

Medical student implementation of a Global Health concentration: a unique bottom-up approach

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U.S. medical students are pursuing an education and training in global health at increasing rates. Many medical schools have responded by establishing global health programs offering academic and experiential training to prepare interested students. Implementation of these programs often requires a significant investment of resources from medical schools. At the University of Texas Medical School at Houston, medical students, with support of faculty, addressed the deficit of global health education by creating a university-approved global health concentration. Through a grassroots effort, the students overcame the need for an initial institutional commitment by building partnerships across disciplines and institutions and capitalizing on their enthusiasm for a student directed program. This paper highlights the development of the concentration, along with the students' vision for their education in global health. The purpose of this article is two-fold: to demonstrate a student based model for bringing global health education to medical schools without an established program, and to emphasize to medical educators the importance of global health education in the training of future physicians.

Background

Worldwide increases in travel, trade and information flow have reshaped the connections in health and medicine between countries.¹ Physicians are expected to have a broader understanding of infectious diseases, knowledge of the major determinants of health and cultural sensitivity to the increased numbers of international travelers and ethnic minority populations.² As such, global health, the multidisciplinary study of the globalization of health determinants and the goal of improving health for all people, has become a growing component of the practice of modern medicine. This precedent of global health involvement holds true for medical students as well.³ Medical students, now more than before, are able, expected and eager to engage with the health challenges associated with an increasingly globalized 21st century.

Perhaps more than any other single factor in the history of global health, student interest has driven the expansion of this field.² Participation in international work has expanded with the availability of commercial travel and financial assistance from major corporations in the 1950s.¹ By 1969, 78% of incoming students and 85% of second year medical students were interested in international work or study abroad.⁴ According to a more recent survey conducted by the Association of American Medical Colleges (AAMC), U.S. medical student participation—not just interest—in overseas clinical activities grew from merely 6% in 1984 to nearly 20% in 2003.⁵ AAMC data show nearly half of all graduating medical students in 2005 participated in international electives. In a survey of U.S. medical students matriculating in 2011, 65.1% expected to participate in global health education or services during their tenure in medical school.⁶

Medical students are leading the call for a greater emphasis on global health issues to be included in medical education. In response, institutions have created global health programs or centers across the United States.⁷⁻¹⁴ About 24% of U.S. medical schools have global health programs, typically in the form of tracks, certificates or concentrations. All programs have didactic and experiential components, but vary widely

in the depth of coursework and requirements for research, international travel and language proficiency.¹⁶ However, formal global health training and structured opportunities to go abroad as a part of an organized curriculum are still not available to about 75% of U.S. medical students^{3,16-18}. It is common for interested students to seek experiences abroad on their own time or through an international elective, but evidence of these experiences' educational value is weak.¹⁸ Beyond failing to adhere to a comprehensive global health curriculum fostering sustainable, long-term interventions, ad hoc trips do not represent responsible global health practices and can expose the ill-prepared and untrained student to unpredictable risks.

This paper describes how one medical school developed its own global health program from the ground up through a largely student-initiated and -sustained effort. While most programs start with an institutional investment of resources, this program began at the grassroots level with a small, but determined, group of faculty and students. The authors hope that the lessons learned from this experience can motivate medical students to implement global health programs at their medical schools through a similar bottom-up approach.

The Beginnings of Students Improving Global Health in Texas

The creation of Students Improving Global Health in Texas (SIGHT) in 2006 represented the beginnings of a global health focus at the University of Texas Medical School at Houston (UTH). A group of students, working alongside a former dean of the medical school (SGS), established a global health interest group for students to learn about and become involved in sustainable global health projects, both within the borders of Texas and beyond. The organization endeavored to reach this goal through two major avenues: education in the form of a lecture series and service in the form of faculty-led international service-learning trips. A long-term objective was the implementation of a formal global health curriculum at UTH.

Figure 1 Results of a survey of entering medical students at UTH showed a high level of interest in global health education and less background knowledge.

