Engaging academic surgery in global health: Challenges and opportunities in the development of an academic track in global surgery

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SURGERY is not thought of typically as a component of public health, especially in resource-poor countries in which much of the medical attention is placed on prevention and treatment of infectious diseases. Current avenues of financial support for research and health initiatives in low- and middle-income countries often focus on health issues targeted by the United Nations Millennium Development Goals, such as HIV/AIDS, malaria, tuberculosis, and maternal and child health. It has been estimated that $85 in research dollars are spent per disability-adjusted-life-year (DALY) caused by HIV, whereas $0.83 in research dollars are spent per DALY caused by road traffic accidents. This marked discrepancy is true despite the reality that operatively treatable disease accounts for at least 11% of the global burden of disease and greater than 25 million DALYs. In the United States and elsewhere, it is well understood that injuries are the leading cause of morbidity and mortality in children and young adults.

As global health has increasingly become a funding priority for governments and aid organizations, participation in international development (by academic surgeons) has been stimulated (and challenged). Simultaneous with these new funding opportunities, the idea has arisen of promoting the capacity-building of health care through advancement of research, education, and clinical care mentorship through academic “twinning” and academic partnership. Developing academic capacities should recruit the unique capabilities of the university physician, and, like other development in global health, was first undertaken by internists, particularly those working with infectious diseases. Yet, as we see an epidemiologic transition in global health from an emphasis solely on infectious disease to one that now acknowledges chronic diseases (including cancer, diabetes, heart disease, and injury), questions arise as to the appropriate role of other academic specialties (including procedural-based specialties like surgery) in ongoing and future development efforts in global health.

Much of the impetus for the development of international academic operative experiences seems to come from our residents and medical students. Given the unique and inherent challenges of providing such systematic and safe mentorship opportunities to our trainees, there is a growing push for the development and acknowledgement of global surgery as an accepted academic surgical subspecialty. In this discussion, we define academic global surgery as relating to the exchange of clinical, teaching, or research resources between 2 academic institutions. Examples of the types of activities promoted by global academic partnership include: (1) collaborative research projects; (2) development of academic surgery training programs through partnership between universities, and (3) bilateral exchanges of surgery residents with developing countries to...
learn how to operate in resource-limited environments. There is an increasing push, then, for academic medical centers to develop partnerships with teaching hospitals overseas.9

It should be said that although the field of academic global surgery is in its infancy, there has been a long-standing network of short-term relief efforts such as Medicins sans Frontiers (Doctors without Borders) that have afforded surgeons the chance to help the underserved in resource-poor, war-ravaged countries. Although this approach is an important and much-needed service, the focus is often on short-term relief and not on long-term solutions.10 For example, according to one survey of nongovernmental organizations, providing operative services in resource-poor countries, 80% of agencies track complications, 78% track mortality, and only 61% track infections. There is an expressed need for more thorough analysis of the quality and quantity of services provided—a task that very well may be beyond the scope of the organizations focused on short-term results.11

Although we advocate for the pursuit of such long-term solutions through academic collaborations, we must first identify why such a movement has been delayed in its upstart. It is recognized widely, for example, that international work has been discouraged for most U.S. academic surgeons up until recent years, perhaps as the result of issues of sustainability, a general lack of complex infrastructure to support surgery procedures abroad, and a lack of funding sources to support such work, including a global fund for surgery.12 To highlight this point, it is important to note that surgeons are largely not represented in positions of leadership, policy development, or initiative design structure of any international health development organization, such as the World Health Organization, the health division of the United States Agency for International Development, or leading community-based health nongovernmental organizations, such as Partners in Health—perhaps because of the traditional focus of such organizations on communicable diseases, sanitation, and nutrition. When such organizations do take on “surgical” problems, the surgeon’s voice often is replaced by that of the anesthesiologist or public health specialist who leads the discussion in the surgeons’ absence. As global public health focus begins to shift to noncommunicable disease, and these organizations begin to recognize the importance of operative development, it is important for surgeons to find a voice. In a push to encourage the development of an academic surgical subspecialty in global health, this report will summarize some of the current difficulties for academic surgeons engaging in public health initiatives.

