Global Cancer Surgery, or Lack Thereof: A Wake-Up Call

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The alarming predictions of the rising global cancer burden should not come as any surprise to the informed reader and must serve as a prompt and substantial wake-up call for anyone involved in the delivery of cancer care.¹ A glimpse of the worrisome metrics associated with the rising global cancer burden is outlined in Table 1. The magnitude of the pervasive consequences of rising global cancer burden on the individual patient, as well as the nation and the entire world, are increasingly evident. Several attempts and initiatives are under way to address this rising global cancer burden by targeting various points in the global chain of cancer care delivery. To address any issue, one needs to be aware of the magnitude of the problem and the myriad deficiencies associated with its targeted amelioration. The Lancet Oncology Commission on Global Cancer Surgery is a laudable attempt to address the inequities in cancer care with particular emphasis on the gross lack of surgical care for patients afflicted with cancer.¹

The article by Sullivan et al. follows in the footsteps of the Lancet Commission published in April 2015.^{1,2} The Lancet Commission outlined the heretofore grossly underestimated global surgical burden (defined as diseases that require a surgical procedure) and postulated various strategies to address the glaring deficiencies in our ability to provide high-quality and safe surgical care across the world. Because cancer is a leading cause of death, surpassed only by cardiovascular disease, it was thought that it required special emphasis. Following the similar structure of the article on global surgery, the article on global cancer surgery covers five main areas: examining the global burden of surgically amenable cancers, understanding the

economic and financial issues surrounding cancer surgery, exploring the issues of strengthening surgical systems in different resource settings, performing an in-depth analysis of cancer research, and placing the issues and solutions for global cancer surgery in the highly variable political context of global health.¹

The article highlights many issues across the spectrum of surgical care for cancer patients. The first issue of importance is the lack of awareness of the impending major onslaught of new cancer cases that require surgical procedures. It is expected that by the year 2030, 45 million surgical procedures will be needed. The gross inequity in the distribution of the new cancer cases (57 %) and cancer-related mortality (65 %) affecting the low- to middle-income countries (LMICs) is not appreciated by many.³

The article clearly outlines the microeconomic and macroeconomic consequences to the individual patient and to the individual nation if the issues with access to surgical care are not addressed. At the microeconomic level, nearly 25–31 % of patients land on the slippery slope to financial bankruptcy after undergoing cancer surgery. At the macroeconomic level, the world will be on track to lose nearly \$12 trillion in gross domestic product between the years 2015 and 2030 due to cancer-related death and disability. The authors postulate financial and economic models to improve surgical care for cancer patients in a sustainable fashion. This includes approaches such as the “investment framework approach” and how to finance cancer surgery from public, private, or mixed sources.

Tackling the problem of strengthening the surgical systems for cancer is extremely difficult, and the Lancet Commission rightfully propose a multisystem approach encompassing primary and community care providers; availability of high-quality imaging; access to reliable, reproducible, and credible pathologic services; and the ability to provide pain, palliative, and supportive services. Because the surgical systems across the world are highly

TABLE 1 Significant metrics related to global cancer burden and global cancer surgery

2015	15.2 million new cancer patients, of whom 80 % will need surgery and 8.8 million of whom will experience cancer-related deaths
2030	45 million surgical procedures will be needed to treat cancer patients
2012	57 % of all new cancer cases and 65 % of all cancer-related deaths occur in LMICs
5 %	Percentage of global spending on cancer that occurs in the LMICs, although they account for the majority for the cases
2030	21.6 million new cancer cases, of which 17.3 million will need surgery
227	Number of different surgical procedures needed to treat cancers across all complexity
<5 %	Percentage of people from LMICs that have access to safe, affordable, and timely cancer surgery
25–31 %	Percentage of patients who will face catastrophic expenditure or bankruptcy after cancer surgery
\$2 trillion	Lost worldwide gross domestic product (between 2015 and 2013) due to economic burden of surgical cancers
\$100 billion	Global spending on cancer drugs in 2014
14 %	Percentage of patients who have access to and receive palliative care
82 %	Percentage of countries that cannot have access to adequate number of cancer surgeons, with most in the low- to middle-income categories
93 %	Global cancer research undertaken by 35 countries worldwide, with only 8 LMICs contributing just 15.2 % of the worldwide output of research

LMIC low- to middle-income country

variable, it is equally highly unlikely that there will be one set of solutions applicable to all countries or regions of the world. These problems are not only unique to the LMICs; high-income countries also have issues with surgery for cancer patients and the rising costs associated with it.

