**Appendices**

The Lancet Commission on Global Surgery (LCoGS) indicators (Table 1).

|  |  |  |
| --- | --- | --- |
| Indicator | Definition | Target |
| Group 1: Preparedness for surgery and anaesthesia care | | |
| 1. Access to timely essential surgery | 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) | A minimum of 80% coverage of essential surgical and anaesthesia services per country by 2030 |
| 2. Specialist surgical workforce density  (WDI indicator [SH.MED.SAOP.P5](https://data.worldbank.org/indicator/SH.MED.SAOP.P5)) | Number of specialist surgical, anaesthetic, and obstetric physicians who are working, per 100 000 population | 100% of countries with at least 20 surgical, anaesthetic and obstetric physicians per 100 000 population by 2030 |
| Group 2: delivery of surgical and anaesthesia care | | |
| 3. Surgical volume  (WDI Indicator [SH.SGR.PROC.P5](https://data.worldbank.org/indicator/SH.SGR.PROC.P5)) | Surgical proceduresa done in an operating theatre, per 100 000 population per year | 80% of countries by 2020 and 100% of countries by 2030 tracking surgical volume; a minimum of 5000 surgical surgical procedures per 100 000 population by 2030 |
| 4.Perioperative mortality | All-cause death rate before discharge in patients who have undergone a surgical procedurea in an operating theatre, divided by the total number of surgical procedures, presented as a percentage | 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 |
| Group 3: Effect of Surgery and Anaesthesia | | |
| 5. Protection against impoverishing expenditure (WDI Indicator [SH.SGR.IRSK.ZS](https://data.worldbank.org/indicator/SH.SGR.IRSK.ZS)) | Proportion of households protected against impoverishmentb from direct out-of-pocket payments for surgical and anaesthesia care | 100% protection against impoverishment from out-of-pocket payments for surgical and anaesthesia care by 2030 |
| 6. Protection against catastrophic expenditure (WDI Indicator [SH.SGR.CRSK.ZS](https://data.worldbank.org/indicator/SH.SGR.CRSK.ZS)) | Proportion of households protected against catastrophic expenditurec from direct out-of-pocket payments for surgical and anaesthesia care | 100% protection against catastrophic expenditure from out-of-pocket payments for surgical and anaesthesia care by 2030 |
| a A surgical procedure is defined as the incision, excision, or manipulation of tissue that needs regional or general anaesthesia, or profound sedation to control pain. This may include inpatient, outpatient, and ambulatory procedures.  b using a threshold of $1.25 PPP/day  c 10 percent of total income | | |

Table 1: Existing Global Surgery Indicators as Proposed in the Lancet Commission on Global Surgery 2030. (1)

**Attendees and methods**

Invited attendees included academics or clinicians working in the field of Global Surgery, Obstetric, or Anaesthesia care; policy makers; and data scientists.

Methods were in accordance with Utstein methodology on reporting guidelines,(2-5) and other guidelines for developing reporting criteria.(6) Utstein-style conferences use an established consensus process to consolidate definitions and reporting criteria to improve comparability of outcomes reported in studies, databases, demographic surveys, and administrative reports.

Atendees were assigned to one of 6 working groups based on attendee’s knowledge and expertise. Each working group related to one indicator; Access, Volume, Workforce, POMR, and Catastrophic and Impoverishing expenditure discussed by the same group. Each group was assigned a lead and a deputy.

The in-person meeting took place at the Utstein Abbey, Mosteroy Island, Norway on June 16-18, 2019. Each group lead presented an outline of the current definition of the indicator(1) and issues found in its availability, comparability, and utility.(7) After which, the groups were asked to develop a clear overall definition for each indicator (if this differed from previous) and consider the overarching data-points needed to derive it.

Each indicator working group was initially divided in half to address the indicator independently, and then re-convened as a complete group to compare notes and recommendations. After which each working group presented their suggestions to the full Utstein Global Surgery Indicators Group for a plenary session to build consensus across all attendees. Thus, all participants contributed to the discussions on each of the indicators. The working group lead and deputy for each indicator recorded the outcome of the plenary discussions.

