

# Developing a Career in Global Health: Considerations for Physicians-in-Training and Academic Mentors

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## Abstract

**Background** Global health is an expansive field, and global health careers are as diverse as the practice of medicine, with new paths being forged every year. Interest in global health among medical students, residents, and fellows has never been higher. As a result, a greater number of these physicians-in-training are participating in global health electives during their training. However, there is a gap between the level of trainee interest and the breadth and depth of educational opportunities that prepare them for a career in global health.

**Objective** Global health experiences can complement and enhance each step of traditional physician training, from medical school through residency and fellowship. Global health experiences can expose trainees to patients with diverse pathologies, improve physical exam skills by decreasing reliance on laboratory tests and imaging, enhance awareness of costs and resource allocation in resource-poor settings, and foster cultural sensitivity. The aim of this article is to describe issues

faced by physicians-in-training and the faculty who mentor them as trainees pursue careers in global health.

**Methods** We conducted a narrative review that addresses opportunities and challenges, competing demands on learners' educational schedules, and the need for professional development for faculty mentors.

**Conclusions** A widening gap between trainee interest and the available educational opportunities in global health may result in many medical students and residents participating in global health experiences without adequate preparation and mentorship. Without this essential support, global health training experiences may have detrimental consequences on both trainees and the communities hosting them. We discuss considerations at each training level, options for additional training, current career models in global health, and challenges and potential solutions during training and early career development.

*Editor's Note: The online version of this article contains a table of global health career self-assessment questions for trainee consideration and a table of select global health resources for trainees and academic mentors.*

## Introduction

Global health is a diverse and expanding field, and interest and participation among medical students, residents, and

fellows has never been higher. The number of graduating US medical students who participated in a global health experience during medical school increased from 6% in 1984 to 31% in 2011.<sup>1-3</sup> Similarly, an unprecedented number of residents are also completing global health electives as a part of their residency training.<sup>4,5</sup> Global developmental assistance from private and public funders quadrupled from \$5.6 billion in 1990 to \$21.8 billion in 2007.<sup>6</sup>

Academic institutions and programs at each level of medical training are establishing educational opportunities in global health, yet they are struggling to keep pace with the rapidly growing demand.<sup>5,7</sup> In a recent survey of graduating medical students, nearly 40% reported that global health was inadequately covered during their training.<sup>2</sup> Faculty members have likewise acknowledged the need to better prepare trainees in global health and that creating global health curricula has the added benefit of improving trainee recruitment to their programs.<sup>8-10</sup>

At the same time, institutions and programs interested in expanding global health training opportunities face multiple obstacles, including limited funding, competing demands for other educational topics, coordinating with

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trainees' busy schedules, and lack of faculty mentors with sufficient time and global health experience.<sup>11</sup>

As the gap between the level of trainee interest and level of educational opportunities grows, many medical students and residents are participating in global health experiences without adequate preparation and mentorship.<sup>12,13</sup> Without essential support, trainee experiences abroad can have detrimental consequences for both the trainees and their host communities.<sup>14,15</sup>

The purpose of this article is to outline some of the pressing considerations faced by physicians-in-training and the faculty who mentor them, as trainees pursue careers in global health. Although not intended as a comprehensive resource, we provide a narrative review of the relevant global health literature and examine the leading challenges, solutions, and potential pathways for developing a career in global health.

### Considerations During Medical Training

Global health experiences can complement and enhance each step of traditional physician training, from medical school through residency and fellowship. Global health experiences can expose trainees to patients with diverse pathologies, improve physical exam skills by decreasing reliance on laboratory tests and imaging, enhance awareness of costs and resource allocation in resource-poor settings, and foster cultural sensitivity.<sup>11,16</sup>

We outline below (and in online supplemental TABLE 1) the primary considerations faced by learners during each stage of training.

#### Medical School

As medical students focus on obtaining the fundamental knowledge and skills to be effective future clinicians, mentored global health experiences can expand students' understanding of the physician's role to serve vulnerable populations abroad and domestically.

However, the benefits gained by a medical student during an international elective must be balanced with the potential burden to host institutions of introducing minimally trained visitors. In light of this, medical student experiences need to be supervised and should be aligned with host community service and research priorities.<sup>17,18</sup> Medical student responsibilities abroad must be appropriate to their skill level. For first- and second-year students, supervised programmatic and research efforts may be best; for third- and fourth-year students, supervised clinical activities may be possible. Creating core competencies in global health and consensus regarding how and when to teach them to medical students prior to their overseas experience are important steps in strengthening these experiences.<sup>19–21</sup>

#### BOX KEY EVIDENCE-BASED POINTS

- Interest and participation in global health among physicians-in-training are growing at every level of medical training.
- Academic institutions are responding by developing global health training programs; however, a gap in opportunities still remains.
- Trainees interested in global health face certain challenges as they pursue global health training and careers.

