

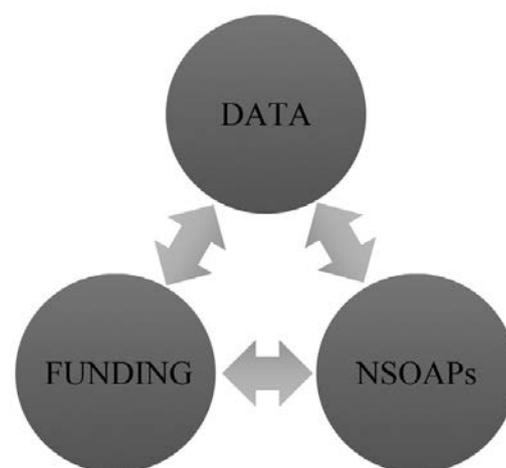
## A global surgery, obstetrics and anaesthesia metamorphosis

Isabelle Citron and John G Meara

Correspondence: John.Meara@childrens.harvard.edu

### NEGLECTED NO MORE

Just 3 years ago it was inconceivable to imagine the trajectory that the ‘Global Surgery’ movement would take. Three years ago, surgery was the ‘neglected stepchild’ of global health, too fragmented and nebulous to take part in the global health discourse and existing almost exclusively as missions or site-to-site partnerships.<sup>1</sup> In 2013, *The Lancet* commissioned an investigation into the state of surgical care worldwide. By the end of 2015, this report, a collaboration including over 110 countries, was published (*Lancet* 2015; 386: 569–624).<sup>2</sup> The *Disease Control Priorities*, third edition, had dedicated its entire first volume to highlighting the cost-effectiveness of surgery.<sup>3</sup> The World Health Assembly had passed resolution 68.15 to include emergency and essential surgery and anaesthesia care as a component of Universal Health Coverage ([http://apps.who.int/gb/ebwha/pdf\\_files/EB135/B135\\_3-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/EB135/B135_3-en.pdf)).<sup>4</sup> In addition, the World Bank – through its president Jim Kim – called for time-bound targets for global surgery and by April 2016 the World Bank had accepted four surgical indicators in its World Development Indicators (WDIs) dataset (Table 1).<sup>5–7</sup> Two years after the launch in 2017, the first National Surgical, Obstetric and Anaesthesia Plans (NSOAPs) were launched by Zambia and Ethiopia.<sup>8,9</sup> By early 2018, a second worldwide wave of WDI collection had been completed, four countries had completed NSOAPs and many more are in progress.<sup>10</sup> What is needed next for global surgery, obstetrics and anaesthesia is not a simple linear process; rather, it is a



**Figure 1.** The next steps for the global surgery movement and their relationships.

cycle of three co-dependent elements: data, NSOAPs and funding (Figure 1).

### DATA-DRIVEN ADVOCACY

Much of the success of the last 3 years can be attributed to data and, more precisely, data-driven advocacy. The *Lancet* Commission on Global Surgery and its associated publications generated over 50 original articles and over the last 5 years publications in global surgery and anaesthesia have increased fourfold. It

**Table 1.** World Development Indicators for surgery

No.	Indicator	Definition
1	SAO density	Physician surgery, anaesthesia and obstetric providers per 100,000 population
2	Procedure density	Procedures performed in an operating room per 100,000 population
3	Impoverishing expenditure	Direct out-of-pocket payments for surgical, obstetric and anaesthesia care that drive people below a poverty threshold
4	Catastrophic expenditure	Direct out-of-pocket payments for surgical, obstetric and anaesthesia care exceeding 10% of total income

SAO, surgery, anaesthesia and obstetrics.

**Isabelle Citron BmBCh, MPH**

Program in Global Surgery and Social Change  
Department of Global Health and Social Medicine  
Harvard Medical School  
Boston, MA  
USA

**John G Meara MD, DMD, MBA**

Department of Plastic and Oral Surgery  
Boston Children's Hospital  
Boston, MA  
USA

is precisely because of this work on consensus building and data generation that the World Bank accepted four surgical/anaesthesia indicators (see Table 1). By endorsing these surgical metrics as WDIs, the World Bank creates a framework for countries to collect and transparently report progress, as Jim Kim challenged the global health community to do in 2014. Once collected, data can be used to advocate for improved access and quality of surgery, obstetric and anaesthesia care by shining a light on the current poor situation of surgery, obstetrics and anaesthesia worldwide, tracking progress made and creating evidence for policies that work to improve surgical outcomes. As the world moves towards results-based financing and impact investing, the goal is clearly to have high-quality data attract funding to improve surgery, obstetric and anaesthesia care and assess what does and does not work.