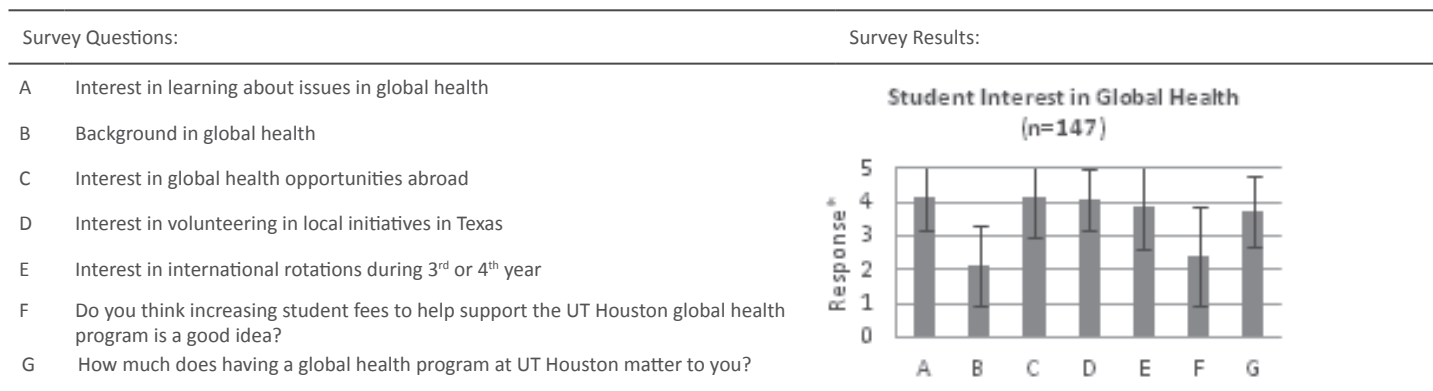


Table 2 Demographics and Trends of the GHC

	2011*	2012	2013
Total Students in GHC†	37	49	47
Acceptance Rate	37/40 (92.5%)	18/19 (94.7%)	17/17 (100%)
Retention Rate	37/37 (100%)	49/55 (100%)	47/53 (89%)
No. Students Graduates	0	4	9
No. Faculty Mentors	11	20	20
No. Publications	0	1	1
No. Posters	0	1	5
No. Partner Sites	4	5	6

* Accepted students in 2011 came from Class of 2012-2014, while students from each subsequent year come from the first year medical student class.
 † Total number of students prior to 4th year student graduation
 GHC = Global Health Concentration

Table 3 Highlights of GHC’s established international partner sites

International Sites	Partner Organizations	Duration of Collaboration (Years)	No. Students Sent Abroad*	Subject Areas Encountered
Roatan, Honduras†	La Clinica Esperanza	7	83	Environmental health, diarrhea, malaria, child and maternal health, malnutrition
Santa Ana, Honduras†	BCM Shoulder to Shoulder	6	61	Water sanitation, infrastructure building, neglected tropical diseases, malnutrition
Santiago de Veraguas, Panama†	Chicho Fabrega Hospital; ANCEC	4	32	Women’s health, HPV/cervical cancer, child and maternal health, malnutrition
Brownsville, Texas, USA†	Browne Road Community Center	3	24	Border health, migrant health, health promotion, nutrition, community gardening
Qingdao, China	AHMCQU – Huangdao branch hospital	2	3	Global surgery, gastric cancer, comparative health systems, rural vs. urban health

* Data based on travel from 2007 – 2012
 † Available as a 1-week Experiential Trip over Spring Break
 GHC = Global Health Concentration; BCM = Baylor College of Medicine; ANCEC = Asociación Nacional Contra el Cáncer; AHMCQU = Affiliated Hospital of Medical College Qingdao University

Service

SIGHT’s earliest—and best embraced—accomplishment was the organization of weeklong service trips. In order to fit international travel into the academic schedule of students and faculty, these trips typically take place during students’ breaks and aim to provide sustainable, preventative health care to international communities. The first Experiential Trip over Spring Break (ETOSB) was to Roatan, Honduras, and initially involved the construction of a medical clinic to serve the island’s population. In response to SIGHT’s growing membership and student demand for global opportunities, SIGHT’s leadership capitalized on opportunities provided by faculty with personal ties to sites abroad to expand the availability of opportunities. New trips to Santa Ana, Honduras; Santiago de Veraguas, Panama; and Brownsville, Texas, were subsequently added, and students return to the same site every year to provide secondary and tertiary preventative healthcare services under

faculty supervision, as well as health education and supplies. Activities have included working with local healthcare providers to conduct basic health and dental screenings, cervical cancer screening, acute care services, nutrition education and building community gardens. Furthermore, an ancillary interest group focused on Texas-Mexico border health, called Frontera de Salud, emerged in 2010. Frontera de Salud offers opportunities for students to become involved in global health domestically through collaboration with local health advocates to strengthen the primary care network in extremely underserved communities. Today, SIGHT has expanded to include a larger local initiatives component. Students organize local health fairs, engage in public health outreach and participate in clinical preceptorships. The organization now has the capacity to offer students sustainable programs that provide both preventative and acute health care to the local community.

