

Global Health in Medical Education: A Call for More Training and Opportunities

Paul K. Drain, MPH, Aron Primack, MD, MA, D. Dan Hunt, MD, MBA, Wafae W. Fawzi, MB, DrPH, King K. Holmes, MD, PhD, and Pierce Gardner, MD

Abstract

Worldwide increases in global migration and trade have been making communicable diseases a concern throughout the world and have highlighted the connections in health and medicine among and between continents. Physicians in developed countries are now expected to have a broader knowledge of tropical disease and newly emerging infections, while being culturally sensitive to the increasing number of international travelers and ethnic minority populations.

Exposing medical students to these global health issues encourages students to enter primary care medicine, obtain public health degrees, and practice medicine among the poor and ethnic minorities. In addition, medical students who have completed an international clinical rotation often report a greater ability to recognize disease presentations, more comprehensive physical exam skills with less reliance on expensive imaging, and greater cultural sensitivity. American medical students have become increasingly

more interested and active in global health, but medical schools have been slow to respond. The authors review the evidence supporting the benefits of promoting more global health teaching and opportunities among medical students. Finally, the authors suggest several steps that medical schools can take to meet the growing global health interest of medical students, which will make them better physicians and strengthen our medical system.

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The world has become increasingly interconnected and globalization now affects virtually every person's life. Increases in the flow of people, products, services, and information between and among countries and continents are having a dramatic influence on the world's health and health care delivery.¹ The global migration of people and the distribution of products increases the threat of communicable diseases, such as HIV/AIDS and SARS, as well as the rapid spread of avian influenza and multidrug-resistant microorganisms.^{2,3} In today's society, the emergence of a new public health threat in

one part of the world becomes a concern throughout the world.²

Research conducted in resource-poor settings has helped answer many questions relevant to medical care in developed countries, but current research funding disproportionately favors studying the diseases of high-income countries over studying those diseases more prevalent in low- and middle-income countries.⁴ Whereas injury and environmental health problems are persistent concerns in resource-poor settings and chronic noncommunicable diseases are continuing to rise, further efforts are needed to understand the contextual basis for poor health among these communities.^{5,6} To address the United Nations' Millennium Development Goals, research efforts are being specifically directed to better understand how to strengthen research capacity in low-income countries, sustain the emerging public-private partnerships, and integrate equity and gender issues.^{7,8}

Increases in the capacity and exchange of health services and information can be used to better address global health threats and influence research priorities.^{5,9} Medicine and public health must continue to become more globalized so that by addressing the emergence and distribution of diseases in low- and middle-income countries, the health of communities in high-income

countries is promoted as well. In addition, addressing global health needs, especially among poorer countries, will not only help promote economic development but may also reduce health inequalities and foster political stability and security.^{10–13} These were some of the reasons the Institute of Medicine recently called on the federal government to create an organization to mobilize U.S. health care workers in the fight against HIV in developing countries.¹⁴

Global Health Demands on New Physicians

In the era of globalization, physicians are now expected to have a broader understanding of various alternative and culturally determined medical practices, as well as knowledge of tropical diseases and emerging global infections.¹⁵ The steady increase of travel and migration has increased clinical visits for travel medicine, including immigrants visiting their home country.^{16,17} Hence, a clinician's ability to recognize or suspect presentations of diseases endemic to other world regions has become increasingly important.¹⁸ Physicians must also learn about determinants of health and disease, including socioeconomic, environmental, and political factors, which are becoming more globally interconnected.¹⁵ New physicians will also be facing more cross-cultural interactions and must be comfortable

Mr. Drain is a medical student and National Institutes of Health Fogarty/Ellison Clinical Research Fellow, University of Washington School of Medicine, Seattle, Washington.

Dr. Holmes is professor, University of Washington School of Medicine, Seattle, Washington.

Dr. Primack is program officer, Fogarty International Center, National Institutes of Health, Bethesda, Maryland.

Dr. Gardner is senior advisor, Fogarty International Center, National Institutes of Health, Bethesda, Maryland.

Dr. Hunt is vice dean of academic activities, Northern Ontario School of Medicine, Thunder Bay, Canada.

Dr. Fawzi is associate professor, Department of Nutrition, Harvard School of Public Health, Harvard University, Boston, Massachusetts.