Despite these benefits, the global surgery community is at risk of losing this great opportunity afforded by the World Bank. To date, although there are data on up to 71 countries for some indicators, this has been achieved through externally driven efforts. No countries are systematically collecting and reporting the WDIs on a national scale.<sup>11</sup> The most logical solution is to integrate WDI collection into existing international tools and collection mechanisms. Examples include the integration of surgery-themed questions into some of the world's largest assessment tools such as the Demographic Health Survey or the Harmonized Health Facilities Assessment, developed with the World Health Organization (WHO) and to be launched in the next year.<sup>12,13</sup>

## NSOAPS PREPARE THE PATH

'If you don't know where you are going, any road will get you there'.<sup>14</sup> For decades, national, regional and global health planning ignored surgical care delivery. If global surgery was a 'neglected stepchild', then anaesthesia was its 'invisible friend'. The solution to this lack of data collection involves NSOAPs, uniting all three communities, that are fully integrated into national, regional and global health strategies. Regular reporting of indicators is possible and in fact the norm for many health programmes. Take, for example, maternal and child health, for which 90% of countries report their annual maternal mortality rates.<sup>15</sup> Through the establishment of NSOAPs, a country lays out a comprehensive strategy for improvement of surgery, anaesthesia and obstetric care across all six building blocks of the health system: workforce, infrastructure, service delivery, information management, finance and governance.<sup>16</sup> The creation of the plan itself mobilises the surgery, anaesthesia and obstetric community in a country, brings a new prioritisation of surgery, obstetric and anaesthesia care and incentivises the collection of the indicators to serve as a baseline against which to measure progress and direct activities. Perhaps most importantly, the NSOAP lays out the mechanisms, data flows and governance systems responsible for collecting, collating and escalating data. In isolation, the World Bank request to collect the surgical WDIs, as has been seen, is an insufficient incentive. However, if these form part of a more comprehensive effort to elevate surgery, anaesthesia and obstetric care cohesively on the national agenda, and

there is a clear definition of how these indicators should be collected, surgical indicator collection will be hardwired into each country's monitoring and evaluation strategy. Going forward, countries that have completed their NSOAPs will serve as international leaders and experts to mentor and guide other countries through the process. To facilitate this process, engagement will be required from strong regional advocates such as the WHO Regional Offices, the African Union and the Southern African Development Community. These regional actors can provide technical support, financing, international advocacy and data collection.

## FINANCE THE CHANGE

Writing and costing an NSOAP is only the first step; a critical mass of the activities need to be funded concurrently or the co-dependent cogs of the system will not turn. The unreliable drip of location- and disease-specific funding will not achieve the goals of strengthening health systems and Universal Health Coverage, which covers emergency and essential surgery and obstetric and anaesthesia care. Innovative ways of blending diverse sources of funding for NSOAPs will be needed. First, countries will need to mobilise domestic funding for NSOAP implementation and for healthcare more broadly, as, for example, was pledged by the African Union in the Abuja Declaration.<sup>17</sup> Estimates have shown that 85% of funding for Universal Health Coverage can be met with domestic resources.<sup>18</sup> However, this financing will need to be augmented by other sources, especially in the initial stages.<sup>19</sup> Much of the financing required for NSOAP implementation is also needed for the majority of other health interventions, including reliable supply chains, water, electricity, blood banks and oxygen to name but a few. By ensuring that NSOAPs are written to complement, coordinate and not duplicate other funded policies and initiatives, the additional price tag associated with the NSOAP will co-fund other programme and development sectors. Finally, as well as looking to external funding, the coordinated expansion of surgery, anaesthesia and obstetrics creates a unique opportunity to create shared value that will expand markets and create health equity concurrently.<sup>20</sup> By creating systems that consistently deliver surgery, anaesthesia and obstetrics, NSOAPs create a consistent market for surgical devices and supplies and therefore a strong business case for industry investment.

No matter what the mechanism, all funders require data. The collection of data, notably the WDIs, will create the data that investors and donors require in order to make a case for investment, calculate the proposed return on investment and measure the real impact that investment is having on population outcomes.

## CONCLUSION

Data create evidence to show that improvement is needed. NSOAPs build the roadmap for the process. Funding allows for the metamorphosis from plan to implementation and, coming full circle, data prove the impact of that investment and monitor progress

towards Universal Health Coverage and realisation of the Sustainable Development Goals. None of this will be possible unless all of the communities involved – anaesthesia, surgery and obstetrics – work in partnership, realising that the ‘elephant in the room’ is social change and health equity.

