

Global Surgery Pro–Con Debate: A Pathway to Bilateral Academic Success or the Bold New Face of Colonialism?

Alyssa Scheiner, BS,^a Jennifer L. Rickard, MD, MPH,^b
Benedict Nwomeh, MD,^c Randeep S. Jawa, MD,^{a,*} Enrique Ginzburg, MD,^d
Tamara N. Fitzgerald, MD, PhD,^e Anthony Charles, MD,^f
and Abebe Bekele, MD^g

^a Division of Trauma, Department of Surgery, Stony Brook University Renaissance School of Medicine, Stony Brook, New York

^b Department of Surgery, University of Minnesota, Minneapolis, Minnesota

^c Department of Pediatric Surgery, Nationwide Children's Hospital, Ohio State University, Columbus, Ohio

^d Division of Trauma, Surgical Critical Care and Burns, Dewitt Daughtry Family Department of Surgery, University of Miami, Leonard M. Miller School of Medicine, Miami, Florida

^e Department of Surgery, Duke University, Durham, North Carolina

^f Department of Surgery, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

^g Department of Surgery, Addis Ababa University School of Medicine, Addis Ababa, Ethiopia

ARTICLE INFO

Article history:

Received 16 September 2019

Received in revised form

27 January 2020

Accepted 31 January 2020

Available online 10 May 2020

Keywords:

Global surgery

Research

Education

Colonialism

ABSTRACT

Global surgery, especially academic global surgery, is of tremendous interest to many surgeons. Classically, it entails personnel from high-income countries going to low- and middle-income countries and engaging in educational activities as well as procedures. Academic medical personnel have included students, residents, and attendings. The pervasive notion is that this is a win–win situation for the volunteers and the hosts, that is, a pathway to bilateral academic success. However, a critical examination demonstrates that it can easily become the bold new face of colonialism of a low- and middle-income country by a high-income country.

Introduction

For years, surgeons have served populations with limited access to surgical services throughout the world. Recently, the

term “global surgery” has found popular usage, similar to “global health,” but one focused on surgical care in low- and middle-income countries (LMICs), where inequity is greatest.¹ Broadly defined, global surgery includes volunteer

This work was presented in part as pro–con debate at the 14th annual Academic Surgical Congress in Houston, TX, February 2019.

* Corresponding author. Department of Surgery, Stony Brook University Renaissance School of Medicine, Stony Brook, NY 11794-8191. Tel.: +1 631 444 8329; fax: +1 631 444 6176.

E-mail address: randeep.jawa@stonybrookmedicine.edu (R.S. Jawa).

<https://doi.org/10.1016/j.jss.2020.01.032>

humanitarian surgery and involves many disciplines within and beyond the health sciences. Among these is also an emerging field of “academic global surgery” in which surgeons have worked to incorporate global service, teaching, and research into their academic careers with departmental and/or institutional support. In 2015, the Lancet Commission on Global Surgery helped to solidify and define this emerging academic discipline, where the Disease Control Priorities-3 project highlighted the burden of surgical disease and indicated that several of the United Nations Sustainable Development Goals could not be accomplished without the provision of surgical care in LMICs.^{2,3}

Although academic global surgery has frequently attempted to focus on capacity building through academic partnerships, it is commonly stereotyped as a “surgical mission,” whereby surgeons from one locale (or country) travel to another locale, perform surgery, and then leave. Some inaccurately perceive that a surgical mission is the only model that most academic surgeons follow. This begs the question, Is academic global surgery a pathway to bilateral academic success or the unintentional bold new face of medical colonialism? The pro-con discussion that follows will examine the definition and legacy of colonialism, identify inherent potential pitfalls in global academic surgery, discuss mutually beneficial partnerships, and provide recommendations for fostering bilateral partnerships and exchange. This article follows the Hot Topics Session at the 14th Annual Academic Surgical Congress in Houston, TX, on February 6, 2019.

Con: colonialism, other adverse effects, and potential pitfalls in global surgery

Colonialism

Colonialism is defined as “control by one power over a dependent area or people; a policy advocating or based on such control.”⁴ It is closely related to imperialism. Indeed, the rule of European empires during the height of colonialism in the 18th and 19th centuries was defined by imperialism—“the policy, practice, or advocacy of extending the power and dominion of a nation especially by direct territorial acquisitions or by gaining indirect control over the political or economic life of other areas” or, more broadly, “the extension or imposition of power, authority, or influence.”⁵

In our current world, we see the consequences of colonialism in the loss of local languages and cultures, economic and health disparities, ongoing racism, and regions of the world that are still dominated by the legacy of colonial rule among other injustices.⁶ The world continues to be divided into categories to describe social and economic disparities, and some of these labels may perpetuate a colonial mindset. For example, the term “Third World Country” is still widely used today in common speech and official publications to describe countries that struggle with poverty and lack infrastructure, but few users of this term likely understand its origin or meaning. French anthropologist Alfred Sauvy used the phrase “Third World” in his 1952 article “Trois Mondes, Une Planète” in the French periodical *L’Observateur*.⁷ Coined at the height of the Cold War, he described “First World”

countries as those that were aligned with Western Capitalism and “Second World” countries as those aligned with Eastern Communism. “Third World” was used to indicate the underdeveloped countries that remained to be exploited and despised as a Third Estate. By the 1960s, the “Third World” had become synonymous with “underdeveloped countries.”⁸ Given the negative implications, “developing” was quickly substituted for “underdeveloped.”⁸ As such, the terms “Third World” and “developing country” have become associated with regions of the world that lack certain infrastructure, including health care.

