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WEB PAPER

Global health training starts at home: A unique US-based global health clinical elective for residents

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Abstract

Background: Many physicians planning to work in global health lack adequate formal training. Globalized cities create opportunities to integrate global health training into residency programs, preparing clinicians for less supported experiences abroad.

Aim: To develop a clinical elective to advance residents' knowledge and skills in global health and fieldwork abroad.

Methods: Two-week comprehensive elective was offered to PGY2 combined medicine-pediatrics residents. We incorporated clinical exposures and global health topics. Global health experts were involved as teachers and preceptors. Clinical exposure included: tropical medicine with laboratory sessions; travel medicine; tuberculosis; immigrant and continuity; and human rights clinics. Didactic components and supplemental readings included socio-political issues, global public health, and health challenges of populations from developing regions. We assessed resident satisfaction using questionnaires and focus groups.

Results: Residents reported usefulness and relevance of sessions and topics as (4) very good (scale: (1) poor to (5) excellent), and quality of sessions and teaching as very good to excellent (4.2). Residents' baseline knowledge and understanding of global health issues improved by around 50%.

Conclusion: Our experience supports the feasibility and usefulness of clinical and didactic training in global health issues at home. A multidisciplinary approach, collaboration with academic and non-academic institutions, experienced faculty, and departmental commitment are vital.

Background

Globalization has led to unprecedented levels of interaction among people from all parts of the world, with subsequent changes in the epidemiology of diseases, resulting in a much more dynamic and diverse dialogue about global public health, and a widening array of views regarding health, wellness, and medicine. Global health is defined as "health issues and concerns that transcend national borders, class, race, ethnicity and culture." (GHEC 2011) This includes the impact of international health issues on those living and traveling within the US (GHEC 2011). Over 30 million Americans travel abroad each year, with about half visiting developing regions (US Dept of Commerce 2009; International Monetary Fund 2011). The percentage of foreign-born US residents has also been increasing, from 7.9% in 1990 to 21.5% in 2009 (US Census Bureau 2003, 2010). Additionally, an estimated 11.2 million undocumented immigrants reside in the US (Passel & Cohn 2010). The nature of medical practice in the US is changing dramatically; the roles of global health and cross-cultural issues are becoming increasingly relevant domestically, particularly in urban settings. Training in cultural competency and global health has become necessary for those wishing to practice medicine outside of, as well as inside, US borders.

Practice points

- Global health issues are relevant at home and within the US, and cities with diverse population provide opportunities to train residents and prepare them for work in the field, both within the US and abroad.
- Offering a domestic clinical global health elective for medical residents is warranted, feasible, and necessary in the context of the changing landscape of public health and considering the global health challenges at home.
- Residency programs could use their local resources to develop and maintain such global health exposures.
- Collaboration with academic and non-academic organizations and institutions, experienced faculty, and departmental support are vital components to the success of such programs.

Considering the growing interest in global health among medical students and physicians-in-training (Panosian & Coates 2006; Landrigan et al. 2011), and the significant increase in international health experiences for students since the 1980s and physicians-in-training (Torjesen et al. 1999; Nelson et al. 2011), current educational opportunities

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and curricula are limited and unable to meet this high demand (Panosian & Coates 2006; Drain et al. 2007; Association of American Medical Colleges 2010; Nelson et al. 2011). Only 30% of North American medical schools provide any training or counseling for students departing for global health experiences, leaving students inadequately prepared to conduct themselves in a professional and effective manner (Dowell & Merrylees 2009).

Experience and training in global health make trainees more efficient in the utilization of limited available resources through exposure to other health systems and through the improvement of clinical skills (Nelson et al. 2011). Global health training also provides exposure to cross-cultural medicine and population health (Godkin & Savageau 2003; Federico et al. 2006) and prepares trainees for work in resource poor settings (Thompson et al. 2003; Ramsey et al. 2004). Despite the obvious need for US-based physicians to be well-versed in global health issues, most global health programs focus on international experiences outside of the US, targeting those who wish to practice beyond our borders (Drain et al. 2007; Nelson et al. 2011). Additionally, curricula that teach global public health or clinical global health tend not to describe the processes, challenges, and practical issues involved in addressing the same issues within the US. Even the more recent articles proposing increased training opportunities in global health do not discuss US-based electives as part of a Global Health curriculum (Panosian & Coates 2006; Dowell & Merrylees 2009; Nelson et al. 2011).

