paramedian parietal lobes without evidence of hemorrhage, mass lesion, or recent infarction. These findings were most consistent with PRES. Consequently, cyclosporin was switched to sirolimus, and his blood pressure was aggressively controlled. The patient had no further episodes of headache, confusion, seizure or other neurologic sequelae. Repeat MRI in one week showed complete resolution of all white matter abnormalities.
DISCUSSION: Posterior reversible leukoencephalopathy syndrome (PRES) is a rare, recently described neurologic syndrome seen in various settings. It has been increasingly recognized in patients on immunosuppressive agents associated with alterations and rapid increases in blood pressure. Immunosuppressants seem to be an independent risk factor, regardless of the presence of hypertension. Levels of the drug do not have to be supratherapeutic, though some degree of renal failure is often seen prior to the development of cyclosporin related PRES. The neurologic symptoms encompass a wide spectrum, ranging from headache and loss of vision to altered mental status and seizures. Both CT and MRI show predominantly posterior white matter edema, often symmetric, crossing multiple vascular territories and sparing the calcarine and paramedian occipital lobe structures. The mechanism of action of cyclosporin induced PRES is likely multifactorial. High levels of cyclosporin are associated with both renal failure and hypertension. Fluctuations in blood pressure can exceed the autoregulatory capability of brain vasculature leading to a breakdown of the blood-brain barrier with focal transudation of fluid and petechial hemorrhage. Excess fluid retention due to renal failure might contribute. However, immunosuppressive agents confer additional risk by an unclear mechanism, demonstrated by the existence of PRES with tacrolimus even without concurrent hypertension or renal failure. It is thought that cytotoxic effects of immunosuppressants on the vascular endothelium may be an additional culprit. PRES is an entity that should not be overlooked among general internists. The syndrome should be recognized promptly as it is easily reversible with withdrawal of the offending agents and control of blood pressure.

"DOC, I'M TAKING MY PILLS, THEY JUST DON'T WORK": DRUG RESISTANT INSOMNIA AFTER BARIATRIC SURGERY K.S. Jorn[1]. [1]Society of General Internal Medicine, Jacksonville, FL. *(Tracking ID # 173635)*

LEARNING OBJECTIVES: Describe an effect of weight loss surgery on absorption of medications. List one prescribing practice to enhance absorption of medications after weight loss surgery.
CASE: Patient A is 39 yo woman who underwent Roux-en-Y weight loss surgery for morbid obesity. Prior to surgery she had shift work related insomnia that responded well to occasional zolpidem (Ambien) 5–10 mg. Obstructive sleep apnea responded to continuous postive airway pressure (CPAP). After the accelerated phase of surgical weight loss, obstructive sleep apnea resolved but depression and stress-related insomnia developed. Zolpidem post operatively did

induce sleep duration greater than 3 h at doses effective prior to her surgery. Sertraline (Zoloft) was effective for depressive symptoms but insomnia remained. Sleep Medicine Psychiatrist prescribed a variety of prescription medications for insomnia. The patient reported ingestion of 20 mg of zolpidem or 6 mg of eszopiclone (Lunesta) with only 3 hours of sustained sleep thereafter. Patient B is a 53 yo woman who also underwent Roux-en-Y weight loss surgery for morbid obesity. She was a night shift nurse who did not require medication for sleep until 3 years after her weight loss surgery. When insomnia developed, various prescription agents were used, but sleep duration of less than 3 hours was the typical result. Transition to day shift did not improve her sleep. She had no evidence of sleep apnea. Depressive symptoms develped but improved significantly when treated with paroxetine (Paxil). The Sleep Medicine Psychiatrist initiated treatment with trazodone in combination with paroxetine and found it to be effective. The patient reports now she is sleeping well.
DISCUSSION: Surgical treatment for weight loss has increased dramatically in the United States in the past five years. Though many conditions improve with surgically mediated weight loss, many patients remain obese (BMI > 30) or regain much of the weight lost initially and therefore continue to need prescription medications. The Roux-en-Y is not felt to be a deliberately malabsorptive surgery but in literature appears to affect absorption of medications nonetheless. The common-channel ileum has shown remarkable adaptive ability for nutrient absorption but whether it adapts to absorb medications is unclear. Transit time through the intestine is decreased by weight loss surgeries. Specific information regarding the segment of intestine through which medications are absorbed is usually unavailable, but may be relevant if the bypassed portions of intestine are most responsible for absorption. Transdermal, liquid and immediate release drug forms are recommended for patients who have had weight loss surgery to help avoid delay in absorption due to tablet dissolution. Unusually high dose requirements or the apperance of noncompliance should prompt the internist should consider the intestinal absorbability of medications when prescribing to patients who have had weight loss surgery.

DRUG INDUCED MULTIVALVULAR HEART DISEASE IN RESTLESS LEGS SYNDROME R.S. De Jesus[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 171899)*

LEARNING OBJECTIVES: 1. Recognize the characteristics of ergot derived dopamine agonist induced multivalvular heart disease. 2. Increase clinician's awareness of this potentially serious complication from commonly prescribed therapy for RLS.
CASE: A 62 year old female with complex restless legs syndrome, initially diagnosed in 1997, presented with symptom of exertional shortness of breath and easy fatigability. She had previously been treated with Pergolide, Temazepam, Pramipexole, and Ropinirole but eventually developed tolerance to these medications. Two years ago, she was switched to Cabergoline 1 mg tablet twice a day which provided adequate relief of her symptoms combined with Clonazepam and Darvocet. The Cabergoline dose was increased to 3 mg daily one month ago due to some breakthrough discomfort. Medical co-morbidities include hypertension and hyperlipidemia which are both pharmacologically well managed. She has no prior history of coronary artery disease, diabetes or valvular heart disease. Because of recent literature reports associating Cabergoline use in Parkinson's disease with restrictive valvular heart disease, an echocardiogram was done. This confirmed the presence of multivalvular disease with similar appearance to ergot and phen-fen changes. She has moderately severe tricuspid valve regurgitation, mild to moderate mitral valve regurgitation and mild aortic valve regurgitation. There was no regional wall motion abnormality and ejection fraction was 65%. She was subsequently seen at the Cardiology clinic; Cabergoline was discontinued and substituted with Gabapentin, and an ACE inhibitor agent was initiated. On clinic follow-up, she reported some improvement in endurance level.
DISCUSSION: In the recent years, there have been documented cases of multivalvular cardiac insufficiency in patients with Parkinson's disease treated with ergot derivative dopamine agonists such as pergolide and cabergoline. It appears to be dose dependent and is likely to develop over a period of 1.5 to 5 years although an exposure of as short as 10 months has been cited. Whereas the mechanisms leading to these valvulopathies remained uncertain, an underlying serotonin mediated toxic effect inducing fibroblast mitogenesis seems likely. This results in peculiar echocardiographic features affecting predominantly the tricuspid and mitral valves but often involving multiple valves. Restless legs syndrome (RLS) has been associated with cortical hyperexcitability and dopaminergic dysfunction. Hence, the dopamine agonists have been very effective agents in its management. Cabergoline, which has 100 times higher affinity to dopamine receptors than pramipexole or ropinirole, provides excellent symptom resolution. As RLS becomes a more commonly diagnosed entity, the use of these dopamine agonists will continue to increase. There is therefore an urgent need for clinicians to be cognizant and be on alert for this rare but potentially serious complication. Appropriate clinical cardiac surveillance of patients receiving any ergot derived dopamine agonist should be implemented.

FIRST DO NO HARM: FANCONI SYNDROME IN A PATIENT WITH ACQUIRED IMMUNODEFICIENCY SYNDROME R.H. Orakzai[1]; S.H. Orakzai[1]; P.B. Hasley[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172653)*

LEARNING OBJECTIVES: 1. To recognize acute renal failure and Fanconi syndrome as potential complications of tenofovir therapy 2. To recognize the importance of periodic screening with serum electrolytes, creatinine and urinalysis among patients receiving tenofovir
CASE: A 40-year-old male with Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) was transferred from an outside hospital with acute renal failure (ARF). Patient initially presented with chills, nausea and vomiting. He also complained of fatigue, decreased urine output and a metallic taste in mouth. His antiretroviral regimen included tenofovir, nevirapine and lopinavir/ritonavir. He was hypertensive with signs of volume overload. Routine labs showed ARF with BUN/Cr of 118/24.7 (baseline Cr 1.5–1.7) and bicarbonate of 16. His antiretrovirals and lisinopril were held. Pertinent tests to rule out other causes of ARF were all negative; tests included renal ultrasound, antinuclear antibodies, antineutrophil cytoplasmic antibodies, C3 and C4 complement, rapid plasma reagin, anti-streptolysin O titers, hepatitis serologies, SPEP and UPEP. Urinalysis showed alkaline pH = 7.0, protein = 81, glucose = 100 (serum glucose = 94) and granular casts consistent with Fanconi syndrome. The patient was treated with emergent hemodialysis. A renal biopsy showed diffuse tubular injury with regenerative changes consistent with tubular damage secondary to tenofovir. He was started on alternate antiretroviral therapy and his creatinine finally decreased to 2.2.
DISCUSSION: Fanconi syndrome results from generalized dysfunction of the proximal renal tubule leading to impaired reabsorption of amino acids, glucose, urate, bicarbonate, and phosphate and increased excretion of these solutes into the urine. The classic features of Fanconi syndrome include polyuria, dehydration, hypokalemia, hypophosphatemia, hypouricemia, metabolic acidosis, and rickets in children or osteomalacia in adults. The serum glucose is within normal limits. Therapy for HIV and AIDS has been revolutionized by newer generations of antiretrovirals. The potential side effects of these medications usually are not fully recognized until widespread clinical use. Tenofovir is a nucleotide reverse transcriptase inhibitor. Tenofovir belongs to the same family as cidofovir and adenofovir, which can induce Fanconi syndrome and ARF. The mechanism of tubular toxicity with adenofovir and cidofovir is cellular accumulation through increased entry from the hOAT (organic anion transporters which are located on the basolateral side of the tubule) and decreased efflux into tubular lumen (mediated by Multi drug-Resistance-Protein, the MRP 2). Similar effects were not expected with tenofovir due to decreased interaction with human organic transporter 1 and minimal mitochondrial DNA toxicity in vitro. However, recent case reports suggest that nephrotoxicity, although uncommon, is present. Tenofovir is primarily excreted by the kidneys through glomerular filtration as well as by active tubular secretion. Tenofovir dose should be adjusted in patients with creatinine clearance rate of < 50 mL/min. There are several medications that compete for renal tubular secretion and coadministration may lead to increased serum levels of tenofovir. Patients on long-term tenofovir therapy should have periodic screening of serum creatinine, electrolytes, urine glucose and protein. Early diagnosis is important as the disorder may completely or partially reverse on discontinuing tenofovir.

GRAPEFRUIT INDUCED ANTICHOLINERGIC TOXICITY K. Axsom[1]; L. Kaplan[1]; K. Saito[1]; D.C. Lim[1]; S.O. Joseph[1]; K.V. Shenoy[1]; H. Weisman[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173018)*

LEARNING OBJECTIVES: 1. Pathophysiology of anticholinergic delirium 2. Symptoms of anticholinergic delirium 3. Interaction of grapefruit juice and CYP3A4 4. Impact of grapefruit popularity and medical therapy.
CASE: A 57 year-old female with history of asthma and bipolar depression was brought to the emergency department following a fall down 12 steps of stairs and loss of consciousness. In the emergency room, she complained of pleuritic chest pain, dizziness, right-sided abdominal and back pain. Her home medications included Geodon, Amitriptyline, Depakote, and Loratadine. On physical exam she was oriented times two, had small scalp and elbow lacerations, and strength of 4/5 on the right lower extremity. Orthostatic examination was positive and her EKG revealing normal sinus rhythm with prolonged QTc interval of 528 ms. CT scan demonstrated right parietal hematoma without fractures of the head or cervical spine. The patient was admitted to the hospital with a working diagnosis of long QT syndrome with presyncope. Electrophysiology determined that her EKG was grossly normal and suggested discontinuing Geodon and Amitriptyline due to side effect of QT prolongation. The patient's mental status declined during her hospitalization and on Hospital day 2, developed auditory and visual hallucinations with agitation eventually requiring restraint. A clock drawn by the patient was grossly negligent of the left side of the clock. Her mental status progressed to an obtunded state on the fourth day of her hospital stay. Doses of her psychiatric medications were reduced and she was not found to have evidence of seizures or organic disease. Over the next few days the patient's mental status slowly improved and she had no memory of the previous few days. Upon further questioning, the patient was found to have been on a grapefruit diet and was consuming up to five grapefruits along with multiple glasses of grapefruit juice daily. At this time, Amitriptyline levels in her serum samples from hospitalization days 4 and 7 were checked and were found to be 794 ng/mL and 764 ng/mL, respectively. Toxic levels of Amitriptyline are greater than or equal to 500 ng/mL. At discharge, the patient was alert and oriented times three with stable ambulation and no longer displaying hemineglect. Grapefruit juice contains flavonoid naringin, a protein that inhibits the intestinal p450 enzyme CYP3A4. Our patient's generous grapefruit consumption prevented first-pass metabolism of her medications leading to toxic levels of serum Amitriptyline and her hospitalization. Our patient presented with many classic symptoms of anticholinergic delirium including disorientation, hallucinations, tachycardia, abnormal psychomotor activities, obtundation, and fluctuating behavior. Additionally, orthostatic hypotension due to alpha-1 adrenergic blockade by Amitryptiline was the most likely reason behind her falls. Her medication regimen and diet likely contributed to her long QT syndrome by blockade of cardiac myocyte sodium channels.
DISCUSSION: This case illustrates a side effect of grapefruit ingestion with medications that are metabolized by CYP3A4 system. The medical literature has well documented cases of rhabdomyolisis and torsade de pointes secondary to grapefruit interaction with medication metabolism. However, this is the first reported case of anticholinergic delirium associated with grapefruit consumption.

LAMOTRIGINE INDUCED ASEPTIC MENINGITIS G.M. Lam[1]; D.P. Edelson[1]; N.J. Sweiss[1]; T.A. Kramer[1]; C.T. Whelan[1]. [1]University of Chicago, Chicago, IL. *(Tracking ID # 172873)*

LEARNING OBJECTIVES: Diagnose drug-induced aseptic meningitis. Recognize lamotrigine as a potential cause of aseptic meningitis.

CASE: A 36 year old Caucasian woman with a history of hypothyroidism and Type II Bipolar Disorder presented to urgent care clinic with a four day history of severe diffuse headaches, neck stiffness, photophobia, fevers, rigors, nausea and vomiting. Her only medications were synthroid and ortho tri-cyclen, which she had been taking for several years, and lamotrigine, which had been started for anxiety 10 days prior to admission. The patient reported previous allergic reactions to penicillin, sulfa, and wellbutrin, consisting of fever and rash. Physical examination was significant for a temperature of 39.0 C, heart rate of 117/min, nuchal rigidity without Kernig's or Brudzinski signs, a lack of focal neurological deficits and a diffuse erythematous maculopapular rash over her trunk, thighs, and neck. Lumbar puncture (LP) revealed WBC 1, protein 57, and glucose 65. A diagnosis of aseptic meningitis with presumed viral etiology was made. The rash was thought to be a complication of lamotrigine therapy, which was discontinued. Mental status changes on Day 4 of admission prompted an MRI, which was unremarkable, as well as a repeat LP, which showed WBC 13 (lymphocyte and monocyte predominant), RBC 42, protein 45, and glucose 109. Bacterial, fungal and viral cultures were negative, as was a full viral work-up. The patient's symptoms resolved over several days. Following discharge she began feeling more anxious and, after one week, was instructed to resume her lamotrigine. Within 45 minutes of taking the drug, her original symptoms recurred. Repeat LP at that time demonstrated WBC 35 (neutrophil predominant), RBC 5, glucose 46, and protein 112. Her symptoms resolved over 24 hours, following the discontinuation of lamotrigine. She was started on quetiapine and discharged home in stable condition.
DISCUSSION: The diagnosis of aseptic meningitis is made in the presense of meningeal symptoms without positive routine bacterial cultures. Etiologies of aseptic meningitis include infectious (such as viral, fungal or atypical bacteria), malignant, and drug-induced. Several medications have been reported to induce meningitis, most frequently nonsteroidal anti-inflammatory drugs, antibiotics, intravenous immunoglobulins, and OKT3 antibodies. Drug-induced, aseptic meningitis from lamotrigine has been described in only one other published case report. In that case, symptoms began 10 days after initiation of lamotrigine therapy, and escalated over a 72 hour period. As in the current case, symptoms resolved quickly with discontinuation of the drug and recurred within one hour following repeat exposure. Lamotrigine is an anticonvulsant agent that has mood stabilizing properties in bipolar patients. Its mechanism of action is believed to be related to inhibition of sodium and calcium channels in presynaptic neurons resulting in stabilization of the neuronal membrane. Rash is a commonly known side effect, with an incidence of 0.1%–3.8%. Physicians should be aware of aseptic meningitis as a potential reaction when prescribing lamotrigine or encountering cases of aseptic meningitis in the future.

LOWERING THE THRESHOLD FOR HEPATOTOXICITY: MIXING ALCOHOL WITH ACETAMINOPHEN S.H. Orakzai[1]; R.H. Orakzai[1]; R. Granieri[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172657)*

LEARNING OBJECTIVES: 1. To recognize acetaminophen as a cause of fulminant hepatic failure. 2. To recognize that chronic alcoholics have increased risk of hepatotoxicity and may develop hepatic failure at lower doses of acetaminophen.
CASE: 43 year old female with history of chronic back pain and alcohol abuse presented with exacerbation of back pain not responding to oxycodone/acetaminophen (Percocet®). On examination patient was drowsy but arousable and oriented with no neurological deficits. Abdominal examination revealed hepatomegaly and right upper quadrant tenderness. She had restricted range of motion of back and lower extremities with normal strength and reflexes. Skin was jaundiced. Laboratory data showed BUN 22, Cr 1.6, ALT 1847, AST 3072, total bilirubin 3.6, alkaline phosphatase 226, GGTP 147, PT 60, PTT 34, INR 4, albumin 3. On further questioning patient admitted to chronic Percocet® use for back pain and drinking half a pint of liquor daily. With recent exacerbation of back pain, patient was using 4–6 grams of acetaminophen daily. Her last dose was 24 hours prior to presentation. Acetaminophen level was elevated at 12 mcg/ml. Patient was started on IV N-acetyl cysteine (NAC). Liver transplant service was consulted. ALT peaked at 3474 and AST at 8077. After treatment with NAC, patient's mental status and LFTs improved and she was discharged home.
DISCUSSION: Acetaminophen toxicity is the most common cause of fulminant hepatic failure. Toxicity occurs with single ingestions > 12 g over 24 hours. Approximately 5% of acetaminophen is metabolized via cytochrome P450 into N-acetyl-p-benzoquinoneimine (NAPQI), which is conjugated with glutathione forming nontoxic compounds. With toxic doses, hepatic glutathione stores are depleted, and NAPQI binds with hepatocytes causing centrilobular necrosis. Chronic alcoholics are at increased risk for hepatotoxicity as alcohol induces CYP2E1, resulting in enhanced generation of NAPQI. Chronic alcoholics are also often malnourished with depleted glutathione stores, further predisposing to hepatic injury. The clinical course of poisoning is divided in four stages. Phase I appears 0.5–24 hours post ingestion with anorexia, nausea, vomiting and malaise. Phase II appears 24–72 hours post ingestion with subclinical elevations of AST, ALT, bilirubin and PT. Phase III starts 72–96 hours post ingestion and is characterized by peak levels of AST and ALT, hepatic necrosis, coagulation defects, renal failure and hepatic encephalopathy. Phase IV continues 4–14 days after ingestion and if the patient survives, complete resolution of hepatic dysfunction occurs. The acetaminophen level should be evaluated by modified Rumack-Matthew nomogram which relates acetaminophen concentration to time of ingestion as a predictor of hepatotoxicity to determine the need for NAC therapy. The mainstays of therapy include NAC and activated charcoal for patients who present early. NAC increases glutathione stores, combines directly with NAPQI, enhances nontoxic sulfate conjugation and also has anti-inflammatory and antioxidant effects. Serious hepatotoxicity is uncommon if NAC is administered within 8–10 hours. Patients who develop hepatic failure should be treated with IV NAC and transferred to a liver transplant center. NAC should be administered until death or recovery. Liver transplantation is recommended for patients who do not respond to therapy and develop poor prognostic signs such as acidosis, PT > 100 seconds, Cr > 3.3 and grade III or IV encephalopathy.

MAD AS A HATTTER? AN UNUSUAL CAUSE OF ANTICHOLINERGIC TOXICITY IN THE ELDERLY L.S. Kwon[1]; T.R. Burke[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172281)*

LEARNING OBJECTIVES: Objectives: 1) To recognize that anticholinergic eye drops can have systemic effects; 2) To identify the at-risk populations for anticholinergic toxicity.
CASE: An 81 yo male with history of CVA, PVD, and B12 deficiency presented to ophthalmology clinic for evaluation of a left lower lid ectropion. Approximately 5–10 minutes after administration of a standard combination of dilating eye drops (tropicamide 1% and phenylephrine 2.5%), the patient's wife noted increasing agitation, word-finding difficulties, and slurred speech. He was disoriented to place and could not remember his wife's name. His ability to carry out commands was severely impaired, requiring repeated prompting for completion. He was taken to the ED and within an hour, his confusion lifted, and he returned to baseline mental status. Vital signs and physical exam, with the exception of dilated pupils, were normal. His own recollection of the episode was incomplete; he reported feeling lightheaded and having difficulty thinking during the event. Emergency Room work up included a head CT revealing marked global atrophy, extensive small vessel disease and bilateral subcortical lacunes unchanged from previous CTs. He was admitted to the medicine service and further testing for arrhythmia, thromboembolic disease, and seizure was unrevealing. Given the negative test results, the patient's advanced age, the short duration of the event, and the temporal relationship of the episode to the administration of dilating eye drops, the patient was given a diagnosis of acute confusion secondary to anticholinergic toxicity - the culprit medication being tropicamide, an antimuscarinic anticholinergic agent used for dilating the pupil as well as paralyzing accommodation, for diagnostic purposes.
DISCUSSION: While anticholinergic-induced confusion in the elderly has been well described, the association with diagnostic eye drops is unusual. Several cases of anticholinergic toxicity have been reported after the administration of commonly used cycloplegics and mydriatics. These reports document mainly cerebellar or cerebral side effects, such as visual and tactile hallucinations, incoherent speech, agitation, disorientation, memory loss, and acute psychotic reactions, after ocular administration of anticholinergic eye drops. These reactions appear to be dose-related with high concentrations, high doses, or repeated instillation of 1% solution, but have rarely been reported in adults receiving normal doses. Systemic absorption can occur transconjunctivally or through the nasolacrimal duct. Systemic absorption may be reduced by compressing the lacrimal sac at the medial canthus for one minute during and following the instillation of the drops. This blocks the passage of the drops via the naso-lacrimal duct to the wide absorptive area of the nasal and pharyngeal mucosa. Central nervous system toxicity is due to anticholinergic action causing stimulation of antimuscarinic receptors in the medulla and cerebral centers. The time of onset is usually within 20 to 30 minutes of drug administration, and in most cases of toxicity, will wear off within 4 to 6 hours without sequelae. The risk of developing mental status changes due to anticholinergic ophthalmic drugs is of particular concern in the elderly and children. In patients with multiple comorbidities and older age, physicians should recognize that anticholinergic eye drops can be a potential source for acute delirium.

