INNOVATION AND IMPROVEMENT

Two Novel Urban Health Primary Care Residency Tracks That Focus On Community-Level Structural Vulnerabilities

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BACKGROUND: Although residency programs are well situated for developing a physician workforce with knowledge, skills, and attitudes that incorporate the strengths and reflect the priorities of community organizations, few curricula explicitly do so.

AIM: To develop urban health primary care tracks for internal medicine and combined internal medicine-pediatrics residents.

SETTING: Academic hospital, community health center, and community-based organizations.

PARTICIPANTS: Internal medicine and combined internal medicine-pediatrics residents.

PROGRAM DESCRIPTION: The program integrates community-based experiences with a focus on stakeholder engagement into its curriculum. A significant portion of the training (28 weeks out of 3 years for internal medicine and 34 weeks out of 4 years for medicine-pediatrics) occurs outside the hospital and continuity clinic to support residents' understanding of structural vulnerabilities.

PROGRAM EVALUATION: Sixteen internal medicine and 14 medicine-pediatrics residents have graduated from our programs. Fifty-six percent of internal medicine graduates and 79% of medicine-pediatrics graduates are seeking primary care careers, and eight overall (27%) have been placed in community organizations. Seven (23%) hold leadership positions.

DISCUSSION: We implemented two novel residency tracks that successfully placed graduates in community-based primary care settings. Integrating primary care training with experiences in community organizations can create primary care leaders and may foster collective efficacy among medical centers and community organizations.

KEY WORDS: primary care; postgraduate medical education; socioeconomic factors; community-based interventions.

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INTRODUCTION

The Institute of Medicine has defined several principles for integrating primary care and public health, including engagement of community members in addressing community needs, and leadership that bridges programs.¹ Residency programs are well situated for building a physician workforce with knowledge, skills, and attitudes that incorporate the strengths of community organizations.^{2–4} Such a workforce would act upon structural vulnerabilities: a population group's risk for negative health outcomes through its interface with socioeconomic and political forces.^{5, 6}

Structural vulnerabilities modulate disease burden in all neighborhoods, including low-income urban neighborhoods.^{7, 8} Educational efforts aimed at addressing the health needs of urban communities have focused on engaging medical students in community health projects and the social determinants of health.^{9–12} At the graduate medical education level, training programs have expanded resident exposure to primary care,^{13, 14} fostered interactions with vulnerable populations,^{15, 16} and offered didactic programs on the social determinants of health and political advocacy.^{17–19}

To confront structural vulnerabilities and build upon the strengths of East Baltimore communities, we created two urban health residency (UHR) programs at Johns Hopkins Hospital (JHH).^{20, 21} The hallmark of these programs is rotations with community-based organizations that address locally prevalent problems such as addiction, incarceration, and homelessness. In these rotations, residents learn clinical approaches to these problems and their sociopolitical context. They also experience the power of collective efficacy, which is defined as the shared belief in a group's ability to solve problems when acting conjointly.^{22–26} While other programs, such as Montefiore's Residency Program in Social Medicine, share similar goals,¹⁸ to our knowledge, no other internal medicine -or internal medicine-pediatrics residency programs formally integrate, standardize, and require community engagement outside the hospital and the continuity clinic in the training curriculum.

As of June 2017, the UHR programs, which include an internal medicine track and the United States' only combined

internal medicine-pediatrics primary care program, have each graduated four cohorts of residents. Here, we describe the UHR program structure and report preliminary outcomes.

SETTING AND PARTICIPANTS

JHH is in East Baltimore, an urban neighborhood in Baltimore, Maryland. For decades, East Baltimore has had disproportionately poor indicators of adult and child health relative to the city and state.^{27, 28} The life expectancy in the neighborhood adjacent to JHH, which houses the principal outpatient site for UHR trainees, is 67.9 years, below the average for the city (73.6 years), and 16 years lower than in an affluent neighborhood 7 miles to the north.²⁹ Poverty, violent crime, teen births, infant mortality, lead poisoning, and the density of liquor outlets are present at rates well above state and national averages.³⁰ Controversial research involving Baltimore residents, land acquisition by JHH, and other historical forces have contributed to mistrust of JHH among members of East Baltimore's residential community.^{24, 31–35}

