Monitoring and Evaluation Training Manual:

Hospital Assessment Tool

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Acronym	Definition
CRCPT	Curative and Rehabilitative Core Processes Team
EHAQ	Ethiopian Hospitals Alliance for Quality
EHRIG	Ethiopian Hospitals Reform Implementation Guideline
ESAC	Emergency Surgical and Anesthesia Care
FMOH	Federal Ministry of Health
GB	Governing Board
HAT	Hospital Assessment Tool
HDSP	Health Sector Development Plan
HMIS	Health Management Information System
HPMI	Hospital Performance Monitoring and Improvement
HSTP	Health Sector Transformation Plan
IESO	Integrated Emergency Surgical Officer
KPI	Key Performance Indicator
M&E	Monitoring and Evaluation
PGSSC	Program in Global Surgery and Social Change
POMR	Peri-operative Mortality Rate
RHB	Regional Health Bureau
SaLTS	Saving Lives Through Safe Surgery
SAT	Situational Analysis Tool
SMT	Senior Management Team
SSE	Surgical Society of Ethiopia
SSI	Surgical Site Infection

1. Introduction to Data Collection

1.1 What is Monitoring and Evaluation?

Monitoring and Evaluation (M&E) provides the framework for change in the health system. Through data collection and analysis, a picture of a health program or system is captured. This picture is used to illustrate the needs or current deficits in the health system in order to drive change. However, as with any cross-sectional picture, the long-term value of M&E lies in its evolution and implementation.

The M&E framework drives policy-making, program planning, and project management to improve health care performance.[1] By collecting, compiling, and analyzing relevant data, or indicators, the current state of the health system is revealed and areas in need of improvement can be acted on. Indicators, or the data points chosen for measurement, are directly tied to the goals of the health care program. With a clear M&E framework and mechanisms for transparent upstream and downstream information flow, changes can be made in a timely manner. The proper collection, aggregation, and reporting of these indicators are essential for this process.

From the HMIS Information Use and Data Quality Manual[2]:

> **Monitoring and Evaluation**: is the process of data collection and analysis for informing policy, program planning, and project management.
>
> M&E helps to answer program-related questions such as:
> - Is the program being implemented as planned?
> - Did the target population benefit from the program?
> - Can improved health outcomes be attributed to the program?
> - Which program activities are effective or not effective?

1.1.1 The Importance of M&E

Measurement is essential for health system improvement. Effective change cannot be made unless the current state of programs and health is known. It is imperative to have an accurate knowledge of the current system to truly understand what the gaps are and where we might be able to improve.

1.1.2 Monitoring versus Evaluation

Monitoring is a continuous, ongoing process measuring the progress of a program toward achieving program objectives. Monitoring activities are usually done more frequently, and are used to track changes over a specific time frame. This contrasts with evaluation, which is usually done less frequently, and is meant to measure a program's success at meeting its objectives. Monitoring can be considered most closely tied to operational elements (inputs, process, outputs) whereas evaluation can be considered more tightly bound to ultimate outcomes and impact.[3]

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[1] *HSDP-III Strategic Plan*, Section 3.12.5, p. 114.
[2] HMIS Information Use and Data Quality Manual (pgs. 28-39)
[3] Ibid.

The distinction between monitoring and evaluation is further illustrated in the HMIS Information Use and Data Quality Manual (Table 1).[4]

Table 1. Monitoring vs. Evaluation

Dimension	**Monitoring**	**Evaluation**
Frequency	Periodic, occurs regularly	Episodic
Function	Tracking / oversight	Assessment
Purpose	Improve efficiency, provide information for reprogramming to improve outcomes	Improve effectiveness, impact, value for money, future programming, strategy and policymaking
Focus	Inputs, outputs, processes, work plans (operational implementation)	Effectiveness, relevance, impact, cost-effectiveness (population effects)
Methods	Routine review of reports, registers, administrative databases, field observations	Scientific, rigorous research design, complex and intensive
Information source	Routine or surveillance system, field observation reports, progress reports, rapid assessment, program review meetings	Same sources used for monitoring, plus population-based surveys, vital registration, special studies
Cost	Consistent, recurrent costs spread across implementation period	Episodic, often focused at the midpoint and end of implementation period

1.1.3 Guiding principles for developing a comprehensive plan for data collection:

Three guiding principles for the M&E strategy include: standardization, integration, and simplification.[5]

i. **Standardization**: The first step is to identify the indicators which will be most important to meet the goals of the health care program. Additionally, a clear definition of each of these indicators guides the accurate measurement of this data.
ii. **Integration**: The procedure for gathering this information and reporting it must be integrated into the existing health data collection system. This M&E system must be flexible enough to be consistent across health facilities, health centers, hospitals, and regional health bureaus in order to be effective.
iii. **Simplification**: Lastly, it is imperative to ensure actionable messages are effectively communicated to decision-makers in a timely manner. This principle necessitates simplifying the mechanisms for data collection, analysis, and interpretation to ensure relevancy and efficiency.

