

Towards a More Equitable Future: A Call to Make Surgery Safe, Accessible, Timely, and Affordable for the World's Poor

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Introduction

Technical advances in surgery have revolutionized what the field can offer to those who can access its miracles. More patients than ever are enjoying lives that are free from untreated surgical disease. Yet five billion people worldwide do not have access to surgical care (1). Even among the fortunate minority of the world's population that can access surgical services when needed, some 81 million patients face financial ruin every year seeking care (1). This represents one quarter of people receiving surgical care annually (1). We propose a vision of the future of surgery that addresses the great unmet need for access to timely, quality, and equitable surgical care. The next greatest innovation in surgery is delivering on the promises of quality modern surgical care in a timely manner to an expanded portion of humanity around the world.

“Sustainable Development Goals: A Common Vision of the Future”

Surgical disease is estimated to contribute to approximately 28-32% of the total burden of disease worldwide (1). However, it is only recently that surgical care has become incorporated into the mainstream global health agenda. Millennium Development Goals expired in 2015 and despite positive change, the envisioned future remains unfulfilled (2). The Sustainable Development Goals (SDGs) look towards the year 2030, and reflect a stronger focus on previously under-recognized contributors to development and delineate specific targets for advancement (2-4). Concerted advocacy efforts have positively shifted how surgery is perceived among global agenda-setters; less of a luxury and more of a vital investment in a complete health system (5).

Fulfillment of SDGs Requires Surgical Care

The SDGs were accepted by over 150 signatory members of the UN (4). They are inclusive of all countries and all people, most notably inclusive of not only in low- and middle-income countries (LMICs) but also in high-income countries (HICs). We identify at least four SDGs which are not fully attainable without access to safe, timely, quality, and equitable surgical care. SDG 1 envisions to “No Poverty” (4). However, from the work of The Lancet Commission on Global Surgery, we know the significant contribution of surgical care to impoverishing and catastrophic expenditures (1). Some 81 million patients annually face financial ruin seeking or accessing surgical care (1). However, the opportunity now exists to work towards universal health coverage (UHC) to provide financial protection for financially vulnerable populations, and strengthen access to surgery. Further integration into efforts to secure UHC will help mitigate financial consequences of seeking care and will buttress the

vision of SDG 8 for “Decent Work and Economic Growth” (4). We know that opportunity costs lead to a significant loss of economic productivity with an estimated total loss of 12.3 Trillion USD by 2030 (1). SDG 3 recognizes the human promise of “Good Health and Well Being” fundamental to other goals (4). Surgically treated conditions contribute approximately to 30% of the global burden of disease (1). Thus, effectively addressing the unmet need for surgical care is essential to securing health and achieving well-being for populations around the world.

The Surgical Vision: Global Surgery 2030 as a Framework

The Lancet Commission on Global Surgery’s report entitled Global Surgery 2030 spells out the “human and economic consequences” of surgical disease left untreated (1, p. 569). Central to the framework is that surgical, obstetric, and anesthesia care represents an integral component of a complete health systems. Six indicators were proposed to help better understand the worldwide state of surgical disease and surgical care: volume of operative cases, access to surgical care within 2 hours, the density of surgical, anesthetic, and obstetric (SAO) providers, peri-operative mortality (POMR) as a quality metric, and protection against impoverishing or catastrophic expenditures seeking surgical care (1). Importantly, the Lancet Commission set specific targets for each of the six indicators.

Using these metrics we can describe a vision of the Future of Surgery to consider in the next 15 years. Global Surgery 2030 sets the following tangible targets: 80% coverage of access to essential surgical and anesthesia care by 2030, a minimum SAO density of 20 surgical, anesthetic and obstetric providers per 100,000 people by 2030, tracking of POMR by 80% countries by 2020 and 100% by 2030 with actual POMR targets to be set in 2030, and 100% protection against impoverishment and catastrophic expenditures from surgical care by 2030 (1). Furthermore, the Global Surgery 2030 report suggests a framework of policy regarding surgical, obstetric, and anesthesia care delivery through the development of National Surgical Obstetric and Anesthesia Plans (NSOAPs) (1,2). In fact, Zambia, Tanzania, and Rwanda have followed precisely this route and are working towards implementation of their vision (6). The future of surgery is starting to become clearer: The year 2030 can be the first time in history that patients around the world have access to timely, quality, and equitable surgical care.

