

Health professional schools, and medical schools in particular, aim to select candidates who are intelligent, motivated and who embody the qualities of leadership and compassion. Matriculating students begin their careers in medicine with a passionate desire to serve and have demonstrated an ability to work effectively with others, often in a leadership role. Medical education should be designed to foster this enthusiasm and eagerness to provide care. However, there is evidence that medical students become more cynical over the course of their medical school education.<sup>1</sup> In light of the current state of our healthcare system, with over 45 million uninsured, a significant percentage of patients with numerous barriers to care, and rising medical costs often attributable to avoidable medical errors due to a lack of interdisciplinary coordination, attitudes and values among health professionals in training are of utmost importance. The question arises as to how to capture the original motivations of health professional students and ensure that those motivations are not lost as they embark on a career in medicine. Health professional or medical student-run clinics have been developed by students in a number of medical institutions across the country. These clinics are often founded by a core group of motivated students interested in serving the unmet healthcare needs of an underserved population in their community.<sup>2</sup> Though the main mission of these clinics is to alleviate barriers to care for disadvantaged patients, another important goal is to offer a unique educational experience to student volunteers. Student-run clinics offer students, at all levels of training, the opportunity to understand the challenges of managing healthcare for underserved patients with limited resources and to work closely in teams, often with health professional students in varied disciplines. Medical schools that have implemented student-run clinic programs have observed the value of this unique educational opportunity: students are engaged in clinical care early in their medical education; they are involved in all aspects of healthcare from social services and education to primary care and specialty referrals; they are responsible for coordinating care for their patients by working in teams. As a result, students are better able to relate to their patients, often the most disadvantaged of patient populations.<sup>3</sup> In order to create a healthcare workforce equipped to provide a high-value team approach to coordinated, patient-centered healthcare, a fundamental change required of the healthcare education system is to support and help fund health professional student-run clinic programs in all medical institutions across the country.

Though, student-run clinic programs have been in existence for over two decades,<sup>4</sup> there has been minimal research conducted regarding the prevalence and clinical/educational impact of these programs. Simpson et al. provided the only review to date by conducting a survey of student-run clinics throughout the United States.<sup>5</sup> The review estimates that there are 111 student-run clinics affiliated with 49 medical schools in 25 states. This group defines a medical student-run clinic as the following: “...a healthcare delivery program in which medical students take primary responsibility for logistics and operational management and which is capable of prescribing disease-specific treatment to patients.” Simpson et al. identify most clinics as providing for low-income adult patients, often uninsured and frequently homeless, who are at a risk of serious chronic medical conditions such as diabetes, hypertension, and mental illness; 88% of clinics care solely for uninsured patients and 78% do not accept any form of payment from patients. Seventy-five percent of the clinics’ patients are ethnic minorities. The majority of clinics operate once a week in an off-campus site such as a community health center or homeless shelter, with which they have developed an affiliation. In addition to providing primary care and management of chronic health conditions, many clinics provide a variety of medical services such as specialty referrals (86%), laboratory services (81%), on-site dispensation of medications (79%), and patient education (66%). The average number of student volunteers (weekly) was

16, supervised by at least one faculty physician. On average 39% of first year medical students participate in their institution's student-run clinic and this degree of participation declines over subsequent years. Some clinics are not limited to medical students and incorporate health professional students across disciplines. Most clinics report a significant amount of teaching between students at all levels. The mean operating budget among clinics is \$18,889 annually (the median operating budget is \$12,000), and most are funded by private or community grants. In their census, Simpson et al. estimate that as an aggregate these clinics represent thousands of student volunteers, tens of thousands of patients, and at least 37,000 annual patient visits.

In order to appreciate the unique educational opportunity a student-run clinic affords its volunteers, it is essential to examine the various facets of an individual program. The author of this essay was fortunate to have personal experience co-founding and co-directing the first student-run clinic in New Haven affiliated with the Yale health professional schools, the HAVEN (Healthcare, Advocacy, Volunteerism, Education, Neighborhood) clinic. The HAVEN clinic opened its doors on November 12, 2005 and has since seen 400 patients, representing 1800 patient visits. HAVEN's mission is to serve as a sustainable free clinic that will provide primary care, wellness education and assistance in securing healthcare coverage to uninsured adults at no cost. The founders also sought to develop a multidisciplinary student-run clinic that would serve as a valuable educational resource by allowing students from all health professional schools to become involved in both administrative responsibilities and clinical care, during the beginning of their training, and learn to coordinate patient care in teams. With the support of the Yale administration and by partnering with Fair Haven Community Health Center (FHCHC), this vision has become a reality. The HAVEN clinic operates every Saturday at the FHCHC site and its medical directors are FHCHC clinicians, both physicians and nurse practitioners. The heart of the clinic is the clinical team, comprised of a senior medical, nurse practitioner or physician associate student, junior health professional student and if needed, a translator. The senior clinical team member is responsible for the clinical component of the patient visit and presents to one of the attending clinicians, comprised of both Yale affiliated faculty and FHCHC clinicians. The junior clinical team member triages the patient and is responsible for coordinating the patient's visit with the various departments of the clinic. In order to address the various barriers to care that this patient population faces, the HAVEN clinic has developed a number of departments, operated entirely by health professional students, early in their training, that are a vital part of a patient visit. Patient services greets patients at the front desk and schedules appointments. All patients are seen by social services, which screens and enrolls patients for entitlement program eligibility, and refers patients to social service organizations in the community. Laboratory services are provided on-site by students trained in phlebotomy. Referral services is responsible for coordinating imaging and specialty referrals. Patient education conducts individualized sessions to teach patients about chronic disease management. The pharmacy dispenses medications from a formulary of generics on-site at no cost to the patient, subsidizes the cost of non-formulary medication, and enrolls patients into pharmaceutical assistant programs. The administration of the clinic is led by student co-directors and an administrative board, comprised primarily of first and second year medical students and junior APRN, PA and EPH students. The clinic operates on an annual income of approximately \$40,000, largely funded by private grants and student fundraising; laboratory and imaging services have been donated by Yale New Haven Hospital. Though HAVEN has benefited tremendously from mentorship by Yale faculty and FHCHC clinicians, the efforts of engaged

and dedicated students from the schools of medicine, nursing, physician associates and public health that have truly led to its success.

