



Series on the Lancet Oncology Commission on Global Cancer Surgery: Introduction—Intent and Content

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ABSTRACT

Background. Surgery plays a key role in the multi-disciplinary cancer care pathway. Nearly 80% of patients with solid tumors will require surgical intervention during the course of their disease. Unfortunately, the vast majority of these patients do not have access to safe, timely, high-quality, and affordable cancer surgical care. The first Lancet Oncology Commission on Global Cancer Surgery shone a light on this grave situation and outlined some strategies to address them. The second Lancet Oncology Commission on Global Cancer Surgery (TLO- II) was conceived to continue the work of its predecessor by developing a roadmap of practical solutions to propel improvements in cancer surgical care globally.

Methods. The Commission was developed by involving approximately 50 cancer care leaders and experts from different parts of the world to ensure diversity of input and global applicability.

Results. The Commission identified nine solutional domains that are considered essential to deliver safe, timely, high-quality, and affordable cancer surgical care. These nine domains were further refined to develop solutions specific to each of the six World Health Organization regions. Based on the above solutions, we developed eight action items that are intended to propel improvements in cancer surgical care on the global stage.

Conclusions. The second Lancet Oncology Commission on Global Cancer Surgery builds on the first Commission by developing a pragmatic roadmap of practical solutions that we hope will ensure access to safe, timely, high-quality, and affordable cancer surgical care for everyone regardless of their socioeconomic status or geographic location.

Keywords Lancet oncology commission · Global cancer surgery · Inequities

The global cancer burden is expected to increase significantly over the next few decades. It is estimated that one in five individuals will develop cancer during their lifetime and approximately one in nine men and one in 12 women will die from cancer. It is predicted that the number of new cancer cases will increase from 19.3 million in 2020 to 28.4 million by the year 2040.¹ The most common cancers by incidence in 2020 were those involving the breast, lung, colon, prostate, and stomach.² Similarly, cancer-related mortality is predicted to increase from 9.96 million in 2020 to 16.3 million deaths by the year 2024. The most common cancers contributing to cancer-related mortality are those involving lung, colon and rectum, liver, stomach, and breast.² Cancer is the second-leading cause of death worldwide.³ Cancer is a leading cause of death in 112 countries in the world, the leading cause of death in 13 U.S. states, and the second-leading cause of death in the remaining 37 U.S. states.⁴

Beyond the calamity of the diagnosis and the distress of the disease itself, cancer extracts a significant economic toll at the macro-economic and micro-economic level. It is estimated that between the years 2020 and 2050, the cancer burden will translate to a cost-impact of \$25.2 trillion

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in international dollars.² The five cancers contributing the most to this extraordinary cost-burden include: trachea, bronchus and lung, colon and rectum, breast, liver, and leukemia.² At the micro-economic level, many cancer patients end up on the slippery slope of financial toxicity and eventual bankruptcy.⁵

In addition to the rising cancer burden worldwide, there are extreme variations in the incidence, mortality, access to care, and financial implications associated with cancer diagnosis and care. Despite the lower incidence rates, the cancer-related mortality rates are much higher in many low- to middle-income countries (LMICs). For example, mortality from breast cancer is much higher in Fiji and Jamaica (35 per 100,000), which is three times higher than that in the United States despite a 26% to 38% lower incidence rate.⁶ This is for many reasons, one of which is the inability to access safe, timely, and high-quality cancer care. This inequity will only worsen because of the disproportionate rise in cancer burden in the LMICs.⁷

Cancer care is effective when delivered in a multidisciplinary format, consisting of many professions and disciplines. Surgery is a key pillar of cancer care in this multidisciplinary format. Surgery is a critical and required component in all six Phases of Cancer Care (6-PCC), ranging from screening, prevention, treatment, reconstruction, palliation, and rehabilitation. The importance of surgery is highlighted by the fact that nearly 80% of patients with solid tumors will require surgical intervention at some time during the course of their disease; some or many will require it more than once.⁸