**Results**

The agreed intention of the attendees is that these indicators are collected by national statistical authorities and – at least the *Basic* set - are compiled for comparison, internationally. WHO currently collates international data on surgical workforce, and we advocate this for all of the remaining indicators. However, our purpose at this meeting was to agree what should be collected, rather than who should collect it.

38 participants in total attended the meeting.

Fields of work and countries that attendees were recruited from are shown in Table 3. Table 4 shows the attendee list and their roles within the meeting

|  |  |
| --- | --- |
| **Table 3. Attendee’s field of work and country of origin** | |
| Role | Number |
| Surgery | 14 |
| Anaesthesia | 12 |
| Demography, Statistics, and Policy (WHO, UNFPA, World Bank, USAID Demographic and Health Surveys, UN Statistical Commission) | 5 |
| Obstetrics | 3 |
| Global Health Expert | 3 |
| Doctor | 1 |
|  | |
| **Country of residence of attendees** | |
| Country | Number |
| Australia | 1 |
| Canada | 1 |
| Denmark | 1 |
| Ethiopia | 1 |
| Germany | 1 |
| Honduras | 1 |
| Netherlands | 1 |
| Nigeria | 1 |
| Norway | 6 |
| South Africa | 2 |
| Sweden | 3 |
| UK | 3 |
| USA | 15 |
| Zambia | 1 |

|  |
| --- |
| **Table 4: Utstein Global Surgery Indicators Group, attendee list and roles** |
| Tom Weiser |
| Justine Davies |
| Hampus Holmer |
| Julian Gore-Booth |
| David Watters |
| John Meara |
| Janet Martin |
| Bruce Biccard |
| Emmanuel Makasa |
| Mark Shrime |
| Adrian Gelb |
| Andy Leather |
| Carolina Haylock-Loor |
| Christina Åkerman |
| David Ljungman |
| Doris Ostergaard |
| Emi Suzuki |
| Emmanuel Ameh |
| Geir Sverre Braut |
| Gerry Visser |
| Jannicke Mellin-Olsen |
| John Varallo |
| José Miguel Guzman |
| Kathryn Chu |
| Lars Hagander |
| Lauri Romanzi |
| Margit Steinholt |
| Mark Newton |
| Michael Lipnick |
| Miliard Derbew |
| Nick Kassebaum |
| Sabrina Juran |
| Teri Reynolds |
| Tore Laerdal |
| Walter Johnson |
| Hege Ersdal |
| Kjetil Soereide |
| Vatshalan Santhirapala |

Tables 1-5 show *Basic*, *Intermediate*, and *Full* sets of data points for each indicator as well as current data sources.

**Next steps**

Next steps will be the development of a manual to inform and enable data collection at facility or national level and a strategy for strengthening data collection at the national level.

**Appendix references**

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2. Idris AH, Berg RA, Bierens J, Bossaert L, Branche CM, Gabrielli A, et al. Recommended guidelines for uniform reporting of data from drowning: the "Utstein style". Circulation. 2003;108(20):2565-74.

3. Idris AH, Bierens J, Perkins GD, Wenzel V, Nadkarni V, Morley P, et al. 2015 Revised Utstein-Style Recommended Guidelines for Uniform Reporting of Data From Drowning-Related Resuscitation: An ILCOR Advisory Statement. Circ Cardiovasc Qual Outcomes. 2017;10(7).

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5. Peberdy MA, Cretikos M, Abella BS, DeVita M, Goldhill D, Kloeck W, et al. Recommended guidelines for monitoring, reporting, and conducting research on medical emergency team, outreach, and rapid response systems: an Utstein-style scientific statement: a scientific statement from the International Liaison Committee on Resuscitation (American Heart Association, Australian Resuscitation Council, European Resuscitation Council, Heart and Stroke Foundation of Canada, InterAmerican Heart Foundation, Resuscitation Council of Southern Africa, and the New Zealand Resuscitation Council); the American Heart Association Emergency Cardiovascular Care Committee; the Council on Cardiopulmonary, Perioperative, and Critical Care; and the Interdisciplinary Working Group on Quality of Care and Outcomes Research. Circulation. 2007;116(21):2481-500.

