



**CENTER FOR GLOBAL  
HEALTH DELIVERY–DUBAI**  
HARVARD MEDICAL SCHOOL

## **POLICY BRIEF**

# **National Surgical Obstetric and Anaesthesia Planning: Process and Consensus Recommendations**



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# **National Surgical Obstetric and Anaesthesia Planning: Process and Consensus Recommendations**

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## Summary

On 21-22 March 2018, a diverse group of 79 surgery, obstetric and anaesthesia stakeholders from 25 countries gathered at the Harvard Medical School Center for Global Health Delivery – Dubai to provide technical guidance for national surgical, obstetric, and anaesthesia planning (NSOAP) and learn from the experiences of neighboring countries who have completed this process. Recognizing the indispensable role of surgery, obstetrics and anaesthesia in achieving Universal Health Coverage (SDG 3.8), this technical workshop supported country-led plans for scaling up these disciplines as part of health system strengthening. Drawing on the expertise of countries that are at different stages of NSOAP planning and implementation, topics covered included (1) the burden of global surgical conditions, (2) the initiation and key principles in developing a NSOAP, (3) critical evaluation and feasibility of different models of implementation, and (4) innovative financing mechanisms. This policy brief details the framework to create a country-specific NSOAP, drawing on the expertise and lessons learned from countries and implementers around the world.

## A Changing Landscape

Surgery has rightly been described as the “neglected stepchild of global health.”<sup>1</sup> Clinical conditions requiring surgical, obstetric, and anaesthesia services amount to 30% of the global disease burden, yet over 70% of the world’s population – 5 billion people – do not have access to safe, affordable, surgical, obstetric and anaesthesia care when needed.<sup>2</sup> The poorest one third of the world, where the majority of the surgical disease burden resides, receives only 6% of surgical procedures worldwide.<sup>2</sup>

In 2015, international attention was drawn to the scope and seriousness of the surgical disease burden in lower- and middle-income countries (LMICs) by two formative publications. The first of these documents is Disease Control Priorities, 3rd Edition (DCP-3)<sup>3</sup> focusing on essential surgical care. The second is the Lancet Commission on Global Surgery (LCoGS) report Global Surgery 2030: Evidence and Solutions for Achieving Health, Welfare, and Economic Development<sup>2</sup> (Table 1).

Subsequently, the unanimous passage of the World Health Assembly Resolution 68.15 “On strengthening emergency and essential surgical care and anaesthesia as a component of universal health coverage” provided the political

mandate to address unmet surgical need.<sup>4</sup> Further political momentum was created by the change from the UN’s Millennium Development Goals with only three targets relevant to surgical care, to the Sustainable Development Goals (SDGs) with arguably more than ten cross-cutting goals pertaining to surgical care. In particular, SDG3 – ensure healthy lives and promote well-being for all at all ages – has obvious relevance to surgical, obstetric, and anaesthesia care, with eight targets of importance to surgical service delivery.<sup>5</sup>

Over the past several years, there has been a growing national and global commitment to increasing access to surgical, obstetric and anaesthesia care. A variety of stakeholders, ranging from multinational organizations to governments, ministries of health, professional societies, and clinicians have endorsed changes in policy and programming to promote surgical care. In many countries, these efforts are culminating in the development of NSOAPs that are fully embedded into a country’s national health strategic plan (NHSP).

# Making a Case for NSOAP

A necessary first step in this process is obtaining buy-in from political and social leaders by making a strong case for surgical care delivery and the development of an NSOAP. Advocacy should be centered on clear, data-driven arguments highlighting the urgent need for improved surgery, obstetric, and anaesthesia (SOA) care for people of all ages, including children. Investments in improving delivery of SOA services will result in improved health, wellness, and economic advantage for individuals and countries. A key argument for surgical systems strengthening is showing how SOA services are essential for meeting goals that countries have already adopted, such as the SDGs set forth in the 2030 Agenda for Sustainable Development.<sup>5</sup> It is important to emphasize that investing in NSOAPs does not preclude investment in other initiatives, but rather NSOAPs leverage surgical service delivery to elevate the entire health system. Particular emphasis on the burden of surgical disease for children, the largest segment of the population in many LMICs, is often a strong and powerful advocacy point.