MY LIPS ARE SEALED. NOW PROTECT MY AIRWAY. L. Teixeira[1]; A. Reddy[1]; M. Guidry[2]. [1]Tulane University, New Orleans, LA; [2]Tulane Health Sciences Center, New Orleans, LA. *(Tracking ID # 173212)*

LEARNING OBJECTIVES: 1.Clinically distinguish mast-cell-mediated from bradykinin-mediated angioedema. 2.Recognize the association of acquired C1-esterase-inhibitor deficiency with diseases of dysregulated immunity such as HIV and lymphoproliferative diseases. 3.Identify the laboratory diagnosis of C1-esterase-inhibitor deficiency.
CASE: A 48 year-old man developed progressive lip swelling after ingesting a "sleeping pill." He denied pruritus or urticaria, but did note an acute onset of impaired speech and breathing. He denied medication and food allergies, but did note a fifteen-pound weight loss and night sweats over the previous six months. His vital signs were normal. He had marked lip and peri-oral edema, as well as diffuse non-tender lymphadenopathy in the cervical, axillary, inguinal, and epitrochlear areas. Laryngoscopy was immediately performed to exclude laryngeal edema. Corticosteroids and anti-histamines did not provide relief. Given the acuity of the symptoms and the lack of precipitating exposures, a C1-esterase deficiency was suspected. He was empirically given fresh frozen plasma. The swelling completely resolved within thirty-six hours. Subsequent testing revealed that he was positive for HIV. Despite its clinic success, the administration of the fresh-frozen plasma negated the utility of obtaining a C1-esterase level. He left against medical advice prior to his scheduled lymph node biopsy to exclude lymphoma.
DISCUSSION: Angioedema is frequently encountered by the general internist. To determine the most likely etiology and to define treatment, it is useful to divide angioedema into its mast-cell-mediated and bradykinin-mediated subgroups. Mast-cell angioedema is mediated by histamine, and is commonly associated with food and environmental allergies. The clinical clue is the urticaria and pruritus that is associated with the edema ninety percent of the time. Epinephrine, corticosteroids, and antihistamines are the preferred treatment. Conversely, bradykinin-mediated angio-edema is never associated with puritus or urticaria. The edema results from increased levels of bradykinin which directly increases vascular permeability. Medications such as ACE inhibitors can induce angioedema through this pathway. C1 esterase inhibitor regulates the activation of the complement system and thus bradykinin levels. In both the hereditary and acquired forms of C1-esterase-inhibitor deficiency, the levels of bradykinin increase causing angioedema. Low C4, C2, and C1q levels are diagnostic for C1-esterase-inhibitor deficiency. A low C4 level is more sensitive and more readily accessible than C1q and C2 levels, though the latter are diagnostic. Acquired C1 esterase inhibitor deficiency is increasingly seen in the general internist's practice, as the prevalence of HIV and lymphoproliferative diseases increases. The disordered antibody response in both conditions leads to antibody-mediated reduction in the C1-esterase level. The primary treatment of acquired C1-esterase deficiency is fresh-frozen plasma to augment the level, and treatment of the underlying disorder.

PRIMIDONE-INDUCED HYPERAMMONEMIC ENCEPHALOPATHY S. Kwok[1]; H. Kaushal[1]; T.J. Kizhakekuttu[1]. [1]University of Illinois at Peoria, Peoria, IL. *(Tracking ID # 172256)*

LEARNING OBJECTIVES: Understand a potentially serious side effect of a commonly used medication.
CASE: A 70-year-old male presented to our institute with altered mental status. There was no history of drug ingestion or head trauma. His past medical history was relevant for right CVA with residual left hemiparesis, hypertension, coronary artery disease and essential tremor treated with primidone 250 mg three times a day. The patient was stuporous with a Glasgow Coma Scale of 9. A work-up including a drug screen, CT head, CMP, CBC, ECG, chest x-ray, urinalysis, blood and urine cultures was unrevealing for a cause of the mental status change. Further work-up revealed an elevated ammonia level at 83 μmol/L (normal 11–32) and an elevated phenobarbital level at 48 μg/mL (therapeutic range 15–40). Review of past records showed a prior hospital admission for similar symptoms at which time the ammonia level was elevated at 47 μmol/L and phenobarbital level was 70 μg/mL. An ultrasound of the liver showed no evidence of liver disease or cirrhosis and liver enzymes were normal, except for a minimally elevated alkaline phosphatase. The patient was treated with lactulose to lower the ammonia level and primidone was discontinued. His mental status returned to normal over the next 3 to 4 days and he was subsequently discharged home. Recovery of mental status was deemed to be secondary to withdrawal of primidone and normalization of ammonia levels. He was started on a beta-blocker, Propranolol, for his tremor.
DISCUSSION: In reviewing the literature, this appears to be the third reported case of primidone-induced hyperammonemia. In 2002, Katano et al reported a case of primidone-induced hyperammonemic encephalopathy in a patient with cerebral astrocytoma.1 In 1979, Forman et al reported a case of primidone-induced hyperammonemic encephalopathy in a patient with renal insufficiency.2 Both cases resembled ours where clinical recovery was seen on withdrawal of primidone. Primidone is an anticonvulsant widely prescribed as first-line treatment of essential tremor. It is metabolized by the liver into two compounds phenylethylmalonamide (PEMA) and phenobarbital which are subsequently excreted by the kidneys. Dose adjustment is therefore required in patients with renal or hepatic impairment. Common side effects include drowsiness, vertigo, ataxia, lethargy, fatigue, nausea and vomiting. The precise mechanisms on how primidone leads to hyperammonemia remain unclear. We hypothesize that the etiology of hyperammonemia in patients on primidone therapy is a result of its hepatic metabolism to two active metabolites PEMA and phenobarbital. This in turn induces the CYP1A2, 2B6, 2C8/9 and 3A4 components of the P450 system.3 Phenobarbital is reported to appear in plasma following four days of continuous primidone therapy.4,5 Phenobarbital in turn inhibits glutamine synthetase leading to increased levels of ammonium in the plasma. Martines et al reported in 1990 that, relative to young controls subjects aged 70 to 81 had decreased renal clearance of primidone metabolites and that there was a greater proportion of PEMA in the urine.6 In conclusion, clinicians should consider hyperammonemia in patients who present with mental status changes while on primidone therapy. This can occur without evidence of hepatic or renal dysfunction. Our case demonstrates that caution is required when treating patients, especially the elderly, with primidone due to the risk of developing hyperammonemic encephalopathy.

SERUM SICKNESS-LIKE SYNDROME ASSOCIATED WITH SULFAMETHOXAZOLE-TRIMETHOPRIM W.A. Li[1]; A. Scardella[2]. [1]University of Medicine and Dentistry of New Jersey, Somerset, NJ; [2]University of Medicine and Dentistry of New Jersey, New Brunswick, NJ. *(Tracking ID # 173251)*

LEARNING OBJECTIVES: Serum sickness-like syndrome is a rare clinical entity that can potentially complicate treatment with commonly prescribed antibiotics, including sulfamethoxazole-trimethoprim. Therefore, recognizing its various clinical features is necessary for safe administration of medications.
CASE: A 69-year old male presented with a 3-day history of fever, chills, myalgia and a diffuse non-pruritic rash. Two weeks prior, the patient was diagnosed with a urinary tract infection by his primary physician and was prescribed sulfamethoxazole-trimethoprim. Five days after taking the antibiotic, he developed symptoms. Patient denied any travel history or known drug allergy. His other medications included hydrochlorothiazide, irbesartan, lopressor XL, atorvastatin and aspirin. He discontinued only the antibiotics one day prior to admission. The physical exam was significant for a fever of 101.4 F and a diffuse whole body erythematous macular-papular rash. Oropharyngeal, cardiac and lung exam were normal. There was no lymphadenopathy, hepatosplenomegaly or vasculitic lesions. Laboratory findings at that time were BUN 32, Cr 2.2, WBC 3.1, ALT 224, and AST 218. Urine analysis showed trace hematuria and proteinuria. Subsequent laboratory testing revealed normal values for C3, C4, CH50 and ANA. A hypersensitivity reaction or serum sickness-like syndrome was suspected based on the temporal relationship between clinical presentation and sulfamethoxazole-trimethoprim therapy. The patient was started on intravenous corticosteroids. The next day, patient appeared confused and developed nuchal rigidity. A lumber puncture was negative for bacteria but showed markedly elevated protein. The brain CT was negative. During an EEG, the patient suffered a 2-minute generalized tonic-clonic seizure. Fosphophenytoin was given without recurrence of the seizures. The brain MRI was normal. All symptoms gradually improved with continuation of corticosteroid treatment.
DISCUSSION: Serum sickness syndrome is a type III hypersensitivity reaction initially described in children receiving horse serum containing diphtheria antitoxin. A variety of medications, including cephalosporins, allopurinol, ciprofloxacin and propanolol have been associated with this syndrome. Beta-lactam antibiotics are the most common reported causative agent. The onset of symptoms typically occurs 7–21 days after administration. The pathophysiology involves circulating immune complexes and activation of the complement cascade system. Clinical manifestations can include fever, skin eruptions, myalgia, arthralgia, malaise, lymphadenopathy. Rarely, there can be neurological involvement as was present in our case. There are no definitive diagnostic clinical or laboratory findings, but leukopenia or leukocytosis, proteinuria, hematuria, elevated transaminases and serum creatinine may be present. Treatment is discontinuation of the causative agent and if symptoms are severe, corticosteroids are indicated. If the correct diagnosis is made, the overall prognosis is excellent. This case illustrates that a commonly prescribed medication can be a cause of this syndrome with variable clinical features including central nervous system involvement.

THE HUNCHBACK WITH HYPOTENSION G. Wishik[1]; L. Sanchez[1]; L. Broyles[1]. [1]Emory University, Atlanta, GA. *(Tracking ID # 169859)*

LEARNING OBJECTIVES: 1. Recognize the symptoms, exam findings, and laboratory abnormalities of adrenal insufficiency. 2. Appreciate the interaction between inhaled fluticasone and ritonavir to produce Cushing's syndrome. 3. Raise clinician's index of suspicion for drug related causes of adrenal insufficiency.
CASE: A 42 year old man with AIDS (CD4 71 cells/mm3) and asthma presented with profound drowsiness and lightheadedness for one week. He endorsed stable dyspnea on exertion and denied fever, headache, vision change, nausea, vomiting, abdominal pain, or syncope. Past medical history revealed diastolic dysfunction and chronic kidney disease. Eight weeks prior, he developed hyponatremia attributed to psychogenic polydipsia. Medications included fluticasone/salmeterol, valsartan, ritonavir, atazanavir, zidovudine, and tenofovir. On admission, he was tachycardic (heart rate 120 beats/minute), hypotensive (blood pressure 90/54 mm Hg) orthostatic, and afebrile. He was somnolent but arousable and was obese with a round face, bitemporal fat deposits, and a buffalo hump. Lung and cardiac exams were unremarkable. His abdomen was protuberant without tenderness, fluid wave, or hepatosplenomegaly, and he had bilateral lower extremity edema. Initial laboratories revealed sodium 127 meq/L, potassium 5.9 meq/L, bicarbonate 14 meq/L, BUN 94 mg/dL and creatinine 4.3 mg/dL (baseline 1.5 mg/dL). Antiretrovirals and valsartan were discontinued due to possible nephrotoxicity. His hypotension resolved after aggressive intravascular volume repletion; serum AM cortisol was undetectable. Corticosteroid replacement led to resolution of symptoms and correction of laboratory abnormalities.
DISCUSSION: Adrenal insufficiency has a strong association with HIV, but can be difficult to diagnose, as many opportunistic infections cause similar symptoms. Autopsy studies have found abnormal adrenal glands in a majority of AIDS patients, but frank adrenal insufficiency is rare. When adrenal insufficiency is discovered, infectious etiologies and medication effects should always be considered and ruled out. This patient had iatrogenic Cushing's syndrome due to an interaction between ritonavir and fluticasone. Ritonavir is a protease inhibitor commonly used to boost levels of other protease inhibitors through its inhibition of cytochrome P450-3A4 metabolism. Fluticasone, an inhaled corticosteroid used in asthma, normally has insignificant serum levels due to its high first pass metabolism by cytochrome P450-3A4. However, when administered concurrently with ritonavir, serum fluticasone levels can rise and cause Cushing's syndrome. Review of past records found that the patient had self-discontinued fluticasone/salmeterol with subsequent adrenal insufficiency. This interaction is described in a growing number of case reports. In one series, all six patients had evidence of adrenal suppression on cosyntropin stimulation tests and four developed frank adrenal insufficiency following fluticasone withdrawal. Misdiagnosis is common, as the findings of Cushing's are similar to lipodystrophy, another side effect of protease inhibitors. Clinicians must therefore avoid the co-administration of ritonavir and fluticasone, and be vigilant for medication-related causes of adrenal insufficiency.

THE PHANTOM OF METFORMIN ASSOCIATED LACTIC ACIDOSIS R.H. Orakzai[1]; S.H. Orakzai[1]; P.B. Hasley[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172649)*

LEARNING OBJECTIVES: 1. To recognize metformin as a cause of severe lactic acidosis in diabetics 2. To recognize the importance of holding metformin in patients in the event of acute illness.
CASE: A 79 year-old-female with diabetes mellitus, hypertension and atrial fibrillation was brought to the hospital after a fall at home with a 5-day history of acute diarrhea. Medications included metformin and glargine insulin. She was awake and alert but confused. She developed hypotension requiring emergent intubation and treatment with norepinephrine drip. ABG revealed severe acidosis with pH = 6.93, pCO2 = 18, pO2 = 194 and HCO3 = 4. Laboratory data showed glucose = 26 mg/dl, BUN/Cr = 51/7.7 (baseline Cr = 1.6), potassium = 6.7, anion gap = 32, lactate = 13.4. Her metformin level was 29 mcg/ml (therapeutic range 1–2 mcg/ml). It was thought that the diarrhea caused worsening of her chronic renal insufficiency placing her at risk of metformin associated lactic acidosis (MALA). The patient was started on IV NaHCO3. She underwent emergent continuous venovenous hemodialysis (CVVHD) for 18 hours until her lactate normalized and acidosis resolved. Her creatinine slowly normalized to her baseline.
DISCUSSION: Metformin is considered the biguanide of choice in the treatment of type 2 diabetes mellitus. It exerts its antihyperglycemic action by inhibition of hepatic gluconeogenesis, increased insulin-mediated glucose disposal in muscular and fatty issue, and inhibition of fatty acid oxidation. Lactic acidosis, is a rare (estimated incidence 2–9 cases per 100,000 patient-years) but life threatening complication of metformin therapy; the mortality rate is ~50%. Steady-state plasma concentrations are usually reached within 24 to 48 hours. However when diabetes is complicated by nephropathy, the plasma half-life of metformin is prolonged and the renal clearance is decreased. Metformin is contraindicated in patients with creatinine clearance < 30 mL/min and caution is advised in patients with clearance in the range of 30 to 50 mL/min. The association of metformin with lactic acidosis is controversial. A recent Cochrane review concluded that there is no evidence that metformin is associated with an increased risk of lactic acidosis. However there are multiple case reports about MALA. Metformin can increase lactate production by changing the intracellular redox potential from aerobic to anaerobic metabolism (type B lactic acidosis). Gluconeogenesis is inhibited by metformin through reduced hepatic uptake of lactate. Once MALA is established, circulatory failure may worsen the acidosis through reduced tissue perfusion and increased lactate

production (a superimposed type A lactic acidosis). Metformin is contraindicated in patients with hepatic disease, renal failure, congestive heart failure, chronic obstructive pulmonary disease, sepsis, severe dehydration, and history of lactic acidosis. In clinical practice these contraindications are largely disregarded. The current therapeutic approach for treating MALA is neutralization of excess H+ with NaHCO3, acceleration of lactate metabolism, elimination of offending drugs, and management of any concurrent disease. Intermittent hemodialysis or CVVHD is recommended for the treatment of severe refractory lactic acidosis complicated by end-stage renal failure. We recommend that all patients on metformin should be educated regarding side effects and should consider temporary discontinuation of treatment in the event of severe illness, including dehydration.

TRICYCLIC ANTIDEPRESSANT TOXICITY RESULTING IN PNEUMATOSIS INTESTINALIS K. Chew[1]; S. Ranji[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173942)*

LEARNING OBJECTIVES: 1- Recognize the clinical features of tricyclic antidepressant (TCA) toxicity. 2- Institute the appropriate therapeutic measures in TCA toxicity. 3- Recognize the spectrum of anticholinergic toxicity in TCA overdose.
CASE: CP is a 59 year old woman who was transferred from a rural hospital after an intentional overdose with clomipramine, venlafaxine, and Vicodin. On presentation to the emergency room, she was obtunded, hypotensive, and hypoxemic after witnessed aspiration of charcoal. She had mydriasis and dry mucous membranes on exam. Initial EKG had a prolonged QTc of 541 milliseconds and a widened QRS of 118 msec. The patient was intubated and treated with intravenous magnesium sulfate and sodium bicarbonate, with resolution of her EKG changes; her hypotension improved with fluid resuscitation. However, within the first 24 hours of hospitalization, she developed an increasingly distended, firm abdomen with absent bowel sounds. An abdominal CT scan was performed, which revealed a marked ileus and cecal pneumatosis intestinalis with extension of gas into the portal venous system. There was no overt evidence of bowel necrosis, and the serum lactate level was normal. The patient was managed conservatively with bowel rest and nasogastric tube decompression, and the cecal pneumatosis resolved on repeat CT imaging 48 hours later. However, her ileus persisted, and she was unable to tolerate nasogastric tube feeds for over 1 week. The patient was successfully extubated after a course complicated by ventilator-associated pneumonia. She was evaluated by psychiatry and felt to no longer be at suicide risk, and was eventually discharged home in good condition on the 17th hospital day, tolerating a regular diet.
DISCUSSION: Tricicylic antidepressants (TCAs) can cause significant life-threatening events in overdose, primarily CNS depression, seizure, cardiac arrhythmias, and refractory hypotension. These events primarily manifest through TCA inhibition of CNS GABA-A receptors, cardiac myocyte fast sodium channels, and peripheral alpha-1 adrenergic receptors. Initial treatment in TCA overdose is aimed at resuscitation. Resuscitative fluids should be given and vasopressors (neosynephrine or norepinephrine) used if hypotension is refractory. Intubation is often necessary due to CNS depression. Sodium bicarbonate should be used if EKG changes (e.g. QRS > 100 msec) are present, and seizures should be treated with benzodiazepines. It is important to recognize that tricyclic antidepressants can also cause significant adverse effects through their inhibition of central and peripheral muscarinic acetylcholine receptors. These effects include mydriasis, dry mouth, urinary retention, absent bowel sounds, and ileus. Pneumatosis intestinalis as a consequence of severe ileus from TCA overdose has not been previously reported, and demonstrates the morbid potential of TCA-induced anticholinergic toxicity. Our case was successfully managed with conservative therapy.

WEAKNESS AND ELEVATED AMINOTRANSFERASES IN A PATIENT WITH CEREBRAL PALSY K.E. Koplan[1]; A. Bitton[1]; J. Camac[2]; K. Pariser[1]. [1]Brigham and Women's Hospital, Boston, MA; [2]Harvard Vanguard Medical Associates, Boston, MA. *(Tracking ID # 171385)*

LEARNING OBJECTIVES: 1. Rhabdomyolysis can cause elevated aminotransferases which are not hepatic in origin. 2. Therapeutically-dosed quetiapine may cause rhabdomyolysis.
CASE: A 35 year old African-American female with a past medical history of cerebral palsy, seizure disorder, and schizoaffective disorder presented to clinic with two days of decreased appetite, vague abdominal pain, and fatigue. Her caretaker noticed she could not walk up a flight of stairs, which previously had not been a problem. Of note, her medications included phenobarbital, depakote, oxybutynin, and quetiapine, of which the latter had been increased in dose one month prior. Physical exam was notable for normal temperature, mild tachycardia, normal blood pressure, mild abdominal tenderness to palpation without guarding, normal muscular tone, general muscular weakness including inability to stand and walk independently, and no rash on skin exam. Laboratory studies were notable for an ALT of 412, Cr of 0.6, TSH 2.1, and sub-therapeutic levels of depakote and phenobarbital. She was admitted to the hospital for further workup. Upon admission, her history and physical exam were unchanged. Initial laboratory studies revealed AST 2,776, ALT 637, and albumin 2.5. Abdominal ultrasound and abdominal CT were unrevealing. EBV, CMV, and Hepatitis A, B, and C serologies were sent, and were subsequently negative for acute disease. CK and aldolase levels were ordered given her persistent unexplained weakness. They were both markedly elevated, with the CK at 62,331 and the aldolase at 255. Fractionation of the CK showed 98% was in the MM isoform (peripheral muscle). Upon further questioning, the caretaker reported no history of falls, trauma, or ETOH use. Given her elevated CK and associated history and exam findings, she was diagnosed with rhabdomyolysis. A muscle biopsy of the deltoid was negative for myositis, inherited disease of the mitochondria, and inherited metabolic myopathies. Her only notable historical finding was an increase in dose of daily quetiapine. Treatment of the presumed quetiapine-related rhabdomyolysis consisted of aggressive hydration, urine alkalinization, and quetiapine cessation. The CK peaked at 90,942 and fell rapidly to a discharge level of 10,586, while the Cr remained stable at 0.7. The patient made a rapid recovery, with increased appetite, strength, and energy, and was discharged home. Three weeks after discharge, the CK was 23.
DISCUSSION: Elevated AST and ALT levels can indicate a wide array of disorders, both internal and external to the liver. In patients without a clear hepatic disorder, rhabdomyolysis should be considered when the AST/ALT ratio is greater than three. Rhabdomyolysis should also be considered in a patient with a history of seizure, trauma, inherited metabolic muscle disorders, or on potentially toxic medications. Initial reports of quetiapine-induced rhabdomyolysis were linked to quetiapine overdoses, but there also have been reported cases in patients on normal therapeutic doses. A recent review of 110 consecutive patients with rhabdomyolysis found that three patients on therapeutic doses of quetiapine had no alternative potential etiology other than quetiapine. This case demonstrates the importance of considering quetiapine as a cause of rhabdomyolysis.

HYPOGLYCEMIA, HYPERTENSION, AND HALLUCINATIONS: HOW TO SEE THE PHENCYCLIDINE FOREST DESPITE ALL THE TREES A. Mealer-Mcartor[1]; M. Maddineni[1]; L. Staton[1]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN. *(Tracking ID # 171705)*

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of phencyclidine intoxication 2. Recognize the laboratory derangements that may result from phencyclidine intoxication.
CASE: A 40 year old African American male with hypertension, type 2 diabetes mellitus and a four month history of schizophrenia presented to the emergency department with altered mental status. The patient was found at home moaning, salivating and staring off into space after awaking from sleep. EMS reported blood glucose of 22 by accucheck and a blood pressure of 190/104 mmHg. He was afebrile, with good oxygen saturations and heart rate in the 90's. Urine drug screen was positive for phencyclidine. C peptide, glucagon and insulin levels were normal. Head CT, chest x-ray, cardiac enzymes, and EKG were within normal limits. In the hospital the patient continued to have hypoglycemia and hypertensive urgency with systolic blood pressure upwards of 250 s and diastolic blood pressure upwards of 140 s despite aggressive medical management. The patient initially experienced audiovisual hallucinations and agitation with violent outbursts but then became largely unresponsive for several days. While initially normal, the patient's neurological exam began demonstrating trismus and hyperreflexia without clonus or rigidity. Around day five, the patient's vitals and glucose were normal and physical exam was back to baseline and the patient was discharged shortly thereafter.
DISCUSSION: Phencyclidine, or PCP, is a hallucinogenic drug that was more commonly used in the 1960s and 1970s. Cities have seen a recent resurgence of this drug, which makes recognizing its varied clinical presentation important. A case review of 1000 cases, the most extensive in the literature, is reported in the Annals of Emergency Medicine in 1981 where McCarron MM et al report the clinical findings as follows: altered mental status (54%), violent behavior (35%), hallucinations, mute and staring, "superhuman strength," bizarre behavior (29%), nystagmus (57%), hypertension (57%), dystonic reactions (including trismus), seizures, diaphoresis, hypoglycemia (22%), elevated CPK (70%), and elevated transaminases (50%). This patient had a few previous similar episodes documented in the recent past. One of these episodes had also been associated with elevated transaminases and elevated CPKs and may have been misdiagnosed as neuroleptic malignant syndrome. Additionally, the patient's recent diagnosis of schizophrenia in his 40 s with no previous psychiatric history or family psychiatric history makes it more likely that his bizarre behaviors associated with hallucinations were more likely from PCP use as opposed to a primary psychiatric cause. The patient had tested positive for methamphetamines in the recent past. Accurate and swift diagnosis of PCP intoxication is important as it will prevent the misdiagnosis of a primary psychiatric illness and will prevent the ordering of an array of expensive tests based on symptoms such as prolonged hypoglycemia.