6. Moher D, Schulz KF, Simera I, Altman DG. Guidance for developers of health research reporting guidelines. PLoS Med. 2010;7(2):e1000217.

7. Holmer H, Bekele A, Hagander L, Harrison EM, Kamali P, Ng-Kamstra JS, et al. Evaluating the collection, comparability and findings of six global surgery indicators. Br J Surg. 2019;106(2):e138-e50.

|  |  |  |  |
| --- | --- | --- | --- |
| **Indicator 1: Geographic Access** | | | |
| **LCoGS indicator name** | 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) | | |
| **Utstein revised name** | **Proportion of a country’s population with geographic access (within 2 hours) to a facility capable of providing surgical and anaesthesia care for the Bellwether procedures (caesarean section, laparotomy, and surgical management of an open long bone fracture)** | | |
| **Overall summary of data elements** | * **Population estimates** * **Facility locations** * **Capacity of health facilities to do Bellwether procedures** * **Distance and travel time of population to facilities** | | |
|  | **Basic** | **Intermediate** | **Full** |
| **Data points needed to construct the indicator** | Population  - Population data or modelled estimates at resolution of 1x1km (by 5 year age groupings and sex, if available)  Facility location/capability  - Location of health facilities offering Bellwether procedures  Distance/travel time\*  - Estimated time to travel to facilities from population locations | Population  - Population data or modelled estimates by 5 year age groupings and sex at resolution of 1x1km  Facility location  - Location of all health facilities  Surgical capability  - Health facility capacity to perform LCoGS Bellwethers based on facility reports, preferably validated by site assessment. Facilities to be classed as capable if doing at least one of each Bellwether procedure in the last month.  Distance/travel time\*  - Estimated time to travel to facilities from population locations  Facility type  - Public or private  - Primary, secondary, or tertiary | Population  - Population data or modelled estimates by 5 year age groupings and sex at resolution of 1x1km  Facility location  - Location of all health facilities  Surgical capability  - Health facility capacity to perform LCoGS Bellwethers based on facility reports validated by site assessment. Facilities to be classed as capable if doing at least one of each LCoGS Bellwether procedure in the last month  - Number and type of each surgical procedure (with harmonised surgical procedure code) done  Facility type  - Public or private  - Primary, secondary, or tertiary  Distance/travel time  - Verified user-generated travel time and source of transport \*\*\*\*  Realised access  - Household data regarding need for and access of surgical services \*\*\*\*\* |
| **Currently available data sources/reporting tools** | Population data:  - Country population census data: <https://international.ipums.org/international/>  <https://data.worldbank.org/indicator/sp.pop.totl>  - WorldPop: [www.worldpop.org.uk/data/methods/](http://www.worldpop.org.uk/data/methods/)  Health facility data:  - Local country data on facility location and services  - National/regional/global geo-referenced datasets (e.g. (20))  Estimated travel time\*:  - Known road networks e.g: - The Humanitarian Data Exchange [https://data.humdata.org](https://data.humdata.org/search?q=road+network)  - Software e.g from OpenStreetMap (OSM), 2018: [www.openstreetmap.org](http://www.openstreetmap.org) | Population data:  - Country population census data : <https://international.ipums.org/international/>  <https://data.worldbank.org/indicator/sp.pop.totl>  - WorldPop: [www.worldpop.org.uk/data/methods/](http://www.worldpop.org.uk/data/methods/)  Health facility data and capability data:  - Local country data on facility location and services  - National/regional/global geo-referenced datasets (e.g. (20))  Note: UNFPA supports countries geo-referencing all structures, including health facilities within their support to the 2020 census round  - Provider log books, operating theatre registries, and medical records\*\*  Travel time:\*  - Known road networks and local survey where available, e.g: - The Humanitarian Data Exchange [https://data.humdata.org](https://data.humdata.org/search?q=road+network) or Open Street Map, 2018: [www.openstreetmap.org](http://www.openstreetmap.org) | Population data:  - Country population census data : <https://international.ipums.org/international/>  <https://data.worldbank.org/indicator/sp.pop.totl>  - WorldPop: [www.worldpop.org.uk/data/methods/](http://www.worldpop.org.uk/data/methods/)  Health facility and capability data:  - Local country data on facility location, type (primary, secondary, or tertiary),\*\*\*\*\*\* and services  - National/regional/global geo-referenced datasets (e.g. (20))  Note: UNFPA supports countries geo-referencing all structures, including health facilities within their support to the 2020 census round  - Provider log books, operating theatre registries, and medical records \*\*\*  Travel time\*:  - Known road networks and local survey where available, e.g: - The Humanitarian Data Exchange [https://data.humdata.org](https://data.humdata.org/search?q=road+network)  or Open Street Map, 2018: [www.openstreetmap.org](http://www.openstreetmap.org) |

