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Teaching the Basics: Core Competencies in Global Health

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WHAT IS GLOBAL HEALTH?

Global health has been defined as "...the goal of improving health for all people by reducing avoidable diseases, disabilities, and deaths" and an "area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide". These definitions highlight the multinational, multidisciplinary, and equity-oriented nature of this emerging field. Global health involves social, political, economic, and environmental considerations that affect the health of communities and individuals around the world. Yet the same interconnectedness that facilitates the globalization of diseases is also manifested through the unprecedented interaction and cooperation between governments, civil society organizations, and individuals across time zones and borders to address health issues. Examples of this cooperation include large-scale multinational health efforts such as the United Nations Millennium Development Goals or the US President's Emergency Program for AIDS Relief.³ Technological advances that permit instant knowledge sharing around the world, creating the capacity to transform medical education and care, are also rapidly evolving. The problem is therefore linked to the solution. Globalization has produced new multidisciplinary multinational health challenges, and the global

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health issues of the modern world require coordinated multisectoral, multidisciplinary, and multinational efforts to achieve effective resolutions.

GLOBAL HEALTH TRAINING IN MEDICAL SCHOOLS: NEED AND CURRENT STATE

Medical education is increasingly being pushed to adapt, internally by the explosive growth in scientific knowledge and externally by rapid transformations in the global context. In response, experts are rethinking the approach to and content of medical education for the twenty-first century, including the role for global health.⁴ Reasons to include global health training as part of routine medical education include, among others, the tremendous increase in student and faculty interest, the growing percentage of immigrants in the United States and Canadian domestic populations, the rapid spread of communicable diseases by international travel, and the need for all physicians to have basic knowledge of major factors affecting health and the delivery of health care.³ Global health provides a framework to address issues such as inequities in health, cultural competency, globalization of health care, and social and environmental determinants of health crucial to modern medical education.

Although the need for global health curricular content is increasingly recognized, there has been a paucity of research examining the development of global health content for medical curricula. In general, the literature reflects a fragmented and insufficient response on the part of medical schools to the increased student demand for global health content. Much of the literature to date regarding global health medical education focuses on international electives or activities at individual medical schools. A survey of global health training in Canadian medical schools in 2006 found that global health content was haphazard and lacking in uniform objectives or guidelines. The lack of coordination in curricular development has resulted in wide variations between medical schools in the type, quantity, and quality of global health content offered. Where global health components are provided, there are variations in the format and content of global health materials, the year in which it is taught, whether the courses are required or elective, and whether they are didactic or experiential.

While variations in educational approaches are an important source of innovation, the lack of consensus that characterizes contemporary global health training may have detrimental consequences. In the absence of formal learning opportunities, medical students are pursuing their own programs and electives in global health, often with little or no faculty oversight. This situation presents the risk of students practicing beyond their competency level, which may lead to harm for patients, themselves, and the educational and clinical institutions in which they study.

Beyond the clinical aspects, medical graduates lacking appropriate global health training will be unprepared to recognize and meet the challenges of an increasingly interdependent world and the needs of the patients and populations they will serve. Coordinating the development of medical education systems for a new global context of medical care requires a systematic approach supported by key organizations and accreditation bodies. The lack of consensus among schools and leaders regarding what constitutes fundamental elements in global health training must be addressed in order to counter the fragmentation and inconsistency of current pedagogical approaches. One step in this process is to seek consensus regarding the core competencies that all medical students, regardless of their interest in global health, should possess before graduating. Although particular themes have been identified in the literature, a common set of criteria will help to ensure that all medical students receive appropriate and comparable global health training.

CREATING CORE COMPETENCIES IN GLOBAL HEALTH

To develop common standards for global health training in US and Canadian medical schools, the Global Health Education Consortium (GHEC) and the Association of Faculties of Medicine (AFMC) of Canada's Global Health Resource Group (GHRG) initiated a project to develop global health core curriculum guidelines appropriate for all medical students.³ A literature review was conducted to assess the state of the knowledge regarding global health competencies for undergraduate medical education. This review identified 32 relevant articles; 11 retrieved articles described curricular competencies including the global burden of disease, travel medicine, health care disparities between countries, immigrant health, primary care within diverse cultural settings, and skills to better interface with different populations, cultures, and health care systems. Whereas each of these topics was mentioned in more than 1 article, no single topic was discussed in more than 5 of the reviewed articles, suggesting a lack of consensus within the literature regarding the essential global health competencies for medical students. The review also highlighted variations in the educational approaches used to teach these competencies.

