

Advancing Global Surgery: Moving Beyond Identifying Problems to Finding Solutions

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Published online: 24 October 2017

Over the past two decades, global surgery has evolved into a well-recognized surgical discipline. This has come about for several reasons beyond the moral imperative. With the emphasis in global health shifting from communicable to non-communicable diseases, global surgery is now uniquely positioned to expand and take its rightful place within global public health. Historically, the emphasis among global surgery researchers, in order to gain a seat at the public health table, was to capture and describe the enormity of the global burden of surgical diseases as it relates to mortality. This has led to the plethora of publications on surgical epidemiology, characteristics and outcomes in differing geographic locations, particularly in low- and middle-income countries, and all have a uniform theme—poor access to surgical care, and high surgical burden of diseases resulting in increased mortality and disability. Unfortunately, countries with the highest surgical burden of disease are typically those with the lowest gross domestic product, worst infrastructure, and areas in active or recent conflict with associated poor health-care systems and weak governance.

In this collection of articles, we highlight research across the world that proffers innovative solutions to the well-described issues in global surgery. The articles in this collection cover a spectrum of topics ranging from specific techniques in the operating room to national policy. These include: details of operative care (fracture care in Cambodia) [1], hospital-wide programs to improve trauma care

in Malawi [2], quality improvement (safe surgery checklist in Cambodia) [3], innovative measures to improve access to surgery through use of patient navigators in Haiti [4] and a nationwide surgical plan in Ethiopia [5].

A key modality reported on in several of these articles is education and training. This includes continuing education in distance learning format in Nepal [6] and credentialing of surgeons in East Africa [7]. Closely related to training is human resource development. Several of the articles report positive experiences with task sharing, such as performance of safe cesarean sections by clinical officers in Sierra Leone [1, 6, 8, 9]. These articles give further support for the viability of task sharing to increase access to surgical care, especially in poorer and more remote areas. While continuing to promote and understand better the role of task sharing, we must also continue to find effective ways to increase the workforce of fully trained surgeons. The aforementioned article on credentialing of surgeons in East Africa demonstrates high retention of well-trained surgeons through the countries in that region through the College of Surgeons of East, Central and Southern Africa [7]. Moreover, these two modalities (task sharing and increasing the output of fully trained surgeons) are not mutually exclusive, but complimentary and in some locations best done together. The improvements in trauma care in Malawi relied on creation of a new surgery residency, as well as educational programs that increased training of other cadres, including clinical officers and nurses [2].

An often-neglected component of global surgery is improving anesthesia capabilities. Two of the articles in this collection address this, including a study on safe use of ketamine by non-anesthetists in Kenya [9], and the above-noted study on distance learning for non-doctor anesthesia providers in Nepal [6].

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To be included in this collection, articles had to have solid outcomes data. This ranged from “structure” (such as the creation of a national health policy in Ethiopia and the training and wide distribution of surgeons in East Africa) [5, 7]; to “process of care” (such as improving quality of care in Cambodia) [3]; to hard “health outcomes”, (such as the well-documented decreases in mortality in Malawi) [2]. The latter study demonstrates the feasibility of following mortality data and using it to document the results of hospital efforts to improve care. Local, non-funded efforts created the needed database.

This collection of studies on identifying solutions is representative of the growing maturation of the field of global surgery. As such, it posits several challenges to the field. First, there need to be many more of such studies trying out a wide range of solutions. Research reports of failed attempts are of equal value if they teach us important lessons. Second, evaluations of potential solutions need to have rigorous outcomes data. Many factors influence which outcomes are best for any given assessment. However, in general, documentation of improvements in structure of care is adequate in some cases. Documentation of improvements in process of care is even better. Documentation of lowering of mortality or complications or other outcomes of direct relevance to patients is the best, where appropriate and where sample size is adequate, and, as the examples from Malawi emphasize, is often feasible even in locations with very limited resources. Third, institutions in high-income countries have dominated much research in global surgery. In the current series, only two of the nine articles have first authors from the low- or middle-income country in which the study is set. We do not mean to diminish the hard work of those from any country who were involved in these important studies. However, going forward, every attempt must be made to develop local researchers in academic scholarship, as sustainable solutions to local problems in surgical care delivery will more likely be achieved by indigenous talent.

Acknowledgements This work was supported in part by National Institute of Health Grants D43-TW007267 and 5T32GM008450-23. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

References

1. Tajsic N, Sambath P, Nguon S et al (2017) Open fracture management in low resource settings: a medical training experience in Cambodian hospitals. *World J Surg.* doi:[10.1007/s00268-017-4245-7](https://doi.org/10.1007/s00268-017-4245-7)
2. Grudziak J, Gallaher J, Banza L et al (2017) The effect of a surgery residency program and enhanced educational activities on trauma mortality in sub-Saharan Africa. *World J Surg.* doi:[10.1007/s00268-017-4272-4](https://doi.org/10.1007/s00268-017-4272-4)
3. Garland N, Kheng S, De Leon M et al (2017) Using the WHO surgical safety checklist to direct perioperative quality improvement at a surgical hospital in Cambodia: the importance of objective confirmation of process completion. *World J Surg.* doi:[10.1007/s00268-017-4198-x](https://doi.org/10.1007/s00268-017-4198-x)
4. Matousek AC, Addington SR, Kahan J et al (2017) Patient navigation by community health workers increases access to surgical care in rural Haiti. *World J Surg.* doi:[10.1007/s00268-017-4246-6](https://doi.org/10.1007/s00268-017-4246-6)
5. Bursa D, Teshome A, Iverson K et al (2017) Safe Surgery for all: early lessons from implementing a national government-driven surgical plan in Ethiopia. *World J Surg.* doi:[10.1007/s00268-017-4271-5](https://doi.org/10.1007/s00268-017-4271-5)
6. Shah S, Knoble S, Ross O, Pickering S (2017) A distance blended learning program to upgrade the clinical competence of district non-doctor anesthesia providers in Nepal. *World J Surg.* doi:[10.1007/s00268-017-4273-3](https://doi.org/10.1007/s00268-017-4273-3)
7. Hutch A, Bekele A, O’Flynn E et al (2017) The brain drain myth: retention of specialist surgical graduates in east, central and southern Africa, 1974–2013. *World J Surg.* doi:[10.1007/s00268-017-4307-x](https://doi.org/10.1007/s00268-017-4307-x)
8. Waalewijn BP, van Duinen A, Koroma AP, Rijken MJ, Elhasseim M, Bolkan HA (2017) Learning curve characteristics for caesarean section among associate clinicians: a prospective study from Sierra Leone. *World J Surg.* doi:[10.1007/s00268-017-4202-5](https://doi.org/10.1007/s00268-017-4202-5)
9. Burke TF, Suarez S, Sessler DI et al (2017) Safety and feasibility of a ketamine package to support emergency and essential surgery in Kenya when no anesthetist is available: an analysis of 1216 consecutive operative procedures. *World J Surg.* doi:[10.1007/s00268-017-4312-0](https://doi.org/10.1007/s00268-017-4312-0)