\* Note, for comparability, travel time means ideal time to travel between a location and a facility, not experienced travel time from recognition of the need for surgery to arriving at a facility, which may incorporate delays in seeking care or delays in obtaining transport.

For comparability across countries we also recommend that OSM is used, accepting that reliability of results from OSM may differ by country (results may be more reliable in countries where transport time is less affected by weather, for examples). However, for national use, verified travel times are likely to be preferable.

\*\* Data on surgical procedures are widely captured in paper form even in the most low-resource settings; these data are not widely available electronically, nor based on standardised surgical procedure codes, and hence not considered readily available or therefore comparable or utilisable in the early timeframes.

To be useable, these need to be electronically maintained and standards for reporting (including surgical procedure codes) harmonised using agreed standard surgical procedure codes. We envision that will occur in the Full data set (>5 year timeframe), with regular reporting to MoH

\*\*\*\* Verified actual travel times collected by local survey are not currently widely collected outside of the research setting; these could be collected as part of census data

\*\*\*\*\* Data for realised access is not yet available outside of research studies. It could be possible to capture this via population census data e.g. on experienced travel times, modes of transport, and need for and access of surgery care. Need for surgery care will likely be self-reported (“have you been told that you needed an operation”), given logistical difficulties in verifying surgical need

\*\*\*\*\*\* Data on facility type are not widely available, do exist in some countries, for others, this variable can be introduced to current collection tools