Education

In parallel with service activities, SIGHT's student leadership organized a semester long lecture series to highlight key topics in global health practice and research. The lecture series featured expert talks by faculty and researchers from within the Texas Medical Center and were widely attended by students, residents and faculty. Because of its initial popularity, the Global Health in the 21st Century lecture series is offered annually and includes external speakers from across Texas.

Quantifying Student Interest & Priorities in Global Health

Being primarily an interest group, SIGHT largely operated on offering episodic exposures – through its weeklong experiential trips – to global health without requiring extensive commitment from its members, and likewise without an avenue for longer-term involvement. The student leadership felt that while SIGHT was a strong foray into the world of global health, UTH lacked an organized and purposeful global health curriculum. To better characterize students' interests and needs, first year medical students at UTH were surveyed regarding their interest and educational priorities in global health [Figure 1]. The survey demonstrates that most students start medical school with little background in global health (2.1/5.0), but their interest in obtaining a global health education and gaining experience abroad remains high (4.1/5.0).

The Development of the UTH Global Health Concentration (GHC)

The high level of interest in global health education, combined with the increasing competitiveness of the experiential spring break trips and growing SIGHT membership was evidence that the medical school could benefit from a formalized curriculum to develop the students' global health exposures into a structured educational program. After extensive review of prominent global health programs at U.S. medical schools, the student leaders of SIGHT designed a curriculum that would incorporate existing efforts into a more structured program. The school leadership accepted the curriculum proposal, and the Scholarly Concentration in Global Health (GHC) was approved by the University in March 2010 as one of 11 concentrations at UTH.

However, GHC faced several unique challenges from its inception: 1) the GHC is the only concentration without a departmental affiliation from which to base its activities; 2) UTH does not have global health-specific faculty, and there were no provisions made to officially recognize faculty involved in the GHC; and 3) the concentration did not have dedicated funding or administrative assistance to support its operations and activities. With only a blueprint for a curriculum, the responsibility of implementing the GHC fell to the new Program Director (CSG) and his team of students.

As the GHC was student driven, the student body largely shaped the concentration's requirements and processes. The concentration responded to the major challenges described above by establishing a GHC faculty mentor network, partnering with student organizations and institutions to build capacity, and creating a student leadership team to take charge of implementation duties. The team acted as the central "office" for the new concentration, developing the concentration curriculum by working directly with the medical school administration, the faculty mentors, partner institutions and existing organizations—SIGHT and Frontera de Salud—and with students themselves.

Without the funding to build new educational opportunities, the GHC sought to tap into already existing opportunities, which led to multiple interdisciplinary and cross-institutional collaborations. As a result, GHC students are exposed to diverse perspectives on how global health fits into their role as future physicians.

The Academic Curriculum

Officially launched in January 2011, the GHC's curriculum has both didactic and experiential requirements for medical students to complete over the course of their four years at UTH [Table 1, Figure 2]. These requirements help students obtain a broad base of knowledge in global health topics, while achieving a greater level of competency in their particular area of interest. The goal of the GHC is that at the end of the four years, GHC students who successfully complete the requirements will have learned to critically interpret and analyze global health literature, gained a basic understanding of global health issues and researched one specific topic to be presented as a scholarly project.

The didactic components of the GHC curriculum include the global health lecture series initiated by SIGHT, a public health course offered through the University of Texas School of Public Health, a monthly journal club, and an optional Diploma in Tropical Medicine (DTM) course offered by the National School of Tropical Medicine at Baylor College of Medicine. Students gain a basic foundation of knowledge through lectures that provide both medical and public health perspectives. They are asked to critically engage the subject matter in monthly journal clubs, which are led by students under the guidance of faculty mentors. Most of these requirements take place in the first two classroom-based years of medical school, allowing the student to pursue a topic of interest in depth in the remaining time. Lastly, the option of taking the DTM is a unique opportunity for those particularly interested in tropical medicine.