Key arguments for the inclusion of NSOAP within the national health agenda include: (1) capacity and quality of SOA care is lacking

in most LMICs; (2) investment in surgery is crucial to meeting the SDGs; (3) investment in SOA care is cost-effective; (4) emergency and essential surgery, obstetric and anaesthesia care are essential components of universal health coverage; (5) national surgical planning optimizes SOA system strengthening; and (6) surgery, obstetrics, and anaesthesia are indivisible components of effective NHSPs and resilient health systems.

Furthermore, the process of creating an NSOAP improves visibility and accountability pertaining to SOA care, a typically neglected area of the health system. A 2015 study of national health plans of sub-Saharan Africa reported that 63% of plans had less than five mentions of surgery and 33% had no targets relevant to surgery.<sup>6</sup> As of March 2018, only four countries – Ethiopia, Senegal, Tanzania, and Zambia – have completed a national surgical, obstetric and anaesthesia plan; with Rwanda's plan expected to be finished in 2018. The planning process maximizes efficiency and coordination amongst stakeholders. NSOAP ensures defined indicators, targets, and a system for monitoring and evaluation are integrated into a national health plan to catalyze change and meet context-specific goals.

## Theoretical Framework

Drafting an NSOAP involves three major components: (1) defining the current gaps in access and care; (2) identifying and prioritizing solutions; and (3) creating a costed implementation plan that includes national collection and evaluation of data. NSOAPs cover the domains of infrastructure, workforce, service delivery, financing, information management and governance. It is important to note that in most cases, strategic plans are just the beginning of a national effort to improve the surgical ecosystem, with their ultimate impact determined by long-term follow through and

successful implementation. Furthermore, there must be at least one champion of the plan – a person who understands the process, who has expertise in surgery, obstetrics or anaesthesia (SOA), who is passionate about establishing an NSOAP, and who has the respect and influence to guide initial efforts. Ideally, this champion has authority and decision-making capacity at a certain level of leadership in the country.



There are eight key principles involved in the development of an NSOAP. These principles are neither mutually exclusive nor temporally separated and often occur in parallel with each other.

## NSOAP Creation: Eight Principles

### 1. MINISTRY SUPPORT AND OWNERSHIP

It is important to note that Ministry of Health (MOH) involvement is crucial. MOH ownership is the first – and arguably most important – step in successfully completing an NSOAP. Their leadership throughout the entire process is critical as they can provide an understanding of the (1) health priorities of the country; (2) current healthcare landscape; (3) financial situation; and (4) implementation capacity. Ultimately MOH support is critical to facilitate NSOAP integration into the national strategic health plan and other existing healthcare programs.

### 2. SITUATION ANALYSIS AND BASELINING

Little is known about unmet surgical need

and the capacity to deliver surgical services in much of the world. In the context of an NSOAP, situation analysis and baselining are key initial steps to provide a framework for priority setting and initiatives. The World Health Organization (WHO) defines a health-specific situation analysis as “an assessment of the current health situation ... [that] is fundamental to designing and updating national policies, strategies and plans.”<sup>7</sup> Ideally, a health situation analysis should aim to: (1) realistically assess the current health-sector situation, with all its strengths, weaknesses opportunities and threats, including their root causes and effects; (2) provide an evidence-informed basis for responding to health sector needs and expectations of the population; and (3) provide an evidence-informed basis for formulating future strategic directions for the health sector.

This situation analysis can then leverage lessons from previous national efforts aimed at strengthening clinical care systems, and forms the basis for monitoring and evaluation (M&E), and helps establish consensus on the state of surgical, obstetric and anaesthesia care in the country. Importantly, a broad group of stakeholders should be convened to agree on the content and process of the situation analysis and baselining, with each stakeholder bringing his/her unique expertise to the table to guide in collection of relevant information. Lessons learned from previous national efforts aimed at strengthening clinical care systems should help guide this process.

There are four steps in the process of conducting a situation analysis: (1) define what information is needed; (2) review existing information; (3) perform a comprehensive situation assessment using both quantitative and qualitative methods; and (4) conduct a strengths, weaknesses, opportunities and threats analysis. There may be significant areas of overlap with other systematically used data collection tools, and where possible the cycle of existing assessments should be leveraged to streamline surgical data collection.

