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Program Attributes and Perceived Effects of the Interprofessional Student Hotspotting Learning Collaborative (Student Hotspotting)

Margaret Ziemann and Marsha Regenstein

BACKGROUND

Driven in part by value-based payment policies, healthcare systems are implementing programs to address the medical and social needs of complex patients with high healthcare utilization.[1,2] Health system experts recognize that the future health workforce must be adequately prepared to practice within care delivery models that promote this approach.[3-6] However, gaps exist between health education curricula and the knowledge, competencies, and experiences needed to understand and address the underlying drivers of healthcare utilization among high-need, high-cost patients.[7-9] To address this gap, new interprofessional service learning models are emerging to train students in medicine and other health professions to respond to the needs of complex patients through patient-centered, interprofessional approaches.

The Interprofessional Student Hotspotting Learning Collaborative (student hotspotting) is a national model for training, "the next generation of providers to deliver integrated, person-centered care for patients with complex needs."[10] Launched jointly by the Camden Coalition of Healthcare Providers, Primary Care Progress, and the Association of American Medical Colleges in 2014, the program brings together medical and other health professions students and faculty advisors to connect with complex patients and learn about the root causes of high healthcare utilization. Patient home visits, interprofessional case conferences, and a structured, evidence-based curriculum are used to build student competencies and confidence in complex care.

According to program administrators at the National Center for Complex Health and Social Needs, over 40 medical schools have participated in student hotspotting since it began. Despite reported outcomes suggesting that the program is effective in teaching students about the social determinants of health (SDoH), the value of interprofessional collaboration, and healthcare system complexities,[11-13] no research to date has examined long-term program effects. This study aimed to identify the program attributes that shape student learning experiences and assesses the lasting effects of student hotspotting on host institutions and alumni 3-5 years post program participation.

KEY FINDINGS

1. Program attributes inherent in the student hotspotting model contribute to alumni-reported learning experiences and outcomes.
2. Student hotspotting influences program alumni's practice after they enter the workforce and may strengthen medical students' decisions to pursue primary care or serve vulnerable populations.
3. Student hotspotting is hard for universities to scale and sustain, but may serve as a program model template for home-grown alternatives.
4. Student hotspotting prepares the future health workforce for complex patient care by building competencies in interprofessional education, social determinants of health, and patient-centered care.

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METHODS

Semi-structured phone interviews were conducted with program alumni and faculty mentors from the first two program cohorts (2014-2015 and 2015-2016), to provide the most long-term perspectives on lasting program effects. Transcribed interviews were coded and analyzed by the study authors to identify dominant program attributes and effects. Participants were recruited to represent as broad a sample as possible in terms of health professional training program and participating universities.

FINDINGS

Nineteen faculty advisors and 21 student hotspotting alumni were interviewed, representing 10 disciplines and 20 of the 23 universities that participated in the first two program cohorts. Multiple program attributes associated with alumni-reported learning experiences were identified. These attributes were categorized by the ways in which they connected: students and patients; students and other students; and students and the healthcare delivery system (Table 1). These connections fostered meaningful learning experiences that alumni described as bringing life to lessons learned in the classroom and allowing them to more deeply understand how SDoH shape health outcomes, the depth of professional colleagues' skills and value to a health care team, and the complexities of healthcare systems.

Most of the program alumni interviewed reported lasting influences of student hotspotting on their professional practice (Table 2) in ways which demonstrated patient empathy, a commitment to interprofessional collaboration in complex patient care, and an understanding how SDoH effect health. Additionally, two-thirds of the physician alumni interviewed reported that program participation reinforced their decision to pursue primary care or a specialty area highly dependent upon interprofessional collaboration. Four alumni stated that the program contributed to their pursuit of a community-based practice setting or desire to serve a vulnerable or high-needs patient/client population, while another four cited an interest in or shift to policy or systems-focused work after program participation. Two students credited student hotspotting with influencing their decision to pursue a Master of Public Health degree.

Overall, faculty interviewees indicated that while the program had a profound impact on students and faculty, it had a more modest impact at the school or university level from their vantage point. Few universities from the first two cohorts still participate in the original student hotspotting program, primarily due to funding challenges. The cost, relative to the size of the program (most school teams consisted of 4-7 students across a minimum of three training programs), was mentioned by several interviewees, who questioned its ability to be scaled for a larger cohort of students. Half of the universities represented by faculty in our study adapted components of the original program to create their own "home-grown" version of the hotspotting. These included expanded programs for medical students, creation of IPE service learning projects, hotspotting clubs, or specially tailored curricular offerings. However, not all adapted programs were inclusive of the interprofessional component, cited by both alumni and faculty as one of the most valuable program elements in the original model.

CONCLUSION

The Interprofessional Student Hotspotting Learning Collaborative has the potential to prepare the future health workforce by building health professions students' competencies in areas that align with best practices in complex patient care, including patient-centeredness, health equity, cross-sector collaboration, and interprofessionalism.[14] Though student hotspotting as a package may be difficult for academic institutions to sustain and scale, it serves as a unique example of how a program that creates meaningful opportunities for health professions students to connect with patients, students from other disciplines, and healthcare systems can have lasting influence on their future practice approaches and perspectives.

POLICY IMPLICATIONS

Undergraduate health professions education programs offer an opportunity to expose students to critical concepts of

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interdisciplinary care for complex and high-need patients, with the potential to provide lasting benefit for the health workforce and higher-quality, lower cost care for patients. Given its strong interest in preparing a health workforce with the skills and sensitivities to advance equity, HRSA may want to consider policies and programs to provide broader uptake of hotspotting efforts that are customized to local settings.

