

## **CREATING URBAN HEALTH LEADERS: A LONGITUDINAL APPROACH TO MEDICAL STUDENT DEVELOPMENT**

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### **ABSTRACT**

*Introduction:* Many medical students begin with a passion for serving urban communities, but few pursue such careers, exacerbating urban health disparities. This study evaluated the effectiveness of the Urban Health Pathway (UHP) established in 2015 at Case Western Reserve University School of Medicine to address the problem. The UHP aims to provide medical students with urban health experiences, including didactics, hands-on rotations, and mentorship.

*Methods:* From 2015 to 2022, 44 students graduated from UHP. Of those, 15 alumni completed a follow-up survey in 2023, and 24 students submitted detailed self-reflective portfolios at graduation. The longitudinal impact of the UHP was assessed using programmatic data, portfolios, and a follow-up survey. Descriptive statistics and thematic analysis were employed.

*Results:* The UHP significantly influences students' career aspirations, fostering a strong commitment to working with medically vulnerable populations. Graduates highly valued the mentorship offered by the pathway and reported UHP as instrumental in shaping career choices and reinforcing their dedication to under-resourced urban communities.

*Discussions:* The UHP provides essential support for students interested in serving under-resourced populations. Implementing similar programs in other medical schools could help meet the growing need for urban healthcare providers, ultimately reducing health disparities in these communities.

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## INTRODUCTION

Since 1910, medical education has largely followed the recommendations of the Flexner Report, which emphasized scientific rigor and standardization in medical training [1]. However, recent scholarship has identified public health dimensions within Flexner's report, leading to calls for curricular changes that better serve vulnerable populations [2,3]. These vulnerable populations are often found in urban settings, which present complex health challenges due to high population density, structural barriers, and significant health disparities. These disparities include limited access to healthcare, higher prevalence of chronic diseases, environmental hazards, and socio-economic inequities [4]. As urbanization continues to grow globally, with more than half of the world's population now living in urban areas, addressing these urban health disparities is becoming increasingly critical [5].

In the United States, considerable efforts have been made to address physician shortages in rural underserved areas through medical pathway programs. These programs, which have been extensively researched and proven successful, have increased medical student interest in rural healthcare and have been widely adopted by medical schools [6,7,8,9]. In contrast, there is a notable lack of documented efforts focused on urban health. Key predictors of a physician's commitment to work in underserved areas include being a member of minority communities, participation in service organization providing healthcare to underserved communities (National Health Service Corps), and a strong interest in working with these communities prior to medical school [8]. Medical schools can significantly influence and sustain student interest in serving these populations through targeted programs.

While many medical schools have introduced experiential public health curricula, evaluations specifically focused on urban health pathways are scarce. Traditionally, these pathways have concentrated on placing physicians in rural underserved communities. Despite extensive information available on specialized curricula, there is a paucity of published outcomes. A scoping review of 22 studies on curricular changes found that only 36% included program evaluation results [10]. Programs such as the Training in Urban Medicine and Public Health (TRIUMPH) and the Urban Medicine Program (UMed) have demonstrated increased knowledge, skills, and confidence among students in serving urban populations [11,12]. This evaluation study aims to provide additional evidence of the success of such programs and present the Urban Health Pathways (UHP) design as an exemplar.

## *PROGRAM DESCRIPTION*

The Urban Health Pathway (UHP) is a four-year supplemental pathway curriculum that serves as a longitudinal collegial learning community where selected students participate in individualized community-based activities to enhance their understanding of real-life health concerns. Through interactions with community experts, patients, and mentors, students gain practical insights. The curriculum builds a learning community through shared experiences, such as didactic sessions featuring physicians serving urban patients, urban clinical rotations at a county hospital, and mentoring from program directors and community partners. These components aim to inspire students to pursue careers in serving medically vulnerable urban populations.

First-year medical students are invited to apply for the pathway. The pathway is overseen by a faculty director with dedicated support for maintaining the design and implementation of the curriculum, as well as managing its operations, with some additional support from an administrator who supports the broader catalog of pathways experiences. Applications are reviewed by the pathway director, and about six students from each class are selected each year.

In addition to the standard curriculum, UHP students benefit from specialized didactics and direct access to experts working with under-resourced Cleveland populations. This supplementary education provides a deeper understanding of urban healthcare intricacies, including disparities in healthcare access, special needs populations, and infectious disease management. Urban clinical rotations allow students in their third year to choose between a longitudinal integrated clerkship or a traditional rotating clerkship at a local county safety-net hospital. Mentorship plays a crucial role, offering personalized guidance from experienced urban health professionals and supporting peer mentoring. These mentorship opportunities help students navigate the challenges of urban healthcare, integrate their desire to serve with evolving career goals, and enhance their clinical skills and community engagement.