In order to measure the future impact of policy and programmatic interventions, it is essential to be able to establish a baseline. In 2015, the Lancet Commission on Global Surgery recommended all countries collect six core surgical indicators (Table 2) as measures of the strength of their surgical system.<sup>2</sup> These six indicators measure three aspects of surgical care: preparedness for delivering surgical services, volume and outcomes of service delivery, and financial risk. WHO included these six in their 100 Core Health Indicators in 2015 and 2017.<sup>8</sup> Additionally, the World Bank incorporated 4 of these indicators as part of the World Development Indicators 2016.<sup>9</sup> It is recommended that countries collect and analyze information that allows for monitoring, at minimum, these core six surgical indicators, although more detailed data collection is required and beneficial for NSOAP planning.

### 3. STAKEHOLDER ENGAGEMENT AND PRIORITY SETTING

A broad group of stakeholders including MOH, clinical providers, professional and civil societies, academic institutions, funders, representatives of the population, and implementers should be convened to review baseline information and set priorities. Broad stakeholder engagement is strongly recommended because each stakeholder brings unique expertise to the table to guide in these discussions.

Once the relevant stakeholders have been identified, the next step is to establish timelines, responsibilities and deliverables on the core NSOAP planning team, then with broader stakeholders review the situation analysis and baselining and identify strategic objectives and priorities for NOSAP and create shared ownership.

Discussion frameworks have been created to guide this discussion for a wide breadth of topics pertinent to health systems strengthening. For each domain, stakeholders should discuss the baseline assessments, identify challenges and proposed solutions, set targets, and come up with a monitoring and evaluation plan for each solution. For example, infrastructure may include discussion of the number and distribution of facilities, equipment and management, blood products, supply chain. Under service delivery, proposed topics include the establishment of standard procedure lists for different levels of facilities, perioperative services, and referral system improvement. Workforce discusses, amongst other things, the distribution and number of providers as well as the current training strategy, subspecialty expansion, and possibly task-shifting and task-sharing for certain procedures. Information management focuses on data collection, quality and management. Finance includes the current state of universal health coverage and specifics on budget allocation to surgical, anaesthesia and obstetric services. And governance establishes the coordination of efforts and responsibility and accountability needed for implementation.

## 4. DRAFTING AND VALIDATION

The next step is to draft a plan that compiles and prioritizes relevant content alongside strategic objectives, goals, desired outcomes, and planned implementation strategies. Drafting should include identification of the gaps and challenges from the baselining situation analysis, the goals to be achieved by the NSOAP, and the proposed solutions and activities for each of these goals. For ease of understanding and acceptance, these drafts should comply, support and enhance the specific country's NHSP. Suggested contents for an NSOAP include: introduction; background and situation analysis; guiding principles, vision and mission; detailed goals, objectives, outcomes, and activities; governance framework; cost of implementation; and other supporting documents.

## 5. MONITORING AND EVALUATION

Once priorities and implementation plans have been agreed upon, a thorough M&E plan is required. Prior NSOAP work creates a framework that can guide decisions regarding the operational planning and management strategy. Key and relevant performance indicators should be selected to routinely and serially gauge surgical capacity and quality. This is crucial to show progress and improvement, align with regional and global priorities, identify inequity, create a surveillance mechanism, use data for evidence-based health policy decisions, and determine the cost-effectiveness of the plan. It may also highlight the activities or initiatives that are struggling and may require additional support and attention. Importantly, measurable targets should be set for each indicator when possible. Attention should be given to how the results from this data are reported and used at the national level to assess the progress of NSOAP, but also how facilities are empowered to use this data for their own quality improvement. A process for regular review, problem solving and action around the indicator results should be laid out.

## 6. COSTING

Assigning costs to implementation items in an NSOAP is a pivotal stage in the planning process – one in which the plan may be transformed into a feasible, fundable policy document or shelved due to overly optimistic targets. Costing is a multi-step process that requires input from a broad range of government and health sector stakeholders, including the Ministry of Finance (MOF). It is typically performed after the creation of an implementation framework, but attention must be paid to the potential costs of programs and services from conception to completion of the NSOAP cycle to ensure that the finalized plan is realistic within the budgetary constraints of the government and funding partners. This will provide a cost estimate for implementation of the plan and allow for informed discussion and direct input from the MOF for the appropriate allocation to NSOAP implementation. Ultimately, the NSOAP is submitted to the MOF to leverage domestic funds and to multilateral organizations, non-governmental organizations, and civil society as a platform for external funding. The costing process also creates an avenue for prioritization of activities within a plan, allowing an NSOAP committee to begin to coalesce around those activities that are aspirational and those that are more immediately achievable. A strategic and thoughtfully costed plan may also identify appropriate donors and frame discussions with funding bodies and implementation partners, as well as creating more aid advocacy and appropriate utilization.