Correspondence should be addressed to Mr. Drain, University of Washington School of Medicine, 1959 NE Pacific Ave, Box 356340, Seattle, WA 98195; telephone: (206) 306-3066; e-mail: (pkdrain@u.washington.edu).

working with translators and understanding cultural beliefs among different ethnic groups.¹⁸ The complexity of the interplay between different cultural approaches to healing has been well documented in the field of ethnomedicine¹⁹ as well as in the popular book *The Spirit Catches You and You Fall Down*.²⁰ Furthermore, in developed countries, primary care physicians must meet the needs of the medically underserved and uninsured, who suffer increased disease morbidity²¹ and whose needs could be better addressed if health care professionals had a better understanding of global health. In summary, newly trained physicians need to be well rounded on global health issues, understand existing and newly emerging global diseases, and be cross-culturally competent and sensitive.

Education for Global Health in Medical Schools

Medical students in the United States have engaged in international rotations in developing countries for over half a century,²² and their interest and participation has accelerated in recent years.²³ In 1978, 5.9% of graduating American medical students had completed a clinical education experience abroad as part of their medical education (Figure 1).²³ By 2004, 22.3% of graduating American medical students had participated in an international health experience.²⁴ However, for maximal effect, international clinical rotations need to be integrated with a

comprehensive international health curriculum.²⁵ In 1991, only 22% of U.S. medical schools offered a course on international health.²⁶ In addition, many medical students are now expanding the time they spend in medical school to pursue international clinical rotations and research opportunities. Medical students have been leading much of the call for greater emphasis on global health issues as part of medical education.

Currently, almost all medical schools have some avenues for medical students to pursue global health interests or activities (P. Gardner, personal observation, 2006). At a minimal level, the great majority of medical schools have a student-led interest group to discuss various global health topics, often with faculty or visiting lecturers. Some schools are now requiring first-year students to choose an area of special interest and are offering global health as an option, which is proving to be highly popular. At medical schools with more mature global health programs, travel support is generally available to help medical students participate in global health projects. Furthermore, many of these schools and their affiliated hospitals have formed partnerships with foreign institutions, and some schools have funding for bidirectional exchange programs. Finally, a number of medical schools have created specific departments of global health, often in partnership with a school of public health, and now have more fully developed global health programs. In the past year, medical

schools at Vanderbilt University, Harvard University, and Duke University, to name a few, have launched or expanded major initiatives in global health. The University of Washington was recently awarded \$30 million by the Bill and Melinda Gates Foundation to support the creation of a department of global health.²⁷ Thus, global health is increasingly being recognized as important by medical schools, and the growing interest among medical students continues to push global health into the mainstream of medical education.

The Benefits of International Clinical Rotations

Medical students recognize the benefits of including global health topics in the medical curriculum, as well as international clinical rotations in the training of medical students.^{15,28} Those who have completed a rotation in a developing country have reported increased skills and confidence, enhanced sensitivity to cost issues, less reliance on technology, and greater appreciation for cross-cultural communication.^{22,28} They become better clinicians by broadening their clinical exposure and experience, most obviously with regard to diseases that are endemic in developing countries and rarely encountered in the student's home country. They also learn to practice medicine with limited access to laboratory tests and expensive diagnostic procedures, relying on strengthened physical examination skills and depending less on laboratory values, radiologic imaging, and other diagnostic testing, and they develop a deeper appreciation for global public health issues and become more culturally sensitive.^{22,28,29} For instance, in-depth interviews with 24 Dutch medical students who completed an international clinical rotation revealed meaningful learning experiences in the domains of medical knowledge, clinical skills, international health care organization, international medical education, society and culture, and personal growth.³⁰ International rotations provide not only training but also opportunities for service, which can be both personally rewarding and useful for building partnerships. In summary, medical students who have completed an international clinical rotation may learn to more readily recognize disease presentations, develop more

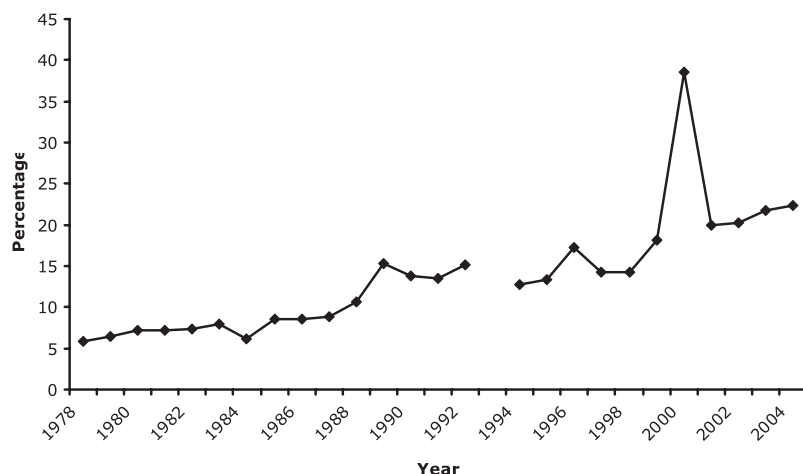


Figure 1 Percentage of medical school graduates who participated in an elective international health experience during medical school.