TABLE 1. STUDENT HOTSPOTTING PROGRAM ATTRIBUTES FACILITATE MEANINGFUL LEARNING EXPERIENCES

Program Attributes (PA)	Learning Experiences	Illustrative Quotes
PA connecting Students and Patients • Real world, community-based setting • Following patients over time • Working closely with 1-3 patients	• Direct observation of SDoH in context • Building patient relationships and trust • Open patient-student communications • Understanding patient goals, preferences • Understanding underlying drivers of high healthcare utilization	• *…having the ability for the patient to illustrate how their health plays out in their own context I think is really beneficial. – Social Work Alum* • *I loved it because it was the perspective of individual people over time…A six-month long intervention that's very divorced from sitting in a clinic… – Medicine Alum* • *…to be able to focus on just one particular, two particular patients, really brought life to the work. – Social Work/Public Health Alum*
PA connecting students and other students • Real world IPE • Diverse IP team composition • Trainee-to-trainee learning • Shared goal • Student convening	• Real world problem solving • Comprehensive patient assessments • Dispelling discipline-specific stereotypes • Learning scope and value of disciplines • Shared responsibility; reduced sense of being overwhelmed • Sense of community, shared purpose • Skill-building in team dynamics • Inter-institutional learning • Professional development	• *...my medical curriculum did not do anything to teach about, what does a pharmacist do?...I learned that a pharmacist can do a whole lot…And I learned, what's the scope of a nurse. And what's the scope of even a public health person.* *– Medicine Alum* • *I would say in terms of the hotspotting program, specifically, it was really valuable for me to work with social work students. I hadn't had a lot of interaction with social work as a field. And that was incredibly, incredibly helpful. –Medicine Alum* • *… if we remind ourselves that we're moving towards the same goal, we just have different ways of approaching it…then it becomes a much easier working environment.* *–Social Work/Public Health Alum*
PA connecting students and the healthcare system • Student accompaniment to clinical, outpatient visits • Student visits to hospital	• Patient perspective observations • Understanding of system level barriers patients face • Awareness of need for more effective patient-provider communications • Awareness of health system deficiencies, especially gaps in care coordination	• *I went to doctors' appointments with my patient, and I watched him not talk. He didn't tell the doctor that he didn't have any insurance…So it was very eye opening because then I had a new appreciation for, this is why these prescriptions come to the pharmacy the way they do, because the patient doesn't talk to the doctor… – Pharmacy Alum* • *…we went to visit him [in the emergency department]and found out how fragmented his service was. He was coming in fairly frequently, but he had never been connected to the physical therapy department, which could have saved him a lot of trips, because he didn't realize that there were rehabilitation options for that outside of going to the ER. –Social Work/Public Health Alum*

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TABLE 2. STUDENT HOTSPOTTING HAS LASTING EFFECTS ON PROGRAM ALUMNI'S PRACTICE HABITS AND PROFESSIONAL DECISIONS: EXAMPLAR QUOTES

PRACTICE HABITS	PROFESSIONAL DECISIONS
• *I try having people repeat things back to me, or make it really clear that I want them to ask me questions instead of just accept what I say because I'm a doctor. –Medicine Alum* • *…I feel like I'm able to help leverage us as a team better than I would be able to if I hadn't done hotspotting. –Medicine Alum* • *…when I'm seeing patients all day, I think of those factors (SDoH). And I still prescribe the medication I should prescribe, but I am always thinkng and trying to ask patients about what are gonna be the barriers to actually taking that." –Medicine Alum* • *I took that with me…we need to make sure that the patient has a team. – Clinical Nutrition Alum* • *…my outlook towards patients and noncompliance is very different than a lot of my coworkers. And because of that, I am able to not get frustrated in providing care. –Nursing Alum* • *We love to write in our discharge summaries 'patient will continue to work in outpatient setting,' but unfortunately, a lot of that stuff gets dropped or missed…So one thing I try to do more is to communicate with the outpatient provider. – Medicine Alum* • *…this is the work that I feel drawn to do, but I actually might be able to do it effectively and keep myself going for many years if I have a team like (student hotspotting team) working alongside of me. – Medicine Alum* • *I continue to see that there's huge fragmentation in various systems, but that hasn't stopped me from trying to provide more continuity of care. –Social Work/Public Health Alum* • *…hotspotting made me realize that maybe a lot of people are trying to make a difference at the system level, but maybe making that difference is staying in clinical medicine, seeing patients, leading teams, and being a leader influence at your organization…policy is great, but sometimes, I'm like, man, I have to roll up my sleeves and be a part of this in order to want to change it. –Medicine Alumni*	• *(Hotspotting) led to my selection of family medicine…and my choice in residency, in terms of making sure that I went to an FQHC that served multiple populations and that valued and supported home visits. - Medicine Alum* • *It was being on a multidisciplinary team that really spoke to me…it's something I love, and it's kind of why I am specializing in geropsychology now. I want a career where that's the setting: where I don't have to be working with the patient alone. –Psychology Alumni* • *I ended up doing my internship and now my post-doc in a more community-based area. – Psychology Alum* • *Hotspotting reinforced that desire to work with folks who are the high utilizing patients, who have a lot of things going on besides their actual physiology. –Medicine Alum* • *(Hotspotting) reinforced my interest of the health services realm…questions in how we get people, particularly people who are vulnerable, the services they need. – Medicine/Biomedical Sciences Alum* • *Getting a public health degree was a good way to stay engaged in the work surrounding patients with complex care needs and healthcare utilization, but in a way I found more sustainable.* • *-Social Work Alum*

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