## REFERENCES

- Farmer PE, Kim JY. Surgery and global health: a view from beyond the OR. *World J Surg* 2008; **32**: 533–6.
- Meara JG, Leather AJM, Hagander L, Alkire BC, Alonso N, Ameh EA et al. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. *Lancet* 2015; **386**: 569–624.
- Debas HT, Donkor P, Gawande A, Jamison DT, Kruk ME, Mock CN (editors). *Essential Surgery. Disease Control Priorities*, 3rd edn. World Bank, Washington, DC; 2015.
- World Health Organization. *Strengthening Emergency and Essential Surgical Care and Anaesthesia as a Component of Universal Health Coverage. Report by the Secretariat. Provisional Agenda Item 5.1*. 16 May 2014. Available at [http://apps.who.int/gb/ebwha/pdf\\_files/EB135/B135\\_3-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/EB135/B135_3-en.pdf) (accessed 23 October 2018).
- Ng-Kamstra J, Raykar N, Meara JG, Shrimpe MG. *Measuring Surgical Systems: A New Paradigm for Health Systems Strengthening*. The Data Blog, 14 June 2016. Available at <http://blogs.worldbank.org/opendata/measuring-surgical-systems-new-paradigm-health-systems-strengthening> (accessed 4 May 2018).
- World Bank. *World Bank Surgical Indicators*. Available at <https://data.worldbank.org/indicator/SH.SGR.PROC.P5?view=chart> (accessed 29 November 2017).
- Kim JY. Opening address to the inaugural ‘The Lancet Commission on Global Surgery’ meeting. World Bank, 17 January 2014. Available at <https://youtu.be/bxhdFM7FL9s> (accessed 24 November 2018).
- Burssa D, Teshome A, Iverson K, Ahearn O, Ashengo T, Barash D et al. Safe surgery for all: early lessons from implementing a national government-driven surgical plan in Ethiopia. *World J Surg* 2017; **41**: 3038–45.
- Mukhopadhyay S, Lin Y, Mwaba P, Kachimba J, Makasa E, Lishimpi K et al. Implementing World Health Assembly Resolution 68.15: national surgical, obstetric, and anesthesia strategic plan development – the Zambian experience. *Bull Am Coll Surg* 2017; **102**: 28–35.
- Albutt K, Citron I, Sonderman K, Nthele M, Bekele A, Maongezi S et al. *National Surgical Obstetric and Anaesthesia Planning: Process and Consensus Recommendations*. Harvard Medical School Center for Global Health Delivery–Dubai, Dubai, United Arab Emirates; 2018.
- The Lancet Commission on Global Surgery. *Data for the Sustainable Development of Surgical Systems: A Global Collaboration*. 2015. Available at [http://media.wix.com/ugd/346076\\_4a3006a16891475ca1a6bd2d19cf4618.pdf](http://media.wix.com/ugd/346076_4a3006a16891475ca1a6bd2d19cf4618.pdf) (accessed 23 October 2018).
- World Health Organization. *Service Availability and Readiness Assessment (SARA). An Annual Monitoring System for Service Delivery Reference Manual*. 2014. Available at [http://www.who.int/healthinfo/systems/sara\\_reference\\_manual/en/](http://www.who.int/healthinfo/systems/sara_reference_manual/en/) (accessed 24 November 2018).
- ICF International. *Survey Organization Manual: Demographic and Health Surveys Methodology*. ICF International, Calverton, MA, USA; 2012. Available at [https://dhsprogram.com/pubs/pdf/DHSM10/DHS6\\_Survey\\_Org\\_Manual\\_7Dec2012\\_DHSM10.pdf](https://dhsprogram.com/pubs/pdf/DHSM10/DHS6_Survey_Org_Manual_7Dec2012_DHSM10.pdf) (accessed 30 November 2018).
- Carroll L, 1832–1898. *L. Alice’s Adventures in Wonderland*, 2nd edn. Broadview Press, Peterborough, ON, Canada; 2011.
- World Bank. *Indicators*. Available at <https://data.worldbank.org/indicator> (accessed 4 May 2018).
- Lin Y, Citron I, Sonderman K, Mukhopadhyay S. *National Surgical, Obstetric and Anaesthesia Planning (NSOAP) Discussion Framework*. Available at [https://docs.wixstatic.com/ugd/d9a674\\_b2f8cb82a09f449b91ad0ee75dd81dbb.pdf](https://docs.wixstatic.com/ugd/d9a674_b2f8cb82a09f449b91ad0ee75dd81dbb.pdf) (accessed 7 May 2018).
- World Health Organization. *The Abuja Declaration: Ten Years On*. Available at [http://www.who.int/healthsystems/publications/abuja\\_report\\_aug\\_2011.pdf](http://www.who.int/healthsystems/publications/abuja_report_aug_2011.pdf) (accessed 24 November 2018).
- Stenberg K, Hanssen O, Edejer TT-T, Bertram M, Brindley C, Meshreky A et al. Financing transformative health systems towards achievement of the health Sustainable Development Goals: a model for projected resource needs in 67 low-income and middle-income countries. *Lancet Glob Health* 2017; **5**: e875–87.
- Global Financing Facility. *Financing Model*. Available at <https://www.globalfinancingfacility.org/financing-model> (accessed 4 May 2018).
- Porter ME, Kramer MR. Creating shared value. *Harv Bus Rev* 2011; **89**: 62–77.