Based on this review, a separate review of existing global health program websites, and expert opinion, the Committee developed a list of core competencies in global health for general medical education. In addition, the Committee detailed the essential knowledge and skills required within each competency topic area. These suggestions were then submitted for peer review to global health experts, medical educators, and students. Using a modified Delphi method, the Committee has developed recommendations outlining 7 topic areas and 18 competencies thought to be appropriate for global health training for all medical students. These recommendations are summarized in the following sections and in **Table 1**.

Global Burden of Disease

A basic understanding of the global burden of disease is an essential part of modern medical education. This knowledge is crucial for physicians to be informed participants in discussions of priority setting and the allocation of funds for health-related activities. Medical students should have a basic understanding of how morbidity and mortality are measured for health program monitoring, what the major causes of morbidity and mortality around the globe are, and how disease risk varies by world region. This includes understanding the major categories of morbidity and mortality used by the World Health Organization (WHO) and how they vary between high-, middle-, and low-income regions. Students should also have familiarity with major public health efforts to reduce health disparities globally, such as the Millennium Development Goals; they should be able to identify a health objective from the Millennium Development Goals and to describe the function and role of the WHO in developing health care policies. Finally, medical graduates should be able to demonstrate familiarity with health care funding mechanisms, priority-setting, and funding for health-related research, as well as be able to describe challenges to the existing health care system in their region.

Health Implications of Travel, Migration, and Displacement

The proper management of patients necessitates taking into consideration varying perspectives and implications due to international travel, foreign birth, or differing cultural backgrounds. Over the past several decades, economic and social globalization, particularly through migration, has led to changing social landscapes in nations around the world. The range of health concerns experienced by migrants and travelers

Table 1 Global health essential core competencies for medical students		
Topic Area	Competency Description	
1. Global burden of disease	 Knowledge of the major global causes of morbidity and mortality and how health risks vary by gender and income across regions To demonstrate competency in this area, students should: Be able to describe the principle measures of morbidity and mortality and their roles and limitations for health program monitoring, evaluation and priority setting. This will involve the ability to: Describe the concepts of under 5 mortality rate, life expectancy, quality adjusted life-year (QALY) and disability adjusted life-year (DALY) Explain how life expectancy, QALY and DALY may be used to make general health comparisons within and/or between countries and regions Identify changes in under 5 mortality as the major reason for changes in life expectancy Be able to identify the major categories of morbidity and mortality used by the World Health Organization (WHO) and to describe how the relative importance of each category, and of the leading diagnoses within each category, vary by age, gender, WHO region, and between high, middle and low-income regions. For example: Communicable and parasitic diseases, maternal, perinatal and childhood conditions, and nutritional deficiencies are more significant causes of morbidity and mortality in low-income regions Non-communicable conditions are important and of increasing significance in high, middle and low-income regions Injuries are a more important cause of morbidity and mortality in middle and low-income regions Be able to efficiently access global health data from sources such as the WHO Global Burden of Disease measures and understand the limitations of these data Be able to knowledgeably discuss priority setting, healthcare rationing and funding for health and health-related research b. To demonstrate competency in this area,	
Health implications of travel, migration and displacement	 Understand health risks associated with travel, with emphasis on potential risks and appropriate management, including referrals To demonstrate competency in this area, students should: 	