[4] Ibid.
[5] HMIS Indicator Definitions Manual (pg. 4-5)

1.2 M&E strategy for SaLTS: HAT and KPIs

1.2.1 Why assess surgical capacity?

Worldwide, it is estimated that 5 billion people lack access to safe and effective surgery when it is needed.[6] In Ethiopia, the exact burden of surgical disease is unknown but from FMOH reports the volume of surgical procedures performed is not more than 200,000 per year.[7] This gap in care is likely responsible for a significant amount of morbidity and mortality in the country. The major reasons behind this service gap relate to inadequate human resources (lack of surgeons, anesthesia providers, and nurses) and infrastructure (lack of medical supplies and equipment). While there is a general perception about the status of surgical services in these areas, there is a lack of evidence based knowledge regarding the issues facing each hospital or region. The collection of this information is essential to inform effective change in these areas.

Surgery is an essential part of the treatment for several diseases. This is increasingly relevant with the growing burden of non-communicable diseases in the country, e.g. cancer, heart disease, trauma related deaths, etc. Additionally, access to safe surgery will lead to significant reduction in patient deaths, for example, providing enough quality cesarean sections could help prevent thousands of maternal deaths annually. Injuries account for more and more of the disease burden globally and in Ethiopia. Deaths and disability attributed to these injuries could be avoided through improved access to surgical care.[8] There are currently an estimated 775 total surgeons, obstetricians, orthopedic surgeons, ophthalmologists, and anesthesiologists in the country. The majority of these physicians are centralized in Addis or other urban cities, leaving rural areas largely uncovered. Including non-physician, surgery and anesthesia trained professionals (IESOs and mid-level anesthesia providers), this number rises to approximately 1,660.[9] However, it is estimated that 18,800 total specialist surgical, obstetric, and anesthesia providers are needed to adequately address the surgical needs of the country.[10] A symptom of this lack of access is the long waiting time in referral tertiary hospitals, where the wait can be up to 4 years for an elective surgery.[11]

1.2.2 A Brief History of Saving Lives Through Safe Surgery:

Since 1997, the Ethiopian Federal Ministry of Health (FMOH) has implemented four successive Health Sector Development Plans (HSDPs 1-4). The Health Sector Transformation Plan (HSTP) is a five-year national strategy (July 2015 – June 2020) intended to build upon the previous HSDPs, with a particular emphasis on four transformation agendas:

1. Transformation of quality and equity of health care
2. Woreda transformation
3. Movement towards compassionate, respectful, and caring health professionals
4. Information revolution

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[6] Meara JG et al. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. Lancet. 2015 Aug 8;386(9993):569-624.
[7] Medical Services General Directorate. National Five Years Safe Surgery Strategic Document. 2016-2020.
[8] Ibid.
[9] Ibid.
[10] Meara JG et al. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. Lancet. 2015 Aug 8;386(9993):569-624.
[11] Medical Services General Directorate. National Five Years Safe Surgery Strategic Document. 2016-2020.

In an effort to address the quality and equity transformation agenda and improve access to essential and emergency surgical and anesthesia care (ESAC), the FMOH designed *Saving Lives Through Safe Surgery* (SaLTS) in 2016.

The image below illustrates the flow of information for the SaLTS model.[12]

