Session III

Workforce, Training & Education for Global Surgery

Lars Hagander | Commission Launch | May 6, 2015 | Boston, USA
The Surgical Workforce

Interdependent Network

- Surgical, Anesthesia, Obstetric providers
- Nurses.
- Trainees, Community Health Workers
- Radiologists, Pathologists
- Technicians, Rehab., Managers
- And Others...

#SAOworkforce
The Current Picture
Correspondence

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in upper-middle-income countries, and 56·9 (32·0–85·3) in high-income countries. There are also significant differences by WHO region (appendix p 17; figure).

The results of this study represent the first truly global compilation of national surgical specialist workforce data and constitute a first step towards routinely collecting surgical workforce data through the WHO Global Surgical Workforce Database. The workforce of fully trained surgeons, anaesthesiologists, and obstetricians is critically inadequate in many parts of the world, and grossly inequitably distributed.

The results of this study must be interpreted carefully. Our database, consisting of official or published country-level data, will need to be validated and expanded. Through emphasising aggregate numbers and by using imputations based on general health-system indicators, we have sought to minimise the role of missing or potentially erroneous data points. More importantly, our data do not fully describe the health workforce that does surgery and anaesthesia, since physicians and other health-care providers who were not licensed as surgeons were excluded from the current study to facilitate international comparisons. Adjunct data regarding the considerable number of associate clinicians who do surgery would add a valuable level of granularity and nuance to the current description of the global surgical workforce. Our results do, however, confirm the global misdistribution of surgical specialists, and indicate that most of the world's surgical patients are either served by non-physicians or non-specialists, or they are not served at all. This also affects the many low-resource countries where surgical task-shifting is used. Defined as the redistribution of responsibilities from highly qualified professionals to those with fewer qualifications, task shifting has been used as a way to increase access to surgical care and reduce surgical costs. However, without trained surgeons, anaesthesiologists, and obstetricians to act as supervisors and educators, such systematised and formally structured task-shifting programmes are challenged.

Also, our results do not capture the actual access to specialist providers, affected by factors such as financial barriers and the urban–rural distribution. National and subnational assessments will need to be undertaken to assess these national specifics. Our data provide a snapshot of the specialist surgeon, anaesthesiologist, and obstetrician workforce today, but say little about the dynamics of that workforce. Continued data collection over time and longitudinal follow-up of the surgical specialist workforce will allow for detection of trends in workforce distribution as well as assessments of strategic workforce investments.

In summary, the surgical specialist workforce is critically inadequate in large parts of the world and grossly inequitably distributed. To tackle the growing global burden of surgical disease, there is an acute need to increase both the number and the distribution of the surgical specialist workforce. Although we encourage validation and expansion of our dataset, we believe that the data presented here can inform further efforts to improve access to surgical care worldwide. At a minimum, our results represent a baseline against which future workforce surveys—and, hopefully, surgical workforce growth—can be measured.

We acknowledge the help of WHO country offices, Ministries of Health, WHO Global Initiative for Emergency & Essential Surgical Care members, and the Workforce, Training and Education Working Group of The Lancet’s Commission on Global Surgery in collecting data for this study. Ties Boerma, Director of the WHO Department of

Figure: Global distribution of surgeons, anaesthesiologists, and obstetricians, per 100 000 population
NA=countries or territories that are not WHO members and thus excluded from our data.
The Surgical Workforce

There are currently:

- 1,1 million specialist surgeons
- 550,000 specialist anesthetists
- 480,000 specialist obstetricians

worldwide
\frac{1}{2} of the global population is served by:

\frac{1}{6} of anesthetists
\frac{1}{5} of surgeons
\frac{1}{4} of obstetricians
33% of the world’s population live in Africa and southeast Asia, where 12% of the specialist surgical workforce works.
12% of all specialist surgeons, anesthetists, and obstetricians in high-income countries are foreign nationals who have graduated from medical schools in LMICs.