MIS-CONCEPTION OR MISSING CONCEPTION? - A FASCINATING CASE OF PSEUDOCYESIS S. Taimur[1]; H. Kaushal[1]. [1]University of Illinois at Peoria, Peoria, IL. *(Tracking ID # 173003)*

LEARNING OBJECTIVES: 1. To recognize the entity of pseudocyesis vera 2. Generate an appropriate differential for a false-pregnancy.
CASE: We present the case of an eighteen year old nulliparous female with no significant past medical history, presented to the clinic with seven months of amenorrhea and increasing abdominal girth. She also reported having breast tenderness and engorgement, early morning nausea and occasional galactorrhea. The patient and her boyfriend had been attempting to conceive and they were certain that she was pregnant, inspite of multiple home pregnancy tests being negative. Physical exam revealed bilateral breast tenderness but no nipple discharge. Abdomen was distended, non tender but uterine fundus was not palpable. Laboratory work up revealed normal serum beta HCG (qualitative and quantitative), FSH, LH, prolactin and TSH levels. Abdominal ultrasound revealed no intrauterine or extra uterine gestational sac and uterine size was within normal limits. CT scan of the abdomen also did not reveal any cause of the abdominal distention or the patient's other symptoms. Tumor markers including LDH, alpha fetoprotein, CA 125 and CEA were all within normal limits. Screening for psychiatric illness was negative. A diagnosis of pseudocyesis was made and the patient was counseled regarding her condition. Two months later, she was seen in follow-up and reported complete resolution of all her symptoms including the abdominal distention and amenorrhea. Eight weeks after her last follow-up, the patient's symptoms returned and she was diagnosed with a viable intra-uterine pregnancy.
DISCUSSION: Hippocrates wrote of twelve women who "believed they were pregnant" as early as 300 BC. John Mason Good coined the term pseudocyesis from the Greek words 'pseudes' (false) and 'kyesis' (pregnancy) in 1923. A variety of terms have since been used in the literature to describe 'Pseudocyesis', including spurious pregnancy, feigned pregnancy, imaginary pregnancy and hysterical pregnancy. Our case brings to light an entity called

Pseudocyesis vera or true false pregnancy which has been reported in the literature in women with no known psychiatric illness. This is an extremely rare diagnosis with the more commonly reported cases of false pregnancy being secondary to pelvic masses, hormone secreting tumors, use of contraceptives, simulation on part of the patient and in some cases following termination of pregnancy and sterilization procedures. This case highlights the fact that Pseudocyesis vera is a rare but known entity that may be encountered by internists and screening for psychiatric illness and appropriate work up to rule out secondary causes is essential to make a definitive diagnosis.

TRUST BUT VERIFY:COLD WAR POLICY FOR THE INTERNIST K. Widmer[1]; M. Cash[1]; M.D. Landry[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 172405)*

LEARNING OBJECTIVES: 1. Establish differential diagnoses for hypokalemia with metabolic alkalosis 2. Identify symptoms and workup of diuretic abuse 3. Recognize discrepancies between historical data and diagnostic testing may indicate undiagnosed psychiatric illness.

CASE: A 26-year old woman presented with generalized weakness, nausea with emesis and her "potassium was low". She had several admissions for hypokalemia in the last few years with no known cause. She took potassium supplements daily to "maintain my potassium at about 2.5". She maintained a strict vegetarian diet with dietary supplements for 15 years. She denied eating disorders or diuretic abuse. She denied diarrhea. Past history included hypothyroidism and gastroesophageal reflux. Current medications included levothyroxine, esomeprazole, potassium supplements, vitamins, oral contraception and iron. She had a psychology degree, worked as an art therapist and had volunteered in emergency departments for many years. Physical examination revealed a gaunt cachectic young female, unable to stand secondary to weakness. Vital signs revealed normal blood pressure with mild tachycardia. She had mild bruising over her body. She had normal, white teeth and no skin changes on her hands. She had a normal thyroid. Physical exam was otherwise unremarkable. Diagnostic testing was significant for potassium of 1.7 mEq/L, bicarbonate of 51 mEq/L, and creatinine of 1.4 mg/dL. The urine chloride and potassium were high; urine calcium was low. Her serum magnesium level was within normal limits. EKG and TSH were normal. A urine drug screen was positive for marijuana, and a urine diuretic screen revealed diuretic abuse of HCTZ. She was treated with intravenous potassium and discharged home with oral supplements. She was referred for follow-up primary care and psychiatric care for her diuretic abuse.

DISCUSSION: Differential diagnoses for hypokalemia involves assessing gastrointestinal versus renal losses, determining acid-base status and blood pressure stratification. Hypokalemia and metabolic alkalosis should prompt specific examination and laboratory investigations to narrow the differential diagnosis, which includes primary hyperaldosteronism, diuretic use, renal channelopathies, and extrarenal fluid losses. Hypertensive patients likely have primary hyperaldosteronism, although Liddle's syndrome presents similarly. Normotensive patients should be evaluated with urine chloride testing. Decreased urine chloride implies extrarenal fluid losses. Elevated urine chloride suggests loop or thiazide diuretic use, Bartter's or Gitelman's syndrome. Physical examination in hypokalemia and potential diuretic abuse should rule out surreptitious vomiting: oral ulcers, dental erosions, calluses and scarring of the dorsum of the hand. Laboratory confirmation includes hypokalemia, metabolic alkalosis, increased urinary chloride excretion. Diuretic screen is a confirmatory test to differentiate between channelopathies and diuretic abuse. Our patient denied diuretic use and appeared to have Bartter's syndrome. Her history of volunteering in emergency departments, high level of education and multiple admissions for undetermined hypokalemia led us to suspect diuretic abuse. Screening of the urine for diuretics revealed the presence of hydrochlorothiazide. When confronted with discrepancies between patient reported history and diagnostic studies, the physician must recognize potential undiagnosed psychiatric disorders which may impact healthcare delivery.

WHAT IS UNUSUAL ABOUT THIS CASE OF FEVER WITH BRADYCARDIA? M. Maddineni[1]; M. Panda[1]. [1]University of Tennessee, Chattanooga, TN. *(Tracking ID # 171517)*

LEARNING OBJECTIVES: 1. To discuss the differential diagnosis of relative bradycardia 2. To recognize and discuss the mechanism of amphetamine withdrawal as a cause of relative bradycardia.

CASE: A 29-year-old caucasian female, with a history of asthma, anxiety attacks and a right hip abscess drained the previous month, presented to the ED with sudden onset of headache, nausea, vomiting and fever up to 104°F degrees the previous day. She denied sick contacts. Her medications included Albuterol inhaler and Alprazolam. She admitted to using amphetamines and cocaine occasionally. Vitals revealed a temperature of 101.6°F, heart rate 48/min, BP 90/70 mmHg. Physical examination was unremarkable without any localizing signs of infection. CBC, CMP, chest x-ray and urine analysis were normal. EKG showed sinus rhythm. Urine drug screen was positive for amphetamines. Patient was started on Vancomycin and Ciprofloxacin empirically. CSF analysis was normal but CT scan of the right hip revealed diffuse increased sclerosis of most of the right ilium with minimal secondary adjacent soft tissue edema with the two primary differential considerations being old injury and chronic osteomyelitis. Transthoracic echocardiogram and later a transesophagial echocardiogram (TEE) revealed thickening of the anterior mitral valve leaftet with a small echodensity suggestive of vegetation. Blood cultures revealed MRSA and patient was treated with a 3 day course of Gentamycin and a 6 week course of Vancomycin. For the first 36 hours of her course of hospitalization she continued to have a heart rate ranging between 40–50/min though she remained febrile with temperature readings of 103.5°F during this period.

DISCUSSION: Relative bradycardia is a temperature-pulse deficit. Infectious causes include legionella, psittacosis, Q and typhoid fever, babesiosis, malaria, leptospirosis, yellow fever, dengue fever, viral hemorrhagic fevers and Rocky Mountain spotted fever. Non infectious causes include beta-blocker use, CNS lesions, lymphomas, factitious fever and drug-related fever. Our patient had an extensive workup that did not reveal any mentioned causes. Though conduction abnormalities are associated with infective endocarditis due to perivalvular extension of infection or myocardial abscess they can be detected by TEE which has 95% specificity. We could not find any evidence of extension in our patient both with transthoracic and transesophageal echocardiograms. Amphetamines are associated with a withdrawal profile which includes hallucinations, fever, and tachycardia followed by periods of bradycardia and moderate hypotension as the acute symptoms resolve. Our patient's toxicological screen was positive for amphetamines and this was the only association which could explain the relative bradycardia. After the last dose, amphetamines can be detected in the urine up to 30 hours on low dose and 120 hours on high dose. Amphetamine withdrawal develops within a few hours to several days after cessation of (or reduction in) heavy and prolonged amphetamine use and peaks 2–4 days after last use. Amphetamines withdrawal symptoms are caused due to their relative functional depletion of noradrenaline, dopamine and seratonin in the brain leading to bradycardia and hypotension. As the use of amphetamines is reportedly increasing we propose that amphetamine withdrawal should be considered as an additional cause of relative bradycardia.

YOUR STOMACH ON DRUGS: CYCLIC VOMITING IN ASSOCIATION WITH CHRONIC CANNABIS ABUSE A. Carhill[1]; J. Wiese[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 173163)*

LEARNING OBJECTIVES: 1. Recognize the clinical presentation of cyclic vomiting syndrome 2. Identify less know triggers of cyclic vomiting syndrome in adults.

CASE: A 20 year-old man presented with twenty-four hours of nausea and vomiting. He had twenty to thirty episodes of emesis over this time period. The vomiting occurred immediately after swallowing liquid or food. During this time, he had taken promethazine, ondansetron, and sumatriptan, all without relief. He noted that he had been having these episodes every two months since the age of fourteen. He was diagnosed with cyclic vomiting syndrome after an exhaustive diagnostic testing regimen revealed no alternative cause. He was being treated with a variety of antiemetics as well as sumatriptan and amitryptiline as abortive and preventive therapy. Despite these treatments, he continued to require inpatient care with intravenous fluid resuscitation and antiemetic treatment for a 24 to 48 hour period every one to two months. He was admitted and given intravenous fluids and medications. In addition to the nausea and vomiting, he had a strong desire to take hot showers, which he did continually during the period of nausea. He stated that the heat helped to relax him and it relieved his nausea. Shortly after getting out of the shower, he would begin to cool off and again have a desire to get back into the shower. A urine toxicology screen was performed and was positive for marijuana. In further discussion with the patient, he stated that he began using marijuana at the age of twelve, and he used it two to three times per week. He had no prolonged period of abstinence since beginning his marijuana use.

DISCUSSION: Cyclic vomiting syndrome is a well-documented disorder in the pediatric population; the median age of diagnosis is five years of age. Cyclic vomiting is also seen in adults, with the median age at diagnosis being 35 years. In adults, cyclic vomiting is strongly associated with migraine headaches, and many patients receive relief with the use of medications traditionally directed toward migraines. It is important for the general internist to recognize that the cyclic vomiting syndrome is associated with chronic cannabis abuse. Of ten patients in a case series of patients with cyclic vomiting, seven patients stopped their cannabis abuse and the cyclic vomiting ceased. The three who continued cannabis continued to have cyclic vomiting episodes. Of the seven who stopped, three eventually rechallenged themselves with cannabis and had a return of the cyclic vomiting episodes. Interestingly, nine of the ten patients shared our patients compulsion to take frequent hot showers or baths, suggesting that histamine release may play a role in the physiology of the disease. The precise mechanism by which cannibus induces cyclic vomiting is unknown, though the general internist should be aware of the association since cessation of cannibus use is a non-invasive therapy for an otherwise difficult to treat disease.

37 YEAR-OLD WOMAN WITH FLANK PAIN AND PROTEINURIA J.A. Korcak[1]; A. P. Burger[2]. [1]Montefiore Medical Center of the Albert Einstein College of Medicine, Bronx, NY; [2]Montefiore Medical Center, Bronx, NY. *(Tracking ID # 173723)*

LEARNING OBJECTIVES: 1) To present an interesting initial presentation of membranous nephropathy and SLE 2) To explore the link between renal vein thrombosis and membranous nephropathy.

CASE: A 37-year-old African American female with a history of hypertension presented with five days of left flank pain. The non-radiating pain began as an intermittent ache, gradually becoming constant and severe. The patient denied dysuria, fever, and chills, but reported two months of frothy urine. She also denied a history of blood clots or pregnancy loss, as well as family history of lupus or clotting. The patient was afebrile and hemodynamically stable. Her exam was notable for pale conjunctiva, a systolic flow murmur, and non-reproducible left flank pain. Initial labs were significant for BUN 6, creatinine 0.7, total protein 5.0, albumin 2.1, platelets 232, Hgb 8.3, MCV 79, RDW 14, Fe 14, TIBC 123, transferrin 98, ferritin 268, PT 9.4, PTT 30.4, as well as a urinalysis with >1000 protein, 5–10 RBC, and a 24-hour urine protein excretion of 14 grams. CT scan showed left renal vein thrombosis with collaterization around the kidney. Lower extremity venous duplex was negative. Renal biopsy demonstrated a stage III membranous glomerulonephropathy. Further testing revealed ANA 1:160, anti-SM Ab 36.37, and anti-RNP >100. Other markers of connective tissue disease, anti-

phospholipid serologies, and additional hypercoagulable work-up were unremarkable. The patient was diagnosed with systemic lupus erythematosus and lupus nephritis.
DISCUSSION: We describe a case of thromboembolic disease, proteinuria, and low albumin as the initial presentation of lupus-associated membranous nephropathy. Membranous nephropathy accounts for approximately 30% of nephrotic syndromes and 20% of renal disease in lupus. While membranous nephropathy is a heterogeneous disease, glomerular immune complex deposition at the podocytes is a unifying factor in its pathogenesis. The prevalence of venous thromboembolism in nephrotic syndrome ranges from 5 to 60% and is highest in membranous nephropathy. In a prospective study, 20 of 69 patients with membranous nephropathy developed renal vein thrombosis. Nephrotic syndrome may cause thrombosis through several mechanisms, including urinary loss of antithrombin III and other anticoagulants, increased platelet activation, and hyperfibrinogenemia. Decreased flow across the glomerulus and subsequent post-glomerular hemoconcentration places renal veins at high risk. Moreover, the glomerular immune-mediated injury in membranous nephropathy may cause local pro-coagulant activity, which increases the likelihood of renal vein thrombosis. There are no randomized clinical trials to guide anti-coagulant therapy in individuals with membranous nephropathy. Prophylactic anticoagulation should likely be reserved for massive proteinuria or the presence of other hypercoagulable risk factors. In one uncontrolled prospective study of 55 patients with nephrotic syndrome started on prophylactic low-molecular-weight heparin, there was no evidence of thrombosis at one-year follow-up. For patients with membranous nephropathy and newly diagnosed thrombus, the duration of anti-coagulant therapy should also depend on the presence of other risks factors. The above case illustrates the importance of nephrotic syndrome, especially membranous nephropathy, as the cause of renal vein thrombosis in patients without a history of thromboembolic disease.

A CASE OF BROKEN KIDNEYS R. Carter[1]; L. Lu[1]. [1]Baylor College of Medicine, Houston, TX. *(Tracking ID # 173541)*

LEARNING OBJECTIVES: 1. Consider renal papillary necrosis (RPN) in diabetic patients presenting with urinary tract infection and oliguria/anuria. 2. Review the causes and presentation of RPN. 3. Learn about the utility of imaging studies in RPN.
CASE: A 46 year-old male with diabetes mellitus presented with one day history of left flank pain, fever and chills. He was treated 4 weeks earlier with trimethoprim/sulfamethoxazole for a urinary tract infection. Vital signs revealed BP 94/65, HR 113, RR 14, and Temperature 100.6^0F. Physical exam was remarkable for left costovertebral angle tenderness. His WBC was 16 K/uL and his urinalysis showed 428 wbc, 1234 rbc, and many bacteria. He was started on intravenous ciprofloxacin with improvement in symptoms. On the 5th hospital day, the patient became anuric. A Foley catheter was placed but no urine was obtained. His serum creatinine rose from 1.5 mg/dL on admission to 7.2 mg/dL. A renal ultrasound and subsequent non-contrast abdominal CT revealed mild bilateral hydronephrosis. A MRA of the kidneys showed patent renal arteries and veins. A cystoscopy revealed purulent and necrotic debris at both uretero-vesicular junctions. Drainage of bilateral ureters was done with the analysis of the collected necrotic debris showing papillary structures and bacterial overgrowth. The patient's renal function returned to normal, and the diagnosis of bilateral renal papillary necrosis (RPN) was made.
DISCUSSION: In a retrospective case series of 27 patients with RPN by Eknoyan et al., common presenting signs and symptoms were flank pain, fever, dysuria, proteinuria, pyruria and leukocytosis. 74% of the patients had bilateral involvement and 7% became oliguric. Literature search reveals 2 recent case reports of diabetics with bilateral RPN caused by Candida leading to anuria. The risk factors include diabetes mellitus, obstruction (i.e. prostatic hypertrophy), analgesic nephropathy, sickle hemoglobinopathy, and infection. Common organisms isolated were Escherichia coli, Klebsiella, Pseudomonas, Proteus, Citrobacter, Staphylococcus species, and Candida. The pathogenesis is thought to be due to disturbances of the microvasculature in the renal medulla by analgesics, diabetes, and/or infection inducing ischemia and necrosis in the medulla and papillae. The gold standard diagnostic test is excretory urography or retrograde urography with findings of blunted papillae, sloughed tissue, clefts, and abnormal excretion of dye. The "ring shadow" sign is the presence of contrast around a piece of necrosed renal papillae. Renal ultrasound and CT are rarely diagnostic. The diagnosis can also be made by the histological identification of renal papillary structures in material excreted in the urine. It is difficult to estimate the prevalence of RPN since many diagnoses have been made at autopsy. Griffin et al., in a retrospective review of 165 cases, noted that those with RPN and DM had an increased risk of death with a 10 year survival of 69%, and the risk for progression to end stage renal disease was 7.4% overall in those who survived for 10 years after diagnosis. There is no known treatment for RPN except to treat the underlying cause. In patients at high risk for RPN with obstructive signs and renal failure, cystoscopy is the best procedure for diagnosis and therapeutic intervention. Thus, renal papillary necrosis should be entertained in the differential diagnosis of diabetic patients presenting with urinary tract infection and oliguria/anuria.

A VERY UNUSUAL CAUSE OF URINARY RETENTION. S. Tamrazova[1]; G.H. Tabas[2]. [1]UPMC Shadyside, Pittsburgh, PA; [2]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172889)*

LEARNING OBJECTIVES: 1) Recognize the causes of acute urinary retention in young adults and the importance of a detailed sexual history 2) Manage acute urinary retention.
CASE: A 27-year-old previously healthy woman presented to the emergency department with progressive difficulty in urination over the last 4 days. She denied abdominal or flank pain, dysuria, fever, chills, vaginal discharge or muscle weakness and her urge to urinate remained intact. Physical examination showed only dullness over the bladder. Bladder catheterization yielded 1000 cc of urine. Urinalysis, urine toxicology and CT of the abdomen with contrast were unremarkable. No etiology for the urinary retention was found and follow-up with her clinic resident was arranged. At presentation to the office the next morning she reported inability to urinate since the ED visit and repeat catheterization yielded 400 cc of urine. Further questioning revealed that her menstrual history was unremarkable, she was sexually active, and she denied unprotected intercourse. She did report that one week prior to this visit she had had very painful anal intercourse resulting in numbness, tingling and pain around her anus and perineal area. Physical examination revealed bladder dullness to 15 cm above the pubic symphysis but there was no muscle weakness or sensory deficit in the perineal area or elsewhere. The rest of physical examination, including rectal and pelvic examination, was normal. MRI of her spine was unremarkable. On the basis of her history, physical examination and normal imaging studies, the diagnosis of acute urinary retention secondary to severe anal dilatation was made. She was taught self - catheterization and within 2 days she reported that her micturition was normal.
DISCUSSION: Causes of acute urinary retention in young adults include urinary tract infection and urethritis, mechanical obstruction, neurogenic bladder secondary to multiple sclerosis or spinal cord compression, sacral autonomic nervous system dysfunction caused by genital herpes, and reflex inhibition of urination due to drugs or mechanical causes. In view of her normal test results, the most likely cause of this patient's acute urinary retention was severe anal dilatation that triggered reflex bladder inhibition. In this phenomenon, sensory input from the anus travels to the sacral micturition center, sending inhibitory stimuli to the urinary bladder[1]. The treatment is bladder decompression with or without cholinergic medication such as bethanechol or alpha blocking agents such as phenoxybenzamine. The patient presented here recovered with bladder decompression alone. 1. Godec CJ, Cass AS, Ruiz E. Another aspect of acute urinary retention in young patients. Ann Emerg Med. 1982 Sep;11(9):471–4.

BAKING THE BEANS: A CASE OF ACUTE RENAL FAILURE FOLLOWING PERCUTANEOUS CORONARY INTERVENTION G.M. Simoncini[1]; S. Chandrasekaran[1]. [1]Temple University, Philadelphia, PA. *(Tracking ID # 173307)*

LEARNING OBJECTIVES: Generate an appropriate differential diagnosis of acute renal failure after cardiac catheterization. Recognize the clinical presentation and appropriate management of renal atheroembolism.
CASE: A 64 year-old female with history of diabetes mellitus, diabetic retinopathy, hypertension, coronary artery disease, and coronary artery bypass surgery was transferred to our hospital for coronary angiography after presenting with chest pain and undergoing a stress test that was consistent with coronary ischemia. Two days after percutaneous coronary intervention (PCI) with three stents placed in diseased venous grafts, the patient experienced decreased urine output (700 cc/24 hours), acute rise in creatinine from 1.8 mg/dL to 3.2 mg/dL, and acute decrease in hemoglobin from 12.1 g/dL to 7.9 g/dL. Urinalysis showed large blood, 1+ protein, and specific gravity of 1.025. Urine microscopy showed an occasional tubular cell and no casts. Additional laboratory studies revealed peripheral eosinophilia, low-normal complement levels, elevated erythrocyte sedimentation rate, and eosinophiluria. Computerized tomography of the abdomen and pelvis performed to evaluate for retroperitoneal hemorrhage showed bilateral renal cortical infarcts that were not present on a previous study. No skin changes were observed. The clinical course was felt to be consistent with renal atheroembolism and the patient was treated supportively. By the time of discharge, the creatinine level stabilized at 2.0 mg/dL.
DISCUSSION: The majority of cases of acute renal failure following PCI are attributed to contrast-induced nephropathy. However, it is necessary to consider other etiologies including acute tubular necrosis, rapidly progressive glomerulonephritis, vasculitic disease, and atheroembolism. The diagnosis of renal atheroembolism relies on the timing of ARF and the constellation of other clinical findings. Estimates of the incidence of cholesterol embolization after vascular procedures have ranged from 0.15% in clinical studies to 25–30% in pathologic studies suggesting clinical diagnosis is often unrecognized. One third of cases present with acute renal failure due to massive embolization, typically within days to weeks of the triggering event. A subacute presentation with stepwise decrease in renal function over weeks to months is more common. Patients often complain of gastrointestinal discomfort, which is attributed to ischemia of the splanchnic vasculature. Physical findings consistent with small vessel ischemia may be present such as blue toe syndrome and livedo reticularis, typically involving the distal extremities. Retinal emboli and Hollenhorst plaques can be observed on fundoscopic examination. Laboratory findings can include peripheral eosinophilia, eosinophiluria, elevated erythrocyte sedimentation rate and C-reactive protein and less commonly, hypocomplementemia. Specific treatment of this syndrome remains a challenge. Avoidance of nephrotoxic medications, HMG Co-A reductase inhibitors, which stabilize atherosclerotic plaques, and aggressive control of hypertension are the cornerstones of therapy. Given the lack of specific treatment options, prevention is crucial. Current research is directed towards decreasing embolization with the use of distal protection devices that trap disrupted cholesterol particles during percutaneous procedures. Until these devices are efficacious and available, physicians and patients must recognize the risk of renal atheroembolism when considering PCI.

CALCIPHYLAXIS M. Bhide[1]. [1]University of Colorado Health Sciences Center, Aurora, CO. *(Tracking ID # 169814)*

LEARNING OBJECTIVES: To present a case of calciphylaxis and increase awareness of this life and limb threatening disorder. It is important to think of this in differential of non healing skin ulcers especially in pts with renal insufficiency.
CASE: 43 yr Caucasian male was admitted with accelerated hypertension and worsening chronic renal insufficiency. He had severe bilateral lower limb edema with

development of blisters and ulceration. He was found to have a BUN of 97 and creatinine of 13. He was started on hemodialysis. On day 3 in the hospital a serpentine violaceous rash was observed, which soon extended from lower legs onto lower abdomen and flanks. Cultures of the leg ulcers grew serratia marcescens. This was treated with intravenous antibiotics Piparicillin-Tazobactum and Clindamycin. The ulceration continued to worsen and turned black. He had poor distal pulses and no lesions anywhere else other than lower legs and abdomen. Laboratory data revealed hemoglobin of 8 g%, with a leukocytosis of 14.2 k/cc. Ca was 7.4, with an ICal of 3.9. Phosphorus was 10.7. PTH was very high at 1900. Calciphylaxis was suspected. Whole body bone scan was done which showed extra-osseous calcification in the lateral aspect of abdomen, thighs and legs. CTScan of lower legs demonstrated substantial arterial wall calcification which is diagnostic of calciphylaxis.
DISCUSSION: Calciphylaxis is a rare serious disorder characterized by severe systemic vascular and soft tissue calcification. Pathologically there is calcification in the tunica media, with small vessel calcification with endovascular fibrosis and thrombosis. This leads to tissue ischemia and cutaneous necrosis. The exact pathogenesis is not known. But calciphylaxis is known to occur in conditions with high calcium, elevated phosphorus, elevated Ca x P product and hyperparathyroidism. No clear value of Ca, P, PTH or alkaline phosphatase has been correlated with the development of calciphylaxis. Glycoprotein fetuin that binds Ca and P and helps in clearing them is thought to play a role. It is important to recognize calciphylaxis because it is a life and limb threatening condition with a high mortality in the range of 60–80%. It is very difficult to treat and requires a multidisciplinary approach. Results of revascularization are poor. Pain control, wound care, infection control and use of non-calcium Phosphate binders and Cinacalcet play a crucial role.