## **METHODS**

### *PROGRAM EVALUATION*

From 2015 to 2022, 44 students participated in the UHP. We employed internal data and online searches to locate contact information for 39 out of the 44 eligible participants for follow-up. This evaluation project was approved as exempt by the Case Western Reserve University Institutional Review Board (IRB) (20221400).

## *DATA COLLECTION*

The foundation of our evaluation was twofold. Annual narrative reflections collected as part of UHP student portfolios were aggregated and de-identified. In the reflections, students provide information on their UHP-related activities and reflect on a series of prompts on their longitudinal progression and impressions of the pathway's benefits and impact. Secondly, a structured UHP Alumni Questionnaire was created with input from pathway, curricular leadership, and annual reflective portfolios. The alumni survey encompassed two queries regarding their current involvement with vulnerable populations, agreement with 6 statements measured by a 6-point Likert scale ranging from strongly disagree to strongly agree, and three open-ended questions exploring program outcomes and impact. Feedback from an independent faculty member and student review informed improvements in the survey's structure and wording. Participation was voluntary, and consent was implied from questionnaire completion.

## *DATA ANALYSIS*

Descriptive statistics and thematic analysis were employed for survey and internal programmatic data, respectively. Qualitative insights from narrative reflections and portfolios were extracted through an inductive and iterative coding process aligned with best practices [13]. Two researchers individually identified recurring themes and defined them after reviewing the same set of five portfolios. A collaborative effort produced a codebook based on their findings, which was refined following the review of an additional set of portfolios. This codebook was then utilized to code the remaining portfolios, with regular meetings to discuss progress, addressing intercoder disagreement, and coding reliability. The research team achieved a Kappa of .60, indicating acceptable reliability [14].

## **RESULTS**

### *URBAN HEALTH PATHWAY ALUMNI SURVEY*

The alumni survey response rate was 34% with 15 of the 39 UHP graduates responding. Of the alumni, 81% claimed UHP influenced their career goals to include more underserved urban communities, and 69% claimed the UHP influenced the type of residency programs they applied to (Table 1). A total of 93% claim the UHP influenced their career goals and are currently working in an urban setting and/or serving medically vulnerable patient populations.

Twelve respondents answered open-ended survey questions asking alumni to describe the most valuable part of being in the UHP and the impact the Pathway had on their career (Table 2). During the analysis, four broad themes

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**Table 1. Urban health pathway alumni’s survey quantitative items**

| Survey Question  | Percentage answering yes                       |
|--|--|
| Do you currently work and/or care for medically vulnerable patients in an urban setting (i.e., patient care, research, or other employment)? | 88%  |
| Survey Statement   | Percentage in agreement with survey statement* |
| The Urban Health Pathway influenced the residency programs I applied to.   | 69%  |
| My participation in the Urban Health Pathway set me apart from other residency applicants.   | 75%  |
| The Urban Health Pathway influenced my career goals/plans.   | 81%  |
| I was satisfied with the mentorship provided to me during the Pathway.   | 75%  |
| I was satisfied with the content taught to me during the Pathway.  | 69%  |
| I was satisfied with the opportunities provided to me as a Pathway participant.  | 81%  |

Responses by 15 UHP alumni who graduated from 2015–2022 to a questionnaire sent in 2023.

\*Agreement to the statement is defined as answering “agree” or “strongly agree” on a 6-point Likert scale of strongly disagree, disagree, slightly disagree, slightly agree, agree, and strongly agree.

**Table 2. Urban health pathway alumni survey qualitative comments**

| Theme   | Percentage of Respondents* | Example Quotation   |
|---|----------------------------|---|
| Most valuable part of the pathway: mentorship or connections                | 75%                        | “Amazing mentor who advocated for me to be a Howard Hughes Medical Institute fellow which really jump started my career.” |
| Most valuable part of the pathway: clinical exposure or opportunities       | 17%                        | “Opening up opportunities ... on projects analyzing how health systems intrinsically prioritize different patients.”      |
| Maintained interest in working with medically vulnerable populations        | 50%                        | “[Urban Health Pathway] has definitely made me want to keep caring for an urban underserved population.”                  |
| Explicitly stated the pathway impacted the choice of residency or specialty | 42%                        | “Motivated me to apply to residency programs ... to work with medically vulnerable communities.”                          |

Note: Analysis from free text responses by 12 UHP alumni who graduated from 2015–2022 to a questionnaire sent in 2023 containing 3 prompts: 1) Describe the most valuable part of being in the Pathway. 2) Describe the impact the Pathway had on your career. 3) Describe one unexpected outcome of participating in the Pathway.