For medical students interested in a career in global health, it can also be important to understand the structure and role of various specialties and their implications for working in global health. Generalists have a breadth of training that allows them to effectively address a diversity of patients in a variety of settings, whereas subspecialists provide invaluable skill sets for more targeted clinical needs but may require more infrastructure to provide adequate care.

#### Residency Training

Residents interested in global health careers need to gain unique knowledge and skills to work effectively in resource-limited settings. An increasing number of residents are participating in global health experiences during their residency training.<sup>22,23</sup> On the most informal level, residents use limited call-free elective time and vacation to pursue experiences abroad. However, in response to recent trainee demand, a growing number of residency programs are integrating formal global health curricula into 3-year residency programs that include a dedicated global health track with structured mentorship, global health curricula, journal clubs, and electives abroad,<sup>5</sup> or, less frequently, into 4-year residency programs with an additional integrated year dedicated specifically to global health.<sup>24</sup>

Global health research opportunities can also be integrated into residency training. Working with a research mentor, ideally both domestically and while overseas, residents may use elective time to conduct or, more commonly, support a research initiative abroad. Others participate in global health research that may be longitudinal and domestically based, for example, data set analysis, literature review, and education and training research. Some residency programs have even incorporated a research requirement and elective into their curriculum.<sup>25</sup>

Regardless of the type of resident global health opportunity, residents need support throughout the experience. Each resident should be provided (1) prerequisite clinical (or research) training; (2) pretravel orientation and preparation; (3) mentorship by host and US faculty; and (4) posttravel evaluation and feedback.<sup>26</sup> Training programs may wish to prioritize structured, mentored opportunities for trainees, which minimize risks and burdens to host institutions. Trainees should be dissuaded from improper

motivations, such as working independently, practicing unsupervised procedures, or being motivated more by a sense of adventure than by a sense of service or social imperative.

### **Fellowships and Other Postresidency Training**

Global health is increasingly recognized as a unique field of clinical study requiring an additional scope of expertise. As such, an increasing number of trainees are seeking advanced global health training opportunities following residency.

A greater number of academic institutions are establishing global health fellowships dedicated to developing global health leadership and expertise.<sup>27–29</sup> These fellowships are available in various disciplines, including emergency medicine, family medicine, internal medicine, pediatrics, women's health, and surgery, and frequently involve domestic and international clinical experiences, research opportunities, and graduate-level coursework.<sup>30–32</sup>

Other postresidency training opportunities are also available for obtaining valuable global health experience. Examples include established academic research fellowships that allow global health research; epidemiologic training such as the Centers for Disease Control and Prevention's (CDC) 2-year Epidemic Intelligence Service (EIS) program; and field-based experiences such as the Texas Children's Global Health Corps or volunteering with Doctors Without Borders or other nongovernmental organizations (NGOs).<sup>33,34</sup> There is also an array of research field experiences that provide exposure and mentorship for trainees who want to explore a career in global health research.<sup>35</sup>

### **Considering Advanced Degrees**

Many clinicians working in global health find additional graduate-level coursework valuable. Depending on particular career interests, advanced-degree options include public health, epidemiology, business, policy, and tropical medicine. Training in public health, for example, assists the clinician in thinking about population-level health care, in contrast to the individual-level focus emphasized in medical training, and provides solid instruction in how to effectively implement and manage global health programs. Training in business administration can provide a deeper understanding of health care finances, management, and macroeconomic policies that affect health care delivery. A Diploma in Tropical Medicine and Hygiene provides physicians with valuable instruction on the diagnosis and management of diseases commonly found in developing countries. Those seeking a career in research or program evaluation will also benefit from graduate training in public health, epidemiology, biostatistics, ethics, and other topics germane to global health research.

Learners commonly pursue advanced degrees between their third and fourth year of medical school or during the

research years of fellowship. Either of these options has its benefits. Pursuing an advanced degree during medical school exposes students earlier in their careers to global health issues and may guide them toward a future area of interest, introduce them to career mentors, and help them make important residency and fellowship choices. Completing an advanced degree within a fellowship program is frequently funded as part of the fellowship. The trainee's clinical specialty is more defined and allows for a more focused approach to course selection, mentor choice, and projects pursued. Lastly, knowledge and contacts obtained during a fellowship-based degree can typically be applied more immediately to one's posttraining career.