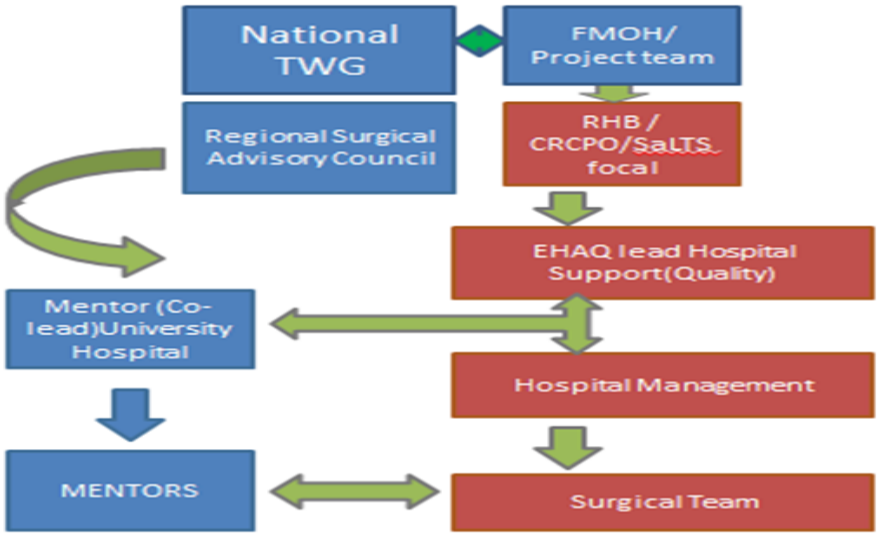


Figure 1. SaLTS Information Flow

SaLTS is a national flagship initiative prioritizing safe, quality surgery and anesthesia at all levels of Ethiopia's healthcare system. The program aligns with existing health sector reforms, including the National Health Care Quality Strategy (quality planning, improvement, and control), Ethiopian Hospitals Service Transformation Guidelines (EHSTG) (professional hospital management), and Ethiopian Hospitals Alliance for Quality (EHAQ). EHAQ is designed to address a specific public health priority and has previously focused on (1) patient satisfaction and (2) MNCH services. The third cycle priority of EHAQ is access to safe and affordable surgical and anesthesia care through SaLTS. SaLTS will be implemented by all health facilities with the capacity to provide surgical services (health centers and/or hospitals). Teaching hospitals with a high surgical workforce will be assigned as a CO/LEAD of EHAQ and will be responsible for supporting lower level hospitals and health centers. The existing EHAQ platform will be used for rapid scale-up of best practices.

SaLTS takes on the largely unmet burden of surgical disease in Ethiopia with a plan for creating change. By addressing the inequity in the distribution of surgical care and outcomes in the country, SaLTS brings surgery to the forefront of the health agenda as an essential component of universal health care.

SaLTS Aim: To improve equitable access to quality and safe essential and emergency surgical and anesthesia care as part of the universal health coverage.

[12] Bekele, A and Burssa, D. SaLTS Saving Lives through Safe Surgery. PAAS Presentation. 2016.

Objectives:

- Implement a nationally coordinated national plan on surgical care
- To define and implement essential surgery package for all levels of the Ethiopian health care delivery system.
- To create better awareness on surgical and anesthesia care with different stakeholders
- To improve the safety of surgical care by implementing the surgical safety check list and improving the safety culture
- Implement quality improvement and audit tool in surgical care
- Proactively identify best practices and scale-up rapidly through EHAQ

1.2.3 Introduction to M&E for SaLTS

The SaLTS initiative identifies 8 key strategic pillars for its intervention:

1. Leadership, management and governance
2. Infrastructure development
3. Supplies and logistics management
4. Human resource for surgery development
5. Partnership and advocacy
6. Quality and safety
7. Innovation
8. Monitoring and evaluation

In order to measure the current state of surgery in Ethiopia and continue to evaluate the SaLTS program, a robust M&E framework was developed under Pillar 8. First, the FMOH outlined a list of 74 essential and emergency surgical procedures that provides health centers and primary, general, and specialized hospitals with an ideal set of procedures they should perform in their respective communities. The Hospital Assessment Tool (HAT) and a list of 15 SaLTS Indicators were subsequently devised to evaluate the impact of SaLTS implementation activities. The following manual illustrates the design and data collection methods for the HAT.

2. HOSPITAL ASSESSMENT TOOL

2.1 Background

The FMOH, in collaboration with the Program in Global Surgery and Social Change (PGSSC) at Harvard Medical School, has developed a comprehensive assessment tool to evaluate surgical and anesthesia capacity, as well as the needs and challenges associated with surgical services at a facility level.

These domains are based off of the WHO Health Systems Framework – all meant to better assist in the analysis of a health system in its totality. Though numerous surveys designed to address surgical capacity are already in existence (e.g. WHO GIEESC Situational Analysis Tool, Surgeons OverSeas PIPES Surgical Assessment), few have been scientifically validated. Thus, to prepare the assessment, a systematic review of facility-level surgical assessments was conducted to compile an exhaustive list of questions that were then reduced based upon their overall frequency. Questions occurring on less than 30% of existing questionnaires were discussed by international panels of providers for relevance with room for additions when consensus was reached. Included questions were subsequently tailored and organized to fit into the National Surgical Plan framework. Elements of this tool were recently incorporated into the recently updated WHO Situation Analysis Tool (SAT). To fill gaps that exist in quantitative measurements of complex systems, qualitative methods were incorporated into the HAT as they have been shown to contribute new knowledge, provide new perspectives, and identify modifiable factors for improving health care.[13]

HAT Objective: To assess the gaps in the availability of Emergency and Essential Surgical Care (EESC) at hospitals in Ethiopia.