Experiential learning provides students with a hands-on approach to apply the concepts learned through didactic requirements to both international and domestic environments. Faculty mentors ensure that students are practicing global health in an ethically responsible manner with consideration for sustainability and long-term impact. Prior to travel, all students are required to complete ethics modules and have mentor-approved trip proposals. Students must further submit a post-travel report of their activities. Mentors also work with students to produce a capstone scholarly project. Finally, students present their work at an annual poster symposium prior to graduation.

Structure and Governance

In contrast to other scholarly concentrations at UTH, the GHC has a unique structure in that it is primarily overseen by a leadership team consisting of one program director and six students, who are responsible for the daily operations and implementation of course curricula. The GHC is not housed within a specific department or office. The leadership team works closely with faculty mentors, the Office of Educational Programs and concentration students. This organizational structure has the advantage of flexibility and responsiveness to students' needs, such that the completion of the curriculum is an attainable goal for students despite the rigorous coursework and schedule of medical school. However, the biggest disadvantage to this structure is the rapid turnover of leadership with each new academic year, which leads to a lack of institutional knowledge and wasted time in repeating mistakes. The GHC has addressed this with a tiered leadership approach, where two students represent each class from the second to fourth years. New leaders are recruited during their second year and remain on the team until they graduate.

Achievements to Date

In the three years since its creation, the GHC has sponsored a total of 60 medical students (including current and graduated) and 20 faculty members who volunteer as mentors [Table 2]. The program has an 89% retention rate and 13 graduates that are attending residencies in a multitude of medical specialties across the nation. SIGHT now sponsors four faculty-led overseas trips in Honduras, Panama, and Brownsville, Texas. Scholarly work is another important outcome measure in the GHC, and approximately seven students have published first-authored original manuscripts or presented their work at regional and national conferences.

Currently, two endowments at UTH are earmarked for global health activities, which fund scholarships that support up to two students (\$500 each) annually for international travel and global health research projects. While the GHC is unable to financially support most students, the philosophy of the concentration is that global health experiences can occur on a local level as well. Thus, local trips at approved rural sites like Brownsville, Texas, provide an affordable alternative for meeting the experiential requirements, so that cost does not prohibit a student's decision to pursue a global health education.

Despite the addition of new trips to accommodate the increase in student interest, the current demand still exceeds the number of available spots on international trips [Figure 3]. Currently, all the organized trips abroad are short-term, one-week experiences for the pre-clinical medical student. This is due to the rigorous academic schedule for students and faculty, such that longer time commitments would be unfeasible. Nevertheless, these intensive experiences are extremely meaningful for pre-clinical students who work under close supervision of UTH

faculty and local healthcare workers. Many of these students are engaging in international work for the first time, and such experiences have a lasting impact with multiple benefits, as will be discussed later. The community gains a short-term benefit from the provision of services, and SIGHT's annual return maintains its sustainability. Trips of longer duration are typically undertaken by fourth year GHC students returning to a previous international site to conduct studies or provide clinical services. However, the GHC recognizes that individually organized trips can vary significantly in quality and hence continues to forge new partnerships under best practice guidelines in global health training in Guatemala, China, Ghana, India, and Kenya.²⁰ More distant sites are better suited for more in-depth immersion experiences from a practical point of view. Each site is unique in both the population served and the subject areas addressed, emphasizing the multi-disciplinary nature of global health [Table 3]. With its unique, bottom-up approach and structure, the GHC is able to adapt quickly to students' desires and trends at UTH.

Current Challenges

The GHC faces challenges that may limit its capacity to expand educational programming. Despite the benefits of student control in managing the concentration operations, it is an inefficient process. There are time and resource constraints upon the student leadership given their concurrent academic duties and finite stay at the institution. The administrative demands on the leadership team are extensive and can only be accomplished with extracurricular time. Cross-coverage of responsibilities must be arranged for situations, such as examinations and time-intensive rotations, to prevent lapse of operations. In addition, faculty interested in global health can become mentors for students, but there is currently no compensation for faculty time. All mentors are volunteering their time, thus limiting the GHC's ability to coordinate faculty-led trips with longer durations. Furthermore, the shortage of dedicated funding or administrative support has required the GHC to pursue creative solutions to bring high quality education to medical students. The curriculum is made possible through multidisciplinary and cross-institutional collaborations at every level of the health science center. The GHC partners with many student organizations for events. The leadership team works closely with faculty from various departments to leverage their resources into opportunities for students, such as research projects or faculty/department-sponsored abroad trips. The GHC also collaborates with the University of Texas School of Public Health to bring an established global health course to second year medical students. Many of the challenges encountered in program implementation and development stem from the lack of a centralizing locale (e.g., department, center, or institute) within which the concentration, and all global health activities in general, can exist. Ultimately, a higher level institutional investment in the program would be required to fully address these barriers.

