

Expert Judgment Evaluation Obstetric Fistula

Purpose:

To determine the effectiveness of obstetric fistula surgical procedures in preventing mortality and reversing or preventing disability associated with this condition. The surgical procedures included in this study are related to obstetric fistula repairs.

We are interested in quantifying the impact-with uncertainty- of surgical intervention in low and middle-income countries. We consider the impact of obstetric fistula surgery on quality-of-life and risk of long-term disability.

Method:

We seek to identify the impact of obstetric fistula interventions through structured expert judgment. Structured expert judgment is an accepted tool in risk analysis for supplementing data shortfalls, quantifying uncertainty and building rational consensus. A panel of experts quantifies uncertainty with regard to variables of interest and calibration variables from the subject area. Experts are treated as statistical hypotheses and combined so as to maximize the statistical accuracy and informativeness of the “decision maker.” Expert names are preserved to enable competent peer review, but are not associated with responses in any published documentation. Expert reasoning is captured during the elicitation and becomes, where indicated, part of the published record. Elicitation is done by specifying percentiles of uncertain quantities, as illustrated below.

Elicitation Format:

You are presented with an uncertain quantity, in the format shown below.

What percent of the estimated 234 million surgical procedures performed worldwide each year are undertaken in countries with per capita health expenditure lower than \$100?

5%

25%

50%

75%

95%

(Source: Weiser, TG, SE Regenbogen, and KD Thompson (2008) An estimation of the global volume of surgery: a modelling strategy based on available data. *The Lancet* 372 (9633): 139–144.)

You are asked to quantify your uncertainty by specifying percentiles of your subjective uncertainty:

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The 50%-tile is that number for which you judge the chance $\frac{1}{2}$ that the true value is above or below.

The 25% -tile is that number for which the chance that the TRUE VALUE IS BELOW, is $\frac{1}{4}$, and the chance that the TRUE VALUE IS ABOVE is $\frac{3}{4}$.

The 5%-tile is that number for which the chance that the TRUE VALUE IS BELOW IS 0.05 and the chance that the TRUE VALUE IS ABOVE is 0.95.

Etc.

ALWAYS: 5%-tile \leq 25%-tile \leq 50%-tile \leq 75%-tile 95%-tile

Suppose you respond as shown below:

What percent of the estimated 234 million surgical procedures performed worldwide each year are undertaken in countries with per capita health expenditure lower than \$100?				
3	5	8	9	15
_____	_____	_____	_____	_____
5%	25%	50%	75%	95%

This means that the true value is equally likely to be above or below 8%; there is a 50% chance that it lies between 5% and 9%, and a 90% chance that it lies between 3% and 15%.

A good probability assessor is one whose assessments capture the true values with the (long run) correct relative frequencies (**statistically accurate**), with distributions which are as narrow as possible (**informative**). Informativeness is gauged by 'how far apart the percentiles are' relative to an appropriate background (Shannon relative information).

Measuring statistical accuracy requires the true values for a set of assessments. The true value for the above question is 3.5%. It falls between the 5%-tile and the 25%-tile. If an expert's assessments are statistically accurate, then in the long run, 20% of the answers should fall within this inter-percentile interval. Similarly, 90% of the answers should fall between the 5%-tile and the 95%-tile, etc.

In gauging overall performance, statistical accuracy is more important than informativeness. Non-informative but statistically accurate assessments are useful, as they sensitize us to how large the uncertainties may be; highly informative but statistically very inaccurate assessments are not useful. Do not shy away from wide distributions if that reflects your real uncertainty.

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If you have little knowledge about an item, this does NOT disqualify you as an uncertainty assessor. Knowing little means that your percentiles should be 'far apart.' If other experts are more informative, without sacrificing accuracy, then they will most influence the decision maker. If there are no statistically accurate experts with more informative assessments, then the uninformative assessments accurately depict the uncertainty. That in itself is very important information.

For **variables of interest** the true values will not be known within the time frame of the study (otherwise we would not need expert judgment!). These questions ask you to envision risk indicators in various settings (low and middle-income) and without any treatment. This of course introduces additional uncertainty, which may be reflected in your percentile spreads

Training:

Below are a few practice questions to familiarize you with the format.