INTERESTING CASE OF DIARRHEA AND JAUNDICE IN RENAL TRANSPLANT RECIPIENT S.S. Subramanian[1]; R. Batwara[1]; S. Hussain[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173033)*

LEARNING OBJECTIVES: 1. Generate an appropriate differential diagnosis for causes of diarrhea and jaundice in post transplant patients. 2. Need for early tissue diagnosis for recognising rare causes which may determine overall disease prognosis.
CASE: A 74-year-old Caucasian man was evaluated for painless jaundice and loose, non-bloody stools for two months. He underwent deceased-donor renal transplantation eight years ago for diabetic nephropathy and was on cyclosporine and prednisone for immunosuppression. Initial laboratory exam revealed elevated liver function tests (LFTs): AST 147 U/liter, ALT 48 U/liter, total bilirubin 6.2 mg/dl and alkaline phosphatase 1941 IU/liter. He had mild proteinuria (urine protein 819 mg/24 hours) but serum creatinine was stable at a baseline of 1 mg/dl.His chart review revealed an isolated elevation in alkaline phosphatase (of hepatic origin) to 400 with otherwise normal liver function tests (LFTs) a year ago. An ultrasound and CAT scan done at that time showed fatty liver but were otherwise unremarkable. Enteroscopic retrograde cholangio-pancreatiography did not show any evidence of pancreatic cancer. Serology for viral hepatitis and cytomegalovirus infection was negative.The patient also had an extensive laboratory work up for causes of diarrhea which was essentially negative except for marked steatorrhea. The LFTs continued to worsen with serum bilirubin rising to 24.2 mg/dl. During this admission, he had a repeat CAT scan which showed a diffusely enlarged but otherwise unremarkable liver and normal pancreatico-biliary system. At this point, biopsies of his liver as well as stomach and intestine were performed. All the biopsy specimens stained positive with Congo-Red stain, consistent with a diagnosis of amyloidosis. Urine protein electrophoresis showed a faint kappa monoclonal peak. Bone marrow biopsy showed increased plasma cells (7%) with kappa light chain restriction, consistent with the patient's amyloid. Chemotherapy was started and three cycles of melphalan and dexamethasone have been completed so far with an excellent response so far, even though the long term prognosis remains poor.
DISCUSSION: In the workup of GI symptoms in post transplant patients,the most common causes are infections and malignancy.But in patients presenting with unexplained GI symptoms and abnormal liver tests, amyloidosis should be kept in the differential diagnosis.In retrospect, if the index of suspicion was higher, the diagnosis could have been made earlier by tissue diagnosis when the abnormal liver tests were first discovered.Primary amyloidosis (AL type) is a rare form of plasma cell dyscrasia characterized by tissue deposition of monoclonal immunoglobulin light chains. To the best of our knowledge, this is the first case of post transplant primary amyloidosis and it remains to be seen if it could be a consequence of immunosuppression. We recommend that despite its rarity, amyloidosis should remain in the differential in patients presenting with unexplainable hepatomegaly,diarrhea and abnormal liver tests and an appropriate work up including biopsies of the involved organ should be undertaken.

PROTEINURIA, PROGESTINS AND PROTHROMBOSIS J. Catalanotti[1]; J. Potter[2]. [1]Beth Israel Deaconess Medical Center, Boston, MA; [2]Harvard University, Boston, MA. *(Tracking ID # 171178)*

LEARNING OBJECTIVES: 1. Identify nephrosis as a hypercoagulable state. 2. Discuss data on progestin-only contraception and thromboembolism.
CASE: A 33 year-old woman presented for routine general physical. Past medical history was significant for recurrent urinary tract infections and eczematous dermatitis on her cheeks and ears. She used depot medroxyprogesterone acetate (DMPA) and had no known drug allergies. She had no family history of autoimmune, renal, or hematologic disease. Review of systems and physical exam were unrevealing. Random UA showed protein greater than 500 mg/dL but was otherwise negative. The next day she presented to the emergency room with left-sided pleuritic chest pain. CT angiogram of the chest revealed a large pulmonary embolus. She was anticoagulated with enoxaparin as a bridge to warfarin therapy. A 24-hour urine sample revealed 3 g protein and serum albumin was 1.8 g/dL. ANA was 1:40, dsDNA was negative and anti-Smith was positive. Renal biopsy showed membranous glomerulopathy consistent with lupus nephritis. Biopsy of her facial rash showed perivascular lymphohistiocytic infiltrate consistent with lupus. Factor V Leiden, anticardiolipin, antithrombin III, lupus anticoagulant, homocysteine, protein C and complement levels were normal. Protein S level was low. Her INR was poorly controlled until proteinuria improved on lisinopril, prednisone and eventually rituximab. DMPA was discontinued and she now uses an intrauterine device (IUD) for contraception.
DISCUSSION: Nephrotic syndrome, defined as proteinuria greater than 3 g per day, edema and hypoalbuminemia, may result from several glomerular disorders. Complications include hyperlipidemia, infection and arterial or venous thromboembolism. Thromboembolism occurs in 10–40% of nephrotic patients. The mechanism of hypercoagulability is unknown but likely involves urinary loss of proteins necessary for normal pro- and anti-coagulant balance. Protein C and S and antithrombin III are found in the urine of nephrotic patients, but levels do not consistently predict thromboembolism. Among causes of nephrosis, membranous nephropathy is most frequently associated with thromboembolism. Complications of nephrosis usually resolve with correction of proteinuria and glomerular injury. Treatment includes ACE inhibitors, angiotensin receptor blockers and immunosuppression. Although some authors recommend prophylactic anticoagulation for all patients with nephrosis due to membranous nephropathy or with serum albumin less than 2 g/dL, no randomized trials support this practice. Current or past history of thromboembolism are stated contraindications to DMPA use. However, some practitioners continue to offer this option to at-risk women who decline barrier methods or the IUD. This may not be wise. Thromboembolic events were not significantly increased among injectable progestin contraceptive users in the WHO Collaborative Study; however, no studies have addressed risk in hypercoagulable patients specifically. In vitro studies of high-dose progestins in rats demonstrate endothelial changes which may increase thromboembolic risk. Thromboembolic events were significantly more frequent among combination estrogen-progestin users compared with women using estrogen alone in the Women's Health Initiative. Finally, megestrol acetate treatment is associated with significantly more thromboembolic events than placebo. On the basis of these data, injectable progestins should be avoided in women at risk for thromboembolic disease.

UNEXPECTED RENAL FAILURE AFTER COLONOSCOPY J.J. Lin[1]; T. Kim[1]. [1]Mount Sinai School of Medicine, New York, NY. *(Tracking ID # 173030)*

LEARNING OBJECTIVES: 1) Evaluate worsening renal function in elderly patients 2) Recognize that certain colonoscopy preparations can precipitate renal failure, especially in elderly patients
CASE: A 78 year old woman with well-controlled hypertension, osteoarthritis and chronic low back pain due to spinal stenosis was evaluated for subacute worsening of her renal function. Several months prior to the event, she was discovered to be anemic and was referred to a gastroenterologist for endoscopy to evaluate for a GI cause of anemia. An EGD and colonoscopy were performed and were normal. Of note, she was administered a Fleets phospho-soda preparation for her colonoscopy. She had no further labs until four months later, when on a routine chemistry test, she was noted to have an increase in her creatinine to 1.6 from a baseline of 1.0. Her medications included hydrochlorothiazide, lisinopril and a baby aspirin, the doses of which had all been stable for over two years. She denied any new medications, specifically any recent NSAID use. A work-up for worsening renal insufficiency included renal/bladder ultrasound, serum and urine electrophoresis, serum and urine immunofixation, urinalysis, urinary protein excretion, and renal ultrasound to evaluate for renal artery stenosis. All of her tests returned normal. It was finally surmised that the cause of her subacute worsening renal function was due to the Fleets phospho-soda prep that she had used for her colonoscopy, given the negative work-up above plus the temporal relationship of her renal failure to the bowel preparation. Her renal function has since remained stable with a creatinine of 1.2–1.4.
DISCUSSION: Acute renal insufficiency is a relatively common but worrisome problem in primary care, especially when it occurs in elderly patients who have less renal reserve. There are multiple reasons for subacute worsening renal function but among the most common in the elderly include medications (especially NSAIDs, diuretics, ACE-inhibitors or angiotensin-receptor blockers). Fleets phopho-soda is one such medication. One bottle of Fleets phospho-soda contains 3 to 7 times the usual daily phosphorus dietary intake. Renal excretion of phosphorus is diminished with renal impairment. At baseline, elderly patients can have calculated GFR that reveal chronic kidney disease, despite normal range creatinine. Transient electrolyte abnormalities (hyperphosphotemia or hypocalcemia) have been noted with Fleets preparations in elderly patients. Moreover, pre-renal azotemia with diarrhea, especially with insufficient oral intake or decreased thirst drive can be observed in some elderly patients. This further decrement in renal function from baseline can exacerbate the problem regarding phosphorus renal excretion. Several case reports of acute renal failure, severe/symptomatic hyperphosphotemia and hypocalcemia, and death have been associated with phospho-soda preparations. Renal intra-tubular calcium-phosphorus deposition, resulting in acute renal failure, has been seen on kidney biopsy in this clinical scenario. Acute renal failure can also ultimately lead to chronic kidney disease, especially in the elderly. Fleets phospho-soda bowel preparations are generally well-tolerated. However, special precautions should be taken in the elderly population who can be more predisposed to acute renal failure and severe life-threatening electrolyte disturbances with its use.

WHAT IS HIDING BEHIND THE JIGGLING EYES? A. Tindni[1]; K. Gaurav[1]; M. Panda[1]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN. *(Tracking ID # 171693)*

LEARNING OBJECTIVES: 1) Review the various causes of nystagmus. 2) Describe an unusual presentation of multiple sclerosis.
CASE: A 22 year-old white female presented with sudden onset of nystagmus, double vision, mild retro orbital pain, dizziness and inability to maintain balance on awakening. Her symptoms were constant without any aggravating or relieving factors. She denied fever, chills, neck stiffness, head trauma or any localized weakness or sensory loss. Her past history was significant for myopia with astigmatism. She denied tobacco, alcohol or any illicit drug abuse and had recently moved from Hawaii. Review of systems was negative. Physical exam revealed an awake, alert, oriented obese young lady in no acute distress and stable vital signs. Eye exam revealed no ptosis bilaterally, pupils equal, round and reactive to light and accommodation, intact extraocular movements with a normal fundoscopic exam. She had horizontal nystagmus with a fast phase to the right and a slow phase to the left, which was more prominent on extreme right gaze bilaterally. Neurological exam revealed CN 2–12 intact bilaterally without focal sensory or motor loss. She had normal gait without cerebellar signs. The rest of the physical exam was unremarkable. Routine laboratory data including complete blood count and basic metabolic panel were unremarkable. HIV and RPR screen were negative. CT brain demonstrated a round nonenhancing lesion of decreased attenuation in the right frontal lobe. MRI revealed multiple intracranial lesions in the posterior fossa and cerebral hemispheres, associated with minimal edema and enhancement of some of the lesions. Lumbar puncture revealed clear CSF, 0 RBC's, 47 WBC's/mm ^{3}, protein 45 mg/dl, glucose 75 mg/dl, marked lymphocytic pleocytosis, negative cryptococcal antigen. The Myelin basic protein of 6 ng/ml, albumin 32, gamma globulin 27.4% with oligoclonal bands. A diagnosis of multiple sclerosis was established. Patient was treated with high dose solumedrol with complete improvement.
DISCUSSION: Multiple Sclerosis (MS) is the most common autoimmune inflammatory demyelinating disease of the central nervous system. Although the definite pathogenesis is unknown it is widely accepted as an inflammatory autoimmune disorder mediated by autoreactive T-cells directed against components of myelin. In the US, the prevalence is 100 per 100,000 (0.1 percent), for a total of 250,000 persons with MS. Approximately 2–4 percent of patients with MS develop acquired pendular nystagmus but most patients with these forms of nystagmus have MS. This nystagmus is characterized by rapid, small-amplitude pendular oscillations of the eyes in the primary position resembling quivering jelly. Patients frequently complain of oscillopsia which causes marked impairment of visual acuity due to constant eye motion and concurrent optic neuropathy. It is rarely a presenting sign of MS and generally develops later in the disease. It usually persists indefinitely and resolves in only about 5 percent of cases. Other causes of nystagmus include stroke, encephalitis, vascular malformations in the brainstem and some rare causes including chronic toluene encephalopathy, Pelizaeus-Merzbacher leukodystrophy, unusual familial syndromes and orbital myositis. We would like to emphasize the unusual presentation of this common CNS disease in our patient which resolved completely with treatment.

A 35-YEAR OLD MAN WITH ABRUPT ONSET OF LOWER PARAPARESIS AND SENSORY LEVEL LOSS S. Tchernodrinski[1]. [1]John H. Stroger Hospital of Cook County, Chicago, IL. *(Tracking ID # 173278)*

LEARNING OBJECTIVES: 1. Review the approach to acute myelopathy and the diagnosis of transverse myelitis. 2. Recognize that in acute transverse myelitis initial tests and MRI may be normal but should demonstrate spinal cord inflammation when repeated in 2 to 7 days.
CASE: A 35-year old previously healthy man felt left arm pain and numbness soon after awakening from sleep. Since it didn't go away he decided do go to the ED and while on the way within less than 1 hour he developed bilateral lower extremity weakness and sensory loss from his upper chest down. Physical exam revealed lower paraparesis with hyperreflexia and a truncal sensory level at T4. An urgent MRI of the cervicothoracic cord was normal. Over the next few hours his lower extremities became completely paralyzed, with transient hyporeflexia, his upper extremities demonstrated moderate bilateral distal muscle group weakness, his truncal sensory level ascended to C6 and he developed urinary retention. CSF analysis was normal, there were no oligoclonal bands and the IgG index was normal. Additional studies were negative for HIV, connective tissue diseases, Lyme borreliosis and syphilis. Despite the negative studies he was diagnosed clinically with acute transverse myelitis and treated with high-dose steroids. Six days later repeat LP again demonstrated normal CSF, but MRI at this time showed diffuse high T2 signal with enhancement of the spinal cord from C4 to T6 consistent with transverse myelitis.
DISCUSSION: In patients with acute neurologic dysfunction attributable to a specific spinal cord level, the first priority must be to urgently rule out compressive myelopathy, preferably with gadolinium-enhanced MRI. If there is no cord compression, evidence for inflammatory myelopathy (CSF pleocytosis, elevated CSF IgG index, cord enhancement on the MRI) must be sought. If this is negative, consider cord ischemia or early inflammatory myelopathy with false negative results. In the latter situation repeated CSF and MRI studies 2–7 days later will demonstrate inflammation. Differentiation from Guillain-Barre syndrome (GBS) is possible based on a true ascending pattern, involvement of the cranial nerves, usual lack of truncal sensory level, hyporeflexia, dysesthetic pain, normal spinal cord MRI and presence of albuminocytologic dissociation of the CSF, all favoring GBS. Approximately one third of patients with transverse myelitis have no identifiable cause. In patients diagnosed with idiopathic transverse myelitis the following should be excluded: history of radiation to the spine within the last 10 years, clinical deficit consistent with anterior spinal artery thrombosis, evidence of connective tissue disease, evidence of Lyme disease, mycoplasma, syphilis, HIV, or other viral disease in the CNS, brain MRI suggestive of multiple sclerosis, history of optic neuritis. Treatment of the idiopathic form consists of intravenous steroids and plasma exchange although randomized trials are lacking.

A CALL TO ARMS AND LEGS: AN UNNERVING DIAGNOSIS IN A 49-YEAR-OLD MAN WITH ASCENDING NEUROPATHY A.J. Kim[1]; P.P. Balingit[1]. [1]UCLA San Fernando Valley Program, Sylmar, CA. *(Tracking ID # 173070)*

LEARNING OBJECTIVES: 1) Recognize the presentation of transverse myelitis (TM). 2) Review the conditions associated with TM and management of the disease.
CASE: A 49-year-old man with no past medical history presented to clinic with a one-year history of progressive lower extremity weakness. He initially noted persistent left foot weakness and numbness. Over the course of six months, his symptoms advanced to his right leg. Soon thereafter, further debilitation of both lower extremities left the patient wheelchair bound. Within one year, the weakness ascended to his arms and chest, accompanied with pain, muscle spasms, and episodes of bowel and bladder incontinence. He denied associated fever, weight loss, anorexia, or rash. Additional history revealed no use of illicit drugs or family history of neurologic disease. On examination, lower extremity atrophy with increased tone and spasticity were noted, and both plantar reflexes were extensor. Symmetric, diminished sensation to light touch was appreciated in the lower extremities. Serum electrolytes, fasting glucose, hemogram, TSH, and liver tests were normal. HIV and viral hepatitis serologies were non-reactive. ESR, RF, CRP, vitamin B12, folate, ANA, and RPR results were normal. SPEP and UPEP were negative for clonal bands. MRI of the brain and whole body PET scan were within normal limits. MRI of the thoracic spine demonstrated abnormal signal in T1 through T3-4, T4-5 to T10, suggestive of diffuse TM. A trial of baclofen and gabapentin produced adequate pain relief.
DISCUSSION: TM is a neurologic syndrome caused by inflammation across a level of the spinal cord. Estimates of incidence per year vary from 1 to 5 per million population. TM symptoms develop rapidly over several hours to several weeks. Inflammation within the spinal cord causes common presenting symptoms of TM, which include limb weakness, sensory disturbance, bowel and bladder dysfunction, and radicular pain. Almost all patients will develop leg weakness of varying degrees of severity. The arms are involved in a minority of cases and this is dependent upon the level of spinal cord involvement. Sensation is diminished below the level of spinal cord involvement in the majority of patients. Significant recovery is unlikely if no improvement occurs by 3 to 6 months. TM may occur in isolation or in the setting of another condition. Idiopathic TM is assumed to be a result of abnormal activation of the immune system against the spinal cord. Conditions associated with TM include exposure to certain vaccines, autoimmune diseases including systemic lupus erythematosus, rheumatoid arthritis, multiple sclerosis, trauma, space-occupying lesions of the spinal cord, vitamin B12 deficiency, vascular insufficiency, and viral or bacterial infections such as HIV, influenza, syphilis and tuberculosis. No effective cure presently exists for TM. Current mainstays of treatment include medications for pain relief and physical therapy. Corticosteroids are often prescribed to decrease inflammation, although no clinical trials have investigated whether corticosteroids alter the course of TM. This case serves as a cautionary tale for the clinician to recognize the presentation of TM and to consider this diagnosis in any patient who presents with ascending neuropathy.

A CASE OF NON-INFECTIOUS FULMINANT ENCEPHALOPATHY B. Mocanu[1]; A. Shamas[1]; M. Panda[1]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN. *(Tracking ID # 172175)*

LEARNING OBJECTIVES: To illustrate the diagnostic challenge in differentiating brain neoplasms from infectious processes when the clinical presentation and the imaging studies are nonspecific.
CASE: A 38 year-old white male, without significant past history presented with altered mental status. The day before admission he complained of severe headache, left arm numbness, vomited, became confused and collapsed. His wife reported that he complained of recurrent headaches and worsening vision for the past year with increasing intensity over the last few months. She denied any high risk factors such as travel, sick contacts, IV drug use, STD's, animal, insect or chemical exposure. On exam he was well developed, well nourished, febrile and hypotensive. His condition precipitously deteriorated requiring intubation and pressors. He became unresponsive, with dilated pupils, absent corneal reflex, bilateral papilledema and areflexia. CT of the head demonstrated diffuse cerebral edema within the white matter more on the right than the left with loss of the mesocephalic cisterns suspicious for bilateral uncal herniation. As he also had leucocytosis the most likely diagnosis was an infectious etiology causing meningoencephalitis. He was started on broad spectrum antiviral and antibacterial medications (Acyclovir, Ceftriaxone and Vancomycin) together with supportive measures, steroids, mannitol and hyperventilation. MRI/MRA brain showed extensive, diffuse abnormal T2 signal within the right temporal lobe, insula, basal ganglia, frontal and parietal white matter, as well as the left temporal lobe, insula and corpus callosum. There was associated transtentorial uncal herniation with compression of the brain stem with tonsilar herniation, narrowing of the internal carotid and anterior middle cerebral arteries and occlusion of the basilar artery. The patient's condition did not improve and was officially declared brain dead at about 48 hours post arrival at the hospital. A limited brain autopsy established the final diagnosis of gliomatosis cerebri, marked cerebral edema and bilateral uncal herniation.
DISCUSSION: Gliomatosis cerebri is a rare form of malignant astrocytic tumor. It is highly aggressive, characterized by diffuse infiltration of the brain with neoplastic glial cells involving multiple brain areas. The majority of patients are male (as in all gliomas) and comparatively young (median age 44 years). Symptoms are often nonspecific at presentation and evolve insidiously (median duration 3 to 5 months). Patients usually have minor neurologic complaints with headache being most prevalent. They can also present with sensory or motor deficits, visual disturbances, cranial nerve signs, neurobehavioral changes, altered mental status or psychosis. These tumors most frequently arise in the white matter of the frontal lobes, commonly invade adjacent tissues and spread throughout the central nervous system. Although MR imaging is considered superior to CT in characterizing this disease, differentiating diffusely infiltrating astrocytomas from an infectious process like encephalitis is often difficult. MR characteristics of gliomatosis are nonspecific and thus pose a diagnostic challenge. Gliomatosis cerebri is a tumor that is known to be pathologically indolent despite its otherwise aggressive, widespread presentation on conventional MR images. The prognosis for gliomatosis cerebri remains poor. This case demonstrates that gliomatosis cerebri can masquerade as infectious encephalopathy.

A CONFUSING CASE OF CONFUSION. S. Brode[1]; C. Chong[1]; O. Mourad[1]. [1]University of Toronto, Toronto, Ontario. *(Tracking ID # 171494)*

LEARNING OBJECTIVES: 1. Generate an appropriate differential diagnosis for acute confusion in a previously healthy young patient. 2. Recognize the clinical, radiological, and serological features of paraneoplastic limbic encephalitis.
CASE: A 35-year-old woman was not heard from for one week. She was found in her apartment disheveled and disoriented with markedly impaired short-term memory. EMS brought the patient to the hospital, where she was noted to have brief periods of hand clasping and lip smacking. Routine bloodwork was normal, a toxicology screen was negative, and a brain CT was normal. Acyclovir was started empirically for the possibility of herpes encephalitis. An EEG confirmed the presence of complex partial seizure activity and anticonvulsant therapy was initiated. Brain MRI revealed symmetric, increased signal involving the uncus of both temporal lobes on T2-weighted and FLAIR images. Work-up for vasculitis and viral encephalitis proved negative. However, serum anti-Hu antibodies were positive, consistent with a diagnosis of paraneoplastic limbic encephalitis. Full body CT, mammography and PET imaging failed to identify a primary malignancy. The patient's cognitive status improved with control of her seizures, though she still demonstrated difficulties with short-term memory.
DISCUSSION: Acute confusion in a young patient has a wide differential diagnosis, including but not limited to viral encephalitis, CNS vasculitis, intoxication, withdrawal states and hypertensive emergencies. In this case, the patient's young age and temporal lobe activity manifested by amnesia and complex partial seizures led the team to first consider herpes encephalitis. When the MRI demonstrated highly symmetric limbic encephalitis and viral investigations were negative, the possibility of a neurological paraneoplastic syndrome moved to the forefront. Felt to be mediated by an autoimmune attack on antigens specific to the nervous system, these disorders can heterogeneously affect any part of the pathway from the brain to the neuromuscular junction. Limbic encephalitis is a rare form of a paraneoplastic disorder. It is typified by cognitive impairment, seizures and personality changes. Often, these patients will have anti-Hu antibodies against neuronal nuclear proteins. Even a severe paraneoplastic neurological syndrome may precede the confirmed diagnosis of a malignancy by months to years, despite sophisticated screening techniques.

