## Core Indicators for Monitoring Universal Access to Safe, Affordable Surgical and Anaesthesia Care When Needed

### Group 1: Preparedness for Surgical and Anaesthesia Care

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Definition</th>
<th>Rationale</th>
<th>Data Sources</th>
<th>Responsible Entity</th>
<th>Comments</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to timely essential surgery</td>
<td>Proportion of the population that can access, within 2 hours, a facility that can do caesarean delivery, laparotomy and treatment of open fracture (the Bellwether procedures)</td>
<td>All people should have timely access to emergency surgical services. Bellwether procedure performance predicts accomplishment of many other essential surgical procedures; 2 hours is a threshold of death from complications of childbirth</td>
<td>Facility records and population demographics</td>
<td>Ministry of Health</td>
<td>Informs policy and planning regarding location of services in relation to population density, transport systems and facility service delivery</td>
<td>A minimum of 80% coverage of essential surgical and anaesthesia services per country by 2030</td>
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<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>The availability and accessibility of human resources for health is a crucial component of surgical and anaesthesia care delivery</td>
<td>Facility records, data from training and licensing bodies</td>
<td>Ministry of Health</td>
<td>Informs workforce, training and retention strategies</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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### Group 2: Delivery of Surgical and Anaesthesia Care

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<td>Surgical volume</td>
<td>Procedures done in an operating theatre, per 100 000 population per year</td>
<td>The number of surgical procedures done per year is an indicator of met need</td>
<td>Facility records</td>
<td>Ministry of Health</td>
<td>Informs policy and planning regarding met and unmet need for surgical care</td>
<td>80% of countries by 2020 and 100% of countries by 2030 tracking surgical volume; 5 000 procedures per 100 000 population by 2030</td>
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<tr>
<td>Perioperative mortality rate (POMR)</td>
<td>All-cause death rate prior to discharge among patients who have undergone a procedure in an operating theatre, divided by the total number of procedures, presented as a percentage</td>
<td>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</td>
<td>Facility records and death registries</td>
<td>Ministry of Health</td>
<td>Informs policy and planning regarding surgical and anaesthesia safety, as well as surgical volume when number of procedures is the denominator</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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### Group 3: Impact of Surgical and Anaesthesia Care

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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>Billions of people each year are at risk of financial ruin from accessing surgical services; this is a surgery-specific version of a World Bank universal health coverage target</td>
<td>Household surveys, facility records</td>
<td>World Bank, WHO, USAID</td>
<td>Informs policy about payment systems, insurance coverage, and balance of public and private services</td>
<td>100% protection against impoverishment from out-of-pocket payments for surgical and anaesthesia care by 2030</td>
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<tr>
<td>Protection against catastrophic expenditure†</td>
<td>Proportion of households protected against catastrophic expenditure from direct out-of-pocket payments for surgical and anaesthesia care</td>
<td>Billions of people each year are at risk of financial ruin from accessing surgical services; this is a surgery-specific version of a World Bank universal health coverage target</td>
<td>Household surveys, facility records</td>
<td>World Bank, WHO, USAID</td>
<td>Informs policy about payment systems, insurance coverage, and balance of public and private services</td>
<td>100% protection against catastrophic expenditure from out-of-pocket payments for surgical and anaesthesia care by 2030</td>
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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 risk protection for universal health coverage. 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. USAID=US Agency for International Development. Equity stratifiers are listed in report’s discussion. *Impoveryishing 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.
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<th>Recommendations</th>
<th>Assessment Methods</th>
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| Surgical facilities | - Track number and distribution of surgical facilities  
- Negotiate centralised framework purchase agreements with decentralised ordering  
- Equip first-level surgical facilities to be able to perform laparotomy, caesarean delivery and treatment of open fracture (the Bellwether Procedures)  
- Develop national blood plan  
- Reduce barriers to access through enhanced connectivity across entire care delivery chain from community to tertiary care  
- Establish referral systems with community integration, transfer criteria, referral logistics, protections for first-responders and helpful members of the public | - Proportion of population with 2 hour access to first-level facility  
- WHO Hospital Assessment Tool (eg, assessment of structure, electricity, water, oxygen, surgical equipment and supplies, computers and internet)  
- Proportion of hospitals fulfilling safe surgery criteria  
- Blood bank distribution, donation rate |
| Workforce | Recommendations | Assessment Methods |
| Surgical, anaesthetic, and obstetric providers  
Allied health providers (nursing; operational managers; biomedical engineers; radiology, pathology and laboratory technician officers) | - Establish training and education strategy based on population and needs of country  
- Require rural component of surgical and anaesthetic training programmes  
- Develop a context-appropriate licensing and credentialing requirement for all surgical workforce  
- Training and education strategy of ancillary staff based on population and needs of country  
- Invest in professional health care manager training  
- Establish biomedical equipment training programme | - Density and distribution of specialist surgical, anaesthetic, and obstetric providers  
- Number of surgical, anaesthetic and obstetric graduates and retirees  
- Proportion of surgical workforce training programmes accredited  
- Presence of task sharing or nursing accredited programs and number of providers  
- Presence of attraction and retention strategies  
- Density and distribution of nurses, ancillary staff including operational managers, biomedical engineers, and radiology, pathology and laboratory technicians |
| Service Delivery | Recommendations | Assessment Methods |
| Surgical volume  
System coordination  
Quality and safety | - All first-level hospitals should provide laparotomy, caesarean delivery and treatment of open fracture (the Bellwether Procedures)  
- Integrate public, private, NGO providers into common national delivery framework; promote demand-driven partnerships with NGOs to build surgical capacity  
- Prioritise healthcare management training  
- Prioritise quality improvement processes and outcomes monitoring  
- Promote telemedicine to build system-wide connectivity  
- Promote system-wide connectivity for telemedicine applications, clinical support and education | - Proportion of surgical facilities offering the Bellwether Procedures  
- Number of surgical procedures done per year  
- Surgical and anaesthetic related morbidity and mortality (perioperative)  
- Availability of system-wide communication |
| Financing | Recommendations | Assessment Methods |
| Health financing and accounting  
Budget allocation | - Cover basic surgical packages within universal health coverage  
- Risk pool with a single pool; minimise user fees at the point of care  
- Track financial flows for surgery through national health accounts  
- Use value-based purchasing with risk-pooled funds | - Surgical expenditure as a proportion of gross domestic product  
- Surgical expenditure as a proportion of total national health-care budget  
- Out-of-pocket expenditures on surgery  
- Catastrophic and impoverishing expenditures on surgery |
| Information Management | Recommendations | Assessment Methods |
| Information systems  
Research agenda | - Develop robust information systems to monitor clinical processes, cost, outcomes and identify deficits  
- Identify, regulate, and fund surgical research priorities of local relevance | - Presence of data systems that promote monitoring and accountability related to surgical and anaesthesia care  
- Proportion of hospital facilities with high speed internet connections |