68% of these are from countries with an SAO density of below 20 per 100,000 population.
Rural surgical and anaesthesia care is underemphasized in graduate and post-graduate surgical and anaesthetic education contributing to the mal-distribution of surgical and anaesthetic providers worldwide.

Accreditation, licensing, and continuing professional development shown to improve quality of the provision of care, are poorly documented around the world.
With these findings, is it possible to achieve

“This Universal access to safe, affordable surgical and anesthesia care when needed”? How much is enough?
The Way Forward
The global surgery indicators and targets

<table>
<thead>
<tr>
<th>Essential Surgery</th>
<th>Definition</th>
<th>Target</th>
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<tbody>
<tr>
<td>Specialist surgical workforce density</td>
<td>Number of specialist surgical, anaesthetic, and obstetric physicians who are working, per 100,000 population</td>
<td>100% of countries with at least 20 surgical, anaesthetic, and obstetric physicians per 100,000 population by 2030</td>
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<tr>
<td>Surgical volume</td>
<td>Procedures done in an operating theatre, per 100,000 population per year</td>
<td>80% of countries by 2020 and 100% of countries by 2030 tracking surgical volume; a minimum of 5000 procedures per 100,000 population by 2030</td>
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<tr>
<td>Perioperative mortality</td>
<td>All-cause death rate before discharge in patients who have undergone a procedure in an operating theatre, divided by the total number of procedures, presented as a percentage</td>
<td>80% of countries by 2020 and 100% of countries by 2030 tracking perioperative mortality; in 2020, assess global data and set national targets for 2030</td>
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<tr>
<td>Protection against impoverishing expenditure</td>
<td>Proportion of households protected against impoverishment from direct out-of-pocket payments for surgical and anaesthesia care</td>
<td>100% protection against impoverishment from out-of-pocket payments for surgical and anaesthesia care by 2030</td>
</tr>
</tbody>
</table>
Maternal mortality per density
Maternal mortality per density
Procedures per density

**FIGURE 4.** The yearly number of surgical operations per 100,000 population corresponding to the proposed thresholds and compared to the estimated global need. Calculated assuming uniform productivity.
20 / 100 000
44% of the population lives in countries with SAO density < 20 per 100,000

72% of the population lives in countries with SAO density < 40 per 100,000

100% providers needed by 2030 to reach 20 per 100,000

100% providers needed by 2030 to reach 40 per 100,000

1.27 million

2.28 million
Scale-Up of the Surgical Workforce
Task **Sharing**

At least **30** countries employ surgical task shifting

At least **108** countries employ anesthetic task shifting

Task **Sharing**: tasks are transferred from one professional to another to maximize human resources, but both the specialist provider and the provider with less training **share the responsibility** for a high-quality outcome of the task. A collaborative use of specialist providers and GPs and associate clinicians.
Scaling up - with task sharing?

Cost and time savings of 40%
Task Sharing

Each country should decide whether task sharing is appropriate for their needs

Clear scopes of practice should be defined

Associate clinicians and general practitioners should be held to high standards of accreditation, licensing, and relicensing

Associate Clinicians and General Practitioners are not meant to replace specialist providers
Additional means to expand the surgical workforce

- Non-governmental Organizations
- Regional and international Partnerships
- Private sector contracting
- Tele-monitoring and education
Improving Workforce Distribution

Rural exposure
Local training
Rural incentives
Beyond Numbers: Quality of Training

- Competency-based training
- Curriculum based on community need
- Mentoring, information, and simulation
- Accreditation of all training programs
- Licensing and re-licensing for all cadres
- Continuing Professional Development
National surgical plan - workforce

Barriers to Entry

Dual Practice

Retirement
Emigration
Career changes

Push/pull factors
FIGURE 3. The average density of surgeons, anaesthesiologists and obstetricians per World Bank country income group. Calculated based on estimated total number of specialists per group,\textsuperscript{2} divided by population.