**Indicator 2: Workforce**

|  |  |  |  |
| --- | --- | --- | --- |
| **LCoGS indicator name** | Number of specialist surgical, anaesthetic, and obstetric physicians who are working per 100 000 population. | | |
| **Utstein revised name** | **Number of each of surgery, anaesthesia, or obstetric providers who are actively practicing, per 100 000 population** | | |
| **Overall summary of data elements** | * **Provider\* numbers as:** * Number of *nationally certified\*\* specialist-physician\*\*\* practitioners* of surgery, anaesthesia, or obstetrics care, excluding trainees * Number of *nationally* c*ertified non-specialist physician practitioners* of surgery, anaesthesia, or obstetric care, excluding trainees * Number of *nationally certified non-physician practitioners* of surgery, anaesthesia, or obstetric care, excluding trainees * Number of *other practitioners (“other practitioners”)* of surgery, anaesthesia, or obstetric care who do not fit into aforementioned categories (includes trainees, nurses, and non-certified non-physician providers) * **Total country population** | | |
|  | **Basic** | **Intermediate** | **Full** |
| **Data points needed to construct the indicator** | Providers  - Total number of nationally certified specialist physician or non-specialist physician practitioners of surgical, anaesthesia, or obstetric care  Disaggregated by  specialist physician or non-specialist physician practitioners  Population  - Total country population | Providers  - Total number of nationally certified specialist physician, non-specialist physician, or non-physician practitioners, or “other practitioners” of surgical, anaesthesia, or obstetric care  Disaggregated by:  -Certified providers, disaggregate by:  specialist physician, non-specialist physician practitioners, or non-physician providers  - Other practitioners, disaggregate by type  - Geographical location of practitioners practice (at least for the macroscopic level of rural or urban)  - Employment in public or private practice  - In a defined level of facility (tertiary, secondary, primary care)  Population  - Geographical location of population within the country (at least for the macroscopic level of rural or urban)\*\*\*\*\* | Providers  - Total number of nationally certified specialist physician, non-specialist physician, or non-physician practitioners, or “other practitioners” of surgical, anaesthesia, or obstetric care  Disaggregated by:  -Certified providers, disaggregate by:  specialist physician, non-specialist physician practitioners, or non-physician providers  - Other practitioners, disaggregate by type  - Geographical location of practitioners practice (at least for the macroscopic level of rural or urban)  - Employment in public or private practice  - In a defined level of facility (tertiary, secondary, primary care)  - Age of providers  - Sub-specialisation of providers  Population  Geographical location of population within the country (at least for the macroscopic level of rural or urban)\*\*\*\*\* |
| **Currently available data sources/reporting tools** | Provider data:\*\*\*\*  *National:*  - Ministry of Health  - National Health Workforce Licensing Authority  - National or regional professional association or colleges  - National Statistical Agency  - National Workforce Accounts Surveys  *International****:***   * - OECD * - Eurostat and WHO EURO databases * - WHO Global Health Observatory * - World Bank World Development Indicators * - Professional association databases   Population data:   * - Country census data * - WorldPop: [www.worldpop.org.uk/data/methods/](http://www.worldpop.org.uk/data/methods/) | Provider data\*\*\*\*\*\*  *National:*  - Ministry of Health  - National Health Workforce Licensing Authority  - National or regional professional association or colleges  - National Statistical Agency  - National Workforce Accounts Surveys  *International****:***   * - OECD * - Eurostat and WHO EURO databases * - WHO Global Health Observatory * - World Bank World Development Indicators * - Professional association databases   Population data:   * - Country census data * - WorldPop: [www.worldpop.org.uk/data/methods/](http://www.worldpop.org.uk/data/methods/) | Provider data\*\*\*\*\*\*  *National:*   * - Ministry of Health * - National Health Workforce Licensing Authority * - National or regional professional association or colleges * - National Statistical Agency * - National Workforce Accounts Surveys   *International****:***   * - OECD * - Eurostat and WHO EURO databases * - WHO Global Health Observatory * - World Bank World Development Indicators * - Professional association databases   Population data:   * - Country census data * - WorldPop: [www.worldpop.org.uk/data/methods/](http://www.worldpop.org.uk/data/methods/) |

\* We have not provided a definition of what a surgery, anaesthetic, or obstetric provider is ; we agreed these should be defined by each country, although recognise that the definitions are likely to vary locally. Providers are persons directly involved in delivering the surgical, obstetric, or anaesthetic care; i.e. the person doing the operation or giving the anaesthetic.

\*\* Certified means completion of a government and/or professionally approved advanced education program that leads to a nationally recognised qualification to provide surgery, anaesthesia, or obstetric care.

\*\*\* Specialist physicians are providers who have obtained a medical degree (physician) and undergone specialty post-graduate training (certification)

\*\*\*\* The terminology used to describe providers is not currently consistent across data sources, we estimate standardisation will be possible after the 2 year timeframe for the Intermediate and Full data set.

\*\*\*\*\*Geographical location of providers and population will enable assessment of whether the distribution of the population is matched by that of the providers

\*\*\*\*\*\* The data sources available are not consistently granular enough to allow the above provider-type disaggregated variables to be captured. However, could readily be Intermediate to include more granular variables