2.2 Assessment Approach

2.2.1 HAT Format

The HAT is a 29-page monitoring tool that includes both quantitative and qualitative questions separated into four sections. The assessment is meant to be administered in the form of an interview but may be self-administered. Questions in each section are separated as such as they are intended to be answered by key, facility-level informants from the administrative leadership and surgical team, including:

1. Hospital Director/CEO
2. Surgeon (Generalist or Specialist)/IESO
3. OB/GYN (or Surgeon/IESO if not available)
4. Anesthesia provider or Nurse

[13] Tong A, Sainsbury P, & Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International Journal for Quality in Health Care 2007;19(6):349-357.

Table 2. HAT Data Categories

Category of Data
General Information
Infrastructure
Human Resources
Interventions
Emergency and Essential Surgical Care Equipment and Supplies
Financing
Information Management
Surgical Sets

The tool is currently paper based and will be used in conjunction with electronic data collection devices used for data entry after the assessment is complete.

2.2.2 Collection Methods

SaLTS focal persons identified at each RHB, lead hospitals, and co-lead hospitals are responsible for ensuring that the HAT is used appropriately to collect information that is as accurate as possible.

For the national-level data collection initiative, HAT will be self-administered by members of the surgical team. Ideally, the hospital director, a generalist or specialist surgeon, OB/GYN, anesthetist or nurse will each be responsible for providing responses to questions in their respective section. All sections are needed to complete the HAT at each facility.

The main responsibilities of the focal persons include:

- Ensuring all health facilities are collecting quality information
- Assisting with the transfer of data to electronic form
- Reporting data to the regional and/or federal level

2.2.3 Assessment Regulations

- It is important for data to be consistent and accurate.
- Data are confidential until assessed by the FMOH. Under no circumstance should confidential information be passed on to third parties until assessment and permission given by the regional health bureau and FMOH. Any members of the data collection team that are found to be breaking these rules will be dismissed.

2.3 Preparing for Data Collection

2.3.1 Facility Selection

Working with the FMOH, RHBs will be expected to identify the facilities to be assessed within their respective regions. In accordance with the national scale-up plan of the SaLTS initiative, it is

intended that all facilities in Ethiopia with the ability to provide surgical services will eventually be evaluated with the HAT.

2.3.2 Participant Selection

Interview participants should include the following from each facility:

1. Hospital director or CEO
2. Surgeon (Generalist or Specialist) or IESO (if no surgeon available)
3. Obstetrician (OB/GYN) or surgeon/IESO (if no obstetrician available)
4. Anesthesia provider: Anesthesiologist, anesthetist, or nurse (if no other anesthesia provider with specialized training is available)

These participants have been identified as having key roles in administrative leadership and surgical teams.

Checklist of materials for data collectors:

□ Copies of Consent forms
□ Copies of Hospital Assessment Tool
□ Copies of Supplemental Qualitative Questions
□ Contact details of facilities to be visited
□ Schedule of visits to facilities and details of backup facilities if scheduled visits are not possible
□ Recorder or cell phone with recording capability
□ Pens (pencils should not be used to record data), clipboard and other supplies

2.4 Data Collection Procedures

2.4.1 Locating and verifying the survey facility

The RHB SaLTS focal person should provide a list of facilities to be assessed. If a facility included in the list has closed or if no staff is available for interview, no assessment will be necessary (please note this fact on the cover sheet of the assigned questionnaire) and report this to the previously mentioned focal person.

2.4.2 Consent

Before beginning any section of the HAT, consent must be obtained from the hospital director. Participants who agree to participate may also be asked to sign a consent form to ensure that they understand the nature of the HAT and their rights to participate, refuse to participate or to withdraw at any time.

2.4.3 Duration of assessment

The approximate duration time for each assessment is expected to vary due to the availability of suitable staff to provide answers to questions and the number of questions in each section of the HAT. During baseline assessments, it was found that the Surgeon/IESO and Anesthesia Provider sections took the longest amount of time to complete (approximately 1 to 1.5 hours).

2.5 Completing the HAT

The main responsibility of surgical team members is to report accurate information, legibly record the data, and report to the relevant bodies as described above. The instructions and examples below explain the tool, the types of questions and instructions, and procedures for correctly recording information.

2.5.1 Recording the Responses

When completing the paper version of the HAT, all responses should be recorded using pens with blue or black ink. The information recorded in the answer fields will eventually be entered manually into an electronic database, at which point it will be very difficult to correct for errors or omissions in the questionnaires.

It is very important that all answers be legible and correctly recorded.

If you are unsure or unable to provide an answer, do not simply leave the response blank. Answers should only be left blank if the question is not applicable or there is no available data to report. Answers such as 'don't know' and 'N/A' should instead be reported. If the answer is zero, record '0' for the response. If you want to report a range for a numerical answer, determine the midpoint from the minimum and maximum and report that value only.

The questionnaire is typically divided into two columns: the first contains numbered questions and the second contains response categories or room for open-ended answers. Please answer questions in the order in which they appear. Some questions may be accompanied by a set of instructions, which are meant to serve as a reminder of important directions recording information.

