

Rethinking Global Health Education in Plastic Surgery Residency

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Summary: Surgical disease is now among the most common, preventable, and growing contributors to the global burden of disease. The attitudes of trainees toward global surgery and the viability of a global surgery as an academic track have blossomed. More optimized experiences within residency education are necessary, however, to prepare the next generation of global surgeons. The field of plastic surgery is thus at an important crossroads in the effort to incorporate global surgery into training programs in a uniform fashion across the country. The recent American Council of Academic Plastic Surgeons meeting in February 2020 was dedicated to identifying strategies that will enhance the adoption of global surgery practices within plastic surgery. In this article, we discuss the principles, themes, and ideas that emerged from this session, and further develop concrete initiatives believed to be potentially fruitful. Some have been discussed in other surgical disciplines or presented in isolation to the plastic surgery community, but never as a cohesive set of recommendations that take into account the background and shortfalls of the current model for global health education in the 21st century. We then introduce five recommendations to optimize learner education: (1) clarification of learner expectations and roles; (2) domestic teaching for optimization of field experiences; (3) expansion of longitudinal, formal rotations; (4) strengthening of the role of research; and (5) integration of program financing. (*Plast Reconstr Surg Glob Open* 2021;9:e3775; doi: [10.1097/GOX.0000000000003775](https://doi.org/10.1097/GOX.0000000000003775); Published online 22 September 2021.)

INTRODUCTION

Although a relatively new area of interest within academia, the study of global surgery represents a critical extension of inquiry that consistently garners attention from students, residents, and faculty alike. The term “global surgery” generally refers to all groups facing inequitable or inadequate surgical care delivery, whether they are chronically underserved populations or those in acute crisis, conflict, or disaster settings, often in resource-poor

environments where health access may be limited.^{1,2} Surgical disease is among the most common, preventable, and growing contributors to the global burden of disease.^{2,3} The adoption of global surgery into training programs across the country represents an important initiative. If done well, it could influence the future academic success and personal satisfaction of generations of future surgeons.

This current generation of trainees desire experiences and preparation in global surgery, which is only partially addressed by an opportunity to operate abroad. The field of plastic surgery is at an important crossroads in the effort to uniformly incorporate global surgery into training programs across the country. The recent American Council of Academic Plastic Surgeons meeting in February 2020 was dedicated to identifying strategies that will enhance the adoption of global surgery practices within plastic surgery, defined by these authors as an emphasis on improving access to surgical care in underserved populations and in resource-poor environments. In this article, we discuss the principles, themes, and ideas that emerged from this session. Many have been discussed in other surgical disciplines or presented in isolation to the plastic surgery community, but never as a cohesive set of recommendations. We further develop concrete initiatives believed to be

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potentially fruitful. At the cornerstone of these proposals lies the importance of sustainability. Although previously considered a primarily philanthropic mission, the field of global health as applied to plastic surgery must move toward a focus on bidirectional learning to increase surgical capacity and decrease reliance on outside support in resource-limited settings. Although easy to continue the traditions of the past, we must instead force ourselves to build on what has already been established to make progress in our field.

Before justifying the need to rethink global health education, in plastic surgery residency, it is worth considering the goals of resident involvement in global health. Global health education may be broadly thought of as training relating to health disparities, health equity, and provision of quality care, particularly in resource-poor environments where health access may be limited.^{4,5} The Accreditation Council for Graduate Medical Education (ACGME) states that “the mission of institutions participating in graduate medical education is to improve the health of the public.”⁶ Current models for global health education have been shown to address and improve all ACGME core competencies.⁷ Resident participation in short-term outreach trips is predictive of future involvement.⁸ Both the Residency Review Committee and the American Board of Plastic Surgery are permissive of resident involvement in global health, allowing up to 12 weeks of elective rotations.⁹

So why, then, is global health education in need of rethinking? It is easiest to recognize this need within the framework of three evolving contexts: residency training, academic surgery, and global surgery. From this framework, one may recognize the shortcomings of the current model. We make five recommendations to improve global health education in plastic surgery training programs.