A TOUGH HEADACHE TO HANDL: TRANSIENT HEADACHE AND NEUROLOGICAL DEFICITS WITH CSF LYMPHOCYTOSIS (HANDL). K. Fargen[1]; M.D. Landry[1]. [1]Tulane University, New Orleans, LA. *(Tracking ID # 172410)*

LEARNING OBJECTIVES: 1. Develop differential diagnoses for headache with associated neurologic deficits 2. Diagnose patients with HANDL 3. Understand prognosis and treatment of patients with HANDL.
CASE: A 22 year old previously healthy man presented to the Emergency Department with severe headache and transient left-sided hemiparesis. The headache was bifrontal, rated 9/10 and constant. There was associated photophobia, phonophobia, nausea and vomiting. The weakness lasted for 15 minutes and was associated with paresthesias. At the time of evaluation, the patient's neurologic symptoms had resolved and his physical exam was unremarkable. The patient was discharged home with a diagnosis of complicated migraine and treated with analgesics. The patient presented again three days later with severe headache, transient right-sided weakness and expressive aphasia. The headache and weakness were similar to previous presentation. The aphasia resolved along with the hemiparesis 30 minutes after onset. Physical exam including vital signs was again unremarkable at time of interview. The patient was admitted for further workup. Diagnostic testing including toxicology was normal. The patient's headache improved with analgesics and he was discharged. The patient presented for the third time four days later with severe headache without associated neurologic deficits. Physical exam was normal. The patient was treated with analgesics and discharged from the ER. Later the following day, the patient's father brought the patient to the emergency room after being unable to arouse his son from sleep. The patient was lethargic upon presentation but his mental status improved over a few hours. Vital signs and physical exam was otherwise unremarkable. A detailed neurologic examination was unremarkable. Head CT, CBC and electrolytes were normal. A lumbar puncture yielded lymphocytic pleocytosis and increased protein. Gram stain and cultures were negative. MRI, MRV and EEG were unremarkable. Viral encephalitis titers were negative. The patient was diagnosed with 'transient headache and neurological deficits with CSF lymphocytosis (HANDL),' also known as pseudomigraine with neurologic symptoms and lymphocytic pleocytosis. The patient had a continuous low grade headache throughout his hospital stay with one more episode of transient weakness upon awakening several days into his hospital course. The patient was discharged home to follow up with a neurologist and primary care physician. The patient experienced three additional episodes of brief paresthesias without headache during the following six weeks and symptoms have since resolved completely.
DISCUSSION: Complicated migraine headaches, bacterial and viral meningoencephalitis, intracranial hemorrhage, arteriovenous malformation, brain abscess, intracranial tumor and HANDL should all be included in the differential diagnosis of headache with neurologic deficits. HANDL is a disease of unknown etiology that causes severe headache and waxing and waning neurologic deficits. Sensory symptoms are most common, followed by aphasia and motor deficits. Young males aged 14–39 are most often affected. HANDL is a diagnosis of exclusion suggested by headache with fluctuating neurologic deficits, CSF lymphocytic pleocytosis, increased CSF protein, and normal head CT, MRI, CSF viral titers and bacterial cultures. Focal slowing is often present on electroencephalogram. The disease is self-limiting and resolves in less than 3 months without treatment or permanent sequelae.

AN INCREASINGLY RECOGNIZED CAUSE OF STROKE IN THE YOUNG. H. Hegazy[1]; M. Akhtari[1]; H. Friedman[1]; D. O'Brien[1]. [1]St. Francis Hospital, Evanston, IL. *(Tracking ID # 171793)*

LEARNING OBJECTIVES: 1. Recognizing the cervicocranial dissection as a cause of stroke in the young. 2. Recognizing the significance of the neck pain, which often precedes neurological symptoms as well as signs in cervicocranial dissection. 3. Recognizing the significance of early diagnosis of the posterior infarct in facilitating the therapeutic efficacy of the treatment interventions.
CASE: A 47 year old female with no past medical history came to the ED with a mild occipital headache which had been radiating down her trapezius muscles for several days. The headache was followed by vertigo and vomiting for two days. Physical examination was normal except the presence of horizontal nystagmus with left lateral gaze. Due to the patient's claustrophobia MRI/A was refused by her, CT head was done instead and the result was normal. The patient improved during the course of the ER admission and she was sent home.However, the next day the patient came back to the hospital with persistent vertigo, vomiting and intermittent headache, and again the physical examination was completely normal. The patient was admitted to the medical floor for observation. While taking the H&P the patient started getting confused, her speech became slurred and unclear. She also began to speak in her native language. The patient developed double vision with ptosis and inability to move her left eye medially, and cerebellar signs bilaterally. MRI/A showed basilar artery dissection plus thrombosis and acute infarcts involving the superior aspect of the cerebellar hemispheres. Half an hour later the patient developed left sided clonus and weakness and she was transferred to another hospital for intra-arterial thrombolytic therapy and stenting.
DISCUSSION: Cervicocranial dissections are an increasingly recognized cause of stroke in the young, when the dissections narrow the vascular lumen, they often alter the blood flow enough to cause transient ischemic attacks in the brain. Alternations in the endothelium activate coagulation cascade leading to the formation of intramural clot that may embolize distally to cause brain infarction. Pain and neuron-ophthalmic symptoms and signs are common manifestations. Pain in the posterior neck or mastoid region often proceeds neurological symptoms by hours days and rarely weeks and maybe the only manifestation. However other possible manifestations include vertebrobasilar TIA (dizziness diplopia, veering, staggering, and dysarthria). Infarcts are explained by embolization of fresh thrombus to the basilar artery and deterioration of the conscious state and progression of symptoms may occur sometime after initial presentation and after admission to the hospital. If such progression is detected immediately therapeutic reperfusion may be feasible. Reperfusion strategies include invtravenous or intra-arterial thrombolysis and mechanical methods to aid reperfusion including the methods of mechanical clot disruption, clot retrieval, or stenting devices. The optimal reperfusion strategy is controversial and not known. However it seems likely that the most important determinants of therapeutic efficacy are the speed and safety with which reperfusion can be achieved. It may also be that the time available to achieve reperfusion is longer than in the anterior circulation. In conclusion the cervicocranial dissections are an increasingly recognized cause of stroke in the young and early diagnosis facilitates early therapeutic interventions.

AN UNCOMMON DIFFERENTIAL DIAGNOSIS FOR OPHTHALMOPLEGIA: TOLOSA-HUNT SYNDROME. H.M. Dajani[1]; S. Hong[2]; K. Pfeifer[1]. [1]Medical College of Wisconsin, Milwaukee, WI; [2]Medical College of Wisconsin, Eye Institute, Milwaukee, WI. *(Tracking ID # 169780)*

LEARNING OBJECTIVES: 1) Recognize Tolosa-Hunt Syndrome based on clinical presentation and physical examination and radiographic findings. 2) Utilize a stepwise approach to the diagnosis of Tolosa-Hunt Syndrome. 3) Describe appropriate treatment of Tolosa-Hunt Syndrome.
CASE: A 65-year old gentleman presented with a 3-week history of diplopia and painful right proptosis. He had no recent head trauma, change in medications or other symptoms. On examination, his visual acuity was 20/30 OD and 20/40 OS. His pupil exam was consistent with a right Horner's Syndrome, but no afferent pupillary defect was present. His right eye demonstrated ptosis, 2 mm proptosis, decreased eye movements in all directions, and hypertropia and exotropia in primary gaze. These findings were consistent with partial palsies of cranial nerves III, IV, and VI, and localized the process to the right superior orbital fissure (SOF) and cavernous sinus area. MRI and MR angiography showed a slightly larger right cavernous sinus with a small asymmetrically enhancing lesion at the right SOF/anterior tip of the cavernous sinus (Figures 1 and 2). Lyme titers, Rapid Plasma Reagin (RPR), fluorescent treponemal antibody (FTA-ABS), purified protein derivative (PPD), angiotensin converting enzyme (ACE), anti-neutrophilic cytoplasmic antibody, and chest X-ray were normal. Empiric treatment with prednisone was initiated for presumed Tolosa Hunt Syndrome (THS). Diplopia and orbital pain completely resolved within 48 hours. Follow-up MRI demonstrated resolution of the abnormally enhancing lesion (Figure 3).
DISCUSSION: THS is characterized by painful, usually unilateral, ophthalmoplegia due to idiopathic granulomatous inflammation within the anatomic continuum spanning the orbital apex, SOF, and cavernous sinus. Ipsilateral oculomotor, trigeminal, and sympathetic neuropathies can occur in various combinations depending on the location of the lesion. THS is acute in onset, self-limited, and highly responsive to systemic steroids. It is useful to consider THS as an anatomic subdivision of the larger spectrum of idiopathic orbital inflammation. Histopathological characteristics are consistent with nonspecific orbital inflammation. However, the location of the pathology precludes obtaining histopathology confirmation without subjecting the patient to significant risk of morbidity. THS is a diagnosis of exclusion, requiring careful evaluation to rule out neoplasms, aneurysms, carotid or dural cavernous fistulas, cavernous sinus thrombosis, sarcoidosis, syphilis, tuberculosis, fungal

infection, and herpes zoster. Diagnostic evaluation of a patient with suspected THS should include ESR, CBC, PPD, ACE, RPR, FTA-ABS and chest radiography. The most useful imaging modality is MRI which can demonstrate changes consistent with THS, such as enhancing soft tissue masses, cavernous sinus enlargement, and enhancing lesions on T1 weighted images. The MRI can often distinguish other processes such as vascular lesions, cavernous sinus thrombosis, and neoplasms. The location of THS often precludes a safe biopsy; therefore, the pragmatic, therapeutic, and retrospectively diagnostic modality for THS is the empiric initiation of systemic steroids. The exquisite and prompt response to steroids (usually within days) supports the diagnosis of THS. A post-treatment MRI demonstrating resolution of the abnormal lesion can further support the diagnosis of THS. An atypical response or recurrence should prompt further investigation into an alternate cause.

DURAL VEIN THROMBOSIS: A RARE CAUSE OF POSTPARTUM HEADACHE. D. Ghassi[1]; A.A. Donato[1]. [1]Reading Hospital and Medical Center, West Reading, PA. *(Tracking ID # 172659)*

LEARNING OBJECTIVES: 1) Recognize the clinical presentation of dural vein thrombosis. 2) Differentiate dural vein thrombosis among causes of headache with focal neurologic findings.
CASE: A nineteen year-old female without significant past medical history presented three weeks postpartum with 17 days of headache which had become intractable and unilateral for the past week and associated with new onset diplopia. Past medical history was negative for any headaches, fevers, trauma or upper respiratory symptoms. Personal and family history were negative for thrombosis. She had an uncomplicated pregnancy and an unremarkable vaginal delivery. Her postpartum period was marked by a hospital admission for new onset headaches, new seizures and elevated blood pressure with a non-focal neurologic exam five days after delivery. Workup at the time revealed a urinalysis without proteinuria but Magnetic Resonance Imaging (MRI) of her brain had revealed bilateral increased cortical signal intensities suggesting eclampsia. She was discharged on antihypertensives and antiepileptics with a diagnosis of atypical eclampsia, only to return with worsening headaches not responding to hydrocodone and a new onset of diplopia one week later. Her physical examination revealed double vision worsened on left lateral gaze but was otherwise nonfocal. Cerebrospinal fluid examination revealed 7 red blood cells, 0 white blood cells, protein of 35 mg/dl and glucose of 53 mg/dl, with normal serum blood counts. A repeat MRI of the brain demonstrated left sigmoid vein thrombosis extending to the transverse vein and internal jugular vein and active infection of paranasal sinuses. The patient was started on broad-spectrum antibiotics along with heparin for anticoagulation. Hypercoagulable workup was subsequently negative, and her diplopia and headache resolved within 2 weeks.
DISCUSSION: Dural vein sinus thrombosis is an uncommon but challenging cause of headache that can cause blindness and permanent neurologic deficit in 6–20% and has mortality rate in excess of 10%. Although the disorder can occur at any age, postpartum females seem to be at higher risk, with an incidence of 8.9 per 100,000 births. Hypercoagulable states and direct extension of local infections such as sinusitis or mastoiditis are implicated as causes in the literature. Incidence of this disorder has dropped precipitously since the pre-antibiotic era. Physicians should consider dural sinus thrombosis in a patient with severe headaches resistant to usual analgesics, especially if proptosis, papilledema or focal neurologic signs are found or if associated with new seizures. Early recognition and treatment with anticoagulants is thought to be important to prevent morbidity and mortality.

HEADACHE - BENIGN VS OMINOUS: WHERE DO WE DRAW THE LINE ? V.M. Alla[1]; T. Huyck[1]; R. Warrier[1]; B.L. Houghton[1]; M. Omojola[1]. [1]Creighton University, Omaha, NE. *(Tracking ID # 173115)*

LEARNING OBJECTIVES: 1. To emphasize that cerebral venous sinus thrombosis continues to be a diagnostic challenge despite the increased awareness. 2. To highlight the need to consider MR and CT venography early on in an otherwise undiagnosed case of acute severe headache. 3. There are often multiple coexistent risk factors for hypercoagulability and finding one should not preclude investigation for other additive risk factors.
CASE: We report the case of a 21 year old Caucasian female who presented to the ER with severe headache of 14 days duration. It was acute in onset, bilateral, continuous and predominantly involving the occipital area. She denied any focal neurologic deficit, seizures or change in consciousness. She visited the ER of another university hospital on 3 occasions where she was evaluated and treated with no resolution of symptoms. CT scan of the brain and CSF analysis were unremarkable. She was managed as migraine. There was no previous history of clotting disorders. She was a non-smoker, had been sexually active since the age of 12 and has been using OCPs for about a year. Physical exam was unremarkable and a repeat CT scan of the brain was normal in our hospital. She was initially managed as status migranicus and treated with dihydroergotamine and metoclopromide with which there was marginal improvement. On day 3 of hospitalization an MRI and MRV of the brain showed partial thrombosis of the lateral venous sinuses bilaterally with extension into the right tentorial veins and right parietal cortical veins. OCPs were discontinued and she was started on subcutaneous enoxaparin and tapering doses of intravenous dexamethasone with which she had a dramatic improvement. Subsequently she was discharged on a enoxaparin with warfarin overlap. Work up for thrombophilia revealed that she was heterozygous for factor V Leiden and others tests were negative. She was well and headache free at 6 week follow up and had a therapeutic INR on warfarin.
DISCUSSION: Thrombosis of the cortical veins and dural venous sinuses is a disorder which unlike its arterial counterpart preferentially affects young women. Headache is the most common symptom occurring in close to 90% of the patients. It is variably accompanied by focal deficits, seizures and clouding of consciousness. Headache is the sole symptom in up to 20% of cases. In a vast majority of patients the headache is insidious in onset, bilateral, continuous, and has variable severity. A small but significant number may have acute onset headache mimicking a sub-arachnoid hemorrhage or migraine. Isolated transverse sinus involvement is the most frequent abnormailty in those with headache as the sole symptom. Risk factors include factor V Leiden, prothrombin gene mutations, other inherited thrombophilias, use of birth control pills, and pregnancy. Upto 30% of patients may not have any known predisposing factors while many have more than one. MR and CT venography are highly sensitive and specific for diagnosis. A high index of suspicion is needed as the onset, symptoms and modes of presentation are remarkably diverse. Heparin (low molecular weight or unfractionated) is safe and effective even in the presence of hemorrhages. Early treatment leads to significant reduction in the morbidity and mortality associated with this disorder.

ISOLATED NEUROSARCOIDOSIS PRESENTING AS A STROKE. J. Whitley[1]; M. Panda[1]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN. *(Tracking ID # 173585)*

LEARNING OBJECTIVES: Recognize and discuss the rare entity of isolated neurosarcoidosis.
CASE: A 31 year-old black female presented with nausea, vomiting and difficulty speaking for four days. She also reported left sided facial weakness, left upper and lower extremity weakness and dysphagia. She had type 1 diabetes for 16 years, left pons CVA of undetermined etiology diagnosed 2 years prior, 100 pound weight loss prior to her first CVA, progressive bilateral lower extremity weakness over 2 years, and a previous LP with elevated protein and lymphocytosis. The patient had a previous diagnosis of possible chronic inflammatory demylinating polyneuropathy that improved slightly with steroids. Exam revealed a thin frail chronically ill appearing female. Neurological exam revealed dysarthria and left facial droop, left upper extremity strength 2/5; right arm 4/5, and bilateral lower extremities 2/5. Reflexes were 1+ proximally, and absent distally. MRI revealed acute ischemic infarction involving right half of pons and abnormal signal in the left pons representing old infarctions. CBC, PT, PTT, CMP, FLP, HIV, Lyme, RPR, PPD, folate, B12, neuromyelitis optica antibody and hypercoagulable evaluation were unremarkable. Hemoglobin A1C was 8.3. Echocardiogram with bubble study was negative. LP revealed WBC 25MM3, lymphs 100%, glucose 114 mg/dl, protein 326 mg/dl, CSF ACE 10.5 (0.0 to 2.5 U/L), cytology no malignant cells, myelin basic protein elevated at 35 (0.0 to 1.0 ng/mL). Serum ACE 28 (12 to 68 U/L) and chest CT was unremarkable. Previous sural nerve biopsy revealed moderate loss of large axons with no vasculitis, chronic inflammation, or amyloid. EMG revealed severe axonal motor sensory polyneuropathy with secondary demyelination and no myopathy. Diagnosis of isolated neurosarcoidosis based on clinical and laboratory data was made. Patient was started on prednisone and azathioprine. At discharge her left upper extremity weakness improved.
DISCUSSION: This is a case of a young female presenting with evidence of debilitating chronic progressive neurological findings, two strokes, and a LP consistent with chronic meningitis. Given the chronic nature and normal cytological findings an inflammatory rather than infectious process was considered. With the addition of the normal serum ACE and elevated CSF ACE level to the above findings, the diagnosis of isolated neurosarcoidosis was made. Neurologic manifestations complicate up to 5% of systemic sarcoidosis cases; however, isolated neurosarcoidosis is an exceedingly rare disorder that presents a diagnostic challenge. Meningeal biopsy can be useful in establishing a diagnosis but without enhancing meningeal lesions on MRI, the diagnostic yield of meningeal biopsy is $<9\%$. There have been a few case reports of stroke associated with neurosarcoidosis. The most common mechanism is related to granulomatous vasculitis, but may also be related to intracranial hemorrhage. First line therapy is systemic corticosteroids, but other immunosuppressive agents have also shown to be beneficial. In patients with a mass lesion refractory to medical therapy surgical excision and radiation therapy have been attempted. Our patient has shown minimal improvement and will be followed closely. This case highlights the importance of complete workup and having a high clinical index for rare entities like isolated neurosarcoidosis in patients with progressive neurological symptoms.

PROGRESSIVE MULTIFOCAL LEUKOENCEPHALOPATHY IN A PATIENT WITH SYSTEMIC LUPUS ERYTHEMATOSUS. J. Yuan[1]; R.B. Cavalcanti[1]. [1]University of Toronto, Toronto, Ontario. *(Tracking ID # 172911)*

LEARNING OBJECTIVES: 1) Recognize that progressive multifocal leukoencephalopathy (PML) is a demyelinating central nervous system disease that can affect immunosuppressed patients due to HIV, malignancies, granulomatous disease, SLE, and post-organ transplant. 2) Diagnose PML based on classic radiographic and laboratory investigations, and manage patients with PML through evidenced-based treatments.
CASE: A 63-year-old woman presented with a 1-month history of slurred speech, dizziness, and decreased fine motor skills on the right side. Her past medical history was significant for a 20-year history of SLE treated with hydroxychloroquine. There were no risk factors for HIV. Physical exam revealed normal fundoscopy, no diplopia, full visual fields and acuity, conjugate horizontal nystagmus on fixed gaze, wide-based ataxic gait, and right-sided dysdiadochokinesia. No physical exam features of active SLE were present. Total lymphocyte count was 0.4 bil/L (absolute CD4 and CD8 counts <10/ul). ANA was 1:640, anti-ds DNA was $>$ 500 IU/ml, anti-phospholipid antibody was negative, C3 = 1.14, and C4 = 0.22. CT brain revealed a hypodensity in the right cerebellar hemisphere. MRI brain delineated a right middle cerebellar peduncle mass with increased T2 and flair signal sparing the gray matter. Lumbar

puncture results were negative for C+S, cytology, WBC, Gram stain, Cryptococcoal antigen, CMV, and AFB. Given the suspicion of PML based on neuro-imaging, PCR for JC virus was performed on CSF (positive at 1398 copies/ml). Serology for HIV and HTLV 1 and 2 was negative. Based on these results, a diagnosis of progressive multifocal leukoencephalopathy was made, the likely source of immunosuppression being lymphopenia secondary to SLE. On follow-up 2 weeks later, her symptoms and neurologic status had significantly improved through physiotherapy.
DISCUSSION: PML is a chronic, progressive, and usually fatal disease caused by JC virus (JCV) infection, affecting mainly the cerebrum, but also the cerebellum and brainstem. JCV is a double-stranded DNA virus belonging to the family Polyomaviridae, and asymptomatic JCV infection occurs in more than 80% of adults (JCV antibodies present). JCV is likely a latent infection in the kidney that reactivates with immunosuppression to infect oligodendrocytes, and the resulting demyelination causes neurological impairments, which can include hemiparesis, cognitive disturbance, visual field deficits, ataxia, aphasia, cranial nerve deficits and sensory deficits. PML is an AIDS-defining illness, and it is the third most common cause of HIV-related neurological disorders after toxoplasma encephalitis and HIV encephalopathy. In fact, 2–5% of AIDS patients develop PML, leading to an average survival of 3 months. PML is usually a consequence of reduced cell-mediated immunity or immune reconstitution following successful HAART. In HIV-negative patients, PML can develop as a consequence of malignancies (lymphoma, leukemia), granulomatous disorders (TB, sarcoidosis), SLE, and post-organ transplantation. Mortality is initially high: 30–50% during first three months; however, some can stabilize and survive for years with some disability since oligodendrocytes destroyed by JCV are not replaced. Currently, there is no specific treatment for JCV; however, numerous compounds have been studied, including a topoisomerase inhibitor; a nucleotide analog which is active against polyomavirus in vitro; and cytosine arabinoside which inhibits JCV replication in vitro.

PSYCHOSIS AND HYPERCAPNIC RESPIRATORY FAILURE SECONDARY TO MYTOCHONDRIAL MYOPATHY. S. Madhwal[1]; A. Yee[1]; J.H. Isaacson[1]. [1]Cleveland Clinic Foundation, Cleveland, OH. *(Tracking ID # 173763)*

LEARNING OBJECTIVES: 1. Recognize that psychosis and respiratory failure can be the initial manifestation of a neuromuscular disease. 2. Learn that mitochondrial myopathy can present with diaphragmatic or esophageal muscle weakness and can have normal Creatinine Kinase levels.
CASE: A 69- year-old woman presented with two weeks history of excessive and irrelevant talkativeness. Review of system was significant for swallowing difficulty, mild shortness of breath and tingling in her extremities for the last few months. Examination was significant for restlessness, pressured speech and flight of ideas. She was saturating 94% on 5 liters of oxygen and had right sided lower lobes crackles. Motor examination revealed 4+/5 strength in all extremities. Laboratory examination was significant for leukocytosis (WBC 11.83×103/mm3) and partially compensated respiratory failure (pH 7.2, PC02 104 mmHg, pO2 110 mmHg, HCO3 42 mEq/L). Chest computed tomography showed infiltrates suggestive of consolidation. She was treated for aspiration pneumonia and investigated for the cause of respiratory failure. Pulmonary function test revealed extra thoracic restrictive lung disease that worsened in the supine position suggestive of diaphragmatic weakness. Work up for myasthenia gravis, thyroid disease, diabetes and rheumatological disease was negative. Electromyogram was suggestive of myopathy that led to muscle biopsy which was consistent with mitochondrial myopathy. Patient was treated with physical therapy and noninvasive ventilation with bilevel positive airway pressure (BIPAP) and stabilized.
DISCUSSION: The clinical signs of hypercapnic respiratory failure can be anxiety, disorientation, restlessness, psychosis, confusion, tremors, myoclonus and CO2 narcosis which may manifest as drowsiness and coma. These could easily be mistaken for primary psychiatric illness. Pulmonary function tests in our case suggested diaphragmatic weakness which led to the suspicion of muscle weakness. The spectrum of clinical manifestations in mitochondrial disease is extremely broad, from pure muscle disease to complex multisystem disorders. Disease mostly involves postmitotic tissues i.e. lacking the ability to divide such as those in the brain, muscles, nerves, retinas, and kidneys. Symptoms can be very non specific and may include fatigue, muscle pain, shortness of breath, dysphagia, migraine, seizures, neuropathic pain and weight loss. In most cases the objective weakness is not noted on examination till late and disease can easily be mistaken for chronic fatigue syndrome, fibromyalgia, or psychosomatic illness. Creatinine Kinase levels are usually minimally elevated. EMG shows myopathic pattern and diagnosis typically requires muscle biopsy. Clinical course is variable; some patients have acute exacerbations followed by long periods of stability or partial recovery. There are no cures for mitochondrial diseases. Treatment, which remains un-proven but widely used, includes CoQ10, L-carnitine and antioxidants. Internists need to be cognizant of this potentially life threatening disease since it can present with non-specific symptoms, variable course and normal Creatinine Kinase. Establishing the diagnosis of a mitochondrial disorder is also important for appropriate genetic counseling and for identifying at-risk family members.