T.1 How many groups of WHO member states are there?

5% 25% 50% 75% 95%

T.2 How many newborns worldwide are estimated to have cleft lip or palate (per 1000)?

5% 25% 50% 75% 95%

Calibration Questions

Questions 1 - 5 are based on indicators from the Uganda Demographic Health Survey (UDHS) 2011, data collected over a 6-month period from June 2011 to December 2011. 8,678 women (age 15 – 49) from a sample of 9,033 representative households across the country participated in the survey.

The UDHS questionnaire describes obstetric fistula as “... a problem of constant leakage of urine or stool from her vagina during day and night. This problem usually occurs after a difficult child birth, but may also occur after sexual assault or after pelvic surgery”, and asks “Have you ever experienced constant leakage of urine or stool from your vagina during day and night?” as a measure to estimate **lifetime prevalence of obstetric fistula** in the sample population.

1. What % of women under the age of 30 (age 15 – 29) have ever experienced obstetric fistula?

_____ 5% _____ 25% _____ 50% _____ 75% _____ 95%

2. What % of women with no education have ever experienced obstetric fistula?

_____ 5% _____ 25% _____ 50% _____ 75% _____ 95%

3. What % of women from the lowest wealth quintile (the poorest 20 percent) have ever experienced obstetric fistula?

_____ 5% _____ 25% _____ 50% _____ 75% _____ 95%

4. RATIO: % of women who have obstetric fistula in RURAL areas to URBAN areas

_____ 5% _____ 25% _____ 50% _____ 75% _____ 95%

5. What % of women who have ever experienced fistula did not seek treatment?

_____ 5% _____ 25% _____ 50% _____ 75% _____ 95%

6. What is the % change in Maternal Mortality Ratio from 1990 to 2010 in Sub-Saharan Africa?

5% 25% 50% 75% 95%

7. What is the % change in Maternal Mortality Ratio from 1990 to 2010 in South Asia?

5% 25% 50% 75% 95%

WHO defines maternal death as “The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.”

***Maternal mortality ratio (MMR)** is defined as the number of maternal deaths during a given time period per 100 000 live births during the same time period.*

8. **RATIO:** rates of still birth in low-income to high-income countries

5% 25% 50% 75% 95%

***Stillbirth** is defined as fetal death in the third trimester (≥ 1000 g birth weight or ≥ 28 completed weeks of gestation).*

9. What is the gap (% point difference) in births attended by skilled health personnel between low-income and high-income countries?

5% 25% 50% 75% 95%

A skilled health personnel refers to doctors, nurses, or midwife.

10. What is the change (% point difference) in antenatal visits (at least one visit) from 1990 to 2009 in developing countries?

5% 25% 50% 75% 95%

The percentage of women aged 15-49 with a live birth in a given time period that received antenatal care provided by skilled health personnel (doctors, nurses, or midwives) at least once during pregnancy.

Variables of Interest

The questions below will ask your opinion about the outcomes of various surgical conditions if treated in a high-income setting, high-volume fistula center in a low- or middle-income country or the ‘average’ district level hospital in a low or middle-income country. The high-volume center would be staffed with at least one expert surgeon while the latter would typically be a 100-bed hospital staffed by 3-10 physicians with general training (as opposed to specialist qualification). The majority of these physicians will have recently completed their medical training. Transferring patients to a higher level of care is possible but often limited due to transport problems. Specialists from tertiary hospitals are encouraged by the Ministry of Health to come for supervisory visits to the district hospital but in practice this rarely happens.

In all cases we are considering only the injury or condition described, assuming no additional injuries.

An 18 year-old woman had obstructed labor and delivery of a stillbirth one month ago. She has a large **vesicovaginal fistula** that obliterated the anterior vaginal wall, resulting in total loss of the urethra. Upon examination, she has involvement of both ureters, with partial obstruction of one. The main long-term complications are constant leakage of urine (urinary incontinence) and functional loss of a kidney.