BACKGROUND

Three Evolving Contexts of Global Health Education

1. *Residency training* has evolved significantly over the past two decades. Work-hour restrictions have urged increased efficiency in education with competency-based education arising. More relevant, however, is the “unprecedented, pervasive, and passionate” interest in global surgery on the part of medical students, junior residents, and young faculty.^{10–14} Global surgery is no longer considered a niche hobby among the minority of applicants. Instead, it is a ubiquitous and prevailing interest of prospective residents.
2. *Academic surgery* has evolved with the emergence of global surgery as a tenable academic track.¹⁵ Multiple models currently exist as potential viable career paths for the academic global surgeon. These include use of surgeon vacation time, full-time presence in low- and middle-income countries (LMICs) host institutions, and hybrid models.¹⁶ The marriage of academic surgery and global health can be seen as a “win-win” situation, in that it addresses three current realities: the unprecedented interest of trainees and young faculty in global surgery, the diminishing clinical experience

of trainees due to work-hour limitations, and the discrepancy of medical science in LMICs.¹⁷

- 3) *Global surgery* has itself evolved over the past several decades. Although many plastic surgeons are quick to point out that the discipline of plastic surgery has led the way in traditional global surgical models, those models have largely changed over the past two decades (Table 1). Across specialties, a transition from self-limited “mission” style trips has been made to an emphasis on models with sustained presences, local partnerships, focus on sustainability, and convenience for host organizations.^{18–20} For example, a short, 1-week international mission to provide complex craniofacial care in the absence of dedicated follow-up or host institution input may introduce unnecessary risks to patients, while also undermining local provider credibility. In particular, an emphasis abandoning what has been deemed “global health colonialism” to a process of *accompaniment*, an idea popularized by Paul Farmer of “sticking to a task until it is deemed completed by the person that you are accompanying,” is critical to ethical and efficacious practice.^{21–24}

Current models for global health education provide residents with an introduction to skills for limited-resource settings, exposure to a wider variety of operative pathology, limited immersion in a foreign culture, and temporary relationships with local counterparts. These models, however, could be significantly optimized for the modern global surgical context. One study of general surgery residents found that 76% of entering residents wished to incorporate global surgery into their career.¹⁴ Another study evaluated residents after graduation and found that only 17% continue to provide surgical care in LMICs (Fig. 1),²⁵ suggesting that, for unclear reasons, residents are not following through on their initial desire to incorporate global surgery into their careers.

The current cohort of residents represents the next generation of global surgeons. Although many might suggest that global health education ethically necessitates continuity of care, most resident experiences are singular and lack follow-up. Education that consists of short-term outreach trips sets unrealistic expectations and inadequately prepares residents for modern global surgical practice. Future global health education models should evolve in tandem with changes in residency training, academic surgery, and global surgery.

Approximately 64% of plastic surgery programs offering formal international rotations, according to a 2015

Table 1. Past and Future Global Surgery Models

| Past/Present | Future |
|------------------------------------|-------------------------|
| Self-limited “mission” style trips | Sustained presence |
| Vertical models | Diagonal models |
| Self-contained | Local partnerships |
| Limited efficacy | Wider efficacy |
| Nonsustainable | Focus on sustainability |
| Questionable cultural competency | Accompaniment |
| Convenient for guest | Convenient for host |

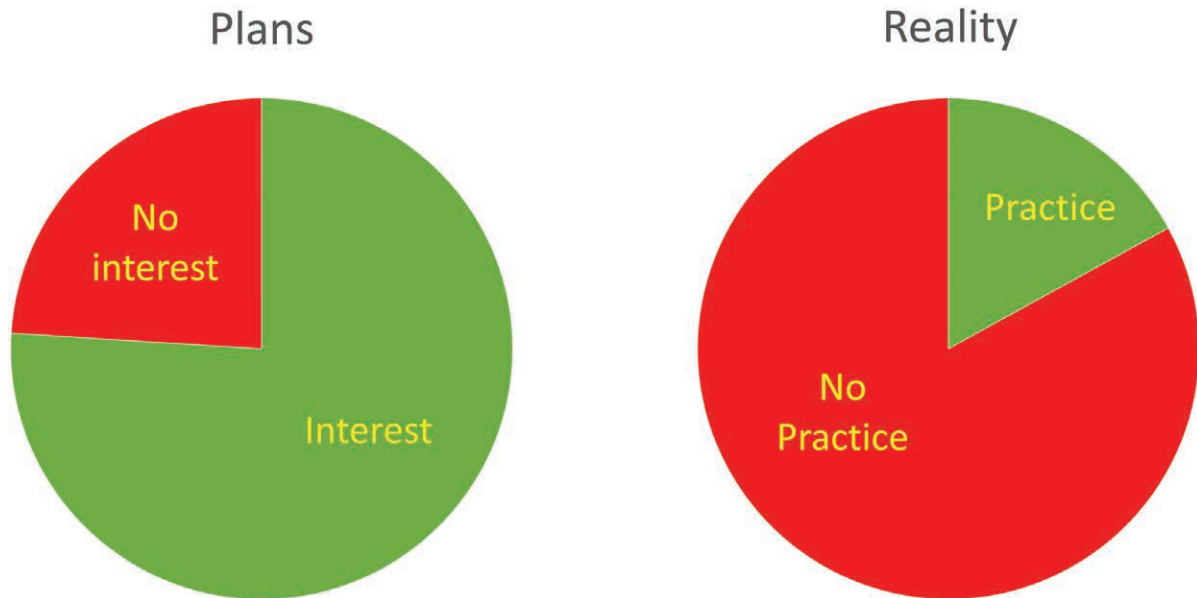


Fig. 1. Resident involvement in global health (original figure by authors).^{14,25}

survey.²⁶ Offering an international elective may be beneficial to residency recruitment, with 75% of medical students and up to 98% of surgical residents being interested in a global health elective.^{12,19,27,28}