The major drawback of the grassroots approach is that program development operates on a much slower time frame, given the multitude of constraints in time, manpower and resources. The GHC took nearly two years to fully implement all aspects of the original curriculum, and changes are still ongoing.

Impact of Global Health Education on Students

According to a comprehensive literature review, there are multiple positive outcomes of global health education.²⁰ Three main areas of impact included students' professional development, medical schools and the host populations. Students commonly report a broadened perspective about the world that will enable medical students to apply global thinking, skills acquired in low-resource settings and cross-cultural competency to medical practices at clinics within the U.S. Such experiences encourage students to pursue careers in primary care, which is a beneficial result as a shortage of roughly 20,000 physicians is predicted in the areas of primary care by the year 2020.^{21, 22} Moreover, by including a global health curriculum, medical schools make themselves more attractive to high-quality student applicants.²¹ The inclusion of global health education affords institutions the opportunity to provide a wider range of clinical experiences to its students. Challenges students encounter while abroad, including different disease prevalence and scarce resources for diagnosis and treatment, introduce new elements to medical education and instill in students a deeper understanding of diseases. Accord-

ing to Novotny et al., "prior experiences and training also likely have effects on ultimate outcomes, suggesting that a longer-term integrated learning program" may be imperative to optimize outcomes of shorter-term experiential learning.¹ This finding supports a fully integrated global health curriculum that the GHC strives to become and aligns with the educational priorities of UTH medical students. Finally, cross-cultural trips can positively impact host populations when the partnership is sustained and the local community's needs are addressed.

Concluding Remarks: An Argument for the Expansion of Global Health Education

Student-initiated development of a global health program is rare, but one other recent example of a successful student-led effort was at Weill Cornell Medical College.¹⁴ Similar to UTH's GHC, the program was preceded by multiple established partnerships and lecture series; however, their program drew support and resources from pre-established global health programs and faculty from other departments, as well as a full time global health fellow. In contrast, the UTH's GHC student leadership oversaw all educational programming, established its own inter-institutional faculty base, assumed all administrative and operational duties, and engaged in capacity-building across institutions and countries. In addition, all operations were budget neutral. Hence, the GHC remains truly unique in the extent of its grassroots efforts on which other student-led initiatives could be based.

Taken together, there are several arguments for the expansion of global health education in medical schools, as well as the continued development of the GHC.

1. AN INTEGRATED LEARNING EXPERIENCE – A curriculum in global health can better prepare U.S. medical students to care for the growing international population in their communities. GHC students can now draw upon the knowledge gained from their lecture series, journal clubs, and abroad experiences to serve local residents at the front lines of global health.
2. A PLATFORM FOR SUSTAINABILITY – Providing a portal for students to learn at established international sites fosters sustainable global health care. The GHC continues to develop partnerships with hospitals and non-profit organizations, while maintaining strong collaboration with our current partners abroad. These relationships will create a network of opportunities upon which UTH students can capitalize.
3. INSTITUTIONAL OVERSIGHT – Given the demand for global health experiences, the risk of sending unprepared medical students abroad is great. This lack of training not only presents a personal risk to students, but may also result in substandard clinical performance of traveling students.^{18,20} Because of GHC's mentoring system and utilization of resources from multiple disciplines, the GHC can ensure that UTH students are properly prepared.

The GHC can be a vehicle to global health education success at UTH. As Panosian and Coates ask, "If there is new fervor for global health on the part of medical professionals and international policymakers, shouldn't the 'sending' process be more organized — and the vision bigger and bolder?"²⁵ With a vision and dedicated group of students and faculty, a grassroots approach to building a successful global health concentration is possible. This approach demands patience, creativity, and the understanding that real change takes time. Implementation will be step-wise, often requiring multiple revisions in response to specific or new challenges and resources available. Outcomes need to focus on adding value to the students' education. In conclusion, the authors believe that the GHC can fulfill this role in fostering students' thirst for quality global health education and hope to offer a blueprint for how a program can be developed through a bottom-up grassroots strategy.

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