Sullivan et al. noted that 32 million cancer surgical procedures were required in 2015, with a predicted increase to 45 million by the year 2030.⁸ In an updated report, Perera et al. noted that the number of needed cancer surgical procedures will increase by 52% from 9 million in 2018 to 13.8 million by 2040.⁹ Surgical care is required in nearly all solid tumors with the indication for surgical intervention ranging from 25% in bone cancer to more than 70% in breast and bladder cancer.⁸ Perera et al. analyzed the trends in the projected need for surgical intervention between 2018 and 2040 and documented that there will be a rising trend across all tumor types.⁹ It was noted that the percentage change in the increased need for cancer surgical procedures will range between 9% (testes) at the lowest end to greater than 60% for bladder, stomach, pancreas, esophagus, and lung.⁹ All of the other tumor types also will experience a double-digit increase in the need for surgical procedures over the next two decades.

Although surgical intervention is a critical part of cancer care, Sullivan et al. noted that less than 25% of the patients globally will have access to safe, timely, and affordable cancer surgical care. This inequity in access

to cancer surgical care translates to estimated cumulative GDP loss of \$6.2 trillion by 2030.⁸

To address this gross inequity in access to cancer surgical care, the first Lancet Oncology Commission on Global Cancer Surgery was published in 2015.⁸ In addition to shining a much-needed light on the inequities in access to cancer surgical care, this seminal Commission outlined five key messages. These key messages include promoting equitable cancer surgical care, lobbying for urgent and strategic investments in surgical services, strengthening of surgical systems in national cancer control plans, increasing funding for cancer surgical research, and making cancer surgery a political priority for policy makers and related entities.

Since the publication of the first Lancet Oncology Commission on global cancer surgery in 2015, there have been notable additions, including a greater visibility and understanding of the role of cancer surgery and improvements in care for some cancers (breast) with the implementation of resource-stratified care pathways.¹⁰ However, there are still some large gaps and lacunae that contribute to the ongoing major inequities in access to cancer surgical care globally. Surgery continues to lag behind and tends to remain on the fringes of healthcare delivery advocacy and supply chains on the whole globally. Although investments in cancer surgical infrastructure can have major horizontal benefits for other indications, such as trauma and obstetric care, much inertia is focused on the initial investments, which tend to be large compared with other initiatives in healthcare delivery.

Inclusion of cancer surgical services as a part of health-benefit packages (HBPs) also continues to lag across the world.¹¹ For example, the number of countries offering surgical management of breast cancer as part of their HBPs is only 76% globally and is even lower in LMICs (63%). Lung cancer management with its high mortality rate is included in only 64% of HBPs globally with a much lower rate (19%) in low-income countries. In the African region with a rising incidence of cancer burden, inclusion of surgical management for cervical and lung cancer is only at 62% and 28%, respectively.¹¹

Although there could be many reasons for this, one reason could be our approach to addressing these inequities. Far too often, when faced with the problem of addressing any issue with cancer care, we rely on the moonshot approach. This approach directs our focus and attention to the next major and expensive scientific or technological breakthrough. While advancing the frontiers of science is critically essential to improving cancer care, it also is known that most major new breakthroughs initially benefit few at the expense of many who may not have access to even the most basic care.¹² In addition, the profit proposition of these new inventions always skews towards the minority who can afford them and already have access to high-quality cancer care compared with the value proposition for the majority.¹³

For example, robotic surgery has introduced a paradigm shift in our surgical approach to cancer care. The utility of the robotic platform is clearly evident in surgical procedures that require complex technical steps, such as those involving the rectum, bladder, and pancreas.^{14,15} The utility of the robotic platforms will and should continue to increase with a predictable decrease in cost and increase in experience. In contrast, the benefits of the robotic platform over the laparoscopic approach in performing less complex procedures is not entirely clear.^{16,17} Notwithstanding this, in many parts of the world, we notice disproportionate emphasis on introduction of expensive, new treatment approaches with marginal benefit at the expense of exploiting and improvising the existing value-based and time-tested approaches that benefit a larger segment of the population. Another example can be noted in breast cancer care. While oncoplastic surgery is extremely beneficial to provide effective care with cosmetic benefits, in many parts of the world, providing even basic breast cancer diagnostic and therapeutic care is beyond the reach of many.