**Volume (Indicator 3)**

|  |  |  |  |
| --- | --- | --- | --- |
| **LCoGS indicator name** | Number of Procedures done in an operating theatre, per 100 000 population per year | | |
| **Utstein revised name** | Number of surgicalprocedures done in an operating theatre using any form of anaesthesia\*, per 100,000 population per year | | |
| **Overall summary of data elements** | * **Number of surgical procedures done in an operating theatre, using any anaesthesia, per year** * **Total country population** | | |
|  | **Basic** | **Intermediate** | **Full** |
| **Data points needed to construct the indicator** | Surgical procedures  - Total number of surgical procedures done in an operating theatre using any form of anaesthesia\* per year  Population  - Total country population | Surgical procedures  - Total number of surgical procedures done in an operating theatre using any form of anaesthesia\* per year  Disaggregated by:  - Rural or urban location  - Age and sex of patient  - Type of surgical procedure  - ASA class  - Whether operation was emergency/elective  - Facility type (Public or private, or primary, secondary, or tertiary)  Population  - Total country population  - Population living in the catchment area\*\*\* of each identified hospital | Surgical procedures  - Total number of surgical procedures done in an operating theatre using any form of anaesthesia\* per year  Disaggregated by:  - Rural or urban location  -Age and sex of patient  - Facility type (Public or private, or primary, secondary, or tertiary)  - Type of surgical procedure and surgical procedure code\*\*  - ASA class  - Whether operation was emergency/elective  - Facility type (Public or private, or primary, secondary, or tertiary)  - Diagnosis  - Number of reoperations  - Level of certification of practitioner providing the surgical, anaesthetic or obstetric care (see workforce)  Population  - Total country population  - Population living in the catchment area\*\*\* of each identified hospital |
| **Currently available data sources/reporting tools** | Surgical procedures\*\*  - Provider log books, operating theatre registries, and medical records    Population data:  - Country census data  - WorldPop: [www.worldpop.org.uk/data/methods/](http://www.worldpop.org.uk/data/methods/) | Surgical procedures\*\*  - Provider log books, operating theatre registries, and medical records (including age and sex of patient and diagnosis\*\*\*\*)  - Urban or rural location  From database of facilities  Population data:  - Country census data  - WorldPop: [www.worldpop.org.uk/data/methods/](http://www.worldpop.org.uk/data/methods/) | Surgical procedures\*\*  - Provider log books, operating theatre registries, and medical records (including age and sex of patient, type of surgical procedure and surgical procedure code\*\*, diagnosis\*\*\*\*, emergency/elective surgical procedure, requirement for reoperation, and level of certification of provider (see workforce)\*\*\*\*\*  - Urban or rural location  From database of facilities  Population data:  - Country census data  - WorldPop: [www.worldpop.org.uk/data/methods/](http://www.worldpop.org.uk/data/methods/) |

\* This recognises that at current time, definitions of procedures that constitute surgery differ among countries and data sources. We have therefore agreed upon a broad definition for surgical procedures (without defining a list).

This definition includes incision, excision, or manipulation of tissue using anaesthesia in an operating theatre, including day-cases but excluding surgical procedures in other locations i.e. outside of the operating room

Definition of anaesthesia is regional or general anaesthesia, or profound sedation to control pain during the procedure

If surgical procedures are coded (for example, using ICD), any number of surgical codes used during a single anaesthetic is counted as one case.

\*\* Data on surgical procedures are widely captured in paper form even in most low resource settings; these data are not widely available electronically. To be useable, these need to be electronically maintained and harmonised for reporting by using standard surgical procedure codes. We envision that will occur for the Full data set ( >5 year timeframe), with regular reporting to MoH

For caesarean sections, the total number of vaginal and caesarean deliveries, at the country level for the <2 year time frame, and in the population living in the catchment area of a facility (see below for definition of catchment area) in the Intermediate and Full data sets is needed to enable calculation of a caesarean section rate (denominator being number of deliveries)

\*\*\* *Catchment area* refers to the population who would normally attend the facility in question. This should be locally defined

\*\*\*\* Diagnosis is often captured, but we recommend using a standardised, harmonised system, for example, ICD 11

\*\*\*\*\* Data on whether emergency/elective surgical procedure, requirement for reoperation, and level of certification of provider providing care are not consistently collected in log books currently. However, existing tools (logbooks, records, and operating theatre registries) can be readily adjusred to capture this information