In 2005, to better prepare physicians for practice in this globalized environment, the Mount Sinai Global Health Center established its multidisciplinary Global Health Residency Track (GHRT). One of the first multidisciplinary graduate medical education programs in Global Health, the GHRT incorporates residents and faculty from different disciplines (Anandaraja et al. 2008; Landrigan et al. 2011). A critical aspect of training in these competencies is providing global health experience within the US. In order to meet this rising need, we developed a unique *New York City-Based Global Health Elective*. By offering an educational curriculum in clinical and population-based medicine, we aimed to prepare residents to address global health challenges in the US, with a particular focus on underserved populations, international travelers, survivors of torture seeking asylum, and transitional populations.

We describe the inception, process, and outcome of this initiative.

Program structure/description

In developing the elective in 2008, extensive research was done to identify and incorporate relevant clinical exposures and global health topics. Core faculty carefully considered and evaluated potential areas from different global health components offered within our own institution, as well as a variety of other NYC-based academic and health agencies. We also approached around a dozen directors of those programs who were, by and large, national experts in their fields. In 2009, we began offering the two-week elective in its current format, conducted during residents' outpatient medicine block. Due to schedule constraints, one resident at a time participated in the elective. Independent study time and assigned readings were provided to promote self-preparation for clinical sessions. During the 2 weeks, residents continued to provide clinical care in their continuity clinic; however, their responsibilities were curtailed considerably to allow for participation in the elective. Administrative and material support was provided by the Global Health Center at the Mount Sinai School of Medicine.

Residents received orientation at the start of the elective. As part of the orientation, the goals and objectives, description of the elective, schedule, responsibilities, logistical issues, integration of readings, effective use of elective time, and feedback expectations were communicated. Attempts were made to customize the experience as much as possible, according to individual schedules and interests.

Dedicated faculty worked closely with chief residents to coordinate the elective schedules with other clinical obligations. Global Health faculty also coordinated with collaborative sites on a regular basis to facilitate scheduling of clinical sessions, provide oversight, and act as preceptors.

Participants

Participants included 2nd and 3rd year medical residents in the combined Internal Medicine-Pediatrics Global Health residency program, as well as medical residents at Mount Sinai Medical Center who are enrolled in the GHRT.

Curriculum goals and objectives

Goals. The elective has two major pillars: clinical aspect, and population-based medicine and its socio-political aspects within the US. We devoted approximately 70% of the elective time to clinical global health sessions and 30% to socio-political topics and non-clinical issues (Table 1).

Table 1. Goals.

1 Global health exposure	To familiarize residents with major global health issues in the US, their socio-political and human rights aspects, and strategies to address them effectively
2 Clinical and applicable skills	To provide residents with clinical and population-based skills in the diagnosis and management of tropical diseases; health issues facing immigrants, transient populations and international travelers in the US; and the clinical presentation of human rights abuses
3 Global health career development	To prepare residents for related clinical and public health positions in the US

Competencies/objectives. To define our objectives/competencies we used multiple sources including Global Health Education Consortium, Duke's Global Health Institute, the Mount Sinai GHRT, and inputs from members of Global Health Education Consortium of New York. Amongst the core competencies of this elective are health disparities, human

rights, cultural competency, tropical medicine and infectious disease, and healthcare delivery models (GHEC 2011). The three critical domains of the global burden of disease, traveler's medicine, and immigrant health also apply to medical school education (Houpt et al. 2007). The New York City-Based Global Health Elective integrates each of these areas into readings and clinical experiences for its participants, with a level of competency geared toward resident physicians (Table 2).

Curriculum components

Didactics. Two to three fundamental articles and readings were provided for each specific session. Carefully selected and diverse readings included, but were not limited to, WHO and Lancet series and additional guidelines for Tuberculosis and Child Mortality, Istanbul protocol for evaluation of torture survivors and writing medical affidavits, Tropical Medicine articles and handbook, and sample medical affidavits. The didactic component provided insight into major global health topics worldwide, and a forum for basic analytic thinking of population-based medicine elements.