However, to use these terms in the definition of global surgery is a mistake. Since the cold war has ended, the world need not be sectioned into First, Second, or Third World based on alignment with Western or Communist forces; this term was never intended to describe infrastructure. To use the term “developing country” implies that there be some definition of what constitutes “developed.” For example, in the United States, there are regions where large numbers of families are homeless, and 38.7 million people are living in poverty.⁹ Clearly, both LMICs and high-income countries (HICs) have difficult socioeconomic issues, and we are all “developing” in some sense of the word.

Another term that is frequently used is “underserved” country. With the numerous in-country champions, nonprofit organizations, mission hospitals, and the billions of dollars in financial aid that have been invested, the term “underserved” is inaccurate. The terms “resource poor” or “limited-resource” settings are also problematic. For example, with regard to resources, the continent of Africa contains 268 national parks, which are the home to diverse species of wildlife, many of these are found nowhere else.¹⁰ A large oil field discovered off the coast of Pemba, Mozambique has the potential to change the economic status of a country that was previously one of the poorest countries in the world.¹¹ Guinea, Sierra Leone, Democratic Republic of the Congo, Tanzania, Angola, Zimbabwe, Botswana, Lesotho, and Namibia are among the top diamond producing countries of the world.¹² Therefore, LMICs are not without resources, although it can be argued that as a result of colonialism and imperialism, some of these resources are untapped, poorly developed, misappropriated, or have been misallocated.¹³

The terms of LMIC and HIC are currently better used to reflect economic divisions. The World Bank defines economies by their gross national income per capita (<\$1025 for low-income, \$1026-\$3995 for lower middle-income, \$3996-\$12,375 for upper middle-income, and >\$12,376 for high-income economies). Thus, countries are designated into categories purely based on economic data, which allows for group analyses and statistical comparisons. This classification avoids grouping based on political influence or stereotype. Countries’ reassignments are performed annually, and thus, countries can change their grouping over time.¹⁴

Self-serving public health spending?

The following examples are intentionally inflammatory to reflect an extreme point of view and thereby maintain the spirit of the debate. Arguably, the field of public health itself is rooted in colonialism. Public health service in the United

States, played an important role in the construction of the Panama Canal (1904-1914), whereby the medical division of the Isthmian Canal Commission, headed by Chief Sanitary Officer William Crawford Gorgas, was tasked with keeping the canal workers free of malaria and yellow fever. This pursuit was arguably not entirely altruistic; rather, sick workers affected the United States' bottom line—"disease affected productivity."^{15,16} Likewise, the focus of the Rockefeller Foundation's first campaign—whose mission was to "promote the well-being of humanity throughout the world"—was the eradication of hookworm in South America, arguably because the disease diminished the productivity of laborers.^{16,17} It is evident that the introduction of Western health care was integral to the success of a likely colonial effort.

Similarly, in Western Countries, current foreign aid funds spent on public health are not necessarily according to foreign need but may appear to be aligned with diseases that are perceived to threaten the health of those countries. For example, although surgical disease accounts for nearly one-third of the global disease burden—with trauma serving as a substantial affliction—only 11.5% of global health spending was directed toward surgery, whereas 60.8% was directed toward infectious diseases.^{18,19} Traumatic injury affects a greater proportion of the sub-Saharan population than tuberculosis, HIV/AIDS, and malaria combined; yet HIV/AIDS dominates in terms of funding, with 54% of US expenditure on global health programs being dedicated to HIV/AIDS alone.²⁰ It is quite apparent that there is a schism between the priorities of HIC and the needs of the sub-Saharan population. One possible explanation is that HIV/AIDS has received a generous amount of celebrity support, both financially and with publicity. An alternative, albeit radical explanation, is that it is in the best interest of Western HICs to solve HIV in Africa, as opposed to solving it at home, because it is less costly. Similarly, during the Ebola crisis in the years 2014-2016, three Western Countries invested \$3.61 billion dollars in foreign aid.²¹ However, during this time, it is estimated that only 11,316 people died from the Ebola virus. In comparison, approximately 1.4 million people die worldwide each year from untreated surgical conditions. In general, untreated surgical conditions in LMICs do not pose a threat to the welfare of those in HIC, whereas the Ebola outbreak was a significant source of worldwide anxiety.

Pitfalls of the surgical mission

Many populations in LMICs undeniably lack access to surgery and yearn for proper care. Local excitement over news that "good" and "standard care," that is Western medicine, has come to the country can be quite profound. However, the subsequent departure of these missions may trigger doubts as to the aptitude of the local health care system. Anecdotally, the resultant animosity has resulted in patients approaching their health care providers stating that they do not want to be treated by the local surgical team and that they would rather wait for the missions to come. This untoward effect of surgical missions has left the local population with an ill-deserved sense of nonconfidence in their very capable local surgical teams. In addition, missions may lack standard ways to select patients for surgery, as well as the means for patient follow-

up. Unless a system has been set in place, the departure of the visiting team signals the end of their contact with the patient, and the local health care personnel are left to handle any complications.