THREATS TO ACADEMIC ADVANCEMENT

Academic advancement in the world of surgery is dependent currently on the accumulation of academic “currency” through scholarly writing about one’s educational, clinical, and research activities, in addition to the accumulation of titles and responsibilities gained through participation in professional organizations. At present, almost none of these are furthered by 2- to 4-week “medical missions” that focus on performing elective procedures in Africa, Eastern Europe, and Southeast Asia. Even here in the United States, socioeconomic and geographic factors influence access to reliable operative services, rendering operative missions an important component of care delivery. Few sabbatical programs or academic funding sources exist that would allow a surgeon to leave his or her institution for any duration of time sufficient to yield substantive academic correspondence. Academic surgeons will remain unable to further their career through international development work until their medical schools sanction and acknowledge the “academic potential” of such work and create educational or research programs that lead to academic advancement. There are, of course, opportunities for surgeons to contribute to the scientific literature while working in an operative capacity, whether it be by addressing capacity issues directly, or by examining disease states that are more difficult to find in the environments of American and European academic practices.13,14

To the authors’ knowledge, very few U.S. academic surgeons receive a contractually stipulated, compensated portion of their time to work on research or education efforts in an underserved area outside our borders unless it is funded externally or via some substantive intramural mechanism within the institution as a whole rather than deriving solely from the clinical productivity of the department of surgery. Yes, new developments in resident education allow for residents to gain operative case credit on international rotations with appropriate U.S.-based supervision, but the current lack of academic surgeons abroad renders this commitment in many instances a hollow promise for today’s trainees. There is very little academic acknowledgement to be gained, at present, from taking on the responsibility of being the course director of an international elective.

Many surgeons, including academic surgeons that use vacation time, seem to focus on short-term (2- to 3-week) relief care efforts in underserved
areas. Surgeons who dedicate their careers to global surgery care may work as missionary surgeons or with relief agencies, but they are rarely in academic positions mentoring residents and students. Despite isolated examples, the position of an academic global surgeon, the “triple threat” of capacity building and development through research, education and clinical care, has yet to be well established. Is there now an opportunity to create a truly academic pathway for global surgery? Can we potentially introduce a “quadruple threat” of clinical care, education, research, and health policy/advocacy both internationally and within the United States academic surgical community? Do we now not have an opportunity for engagement in the making of policies for domestic and global public health from a surgical perspective?

**DISINCENTIVES TO ACADEMIC AND CLINICAL DEPARTMENTS**

Training surgery residents requires long-term, close mentorship and deep relationships to impart complex knowledge, a way of thinking, and clinical acumen. Unlike nonprocedural specialties in which physicians may have dedicated weeks for teaching, research, or clinical care, the mentorship and educational responsibilities of a surgical mentor are continuous. Thus, sending academic mentors abroad introduces a new source of discontinuity into mentorship relationships that already seem somewhat weakened by duty-hour reform.

In addition to their otherwise valuable clinical and educational expertise, a surgeon is often the financial engine that drives the hospital by generating high facility and procedural revenues, sources of income that are often 5-10× (or more) greater than the individual professional fees collected by the nonprocedural clinician. These nonprocedural academic interns who participate currently in and lead many existing academic development and relief efforts, in general, seem to rotate as the “on-service” ward attending in their home institution 5-10 weeks per year (or even less). As such, the ability to leave the hospital setting for an international project is easier to manage. In contrast, surgeons engage largely in patient care more than 40 weeks per year, and so a similar international commitment made by a surgeon would require hiring a full-time replacement during the entirety of that surgeon’s absence at considerable expense (at least $300K per year). The challenge to the academic surgeon and the academic institution is to find a way to derive financial and academic value from an experience in global surgery.

**DISINCENTIVES TO THE INDIVIDUAL SURGEON: INDEBTEDNESS**

For an individual academic surgeon, especially the younger surgeon, several temporal and financial barriers prevent committing a portion of their time and effort working abroad. Current graduates finish with an educational/training school debt averaging approximately $147,000 per graduate, whereas the average total debt of all indebted students in 2010 was $159,000. Surgery residencies and fellowships often demand additional years of residency and fellowship training to obtain the obligate academic currency, which produces additional opportunity costs (and accrued interest) for physicians who may otherwise have the will and desire to work abroad. At present, more than 75% of general surgery graduates go on to complete fellowships before entering practice compared to only 35-45% internal medicine graduates. In addition, surgery residents perceive that finances represent one of the most important barriers to personal involvement in international operative experiences.