3. A) Social and	 2. Understand how travel and trade contribute to the spread of communicable diseases b. To demonstrate competency in this area, students should: i. Describe the concept of a pandemic and how global commerce and travel contribute to the spread of pandemics ii. Understand how travelers may contribute to outbreaks of communicable diseases such as measles in a context of local and international populations with varying levels of immunization iii. Be aware of the utility and limitations of common infection control and public health measures in dealing with local or global outbreaks 1. Examples include contact precautions, vaccinations, health advisories, prophylaxis, quarantines, isolation and travel restrictions iv. Know how to liaise with local or regional public health authorities and be aware of national and international public health organizations responsible for issuing health advisory recommendations 3. Understand the health risks related to migration, with emphasis on the potential risks and appropriate resources c. To demonstrate competency in this area, students should: i. Understand the basic demographics of foreign-born individuals in one's local community and country ii. Recognize when foreign birth places a patient at risk for unusual diseases or unusual presentation of injuries, common diseases or tropical diseases and make an appropriate diagnosis or referral iii. Be able to elicit individual health concerns in a culturally sensitive manner iv. Be familiar with issues that arise when communicating with patients and families using an interpreter 1. Understand the relationship between health and social determinants of health, and how these vary across world regions
economic determinants of health	 a. To demonstrate competency in this area, students should: Define health inequity and be able to describe one local and one international example List major social determinants of health and their impact on differences in life expectancy, major causes of morbidity and mortality and access to healthcare between and within countries Topics include absolute and relative poverty, urbanization, crowding, inadequate housing, education (especially for females), gender and other inequities and discrimination based on race, ethnicity or other social determinants. Be aware of local, national or international interventions to address health determinants Examples include the UN Millennium Development Goals or the US Global Health Initiative
3. B) Population, resources and the environment	 Understand the impact of rapid population growth and of unsustainable and inequitable resource consumption on important resources essential to human health, including water, sanitation and food supply, and know how these resources vary across world regions To demonstrate competency in this area, students should: Have a basic understanding regarding the adequacy of nutrition, potable water and sanitation in different regions around the world
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Table 1 (continued)	
Topic Area	Competency Description
	 Describe the relationship between access to clean water, sanitation and nutrition on individual and population health To demonstrate competency in this area, students should: Explain the basic relationship between the availability of adequate nutrition, potable water and sanitation and risk of communicable and chronic diseases and provide specific examples Appropriate topics include the interactions between protein, caloric, and micronutrient malnutrition and various major diseases; and the interactions between inadequate clean water supplies and good sanitation and diarrheal and parasitic diseases Describe the relationship between environmental degradation, pollution and health To demonstrate competency in this area, students should: Be able to explain examples of causes of pollution and environmental degradation and their consequences for health globally. For example:
	2. The relationship between environmental pollution and cancers i. Radon and lung cancer; benzene and leukemia
4. Globalization of health and healthcare	1. Hadon and lung cancer; benzene and leukemia 1. Understand how global trends in healthcare practice, commerce and culture contribute to health and the quality and availability of healthcare locally and internationally a. To demonstrate competency in this area, students should: i. Describe different national models for public and/or private provision of healthcare and their impact on the health of the population and individuals ii. Be aware of examples of how globalization and trade including trade agreements affect availability of healthcare such as patented or essential medicines 2. Be familiar with major multinational efforts to improve health globally b. To demonstrate competency in this area, students should: i. Describe the core functions and role of the WHO in developing healthcare policies and practices ii. Discuss the function/intention of the Millennium Development Goals and identify health-related objectives, including: 1. Reduce child mortality 2. Improve maternal health 3. Eradicate extreme poverty and hunger 4. Combat HIV/AIDS, malaria and other diseases 3. Understand and describe general trends and influences in the global availability and movement of healthcare workers c. To demonstrate competency in this area, students should: i. Know the approximate extent of national and global healthcare worker availability (shortage) ii. Describe the most common patterns of healthcare worker migration ("brain drain") and its impact on healthcare availability in both the country that the healthcare worker leaves and the country to which he/she migrates

5. Healthcare in low-resource settings

- 1. Identify barriers to health and healthcare in low-resource settings locally and internationally
 - a. To demonstrate competency in this area, students should:
 - i. Describe barriers to recruitment, training and retention of human resources in underserved areas such as rural, inner-city and indigenous communities within high- and low-income countries
 - ii. Describe the effect of distance and inadequate infrastructure on the delivery of healthcare
 - 1. For example, be able to discuss the effects of travel costs, poor roads, lack of mailing address or phone system, lack of medicines, inadequate staffing, and inadequate and unreliable laboratory and diagnostic support
 - iii. Identify barriers to appropriate prevention and treatment programs in low-resource settings
 - 1. For example, be able to discuss the effects of low literacy and health literacy, user fees, lack of health insurance, costs of medicines and treatments, therapies and procedures, advanced presentation of disease, lack of provider access to management guidelines and training including continuing professional development, concerns regarding quality of care–real or perceived, cultural barriers to care, underutilization of existing resources, issues facing scaling up and implementation of successful programs
- 2. Demonstrate an understanding of healthcare delivery strategies in low-resource settings, especially the role of community-based healthcare and primary care models
 - b. To demonstrate competency in this area, students should:
 - i. Differentiate between and highlight the benefits and disadvantages of horizontal and vertical implementation strategies
 - ii. Be familiar with the concept of an essential medicines list and understand its role in ensuring access to standardized, effective treatments
- 3. Demonstrate an understanding of cultural and ethical issues in working with underserved populations
 - c. To demonstrate competency in this area, students should:
 - i. Discuss the professional and ethical issues involved in allowing trainees to practice or assist in settings where they may be perceived and treated as healthcare workers, even by local healthcare providers
 - 1. Explain the student's professional and ethical responsibilities in resource-poor settings
 - 2. For example, be able to discuss the impact on local staff, patient perceptions and risks to patients and students
- 4. Demonstrate the ability to adapt clinical skills and practice in a resource-constrained setting
 - d. To demonstrate competency in this area, students should:
 - i. Identify signs and symptoms for common major diseases that facilitate diagnosis in the absence of advanced testing often unavailable in low-resource settings
 - 1. For example, HIV/AIDS, TB, malaria, childhood pneumonia, cardiovascular disease, cancer, diabetes
 - ii. Describe clinical interventions and integrated strategies that have been demonstrated to substantially improve individual and/or population health in low-resource settings
 - 1. For example, be able to discuss immunizations, an essential drugs list, maternal, child and family planning health programs