Given 1000 such cases, how many would develop long-term renal dysfunction in the following settings:

1. If treated in a high-volume fistula center staffed with an expert fistula surgeon?

5% 25% 50% 75% 95%

2. If treated in a low-volume district hospital in a resource-poor country?

5% 25% 50% 75% 95%

3. If left untreated?

5% 25% 50% 75% 95%

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A 22-year-old woman presents with urinary incontinence after having a stillbirth. She has a **small fistula but bilateral footdrop**. Long-term disability includes urinary incontinence with severe hip and leg pain, difficulty mobility and atrophy of the lower extremities.

Given 1000 such cases, how many would develop long-term disability in the following settings:

4. If treated in a high-income country with repair of the fistula and intensive physical therapy?

5% 25% 50% 75% 95%

5. If treated in a high-volume fistula center staffed with an expert fistula surgeon in a resource-poor country?

5% 25% 50% 75% 95%

6. If treated in a low-volume district hospital in a resource-poor country?

5% 25% 50% 75% 95%

7. If left untreated?

5% 25% 50% 75% 95%

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A 27-year-old patient presents after laboring for 3 days in her village during her 3rd pregnancy. She undergoes an **emergency cesarean delivery of a stillbirth**. Possible long-term outcomes include: loss of her uterus leading to infertility, and damage to the bladder and/or ureters due to the difficulty nature of the surgery.

Given 1000 such cases, how many would develop long-term disability in the following settings:

8. If treated in a high-income country with emergency caesarean delivery, blood bank availability, and ability to identify ureters?

5% 25% 50% 75% 95%

9. If treated in a high-volume fistula center staffed with an expert fistula surgeon in a resource-poor country?

5% 25% 50% 75% 95%

10. If treated in a low-volume district hospital in a resource-poor country?

5% 25% 50% 75% 95%

11. If left untreated?

5% 25% 50% 75% 95%

Given 1000 such cases, how many would result in death in each of the following settings—

12. If treated in a high-income country with emergency caesarean delivery, blood bank availability, and ability to identify ureters?

5% 25% 50% 75% 95%

13. If treated in a high-volume fistula center staffed with an expert fistula surgeon in a resource-poor country?

5% 25% 50% 75% 95%

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14. If treated in a low-volume district hospital in a resource-poor country?

5%

25%

50%

75%

95%

15. If left untreated?

5%

25%

50%

75%

95%

A 17-year-old woman presents in labor with obstruction for the last 24 hours. She delivers a live infant who has some transient respiratory depression, but otherwise appears well. She develops a **rectovaginal fistula** on post partum day one. Potential long-term disability includes severe fecal incontinence, imposed isolation from her family, and depression.

Given 1000 such cases, how many would develop long-term disability in the following settings:

16. If treated in a high-income country with repair of RVF?

5%

25%

50%

75%

95%

17. If treated in a high-volume fistula center staffed with an expert fistula surgeon and repair of RVF?

5%

25%

50%

75%

95%

18. If treated in a low-volume district hospital in a resource-poor country?

5%

25%

50%

75%

95%

19. If untreated?

5%

25%

50%

75%

95%

A 30-year-old woman underwent an emergency cesarean delivery after presenting to a hospital with severe antepartum hemorrhage at term. Her recovery is complicated by constant leakage of urine during her post-operative course, despite placement of a foley catheter for drainage. She is diagnosed with a **right-sided ureterovaginal fistula**. Potential long-term disability is severe urinary incontinence, depression, isolation, and possible loss of kidney function.

Given 1000 such cases, how many would develop long-term disability in the following settings:

20. If treated in a high-income country with repair of ureterovaginal fistula?

5% 25% 50% 75% 95%

21. If treated in a high-volume fistula center staffed with an expert fistula surgeon and repair of ureterovaginal fistula?

5% 25% 50% 75% 95%

22. If treated in a low-volume district hospital in a resource-poor country?

5% 25% 50% 75% 95%

23. If left untreated?

5% 25% 50% 75% 95%

Training Answers:

T1. 6

(Source: World Health Organization)

T2. 1.7

(Source: Mossey PA, Little J, Munger RG, et al. (2009) Cleft lip and palate. *The Lancet* 374(9703):1773-85.)