**OPPORTUNITIES**

Extramural funding of academic institutions (using similar funding mechanisms as those employed by major research efforts) may be the best solution if academic surgeons are to become engaged in the cause of decreasing the burden of preventable death and disability due to injury and surgical disease in low- and middle-income countries. The funding for surgical (and other procedural) expertise may need to be greater than what is allotted to non-procedural specialists in order to account for lost hospital revenues and their greater average costs of employment. A relatively long-term rotation of surgery academicians abroad could bring long-lasting developmental benefits to the educational programs of underserved populations, yielding a much greater long-term effect that that exerted by itinerant surgeons who provide short-term “relief work.” This is not to denigrate the importance nor laudability of this short-term relief work, which must necessarily continue, but maybe a new academic avenue for in-country capacity-building seems an obvious need and a potential chance for a new career pathway in global academic surgery.

If appropriate extramural support for such U.S. academic departments could be secured, the institutions could hire extra surgeons to backfill the absence of their clinicians and mitigate the ensuing revenue losses at home. Not only would this
effort and financing benefit the citizens of relatively poorer countries and provide capacity-building on-site, but this approach would help also bolster interest in residency programs that support such activities.

Interest in global health among the next generation of physicians and surgeons is increasing. More than 30% of graduating medical students in 2010 reported having had international educational experience during medical school, which represents a 42% increase since 2003. Surgery trainees are increasingly seeking opportunities in international settings; recent surveys show 66% of residents would be more interested in a program that offers training abroad. The perceived benefits by residents for such training are many, with as many as 94% of surveyed residents seeking also to improve further their technical and clinical skills through such experiences. Only in the previous 2 years has U.S. Government funding (Fogarty or Fulbright awards) gone to surgery residents engaged in research abroad.

Yet, the opportunities for collaborative research projects are expansive. Current research focuses on epidemiologic analyses of surgical burden, including statistical modeling of surgical burden and operating theatre distribution. Collaborative projects include hospital-based needs assessments and the development of a community-based survey of surgical need. As health care infrastructure and human resources develop in resource-limited settings, the opportunity for collaborative research in injury epidemiology, cancer treatment and outcomes, and innovative device design for low-cost implementation becomes more apparent. Consider the opportunities for multinational randomized trials in typhoid perforation, breast cancer, or burn care, for example.

Other training needs are also well-served through international collaboration and rotations for residents and students in low and middle income countries. For example, several core competencies that are somewhat difficult to define and develop in the setting of an ultra-modern United States Academic Medical Center (eg, system-based practice, professionalism, communication, ethics) are suddenly thrown into sharp relief and relevance when providing surgical care in such places as sub-Saharan Africa and Mongolia. As Schecter and Farmer wrote in the Bulletin of the American College of Surgeons in 2006, surgery residents learn something far greater than increasing excellence in maintaining duty hour logs or, for that matter, how to do a pancreatecdudonectomy or an esophagectomy via a minimally invasive approach when they provide care in low income countries often for relatively “low tech” disorders. This is true, because the well-being and survival of patient in many low income settings often depends on the conscience and communications skills of the physician, in addition to their capability in managing resources. In locations such as these, the trainee will often be allowed to participate directly in the process of prioritizing care and the realities of providing compassionate comfort and counsel when technology-dependent procedural solutions are neither available nor cost effective. There are numerous potential benefits of our trainees being forced to rely on their skills of history taking and physical examination rather than their ability to read the report of a cross-sectional imaging study. With a few notable exceptions, such skills are nearly impossible to acquire within our borders. Also, as air travel makes our planet a relatively smaller place, there may also be benefits to acquiring expertise in diseases that are not seen routinely in American and European surgical practice, such as abdominal tuberculosis, sigmoid volvulus, typhoid-perforation, etc. Finally, in an era in which such a great proportion of surgical care is performed using minimally invasive techniques, working in an environment where open surgery predominates may render our trainees better able to bail themselves out when they find themselves taking care of patients with penetrating trauma or iatrogenic injury.

**SUMMARY**

Global surgical development is increasingly becoming a global health priority. As more surgeons become involved in surgical development, academic departments, funding agencies, and development experts must consider the unique financial challenges of involving an academic surgeon and the expertise of surgical academia in the global health dialogue. Although there are strong structural and financial barriers to the development of an academic track in global surgery, a new day may be dawning in which the academic global surgeon is recognized as a unique and valuable professional alongside his colleagues in more traditional academic tracks and disciplines. Indeed, is this day now on us, and especially so with the much of the popularization and awareness of global operative initiatives by surgeons such as Atul Gawande and Haile Debash?

With impressive capability to provide mentorship for research, education, and clinical care, the academic surgeon possesses unequaled potential
to stimulate positive change in the health of all populations that suffer under the burden of untreated surgical disease and injuries. This is a call to academic surgeons to encourage the development of a global health subspecialty.

REFERENCES