\*Percentage of respondents who endorsed themes in free text survey responses as interpreted by two researchers. Each respondent may endorse multiple themes.

emerged: students valued mentorship or connection, valued clinical exposure or opportunity, maintained existing interest in working with medically vulnerable populations, and explicitly stated that the pathway impacted their choice of residency or specialty.

Seventy-five percent of participants emphasized the value of their relationships with mentors in the pathway program, highlighting how these mentors helped them apply classroom knowledge in real-world settings. One alum reflected that the most valuable part of being in the UHP was “meeting new people with similar interests and commitment and meeting faculty who practiced in a way that represented what we learned.” Additionally, 50% of participants noted that the pathway helped sustain or boost their interest in working with medically vulnerable populations, and 42% indicated it influenced their choice of residency or specialty. One student stated that UHP “solidified [my] dedication to the geriatric population in urban communities”. Lastly, 17% mentioned that the pathway offered clinical exposure and opened up further opportunities, as stated by one of the alumni: “I took the opportunity to work with our LGBT population, and now I offer transgender surgery in Cleveland.”

### *URBAN HEALTH PATHWAY PORTFOLIOS*

Twenty-four UHP students submitted self-reflective portfolios prior to graduation from 2019 to 2022. These portfolios were de-identified and analyzed with Dedoose. The impacts of the UHP can be summarized by four major themes, illustrating that students graduated with increased interest in working with medically vulnerable populations (Table 3).

Notably, the percentage of students with an interest in working with underserved populations increased from 58% when enrolling in the UHP to 96% when near graduation (Table 3). In addition to the increased interest, UHP graduates frequently outlined more specific residency and career aims, including medically underserved populations through one or more of the following plans: clinical inclusion of medically vulnerable populations (88%), advocating personally or politically for medically vulnerable patients (67%), educate medical professionals or the public on better healthcare for medically vulnerable patients (58%), conduct research with medically vulnerable populations (42%).

Of the 75% of students who noted a deeper understanding of how to best serve medically vulnerable communities, 50% identified specific systems-level issues (e.g., insurance, transportation, care navigation) preventing patients from seeking or receiving care. These students contemplated how they could influence systemic factors outside of direct patient-physician interactions that played a role in urban health equity. For instance, a student realized they wanted to “keep the various ways to get involved in [healthcare policy] in mind as I go further in my career” because “it can be frustrating when one is volunteering and policy changes are what is ultimately needed.”

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**Table 3. Urban health pathway (UHP) portfolio themes**

| Theme  | Percentages of Respondents* | Example Quotation  |
|--|-----------------------------|--|
| Enrolled in UHP with prior interest in working with medically vulnerable populations | 58%                         | “In an effort to learn more about the disparities affecting urban populations and ways in which I could work to address them, one of the first actions I took when starting medical school was to join the urban health pathway.”  |
| Graduated from UHP with future plans to work with medically vulnerable populations   | 96%                         | “The influence my experiences within urban health have had on me has been instrumental, and I think it would be quite fulfilling to pass on some of the lessons I have learned and to advocate for primary care.”  |
| Gained a deeper understanding of how best to serve medically vulnerable communities  | 75%                         | “My clinical rotations and the various patients and clinical vignettes that have embedded themselves in my understanding of medicine have been the most eye-opening in this regard, like being a part of a patient’s medical team and considering how to advocate for patients in this role...”      |
| Developed inclusivity in medical specialties for medically vulnerable populations    | 29%                         | “However, I think there is a lot that can be done in the realm of exploring disparities in care from an orthopedic perspective. For example, in the utilization of elective surgeries, outcomes in trauma patients, and exploring provider-related factors that may contribute to such disparities.” |

Note: Themes from student portfolios asking them to reflect on the impact of UHP on their growth as students and future physicians. 24 portfolios were submitted prior to students graduating from 2019 to 2022.

\*Percentage of respondents who endorsed themes in free text survey responses as interpreted by two researchers.

About 58% of students reflected on the roles of physicians in serving medically vulnerable communities, noting how to coach or provide non-clinical care to patients who may need additional support navigating the healthcare system (Table 3). Likewise, 22% of students stated they realized after the pathway that there is a broad need for more training in medical school and residency to prepare doctors better to work with medically vulnerable populations.