The principal outpatient site of the UHR, East Baltimore Medical Center (EBMC), has focused for over 40 years on families that live in the surrounding public housing projects.^{20, 36} Among adult patients who visited the clinic in 2015, 32% had Medicaid, 32% had Medicare, 12.8% had commercial insurance, 12.4% had Johns Hopkins University's employee health plan or other insurance, and 10.3% were uninsured. Among pediatric patients, 71.8% were covered by Medicaid, 6.4% had commercial insurance, 4.8% had Medicare, 7% had the university employee health plan or other insurance, and 9.9% were uninsured. There is a growing uninsurable adult and pediatric population due to an influx of unauthorized immigrants.

Applicants to the UHR programs are expected to commit to the clinical excellence expected of the Osler Medical Housestaff and the Harriet Lane Pediatric Training Programs, alongside whose residents they work in clinical rotations. The UHR leadership endeavor to recruit incoming residents who have demonstrated dedication to primary care of urban populations as medical students.

PROGRAM DESCRIPTION

The UHR programs' curricula are based on the social-ecological model for health, which considers individual, social, and structural targets for health promotion.^{37–40} A significant portion of the UHR residency experience (at least 28 weeks out of 3 years for the IM UHR and at least 34 weeks out of 4 years for the MP UHR) occurs outside the hospital or continuity clinic to emphasize the importance of community partnerships.^{41–43} The skill set targeted by the urban health curriculum is based on community needs that are relevant both locally (e.g., addressing specific problems characterized by neighborhood health surveys)^{29, 30, 32} and temporally (e.g.,

addressing the changing burden of opioid use disorder in Baltimore.)⁴⁴

Table 1 describes the UHR urban health rotations and community partners. Relationships between community partners and JHH have been developed based on frameworks proposed by community-based participatory researchers that include processes of self-reflection; networking; negotiating mutually beneficial educational agendas; using up, down, and peer mentoring; and constituency-building.⁴⁵ Curricula for each site are designed iteratively in partnership between UHR leadership and site staff. MP UHR residents schedule 3–4 home visits per academic year to experience family strengths and vulnerabilities in the home.

To contextualize structural vulnerabilities relevant to Baltimore City, an urban health book club co-led by residents, faculty, and alumni meets up to once a quarter. The book club has focused on housing discrimination,⁴⁶ school desegregation,⁴⁷ and gun violence.⁴⁸ Themes such as these, as well as clinical topics relevant to urban primary care, are bolstered didactically with a weekly urban health noon conference, featuring discussions with clinical experts and community-based professionals. A monthly urban health journal club draws from biomedical and social sciences literature to reinforce issues relevant to caring for urban populations. Attendance is not required or measured for these activities, and residents may invite other trainees or community partners.

Opportunities for leadership that emphasize stakeholder engagement are built into the UHR curriculum. During urban health rotations and electives, residents have 4 hours every 2 weeks blocked off for an "Academic Half Day." One resident chooses a topic, fosters discussion, and is responsible for inviting community partners. Topics have included redlining in housing policy, trauma-informed care, and dirt bike riders in Baltimore. A quality improvement curriculum, based at EBMC, promotes projects led by senior residents that are collaborative with clinic staff.

UHR graduates are incentivized to practice in Baltimore-Washington community clinics through the offer of a tuition-free part-time master's degree at a Johns Hopkins University program of the graduate's choice (the Urban Health Scholars program, UHS).²⁰

PROGRAM EVALUATION

Our evaluation was exempted by the Johns Hopkins Institutional Review Board. To characterize the UHR applicant pool, interviewees for the internal medicine program (IM UHR) over the last four application cycles ($n = 123$) and those for the internal medicine-pediatrics program (MP UHR) over the same period ($n = 99$) were offered anonymous, electronic surveys following submission of their residency rank lists. Responses to the 13 questions included a Likert scale of "definitely not" to "yes, definitely" or "completely unimportant" to "extremely important" (see [supplemental](#)

Table 1 Urban Health Rotations, Associated Community Partners, and Selected Objectives