With trainees interested at every level of experience, who should participate in organized outreach? Junior resident or medical student experience may be less “experientially efficient,” with a high resource cost and lower competence. Additionally, many have raised concerns regarding cultural maturity and professionalism of younger trainees.^{19,28–31} As a result, many programs report sending more senior residents (PGY3+).^{27,32,33} Unfortunately, this ignores compelling research suggesting that earlier-involved trainees are more likely to continue global health involvement and volunteerism throughout their career.^{8,12,27}

It is in recognition of these evolving contexts and state of the current model that we make the following five recommendations to enhance global health education during plastic surgery residency.

Recommendation #1: Clarification of Learner Expectations and Roles

Several strategies may be adopted to accommodate motivated trainees during outreach work while ensuring the maximal benefit to the host institution. Monitoring expectations of the trainees is critical. The top priorities of trainees interested in surgical global health outreach are improvement of technical ability and cultural experience.¹² Without setting of clear goals and expectations, trainees may feel that they can perform unsupervised tasks, spend most of their time operating, and have significantly more autonomy than at their home institution. Instead, the trainee may add value to a specific outreach trip in a form more appropriate for the trip’s structure. Performing collaborative global health research, engaging in public health outreach, providing clinical follow-up,

and giving lectures to local healthcare providers are all valuable contributions to healthcare infrastructure and capacity. These expectations should be established in advance and in collaboration with host institution leadership to maximize outreach productivity.²⁹

The established tension between education and service should be reevaluated in the global surgical setting. Balancing operative time with time in clinic should be reassessed to optimize responsible exposure to novel pathology and teaching of specific resource-limited techniques. Furthermore, the equilibrium between teaching technical skills and teaching cultural competency should be continually considered. Great value can be gained from exposure to resource-limited environments that represent the challenges of truly rationed medical care. Medical education within LMICs and of LMIC residents also offers tremendous lessons in cultural exchange and accompaniment.

Recommendation #2: Domestic Teaching for Optimization of Field Experiences

It is crucial that visiting trainees are mature, professional, emotionally intelligent, and culturally competent to navigate the challenges of a novel cultural environment. Institutions should reconsider the necessity of field experience, and instead weigh the role for global health teaching outside of an outreach trip. Local didactic education at home institutions can focus on understanding the global burden of surgical disease, the experience of practicing medicine in LMICs, the specific cultural context of host institutions, and improving professionalism and ethical social media practice when abroad. Home-based education can dramatically increase the efficiency of on-site experiences. Furthermore, briefing and debriefing sessions may be particularly useful to optimize experiences and solidify lessons learned.

Table 2. Funding Opportunities for Plastic Surgery Trainees to Participate in Global Surgery Research

| Global Surgery Research Opportunities | | | | | | |
|--|---|--|--|--|--|---|
| Program Name | Sponsoring Organization(s) | Eligibility | Description | Duration | Funding Details | Website |
| AAS/AASF Global Surgery Research Fellowship Award | Association for Academic Surgery | Residents or fellows in an accredited training program who have completed at least 2 y of postgraduate training in a surgical discipline; applicants must be a candidate member of the AAS, or have submitted an application for membership; at least one mentor must be an active member of the AAS | Funding for research proposals addressing a broad range of topics addressing the global burden of surgical disease, especially in resource-poor settings; on-site field work required | 12 mo; award period begins July 1 | \$20,000 | https://www.aasurg.org/awards/fellowship-awards/global-surgery-research-fellowship-award/ |
| Paul Farmer Global Surgery Fellowship | Partners in Health, Harvard Medical School, Boston Children’s Hospital | Residents or fellows in a training program in any surgical specialty | Research support and structured curriculum designed to develop academic, clinical, and administrative skills in global surgery, public health, surgical systems development, and humanitarian aid; on-site field work required; optional masters degree in public health through the Harvard School of Public Health (tuition and fees to be paid by fellow) | 24 mo; fellowship begins in early July | Travel expenses related to fellowship work and research covered; cost of living expenses not covered | https://www.pgssc.org/paul-farmer-global-surgery-fellowship |
| Tsao Fellowship in Global Health | University of Southern California, Children’s Hospital Los Angeles, Shriners Hospital for Children, Operation Smile | Residents in a surgical training program with dedicated time available | Research support and academic curriculum designed to train leaders in global reconstructive surgery, advance the specialty of reconstructive surgery in resource-poor settings, and contribute to humanitarian relief; includes on-site field work in reconstructive surgery; requires completion of a masters of science in public health | 24 mo | Full funding for fellowship work and cost of living expenses | https://globalhealth.usc.edu/2016/04/25/the-tsao-fellowship-in-global-health-a-model-for-international-fellowships-in-a-surgery-residency/ |
| Northwestern University Institute for Global Health Postgraduate Fellowship in Global Health | Northwestern University Institute for Global Health | Residents and fellows in any training program in any surgical specialty; must find a Northwestern University faculty mentor | Funding for global health-related research and salary support for 1 y | 12 mo | \$10,000 grant and salary support | https://www.globalhealth.northwestern.edu/education/residents-fellows/post-graduate.html |