2.5.2 Question and Response Types

The HAT includes both quantitative and qualitative questions. Quantitative questions will require one or more of the following types of responses:

- Numeric response

Insert number.
#
#
#

Minor #
Major #

- Percentage response

☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)

- Binary response

☐ Yes ☐ No

- Other quantitative response categories

☐None ☐Paper ☐ Electronic ☐Both

Qualitative questions require written responses, with no particular response format. Please record as much information as possible in qualitative responses. Qualitative data should be recorded and reported in English.

2.5.3 Ensuring quality

All members of the surgical team are responsible for ensuring that the data collected is as accurate and comprehensive as possible. Each participant is responsible for:

- Checking that their section is complete, ensuring that all answers are clear and reasonable, and that responses are legible
- Revising appropriately if an answer is omitted, unclear, or appears to contain errors
- Notifying the Regional Health Bureau SaLTS focal person if there are issues in completing an assessment

If a mistake is made while recording an answer or one would like to change their reply, a diagonal line through the incorrect response should be used. Do not try to erase an answer, cover up, or write over an answer as this makes data entry particularly difficult.

Checklist of HAT activities for data collectors and participants:

□ Verify that verbal and/or written consent is obtained

□ Verify that all instructions have been followed

□ Verify that responses are recorded legibly

□ Verify that only one response is recorded per question

□ Verify that any corrections are done legibly

□ Ensure that all tools are completed (contain the correct number of pages)

2.6 Annotated Instructions for Utilization

2.6.1 General Information

The Hospital Director should complete all general hospital information requested to the best of their knowledge.

2.6.2 Infrastructure

Hospital Director/CEO

Population of interest is the actual catchment population of the facility, not the ideal or standard population.

		Insert number.
	1. Total population served by this health care facility	#
	2. Total number of hospital beds	#
	3. Total number of surgical beds (ENT, Trauma, GS, orthopedics and others)	#
	4. Total number of obstetric and gynecologic beds	#
	5. Total number of post-op recovery beds	#
	6. Total number of advanced care/ICU beds	#
	7. Total number of emergency area beds	#
	8. Total number of admissions in a year	#
	9. Total number of total surgical admissions in one year (ENT and orthopedics included)	#
	10. Total number of obstetric and gynecologic admissions	#
	11. Total number of outpatients seen in one year	#
	12. What percentage of your patients can reach the hospital within 2 hours of travel?	☐ 0 (None) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (All)
	13. Who is acting as OT manager? ***OT Manager**: defined as the person(s) responsible for the surgical and OB/GYN operating theatres*	
	14. What is the average number of peri-operative, in-hospital deaths per month?	#

Only obstetric/gynecologic admissions requiring surgery.

Report the best estimate based on experience.

Report one answer based on best estimate.

Report position and qualification of person(s) responsible for surgical and obstetric operating theatres, not names.

Report best estimate.

For section:
Report one answer based on best estimate.

	Fill in with percentages.	
	15. Over the past month, how often do you have running water?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)
	16. Over the past month, how often do you have a regular, 24/7 electricity source?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)
	17. Over the past month, how often do you have a generator/back-up electricity source?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)
	18. Over the past month, how often do you have internet?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)

Surgeon/IESO

	Items	*Insert number.* **Minor:** any procedure done under local anesthesia **Major:** any procedure done in the operating theatre under general anesthesia or profound sedation (i.e. spinal anesthesia)
	1. Total number of functioning operating rooms?	Minor #
		Major #
	2. Total number of surgical procedures per year?	Minor #
		Major #
	3. Total number of laparotomies (adult and pediatric) performed per month (on average in the past 6 months)?	#
	4. Total number of surgical fracture repairs performed per month (on average in the past 6 months)?	Minor #
		Major #
	5. Total number of pediatric (aged less than 15 years) surgeries per month?	#
	6. Total number of patients to this facility that you refer for surgical intervention to a higher-level facility per year?	#
	7. How far do most patients travel to get to your health facility for surgical services? If estimation is not possible, which woreda do a majority of patients come from?	(km)
	8. When referred from your hospital, how far does the average patient travel to access surgical services?	(km)

If there are multiple functioning operating tables per operating room, **report the number of operating rooms only.**

Report the best estimate for number of procedures performed during one month on average from the last 6 months.

Report best estimate based on experience.