SINUS HEADACHE: BUT WHICH SINUS? A. Shamas[1]; M. Panda[1]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN. *(Tracking ID # 171709)*

LEARNING OBJECTIVES: 1. Discuss a relatively rare cause of headache and the how the workup for suspected Carotid sinus venous thrombosis (CSVT) should be initiated in a patient with headache 2. Discuss diagnostic workup for suspected CSVT.
CASE: A 31-year-old female with a history of migraines presented with one-week history of continuous headaches along with neck pains. Her only medication included oral contraceptive pills which she had been taking for a while. Patient also complained of brief episodes of parasthesias in the form of tingling and numbness involving the right upper extremity, lower extremity and right side of the face. This was followed by the same symptoms involving the left half of body. She had multiple episodes of these symptoms each lasting for 15–20 minutes. Patient denied recent illness, fever, vertigo, dizziness, visual or gait disturbances. Initial impression was that of viral meningitis, complicated migraine, some form of upper cervical or lower brainstem lesion, partial seizures or conversion disorder. Base line tests including CBC, complete metabolic panel, sed rate and EEG were all completely normal. Brain imaging studies including CT scan, MRI and MRA were initially read as unremarkable. Upon careful review of MRI suspicion of venous sinus thrombosis was made and a repeat MRI with magnetic resonance venography (MRV) indicated superior sagittal sinus thrombosis with evidence of clot in left transverse sinus and left internal jugular vein. Patient was put on IV heparin. Over the next 2–3 days, patient's symptoms resolved completely. Patient was discharged on 4th hospital day.
DISCUSSION: The most common feature of CSVT is headache which is often continuous and worsens progressively. However headache being a common symptom of many conditions, the diagnosis of CSVT simply on the basis of headache is very difficult especially in patients with a past history of chronic headaches or migraines. In female patients on OCP's or in peripartum period, the chances of CSVT as a cause of recent onset of headache greatly increase. CSVT can present with a variety of neurological symptoms sometimes very subtle and may be confused with conditions like complicated migraines, meningitis or stroke etc. In our case however, patient had symptoms of involvement of unilateral hemisphere followed by those of involvement of other hemisphere which is characteristic but rare presenting feature of sagittal sinus thrombosis. Because of high index of suspicion a MRV was ordered despite an apparently normal looking initial MRI which confirmed the presence of sinus thrombosis. Studies have shown that MRI along with MRV is the most sensitive examination technique for CSVT. In our patient though OCPs may have predisposed her for CSVT a workup for hereditary hypercoagulable states will be undertaken after completion of 6 months of anticoagulation. Thus CVST can present with headaches and non-specific subtle neurological symptoms and high index of suspicion is required to promptly diagnose this difficult to diagnose and potentially disabling or lethal condition. In case of suspicion MRV should also be done along with MRI of the brain.

SWALLOWING: A CAROTID MASSAGE EQUIVALENT CAUSING SYNCOPE IN PATIENTS WITH NECK MASSES? M. Maddineni[1]; M. Panda[1]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN. *(Tracking ID # 171512)*

LEARNING OBJECTIVES: To discuss the mechanism of syncope caused by swallowing and head and neck cancers and propose a new mechanism suggesting a carotid sinus equivalent.
CASE: A 66 year-old male presented after an episode of syncope. He was eating breakfast when he felt dizzy, became pale and blacked out. There was no loss of bladder or bowel control, seizure activity, chest pain or palpitations. He denied relation to postural changes, urination or defecation or previous syncopal episodes. He had hypertension and his medications included atenolol and lisinopril. A recent diagnosis of cancer of the tongue spreading to the neck was being worked up at an outlying facility. Cardiac catheterization at the same hospital was normal. During evaluation in the emergency room the patient had just finished eating a bite of his lunch, when we witnessed a similar episode where he complained of lightheadedness and became pale and unresponsive, his heart rate dropped to 37/min with a palpable systolic blood pressure of 58 mmHg. The telemetry monitor showed sinus bradycardia. He recovered quickly after being laid flat and receiving intravenous fluids. Minutes after resuscitation he was alert and oriented and his blood pressure and pulse were 135/71 mmHg and 50/min respectively, without any significant findings on exam except a palpable neck mass on the left. Laboratory exam and chest x-ray were normal. EKG showed sinus bradycardia. Computerized tomography and angiography of the head and neck revealed a multiloculated cystic structure within the left carotid space located anterior to the sternocleidomastoid muscle compressing the anterolateral margin of the left jugular vein.
DISCUSSION: The cause of syncope remains undiagnosed in about 50% of patients. Though syncope associated with swallowing or with head and neck cancers have been documented independently, our case emphasizes the coexistence of two mechanisms leading to syncope in an atypical manner. Syncope on swallowing is a vagally-mediated mechanism involving afferent impulses from the upper gastrointestinal tract and efferent impulses to the heart manifesting as bradyarrythmias. In parapharyngeal space lesions related to syncope the afferent glossopharyngeal nerve from the baroreceptorial area carries impulses to the medullary cardiac and vasomotor centres from which efferent fibres descend into the vagus leading to carotid sinus hypersensitivity. In our patient, the syncope was not entirely related to the neck mass since it was not encroaching onto the carotid. It was only during deglutition that there was a possible mechanical compression of the carotid sinus leading to the irritation of the afferent fibers of the glossopharyngeal nerve producing syncope. It was intermittent carotid massage by the neck mass during deglutition on a background of inability to mount a sympathetic response due to betablocker usage that led to the hemodynamic collapse raising the possibility that swallowing can be considered a carotid massage equivalent in patients with neck masses not physically extending to the carotid sinus.

THE HUNGER STRIKER: PHYSICIAN ADVOCACY AT GUANTNAMO BAY, CUBA. J.H. Levison[1]; M.A. Grodin[2]; S.S. Crosby[2]. [1]Brigham and Women's Hospital and Boston Center for Refugee Health and Human Rights, Boston, MA; [2]Boston University Schools of Medicine and Public Health, Boston Center for Refugee Health and Human Rights, Boston, MA. *(Tracking ID # 173171)*

LEARNING OBJECTIVES: Identify the clinical and ethical challenges for physicians caring for hunger strikers.
Recognize the physician's vital role as advocate for their patients in situations of torture and abuse.
CASE: A 40 year old male political prisoner presents to a military hospital for dehydration and tachycardia after several weeks of refusal of food and water. Social history is remarkable for a three-year detention by the United States (U.S.) military services and Department of Defense on the military base at GuantÄnamo Bay, Cuba. Under the U.S. Patriot Act 2001, he has limited access to legal counsel, prolonged detention without anticipated trial, and prohibited family contact. Exam revealed a male with a body mass index (BMI) of 20 (kg/in2), in distress, tachycardic, and hyperventilating. Initial laboratories were notable for a potassium 3.3 mmol/L, bicarbonate 12.8 mmol/L, BUN 10 mg/dl and Cr 1.3 mg/dl, glucose 93 mg/dl, magnesium 1.7 mmol/L, phosphorus 3.0 mmol/L,. His dehydration, electrolyte abnormalities, and acute renal failure responded to repletion with intravenous fluids, thiamine, and electrolytes. Despite the patient's refusal to eat, he was restrained in 4–6 point restraint systems and force-fed through a nasogastric tube without his consent. His legal counsel unsuccessfully attempted to obtain independent physical and mental health examination of the patient. Legal counsel asked these authors to review this detainee's medical records, assess his condition, and address the ethics of force-feeding.
DISCUSSION: Since the creation of the U.S. Naval Station at GuantÄnamo Bay, Cuba in 2002, hundreds of prisoners have embarked on hunger strikes to protest their indefinite detention without legal process and inhumane treatment. This has presented a unique challenge to U.S. military physicians who are faced with the clinical and ethical challenges in caring for these hunger striking patients. Hunger strikers commonly report abdominal pain, lightheadedness, and weakness. Physical findings include evidence of dehydration, orthostatic vital signs, muscle catabolism including cardiac and cerebral atrophy, lethal cardiac arrhythmias, thyroid dysfunction, electrolyte depletion, ketosis, and delerium. Re-feeding can be problematic due to the risk of lethal electrolyte abnormalities, called re-feeding syndrome; ventricular tachycardias; and Wernicke's encephalopathy. Ethical dilemmas faced by physicians caring for hunger striking patients hinge on two principles: caring for the patient's well-being and respecting patient autonomy. The principle of "dual loyalty" may arise when there is a conflict between the interests of the patient and the interests of the employer, prison, or government officials. Force-feeding without the consent of a competent patient may be regarded as assault, or at worst, a form of torture and cruel and degrading treatment. The 2006 revised guidelines of the Declaration of Malta, World Medical Association, provide specific guidance on the care of these patients along with promotion of their well-being and affirm that physicians must always act in the best interest of their patients.

A RIGHT ATRIAL MASS IN A 72-YEAR-OLD FEMALE PRESENTING WITH SHORTNESS OR BREATH. M. Ramratnam[1]; J. Disney[1]; S.D. Sisson[1]. [1]Johns Hopkins University, Baltimore, MD. *(Tracking ID # 173127)*

LEARNING OBJECTIVES: 1. To describe the differential diagnosis of right atrial masses 2. To review management of right atrial thrombus.
CASE: A 72-year-old woman with myasthenia gravis presented with abdominal pain and near syncope that occurred after self-administration of heparin into her indwelling plasmapheresis catheter. She denied chest pain or palpitations, but did have dyspnea, diaphoresis, and blurry vision. On physical examination, she was afebrile, normotensive, with a heart rate of 81. Room air oxygen saturation was 98%. Cardiac, pulmonary, and neurologic examinations were normal. Laboratory examination showed a normal CK but an initial troponin of 0.18, which then normalized at 6 hours. D-dimer was elevated at 3.17. EKG and chest x-ray were normal. Chest CT with contrast showed no pulmonary embolism and a right subclavian catheter with its tip at the junction of the superior vena cava and right atrium. Brain CT showed no acute stroke. Transthoracic echocardiogram showed a large nonmobile sessile right atrial mass, 2.2 cm by 2.9 cm, attached to the free wall of the right atrium and not involving the valve. The mass was not continuous with the intravenous catheter. A bubble study showed no interatrial shunt. The patient was anticoagulated and underwent surgery for removal of the mass. During surgery the plasmapheresis catheter was removed and a patent foramen ovale was incidentally discovered and closed. She had an uneventful recovery and was discharged home. The pathology report showed the mass was an organized thrombus.
DISCUSSION: The differential diagnosis for intracardiac masses is tumor, microbial vegetation, or thrombus. Metastatic cardiac tumors are much more common than primary tumors and most often arise from bronchogenic carcinoma or breast cancer. Myxomas, the most common primary cardiac tumor, may present with weight loss, fever, fatigue and other constitutional symptoms. Bacterial or fungal endocarditis causing vegetation most commonly presents with fever, chills and weakness in the susceptible host. An indwelling venous catheter is the most significant risk factor for right atrial thrombus (RAT). Studies show that almost half (46%) of all catheter tips located in the right atrium will develop clinically significant thrombus. The most devastating complication of RAT is massive pulmonary embolus (PE), with incidence reported at 40%, and mortality of 28% to 31%. All etiologies of intracardiac masses may result in thromboembolism or congestive heart failure. Non-invasive evaluation of intracardiac masses includes echocardiography, computed tomography, and magnetic resonance imaging, which may help distinguish the different etiologies by specific tissue characterizations. Diagnosis of microbial causes is typically made with clinical findings such as fever and embolic phenomena, blood cultures, and echocardiography. Definitive diagnosis of intracardiac masses is provided by surgical resection. Treatment of RAT is not well defined. Anticoagulation alone does not eliminate the risk of pulmonary embolus. Surgery may be considered, but no randomized controlled studies compare surgery and anticoagulation. Prevention is the best treatment; vascular catheters should encroach no further than the junction of the SVC and right atrium. In our case, presenting symptoms were likely thomboembolic events while flushing her catheter. Emboli that traversed her PFO explained her blurry vision, headache and abdominal pain, while dyspnea was likely a result of pulmonary emboli.

ARE YOU SURE IT IS CELLULITIS? A.A. Mohammed[1]; S. Nallacheru[1]; S. Chandrashekaran[1]; N. Alberto[1]. [1]University of North Dakota, Fargo, ND. *(Tracking ID # 173896)*

LEARNING OBJECTIVES: 1. Cellulitis is the diagnosis that comes to one's mind upon encountering a patient with a red, warm and painful extremity. However, it should be borne in mind that other diseases can mimic cellulitis, more so when there is a lack of response to antibiotics. 2. Recognize acute lipodermatosclerosis and understand the pathophysiology and management.
CASE: A 54-year-old caucasian woman with a history of anticardiolipin antibody syndrome, chronic venous insufficiency and deep vein thrombosis presented with increasing swelling, redness, pain of the left lower extremity. She had been treated multiple times with antibiotics over the course of a year without resolution. She went on to have increasing pain and tenderness on the medial side of the left ankle which was worse on weight bearing, thus limiting her ambulation. Patient did not have fever or chills. On examination of the extremities, left lower extremity was swollen compared to the right. An erythematous area was present over the medial malleolus of left ankle which was markedly tender. There were no skin ulcerations. Peripheral pulses were present. CBC was normal. Patient was started on intravenous antibiotics empirically for cellulitis. Despite these measures there was no improvement in her condition. This made us question the diagnosis of cellulitis and consider other disease entities that could present in a similar manner. A skin biopsy revealed acute lipodermatosclerosis. The patient was started on stanozolol.
DISCUSSION: Cellulitis is commonly encountered in both outpatient and inpatient settings. When cellulitis does not respond to the conventional antibiotic therapy, we often think of inappropriate empiric antibiotic regimen, antibiotic resistance, poor patient compliance, deeper infection, foreign body and immunodeficiency. However it is also important to consider non-infectious causes of cellulitis in the differential diagnoses. Diseases that can masquerade as cellulitis include thrombophlebitis, contact dermatitis, insect stings, drug reactions, eosinophilic cellulitis, gout, carcionoma erysipelatoides, familial Mediterranean fever, and foreign-body reactions. Occasionally urticaria, lymphedema, lupus erythematosus, sarcoidosis, lymphoma, leukemia, pagets disease, and panniculitis can also mimic cellulitis. A careful history and physical examination is essential to generate a good differential diagnosis. Chronic lesions are suggestive of non infectious causes. Laboratory tests should be done to confirm the suspected diagnosis. Skin biopsy may be eventually required. Our patient had acute lipodermatosclerosis (LDS). LDS is a type of panniculitis which causes scleroderma-like hardening of the legs in patients with venous insufficiency. Most patients are middle-aged or older women, often with a history of venous insufficiency. In the acute phase, patients have an erythematous, tender area around the medial malleolus with minimal induration. Lesions respond favorably to stanozolol. Compression therapy, which reduces venous hypertension and fluid extravasation is also useful.

HOW CAN SOMETHING SO COLORLESS, ODORLESS AND SWEET BE BAD FOR YOU? A CASE OF ETHYLENE GLYCOL TOXICITY. S.H. Orakzai[1]; R.H. Orakzai[1]; R. Granieri[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 172655)*

LEARNING OBJECTIVES: 1. To recognize ethylene glycol (EG) as a cause of altered mental status and acidosis in young, otherwise healthy patients. 2. To recognize EG toxicity as a medical emergency and that prompt treatment may prevent complications. 3. To recognize that calcium oxalate crystals in urine may be misread as hippuric acid crystals in patients with EG toxicity.
CASE: 56 year old male with history of alcohol abuse was brought to the hospital after being found unresponsive at home. Physical examination revealed an obtunded, tachypneic male with RR of 23, BP 120/60, HR 89. Pupils were equal and reactive to light. Neurological exam revealed depressed level of consciousness but no focal deficits. Patient was intubated for airway protection. CT head was normal. Laboratory data showed pH 7.18, PaCO2 8, HCO3 3, BUN 15, Cr 2.2, Ca 8.8, anion gap 35, osmolal gap 33. Toxicology screen was negative for salicylates, acetaminophen and alcohol. Serum and urine ketones were undetectable. Urine microscopy showed hippuric acid crystals but no calcium oxalate crystals. In the setting of anion gap metabolic acidosis, osmolal gap and renal failure, EG poisoning was suspected. Patient was treated with intravenous fomepizole, intravenous bicarbonate and hemodialysis. EG level later came back elevated at 48 mcg/mL. Following treatment, EG levels became undetectable, metabolic acidosis resolved, patient's mental status improved and he was extubated. Patient later admitted to ingesting antifreeze. He was discharged home on hemodialysis secondary to renal failure.
DISCUSSION: EG is found in automotive antifreeze, windshield wiper fluid, cleaners etc. EG itself is non-toxic and mainly causes sedation. However, when it is metabolized

by alcohol dehydrogenase and aldehyde dehydrogenase into glycolate, glycoxylate and oxalate, profound toxicity ensues. The clinical syndrome of poisoning is divided into three stages. Stage I lasts up to 12 hours with depressed mental status. Stage II is characterized by severe metabolic acidosis and toxic effects of EG metabolites. It is in the second stage that most deaths occur. Stage III appears 24–48 hours post ingestion and is characterized by renal failure secondary to metabolites of EG causing acute tubular necrosis. Renal function recovers in most cases. Calcium oxalate formation leads to hypocalcemia. EG toxicity should be suspected in the setting of acute altered mental status, anion gap metabolic acidosis, elevated osmolal gap and renal failure. Urine should be examined for presence of calcium oxalate crystals. Two types of calcium oxalate crystals may be seen; needle shaped monohydrate crystals which may be misread as hippurate crystals, as was the case in our patient, and envelope-shaped dihydrate crystals. Urine should be examined under a wood's lamp because many antifreeze preparations include fluorescein, which causes urine to fluoresce. Treatment should not be delayed while waiting for the EG levels, but should be instituted immediately once a reasonable suspicion is present. Treatment with ethanol or fomepizole is aimed at inhibiting alcohol dehydrogenase to prevent the metabolism of EG. Ethanol has higher affinity for alcohol dehydrogenase than EG while fomepizole is a competitive inhibitor of alcohol dehydrogenase. Fomepizole has become the treatment of choice as it has fewer adverse effects, easier administration and equal efficacy. Hemodialysis should be employed in cases of severe acidosis, EG level >50 mg/dL or renal failure.

IS THAT BRAIN LEAKING OUT OF MY NOSE? A.D. Slansky[1]; C.K. Bates[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA. *(Tracking ID # 171429)*

LEARNING OBJECTIVES: 1) Differentiate CSF leaks from other causes of rhinorrhea in presentation and diagnosis. 2) Appropriately manage CSF leaks and guard against complications.
CASE: A 64 year old female presented to clinic with 5 days of unilateral, clear rhinorrhea from her left nostril that worsened when her head was upright and leaning slightly forward. She denied itchy or watery eyes, fevers, sore throat, cough, ear pain, or history of head trauma. She was treated with fluticasone and oxymetolazone nasal sprays and cetirizine tablets for presumed allergic rhinitis. Her symptoms did not improve after several days and she began to have intermittent headaches. She kept a bowl at her side to collect the drainage. Nasal discharge was collected and tested for Beta 2 Transferrin which was positive. She was evaluated by ENT and sinus CT scan showed pneumocephalus but did not reveal an exact origin of a CSF leak. She was managed conservatively for several weeks but continued to have copious left rhinorrhea. She was taken to the operating room approximately one month after presentation for repair of the posterior portion of the anterior skull base with a cartilage graft taken from the middle turbinate. She is now three and a half years out from surgery and has had no recurrence of the CSF leak.
DISCUSSION: CSF leaks are a rare but important cause of rhinorrhea. They often present as clear, watery drainage from a single nostril that is constant and unaccompanied by other symptoms typical of allergic or vasomotor rhinitis. A postural component to the rhinorrhea is common, with flow increasing when the patient is upright. CSF rhinorrhea is most often seen in the setting of head trauma, whether from an injury or as a post-surgical complication. However, spontaneous leaks can occur and 90% are felt to originate from a congenital or potential pathway such as a persistent craniopharyngeal canal. The initial leak can be precipitated by coughing, sneezing, or straining. Only 0.5 cc of nasal fluid needs to be collected to test for Beta 2 Transferrin, a highly sensitive and specific assay for identifying spinal fluid. CT scans can often help localize the source of the leak, especially when intrathecal contrast agents such as metrizamide are used. Up to 80% of CSF leaks are associated with high probability of spontaneous closure, and thus, cases are often managed conservatively with head elevation, bed rest, and drugs such as furosemide, hydrochlorothiazide, and acetazolamide to decrease the production of spinal fluid. Lumbar drains similarly help to reduce CSF pressure and aid in allowing the torn dura to approximate and heal. Prophylactic antibiotics for meningitis are controversial, but have been shown to reduce the incidence of this feared complication, especially in patients with prolonged duration of CSF leakage. Early diagnosis is important to avoid the prolonged use of intranasal steroids and decongestants which can delay healing. Both intracranial and extracranial surgical approaches are used for repair and are often highly successful at preventing further leaks.

RELIEVING THE TENSION: AN 82 YEAR-OLD FEMALE WITH A BULLOUS RASH. V. Subbiah[1]; L.D. Ward[2]. [1]Temple University Hospital, Philadelphia, PA; [2]Temple University, Philadelphia, PA. *(Tracking ID # 172920)*

LEARNING OBJECTIVES: Initiate an evaluation of a patient with a bullous rash. Recognize the key differences between bullous pemphigoid and pemphigus vulgaris.
CASE: An 82 year old Caucasian female nursing home resident with a history of Alzeimer's disease, and hypertension was observed scratching her extremities without relief. The patient was noted to have a diffuse erythematous urticarial rash on all extremities and trunk, with several non-tender tense fluid filled bullae on the flexor surfaces of the upper extremities and trunk. One week prior she was treated for a urinary tract infection and new onset heart failure with levofloxacin, captopril and furosemide. Other maintenance medications included clopidogrel and memantine. A skin biopsy was performed and the patient was empirically started on high dose prednisone and topical clobetasol. 4 days after treatment was initiated, the patient's blisters began to subside without any significant scarring. Her steroids were soon tapered, and azathioprine was started. The biopsy was positive for bullous pemphigoid. She was discharged on azathioprine alone with outpatient follow-up.
DISCUSSION: The differential diagnosis for pruritic bullous lesions includes Pemphigus Vulgaris (PV), Dermatitis Herpetiformis (DH), Erythema Multiforme (EM), and Bullous Pemphigoid (BP). Differentiating between these various disorders is important since the prognosis varies between them. EM and DH will not be discussed here as most confusion occurs between Pemphigus Vulgaris and Bullous Pemphigoid. There are several key differences between BP and PV. A proper diagnosis can be made with a combination of clinical and histopathological features, and allows the internist to prevent significant mortality and morbidity associated with each disease. BP is a benign autoimmune dermatosis with a prevalence of less than 1%, affecting predominantly the elderly that waxes and wanes with eventual resolution after several years. On the other hand, PV is usually seen at a younger age (40–60 years) and often assumes a chronic course but can be fatal if left untreated due to the high risk of secondary infection. While PV manifests with flaccid bullae on normal skin, the classic signs and symptoms of BP are intense pruritus, erythematous, tense fluid-filled bullae on urticarial skin in flexural areas that subside with minimal scarring. BP is characterized by subepidermal involvement, where as PV has intradermal involvement as manifested by the Nikolsky sign (skin slipping free from the lower layers with slight pressure). PV is also found on mucosal surfaces in 50–70% of patients, but mucosal involvement is less common (about 1/3) and of limited significance in BP. Although the exact cause of BP is still unknown, blisters are thought to be a consequence of IgG autoantibodies directed against normal proteins in the skin. Several factors have been implicated in both BP and PV including medications (furosemide, non-steroidal anti-inflammatory agents, captopril, antibiotics) while BP alone has been tied to immunogenetics (increased HLA haplotype, DQB1*0301), and advanced age. The treatment for bullous pemphigoid and pemphigus vulgaris uses similar agents, initially consisting of topical steroids for localized disease. However, PV is often more extensive in nature and difficult to control, often requiring systemic steroids, as well as a steroid sparing agent such as azathioprine, cyclophosphamide, or mycophenolate mofetil.