In addition to the lack of government financing for global surgery, surgical missions that do occur—albeit privately funded—are often disease specific. Common examples include surgery for cleft lip and cleft palate, obstetric fistula, clubfoot, among others. Procedures to treat acute traumatic injuries or general surgical conditions, especially emergency general surgery procedures, are less likely to be a topic of focus. Once the mission team arrives, the normal function of the local hospital may cease. The operating rooms may be taken over, the anesthesiologists and other human and material resources are diverted away from the normal care in that hospital. Such missions frequently disturb the daily work of the LMIC hospital and may not focus on exchange of knowledge or introduction of novel techniques and operative skills improvements. The visiting surgeon may actually be less qualified than the local surgeon because the local surgeon has a better understanding of the local health care system, familiarity with advanced disease pathology that they see more frequently and has knowledge of the limitations patients will face once they are discharged.

Local surgeons may be blindsided by the arrival of foreign surgical missions; the ministries of health or other regulatory bodies may fail to notify the hospital and staff in advance of the visiting mission's presence. Anecdotally, one of the authors, an LMIC surgeon, recalls an episode where he was kicked out of the operating theater to make way for foreign surgeons on a mission, performing nonemergency surgeries, and thereby forcing the cancellation of many patients who had been scheduled for procedures that week. Such disruptions and cancellations force the local surgical team to take "vacations." Not only have they lost the opportunity to operate on their regular patients, they also miss participating in the missions' procedures and collaborating with the visiting surgeons.

Most volunteers are well intentioned. However, some surgeons or students may arrive with a "savior mentality." The true objective may be rather to take the perfect picture (i.e., the selfie) with a destitute patient that can be uploaded to social media; medical volunteering can come with the promise of great photo opportunities to boost social standing and perhaps gain an internal sense of self-worth. HIC physicians who teach in LMIC training programs must be aware of their limitations and acknowledge that their assistance can, in fact, be disruptive. Some in LMICs feel that "when a visiting doctor offers to teach, they may not feel that they can refuse, even if the teacher is not appropriately qualified, or educational material does not fit into their curriculum."²²

Surgical education pitfalls

There have also been concerns that the current level of operative experience in the United States is inadequate in training residents and that general surgical residency inadequately prepares trainees for fellowship.^{23,24} Cognizant of the ever-growing interest in global surgery, the Accreditation Council on Graduate Medical Education and the American Board of

Surgery established a process to allow a structured international rotation.²⁵ Unfortunately, their contemporaneous development has been misconstrued as a self-serving endeavor because the presence of HIC surgical residents substantially increases their operative opportunities, as opposed to its development in recognition of the growing enthusiasm among surgical residents for global surgery. To this end, an article was published on “how international electives can save general surgery,” by attracting the “best” and “brightest” medical students.²⁶ Similarly, others have discussed “systematic” approaches to developing global surgery electives.²⁷

Why are global surgery electives so attractive to residents? Likely it is because of the breadth and volume of cases that can be performed in a short period far exceeds that of a typical US residency program. For example, within a 4-wk period in a hospital in Southern Africa, returning HIC residents described the range of cases they performed—thyroidectomies, cholecystectomies, hernias, and cystectomies.²⁸ In addition, all these cases were performed with open technique, whereas many of these cases would be performed using minimally invasive techniques in the HIC. It logically follows that there is a certain degree of attraction of why residents are seeking these opportunities. Likewise, there was a survey carried out on the benefits of international rotations to LMIC settings for HIC surgery residents.²⁹ The focus was on US residents, rather than our partners in LMICs. Unsurprisingly, the survey found that many residents, medical students, and individual faculty from HICs felt that the experience of the international rotation was significantly beneficial and educational.

However, there are often discrepant perceptions between HIC volunteers and local hosts. For example, a survey of orthopedic volunteers and host country staff indicated “Although volunteers and hosts typically believed that the volunteers were strongly motivated by the altruistic aspects of volunteering, host responses suggested that they perceived that volunteers were also motivated by their desire to practice and learn new techniques and enhance their professional careers.”³⁰ The authors postulated that “Discrepancies in perceptions of volunteer motivations could be due to a paternalistic attitude of the volunteers, who may have preconceived notions that they come from a superior medical system and that their primary role was to teach rather than participate in a bidirectional relationship”.³⁰ In an accompanying editorial to the previously mentioned general surgery survey, it was stated that “there must be competent supervision provided for all trainees so that unsuspecting and uninformed patients are not harmed by inadequately trained residents.”³¹ Meanwhile, how many hospitals in the United States do we see LMIC medical students, residents, and fellows walking around going to operating rooms and trying to operate? The answer is almost negligible.

Finally, we must also consider how global surgery electives impact training and future practice. A study compared HIC residents interested in global surgery with those who actually pursued global surgery in their careers. The study found that very few surgeons continued with global surgery after the completion of their 1-month elective.³² Hence, in offering these rotations, we must be mindful of what we are offering to the citizens of LMICs. Once again, we find ourselves teetering on the edge of colonialism.