Clinical. Participants rotated through a variety of clinical sites, including New York-based travel clinics, tropical medicine and parasite clinic, immigrant clinic, NYC Tuberculosis/Chest clinic, and the health and human rights clinic (HRC), with subsequent mentoring in writing medical affidavits over the course of the elective. Two sessions were devoted to each clinic. The continuity clinic had 4 sessions total. On-site preceptors for clinical sessions were identified and recruited from multiple national and international institutions, universities and disciplines, including non-governmental international organizations, academic institutions with expertise in global health, and relevant state and federal agencies. Partner organizations and clinical sites included:

(1) *New York City Department of Health Chest Clinic*

The Chelsea Chest Center is a comprehensive tuberculosis evaluation and treatment center operated by the New York City Department of Health. It offers free medical evaluations, TB testing, chest x-rays, and treatment for active and latent TB infection, as well as social services and referrals, HIV testing and counseling, and directly observed therapy. At the Chelsea Chest Center, residents worked under supervision from a

Table 2. Competencies/objectives.

Clinical skills competencies	
(a) General competencies for practice in resource-limited cross-cultural settings	• Use an evidenced-based clinical approach to the care of patients from urban and ethnically diverse settings • Identify and apply standardized guidelines (e.g., WHO/UNICEF) for the diagnosis and treatment of conditions common to developing countries, and adapt them to the individual needs of specific patients in urban immigrant populations • Effectively diagnose and evaluate an asylee with a history of torture, and write a medical affidavit as part of the asylum seeking process • Appropriately utilize interpreters and communicate effectively with patients and families who speak other languages • Develop skills to provide appropriate health education to patients and communities with varying levels of education and health literacy, while demonstrating cultural sensitivity • Know and/or access appropriate global health related medical resources and apply them to the care of relevant patient populations in the US
(b) Specific clinical and practical competencies for residents	• Describe the presentation and prevention strategies of, and diagnose and manage, the following specific diseases in the US, based on local and international guidelines: ○ Malaria. Hepatitis A and B. HIV/AIDS and related infections/complications. Tuberculosis. Major pathologic parasites. Other common tropical diseases. Common international travelers diseases ○ Describe prevention methods for international travelers • Know and perform the appropriate lab techniques for identification of malaria and other common tropical diseases at home • Interview and perform physical and psychological evaluations and examinations of torture survivors
Non-clinical competencies	• Learn the demographics and common forms of torture, psychological and physical sequelae of torture, and the principles of interviewing and writing a medical affidavit • Describe US asylum law, worldwide epidemiology of torture, and advocacy options to improve the health status of survivors • Describe effective interventions, including prevention and treatment, for reducing mortality and morbidity of children under 5 (e.g. vitamin A supplementation, exclusive breastfeeding, etc.) • List the major vaccine-preventable diseases and the immunizations available in developing regions, and know the current international vaccine policies and recommendations (WHO EPI). Know how to identify immunization needs in various settings • Identify conditions that contribute to morbidity and impaired cognitive development in the developing world, such as intestinal parasites, hearing loss, birth complications, anemia, infections (e.g. cerebral malaria), nutritional deficiencies, injuries, and environmental toxin exposures • Recognize the health and psychological impact of activities affecting populations, including displacement, war trauma, torture, human rights abuses, human trafficking, child soldiers and child labor

Source: Houpt et al. 2007; GHEC 2011.

preceptor, a pulmonologist with extensive international field experience who acted as medical advisor for the international medical humanitarian organization Doctors Without Borders/ Médecins Sans Frontiéres. Residents learned how to evaluate and manage patients with active and latent tuberculosis and patients with concomitant HIV and TB, and about the unique social and cultural challenges facing physicians in the treatment of TB and HIV in an urban setting.

(2) *Mount Sinai Hospital HRC*

The Human Rights Program at Mount Sinai is a free clinic that provides specialized medical and psychological evaluation for torture survivors and asylum seekers in New York City. The program has teaching and advocacy components, and trains medical students and medical residents. A preceptor with expertise in the evaluation of and advocacy for torture survivors supervised residents. Residents were trained in the physical and psychological evaluation, documentation and management of torture survivors, and asylum seekers, including the preparation of medical affidavits and provision of specialized medical care for this unique population. Residents received a half-day workshop that introduced them to the demographics of asylees, the legal aspects of torture and national and international law, common physical and psychological torture, common physical and psychological sequelae of torture, interviewing techniques, affidavit writing, and the logistical concerns of working with asylees. The process of writing the medico-legal affidavit is an interface between law and medicine, and provides an opportunity to become familiarized with legal writing. Close mentoring and support accompanied this training throughout the duration of the elective. Residents were also introduced to and familiarized with the broader goals of human rights advocacy.