The Lancet Oncology Commission on Global Cancer Surgery, Part II was conceived to continue the work initiated by the first Commission and address some of the ongoing issues highlighted above.^{8,10} The methodological approach to the current Commission consisted of some foundational themes, including (1) to consist of simple and pragmatic solutions that can be applicable to as many parts of the

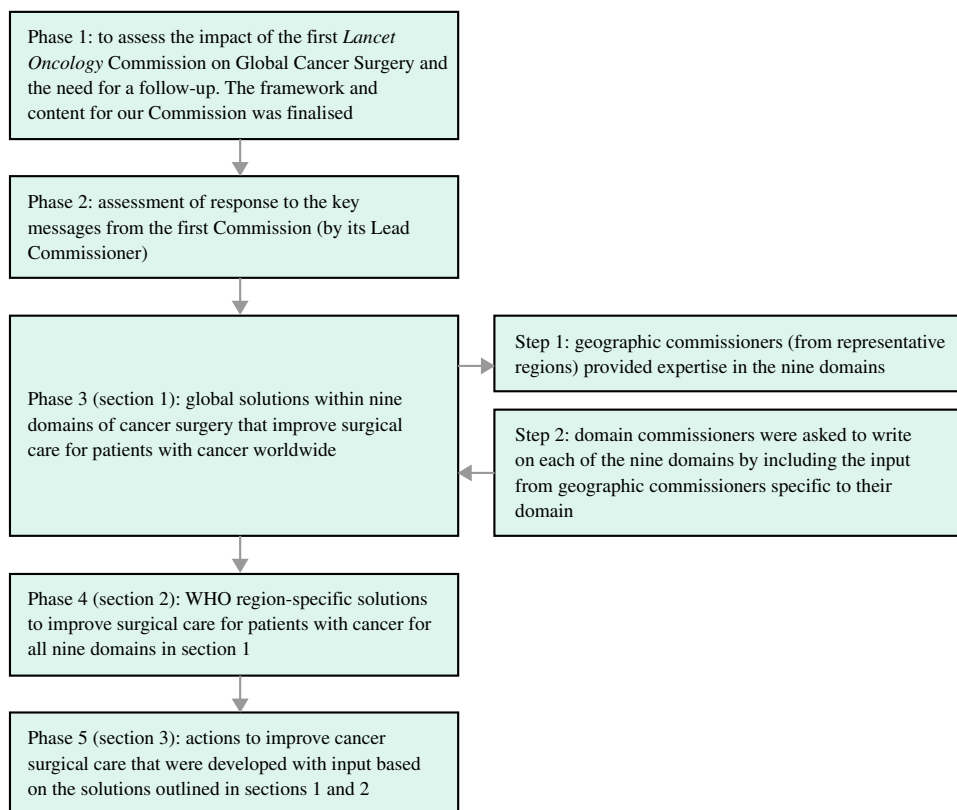
world as possible, (2) awareness of resource constraints but developing solutions that can be resource-agnostic as much as possible, (3) to develop solutions in a modular format that enables piece-meal implementation as needed and feasible based on resource constraints, (4) presenting solutions with an aspirational intent with the hope of eventual attainment, and (5) contextualizing the solutions to each region of the world. The overall theme of the current commission is based on the ground shot format, which focuses on simple, realistic, pragmatic, and affordable themes by improvising systems and solutions already in existence.¹⁰ This approach in combination with measured incorporation of ongoing advances in cancer surgical care is more likely to address the inequities and improve access to cancer surgical care globally.