Research pitfalls

There is often an imbalance in research activities between the interests of HIC investigators and the local priorities of LMICs. In a clear example, researchers in 1994 withheld zidovudine from HIV positive pregnant women in several African countries because of the drug’s high cost, despite the drug’s proven efficacy in preventing vertical HIV transmission and its previous determination as the standard of care. When the LMICs surmised the nature of the study, there was outrage.³³

A recent meta-analysis of research articles addressing issues in LMICs found that 20% of all articles did not include LMICs partners as coauthors.³⁴ Surgical research is usually initiated as part of an international relationship. However, as academics, our national standards for promotion do not align with international partnership. Our publish or perish mentality is pervasive, infiltrating our academic pursuits.

There is also a huge imbalance in terms of the funds that we acquire for research. Whoever brings the funds tends to want to dictate how those funds will be spent. Colonialists once saw themselves as “the trustees of civilization... it was their duty to see to it that civilization was disseminated to as many beneficiaries as could be contrived. They wanted to leave the world better than they found it.”³⁵ We must be cautious in our approach and learn from our past mistakes so as to not become neoimperialists. As two British medical students so succinctly stated, “Have we really come this far in achieving the ethical standards we claim to be so proud of, only to wave goodbye to them all at Heathrow airport?”³⁶ We must take steps to distance ourselves from colonialism. The way to achieve this is through true, bilateral academic partnership.

Pro: partnership, mentorship, and pathways to bilateral academic success in global surgery

Bilateral partnership

The basis of any partnership is reciprocity—bilateral exchange. Reciprocity does not create a social structure in which there are debtors and creditors. So too should our approach to global surgery mimic this most basic, fundamental idea of an equal exchange. The practice of charity medicine is inadequate to serve populations that lack access to surgery, particularly when there is an abundance of intelligent and skilled individuals in LMICs who have in their hearts and minds to fill this void. They only require the resources and training, as was true of us all at the beginning of our careers. This concept of partnership in the service of others is not new. The 12th-century Jewish scholar and physician Maimonides writes that the highest level of charity is to “strengthen the hand of a fellow... by making a partnership with him or finding him work to strengthen his hand until he no longer has to ask of others.”³⁷ Bilateral partnership and education should form the cornerstone of global surgery, freeing LMICs from poverty and the reliance on others for basic surgical needs. Succinctly put, “academic partnerships can help

improve access to and quality of care, decrease the disparities in access to surgical care, and strengthen health systems.”³⁸

An example of a partnership is an exchange program, where residents from one setting (i.e., HIC or LMIC) are able to operate and acquire new skills in an environment different from their own. A partnership may also look like a residency or fellowship program in an LMIC that is staffed by LMIC and HIC surgeons working together. Opportunities must be created for people in their own countries—not just training opportunities, but working ones as well. Although much has been said about “brain drain,” people—for the most part—do not want to leave their home countries. Rather, they desire to invest in their countries but are oftentimes without an avenue to do so. A 2017 survey examined the retention of specialist surgical graduates from eight countries in the College of Surgeons of East, Central, and Southern Africa (COSECSA) region from 1973 to 2013 and concluded that this fear of brain drain with increasing surgical education and specialization is, essentially, for naught. Researchers found that of the 1038 surgeons included in the study, 85.1% remained in the country of training, 88.3% remained in the COSECSA region, and 93.4% stayed in Africa.³⁹ This high retention rate of trained surgeons serves to illustrate that when given the opportunity to remain in their country of origin, trained surgeons will generally opt to do so. Thus, the need to create local opportunities is apparent, and it is in our best interest to do so.

At this juncture, it is important to mention that surgeons from LMICs play a very important role as teachers and mentors not only to their own trainees but also to trainees from HIC institutions. In fact, this is how the true bilateral nature of partnerships is reflected. Such mentorship helps trainees from HICs acquire the surgical and research skills relevant to developing countries that HIC trainees are not used to (or cannot get access to in their HIC setting). Surgeons from LMIC institutions can provide structured support and assessment to the HIC trainees to the extent that some training programs in the United States have already started recognizing LMIC attachments as integral part of the training. As an example, one of the coauthors of this article served as a mentor to surgical residents from HIC setting between 2016 and 2019 to the LMIC setting. As another example, faculty at the University for Global Health Equity, an LMIC partner for the HBNU Fogarty fellowship, will be the mentors for US-based fellowship applicants interested in Surgery in Rwanda.

Furthermore, LMIC countries also have diverse patterns of surgical diseases that are unique to the setting, such as tuberculosis that requires surgery, typhoid peritonitis, and hydatid liver cysts. These are an additional opportunity for HIC attending surgeons to learn indications for surgery, surgical skills, and perioperative management from LMIC mentors for conditions they would infrequently encounter in their respective programs. HIC surgeons, with LMIC mentors, can also refine their management skills of common surgical diseases in settings with limited health care access.