(3) *Mount Sinai Hospital Travel Medicine Program*

The Mount Sinai Travel Medicine program offers comprehensive pre-travel and post-travel health services for individuals and families, with customized services for business travelers, non-governmental organizations (NGOs) personnel, and United Nations officials with particular travel health concerns and needs. Residents worked with a specialist in infectious disease and travel health. They became familiar with the pre-travel assessments tailored to each patient's destination and intended activities, including immunizations, counseling and prescription of travel medications such as anti-malaria medications. Residents also learned the essential aspects of post-travel care, including the evaluation and treatment for any travel-acquired health issues.

(4) *Jacobi Medical Center Infectious Disease and Tropical Medicine Clinic*

Located in the Bronx, this clinic offers screening, diagnosis, and treatment for patients referred from throughout the tri-state area with a variety of common and rare tropical diseases, including Chagas disease, hookworm, schistosomiasis and cysticercosis. An infectious disease specialist with particular expertise in parasitic diseases supervised residents. Residents learned how to perform and interpret simple tests to diagnose parasitic diseases. They were trained in the evaluation and management of patients with tropical diseases, many of whom were immigrants, uninsured, non-English-speaking, and have advanced diseases due to the prolonged lack of access to appropriate care. Residents were also familiarized with the process of reporting clinical cases to GeoSentinel, a network of travel and tropical medicine clinics developed for infectious disease surveillance by the International Society of Travel Medicine and the Centers for Disease Control.

As part of their required continuity clinic experience, residents were continually involved in the provision of comprehensive primary medical care to a large immigrant and uninsured population of patients from East Harlem in New York with diverse medical issues. Many of the clinics' patients have social and cultural barriers to medical care and have been without consistent and quality medical attention. Residents continued to act under the supervision of attending physicians at Mount Sinai Hospital as the primary providers of medical care to these patients during their elective experience.

Curriculum evaluation

Participating residents ($n=10$) completed an anonymous qualitative assessment and short electronic survey within couple of months of concluding their elective. These included nine multiple-choice questions and one open-ended question with directing probe toward clinical rotations, reading assignments, overall organization, schedule, etc. Closed-ended-questions covered the following: variety of topics, overall usefulness and relevance, likelihood to recommend to colleagues, quality of each clinical rotation, preceptor teaching, open discussion for each clinical rotation, least and most helpful components, and self-reported change in the understanding of global health issues at home. An informal focus group ($n=3$) and multiple discussion sessions ($n=2$, $n=1$, $n=2$) were held at the conclusion of the year to solicit feedback.

Survey results are summarized in Table 3. At baseline, the majority of participants described no previous systematic training in domestic global health in their prior medical training. All participants were 2nd year residents. The evaluation received Institutional Review Board approval from the Mount Sinai School of Medicine.

Table 3. Curriculum evaluation ($n=10$).

Curriculum evaluation by residents: (Likert scale: 1 ''poor'' and 5 ''excellent'')			
Variety of topics		3	60%
Overall usefulness and relevance		4	80%
Likelihood to recommend to colleagues		4.5	90%
Quality of clinical sessions	HRC	4.5	90%
	TB/Chest Clinic	3.5	70%
	Tropical Clinic	5	100%
	Continuity Clinic	4	80%
Preceptors' teaching and open discussions	HRC	4	80%
	TB	3.5	70%
	Tropical	4.3	86%
	Travel	4.75	95%
	Immigrant/continuity	4	80%

The Likert scale, with 1 ("poor") being the lowest and 5 ("excellent") the highest possible scores, was used (Table 3).

On average, they stated that their baseline understanding of domestic global health issues had increased by around 50% (scale of <10%, around 25%, 50%, or 75%, >90%). The most helpful components identified were: human rights, travel health, and tropical clinics.

Residents expressed their overall impression of the elective as very interesting. Residents' suggestions included creating more opportunities to do clinical work in the TB clinic (such as treating active TB patients), opportunities to shadow preceptors in the policy aspects of global health within NGOs, more coverage of population-based aspects, and more clinical sessions at the parasite clinic. The identified barriers to effective learning were time constraints, residency workload, short duration of elective and clinical exposure, and some scheduling issues.

Discussion

With the significant number of immigrants in the US; travelers within and outside of the US; and the high influx of refugees and asylum seekers (United States Department of Homeland Security 2010) to industrial regions due to political turmoil, economic collapse, and natural disasters; global health medicine must start within the US. The opportunities to serve these populations, and for training in their medical and population-based challenges, are endless (Drain et al. 2007). The NY-based GH elective for resident-physicians was created to address these challenges and provide a much-needed learning opportunity.