## 7. GOVERNANCE

Governance involves understanding the organizational structure and mechanisms needed to achieve the objectives laid out in strategic plans, (including mechanisms to promote health on the national agenda, balance policy priorities, define terms of engagement, and establish transparency and accountability, and coordinating) efforts and responsibility needed for implementation. The governance of NSOAP should parallel

that of the NHSP and be intertwined with the governance strategy already in place. One of the most important functions of the NSOAP is to strengthen the visibility and accountability around access to and quality of SOA care. Setting up a strong governance system around the NSOAP facilitates the following: (1) improved visibility for SAO care on national health agendas; (2) enhanced coordination of the SOA care agenda with complementary programs within health and across sectors, including health financing; and (3) setting up communication and accountability mechanisms from national to facility levels to ensure widespread implementation of the NSOAP. The organizational structure, implementation, management, and accountability mechanisms will vary somewhat from country to country depending on existing structures and policies, however, a clear chain of accountability and escalation from the facility level to the national level is essential to ensure successful implementation of the plan.

## **8. IMPLEMENTATION**

The first step to implementation is the identification and mobilization of a core team of MOH staff to implement the NSOAP. The dedicated ministry project team should be supported by a technical working group (TWG) of advisors from across the professional

associations, private and civil society. The next phases of plan implementation will be largely driven by what resources can be successfully mobilized. The MOH project team along with the TWG, which often has members with considerable influence, together can lobby for financing and implementation of the plan amongst government, private and development partners based on activities within the plan that are of highest priority. Where feasible, testing interventions at a smaller scale before large scale nationwide implementation can help minimize their opportunity cost, assess impact, and maximize efficiency. Training of additional specialist and ancillary workforce expansion has a significant lag time due to the need to establish curricula, mobilize and train trainers and establish regulation, standards and continuing professional development. As such workforce expansion should be prioritized in the first phase of the plan. Concentrating initial efforts for specialist staffing and resources on the regional centers, allows the regional centers to develop as a hub for training and supervision of non-specialist competent staff at the lower level centers. Functional regional hospitals also begin to rehabilitate a functional referral system. The agreed upon monitoring and evaluation plan for these initiatives should also be implemented from the beginning.

## NSOAP Financing

Despite the perception that surgical care is complex and cost-prohibitive, surgery has been shown to be a highly cost-effective intervention.<sup>10</sup> The cost of scaling up surgical services to address the surgical burden of disease in LMICs by 2030 is an estimated \$350 billion.<sup>2</sup> This is almost 50-fold less than the estimated \$12.3 trillion losses attributed to untreated conditions requiring surgery, making surgical care one of the most cost-effective public health interventions, comparable to oral rehydration therapy, vitamin A supplementation, and antiretroviral therapy for HIV.<sup>11,12</sup> The DCP-3 identified 28 procedures as highly cost effective, with benefit-to-cost ratios (BCR) similar to the benefit-cost analysis by the Lancet Commission on Investing in Health<sup>3</sup>. The estimated cost to scale up delivery of the identified essential surgical procedures at first-level hospitals worldwide is \$3 billion, with a BCR of 10:1.<sup>3</sup> Furthermore, the cross-cutting nature of SOA care makes NSOAP a compelling investment as it has benefits that extend well beyond surgery to the broader health ecosystem. It is thus critical for a MOH to integrate the costed NSOAP within the overall strategic health plan and budget. When integrating, the aim should be to identify areas of overlap within the key silos of the health system that represent opportunities to share costs. Such potential silos include maternal health, non-communicable diseases, primary health care, emergency care, and disabilities.