Mentorship: shifting the culture away from colonialism

The tragedy that billions of people in the world lack access to surgical care is a problem that is solvable in our lifetime, but we must decide that we want to solve it and devote ourselves

to the work. This includes commitment from crucial members of both HICs and LMICs. Global access to surgery will demand a culture change, a shift from a colonial way of thinking to a higher paradigm. In the following example, we present a metaphor for mentorship and the distortion of mentorship (Table). In this metaphor, fathers and mothers will represent anyone who has chosen to intentionally mentor the next generation, sons and daughters will represent anyone who has opened himself or herself to receive mentoring, and an orphan is anyone who has no mentorship. Therefore, individuals are not categorized according to their HIC versus LMIC affiliation but rather are categorized according to their willingness to become a son or daughter (mentee), mother or father (mentor), versus remaining an orphan. Indeed, many “orphans” from HICs have been responsible for creating colonial structures and stifling global development when they achieved positions of power and made decisions out of their own insecurities.

Table gives examples of the behaviors that define “mothers and fathers,” “daughters and sons,” and “orphans.” Fundamentally, a good father or mother teaches their son or daughter everything they have learned, thereby empowering them to become mothers and fathers. We see this at work in our surgical communities, in that surgical fathers and mothers have taken risks; developed new procedures,

Table — Examples of behavior for metaphorical “orphans” and “sons/daughters.”

“Orphan” behavior
Avoids mentorship
Feels threatened by the successes of others
Has a mindset of scarcity
Distrustful of those who know more than they do
Takes offense to criticism
Ultimately promotes paternalism and colonialism when given power
“Daughter/son” behavior
Actively pursues relationships with mentors
Build on successes of previous generations
View the success of another as an invitation to their own success
Believes that provision is available to them to achieve goals
Understands that criticism is about the gap between their current position and destiny
“Father/mother” behavior
Intentionally seeks out those they can mentor
Facilitates knowledge and skills transfer to the next generation
Teaches their mentees to become teachers
Calls out and nurtures the special abilities and gifting of their trainees
Celebrates when their trainees achieve greater success than they have achieved
Positions their trainees to receive promotion and leadership advancement
Leaves their trainees an “inheritance” (something a trainee receives and builds upon, but for which the mentor has done the initial work)

therapeutics, health structures, and leadership skills; and have passed these on to their trainees. The trainees, in turn, improve upon what has been accomplished and entrust these skills, via mentorship, to the next generation. The goal of a surgical training program is never to train good interns; the goal is to develop mature surgeons and future leaders.

A son or daughter (mentee) can proceed with confidence based on the assurance of the mother or father (mentor). They understand that when a sibling succeeds, it brings success to the whole family, and they view the success of another as an invitation to greater success for themselves. In contrast, orphans live with the mindset that there is never enough and resist help because historically, there has been no one trustworthy. They are constantly in survival mode and often view the success of another as a threat to their own success. Orphans hear criticism and take offense. Sons hear criticism and understand that what has just been said represents the gap between where they currently are and where their destiny lies. There is only one way for orphans to transition into a daughter or son (mentee)—they must humble themselves and ask a mother or father to “adopt” (mentor) them. Only then can they receive guidance and/or an “inheritance.”

This example has included a metaphor of fathers, mothers, sons, and daughters, which some may find paternalistic, but we propose that paternalism is the counterfeit of true mentorship. Paternalism occurs when one group of people always assumes the role of a mother/father and forces another group of people to assume the role of children. Paternalism does not intend to develop sons and daughters into mothers and fathers. In contrast, colonialism is when a whole country or political entity practices paternalism and a dictator is an orphan with a misused leadership gift.

We are asking our readers to examine our own lives. Do our thoughts and actions resemble those of orphans or daughters and sons? When discussing global surgery, there are billions of lives hanging in the balance. To be concerned with who will receive the credit for solving these problems is orphan behavior. Whether we are coming from an LMIC or HIC, both of which contain mothers and fathers, we can all move toward mentorship in our lives and seek out mentees to empower.

When considering the current landscape of global surgery, we propose the following practical applications of this metaphor: (1) all surgeons, from both LMICs and HICs, should seek mentorship for their career. This mentorship should come from a variety of genders, races, institutions, countries, and disciplines (including nonsurgical mentors). Local mentorship is most convenient and can have many benefits but is not always available, particularly at advanced career stages, within highly specialized surgical interests, and for those surgeons providing care in low-surgeon-density areas. (2) In areas where there are insufficient numbers of surgeons or a shortage of particular skills, HIC and LMIC surgeons should seek out and mentor local trainees who are seeking to become the solutions that their countries need. This should include development of skills in surgery, teaching, leadership, and research. HIC surgeons who currently have access to resources should use them to mentor and promote surgeons from LMICs into leadership positions. (3) Surgeons in HICs, particularly those in leadership positions, should critically examine their knowledge base and attitudes toward the field

of global surgery including how old ways of thinking may perpetuate colonial structures. (4) In many LIMCs, a large percentage of surgical care is performed and supported by international nonprofit organizations.⁴⁰ HIC and LMIC surgeons should continue to work together to transition surgical care to a system that is 100% supported, owned, and led by local stakeholders.