STRANDED AT "C" IN SAN FRANCISCO: ONE MAN'S TALE OF SYNCOPE T.M. Nazif[1]; N. Dey[1]; B. Sharpe[1]. [1]University of California, San Francisco, San Francisco, CA. *(Tracking ID # 173840)*

LEARNING OBJECTIVES: Recognize different clinical presentations of scurvy. Recognize that patients with psychiatric illness or marginal socioeconomic status are at increased risk for scurvy and other nutritional deficiencies.
CASE: A 51-year-old man who had not sought medical care for several years was brought to the emergency department after being found unconscious in the hallway of his transitional housing establishment. At the time of presentation, he was alert and interactive but appeared preoccupied, making several odd statements. He reported a one-month history of a painless, non-pruritic rash which started on his thigh and then worsened and spread to other parts of his body. He finally developed severe light-headedness and daily episodes of syncope. The patient was unemployed, divorced, and lived alone in a hotel. He rarely consumed alcohol and denied using illicit drugs. Physical examination was notable for profound orthostatic hypotension, poor dentition with gingival bleeding, and a widespread ecchymotic and purpuric rash. Laboratory studies were notable for a hematocrit of 24%, bilirubin of 5.5 mg/dL (indirect 4.7 mg/dL), and creatinine of 1.7 mg/dL. The platelets, PT, and PTT were all within normal limits. The presence of anemia, intravascular volume depletion, and a hemorrhagic rash led us to suspect scurvy or a systemic vasculitis. On further questioning, the patient stated that he ate a diet consisting almost exclusively of canned tuna fish and crackers. The diagnosis of scurvy was confirmed with a skin biopsy that revealed perifollicular hemorrhage and a serum ascorbic acid level of <0.12 mg/dL (lower limit of normal is 0.20 mg/dL). The patient was treated with high-dose ascorbic acid with full resolution of his symptoms within two weeks. Psychiatric evaluation revealed paranoid schizophrenia with delusions that gangsters threatened physical harm if he expanded his diet beyond tuna and crackers.
DISCUSSION: Scurvy was the subject of the first randomized, controlled clinical trial in 1753, in which Dr. James Lind described successful treatment with citrus fruits in sailors. We discuss here an illustrative case of scurvy presenting with protean manifestations in a socially marginalized patient with undiagnosed psychiatric illness, someone who was not stranded at sea but at the outskirts of society nonetheless. The earliest clinical manifestations of scurvy are often dermatologic - petechiae, perifollicular purpura, ecchymoses, hyperkeratosis, and corkscrew hairs - with gingival disease following. These changes result because ascorbic acid is a necessary cofactor in collagen synthesis, and its deficiency results in pericapillary collagen fragility and hemorrhage at various sites. Postural hypotension and syncope from hemorrhage or poor fluid intake are common. Sequelae may also include hemarthrosis, internal hemorrhage, sepsis from impaired wound healing, and dementia. Laboratory data typically reveal anemia and hyperbilirubinemia from hemolysis. The serum ascorbic acid level is a specific test for scurvy, but can be insensitive if there has been recent vitamin C intake. The diagnosis can also be supported by skin biopsy, which typically reveals perifollicular hemorrhage. Scurvy is readily treated with ascorbic acid supplementation, and the majority of patients recover fully. As this case demonstrates, physicians must remain vigilant for scurvy in populations with risk factors, such as psychiatric illness and socioeconomic marginalization.

A BREATHTAKING DIAGNOSIS IN A 53 YEAR OLD MAN WITH HYPOXEMIA AND END-STAGE LIVER DISEASE. J. Spector[1]. [1]University of Pennsylvania, Philadelphia, PA. *(Tracking ID # 172895)*

LEARNING OBJECTIVES: 1. Generate a differential diagnosis for hypoxemia with an elevated alveolar-arterial gradient. 2. Define hepatopulmonary syndrome and

recognize the appropriate diagnostic studies, therapeutic options, and implications of the diagnosis.
CASE: A 53 year old man with end-stage liver disease, hepatitis C, and type 2 diabetes mellitus was brought to the emergency room by his family with two months of progressive shortness of breath without fever, cough, orthopnea, or lower extremity edema. In the emergency room, the patient was noted to be tachypneic (respiratory rate of 28) and hypoxic (oxygen saturation of 80% when breathing ambient air and 96% on a 50% Venturi mask) with distal clubbing and cyanosis. White blood cell count, hemoglobin, and cardiac markers were normal, and an arterial blood gas revealed a partial pressure of oxygen of 52 mmHg with an alveolar-arterial gradient of 68 mmHg while breathing ambient air. CT scan of the chest with intravenous contrast revealed normal lung parenchyma without pulmonary emboli or effusion. The patient was transferred to the medical intensive care unit, and further history was obtained. Medications included propranolol, lactulose, spironolactone, glipizide, and methadone. The patient lived with his family and admitted to tobacco and intravenous heroin use 10 years prior to admission but denied alcohol use. Recent pulmonary function tests showed a mildly decreased diffusion capacity but no evidence of obstruction or restriction. Microbubble contrast echocardiography revealed normal left ventricular function and the delayed appearance of bubbles in the left heart consistent with intrapulmonary shunting. The patient was counseled about hepatopulmonary syndrome and, at his request, discharged to his home with oxygen therapy and hospice care.
DISCUSSION: Although hypoxemia usually has an intrinsic cardiopulmonary etiology, it is important to recognize other causes. The differential diagnosis for hypoxemia with an elevated alveolar-arterial gradient includes ventilation-perfusion mismatch from an intra-cardiac or intra-pulmonary shunt, pneumonia, congestive heart failure, asthma, chronic obstructive pulmonary disease, acute respiratory distress syndrome, or pulmonary embolus and diffusion impairment from interstitial lung disease. Hepatopulmonary syndrome is characterized by the simultaneous occurrence of liver disease, increased alveolar-arterial gradient while breathing room air, and evidence for intrapulmonary vascular dilatations. The prevalence of hepatopulmonary syndrome is about 10–20% in patients undergoing evaluation for orthotopic liver transplantation. Classic clinical findings include dyspnea, platypnea, and orthodeoxia in addition to symptoms of chronic liver disease. Hepatopulmonary syndrome is thought to be caused by loss of pulmonary vascular autoregulation resulting in ventilation-perfusion mismatch, intra-pulmonary shunting, and diffusion-perfusion impairment. Diagnostic studies include microbubble contrast echocardiography and technetium-labeled macroaggregated albumin scanning. Hepatopulmonary syndrome is associated with an increased mortality in patients with cirrhosis, and liver transplant is the only established therapy. Therefore, it is critical for the internist to rule out other treatable causes of hypoxemia and to appropriately counsel patients with hepatopulmonary syndrome about treatment options and prognosis.

AIR IN THE NECK: AN UNUSUAL CAUSE OF PAIN IN THE NECK. S. Bhat[1]; S. Mannepalli[1]; M. Panda[1]. [1]University of Tennessee, College of Medicine - Chattanooga Unit, Chattanooga, TN. *(Tracking ID # 171481)*

LEARNING OBJECTIVES: To discuss the entity of spontaneous pneumomediastinum as an unusual and less well known cause presenting as neck and chest pain.
CASE: An 18 year-old African American male presented with severe retrosternal chest pain for about 12 hours. He described the chest pain as sharp and stabbing, intermittent, severe in intensity and made worse by inspiration and coughing. He also noticed that his throat was sore and he felt some discomfort in the neck. He related the onset of the pain after a bout of violent coughing at his work place. He worked at a fast food place where he was exposed to fumes from frying oils. He admitted to using marijuana occasionally, the last day of use being the night before presentation. On examination he was anxious but vital signs were stable and examination was completely normal except for palpable crepitus in the neck. A complete blood count and metabolic profile were normal. The urine drug screen was positive for cannabis. Posteroanterior and lateral views of chest radiographs showed streaks of gas density within the subcutaneous regions outlining the tissue planes in the neck. The continuous diaphragm sign produced by air trapped posterior to the pericardium which gives the appearance of a continuous collection of air on posteroanterior radiography was seen. The CT scan showed air in the mediastinum (peritracheal) and in the subcutaneous tissues of the neck. The patient was observed in the hospital for one day and then discharged home as his symptoms and his chest radiographic findings improved.
DISCUSSION: Spontaneous pneumomediastinum (SPM) is a clinical entity which is a benign finding in a small group of younger patients who have no history of an obvious precipitating event. SPM has also been reported in those using inhalational drugs as this form of drug abuse often entails Valsalva like maneuvers, which is prolonged breath holding after forceful inhalation, which can cause alveolar rupture. Violent bouts of coughing can also cause alveolar rupture. Our patient had both the predisposing risks. Patients are generally well and their vital signs are usually in the normal range which indicates that there is no other underlying serious abnormality. In those with a history of vomiting, retching or trauma, secondary causes should be looked for. If the chest radiograph is diagnostic of pneumomediastinum and the patient's history does not indicate a potentially perforated intrathoracic viscus then no further investigations are required. If there is a suspicion of pneumomediastinum and the chest radiograph is not diagnostic, then a CT scan of the chest with intravenous contrast should be performed. If there is a suspicion of Boerhaave's syndrome on the basis of the patient's history, physical examination or investigations, then a contrast enhanced swallow is mandatory. The usual treatment of benign SPM is bed rest, oxygen therapy, reassurance and analgesics. With the increased prevalence of inhalational drugs the entity of SPM should be entertained in the differential diagnosis of patients presenting with chest pain.

AN UNEXPECTED CAUSE OF DYSPNEA IN AN OLDER MAN. S. Anand[1]; S. Cheng[2]. [1]Department of Medicine, Brigham and Women's Hospital, Boston, MA; [2]Division of Cardiovascular Medicine, Brigham and Women's Hospital, Boston, MA. *(Tracking ID # 172616)*

LEARNING OBJECTIVES: 1) To review the differential diagnosis of subacute exertional dyspnea in the older adult. 2) To become familiar with the basic work up and management of late-onset pulmonary hypertension. 3) To learn about the special features associated with pulmonary hypertension in the elderly.
CASE: A 74 year-old man with a history of Raynaud's phenomenon presented to clinic with progressive exertional dyspnea. He previously could bicycle for 30 minutes but, over one month, had developed dyspnea limiting his ability to even walk across his kitchen. On examination, he was noted to have an elevated jugular venous pulsation, clear lung fields, paradoxically split S2, loud P2, 2/6 holosystolic murmur at the left sternal border, and 1+ edema. He also desaturated from 97% at rest to 80% with ambulation and so was admitted for further management. A transthoracic echocardiogram (TTE) showed preserved left ventricular (LV) ejection fraction, marked right ventricular dilatation, severe tricuspid regurgitation (TR), and a pulmonary arterial systolic pressure (PASP) of 79 mmHg plus right atrial pressure. Right heart catheterization confirmed the presence of severe pulmonary hypertension (PH) in the setting of preserved left-sided heart function and low-normal cardiac output. Pulmonary function testing demonstrated a severe diffusion defect, chest computed tomography showed no signs of interstitial lung disease (ILD), and ventilation-perfusion scan was low probability for pulmonary embolism. Additional investigations ultimately revealed a positive anti-centromere antibody at 1:320, pointing to collagen vascular disease (CVD) as the probable underlying cause of severe PH. Although pulmonary pressures improved with diuresis, a vasodilator challenge resulted in systemic hypotension. Therefore, initiation of vasodilator therapy was deferred while alternate treatments for PH and CVD were started.
DISCUSSION: Subacute exertional dyspnea in the older adult may be due to a variety of etiologies and the presentation is often compounded by impaired functional and nutritional status. Common etiologies include chronic obstructive pulmonary disease, coronary artery disease, ventricular dysfunction, atrial fibrillation, anemia, and, less frequently, PH. Although PH typically presents by the fourth decade, it can also manifest for the first time in later life. Older adults appear more likely than younger adults to have secondary PH, in part due to a higher incidence of predisposing conditions such as ILD, inflammatory pulmonary disorders, and diastolic as well as systolic LV dysfunction. Some data suggest that diastolic dysfunction, in particular, may become increasingly important as a precipitant of PH in older age. Early detection and management of common cardiopulmonary conditions in the elderly may facilitate PH prevention. Upon diagnosing PH in any age group, however, a complete workup for all possible etiologies is essential. In this case, systemic sclerosis was discovered to be the most likely predisposing condition. While the average age at diagnosis of scleroderma and associated syndromes is 50, the incidence in white males peaks after age 70. Furthermore, PH is present in one third of cases and its risk increases with age at diagnosis. In all patients with PH, regardless of age or etiology, early treatment initiation is recommended. In effect, vasodilator therapy can improve hemodynamics and mortality across all age groups.

CRYPTOGENIC ORGANIZING PNEUMONIA PRESENTING AS NONRESOLVING COMMUNITY ACQUIRED PNEUMONIA. C. Tseng[1]; A.P. Burger[2]. [1]Montefiore Medical Center, New York, NY; [2]Montefiore Medical Center, Bronx, NY. *(Tracking ID # 173685)*

LEARNING OBJECTIVES: 1) Recognize cryptogenic organizing pneumonia (COP) as a cause of persistent pulmonary infiltrates 2) Review the differential diagnosis and evaluation of a patient with pulmonary infiltrates not responsive to antibiotics.
CASE: A 31-year-old female with a history of asthma and previously treated pulmonary Tuberculosis presented with persistent shortness of breath and productive cough after completing a 7-day course of antibiotics for community acquired pneumonia (CAP). Two weeks prior she had been admitted for right middle and lower lobe pneumonia. She was treated with ceftriaxone for 3 days and moxifloxacin for the following four days. Now she returns to the hospital complaining of worsening shortness of breath and productive cough for 5 days. On physical exam she had a temperature of 100.6°F, blood pressure 143/95 mm Hg, pulse 109 bpm, respiratory rate 16, 98% room air oxygen saturation, lung bibasilar crackles, regular heart sounds without murmurs or gallops, no JVD, and diaphoresis. Laboratory data: Hct 37% (MCV 73 fL; RDW 20.6), WBC of 8.5 k/ul (83% granulocytes, 2% eosinophils), serum chemistries otherwise normal. Her chest radiograph and CT scan demonstrated worsened bilateral infiltrates and a new left lower lobe infiltrate. No ground glass opacities were noted on imaging. She was treated with ceftriaxone and azithromycin for community acquired pneumonia and was ruled out for tuberculosis with three AFB smears. She continued to be febrile despite therapy. Antibiotics were discontinued. Bronchoscopic biopsy showed alveolar tissue with foci of airspace fibrosis consistent with COP. Corticosteroids were initiated with resolution of her fever and symptomatic improvement in cough and shortness of breath. Sedimentation rate of 23 mm/hr, C-reactive protein of 1.8 mg/dL and LDH of 207 U/L were elevated on corticosteroids.
DISCUSSION: COP is an inflammatory lung disease of unclear pathogenesis. It has a variable presentation that often mimics other pulmonary diseases. We present such a case of a young woman originally diagnosed with CAP that did not respond to antibiotics. In this type of patient the differential diagnosis would include eosinophilic pneumonia, hypersensitivity pneumonitis, or a pulmonary disease associated with a connective tissue disorder. The diagnosis of COP is made from a lung biopsy showing

polyploidy endobronchial connective tissue masses composed of myxoid fibroblastic tissue. The exact prevalence of COP is unknown, however in one study from a large teaching hospital the cumulative incidence of COP was six to seven per 100,000 hospital admissions. Typically, COP patients are in their fifth or sixth decade (range 20–80 years). Patients present with a subacute course or have an acute and fulminant decline in lung function. COP is associated with numerous conditions such as collagen vascular diseases, malignancies, organ transplantation, HIV infection, postradiation, drug reactions, and extrinsic allergic alveolitis. The idiopathic form is most common and is found in 56% to 85% of reviewed cases. The difficulty in diagnosing COP is its variable presentation and presumed association with other diseases. This may delay diagnosis as it did with this young patient. Two-thirds of patients usually respond well to corticosteroids and therefore, it is important to keep COP in the differential diagnosis of pneumonia unresponsive to treatment. Relapses occur in one-half of COP patients but most have complete recovery.

IT'S NOT JUST A TRANSFUSION: A POTENTIALLY FATAL COMPLICATION OF BLOOD PRODUCT ADMINISTRATION. A.A. Patel[1]; J. Quintana[1]; K. Pfeifer[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 173531)*

LEARNING OBJECTIVES: 1. Recognize consequences of transfusion. 2. Treatment of transfusion related acute lung injury.
CASE: An 86-year-old gentleman presented with a three-day history of left-sided, intermittent costal margin pain which he described as dull and non-radiating. He also noted feeling weak and experiencing shortness of breath. On physical exam, he had significant abdominal distention with dullness to percussion. Abdominal CT showed a small left pleural effusion and moderate ascites thought to be due to hepatic cirrhosis. Four units of fresh frozen plasma (FFP) were given in preparation for an ultrasound-guided paracentesis. During administration of the final two units, the patient went into respiratory distress and had an oxygen saturation of 74% on room air. The patient was placed on high flow oxygen and transferred to the intensive care unit where he was placed on noninvasive ventilatory support. Chest radiograph showed bilateral reticulonodular interstitial infiltrates but no cardiomegaly or pulmonary vascular congestion. He was started on empiric therapy for community-acquired and aspiration pneumonia, but on day three of hospitalization the patient went into respiratory distress again. The family requested that mechanical ventilation not be used, and he subsequently died. Bilateral pulmonary edema and pleural effusions were identified at autopsy, and microscopic examination of both lungs revealed diffuse alveolar damage. His cause of death was listed as acute respiratory distress syndrome (ARDS) associated with FFP transfusion.
DISCUSSION: Transfusion related acute lung injury (TRALI) is now thought to be the most common cause of death from transfusion. Donor HLA antibodies can trigger the onset of TRALI, and reports from the SHOT organization (Serious Hazards of Transfusion) in the United Kingdom have implicated multiparous women donors in cases of FFP-related TRALI. In 2003 this led to a decision to mainly use male donors for the production of FFP in the United Kingdom. Data on other risk factors for the development of TRALI are lacking since this syndrome occurs in only 1/10,000 transfusions. The diagnosis of TRALI is based on findings of acute noncardiogenic pulmonary edema within 1–6 hours of blood product transfusion. The clinical picture is similar to ARDS, but TRALI typically resolves much more rapidly. Management focuses on ventilatory and circulatory support, and most patients recover fully after approximately 4–5 days. This case serves as a reminder that though transfusions are done on a routine basis, they are associated with serious and potentially fatal consequences that are difficult to predict.

NON RESOLVING PULMONARY INFILTRATES IN A SMOKER. P. Sharma[1]; R. Sahni[2]; A. Aneja[1]. [1]Cleveland Clinic Foundation, Cleveland, OH; [2]St Vincent Charity Hospital (Case Western reserve University), Cleveland, OH. *(Tracking ID # 173925)*

LEARNING OBJECTIVES: Recognize Histiocytosis X as a differential diagnosis of pulmonary infiltrates in a young smoker.
CASE: A 28 year old female with a past medical history of asthma, migraine, depression and smoking, presented to the ED with shortness of breath and cough for a month. She had previously treated by another ED with oral steroids without any significant relief. A CXR done this time revealed diffuse reticular nodular pattern of interstitial markings suggestive of atypical pneumonia. A course of appropriate antibiotics also failed to improve symptoms. A CT of the chest showed numerous cavitated nodules of varying sizes scattered throughout both lungs in the upper and lower lobes with mildly enlarged hilar and mediastinal lymph nodes. other investigations such as PPD, ESR, ANA, dsDNA, pANCA and cANCA were all negative. BAL did not reveal any organisms and was negative for malignant cells. Transbronchial biopsy showed no significant pathologic findings. An open lung biopsy showed Langerhans cells with characteristic staining for S-100 protein - diagnostic of Primary Pulmonary Langerhans Cell Histiocytosis (PLCH). Further survey of her bones revealed no bone involvement.
DISCUSSION: PLCH or Eosinophilic Granuloma or Pulmonary Histiocytosis X is an uncommon interstitial lung disease that primarily affects young adults between 20 and 40 years of age with an equal gender distribution. Although, no occupational or geographic predisposition is known, there is near universal association of PLCH with cigarette smoking. Patients mostly present with respiratory or constitutional symptoms, although the diagnosis is often made when abnormalities are incidentally detected on chest radiographs or following a spontaneous pneumothorax. The term eosinophilic granuloma is a misnomer as the peripheral eosinophil count is normal and the lesions are also devoid of eosinophils. Radiology reveals predominance of the disease in the mid to upper zones of the lung. Cessation of smoking is the mainstay of therapy. Other modalities include corticosteroids, cytotoxic agents (etoposide, VP-16, LCH-1), lung transplantation and radiotherapy for symptomatic bone lesions. This case illustrates how a common presentation can sometimes lead into a rare diagnosis. It is important to realize that common things happen commonly. However, recognizing when the picture does not fit is prudent. PLCH should be considered in young smokers who present with interstitial lung disease of unknown etiology.

PERSISTENT COMMUNITY-ACQUIRED PNEUMONIA OR MISDIAGNOSED SARCOIDOSIS? B.M. Schneeberger[1]; K. Pfeifer[1]. [1]Medical College of Wisconsin, Milwaukee, WI. *(Tracking ID # 172665)*

LEARNING OBJECTIVES: 1) Review extrapulmonary manifestations of sarcoidosis. 2) Recognize that not all chest radiograph infiltrates are pneumonia. 3) Describe the pathophysiology and prognosis of cardiac sarcoidosis.
CASE: A 40-year-old African-American woman with no past medical history presented to an urgent care clinic with a three-month history of dyspnea, productive cough, wheezing, orthopnea, and night sweats. She had no fever or other symptoms, and no history of TB exposure, sick contacts or travel outside the state. She was previously seen in multiple emergency rooms over the prior several months and received several courses of antibiotics for presumed community-acquired pneumonia diagnosed by chest radiography. During an urgent care appointment she complained of severe dyspnea and was directly admitted to the hospital for further evaluation. On examination she was tachycardic, mildy tachypneic, and had a resting oxygen saturation of 96%. Cardiopulmonary examination revealed diffuse bilateral expiratory wheezes with good air movement and a third heart sound. Laboratories were remarkable for mild hypokalemia, BNP 382 pg/mL, and serum ACE level 52 mg/L (16–68 mg/L). Chest CT showed bilateral hilar lymphadenopathy consistent with nodular sarcoidosis, and subsequent tissue biopsy from mediastinoscopy was diagnostic with non-caseating granulomatous inflammation. She was started on prednisone, and due to her orthopnea and third heart sound further cardiac evaluation was pursued. An echocardiogram demonstrated left ventricular hypertrophy and an ejection fraction of 20%. Cardiac catheterization revealed normal coronary arteries, leading to a diagnosis of sarcoidosis-related cardiomyopathy. She was started on appropriate congestive heart failure (CHF) therapy and has since had improvement in her symptoms.
DISCUSSION: Sarcoidosis is a multisystem granulomatous disease of unclear etiology. Current hypotheses suggest it results from an exaggerated cellular immune response. It generally affects the respiratory and lymphatic tracts; however, it can be widespread and affect any organ system. Diagnosis requires a compatible clinical picture, histology revealing non-caseating granulomas and exclusion of other diseases with similar clinical or histologic picture. Corticosteroids have long been the mainstay of systemic treatment by controlling the inflammatory process. Cardiac sarcoidosis has a wide range of manifestations including conduction abnormalities, valvular disorders, heart failure, ventricular aneurysms, pericarditis, and sudden death. Clinical evidence of cardiac sarcoidosis is present in less than 5% of patients, although involvement can occur in up to 50% in the Pacific Island region. Sarcoid granulomas are thought to cause diminished systolic contractility and decreased ventricular compliance. CHF is the second-most frequent cause of sarcoidosis-related mortality after sudden death and carries a very poor prognosis. Since the majority of patients with cardiac sarcoidosis are asymptomatic and acute sudden death generally occurs in the absence of previous cardiac events, it is unclear which sarcoid patients should undergo cardiac testing. Initial work-up usually includes resting and ambulatory ECG monitoring, echocardiography and cardiac radiography with or without cardiac catherization to exclude coronary artery disease. In addition to corticosteroids, management of cardiac sarcoidosis is consistent with current guidelines of similar non-sarcoidosis-related cardiac ailments.