Financing mechanisms can and should include domestic and external financing sources. Mobilization of domestic resources may be attained through the allocation of UHC funds, improved efficiency, increased investment into the health sector through revenue generation or reprioritization of health expenditure, and stimulation of economic

grow through conducive macroeconomic conditions. While some countries may be able to finance the NSOAP domestically, many low-income countries and fragile states will need help with their health financing. They may require the assistance of donor countries, foundations, international organizations, non-governmental organizations, or development partners. Unfortunately, with a large portion of developmental assistance for health earmarked for infectious diseases and maternal and child health, funding for surgical, obstetric, and anaesthesia expansion is currently not a priority and remains a challenge. Alternative financing mechanisms such as the Global Financing Facility and other grants and loans can and should be explored. Industry also represents an untapped resource which can provide assistance with surgical scale up as well as logistic and managerial expertise.

As countries develop NSOAPs, they should be cognizant of the investment case to be made based on the NSOAP and proceed accordingly. Inclusion of the NSOAP within the NHSP opens internal funding channels through the Ministry of Finance. Financing an NSOAP – and ultimately UHC – is a political decision. The expected costs to achieve UHC are reachable by most governments using established financing mechanisms and instruments, along with potential innovative financing methods unique to surgery.<sup>13</sup> Naturally, some countries will require external assistance. However, donors can pool their aid and coordinate with each other in assisting countries to achieve sustainable financing that is aligned with their priorities and values. This offers the best chance of ensuring that no one will be denied SOA care because of where they live or how much money they have.

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# The Status of NSOAPs Worldwide

Throughout the two days, participants heard case studies and panel discussions about technical successes and challenges from countries at various stages of their NSOAP process. This workshop drew on the expertise and experiences of countries at different stages in NSOAP development. Selected examples are presented as case studies below.

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## MID-DEVELOPMENT

### Sierra Leone

As a fragile state with fewer than 10 actively practicing surgeons for over 7 million people, Sierra Leone has begun the journey towards an NSOAP. In the post Ebola phase of reconstruction of the entire health system, the Sierra Leone NSOAP has unique opportunities to design solutions from the ground up. Another unique opportunity in Sierra Leone is the prevalence of research data on current health system capacity due to the high density of bilateral partners working in the region. Although recent landslides and other natural disasters have created a hiatus in the NSOAP process at present, there is confidence that the process will soon resume.

### Nigeria

Baseline assessment has been completed for the federal capital territory and will commence in one state from each of the 6 geopolitical zones shortly (there are 6 states in each zone). The NSOAP team's goal is to complete the process by December 2018.

### Madagascar

Another open account of progress was shared by the representative from Madagascar. In Madagascar an initial baseline was carried out by external partner Mercy ships during their docking and an initial stakeholder meeting occurred in September 2016 arranged by Jhpiego and the Ministry of Health. However, a handover of leadership of the NSOAP process to the medical school led to a hiatus in activities for over a year. However, in January 2018 the process restarted, with the goal of completing the plan within the next 6 months.

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## DRAFT

### Rwanda

Rwanda has completed the first draft of their plan and will have a validation workshop in April to review the initiatives among a large group of stakeholders to achieve consensus prior to finalization. Their intent is to launch the plan in April/May 2018.

## LAUNCH

### Tanzania

Tanzania began their process with a directive from the Permanent Secretary in November 2016. The effort was led by the Department of Curative Services in the MOHCDGEC and the Program in Global Surgery and Social Change at Harvard Medical School and was funded by the GE Foundation Safe Surgery 2020 project. Between November 2016 and April 2017, they identified and gathered stakeholders from across the country and performed a thorough situation analysis. In April 2017 a large multi-stakeholder group was brought together for priority setting. During a two-day workshop over 70 cross sectional stakeholders came together to complete the “discussion framework” and come to a consensus on the priorities of the NSOAP. From that a first draft was written by a working group. It was then costed by a cross section of ministry of health experts in a workshop led by the PGSSC. The final validated and costed plan was then escalated through the ministry channels prior to it being signed at the end of January 2018. The formal launch took place alongside the ECSA health minister’s meeting on March 19th.

## IMPLEMENTATION

### Zambia (year one of implementation)

Zambia has made significant progress since the signing of their NSOAP last spring, including a successful integration of their NSOAP into the NHSP. Given this, the surgical, anaesthesia, and obstetric societies has been able to successfully lobby for funding from the MOH to support the initiatives within the NSOAP. The NSOAP highlighted workforce as one of the largest gaps in surgical, obstetric, and anaesthesia care, therefore the focus has been largely on increasing the number of specialists, operating theatre nurses, non-physician anaesthetists as well as the improving the distribution of providers around the country.