### **Potential Career Models**

Global health careers are as diverse as the practice of medicine, with new paths being forged every year. Global health practitioners participate in clinical care, research, policy, education, program implementation, and monitoring and evaluation. The settings and organizations with whom they work are equally diverse and include nongovernmental, governmental, multinational, and, increasingly, academic medical institutions.

We have grouped the diversity of career options into 3 broad categories: service and program delivery, research, and policy. Within each group, geographic base (international versus domestic) and level of global health involvement (part-time versus full-time) may vary. Each model plays an important role in addressing the health of the world's population. Questions for medical trainees to consider when choosing a career model are included in the career self-assessment tool, and select key resources for trainees and mentors (both available as online supplemental material).

### **Global Health Service and Program Delivery**

A common role of a global health practitioner involves providing clinical service and program delivery in developing countries. Many traditional examples involved physicians living and working for years abroad among the populations they served. A renowned example is Albert Schweitzer, a theologian and physician who dedicated his life to providing clinical care in west-Central Africa. Although the current number of medical missionaries is unknown, there are many physicians following this model of full-time clinical work abroad in both faith-based and non-faith-based organizations.

Today, however, an even greater number of clinicians participate in global health service and program delivery through shorter-term visits, or through supporting or managing the efforts of various institutions. Multinational organizations (eg, United Nations [UN] organizations, the World Bank) and governmental organizations (eg, US Aid

for International Development [USAID], the United Kingdom's Department for International Development) play an important role in many health and health-related sectors, including economic growth, agriculture and trade, and humanitarian assistance.<sup>36,37</sup> Although their primary role is capacity-building and collaborating with beneficiary countries, much of their work is carried out via partnerships with private organizations, indigenous community-based organizations, universities, businesses, and international agencies. Clinicians working with international and governmental organizations may serve in various roles, including as an in-country manager, part-time technical advisor, or domestic administrator.

Physicians may also provide service and program delivery while working with NGOs. In fact, the role of NGOs in global health has grown dramatically in the last two decades; their number quadrupled in the 1990s, and one-third to nearly three-quarters of all aid is now channeled through them.<sup>38–40</sup> Faith-based organizations, such as World Vision and Catholic Relief Services, account for 30% to 40% of health care services in sub-Saharan Africa, especially in rural areas.<sup>41</sup> Other prominent NGOs, among the tens of thousands of NGOs worldwide, are Oxfam, Doctors Without Borders, Bangladesh Rural Advancement Committee, International Rescue Committee, CARE, and Save the Children. Many NGOs work in either long-term development or in humanitarian relief; both approaches may employ physicians in program development, education and training, health systems support, technical assistance, monitoring and evaluation, and clinical service provision. Surgical organizations, such as those replacing cataracts or repairing cleft lips and palates, demonstrate the important role surgeons, surgical nurses, and anesthesiologists play in global health.<sup>42</sup>

A number of academic institutions have established centers of excellence for health care provision or disease-specific programmatic sites in developing countries.<sup>43–46</sup> Global health practitioners may either live at these sites for a period of time or make intermittent trips for the purpose of technical assistance, capacity-building, training, data collection, analysis, and monitoring and evaluation.

### Global Health Research

There is a critical need for ongoing global health research. Achieving our global health aims worldwide requires a clear understanding of the issues and how to most effectively address them. Research provides this evidence-based understanding, including how to prevent, diagnose, and treat diseases; strengthen health care delivery; address

social determinants of health; and guide equitable distribution of health resources.

Many global health researchers pursue their career through academic institutions, where their research may be complemented by clinical and educational opportunities. In most cases, global health research involves collaborating with in-country partners and working with domestic and host-country ethics boards and governments. Research salary support may come from US government funding sources (eg, CDC, USAID, National Institutes for Health [NIH]), other governments, or via private foundations. The NIH has developed stepwise, competitive funding opportunities for career researchers.<sup>47</sup>

The research agenda is often set at the agency level (eg, World Health Organization [WHO], Ministries of Health, USAID, and NIH). There is a current trend toward examining the real-world *effectiveness* of interventions rather than simply their *efficacy*, and for performing operational research that examines why certain interventions may or may not work. For example, investments have been made for greater operational research on improving large-scale malaria, malnutrition, and HIV interventions.<sup>48–50</sup>

Specific tools necessary for research pursuits include advanced degrees and training in epidemiology, biostatistics, and ethics. These skills may be obtained through graduate-level coursework and field-based experience with appropriate mentorship. Certain training programs, such as the CDC's EIS program, combine the didactic learning and field experience needed to solidify this skill set.