Rotation	Community partner(s)	Duration	Selected systems-based practice objectives
Urban community medicine	House of Ruth*, Care-A-Van†, Baltimore City Health Department, Helping Up Mission‡, Medicine for the Greater Good§, Esperanza Center¶, Charm City Clinic¶¶	2 weeks	<ul style="list-style-type: none"> • Participate in health care delivery in at least three different community-based settings with interdisciplinary teams • Lead at least two accessible and interactive health education sessions in East Baltimore at community organizations
Psychiatry and mental health	Johns Hopkins Assertive Community Treatment Program#	4 weeks	<ul style="list-style-type: none"> • Recognize and address the resources available to treat patients with psychiatric illnesses in the East Baltimore community • Recognize the individual and community impact of psychiatric illness and conduct cost-effective care
Substance use disorders (SUD)	Helping Up Mission, Baltimore Buprenorphine Initiative***, various methadone and buprenorphine clinics	4 weeks	<ul style="list-style-type: none"> • Address the systems aspects of SUD in their biopsychosocial complexity • Identify community resources for patients with substance use disorders • Receive training and experience in medication-assisted treatment
HIV and hepatitis C	Chase Brexton Health Care††	4 weeks	<ul style="list-style-type: none"> • Gain an understanding of how lack of health care, as well as social, economic, and political constructs, perpetuates economic inequity and health disparity • Learn how advocacy can be a useful tool for clinicians to improve individual outcomes and influence local and national health policy
Homelessness	Health Care for the Homeless	4 weeks	<ul style="list-style-type: none"> • Recognize structural factors contributing to homelessness in the United States • Learn how homelessness affects health through biological and structural mechanisms

(continued on next page)

Table 1. (continued)

Rotation	Community partner(s)	Duration	Selected systems-based practice objectives
Correctional medicine	Baltimore County Detention Center	2 weeks	<ul style="list-style-type: none"> • Articulate the limitations of health care delivery in institutionalized settings, including the challenges that make it difficult to comply with evidence-based medicine and CDC guidelines • Characterize the health needs of incarcerated persons
Public health	Baltimore County Health Department	4 weeks	<ul style="list-style-type: none"> • Demonstrate familiarity with community services available to patients and families with a variety of developmental, behavioral, and physical health problems. • Describe the community resources available to patients without regular access to care
Health policy	Maryland Department of Health and Mental Hygiene	4 weeks	<ul style="list-style-type: none"> • Gain an understanding of local public health law, including the limitations imposed and powers conferred to the department of health • Identify processes by which priorities are selected and decisions are made at the city, state, and national level and their points of influence
Women's health	Planned Parenthood of Maryland	2 weeks	<ul style="list-style-type: none"> • Develop skills for delivering long-acting reversible contraception • Become familiar with community resources for assistance with distribution of medications and other services at reduced or no cost

*House of Ruth: intimate partner violence center

†Care-A-van: hospital-based mobile treatment facility

‡Helping Up Mission: recovery house and shelter for those without stable housing

§Medicine for the Greater Good: partnership between academic medical center and area churches, community-based organizations, and schools

¶Esperanza Center: immigrant resource center

¶¶Charm City Clinic: medical student-run clinic and community resource center

#Johns Hopkins Assertive Community Treatment Program: home- and community-based psychiatric treatment services program

***Baltimore Buprenorphine Initiative: collaboration between city government and SUD treatment providers to expand access to evidence-based treatment for opioid use disorder

††Chase Brexton Health Care: federally qualified health center founded in Baltimore's gay community

material). Ninety-four IM UHR interviewees (76%) and 77 MP UHR interviewees (78%) completed the survey. When asked about their likelihood of engaging in various activities after residency, 89 (95%) of IM UHR interviewees and 73 (95%) of MP UHR interviewees responded “possibly” or “yes, definitely” to practicing ambulatory primary care. Conversely, 22 (23%) of IM UHR interviewees and 11 (14%) of MP UHR interviewees responded “possibly” or “yes, definitely” to pursuing subspecialty care training. Eighty-nine (95%) of IM UHR and 77 (100%) of MP UHR interviewees identified the urban health curriculum as a somewhat or extremely important factor in deciding to apply. Ninety-one (97%) of IM UHR and 72 (94%) of MP UHR interviewees reported that the ambulatory training curriculum was somewhat or extremely important.