METHODOLOGY

After extensive discussions with the leaders of the first and current commissions and journal leadership, the content of the current Commission was finalized and included (Fig. 1):

1. Assessment of the first Commission and the impact of the five key messages within the Commission
2. Developing solutions within the nine domains to improve cancer surgical care worldwide.¹⁰ While there are poten-

FIG. 1 Methodology for conceiving, writing, and publishing the Commission. Reprinted with permission from Are C, Murthy SS, Sullivan R et al. Global cancer surgery: pragmatic solutions to improve cancer surgery outcomes worldwide. *Lancet Oncol.* 2023; 24(12): e472–e518. [https://doi.org/10.1016/S1470-2045\(23\)00412-6](https://doi.org/10.1016/S1470-2045(23)00412-6). Epub 2023 Nov 2. Erratum in: *Lancet Oncol.* 2023; 24(12): e459. PMID: 37924819



tially many other solutions that needed to be considered, it was felt that these nine solutional domains were the most pragmatic and important to be included. The first step of this stage was to approach cancer surgery leaders (Geographic Commissioners) from the World Health Organization (WHO) regions of the world and obtain regional input about these nine solutional domains that are specific to their region. This input from the various WHO regions was collected and separated into to each of the nine solutions. This data were presented to another set of cancer surgery leaders (Domain Commissioners) from across the world to expand on these nine solutional domains that can be applicable on the global stage. These nine solutional domains included:

- a. Emphasizing the role of surgery and surgeons in cancer
 - b. Basic requirements for establishing or expanding cancer surgery services
 - c. Incorporation of technology in cancer surgery
 - d. Other specialties integral to providing optimal cancer surgical care
 - e. Patient safety, quality improvement in cancer surgery
 - f. Enhancing the role of research in cancer surgery
 - g. Education of surgical workforce pertaining to cancer surgery
 - h. Economic effect of providing safe, timely, high-quality, and value-based cancer surgery
 - i. Scaling up the cancer surgery workforce
3. Tailoring the nine solutions to each of the 6 WHO regions.¹⁰ Cancer surgery leaders (WHO Region Commissioners) were approached to describe how these nine solutional domains apply or benefit their part of the world. They also were asked to highlight one initiative that worked well and another that could be improved.
4. Finally, we developed an eight-point action plan that can be used to propel improvements in access to cancer surgery on the global stage.¹⁰ These eight action items include:
- a. Making cancer surgery available, accessible, and affordable
 - b. Train the next generation of cancer surgeons
 - c. Promote cancer surgery research
 - d. Develop a skilled cancer surgery workforce
 - e. Implement principles of patient safety, quality improvement, and value-based care
 - f. Encourage continuous professional development
 - g. Promote wellbeing among the cancer surgery workforce
 - h. Establish cancer surgery delivery platforms in the event of global catastrophic events

DISCUSSION AND CONCLUSIONS

The entire Commission benefitted significantly from the input of cancer surgery leaders from across the world. The strength of this Commission lies in the input obtained from global leaders with diverse perspectives about the various aspects of cancer surgical care. The Commission was put together with a detailed and thoroughly analytical approach that took more than 4 years (mostly during the pandemic) to complete despite the vicissitudes of the pandemic. We also included the framework of implementation science to ensure a greater chance of success in the application of these solutions and action items.^{18–20}

The *Annals of Surgical Oncology* series on The Lancet Oncology Commission on Global Cancer Surgery will highlight each of the eight action items in subsequent publications. We hope that this series will serve to amplify the message, solutions, and more importantly these eight action items within this Lancet Oncology Commission on Global Cancer Surgery. It is through these ongoing efforts that we as a collective community hope to ensure that every patient has access to safe, timely, high-quality, and affordable cancer surgery regardless of their geographic location or socioeconomic status.

DISCLOSURE None

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