Global Surgery: The Need for Quality and Volume

Yet despite a compelling vision of the future, much remains to be done. Simple surgical care is not accessible for an estimated 5 billion people worldwide (1). This translates into an additional 143 million annual procedures required to satisfy the need worldwide (1). Even higher numbers of patients cannot access surgical care that is now considered standard-of-care in wealthy parts of the world (1). Laparoscopic approaches to common surgical problems, refined in the late 1980s have become standard of care in many HIC settings since the early 1990s (7). Laparoscopic care has redefined clinical outcomes, patient satisfaction, and cost of care (7,8). Yet, most LIMCs are easily 20 years behind in implementing this relatively straightforward and affordable technology (8-10). Would the poorest patients not stand to benefit the most from the cost-effectiveness of this technological standard (10)?

Global Surgery: The Need for Human Resources

The major barrier to addressing the need for additional surgical care around the world is an inadequate number of surgical and anesthesia providers (1). Global Surgery 2030 envisions a minimum SAO density of 20 surgical, anesthetic and obstetric providers per 100,000 people by 2030 (1). However, the majority of sub-Saharan Africa needs a 10 to 20-fold increase in SAO density to meet this goal (1). Investment in human resources requires policies guided by long term vision and resolute financial and political commitment from health leaders and funders. The Human Resources for Health (HRH) Program in Rwanda is an example of the type of innovative programs needed in the future (11,12). The seven year, 170-million-Dollar partnership linked the technical expertise of US based academicians and clinicians with Rwandan faculty to facilitate systematic and sustained knowledge and skills transfer (11,13). Strong support of Rwandan teaching institutions was accompanied with bold targets. The number of physicians is to nearly double from 625 in 2011 to almost 1200 in 2018 (11). Equally aggressive targets were set for the training of nurses, midwives, subspecialist doctors, oral health professionals and health administrators amongst others (11). The HRH program has emerged as a paradigm of effective investments in human resources investments that are necessary to address the worldwide shortage of providers and to achieve a more equitable future of surgery.

The Epidemiological Basis for Equity in Global Surgery

Considering the distribution of untreated surgical disease can help prioritize investments in infrastructure and human resources that will have the greatest impact. The Global Surgery 2030 report suggested that only 6% of the 313 million surgical procedures performed worldwide were delivered to the poorest one third of the global population (1). Thinking of surgical disease on the population level can help leverage limited resources to maximize our impact. Perhaps extension of a concept introduced by Geoffrey Rose, the celebrated British epidemiologist, in his landmark paper *Sick Individuals and Sick Populations* may be illustrative (14, p. 431). Rose described two types of interventions: treating 'high risk' patients as disease control in individuals and the contrasting "population approach" which aims to lower the incidence of disease in society (14). As clinically active surgeons, we naturally share concern for sick individuals. However, we should also acknowledge that *'a large number of people at a small risk may give rise to more cases of disease than the small number who are at a high risk'*. (Rose p.431) The corollary to the burden of surgical disease is clear: rather than focusing on high-cost high-resource individual interventions there is an opportunity to address the large unmet need for volume of relatively straightforward surgical conditions. The majority of the unmet burden of surgical disease worldwide is secondary to conditions that can be addressed with standard interventions like laparotomy, laparoscopy, long bone-fixation, and Cesarean section (1,15). Admittedly, this approach does not come naturally for surgeons because epidemiology is not the focus of our busy clinical training. Furthermore, fee-for-service care systems which pay for individual care dis-incentivize population-based approaches (14). Lastly, surgical training in the technologically advanced settings of HICs does not prepare surgeons to provide surgical care to the global population (16). However, the opportunity to impact the millions of untreated surgical patients is so profound that we advocate for it to be considered an integral component of the future of surgery.

Conclusion

The future of surgery is a tremendous opportunity to improve the lives of many of the world's destitute sick and injured. As we have seen, surgical care is an integral component of health care systems and transnational plans for human development. Existent frameworks have identified key metrics and steps towards achieving equitable surgical care by the year 2030. We believe that prioritizing equitable surgical care is an incredible and essential opportunity to improve the future of surgery.

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