Furthermore, 29% of students expressed their desire to pursue medical specialties they initially viewed as difficult to align with their desire to serve medically vulnerable populations (Table 3). Eight students highlighted their interest in urology and surgery and expressed challenges in first understanding how to apply their passion for urban health to their clinical roles. By participating in the program, these students ultimately recognized ways to overcome this challenge through their experiences in

the UHP. For instance, one of the students interested in neurosurgery acknowledged that the training prompted them to begin “thinking forward to my hopeful career in neurosurgery and how I will be able to incorporate my passion for urban health.”

## DISCUSSION

We evaluated the UHP’s impact on graduates via alumni surveys and portfolio analysis. Results showed the UHP influenced career goals, with almost all graduates currently working with medically vulnerable patients. Seventy-five percent of alumni survey respondents claimed that mentorship and connections played a key role in sustaining interest in serving such communities and shaping career decisions (Table 2). Four key student perspectives emerged: existing urban health interests, career plans involving vulnerable populations, better understanding of healthcare systems, and how to integrate urban health regardless of specialties (Table 3). Following the experience, students were more committed to urban health. The pathway helped align specialty interests with vulnerable populations, reinforcing dedication to healthcare disparities and urban community careers. The overall impact UHP had on students is important for increasing the number of physicians working with underserved populations. It is known that the strongest predictors of physicians to work in underserved communities, such as those in urban areas, are being a member of the minority community, participation in organizations providing care to underserved communities, and a strong interest in working with underserved communities before medical school [8]. Of these factors, the one medical school can most influence after student enrollment is maintaining and expanding the student’s interest in working with underserved communities, which is what our evaluation evidence indicates as an impact of UHP participation.

Our findings indicate that a well-designed and adequately supported longitudinal program has the potential to offer medical students educational and practical exposure to working with urban populations, effectively encouraging future physicians to pursue careers caring for vulnerable, under-resourced patients. This is in line with the reports on the TRIUMPH and UMed programs; however, these programs showed changes in attitudes, skills, and/or knowledge, and our outcomes were focused on graduates’ service to medically vulnerable communities and/or perceptions of the impact of the program on their career [2,11]. The experience provided students with additional insights into how they might serve urban communities in addition to clinical care, including through policy/advocacy work and research. The structure of UHP could be transferred and adapted to fit into medical education programs globally. Most medical schools are located within or near urban centers to allow for practical exposures. Mentorship is sourced within the existing school faculty.

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Given the increased need for physicians serving urban populations, it would be advantageous to consider how such a program could be scaled up to support more than a small cohort of students [15]. The UHP is limited to six annually selected participants. This program caters to students motivated by personal interest in urban health populations. This self-selected group, however, demonstrated an increased commitment to working with such patients and contexts, enriching their insight beyond initial curiosity. Evaluating the pathway's additional value necessitates comparing it to a control group. The survey response rate of 34% limited the capture of broader student perceptions, constraining conclusions drawn from quantitative data. It is likely that self-selection bias led to the reporting of a more significant impact of UHP. However, required portfolios submitted by all students participating in the pathway showed similar results, suggesting the significant role UHP played in increasing student interest in working with UHP, which was consistently reflected at graduation and beyond. For instance, at graduation, 96% of participants planned to work with medically vulnerable populations, and in the survey years after, 93% of respondents reported that the UHP influenced their career goals or that they are currently working with vulnerable populations. Chosen for their capacity to convey impact and student perspectives, the study's evaluation methods are intended to inform similar program development at other institutions.

The UHP at Case Western Reserve University School of Medicine fosters the development of students with a desire to provide for medically vulnerable populations. It is one of dozens of such programs across the nation; however, limited evaluation results have been published. It is imperative that a larger initiative to showcase not only their curricular components, but also the successes of these programs, is considered by the broader educational community. This would allow institutions to improve their programs, demonstrate the value of promoting them, and ideally lead to increased opportunities for interested students.

### **PRACTICE POINTS**

- 1) The Urban Health Pathway for medical students maintains and increases students' interest in urban health.
- 2) Graduates highly value the mentorship they receive, with many reporting that it has been instrumental in shaping their residency and career choices.
- 3) The Urban Health Pathway gives medical students hands-on knowledge/ skills while interacting with experts in the field to address urban health problems.

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## DECLARATION OF INTEREST STATEMENT

Authors declare there is no financial interest or personal relationships which could influence the work in this paper.

## DATA AVAILABILITY

The dataset generated and analyzed is not publicly available as per the condition of IRB approval. But they may be available from the corresponding author upon reasonable request.

## AUTHOR CONTRIBUTIONS

Conception (KQ, ZX), Data collection (KQ, ZX), Analysis (ZX), drafting of manuscript (ZX), editing (ZX, KQ, EM, NL)

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