Source: Association of American Medical Colleges' Medical School Graduation Questionnaire All Schools Report, 1978 to 2004. Data for 1993 were not accessible.

comprehensive physical exam skills, and approach patients with greater cultural sensitivity—all attributes that make for becoming better clinicians.

International clinical rotations not only benefit the medical student, but also help to serve the needs of the health care system. Medical students and residents with international clinical experience are more likely to enter general primary care medicine.^{22,31–34} Further, medical students and residents with international experience are more likely to obtain a public health degree and engage in community service.^{31,32} Similarly, they embrace attitudes and desires to practice medicine among underserved and multicultural populations.^{31–35} A two-year follow-up survey found that 23% of medical students who participated in an international clinical elective intended to work in resource-poor settings, compared with only 6% of medical students with similar plans who did not participate in an international clinical elective.³⁶ A follow-up survey of American fourth-year medical students who had completed a clinical rotation abroad found that a six-week intensive experience in a developing country influenced the medical careers of 67% of the participants; 74% were engaged in primary care specialties, and 60% planned on working overseas in the future.³² In summary, international clinical rotations influence medical students to enter primary care medicine, obtain public health degrees, and practice medicine among the poor and ethnic minorities.

Current Opportunities for Medical Students

Although several residency programs have long offered international electives,^{31,34,37} earlier experiences could have an even greater impact on shaping career decisions in medicine. A few medical schools have created programs specifically to train medical students for careers in global health. In 1998, Ben-Gurion University and Columbia University founded a medical curriculum in Israel with the purpose of training physicians in global health and medicine.³⁸ More recently, the Royal Free and University College Medical School in the United Kingdom created an intercalated bachelor of science degree (equivalent to an expanded fifth year of a U.S. medical school) in international health.³⁹

Many medical schools do offer a course or seminar on global health, and several now provide opportunities or help arrange international rotations. The Karolinska Institute in Sweden offers students an optional five-week full-time course on global health.⁴⁰ The University of Arizona has an international health option that allows medical students to conduct international fieldwork during their last year of clinical training.⁴¹ The University of Washington recently introduced a global health pathway, which includes course work on global health and tropical medicine as well as fully funded international clinical rotations during the last year of medical school.⁴² The University of Massachusetts offers a Global Multiculturalism Track to improve cultural competency for medical students working with local immigrants.⁴³ Several other medical schools that offer global health teaching or international clinical opportunities can be found at the Global Health Education Consortium⁴⁴ and the American Medical Student Association⁴⁵ Web sites.

Several associations, organizations, and institutions have recently created scholarships and fellowships for medical students to pursue international research and training. The Global Health Education Consortium created the Carole M. Davis Scholarship to assist medical students to complete fieldwork abroad.⁴⁶ The American Society of Tropical Medicine and Hygiene established the Benjamin H. Kean Traveling Fellowship to fund medical students, residents, and fellows for an international tropical medicine elective.⁴⁷ The National Institutes of Health's (NIH) Fogarty International Center (FIC) and the Ellison Medical Foundation have established the Fogarty/Ellison Overseas Fellowships in Global Health and Clinical Research Training, which allow medical students to spend 10 months with an established NIH-supported research center in a low- or middle-income country.⁴⁸ In 2005–2006, this fellowship allowed 27 U.S. fellowship recipients and 27 matching fellows from the foreign sites to work in 18 research centers around the world. To our knowledge, this is the only one-year fellowship that supports American medical students for a year of clinical research training in a developing country. In addition, the FIC's newly established Framework Programs for Global Health provides support for NIH-funded U.S. and foreign institutions to help develop

multidisciplinary curricula in global health and encourages faculty and students from diverse disciplines, including business, law, journalism, and engineering, to work collaboratively with traditional partners in global health research.

The Perspectives of Medical Students

Medical students and residents are calling for more global health teaching and international rotation opportunities during their medical school education.^{34,49} Nearly all medical students who have had international rotations report that these rotations are enriching experiences, and many consider them the best part of their medical education.^{50,51} In a survey of University of Arizona medical students who completed an international clinical rotation, all 133 participants indicated that they would recommend the program to their peers.⁴¹ In a more recent survey, 58 of 60 American medical students who completed six to eight weeks of field experience in a developing country said they would recommend an international clinical rotation to their peers.²⁸ A survey of Yale University internal medicine residents found that 60% of those who had completed an international clinical rotation, as well as 45% of those who had not completed an international rotation, felt that medical school training should include exposure to health care in developing countries.³⁴ As a reflection of the growing interest in global health, applicants may now choose medical schools and residency programs on the basis of global health training programs and opportunities.