### Ethiopia (year two of implementation)

Ethiopia has seen implementation success following the appointment of a core project team, under the quality directorate, for the implementation of their Saving Lives Through Surgery (SALTS) Initiative. The successes so far include, the construction of 80 new OR blocks with construction underway for 290 additional OR blocks, the preparation of road maps for the development of the SAO workforce in the country by wide scale clinical mentorship, the formation of vital partnerships with many funders and expert groups, the launch of a safe surgery national monitoring and evaluation program, facility based quality improvement efforts focused on transforming surgical care systems, and development of a perioperative guidelines, amongst others.

### Senegal (year five of implementation)

In December 2013, Senegal launched its national surgical plan that was to be implemented over five years. This was a very inclusive plan that was integrated into their national health services plan and was created 18 months before the launch of the Lancet Commission on Global Surgery. This is the first plan of its kind that has been launched at a national level and fully integrated into the national health services delivery structure.

## Next Steps

The group requested that the WHO in-country and regional representatives provide technical assistance in the priority setting, drafting and costing phases of the plans. They also asked that the WHO in-country offices use their significant political influence for NSOAP advocacy. WHO headquarters will send to regional and national offices a memo summarizing the case for NSOAP and activity to date. The need for advocacy around NSOAP was highlighted including specific side-events at WHA meetings and direct engagement with the African Union (AU) to incorporate surgical system strengthening into the AU's Agenda 2063.

The conference highlighted the value of industry support including leveraging their managerial, logistic and training capacity, innovative product design and end to end solutions to meet the specific surgical needs of each country. At the conference, industry partners in the SOA space agreed to discuss how to partner and best create a collaborative strategy for NSOAP support. To this aim, the industry working group is set to deliver a plan by May 15th, 2018.

Participants agreed to meet at the College of Surgeons of East Central and Southern Africa (COSECSA) 19th Annual AGM and Scientific Conference in Kigali, Rwanda in December 2018. By then, most participants anticipated significant progress in their national surgical planning journey: with delegates from Rwanda anticipating completion by April/May 2018, Madagascar in the next 6 months, Sudan by mid 2019, and Namibia by December 2019. To build upon the individual country NSOAP process that was discussed throughout the conference, the group identified three important strategies to drive successful and rapid expansion:

### 1. Regionalization

The need for creation of an NSOAP community that could provide mentorship and technical support at a regional level could be best executed through leveraging existing regional health actors including AU, and WHO AFRO and EMRO, etc. WHO AFRO expressed willingness to support this endeavor. The West African College of Surgeons has already embarked on a regional surgical plan and is working with all member countries to help them develop NSOAPs. Representatives from Ethiopia, Zambia and Tanzania offered to mentor other countries based on their NSOAP development and implementation experience.

### 2. Data collection

There was substantial support for the inclusion of data collection specific to surgical, obstetric, and anaesthesia care to be written as a named objective into each future NSOAP. The argument was made for the data to be used to inform future priorities, identify initiative progress, as well as showcase advances in care following NSOAP implementation. Further, the importance of sharing this data with the WHO and World Bank to be part of the World Development Indicators site for transparency and accountability was equally stressed.

### 3. Financing

Surgical, obstetric, anaesthesia system strengthening must be prioritized in its own right and not hidden within other health strategies; new financial mechanisms must be developed with allocation of funds specific to NSOAP initiatives. Champions of the NSOAP plans and MOH officials in support of NSOAP must take the initiative to advocate for financial support within the Ministry of Finance but also to external funders including foundations, international organizations, non-governmental organizations, etc.

## Tables and Figures

**Table 1: Key Messages from the Lancet Commission on Global Surgery**

|                      |  |
|----------------------|--|
| <b>Key Message 1</b> | 5 billion people lack access to safe, affordable surgical and anaesthesia care when needed                       |
| <b>Key Message 2</b> | 143 million additional surgical procedures are needed each year to save lives and prevent disability             |
| <b>Key Message 3</b> | 33 million individuals face catastrophic health expenditure due to payment for surgery and anaesthesia each year |
| <b>Key Message 4</b> | Investment in surgical and anaesthesia services is affordable, saves lives, and promotes economic growth         |
| <b>Key Message 5</b> | Surgery is an indivisible, indispensable part of health care   |

