

Template for Requests for Revisions to the DHS Model Questionnaires, Optional Modules, and Biomarkers for DHS-8 (2018-2023)

Section I. Information about the requesting party

1. Is this request being submitted on behalf of a group? If so, please provide the name of the group and the participating parties.

This submission is co-led by Harvard Medical School's Program in Global Surgery and Social Change, Lund University WHO Collaborating Center for Surgery and Public Health, and the German Global Surgery Association. The proposal is further supported by a number of international collaborators (please see Appendix A for full collaborating list).

Section II. Indicator definition and rationale

2. Please define the indicator or indicators you are requesting The DHS Program to incorporate. *Multiple indicators derived from a single set of questions should be included in the same submission.* (Response required)

Primary indicators:

- Perioperative mortality (in-hospital)
- Maternal death following cesarean section

Secondary indicator

- In-hospital mortality

3. What is the rationale for measuring this indicator (each of these indicators) in DHS surveys? (Response required)

In-hospital Perioperative Mortality

Perioperative mortality (POM) is thought to account for approximately 7.7% of global mortality, with a disproportionate burden on low and middle income countries where POM rates can be up to 100 times higher, demonstrating an inequity in access to safe surgical care.

Perioperative mortality is a marker of surgical systems quality and is essential in achieving SDG 3 targets for health, specifically 3.8 (LCoGS, 2015; Kruk, 2018; Ng-kamstra, 2018). Quality is an increasingly important measure of healthcare delivery and it has been estimated that 60% of deaths amenable to healthcare are due to poor quality health services.

Despite the adoption of perioperative mortality rate into WHO's "Global Reference List of 100 Core Health Indicators", a recent study found only 9 countries had national data on 30 day POM. Inclusion of

this indicator into DHS-8 will enable nation states to monitor and track POM and thus drive health system and surgical service improvements.

Maternal Death Following Cesarean Section

Cesarean sections are the most commonly performed operation worldwide, and make up over 50% of all surgical procedures performed in some LMICs countries ([Albutt et al., 2019](#)). Cesarean section is an essential treatment in pregnancy and is recommended at a rate of 5-15% of all births ([WHO, 2017](#); [SDG, 2015](#)). It is important to ensure that this essential maternal healthcare service is utilized appropriately in the context of universal access to healthcare ([Harrison et al., 2016](#)).

Perioperative mortality following cesarean section is a quality marker of Comprehensive Emergency Obstetric and Neonatal Care (CEmONC). Collection of post-cesarean mortality will enable us to measure and compare maternal surgical outcomes internationally and help delineate the proportion of maternal mortality that is attributable to surgical complications.

In-Hospital Mortality

Hospital mortality is a marker of healthcare utilization and availability of hospitals and community healthcare services.

Section III. Proposed additions/revisions to the questionnaires or biomarkers

4. Please describe the requested addition or revision.

If the requested change is the addition of new questions to the DHS questionnaires or modules, complete questions 4.1 and 4.1.1. If the requested change is a revision to existing questions, complete question 4.2. If the change relates to anthropometry or a biomarker, please complete question 4.3.

4.1. **For additions:** If you have developed a question or set of questions to measure the indicator(s), please provide them in the space below or in a separate file attached with your submission.

MM25A: Did (NAME) die in the hospital?

MM25B: Did (NAME) undergo a surgical procedure during this hospital stay?

MM22A: Did (NAME) receive a cesarean section?

4.1.1 If requesting multiple questions, please specify the relative priority of each new question.

High priority

- MM17A: Did (NAME) die in the hospital? AND MM17B: Did (NAME) undergo a surgical procedure during this hospital stay?
- MM22A: Did (NAME) receive a cesarean section?

4.2. **For revisions to existing questions:** Please specify the DHS-7 question number, the proposed revision to the question, and the rationale.

| DHS-7 question number | DHS-7 question text | Proposed new question | Rationale |
|-----------------------|---------------------|-----------------------|-----------|
| | | | |
| | | | |

4.3. **For anthropometry and biomarkers:** Please describe the measurement procedures or specimen collection procedures, point-of-care or laboratory testing procedures (as relevant), and any recommendations for return of results.

N/A

5. Can any related questions be deleted from the questionnaire to make room for the proposed new content? If so please specify which questions using the DHS-7 question numbers.

No suggestions for deletion

6. What are the implications of these requested changes on measurement of trends using DHS data?

No impact on measurement of trend of previous DHS data as no suggestions to current structure.

Section IV. Indicator calculation

7. Indicate how to calculate the indicator(s). Include detailed definitions of the numerator and denominator of each individual indicator. If you have developed a tabulation plan for the indicator(s), please attach a file including the suggested table(s) with your submission.

| <u>Indicator</u> | <u>Numerator</u> | <u>Denominator</u> | <u>Comments</u> |
|--|--|---|--|
| In-hospital Mortality | Number of in-hospital deaths | Population | |
| In-hospital perioperative mortality | Number of surgical in-hospital deaths | Total population (Surgical Volume) | NB: If we were able to obtain the surgical volume indicator (please see accompanying submission), then the denominator would be surgical volume. |
| Maternal death rate following cesarean section | Number of maternal deaths following cesarean section | Total number of cesarean sections in population | |

8. Is the indicator useful when measured at the national level, or is it useful only when disaggregated to specific subnational areas, such as endemicity zones or project intervention regions?

For each indicator, select one of the three options by clicking in the appropriate box.

| Indicator | Useful <u>only</u> for subnational endemicity zones or project intervention regions. A single estimate at the national level is <u>not</u> meaningful. | Useful at both national and subnational regions, as sample size allows. | Useful only at the national level. Subnational estimates are not needed. |
|---|--|---|--|
| In-hospital mortality | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| In-hospital perioperative mortality | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Maternal death following cesarean section | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Section V. Prior testing of the proposed question(s)

9. Have the proposed questions undergone any formal validation; i.e., have the questions been tested against a “gold standard” to assess their accuracy? If yes, please describe how well or poorly the questions performed and/or provide a publication or report of the validation exercise (or a link).

Questions relating to hospital death and cesarean section have been piloted as part of the DHS Zambia survey.

10. Have the questions undergone any other kind of testing; e.g., cognitive testing, pilot testing. If so, please describe the results of the testing and/or provide a publication or report of the findings (or a link).

No.

Section VI. Other considerations

11. Please provide information relevant to the kinds of questions below, and/or anything else you wish to share with us about this indicator (these indicators).

- Describe how the data for this indicator are being used (or will be used).
 - Are the data produced by this indicator actionable?
 - Who will use the data?

Data will be used by ministries of health, public health researchers and stakeholders interested in the quality of both maternal health and surgical services. The collected data would enable the reporting of

the WHO Core 100 indicator on perioperative mortality. This will help guide health system strengthening through improved quality and safety of surgical services provided a key requirement of SDG target 3.8

- What kinds of decisions will be made using these data?

The data gathered by these indicators will help to inform policy on surgical and maternal healthcare quality in the context of universal health care.

- For what kinds of countries would the indicator(s) be most useful?

Low and middle income countries (LMICs)

- Does the DHS survey offer any particular advantage over other available data sources for measuring this indicator? If so, what?

There are currently no available systematic and nationally representative figures for maternal mortality following cesarean section in LMICs.