Examples of partnerships

Establishing a mutually beneficial partnership is a challenging endeavor, which should be approached with wisdom and exceptional communication. Before agreeing to a partnership, both parties should carefully examine their motivations and expectations. Local stakeholders should identify their specific goals and those with the partner. Each side should truthfully assess whether they have the resources to contribute to a solution. Most importantly, consideration should be given to a specific endpoint to the partnership. At the achievement of what goal will a partner's help no longer be needed? At this juncture, the partner should gracefully exit and leave the program in the hands of the capable and confident local surgical providers.

In 1999, COSECSA was formed with the intention of meeting sub-Saharan Africa's surgical needs and combating the aforementioned brain drain concern. This independent, not-for-profit organization supports postgraduate surgical education, formulating the structure and standardization of surgical training throughout sub-Saharan Africa.⁴¹ In addition, COSECSA administers an internationally recognized standardized examination as part of its members' surgical training. Since 2007, the Royal Colleges of Surgeons of Ireland has supported COSECSA in its efforts to train more surgeons in the region, facilitating curriculum development, examinations, and training and leadership courses. In addition, the two organizations have collaborated on the development of information technology resources including a mobile logbook and an electronic learning portal.⁴¹

Likewise, the American College of Surgeons joined with COSECSA in developing projects to improve surgical education and address workforce shortages.⁴¹ The most recent collaboration was the development of an ACS-COSECSA Surgical Training Program at Hawassa University, Ethiopia. Hawassa University is a 480-bed hospital that serves more than 18 million people. The program is designed to facilitate the transfer of expertise locally rather than inviting the surgeons from Hawassa to travel abroad. There were few trainers in the hospital, and aside from one urologist and one orthopedic surgeon, all are general surgeons. There were no surgeons trained in laparoscopy, hepato-biliary-pancreatic surgery, or vascular surgery. Visiting faculty from the United States have been coming to Hawassa on a regular basis to mentor faculty and students, and therefore, it was deemed possible to expand and solidify the training program. The presence of visiting surgical faculty all year round is vital to train the surgeons in particular skills in an uninterrupted manner. As local capacity expands, we anticipate corresponding adjustment in the specialist types and a reduction in the overall numbers of American surgeons traveling to this facility. We view this as a model that contributes toward building sustainable capacity

in the local surgical workforce. The program is in its infancy, but the ultimate goal of this project is to improve the quality of surgical training and increase the number of trainees by providing a year-round, on the ground presence of US surgical faculty at the university to assure continuity of care and resident supervision. The members of the 13 participating US medical schools will be completely integrated into the clinical activities of the hospital.

As another successful partnership example is that of a HIC University's twinning program (funded by President's Emergency Plan For AIDS Relief) with the University of Addis Ababa's Black Lion Hospital/Tikur Abnessa Specialized Hospital.⁴² The international and local partnership successfully established emergency services at Tikur Abnessa Specialized Hospital. In the course of this endeavor, eight Ethiopian faculty completed a condensed Emergency Medicine (EM) fellowship at this HIC University, nine EM training modules were then adapted to the Ethiopian context, an EM training center was opened, and academic training programs in EM residency and masters in nursing were inaugurated in Ethiopia.⁴³ The focus of this twinning program is that of bilateral academic partnership, and its success has been predicated upon the promotion of mutual academic development. Another HIC University has a partnership in Malawi with the specific intent of staying long term to train local residents—to train both physicians and nonphysicians alike—over a prolonged period, such that the visiting physicians are proverbially “out of a job.” In fact, a mere few years after the program's inauguration, the HIC physicians were no longer needed to operate in these hospitals.^{27,44}

One approach to training LMIC surgeons in HIC could be “about training, sending people back, and then letting them upgrade.” For example, before the 2014 World Cup and 2016 Summer Olympics, the president-elect of the Pan-American Trauma Society was contacted by the Brazilian government to help build a trauma network in Rio de Janeiro.⁴⁵ Over the course of 2 y, teams from a University in an HIC aided in the development of this new trauma network, which culminated in the creation of the country's first self-standing trauma centers. Participants from both sides visited each other's countries and were able to partake in operative cases. Telemedicine was also used as a learning tool and was instrumental to the success of this project.⁴⁶ Participants agreed that it was a “very enriching experience bilaterally.”

Yet another example of a bilateral partnership is by Project Medishare in the development of Haiti's Trauma Hospitals after the 2010 earthquake followed by the transition of the largest functioning critical care tented hospital in Haiti to the Trauma–Acute care–critical care Bernard Mevs Hospital in Port au Prince. The Hospital started out with primarily American volunteers from multiple academic medical centers and community hospitals, who helped staff and train hospital personnel. The success of Project Medishare, a university-affiliated nongovernmental organization, demonstrates a successful path to upgrading LMIC medical systems through private–public–nongovernmental organization cooperation. The hospital is now 90%–95% staffed by Haitian Healthcare staff and has begun a residency program.^{45,47,48}

In addition to educational and training efforts, bilateral academic partnership involves research. Specifically, global

research includes “promotion of intramural and academic society funding and faculty research projects and programs that facilitate bilateral collaboration with LMIC partners and prioritize comprehensive system strengthening.”⁴⁹ Once again, paramount to the success of academic partnership in research is system strengthening via bilateral input. Fundación Trauma in Argentina is one such example of a successful bilateral research partnership. Initially founded with the help of an HIC University and enhanced by private funds, Fundación Trauma set out to develop a systemized Argentinian trauma network.⁴⁵ One of their first projects was to create a national trauma database. Since 2011, Fundación Trauma has been functioning as an independent entity, publishing numerous articles of original research.