Lessons learned

Overall, the elective has been a positive experience for residents. It has provided an understanding of global health issues at home, and has changed the residents' view of global health. Residents were taught skills including diagnosis and management of tropical and uncommon diseases; recognizing and addressing language and cultural barriers; and screening and caring for survivors of torture with sensitivity for their significant social, psychological and physical consequences. Residents learned to document torture through effective affidavit writing and to work collaboratively with attorneys as an interface between law and medicine.

Our evaluation of the effectiveness and appeal of the elective was remarkably positive. Anonymous student evaluations of the elective were positive, particularly in regard to the practical skills sessions within each teaching session, clinical preceptors, and the collaborative work and learning environment that facilitated horizontal and vertical mentorship. We plan to better evaluate the participants' skills through pre- and post- elective knowledge assessment tests in the future. The emphasis on clinical skills building, management of important global health diseases, and joint mentorship between varying institutions created the unique strengths of this elective. The partnership with academic institutions and NGOs fostered a collaborative environment in which trainees and multidisciplinary faculty shared experiences and knowledge. Building an alliance between different academic and non-academic institutions serving underserved communities provided residents with opportunities to work collaboratively to address global health issues on both the patient and population level.

This experience has been illuminating and has helped residents better understand the sociopolitical context of their patients' illnesses, and see the first-hand global public health issues that overarch the boundaries of states and countries.

Challenges

Commonly identified obstacles to better incorporating global health within training curricula include limited funding for global health education, competing demands for other training topics, coordinating extracurricular activities with trainees' already busy schedules, and the lack of sufficient faculty with available time and global health experience (Drain et al. 2007). We experienced considerable barriers and challenges to designing and implementing this elective, including logistical issues of coordinating and identifying collaborative sites, scheduling with clinical preceptors, maintaining relationships with collaborating sites, providing consistent and homogeneous clinic exposures and clinical preceptors, maintaining uniform teaching strategy at sites, and getting departmental support from the parent institution to make sure the experience is uninterrupted. Over time, we have overcome these barriers and challenges by using a multidisciplinary approach, along with extensive negotiations and lobbying, and trying to change mindsets within primary departments to make this an important component of residency training. There are also inherent challenges in assessing these types of training programs, in that measuring their impact may involve long term data regarding career choices, continued work in global health, and other indicators.

To design the curriculum and to define objectives, we used the extensive experience of our core faculty in working within the global health context and in public health. We also relied on a network of NGOs and global health oriented institutions readily available in New York City. We actively worked within a consortium of global health training centers to develop sites, and conducted considerable research to develop our objectives.

Taking the steps to create formal supervised exposure with trained faculty and maintaining departmental support during training are essential components and could not be overemphasized.

While the exposure has been unique and valuable, it is still a relatively short-term exposure to the specific clinical scenarios, with very busy residency schedules hampering effective learning, along with the limitations inherent in the unpredictable nature of clinical care in a hospital setting, and a lack of enough time and support for core faculty. This experience did not need considerable funding since all sites were in the New York City area, and we did not have to reimburse the collaborating institutions due to the faculty's previous personal working relationships with the organizations.

Recommendations

Global health as a discipline is gaining momentum and has attracted significant interest among medical and public health trainees. Medical students and residents continue to participate in global health activities, but they often do not have adequate preparation (Crump & Sugarman 2008; Unite for Sight 2010), which hampers their efficiency and effectiveness, and disproportionately consumes limited resources (Shah & Wu 2008; Dowell & Merrylees 2009). As educational institutions, we have not only an opportunity, but a responsibility to provide them with sound and rigorous training in global health that prepares them for work overseas and at home in an increasingly globalized community.

This opportunity would potentially reinforce the idea that practicing global health at home is a tangible and viable option for many who want to pursue global health, but might be unable to travel internationally. Such experience could better equip practitioners to tackle the cross-cultural issues of practicing medicine in globalized, urban settings. Based on the feedback we received, adding a stronger advocacy component, more population-based learning, and health policy training should be considered in future training programs in global health.

Conclusion

Creating and offering a domestic clinical global health elective for medical residents in primary care oriented programs is not only feasible, well-received, and important, but also warranted, considering the global health challenges at home. We suggest that residency programs try to use their local resources to develop and maintain such exposures. Collaboration with NGOs and state and local health agencies, and departmental support from institutions are essential to the success of such programs.

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