Providing evidence-based cancer care to patients can only be supported by a strong research framework. Unfortunately, the inequitable distribution of research funds prevents all the countries from participating in robust research activities. It is even more unfortunate that the LMICs that will bear the brunt of the new cancer cases are the ones least likely to participate in research activities. Kingham et al. noted that large-scale collaborations to conduct basic science and translational research with clinical emphasis are lacking in LMICs.⁴ Brennan commented on the role that U.S. cancer centers can play on the global stage to address these glaring inequities in research capacity.⁵ Ilbawi and Anderson have outlined examples, such as that from the Breast Health Global Initiative, to demonstrate how U.S. cancer centers can collaborate to improve cancer care, including the implementation and dissemination of resource-stratified guidelines to maximize outcomes.⁶

The ability to address the global cancer burden is dependent on the presence of an adequate surgical oncology workforce. Robust and time-sensitive educational pipelines are paramount to train and certify surgical oncologists in a sustainable fashion to maintain an adequate workforce. Are et al. documented the significant differences in the training pathways across the world with areas for improvement.⁷ These areas of educational deficiencies need to be addressed if we want to have a

workforce that is adequately trained to perform cancer surgery. It is well known that the majority of cancer surgery is performed by general surgeons. The educational improvements could include adding a basic curriculum for oncology within the framework of general surgery training. This will expand the workforce of surgeons with the required basic oncology competencies to perform surgical procedures for cancer patients. In addition, further training in complex surgical oncology will provide the additional workforce needed to perform the advanced procedures. Such training pathways could lead to national certification in basic or complex surgical oncology in their respective countries. Surgical treatment is one of the most effective treatment options for many solid tumors and is best performed by well-trained surgeons in the early stages of disease rather than as a salvage option. The lack of proper training can have an adverse influence on outcomes, as documented by Bilimoria et al.⁸ On the other hand, the presence of an adequately trained surgical workforce in oncology will go a long way to addressing the global cancer burden.

The most difficult part of a project of this magnitude is to assimilate the data in a form that can be presented to not only the health care providers but also to the politicians and economists who govern the respective nations. Nonetheless, the authors present a model of political framing that can help in disseminating this valuable information to the various vital policy makers and organizations. This information has been summarized by the authors as five key messages, outlined in Table 2.

Any project that contains the word “global” is fraught with innumerable hurdles—verifying the accuracy of data,

TABLE 2 Five key messages of the Lancet Oncology Commission on Global Cancer Surgery

1. Over 80 % of the 15.2 million people diagnosed with cancer worldwide in 2015 will need a surgical procedure at some point in their treatment
2. LMICs are projected to lose 0.5 to 1.5 % GDP annually between now and 2030 if surgical systems for cancer are not strengthened
3. National cancer control plans must include the strengthening of surgical systems through investment in public sector infrastructure, education, and training
4. Less than 5 % of global cancer research is devoted to surgery despite its huge effect on patient outcomes and its importance to personalized cancer medicine
5. Global cancer surgery needs to be a political priority for policy makers in countries, research funders, international organizations, and global alliances

LMIC low- to middle-income country, *GDP* gross domestic product

understanding the complexity of different health systems, dealing with unpredictable political systems and shifts as well as variable financial and economic indicators, and lastly the unenviable task of assimilating all of this incompatible bits of information into one cogent presentation. We are fortunate that the group of authors behind this publication are leaders from various parts of the world with significant experience and contributions to cancer care, education, research, and policy. That said, a project of this magnitude has to defy gravity to stay high enough to obtain a perspective of the entire world. While the global perspective it provides is broadly brilliant, the solutions offered tend to be global as well. The global perspective and global solutions can come at the price of identifying precise solutions suitable for the individual patient population or an individual nation.

The Lancet Oncology Commission on Global Cancer Surgery needs to be commended for embarking on this project. Notwithstanding the inherent caveats associated with any global project, the article serves a vital role in highlighting several aspects of global cancer surgery. We hope that this article will be seen as an initial project of several more to come with more specific solutions. Oncologists of all training backgrounds, but particularly those who provide surgical care to cancer patients in any part of the world, ought to feel compelled to read this comprehensive review. Similarly, all oncology organizations across the world, but more so those that represent surgical oncologists, should serve as ready platforms to disseminate this message to their members. Organizations such as the Society of Surgical Oncology have already

taken a lead by expanding their global efforts and making this a part of its mission. The ultimate goal of all these efforts would be to improve access to safe, timely, high value, compassionate, and quality-driven surgical cancer care to all patients across the world regardless, of their race, gender, and socioeconomic standing.

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