The response of HAVEN's student volunteers regarding their experience at the clinic has been overwhelmingly positive. Volunteers often rotate through various departments, and fulfill diverse roles at the clinic, which allows them to understand a number of elements involved in providing care to an underserved population. For example, a student may volunteer in social services one week and learn about a patient's struggles with medical debt, and next week serve as a junior clinical team member and learn about the challenges of managing diabetes on a fixed income. Students have come to appreciate the importance of coordinating care between the various departments: the referrals department relies on social services to provide the patient's financial information in order to obtain donated services; similarly, the pharmacy utilizes patient education to educate patients about administering insulin and dietary issues. In addition, students from all health professional schools are learning from one another and have gained an appreciation of the diverse training and skills across the health professions. As a result, students have learned how to work effectively in multidisciplinary teams. This interprofessional collaborative model has been employed successfully by the Students in the Community student-run clinic affiliated with the University of Washington.<sup>6</sup> Similarly the HOMES clinic in Houston has sought to facilitate providing care in multi-disciplinary teams, and their volunteers cite the value of learning from and teaching others by working in teams.<sup>7</sup> HAVEN's student volunteers, across disciplines and at all levels, report that they feel a unique sense of ownership with respect to patient care. Students are able to empathize with a patient's situation to a greater extent because they understand the multifaceted nature of providing care to disadvantaged patients. Students involved in the HOMES clinic identified four themes that contributed to their professional education and understanding of biopsychosocial issues: social awareness, compassion and empathy, teamwork and confidence building;<sup>7</sup> statements by these students include: "*I never knew the difficulties a homeless person faces in simply getting a job...I never just talked to a homeless person and came today thinking I was going to give but received much more.*" A medical student-run clinic in Buffalo, NY found that student interaction with homeless patients and coordination of patient-centered care can combat negative attitudes towards this patient population.<sup>8</sup> The long standing UCSD student-run clinic published its perspective on the impact of the program on student volunteers: "... *provide a setting in which the student's passions, compassion, and potential for leadership can thrive and be reinforced...*"<sup>9</sup> This clinic reports that the students benefit from a sense of ownership, and that the program cultivates qualities of humility, teamwork, and leadership as well among its volunteers. Teamwork, interdisciplinary coordination and patient-centered care- these are elements of patient care that student clinics have been able to cultivate among their student volunteers, which are essential for the development of an effective healthcare workforce.

The healthcare education system could be transformed by implementing a nation-wide program to promote the development of student-run clinics in all medical schools. Given that the major challenge in establishing a student-run clinic is funding, the federal government should provide financial assistance to developing clinics, which usually operate with a minimal budget (approximately \$19,000 on average). Medical schools in turn must provide adequate institutional support and guidance; faculty mentorship is vital to establishing the appropriate educational objectives for students and in assisting students both with administrative duties and clinical care. Community health centers are ideal partners for student clinics, as they tackle identical challenges involved in administering multifaceted care with limited resources, and

medical schools could establish affiliations with these institutions in order to foster student clinic programs. The success of student-run clinic programs can be promoted by adopting a number of principles. First, when possible collaborative efforts across disciplines should be an integral component of the clinic model, and this involves medical schools partnering with other health professional schools. Second, clinician supervision of both clinical practice and administrative decisions is crucial. Medical school-based faculty and community based clinicians, experienced in serving underserved patients, are needed to provide the appropriate guidance of student efforts. Third, students must be organized in teams to provide both clinical and administrative care. Finally, the student clinic must be incorporated into the school's curriculum in order to ensure that all students have the ability to participate in the program. The HAVEN clinic is offered as a primary care elective to senior medical students. The UCSD clinic has become incorporated in the medical school curriculum as an elective offered during both the preclinical and clinical years of training.<sup>9</sup> This elective also includes supplemental classroom activities and reflective sessions, which promote the educational values of teamwork and compassion towards patients.

There are limitations to implementing such a broad initiative. The administrative responsibilities, though extremely rewarding and educational, are often time-consuming and under the purview of a few dedicated students. Students interested in family medicine, primary care, or serving underserved patients should be identified and enlisted to participate at an early stage of their training to fill these essential roles. Though these programs have been shown to be a valuable educational opportunity, the primary goal of these clinics should be to provide quality healthcare to its patients. Again, clinical supervision is essential and research measuring quality metrics must be conducted regularly to ensure quality of care.<sup>10</sup> Finally, maintaining continuity of care for patients is an ongoing issue for the HAVEN clinic and may arise in other clinics. In order to address this issue the HAVEN clinic requires students to volunteer for consecutive dates, so that follow-up visits can be appropriately scheduled.

In summary, establishing student-run clinics affiliated with all medical institutions will promote team-based, patient centered coordination of care among health professionals in training. Student-run clinics foster interdisciplinary collaboration and empathy towards patients, particularly the underserved. By engaging students early in their training, student clinics harness and promote the desire to serve others, which most health professional students identify as their motivation for pursuing a medical career.

## **References**

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