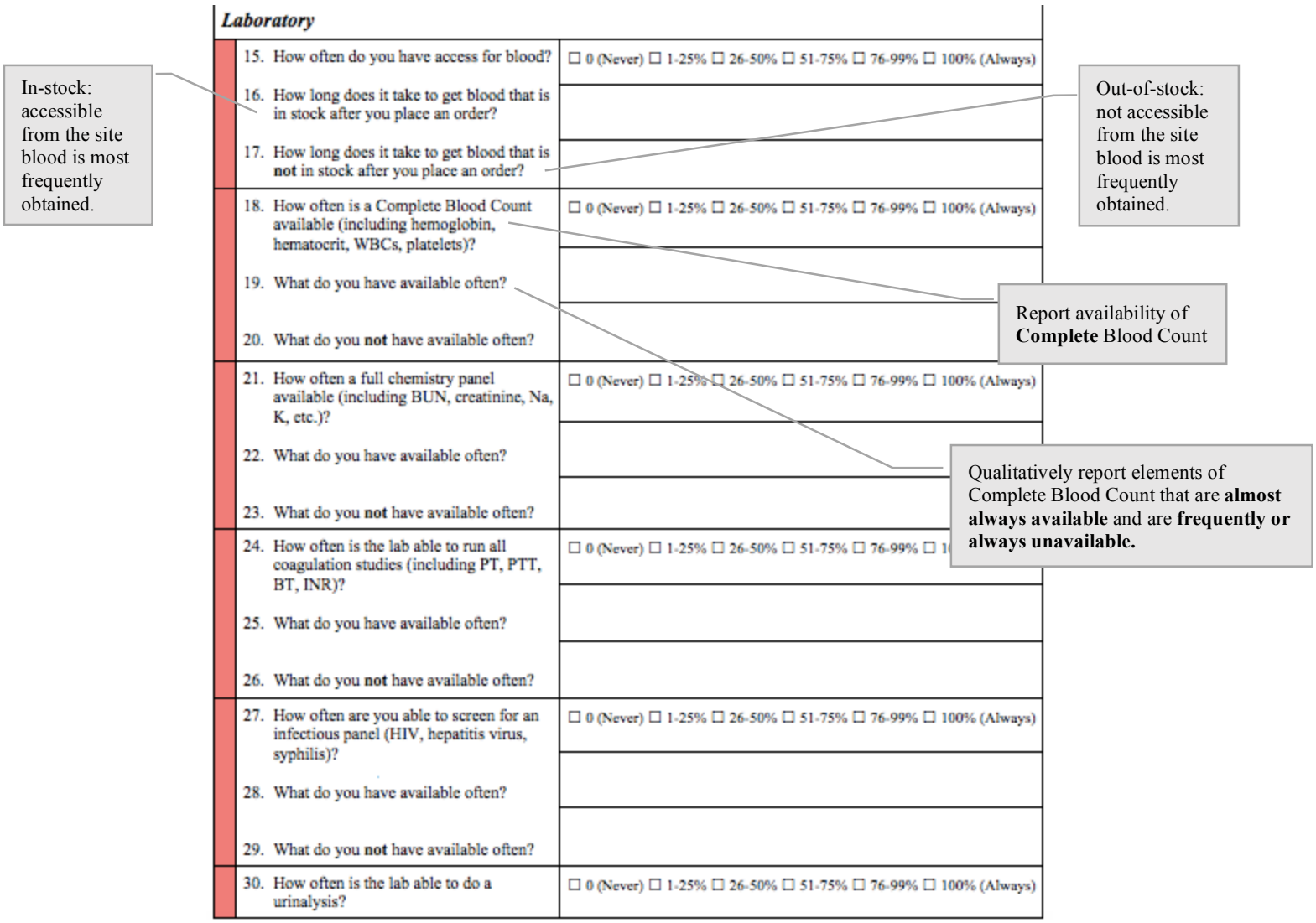
Report the best estimate based on experience. When estimation is not possible, report which woreda the majority of patients are referred to.

Operating Room		
	Fill in with percentages.	
	9. How many OT tables do you have?	#
	10. How many of those tables are regularly used?	#
	11. If not in use, why? (e.g. non-functional, surgical services not yet started)	
	12. How often do you keep surgery related records?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)

Report the best estimate based on experience. When estimation is not possible, report which woreda the majority of patients are referred to.