Recommendation #3: Expansion of Longitudinal, Formal Rotations

Institutions have adopted several different structures to international plastic surgery electives, including varying levels of institution sponsorship and rotation length.^{26,27,32} Although shorter independent trips with an accredited foundation may be beneficial, their value is outmatched by extended, recurrent, consistent experiences that improve relationships, education, and patient care between sites.^{9,27,28,33} Preparation for a global surgical career can be improved by focusing primarily on structured, longitudinal opportunities for global health involvement. Incorporation of research, education, and clinical work are each beneficial.^{34,35} Some general surgery

programs have begun development of specific global surgery tracks within residency. With the development of longitudinal, structured opportunities comes an emphasis on capacity building, on promotion of resident research and quality improvement projects with local partners, and on true cultural exchange.

Many residents find identification of global surgical outreach opportunities challenging. Creation of formal rotations within academic plastic surgery programs helps to alleviate some of these barriers, by allowing cases to be counted toward ACGME case requirements and time to be counted toward the 48 weeks of yearly training.^{27,33,36} Formal rotations may also permit trainees to rotate through other institutions to identify an optimal rotation

for their educational goals and to foster a sustainable relationship with the host institution.

Recommendation #4: Strengthening of the Role of Research

Despite growing interest in global surgical care among plastic surgery trainees, direct clinical involvement is typically limited to a few weeks of on-site experience. Research opportunities can provide additional depth to a trainee's global health education.

Global health research may take different forms, and many trainees are able to remain productive while continuing surgical training at their home institution. Great care must be taken to engage local partners and trainees in collaborative work and to abide by ethical standards of both institutions. For those desiring deeper involvement and education in global surgical development, several programs are available to plastic surgery trainees that provide funding for larger-scale projects. These programs require 1–2 years of commitment, and often allow opportunities to obtain an advanced degree (Table 2). These experiences have been shown to result in ACGME competency growth that exceeds that of an average residency year in all domains.³⁷

Perhaps, the most significant benefit of participating in global surgical research is that trainees gain a sophisticated understanding of global surgical care delivery and develop a sense of ownership over the topics that they investigate, often leading to sustainability. A survey of previous research fellows revealed that participants learned large-scale strategic thinking and worked with departments ranging from engineering to computer science to education.³⁸ Ubiquitously, participants anticipated continuing to be involved in global surgical research and clinical work.

Recommendation #5: Integration of Program Financing

Financial support of an expanded global health education curriculum in residency is challenging. Grants may be obtained from local and national foundations/agencies.¹⁶ In most cases, however, sustained support for an expanded global surgical education necessitates institutional and/or departmental buy-in.¹⁶ Many arguments may be made for the development of a global plastic surgical program, including the attraction of top residency candidates, support of the academic mission of the department/institution, and formation of global brand ambassadors that improve the reputation and reach of institutions. Introduction of reverse innovation, the process of identifying innovations developed in resource-limited settings and utilizing them in resource-rich settings, may be used to improve quality of care, reduce waste and/or decrease costs.²⁷ Involvement of the institutional development office in this context may be very helpful.

SUMMARY

The modern global surgical context has evolved and the viability of a global surgery as an academic track has blossomed. More optimized experiences within residency

education are necessary to prepare the next generation of global surgeons. We propose that plastic surgery training programs clarify learner expectations and invest in more non field-based teaching. Programs will benefit from long term relationships with host institutions to provide structured, longitudinal experiences for trainees, with an educational curriculum that includes collaborative research and integrates financing.

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