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Table 1 (continued)	
Topic Area	Competency Description
	 For students who participate in electives in low-resource settings outside their home situations, demonstrate that they have participated in training to prepare for this elective To demonstrate competency in this area, students should: Demonstrate preparation in the following areas: Personal health: basic health precautions, immunizations, health insurance, personal protective equipment, post exposure prophylaxis for HIV, access to medical care Travel safety: orientation upon arrival, packing requirements, registering at home embassy, travel advisory warnings, emergency preparedness Cultural awareness: basic understanding of culture (especially as it pertains to health), intercultural relationships, gender, family and community roles, and religion Language competencies: language basics, host language expectations and availability of interpreters Ethical considerations: evaluate motivations for participating in international elective, discuss potential ethical dilemmas prior to departure, code of conduct, appropriate licensing, local mentor/supervision, communications, and patient privacy Review guidelines for professionalism in electronic communications such as blogging, emails, and/or distribution of photographs taken in low resource settings Understand the possible historical and current socio-political and economical factors pertaining to the region in which they will work and how these may affect their work abroad
6. Human rights in global health	 Demonstrate a basic understanding of the relationship between health and human rights To demonstrate competency in this area, students should: Have an understanding of the right to health and how this right is defined under international agreements such as the United Nations' Universal Declaration of Human Rights or the Declaration of Alma-Ata Discuss how social, economic, political or cultural factors may affect an individual's or community's right to healthcare Examples include availability, accessibility, affordability and quality

These recommendations represent their authors' opinion and should not be considered as representing the opinion of the AFMC.

Abbreviations: DALY, disability-adjusted life-year; HIV, human immunodeficiency virus; QALY, quality-adjusted life-year; TB, tuberculosis; UN, United Nations; WHO, World Health Organization.

From an AFMC Resource Group on Global Health/GHEC joint committee; with permission.

requires that domestic health care professionals be well trained in a broader range of health issues to meet the needs of increasingly multicultural and diverse populations. This training includes competency in cross-cultural communication and interactions.

In 2004, 763 million people crossed international borders. ¹² Each year, up to 8% of travelers seek health care while abroad or upon returning home. ¹³ Although travel medicine has emerged to accommodate the need for expertise in providing pre-travel and post-travel advice, ¹⁴ all physicians should know how to take a basic travel history and when to refer or treat individuals with possible travel-related illnesses. Health professionals also require some understanding of how the global economy and travel contribute to the spread of communicable diseases, such as the severe acute respiratory syndrome epidemic of 2003 or the H1N1 pandemic of 2009. These experiences demonstrate the undeniable link between global and domestic health systems, the need for training in public health practice, and the need to better comprehend the medical risks of an interconnected world.

Social and Economic Determinants of Health

Dramatic inequities in health status exist within and between countries. According to the WHO Commission on Social Determinants of Health, "These inequities in health... arise because of the circumstances in which people grow, live, work, and age, and the systems put in place to deal with illness. The conditions in which people live and die are, in turn, shaped by political, social, and economic forces". Morbidity and mortality vary according to social determinants, including education, occupation, income, social class, gender, age, and ethnicity, among others. Consistently, a lower socioeconomic status is associated with poorer health. Physicians should understand how social and economic conditions affect health, both to recognize disease risk factors in their patients and to contribute to improving public health.

