

# Improving global surgery education for trainees

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## Introduction

Since the 2015 publication of *The Lancet Commission on Global Surgery*, universal access to surgical care has emerged as a worldwide priority. Their landmark report highlighted the sheer scale of the global surgical burden, with an estimated 5 billion people without access to safe surgical care and 143 million essential operations not being performed every year in low- and middle-income countries (LMICs)<sup>[1]</sup>. A lack of an adequately trained surgical workforce was named as a major contributing factor to this global health issue<sup>[1]</sup>. According to 2016 World Bank data, 23 LMICs have fewer than the recommended minimum 20 specialist surgical workforce per 100,000 people. This figure is likely underestimating the true figure as data are not available for a large proportion of LMICs<sup>[2]</sup>. To tackle this immense workforce gap requires a concerted effort by the surgical provider community across all income settings.

The *Lancet Commission's* follow-up report "Global Surgery 2030: a roadmap for high income country actors" called for all high-income countries (HIC) surgical trainees to "develop broad competencies in global health" to help address this inequitable access to surgery<sup>[3]</sup>. We echo their recommendation and take one step further in arguing for the inclusion of global surgery in all HIC surgical training programs. We call for, at a minimum, an agreed syllabus in global surgery to be provided to all HIC trainees. For the purposes of this article, global surgery can be defined as "an area of study, research, practice, and advocacy that seeks to improve health outcomes and achieve health equity for all people who require surgical care"<sup>[4]</sup>.

## Defining the need

With approximately one-third of deaths worldwide due to surgically treatable conditions, it is crucial that all HIC surgical trainees are aware of the enormity of the problem<sup>[1]</sup>. Although there may be some variability in their degree of engagement, incorporating global surgery into HIC training curricula is essential to nurture a conscientious, globally minded next generation of surgeons.

This call for increased global surgery training reflects the enthusiasm by the current generation of HIC surgical trainees. Approximately two thirds of all Canadian general and orthopedic surgical residents expressed a desire to undertake surgical work internationally<sup>[5]</sup>. Similarly high levels of interest in pursuing global surgery have been demonstrated among trainees in the United States<sup>[3,6,7]</sup>. Most of this literature focuses on residents' desire to work in international settings, for which formal global surgery training must be a prerequisite.

Surgical training curricula need to be responsive to trainee needs and useful for patients and surgical services locally and globally. The inclusion of global surgery in curricula would ensure this greater trainee interest is matched with greater trainee competence. Furthermore, educating trainees in global surgery fulfils an ethical imperative. If we believe a large proportion of trainees will participate in international work, we would be negligent to permit them to do so without adequate preparation. How else can we equip this large cohort of enthusiastic residents to aid international surgical efforts in an ethical and sustainable manner?

## Current models of global surgery training

Over the last few years, we have seen the emergence of academic global surgery training pathways and a surge of international health experiences (IHEs) offered by various HIC institutions. The Brigham and Women's Global Health Equity Residency in General Surgery is one such example, involving a 2-year program of research and international work incorporated within existing training. We commend the program's leads for its focus on mentorship, equitable approach to research, and emphasis on long-term partnership development<sup>[8]</sup>. However, for academic global surgery training pathways, scalability is limited, as evidenced by their small resident intakes. This is especially true given practical implications such as funding and the need for clinical service delivery at the home institution. Furthermore, even where IHEs are universally offered, individual trainee factors, such as their family and financial situation, limit their participation<sup>[9]</sup>. It is evident that current models of global surgery training do not address the barriers to more widespread implementation.

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Fundamentally, we need to democratize global surgery training and ensure a baseline level of knowledge across all trainees. To date, no studies have demonstrated the development of a 2-tiered model for global surgery training, with formalized paths for those more interested alongside a universal training program. Such an approach would support equal access to opportunities to learn about global surgery for all trainees without ignoring the need for developing the next generation of global surgery specialists.

### How to incorporate global surgery into training programs?

Critics of the widespread adoption of a global surgery syllabus may cite insufficient time in postgraduate training as a barrier. However, over only a 2-week period, the collaboration between Lund University, Harvard University, and the University of Zimbabwe provided a taught component covering important topics in global surgery for a selected group of their medical students<sup>[10]</sup>. Similarly, the University of Oxford delivered a 1-week short course in global surgery, using a combination of precourse reading, lectures, and interactive group activities. These courses illustrate how training programs may successfully include essential concepts in global surgery in a time-efficient manner within stretched training curricula.

Selected educational areas covered in each course and developed by expert faculty are seen in **Table 1**, with considerable overlap between the 2<sup>[11]</sup>. These topics may form the foundation for institutions or training bodies wishing to develop their own global surgery teaching. In addition, the successful utilization of video conferencing software during both taught courses provides strong support for institutions to draw from international expertise in the

absence of local knowledge to deliver a high-quality global surgery program. This may foster secondary benefits in creating international partnerships and the capability for bidirectional exchange.

### Addressing equity worldwide in global surgery training

Some global surgery advocates may assert that greater resources should be allocated to providing global surgery training to surgeons and researchers in the Global South. The authors of this article wholeheartedly agree and adopt the sentiment of Professor Yap Boum II and colleagues in saying, “If we want to go far in global health partnerships, we have to go together”<sup>[11]</sup>. This is not to say that training HIC surgical trainees and those in LMICs are mutually exclusive though. Our intent in advocating for greater global surgery training for HIC trainees is in part to help them avoid the pitfalls of “surgical colonialism” and short-term “fly-in fly-out” trips<sup>[3]</sup>. Any HIC global surgery training program should at its core integrate principles of ethics, sustainable and equitable partnerships, and empowerment of our LMIC colleagues.

### Conclusions

We believe the inclusion of global surgery in all HIC training programs merits further advocacy work, which can be undertaken at a local, national, or international level. Training is incomplete for any HIC surgical trainee not to have knowledge of the global context of surgical care and burden of disease. Training programs must not only prepare their residents to be surgeons for their home institution, but to be surgeons in the wider world. This article provides a basis upon which further work must be undertaken to establish national or international curricula in global surgery.

**TABLE 1**  
**List of selected global surgery topics<sup>[10]</sup>.**

University of Oxford course	Lund University, Harvard University, and University of Zimbabwe Course
Global burden of surgical disease	History of global health
Measuring progress against global need	Workforce issues
Healthcare capacity building in LMICs through digital technology	Blood banking
Barriers to safe surgery	Task shifting/sharing
Oxygen and blood	Surgery in the context of global health
Opportunities and pitfalls in working abroad	Investing in surgery for LMICs
The global surgical workforce	Cardiothoracic surgery in LMICs
Task shifting/sharing	Role of schools of public health
Developing cooperative partnerships	Perioperative nursing in global health
Good practice in partnerships	Lancet Commission on Global Surgery
Research in LMICs	Trauma as a global health issue
Innovation in LMICs	Critical care in resource limited settings
Female genital mutilation	Careers in global surgery
Global surgery metrics	Radiology in LMICs
Pediatric global surgery	Short-term mission trips
Careers in global surgery	Humanitarian and natural disasters
Governance in partnerships	Surgical oncology in global health
Mobile children's surgery and safe access	Pediatric global surgery
Lancet Commission on global surgery	Orthopedic surgery in LMICs
Technology in global surgery	Barriers to access
Preparation for global surgery training	Mobile surgery
Advocacy and ethics	Global surgery metrics
Understanding cultural practices and reducing harm	Female genital mutilation
Role of donors	Urology in LMICs

LMICs indicates low- and middle-income countries.

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