As of July 2017 (7 years since the UHR program was founded), 16 physicians have graduated from the IM UHR and 14 from the MP UHR. Among IM UHR graduates, nine (56%) chose to practice primary care, two (12%) chose generalist hospital medicine, and five (32%) are pursuing subspecialty training. Of these five, three are pursuing infectious disease training with a focus on HIV, and one is pursuing palliative care training.

Among the MP UHR graduates, 11 (79%) are practicing primary care, two (14%) pursued subspecialty primary care training in adolescent medicine, and one (7%) is pursuing subspecialty training in palliative care. As of July 2017, one of the adolescent medicine subspecialists is a faculty addiction medicine researcher at a different academic center. Seven UHR graduates are currently practicing community-based

primary care with UHR community partners. Eight UHR residents have pursued the UHS program.

Figure 1 presents the post-residency career choices of these graduates, with details on practice settings and leadership roles, compared to the career choices of the categorical residents in the Osler program and the Harriet Lane program over the same 4-year period of graduates. Published data from other primary care internal medicine programs suggest that a comparable percentage of our graduates choose primary care careers (54% of a 10-year sample of graduates from the University of California, San Francisco, primary care residency chose primary care careers, and 90% of a 20-year sample of graduates from the New York University School of Medicine/Bellevue primary care internal medicine residency program did).^{49, 50} However, these data are from surveys with response rates of 67% and 85%, respectively, and do not include practice location.

Suggestions for improving the UHR programs have arisen from multiple stakeholders. Urban health rotation site directors iteratively modify their curricula to meet the changing needs of their community organizations and resident-learners. Surveys of current residents revealed a desire for more scholarly opportunities during residency, so the urban health noon conference series and the urban health journal club have been modified to emphasize the work of researchers in the general internal medicine and general pediatrics divisions at JHH. Residents also identified a need for stronger outpatient procedural training. An ongoing, voluntary opportunity for training in emplacement of the etonogestrel implant (Nexplanon) is

Figure 1 Career plans for graduates of residency programs from academic years 2013–2014, 2014–2015, 2015–2016, and 2016–2017 in the two urban health tracks and in the categorical internal medicine and categorical pediatrics programs at Johns Hopkins Hospital. Graduates with plans for a 1-year experience in a certain setting during which they plan to apply for another position or fellowship after that year were assigned according to their plans for that second postgraduate year. GPAM, general pediatrics and adolescent medicine; GIM, general internal medicine; NCSP, National Clinician Scholars Program.

now offered, and we are collaborating with Planned Parenthood of Maryland to develop training on intrauterine device insertion available to the UHR program.

The programs are designed to prepare primary care providers to meet the social and medical needs of their patients while also becoming leaders in primary care. To date, seven (23%) have taken on leadership roles. Four have served in residency program leadership, three are medical office directors, and one is leading quality improvement efforts in his primary care clinic.

While it is difficult to assess the impact of the UHR programs on the JHH categorical residencies, we note that categorical residents tend to choose urban health electives: two in 2013–2014, one in 2014–2015, four in 2015–2016, and seven in 2016–2017.

DISCUSSION

We have described the theoretical underpinnings, curricula, and preliminary outcomes of the Johns Hopkins UHR programs, which are novel in their emphasis on community-based learning and formalized leadership opportunities. Interviewees for the UHR programs tend to be applicants seeking careers in primary care. They identify the urban health curriculum and ambulatory training opportunities as central to their decision to apply. The UHR programs have placed seven graduates in community organizations, despite a tradition of training of future subspecialists among the categorical internal medicine and pediatrics programs at JHH. We anticipate that recent UHR graduates will serve as ambassadors for community-based organizations to JHH and Johns Hopkins University.

Too few years of graduates exist to analyze trends over time as we seek to improve the programs. Scalability is unclear because the national appetite for programs such as these is not known. Further, we do not have patient- or community-level data, including qualitative data, to evaluate whether the programs have begun to build collective efficacy.

Residency training in an urban setting with historical strain between an academic medical center (AMC) and neighboring communities may build relationships between the AMC and its community and foster the integration of primary care medicine and public health.¹ Residency programs that produce primarily subspecialists can integrate primary care tracks into their programming. Our model offers a framework for community-relevant training that will produce primary care leaders. Further research may clarify the effects of such programs on community-academic partnerships, and longer-term follow-up of our graduates may elucidate the utility of the skill set acquired during residency.

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