Global health strives to achieve health equity for all. Medical education has a crucial responsibility to cultivate health professionals who embrace their role as advocates for the promotion of population health and the provision of effective health care services. Integral to the professional role of physicians within society are the values of altruism and compassion ¹⁶ and the need to address issues of social justice and inequities in access to health care. ^{17,18} Major medical organizations and licensing bodies have recognized this role and emphasized that addressing health care inequalities within and beyond domestic borders is a fundamental principle of physician professionalism. ^{17,19} In order to cultivate in future physicians the characteristics required to meet the needs of contemporary societies and the expectations of professional organizations, medical schools should incorporate social and economic determinants of health learning objectives as integral components of their educational programs.

Population, Resources, and the Environment

Demographic projections anticipate that the world's population will increase by 40% by 2050, with almost all of this expansion occurring in low-income countries. This growth could have a major adverse impact on the availability of food, water, and other essential resources, as well as exacerbate pollution. Medical students should have an understanding of the health impacts of rapid population growth and unsustainable and inequitable consumption of essential resources, including water and food supply. Students should also be aware of regional variation in access to these resources and the effects of inequitable consumption on individuals and communities around the world. They should be able to describe the relationship between access to clean water, sanitation, and nutrition to individual and population health.

Globalization of Health and Health Care

Globalization affects all aspects of health care, including the ability of governments or organizations to provide adequate care, the evolution of the local health care system, disease patterns, and the movement of health care workers within a global shortage of health human resources. Medical students should be able to understand and describe general trends in and influences on the global availability and movement of health care workers, as well as know how global trends in health care practice, commerce, and culture contribute to health and the quality and availability of health care locally and internationally.

Health Care in Low-Resource Settings

Health systems in low-resource settings often differ from those in the high-resource urban environments in which medical students are typically trained. Low-resource settings, including those among marginalized populations and rural environments in high-income countries, often face considerable human resource shortages within health care, as well as broader infrastructural inadequacies and barriers to prevention and treatment programs. These barriers may include inadequate local health system infrastructures; poor public infrastructure such as roads, schools, and telecommunications; cultural and linguistic barriers; low literacy rates; lack of health insurance; costs of medicines and therapies; advanced presentation of disease; lack of provider access to continuing education; and underutilization of available resources. Medical students should be aware of the realities of health care delivery in resource-poor settings and standards of clinical appropriateness in different environments. Further, students who travel abroad to participate in elective programs in low-resource settings should receive appropriate specialized orientation and training. This training should include such topics as personal health, travel safety, and ethical challenges that they may encounter, as well as competency with respect to the historical, sociopolitical, cultural, and linguistic contexts in which they will be learning.

Besides specific training in working within low-resource settings, medical graduates should be able to demonstrate an understanding of how primary health care delivery strategies may reduce health inequalities through programs such as universal and equitable access to health services, immunization programs, essential medicines lists, maternal and child health programs, community health worker programs, and primary care as a focal point and coordinating mechanism for comprehensive health service provision at all levels.²⁰

Human Rights in Global Health

In 1948, the Universal Declaration of Human Rights established the right of every human being to enjoy a standard of living that promotes health and ensures adequate access to medical care. However, despite the international community's agreement to health as a basic human right, health inequalities within and among nations persist and in many cases are widening. Future physicians should have an understanding of the intersection between health and human rights and how social, economic, political, and cultural factors affect individual and community rights to health care.

FUTURE DEVELOPMENTS

Compelling moral, ethical, professional, pedagogical, and economic imperatives support the integration of global health topics within medical school curriculum. Although the process of integrating global health into medical education is well underway at some medical schools, there remain substantial challenges to initiating

global health training in others. As a new field, faculties and schools may benefit from resources and guidance to develop global health modules and teaching materials. The GHEC/AFMC GHRG core competencies project was undertaken with the goal of providing guidance for those programs interested in adding global health content to their curricula. In addition, it is hoped that these recommendations will stimulate discussion among medical educators, students, professional educational organizations, and accreditation bodies regarding global health training in medical education to facilitate consensus on necessary competencies for students. Through the use of the proposed set of core competencies established by this project, it is hoped that this model will be shared among medical educators and programs in an effort to build a coordinated approach to global health in medical education.

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