**POMR (indicator 4)**

|  |  |  |  |
| --- | --- | --- | --- |
| **LCoGS indicator name** | All-cause death rate before discharge in patients who have undergone a surgical procedure in an operating theatre using any form of anaesthesia, divided by the total number of surgical procedures, presented as a percentage, per year | | |
| **Utstein revised name** | **Deaths from all-causes, before discharge (up to 30 days), in all patients who have received any anaesthesia for a surgical procedure done in an operating theatre\*, divided by the total number of procedures, per year, expressed as a percentage.** | | |
| **Overall summary of data elements** | * **Number of patients undergoing a surgical procedure using any form of anaesthesia who died before hospital discharge, per year** * **Number of surgical procedures done in an operating theatre, using any anaesthesia, per year (from Indicator 3, Volume)** | | |
|  | **Basic** | **Intermediate** | **Full** |
| **Data points needed to construct the indicator** | Deaths  - Number of deaths in all patients who received any anaesthesia for a surgical, or obstetric procedure,\* per year  Surgical procedures   * - number of surgical procedures done using any anaesthesia per year   Time point:   * - Deaths before discharge | Deaths  - Number of deaths in all patients who received any anaesthesia for a surgical, or obstetric procedure,\* per year  Surgical procedures   * - Total number of surgical procedures done using any anaesthesia per year   Time point:   * - Deaths before discharge   Disaggregated by:  - Rural or urban location  - Age and sex of patient  - Type of surgical procedure  - ASA class  - Whether operation was emergency/elective  - Facility type (Public or private, or primary, secondary, or tertiary) | Deaths  - Number of deaths in all patients who received any anaesthesia for a surgical or obstetric procedure,\* per year  Surgical procedures   * - Total number of surgical procedures done using any anaesthesia per year   Time point:   * - Deaths before discharge * - Deaths within 30 days after the procedure date   Disaggregated by:  -Rural or urban location  -Age and sex of patient  - Facility type (Public or private, or primary, secondary, or tertiary)  - Type of procedure and procedure code\*\*  - ASA class  - Whether operation was emergency/elective  - Facility type (Public or private, or primary, secondary, or tertiary)  - Diagnosis  - Number of reoperations  - Level of certification of practitioner providing the surgical, anaesthetic or obstetric care (see workforce) |
| **Currently available data sources/reporting tools** | Procedures & Deaths\*\*  Provider log books, OR registries, and medical records | Procedures & Deaths  Provider log books, OR registries, and medical records (including age and sex of the patient, type of procedure\*\*, and diagnosis\*\*\*)  - Urban or rural location  From database of facilities | Procedures & Deaths  Provider log books, OR registries, and medical records (including age and sex of the patient, type of procedure and procedure code\*\*, diagnosis\*\*\*, emergency/elective procedure, requirement for reoperation level of certification of practitioner providing the surgical, anaesthetic, or obstetric care (see workforce)\*\*\*\*  - Urban or rural location  From database of facilities  Include Deaths 30 days after the procedures\*\*\*\*\*  Distance of patients’ residence from the facility\*\*\*\*\*\* |

\* This recognises that at current time, definitions of procedures that constitute surgery differ between countries and data sources. We have therefore agreed upon a broad definition of procedures for the Basic data set (<2 year time frame), without defining a list.

This definition includes incision, excision, or manipulation of tissue done using anaesthesia in an operating theatre. This includes day-cases, but excludes procedures in other locations i.e. outside of the operating theatre

Definition of anaesthesia is regional or general anaesthesia, or profound sedation to control pain

Number of surgical codes in a single anaesthesia procedure counted as one case.

If only a subset of procedures is feasible for this indicator, then the type of procedures included should be transparently reported.

**\*\*** Data on procedures are widely captured in paper form even in the most under-resourced settings; these data are not widely available electronically. To be useable, these need to be electronically maintained and standards for reporting (including procedure codes) harmonised using agreed standard procedure codes. We envision that will occur in the Full data set (>5 year timeframe), with regular reporting to MoH

\*\*\* Diagnosis is often captured, but we recommend using a standardised, harmonised system, for example, ICD 11

\*\*\*\* Data on whether emergency/elective procedure, requirement for reoperation, and level of certification of provider providing care are not consistently collected. However, existing tools (logbooks, records, and OR registries), can be adjusted to capture this information

\*\*\*\*\* For 30-day follow-up, where this is not routinely reported, discrete studies including periodic prospective sampling may be necessary to collect representative data that could be modelled to project country-wide data