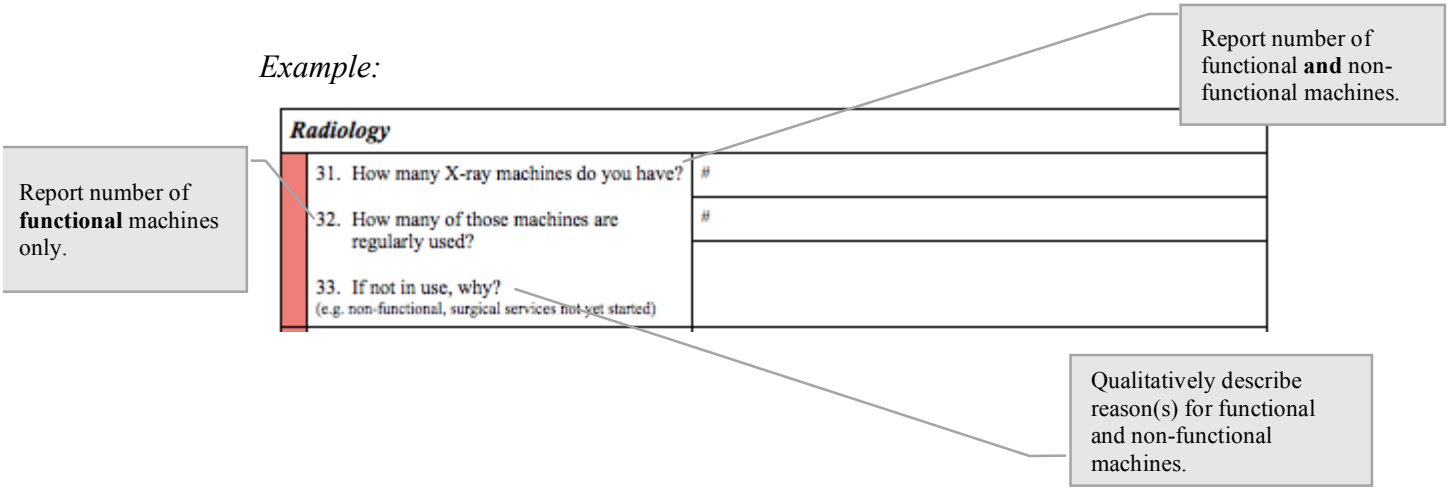
Management Guidelines		
	Fill in with percentages.	
	13. Do you have management guidelines available for emergency care?	☐ Yes ☐ No
	14. Do you have management guidelines available for surgery?	☐ Yes ☐ No

For section: Report whether the guidelines are available, not whether they are used.



The following comments apply to all questions regarding equipment in the *Radiology* and *Supplies* section:

Example:



OB/GYN (Surgeon/IESO if not available)

Report a **monthly** estimate: how many procedures were performed on average per month over the last 6 months.

	Items	*Insert number.*
1.	Total number of surgical OB/GYN procedures per month (on average in the past 6 months)?	Minor #
		Major #

Management Guidelines		
	Fill in with percentages.	
2.	How often do you have management guidelines available for obstetrics?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)
3.	How often do you have management guidelines available for maternal delivery?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)

For section: Report how often guidelines are available, not how often they are used.

Anesthetist/Nurse

Record perspective on the frequency of checklist usage.

Quality and Safety		
1.	***For Anesthetist/Nurse to answer:*** How often is the WHO surgical safety checklist utilized in the operating rooms?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)
2.	***For Data Collector (if able):*** Calculate # of times the checklist is used in a random selection of 20 charts: *# of charts with checklist utilized ÷ 20*	#

Obtain a random sample of 20 surgical patient charts and record the number of patient charts that contain a completed checklist. Report the fraction of patient charts with a completed checklist out of 20.

Report number of functional **and** non-functional anesthesia machines.

Operating Room		
	Fill in with percentages.	
3.	How many anesthesia machines do you have for the OT?	#
4.	How many of those machines are regularly used?	#
5.	If not in use, why? (e.g. machines not functional, surgical services not yet started)	
6.	How often do you have oxygen cylinder or concentrator supply with mask and tubing?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)
7.	How often is a pulse oximetry used in the operating theater?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)
8.	How often do you keep anesthesia related records?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)

Report number of **functional** machines only.

Qualitatively describe reason(s) for functional and non-functional machines.

Report how often **functional** oxygen cylinder OR concentrators are available **with** mask **and** tubing. If a participant reports one of these elements are lacking, report how often **all** materials are available.

Management Guidelines		
	Fill in with percentages.	
9.	How often do you have management guidelines available for anesthesia?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)
10.	How often do you have management guidelines available for pain relief?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)

For section: Report how often guidelines are available, not how often they are used.

2.6.3 Human Resources

Hospital Director/CEO

	Items	*Number of Full Time Workers.*
	19. Qualified radiologists?	#
	20. Qualified pathologists?	#
	21. Qualified biomedical technicians?	#
	22. Qualified X-ray technicians?	#
	23. Trained operating theater nurses?	#
	24. Pharmacists (including druggists)?	#

	25. Has any continuing medical education been provided to your staff?	☐ Yes ☐ No

For section:
Report the total number of *only* full time workers.

Surgeon/IESO

When reporting the number of employees in the surgical workforce, it is important to differentiate between the type of positions: full-time employees, contracted or short-term employees, and residents/interns/trainees.

			Full time	*Contracted (short-term)*	*Residents/Interns/ Trainees*
	52. Surgeons?	General #			
		Ortho #			
		IESO #			
		Other specialties #			
	53. General doctors providing surgery (including obstetrics)?	#			

Report full-time, part-time, contracted (short term) and/or residents/interns/trainees for each of the providers listed. Record '0' if there are none and 'N/A' if there is no answer.