Conclusions

Armed with this knowledge, practically, what should be done? First, it must be recognized that global academic surgery has tremendous potential. Bilateral academic partnerships should be the ideal and the practice. The key lies in establishing bilateralism whereby expatriates/visitors and local staff learn from one another where either HIC or LMIC members can be mentees and mentors. For volunteers and their academic partners, an ethics curriculum should be instituted to avoid unidirectional benefits. Without this understanding, volunteer efforts, no matter how well intentioned, may have the untoward adverse effect, that is medical colonialism. The effects of colonialism in our world are far reaching, and nations are still recovering from this troubled past. We have provided but a few examples of successful bilateral academic partnerships. Many more are paving the way for universal surgical access. There remains a large task before us. Let us rise to the challenge.

Acknowledgment

Sources of Funding: none.

Disclosures

J.L.R. works with Rwanda Human Resources for Health Program.

R.J. volunteered with the University of Wisconsin and Project Medishare. E.G. volunteers with Project Medishare, Fundacion Argentina. A.S., B.N., T.F., and A.C. have no conflicts of interest to declare.

REFERENCES

1. Dare AJ, Grimes CE, Gillies R, et al. Global surgery: defining an emerging global health field. *Lancet*. 2014;384:2245–2247.
2. Sustainable Development Goals. Available at: www.un.org/sustainabledevelopment/sustainable-development-goals/. Accessed October 10, 2019.