\*\*\*\*\*\* knowledge of distance of patients’ residence to facility has utility in determining whether there was a potential delay in accessing surgery that contributed to the individual’s death. This is not currently collected or available, but could feasibly be calculated from patient’s addresses on medical records

**Financial Risk Protection ( Indicator 5)**

|  |  |  |  |
| --- | --- | --- | --- |
| **LCoGS indicator name** | Financial Risk Protection: “Risk of Catastrophic Expenditure from Surgical Care” | | |
| **Utstein revised name** | **Percentage of the population at risk of catastrophic expenditure *if* they were to require surgical care\*** | | |
| **Overall summary of data elements** | * ***Out of pocket expenditure (OOP)\*\****   OOP is the *direct medical* costs incurred from receiving surgical care from time of admission to a facility capable of providing surgical and anaesthesia care to the time of discharge.   * **Household expenditure**   Total household expenditure (Y) is defined as “the sum of the monetary values of all items (goods and services) consumed by the household” over 12 months.   * **Catastrophic expenditure threshold**   The catastrophic expenditure threshold should be set at 10% of total household expenditure.\*\*\*  ***If (OOP/Y)x100 >10, catastrophic expenditure has occurred*** | | |
| **Time frame and importance** | **Basic** | **Intermediate** | **Full** |
| **Data points needed to construct the indicator** | OOP expenditure for access to surgical care   * Nationally-representative survey of direct OOP expenditure   Household expenditure   * National total household expenditure | OOP expenditure for access to surgical care   * Nationally-representative survey of direct OOP expenditure   Household expenditure   * National total household expenditure | OOP expenditure for access to surgical care  Nationally-representative survey of direct OOP expenditure   * disaggregated by procedure * Individual-level OOP   Additionally:   * Total health expenditure (THE) for the care episode including pre-hospital direct medical costs, direct non-medical costs (lodging, food, transport) and indirect costs (loss of earnings, loss of crops) * - Funding for healthcare (health insurance contributions)   Household expenditure   * National total household expenditure * District level total household expenditure |
| **Currently available data sources/reporting tools** | OOP expenditure for access to surgical care   * There are currently no organisations routinely collecting these data and no plans for their incorporation into ongoing surveys in the next <2 year timeframe   Household expenditure   * National statistical offices Living Standards Measurement Study (LSMS), International Labour Organisation (ILO), Organisation for Economic Cooperation and Development (OECD) | OOP expenditure for access to surgical care   * There are currently no organisations routinely collecting these data\*\*\*\*   Household expenditure   * National statistical offices LSMS, ILO, OECD | OOP expenditure for access to surgical care   * There are currently no organisations routinely collecting these data on OOP costs\*\*\*\*   Health insurance contributions\*\*\*\*\*  Household expenditure  National statistical offices LSMS, ILO, OECD |

\* Catastrophic expenditure is usually calculated at the individual level (with data collected on OOP and household expenditure for each individual undergoing a medical admission episode). However, many people do not access surgery care because of fear of catastrophic expenditure. This indicator thus uses individual OOP expenditure in combination with national average level household expenditure to estimate the proportion of people who would suffer catastrophic expenditure *if* they were to need surgery

\*\* Direct OOP costs, in reality, could include pre hospital direct medical costs. However, they are not included here as they are small relative to the hospitalisation episode and patients may not recall these as readily as hospitalisation costs.

OOP should not be derived from hospital billing alone as this will substantially under-estimate OOP

This does not include direct non-medical costs (lodging, food, transport to and from facility). This does not include indirect costs (e.g.: loss of earnings)

**\*\*\*** we note as per SDG Target 3.8.2 there are two recognised thresholds, >10% and > 25%, however, we have chosen 10%

\*\*\*\* Some small studies in a few facilities have been done using exit surveys (patients interviewed on discharge). It could be possible to expand these to collect nationally representative samples, or add questions in to DHS

\*\*\*\*\* Health insurance databases are generally available in countries with health insurance policies, however, few LMICs have these to cover the entire population