Suggestions for Developing Global Health Education

The U.S. medical system has been called upon to encourage and assist more medical students and young physicians to enter global health careers.^{14,52} Further structured research could better elucidate the range of effects of international clinical rotations among medical students, including costs, which may include variability in medical supervision, personal safety and liability concerns, and time away from family. However, recognition of the benefits has been rather consistent. Although opportunities could be provided for students to work more with local multicultural

populations, these experiences have only some, and not all, of the benefits of working in international, resource-poor settings. We now suggest several steps that can be taken by medical schools to meet the growing interest and demands of medical students for more training and opportunities in global health (List 1).

As a first step, medical schools could integrate global health topics into core medical curricula. In addition to teaching about tropical diseases and providing cross-cultural training, medical schools could also offer courses on international public health, medical anthropology, and global health economics. This could be facilitated by fostering relationships with other schools, particularly schools of public health, because medicine and public health are largely intertwined in developing countries. Additionally, schools could establish a global health pathway or track to encourage and recognize students gaining global health training and international clinical experiences. Finally, students pursuing combined degrees, such as MD/PhD and MD/MPH programs, could be encouraged to concentrate on global health.

Medical students could be provided with adequate administrative and financial support, opportunities, and time to conduct an international elective during the clinical years. Currently, the limited number of opportunities and difficulty in arranging an international rotation discourage medical students from expanding their clinical experience. International clinical electives will require adequate organization and supervision to maintain safety for medical students and to avoid the danger of students practicing beyond their medical competence.³⁰ Medical schools can better serve students by establishing an administrative position or office to provide logistic support to

facilitate international rotations. The typical, and perhaps the optimum, amount of time for a clinical rotation is six to eight weeks, depending in part on pretravel logistic support. An international research rotation typically requires more time than traditional rotations for both the research program and the medical student to reap the full benefit, and would be highly dependent on the research being conducted. Medical schools and hospitals in developed countries could initiate more direct collaborative partnerships with medical institutions in developing countries to foster innovative, long-term partnerships for an exchange of resources and training opportunities.^{14,53} Pairing medical schools and hospitals and promoting such an exchange will lead to more qualified physicians and to improved health care delivery at both institutions. Traveling medical students will need knowledgeable onsite mentors and a close relationship with a faculty supervisor, should they need assistance. Medical institutions in developing countries will benefit by having greater access to medical information, visiting lecturers, material resources, and additional training opportunities. Medical schools could also assist students in accessing available scholarships for travel costs, because limited financial resources will continue to hinder medical students from being able to participate in international rotations.

Finally, we recommend that all medical students receive training in global health and that an international clinical rotation become more routinely available to medical students. If international clinical electives opportunities remain limited and sparse, then programs will be likely to continue to draw on a small, self-selected group of students who are internationally oriented and well traveled,⁵⁴ and opportunities will likely not reach those students, including

members of U.S. minority groups, who would most greatly benefit from an international rotation.³⁰ The benefits to medical students are more than sufficient to justify promoting an international clinical rotation as a worthy training opportunity.

Conclusion

Thus far, medical schools have been slow in responding to the global health interests of their students. Medical schools should be encouraged to continue integrating global health teaching into medical curricula while creating and promoting more opportunities for international rotations. Also, they should move toward making an international clinical rotation a routine part of medical education. At the same time, more quantitative data on global health in medical education should be collected. Teaching the global aspects of medicine and understanding medical resources and care in a developing country will prepare future physicians to have a more complete understanding of health and medicine and will encourage them to pursue primary care specialties and to serve in resource-poor settings. This, in turn, will strengthen our health care system.

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List 1

Strategies to Meet the Global Health Interests of Medical Students

- Integrate global health topics into core medical curricula.
- Offer courses on global public health and tropical medicine.
- Offer various elective courses, for instance, medical anthropology, international development and health, or health and human rights.
- Establish a global health pathway or track to recognize international experiences and training.
- Offer combined degree programs (e.g., MD/PhD, MD/MPH) in global health.
- Provide academic, logistic, and financial support for international rotations.
- Establish a global health administrator or office within the medical school.
- Form international partnerships with developing-country institutions.
- Create more scholarships and financial support for international exchanges.
- Make an international clinical rotation a routine part of medical education.

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