PULMONARY EMBOLISMS: DO PROBABILITY TESTS HELP? J.A. Willard[1]; P.M. Haidet[2]. [1]Micheal E. DeBakey Veterans Affairs Medical Center, Baylor College of Medicine, Houston, TX; [2]Micheal E. DeBakey VA Medical Center, Houston, TX. *(Tracking ID # 172619)*

LEARNING OBJECTIVES: Recognize limitations in PE pre-test probability algorithms.
CASE: The patient is an 88 y/o male with history of: CHF with a 4 yr h/o declining ejection fraction (from 50% to 20–25%), chronic angina and SOB, HTN, one-time episode of a-fib, and incidental pulmonary embolism (PE) found 4 years previously, who sought medical attention for chest "pressure". Onset of pressure was sudden and of mid-grade intensity; symptoms did not radiate. There was no cough, hemoptysis, peripheral edema, recent surgery, or immobilization. The patient had 4 prior admissions for dysuria in the past year (3 included concomitant chest pressure similar to present occasion). The patient noted increased episodes of chest pressure in the past year, with little relation between onset and activity level. Admission vital signs were BP 133/81, HR 71, RR 18, O2 sat 95% on room air. Physical exam revealed an irregularly irregular rhythm, mild JVD, and faint bibasilar crackles. Peripheral pulses were palpable; extremities showed no edema and negative Homan's sign. Pertinent electrolytes, cell counts, and liver panel were within normal limits. CXR and set of cardiac enzymes were normal, while EKG showed wandering atrial pace maker, RBBB, left axis deviation, and T wave abnormalities, all indistinguishable from prior EKG. The patient was admitted for probable ischemic cardiomyopathy exacerbation and recurrence of a-fib, and treated with ASA, beta-blocker, and nitroglycerin. Serial

cardiac enzymes were sent to rule out MI. Although the clinical pre-test probability for PE was low (~3% per simplified Wells scoring system), a D-dimer level was drawn. Within 24 hours, the patient reported resolution of chest pain. Test results showed cardiac enzymes negative, and D-dimer level of 2.0 μL (nl 0–0.47). On day 2, the patient remained pain-free but described episodic dyspnea. Day 3 was marked by a fleeting episode of dyspnea with HR 137 and BP 97/64. EKG minutes later showed sinus rhythm with no change from baseline and HR 97. ABG revealed pH 7.45, pCO2 37, and pO2 105 on 2 L O2. Chest CT and ultrasound doppler of lower extremities showed right main pulmonary artery embolism and left lower extremity DVT.
DISCUSSION: This case reveals limitations in a well-recognized PE pre-test probability algorithm. Several similar algorithms exist to facilitate an initial approach to the patient. The algorithm used comes from Wells et al who developed a 40-variable algorithm to assess risk of PE. This was later validated among 1239 patients. These data led to the subsequent identification of 7 key variables (signs of DVT, lack of likely alternate diagnoses, tachycardia, immobilization or recent surgery, previous h/o either DVT or PE, and the presence of hemoptysis or cancer), known as the simplified Wells scoring system, which sorted patients into low-, moderate-, and high-risk categories with a prevalence of PE of 3%, 20%, and 64%, respectively. However, subsequent studies of the simplified rubric found ostensibly "low-risk" patients to have a risk of PE between 1.3% and 28%, compared to the 3% derived by Wells (Sanson et al, Chagnon et al). Of the seven key variables, our patient exhibited only one (prior embolism), leading us to assume a low initial probability of PE This low probability influenced initial diagnostic discussions, leading to a delay in diagnosis despite mounting evidence of embolism. Our experience suggests a cautious approach that takes into account ALL accumulated data in the diagnosis of PE.

RECURRENT SPONTANEOUS PNEUMOTHORAX WITH ST SEGMENT ELEVATIONS. S. Saini[1]; M. Reddy[1]; J. Porter[1]. [1]Creighton University, omaha, NE. *(Tracking ID # 173877)*

LEARNING OBJECTIVES: 1. Recognize the predisposing factors for recurrent spontaneous pneumothorax. 2. Recognize the indications and importance of surgical management of spontaneous pneumothorax in patients with alpha-1 antitrypsin deficiency. 3. Recognize the EKG changes associated with a pneumothorax
CASE: A 54 year old Caucasian male with alpha-1 antitrypsin deficiency of ZZ phenotype, status post right lung transplantation was admitted for acute renal failure. He had been recently admitted to the hospital for left sided spontaneous pneumothorax which was managed with a chest tube. His follow up x-ray before discharge showed a re-expanded left lung. His last CT chest revealed marked bullous emphysema of left lung. On this admission, the patient denied any respiratory symptoms. Laboratory work up was significant for a WBC count of 14.1 K/ul with 8% bands and an increase in creatinine from his baseline of 3.0 mg/dl to 5.7 mg/dl. Over the course of his hospitalization, hemodialysis was initiated for uremic symptoms. Post dialysis, the patient developed tachycardia and an EKG showed new PR depressions and ST elevations in II, III, and aVF suggestive of inferior myocardial infarction. He was emergently taken for a coronary angiogram which revealed normal coronaries. A chest x-ray post angiography revealed a spontaneous left pneumothorax with left-to-right shift of the mediastinal and lung structures which was new since admission. A chest tube was placed and after 5 days all the EKG changes resolved. Later, pleurodesis with talc was performed for recurrent spontaneous pneumothoraces.
DISCUSSION: Spontaneous pneumothorax has been observed in patients with abnormal levels of alpha 1-antitrypsin. Pneumothorax in these individuals is more life-threatening because of the lack of pulmonary reserve. Rupture of sub-pleural emphysematous blebs in patients with alpha1-antitrypsin deficiency is believed to be the cause of pneumothorax. These patients are at increased risk (40%) for recurrence and recurrent episode often occurs in intervals of 1.5 to 2 years. Measures to prevent the recurrence include discontinuation of smoking, avoiding high altitudes and refraining from activities like scuba diving or flying in unpressurized aircrafts. Patients with secondary spontaneous pneumothoraces should receive instillation of a sclerosing agent if they have a persistent air leak, an unexpanded lung after 3 days of tube thoracostomy, or a recurrent pneumothorax. Presently, there is a trend towards initiating recurrence prevention (preferably via thoracoscopy) after the first, rather than after the second episode of pneumothorax. It is also important to recognize that the EKG changes in spontaneous pneumothorax can mimic acute myocardial infarction. Most often the EKG changes include shift of the mean frontal QRS axis, reduced precordial R-wave voltage, electrical alternans, or precordial T-wave inversions. ST segment elevations, as in our patient, have been reported in very few cases of left pneumothorax. The proposed mechanisms are left ventricular dysfunction induced by altered catecholamine dynamics caused by the occurrence of pneumothorax or rotation of heart leading to electrical axis deviation.

SMOKER WITH A COUGH P.M. Roy[1]; C. Bates[1]. [1]Beth Israel Deaconess Medical Center, Boston, MA. *(Tracking ID # 172242)*

LEARNING OBJECTIVES: Recognize a serious and treatable cause of chronic cough.
CASE: A 45 year old Ethiopian male presented with a chronic, intermittent, non-productive cough for 10 years. He denied precipitating or relieving factors, hemoptysis, chest pain, fevers, chills, wheezes, nasal congestion, night sweats, weight loss, known contacts with Tuberculosis (TB) or recent international travel. He did note an occasional sour taste in his mouth. He had a five pack-year smoking history and quit two years ago. Medical history was notable for hepatitis C and a positive PPD of 25 mm induration nine years ago with a clear chest x-ray. He was not treated for TB due to alcoholism and had not seen a doctor since that time. He lived alone, had no pets and was not sexually active. He denied drug use and drank occasionally.On exam he was hypertensive and tachycardic with clear lungs. Chest x-ray was clear and hepatitis C viral load and HIV test were negative. At a later visit, rhonchi were present at the right lung base. Due to complaints of esophageal burning, he was started on a proton pump inhibitor (PPI) as well as Isoniazid (INH) for the prior positive PPD. Chest CT showed diffuse centrilobular opacities in the right lower lobe (RLL) and mild opacities in the right middle, upper and left lower lobes. Bronchiectasis, right hilar lymphadenopathy, esophageal distention and a small hiatal hernia were also seen. INH was stopped and three sets of induced sputums were negative for TB. Respiratory culture grew sparse gram negative rods. Bronchoscopy with BAL showed chronic interstitial pneumonitis and no granulomas or malignancy. Cultures grew rare ***Strep viridans***, gamma strep and ***Hemophilus***. AFB smear and culture were negative.His symptoms and lung opacities improved on the PPI, implying chronic aspiration pneumonitis. However, his cough continued and was aggravated by drinking liquids. Repeat chest CT showed worsening RLL opacities and an air collection possibly contiguous with the esophagus. Endoscopy showed an esophageal diverticulum in the lower third of the esophagus with an opening suggestive of a fistula. A barium esophagram showed contrast traveling from the esophagus to a RLL bronchus, confirming the diagnosis of a bronchoesophageal fistula.
DISCUSSION: Benign bronchoesophageal fistula (BEF) is a rare condition. In adults, most BEFs are acquired and attributable to malignancy. Benign acquired causes include infections like TB, inflammatory conditions like Crohn's disease, trauma, caustic ingestions and iatrogenic causes such as prolonged intubation. Congenital fistulas that present in adulthood are rare. Symptoms of a BEF include coughing with ingestion of liquids (Ohno's sign), hemoptysis and recurrent pneumonias. Barium swallow is the most sensitive test for diagnosis. The recommended treatment is division of the fistula and removal of injured lung segments. This patient may have a congenital defect or an acquired BEF from a prior infection. The time from initial presentation to final diagnosis was 11 months. Diagnosis is often delayed due to non-specific symptoms and limited knowledge about this disease. In a 2002 study of patients with BEF by Mangi et al, the mean delay in diagnosis was 46 months. Many patients were initially given a diagnosis of persistent postinfectious bronchitis or adult onset asthma. Since the complications of this process can include life threatening hemoptysis and respiratory failure, early diagnosis and treatment are essential.

STATUS ASTHMATICUS: WHEN ASTHMA ATTACKS. K. Leung[1]; J. Sethi[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173910)*

LEARNING OBJECTIVES: 1) Describe the physiology in status asthmaticus 2) Review the management of status asthmaticus.
CASE: The patient was a 41-year-old female with poorly controlled asthma who presented to an outside hospital in acute respiratory failure. Initially, she called her friend in distress stating that she could not breathe. On arrival, EMS found her to be unresponsive and transported her to a nearby hospital. She was intubated and started on steroids and inhaled albuterol immediately. Her initial ABG at the hospital was 6.97/150/84/33. Mechanical ventilation was problematic as she had exceedingly high airway pressures; thus, she was flown to our hospital for further management. Here, her high peak airway pressure was 92 (normal 13–19) with a respiratory rate of 24. She was paralyzed, sedated and ventilated with low tidal volumes and respiratory rate. In light of her severe presentation, she was treated with albuterol/ipratropium MDIs, intravenous steroids, aminophylline, subcutaneous epinephrine, and intravenous sodium bicarbonate. She was also treated with azithromycin as her x-ray was concerning for an infiltrate, along with a WBC of 30.8 with 59% neutrophils and 2% bands. Her condition rapidly improved and she was extubated within 48 hours of presentation.
DISCUSSION: In status asthmaticus, there are several factors leading to respiratory distress. In rapid attacks that progress over hours, bronchospasms appear to be the predominant cause of airway obstruction. In slow attacks that onset over days, there appears to be a greater contribution of mucous secretions and inflammation. The above factors, in addition to tachypnea, lead to air trapping and progressive hyperinflation of the lungs. This can cause the airway and intrathoracic pressures to rise precipitously and result in cardiovascular collapse. Status asthmaticus can become rapidly fatal if not aggressively treated. The treatment of status asthmaticus must address the above etiologies. Most importantly in these patients is airway management. They can decompensate very quickly and if they are intubated, there remain further ventilatory challenges secondary to the progressive hyperinflation and air trapping. Intubated patients must have meticulous ventilator adjustments to allow for permissive hypercapnia and hypoventilation. Anesthetics and paralytics are useful to facilitate ventilator control and synchrony with the patient. Intravenous sodium bicarbonate has been studied in status asthmaticus to buffer the hypercapneic acidosis; however, there is no conclusive evidence of benefit. Among pharmacological agents, inhaled beta2-agonists are the first line therapy for the bronchospasms. Anticholinergics also have additive bronchodilatory effects. Her severe case prompted the use of aminophylline and subcutaneous epinephrine, which are not typically used in the treatment of asthma exacerbations. Phosphodiesterase inhibitors, like aminophylline and theophylline, may be beneficial in status asthmaticus by inhibiting airway T cell activation along with smooth muscle relaxation. Epinephrine has been used in refractory status asthmaticus; however, there is unclear benefit for it. The inflammatory component of asthma is treated with systemic steroids. If there are features suggestive of a bacterial cause to asthma exacerbation, antibiotics should be used.

THE MERCHANT MARINE FROM RUSSIA: A PUZZLING CASE OF PNEUMONIA(S). K. Reinhardt Block[1]. [1]Tufts University, Boston, MA. *(Tracking ID # 173655)*

LEARNING OBJECTIVES: 1. Identify risk factors for staphylococcus aureus pneumonia. 2. Establish the differential diagnosis for necrotizing pulmonary infection in the setting of AIDS. 3. Evaluate the utility of expectorated and induced sputum in the diagnosis of pneumonia in immunosuppressed persons.
CASE: A 46-year-old man from Russia presented with five days of high-grade fevers and cough productive of brown sputum. The review of systems was significant for dyspnea, pleuritic chest pain, chills and night-sweats. His purified protein derivative test had been negative 10 years ago. He was a merchant marine on a cargo ship that was in port at Boston Harbor en route from Egypt to the United States. He visited the ship physician one day prior and was treated with penicillin B and probenecid. The physical exam revealed a temperature of 37.1 degrees Celsius, a heart rate of 119, and a room-air oxygen saturation of 95%. He was cachectic with temporal wasting, oral thrush, and dry crackles in his right upper and lower lobes, with corresponding egophony and dullness to percussion. Diagnostic studies revealed a sodium of 123 mEq/L, and a white blood count of 6,000 (0% bands). His chest x-ray showed bilateral apical infiltrates with cavitary lesions; a chest CT showed upper lung zones with multiple areas of lucency, cavitary lesions with alveolar and interstitial densities, and air bronchograms consistent with necrotizing pneumonia. ELISA and a Western blot for HIV were positive, and the CD4-count was 24. Three initial sputum samples were negative for acid-fast bacilli but grew 4+ methicillin-sensitive staphylococcus aureus, and silver-stain from bronchoscopy samples revealed Pneumocystis jiroveci. Respiratory isolation precautions were discontinued and the patient was treated for his pneumonias with oxacillin (later transitioned to amoxicillin/clavulanate) for the staph pneumonia and trimethoprim-sulfamethoxazole for PCP. He was prophylaxed against mycobacterium avium intracellulaire, and his return to Russia was arranged at his request.
DISCUSSION: Staphylococcus aureus is a rare lung pathogen but may cause sepsis and/or pulmonary necrosis. Risk factors for infection include concurrent influenza infection, CD4-count less than 100, or the presence of a vascular catheter. Other etiologies for necrotizing pulmonary infection in the setting of AIDS and immunosuppresed states include mycobacteria, gram-negative bacilli, Nocardia, and fungi; More than one diagnosis may be present. Thus, specific microbiologic diagnosis is called for in these patients. Expectorated sputum should be collected but may have decreased sensitivity and/or specificity due to varying laboratory technique and sample quality. Induced sputum has been shown to be equal or superior to bronchoscopy in the diagnosis of tuberculosis; It has a near-100% specificity for PCP but is less sensitive, and its utility in other pulmonary infections is unknown. More invasive techniques, such as bronchscopy with lavage (which is high-yield and relatively low-risk) or biopsy may be needed to establish a diagnosis.

THE MYSTERY OF THE VANISHING BIC. B. Phillips[1]; S.A. Haist[1]. [1]University of Kentucky, Lexington, KY. *(Tracking ID # 172708)*

LEARNING OBJECTIVES: 1) Recognize the presentation of foreign body aspiration in adults 2) Recognize the complications of foreign body aspiration.
CASE: A 20 year-old female smoker presented to an ER with hemoptysis for three weeks. She also complained of constant cough for six months and mild right-sided chest pain. She denied fever, chills, dyspnea, or weight loss. She had no known exposure to tuberculosis and denied HIV risk factors. Three years earlier, she was treated for right lower lobe pneumonia as documented by an abnormal chest x-ray. Follow-up CT scan for the pneumonia showed right lower lobe scarring. Chest x-ray upon this presentation showed right pleural effusion and distinct increase in size of the right mainstem bronchus. She was admitted for possible community acquired pneumonia and placed on IV antibiotics. CT chest showed a right middle (RML) and lower lobe (RLL) pneumonia, bronchiectasis of the right lower lobe with mucous plugging, and right hilar adenopathy. Bronchoscopy demonstrated a fleshy lesion 3 cm from the carina. She was transferred to University of Kentucky for further workup of the tumor. The initial flexible bronchoscopy showed copious mucopurulent secretions in the right middle lobe. Impacted in the RLL bronchus was a rounded dark-colored plastic foreign body. CT surgery was consulted and performed a rigid bronchoscopy removing the end of a BIC® pen. After further questioning, the patient remembered choking on the end of a pen at age 12. She was in class chewing on the end of her pen when a classmate slapped her on the back and she "swallowed" it. Afterward, she remembered having a violent episode of coughing. After removal of the foreign body, she was continued on antibiotics for post-obstructive pneumonia. At follow-up, her CT showed a decrease in bronchiectasis, adenopathy, and resolution of the mucous plugging.
DISCUSSION: The diagnosis of foreign body aspiration (FBA) in adults is complicated since patients often do not recall or volunteer a history of choking. In the cafÅ coronary syndrome, a large object lodges in the larynx or trachea, causing nearly complete airway obstruction. Respiratory distress, cyanosis, loss of consciousness, and death occur in quick succession unless the object is dislodged. More commonly the degree of obstruction is less severe when the aspirated object descends beyond the carina and thus the presentation is less dramatic. If the object is inorganic material, the latency period prior to the onset of symptoms may be months to years. Complications of FBA include atelectasis, hypoxic vasoconstriction, post-obstructive pneumonia, volume loss, necrotizing pneumonia or abscess, suppurative pneumonia, or bronchiectasis. Bronchoscopy, including both rigid and flexible, can be both diagnostic and therapeutic. As in this case, the object may appear as a tumor during bronchoscopy. Even if the object is removed, the inflammatory changes may not be completely reversible. In conclusion, FBA in adults can present with complications years after the aspiration. FBA should be included in the differential of hemoptysis and non-resolving pneumonia.

TRACHEOESOPHAGEAL FISTULA LEADING TO LUNG ABSCESS AND PULMONARY ARTERY FISTULA. K.M. Swetz[1]; K.L. Swanson[1]. [1]Mayo Foundation for Medical Education and Research, Rochester, MN. *(Tracking ID # 171805)*

LEARNING OBJECTIVES: 1. To recognize life threatening causes of massive hemoptysis. 2. To identify common and uncommon complications of esophageal malignancies in patient who have or have not undergone radiation therapy.
CASE: A 58-year-old male initially presented elswhere with progressive dysphagia and odynophagia for one month. Endoscopy with biopsies revealed unresectable squamous cell carcinoma of the esophagus, and he was treated with palliative 5-fluorouracil, cisplatin, and radiation therapy. Two months later, the patient developed sepsis, and was noted to have a tracheoesophageal fistula. He was successfully treated with empiric antibiotics. Subsequent imaging revealed persistent tracheoesophageal fistula, and the development of a cavitary lung lesion. An esophageal stent was placed, but dislodged, with worsening of the abscess. He presented two months later with large volume hemoptysis/hematemesis. CT scan revealed persistent tracheoesophageal fistula communicating with the lung abscess, now with extravasation of contrast into the abscess, suggesting possible erosion into the right lower lobe pulmonary artery branch. Upon arrival at our institution, the patient was still having small volume hemoptysis. He was taken urgently to pulmonary angiography, which revealed a large pseudoaneurysm arising from a superior segmental branch of the right lower lobe pulmonary artery. Due to local tissue necrosis, coil embolization could not be performed. Upper endoscopy with biopsy revealed recurrence of squamous cell carcinoma. The patient was not deemed an operative candidate, and was discharged home to pursue hospice care.
DISCUSSION: Esophageal cancer frequently presents at an incurable stage, with multiple complications. Five-year survival is 5–10%. We present a rare, life-threatening complication of esophageal malignancy. Tracheoesophageal fistulae are observed either as a late complication of direct tumor invasion, or as a complication of radiation or chemotherapy. Presentation with recurrent pneumonias, persistent cough, and respiratory failure is common, and average life expectancy is four weeks after development of a tracheoesophageal fistula. This case illustrates an unusual presentation of massive hemoptysis due to fistulous erosion into a pulmonary artery branch. Early recognition of this entity is critical, as embolization by interventional radiology is one means of potentially limiting life-threatening bleeding.

WHEN A COUGH IS NOT JUST A COUGH. S.N. Reddy[1]; D. Kim[1]. [1]University of Pittsburgh, Pittsburgh, PA. *(Tracking ID # 173867)*

LEARNING OBJECTIVES: 1. Appreciate that the cause of acute eosinophilic pneumonia is often unknown. 2. Identify methods of diagnosing acute eosinophilic pneumonia. 3. Recognize that intravenous or oral steroid therapy is the only confirmed treatment for acute eosinophilic pneumonia.
CASE: A 24 year old woman without any significant past medical history initially presented to an emergency room with persistent symptoms of dyspnea, non-productive cough, low-grade temperatures, and general malaise. She was discharged twice with azithromycin for a presumed atypical pneumonia. On her third visit, she was found to be in respiratory failure with radiographic evidence of diffuse bilateral airway space disease and was intubated immediately. Upon arrival to the intensive care unit, physical examination was remarkable for bilateral rhonchi, diminished lung sounds, and thick respiratory secretions. Basic laboratory data was within normal limits. Further radiographic studies of the chest demonstrated extensive bilateral fluffy infiltrates in the lower lobes and small bilateral pleural effusions. She was initially treated with broad spectrum antibiotics and antifungals for a presumed respiratory infection and continued on ventilator support. Despite the additional support, the patient deteriorated clinically and needed additional FIO2 and PEEP. Eventually, she underwent fiberoptic bronchoscopy and a bronchoalveolar lavage was performed. Although the culture data was negative, the cell count differential on the BAL was greater than 64% eosinophils which was consistent with acute eosinophilic pneumonia. She was placed on intravenous high dose steroids and had significant improvement in her pulmonary mechanics allowing her to be extubated. Her antimicrobial therapy was stopped and she was eventually weaned completely from oxygenation as her chest x-ray and physical examination were both consistent with a cleared respiratory process. She was discharged in stable condition with a prednisone taper over a one month period.
DISCUSSION: This case demonstrates acute eosinophilic pneumonia which was first described as a cause of respiratory failure in 1989 and is usually a diagnosis of exclusion. Possible contributing causes include unusual outdoor activities, cigarette smoke, exposure to fine airborne sand or dust, or possibly some other occult environmental factor. Clinical features of acute eosinophilic pneumonia include an acute febrile illness of less than three weeks duration, nonproductive cough, dyspnea, myalgias, night sweats, and pleuritic chest pain. Key physical examination findings include fever, tachypnea, and bibasilar inspiratory crackles or rhonchi. Respiratory failure is a common finding upon presentation and often requires mechanical ventilation. Routine laboratory studies are nonspecific and generally not helpful. Radiographic findings include bilateral diffuse mixed alveolar and reticular opacities with small bilateral pleural effusions. Analysis of bronchoalveolar lavage fluid often shows a very high percentage of eosinophils. Treatment uniformly consists of intravenous or corticosteroid therapy. The response is often dramatic, occurring within 12 to 48 hours, and there is no relapse following withdrawal of the steroids. In the absence of respiratory failure, initial treatment is oral prednisone. In the presence of respiratory failure, methyprednisone is given until respiratory failure resolves, after which oral prednisone may be used.

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