Table 2: Six Indicators from the Lancet Commission on Global Surgery

| Definition  | Rationale  | Data sources  | Responsible entity  | Comments                     | Target   |   |
|---|--|---|---|------------------------------|--|---|
| <b>Group 1: Preparedness for surgical and anaesthesia care</b>  |  |   |   |                              |  |   |
| Access to timely essential surgery  | Proportion of the population that can access, within 2 h a facility that can do caesarean delivery, laparotomy, and treatment of open fracture (the Bellwether Procedures) | All people should have timely access to emergency surgical services; Bellwether Procedure performance predicts accomplishment of many other essential surgical procedures; 2 h is a threshold of death from complications of childbirth | Facility records and population demographics              | Ministry of Health           | Informs policy and planning about location of services in relation to population density, transport systems, and facility service delivery | A minimum of 80% coverage of essential surgical and anaesthesia services per country by 2030  |
| Specialist surgical workforce density   | Number of specialist surgical, anaesthetic, and obstetric physicians who are working per 100 000 population  | The availability and accessibility of human resources for health is a crucial component of surgical and anaesthesia care delivery   | Facility records, data from training and licensing bodies | Ministry of Health           | Informs workforce, training, and retention strategies  | 100% of countries with at least 20 surgical, anaesthetic, and obstetric physicians per 100 000 population by 2030   |
| <b>Group 2: Delivery of surgical and anaesthesia care</b>   |  |   |   |                              |  |   |
| Surgical volume   | Procedures done in an operating theatre, per 100 000 population per year   | The number of surgical procedures done per year is an indicator of met need   | Facility records  | Facility, Ministry of Health | Informs policy and planning about met and unmet need for surgical care   | 80% of countries by 2020 and 100% of countries by 2030<br>tracking surgical volume; 5000 procedures per 100 000 population by 2030                        |
| Perioperative mortality   | All-cause death rate before discharge in patients who have had a procedure in an operating theatre, divided by the total number of procedures, presented as a percentage   | Surgical and anaesthesia safety is an integral component of care delivery; perioperative mortality encompasses deaths in the operating theatre and in the hospital after the procedure  | Facility records and death registries                     | Facility, Ministry of Health | Informs policy and planning about surgical and anaesthesia safety and surgical volume when number of procedures is the denominator         | 80% of countries by 2020 and 100% of countries by 2030<br>tracking perioperative mortality; in 2020, assess global data and set national targets for 2030 |
| <b>Group 3: Effect of surgical and anaesthesia care</b>   |  |   |   |                              |  |   |
| Protection against impoverishing expenditure*   | Proportion of households protected against impoverishment from direct out-of-pocket payments for surgical and anaesthesia care   | Billions of people each year are at risk of financial ruin because they have accessed surgical services; this is a surgery-specific version of a World Bank universal health coverage target  | Household surveys, facility records                       | World Bank, WHO, USAID       | Informs policy about payment systems, insurance coverage, and balance of public and private services                                       | 100% protection against impoverishment from out-of-pocket payments for surgical and anaesthesia care by 2030  |
| Protection against catastrophic expenditure†  | Fraction of households protected against catastrophic expenditure from direct out-of-pocket payments for surgical and anaesthesia care                                     | Billions of people each year are at risk of financial ruin because they have accessed surgical services; this is a surgery-specific version of a World Bank universal health coverage target  | Household surveys, facility records                       | World Bank, WHO, USAID       | Informs policy about payment systems, insurance coverage, and balance of public and private services                                       | 100% protection against catastrophic expenditure from out-of-pocket payments for surgical and anaesthesia care by 2030                                    |
| <p>Access, workforce, volume, and perioperative mortality indicators should be reported annually. Financial protection indicators should be reported alongside the World Bank and WHO measures of financial protection for universal health coverage. USAID-US Agency for International Development. Equity stratifiers listed in discussion. *Impoverishing expenditure is defined as being pushed into poverty or being pushed further into poverty by out-of-pocket payments. †Catastrophic expenditure is defined as direct out-of-pocket payments of greater than 40% of household income net of subsistence needs. ‡These indicators provide the most information when used and interpreted together; no single indicator provides an adequate representation of surgical and anaesthesia care when analysed independently.</p> |  |   |   |                              |  |   |
| <b>Table 6: Core indicators to monitor realisation of universal access to safe, affordable surgical and anaesthesia care when needed</b>  |  |   |   |                              |  |   |

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