3. Mock CN, Donkor P, Gawande A, Jamison DT, Kruk ME, Debas HT. Essential surgery: key messages from disease control priorities. *Lancet (London, England)*. 2015;385:2209–2219.
4. Colonialism Merriam-webster. Available at: <https://www.merriam-webster.com/dictionary/colonialism>. Accessed June 10, 2019.
5. Imperialism Merriam-webster. Available at: <https://www.merriam-webster.com/dictionary/imperialism>. Accessed June 10, 2019.
6. United Nations University. Available at: <https://unu.edu/publications/articles/residual-colonialism-in-the-21st-century.html#info>. Accessed August 28, 2019.
7. Sauvy A. Tres Mondes, Une planete. Available at: <http://www.homme-moderne.org/societe/demo/sauvy/3mondes.html>. Accessed August 28, 2019.
8. Wolf-Phillips L. Why third world? *Third World Q*. 1979;1:105–115.
9. Anders RL, Olson T, Robinson K, et al. A health survey of a colonia located on the west Texas, US/Mexico border. *J Immigr Minor Health*. 2010;12:361–369.
10. Which African Nations Have The Highest Number Of National Parks?. Available at: <https://www.worldatlas.com/articles/which-african-nations-have-the-highest-number-of-national-parks.html>. Accessed August 28, 2019.
11. Mozambique: Emerging gas market. Available at: www.theoilandgasyear.com/market/mozambique/. Accessed November 6, 2019.
12. King H. Which countries produce the most gem diamonds? Once centered in Africa, diamond mining now occurs in many countries throughout the world. Available at: [Geology.com](http://www.geology.com). Accessed August 28, 2019.
13. Bayeh E. The political and economic legacy of colonialism in the post-independence African states. *Int J Commerce, IT & Social Sci*. 2015;2:3394–5702.
14. World Bank country and lending groups. Available at: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>. Accessed November 6, 2019.
15. Stern AM. Public health chronicles. *Public Health Rep*. 2005;120:675–679.
16. Harrison M. A global perspective: reframing the history of health, medicine, and disease. *Bull Hist Med*. 2015;89:639–689.
17. About Us. The rockefeller foundation. Available at: <https://www.rockefellerfoundation.org/about-us/>. Accessed June 20, 2019.
18. Gutnik LA, Dielman J, Dare AJ, et al. Funding flows to global surgery: an analysis of contributions from the USA. *Lancet*. 2015;385:S51.
19. US global Health. Budget. Available at: <https://www.kff.org/global-health-policy/fact-sheet/breaking-down-the-u-s-global-health-budget-by-program-area/#Overview>. Accessed September 13, 2019.
20. Kaiser Family Foundation. Available at: <https://www.kff.org/global-health-policy/fact-sheet/breaking-down-the-u-s-global-health-budget-by-program-area/#HIV-PEPFAR>. Accessed August 3, 2019.
21. CDC. The cost of the EBOLA epidemic. Available at: <https://www.cdc.gov/vhf/ebola/history/2014-2016-outbreak/cost-of-ebola.html>. Accessed September 12, 2019.
22. Rickard J, Ntirenganya F, Ntakiyiruta G, Chu K. Global health in the 21st century: equity in surgical training partnerships. *J Surg Ed*. 2019;76:9–13.
23. Bell RH. Why Johnny cannot operate. *Surgery*. 2009;146:533–542.
24. Mattar SG, Alseidi AA, Jones DB, et al. General surgery residency inadequately prepares trainees for fellowship: results of a survey of fellowship program directors. *Ann Surg*. 2013;258:440–449.
25. ACGME. International rotation application process: review committee for Surgery. Available at: http://www.acgme.org/Portals/0/PFAssets/ProgramResources/440_Surgery_International_Rotation_Application_Process.pdf. Accessed September 13, 2019.
26. Gumbs AA, Gumbs MA, Gleit Z, Hopkins MA. How international electives could save general surgery. *Am J Surg*. 2012;203:551–552.
27. Hoehn RS, Davis BR, Huber NL, Edwards MJ, Lungu D, Logan JM. A systematic approach to developing a global surgery elective. *J Surg Educ*. 2015;72:e15–e20.
28. Qureshi JS, Samuel J, Lee C, Cairns B, Shores C, Charles AG. Surgery and global public health: the UNC-Malawi surgical initiative as a model for sustainable collaboration. *World J Surg*. 2011;35:17–21.
29. Henry JA, Groen RS, Price RR, et al. The benefits of international rotations to resource-limited settings for U.S. surgery residents. *Surgery*. 2013;153:445–454.
30. Wassef DW, Holler JT, Pinner A, et al. Perceptions of orthopaedic volunteers and their local hosts in low- and middle-income countries: are we on the same page? *J Orthop Trauma*. 2018;32(Suppl 7):S29–S34.
31. Lewis Jr FR. Commentary on: the benefits of international rotations to resource-limited settings for U.S. surgery residents. *Surgery*. 2013;153:455–456.
32. Harfouche M, Krowsoski L, Goldberg A, Maher Z. Global surgical electives in residency: the impact on training and future practice. *Am J Surg*. 2018;215:200–203.
33. Lurie P, Wolfe SM. Unethical trials of interventions to reduce perinatal transmission of the human immunodeficiency virus in developing countries. *N Engl J Med*. 1997;337:853–856.
34. Pauyo T, Debas HT, Kyamanywa P, et al. Systematic review of surgical literature from resource-limited countries: developing strategies for success. *World J Surg*. 2015;39:2173–2181.
35. Thornton AP. Colonialism. *Int J*. 1962;17:335–357.
36. Holt TA, Adams TJ. Medical colonialism. *J Med Ethics*. 1987;13:102.
37. Maimonides M. Mishneh Torah, gifts to the poor. 10:7
38. Farmer P, Meara JG. Commentary: the agenda for academic excellence in “global” surgery. *Surgery*. 2013;153:321–322.
39. Hutch A, Bekele A, O’Flynn E, et al. The brain drain myth: retention of specialist surgical graduates in East, Central and Southern Africa 1974–2013. *World J Surg*. 2017;41:3046–3053.
40. Olivier J, Tsimpo C, Gemignani R, et al. Understanding the roles of faith-based health-care providers in Africa: review of the evidence with a focus on magnitude, reach, cost, and satisfaction. *Lancet*. 2015;386:1765–1775.
41. Derbew M. COSECSA collaborates to address surgical shortages in sub-Saharan Africa. The Bull. Available at: <http://bulletin.facs.org/2018/05/cosecsa-collaborates-to-address-surgical-shortages-in-sub-saharan-africa/>. Accessed May 1, 2018.
42. Vascular surgeon leads program to build emergency services in Ethiopia. UW Health. Available at: <https://www.uwhealth.org/referring-physician-news/Vascular-Surgeon-Leads-Program-to-Build-Emergency-Services-in-Ethiopia/28305>. Accessed June 10, 2019.
43. Busse H, Azazh A, Teklu S, et al. Creating change through collaboration: a twinning partnership to strengthen emergency medicine at Addis Ababa University/Tikur Anbessa specialized hospital—a model for international medical education partnerships. *Acad Emerg Med*. 2013;20:1310–1318.
44. Grudziak J, Gallaher J, Banza L, et al. The effect of a surgery residency program and enhanced educational activities on trauma mortality in sub-saharan Africa. *World J Surg*. 2017;41:3031–3037.

45. Ginzburg E, Goodman C, Sussman G, Klein Y. UM Ryder trauma center/Israel fellowship program provides a model for global training. *Bull Am Coll Surg*. 2017;102:17–21.
46. Trauma telemedicine team trains Brazil for World Cup and Olympics. Available at: <http://med.miami.edu/news/trauma-telemedicine-team-trains-brazil-for-world-cup-and-olympics>. Accessed June 5, 2019.
47. Ginzburg E, O'Neill WW, Goldschmidt-Clermont PJ, de Marchena E, Pust D, Green BA. Rapid medical relief—Project Medishare and the Haitian earthquake. *N Engl J Med*. 2010;362:e31.
48. Hotz GA, Moyenda ZB, Bitar J, et al. Developing a trauma critical care and rehab hospital in Haiti: a year after the earthquake. *Am J Disaster Med*. 2012;7:273–279.
49. Christie SA, Nwomeh BC, Krishnaswami S, et al. Strengthening surgery strengthens health systems: a new paradigm and potential pathway for horizontal development in low- and middle-income countries. *World J Surg*. 2019;43:736–743.