Researchers play a central role in global health. For example, researchers and service delivery teams are increasingly collaborating to determine whether health interventions are having the desired effects.<sup>51</sup> Policy makers are demanding evidence to best inform and prioritize global health policies. Meanwhile, donors are using rigorous research and monitoring and evaluation to guide how best to spend funds.

### Global Health Policy

Physician careers in global health policy frequently evolve from established careers in service delivery, program management, or research. The goals of policy are to set priorities and guide the most effective use of resources. Policy may address the important issues of health care access, health equity, human rights, and how NGOs should operate in these settings.<sup>52–54</sup> Historically, policy setting largely occurred at the supranational level, with organizations such as the WHO and UN writing guidelines and recommendations for direct clinical care, public health, and program design. More recently, policy is also being shaped by private foundations, governmental aid agencies, and international financial institutions.



Some recent examples of policy development include WHO's Rapid Advice on Care and Treatment of People with HIV, Prevention of Mother-to-Child Transmission of HIV and Breastfeeding, and the Millennium Development Goals. The Millennium Development Goals are 8 goals to combat poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women that were written by the UN and which all 191 UN member states, with help from the private sector and civil society, have agreed to try to achieve by the year 2015.<sup>55</sup>

### Gaps and Barriers

Despite the increasing interest among medical trainees and increasing opportunities within training programs, several gaps and barriers still limit the development of this growing field.

At the institutional level, there is a recognized shortage of mentors and competency-based curricula to shape training and accountability for this nascent but growing field.<sup>11</sup> Additionally, many academicians work in topic-specific silos, have limited access to trainees, and receive limited support and recognition for mentoring young trainees. By capitalizing on the university model, one could imagine departments or divisions of global health where interdisciplinary networks could flourish among public health, clinical science, research, economics, business, law, and other areas. This type of collaboration reflects the complex reality of most global health issues and provides an academic model that not only decreases isolation among potential mentors, but also allows for academic departments to pool their resources and create curricula and opportunities for trainees.

Recent efforts have been made to create a universal set of core competencies in global health for medical trainees.<sup>56–58</sup> However, there is little direction regarding how to best translate these competencies into practice. Using the evolution of other specialties (eg, emergency medicine, intensive care) as a standard, rigorous global health curricula could be developed, vetted by a core of experts, and shared among residency programs. More work is also needed in identifying career development pathways and viable career models.

In addition to curricula and faculty challenges, residency training programs may feel hard-pressed to fulfill the current requirements of the Accreditation Council for Graduate Medical Education, especially as resident work hours are reduced further. These requirements limit time for overseas travel, global health-specific training, and service. There is a distinct need for more flexibility in residency programming and better balance of hospital service demands with educational priorities. Because residents' salaries are supported primarily by Medicare

reimbursement, priority is placed on providing health care domestically, and overseas service often is not recognized and not reimbursed. Therefore, trainees and residency programs frequently struggle to find alternative funding sources, such as institutional, foundational, and philanthropic funding.<sup>58</sup> A number of individuals and organizations, including the Institute of Medicine, are encouraging the US government to create a federally funded global health service corps to support specialized global health training of select physicians across disciplines.<sup>59,60</sup>

Individual medical trainees face many personal challenges when opting for a career in global health. The dilemma of how to balance clinical training, family, travel, and debt are difficult realities. According to the Association of American Medical Colleges 2011 Graduation Questionnaire, 84% of graduating medical students carry outstanding loans, with an average debt of \$160,911.<sup>2</sup> Lack of funding during training and the burden of loans after training are often prohibitive to global health career development and pursuit. Federal loan forgiveness, which is offered for primary care work with underserved populations in the United States, should be considered as a possible solution for indebted graduates pursuing a global health career. This would promote global health as a viable career option as well as assist in building a cadre of workers for a global health service corps.

### Conclusion

With the challenges of growing global medical and research fields come many opportunities. Medical trainees face a wide spectrum of career options, and training programs are attempting to develop robust curricula and mentored experiences to support their trainees. The wide range of global health career models provides training programs an opportunity for innovative career training and preparation. This requires collaboration across medical disciplines and other fields of study. The federal government has the opportunity to support training initiatives, deliver on policy suggestions, and offer debt forgiveness for medical professionals dedicating their careers to narrowing the health equity gap at home and abroad.

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