Do not report druggists and pharmacists separately.

		Select one.
	54. How often is emergency surgical care available after hours/available 24 hours a day? (on average in the past month)	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)

Report the best estimate based on experience.

OB/GYN (Surgeon/IESO if not available)

		Full time	*Contracted (short-term)*	*Residents/trainees*
	4. OB/GYNs? #			
	5. Midwives? #			

	6. How often are OB/GYN services available for 24 hours a day? (on average in the past month)	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)

Report the best estimate based on experience.

Anesthetist/Nurse

		Full time	*Part time*	*Contracted (short-term)*	*Residents/Interns/ Trainees*
17. Anesthesiologists physicians?					
18. Other anesthesia providers:	a) BSc. anesthetists #				
	b) MS anesthetists #				
	c) Level 5 anesthesia nurses #				
	d) Nurses #				
	e) Health officers #				
19. General doctors providing anesthesia?					

Report full-time, part-time, contracted (short term) and/or residents/interns/trainees for each of the providers listed. Record '0' if there are none and 'N/A' if there is no answer.

20. How often is anesthesia care available for 24 hours a day? (on average in the past month)	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)

Report the best estimate based on experience.

2.6.4 Interventions

All sections except Hospital Director/CEO

The questions included in the intervention section should be considered in a 'point-in-time' context, as the aim of this section is to assess the surgical and anesthesia procedures a facility is able to do at the time of the assessment. All five questions listed in this table should be asked for each intervention listed in the left-hand column of this section. Please record responses legibly.

Do you perform these procedures?									
	Yes/No	**If Yes, how many procedures performed in past month?**	**If No, why not?**	**Do you refer?**	If you refer, is it due to… **(mark ALL that apply)**				
					Lack of skills?	Lack of staff?	Non-functioning equipment?	Lack of supplies/ drugs?	Other?

Circle Y or N to record response.

Provide numerical response. Though this question is intended to be reported as the best estimate of the participant, review of hospital logs may also be done to provide an answer. If possible, do not leave answers blank. Record '0' if there are none and 'N/A' if there is no answer.

Provide written response detailing why a facility is unable to perform a specific intervention. Examples answers may include: 'no electricity available' or 'have not been trained on this procedure'

Circle Y or N to record response.

If 'yes' is selected as the answer to previous question about referral, please describe the reason for referral. Place an X in the column corresponding to the reasons, or describe reasons in a written response in the 'Other' category.

2.6.5 Emergency and Essential Surgical Care Equipment and Supplies

All sections except Hospital Director/CEO

The questions included in the intervention section should be considered in a 'point-in-time' context, as the aim of this section is to assess the surgical and anesthesia procedures a facility is able to do at the time of the assessment.

				Please check availability of following items.
	Items	***Yes***	***No***	***Remark***

Indicate an 'X' in the box that corresponds to the reported answer (Yes or No).

Record any relevant comments that corresponds to the question.

For sections with the following response format:

- Report '0' if equipment/supply is available with **occasional or frequent** shortages or difficulties
- Report '1' if a participant reports equipment/supply is available with **occasional or frequent** shortages or difficulties
- Report '2' if participant reports equipment/supply is **always** available

Example:

Capital Outlays					
		0 absent	**1** available with shortages or difficulties	**2** fully available for **all** patients **all the time**	***Remark***

Record any relevant comments that corresponds to the question.

2.6.6 Financing

Hospital Director

Health Financing and Accounting	
26. What percentage of your patients have health insurance?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (All)

Budget Allocation	
27. What is your total annual hospital budget?	_____ Birr
28. How much of your annual hospital operating budget is allotted to surgery and anesthesia? Including medications, consumables (gloves, etc.) and equipment bought for surgery.	☐ 0 (None) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (All)

Report best estimate based on experience.

Surgeon/IESO

Cost	
147. What is the average out-of-pocket cost to a patient for an open fracture repair (procedure only)?	#
148. What is the average out-of-pocket cost to a patient for a laparotomy (procedure only)?	#
149. What is the average out-of-pocket cost to a patient for a CBC?	#
150. What is the average out-of-pocket cost to a patient for a chest X-ray?	#
151. What is the average out-of-pocket cost to a patient for surgery-associated lodging (e.g. bed, overnight stays) per visit? **Surgery-associated lodging:** defined as in a single visit, before returning home (include lodging for patient *and* lodging for the caretaker)	#
152. What do the most patients pay out-of-pocket for patient and family transportation per visit?	
a) Emergency visits	#
b) Elective visits	#
153. What is the average out-of-pocket cost to a patient for surgery-associated medication per visit (e.g. perforated appendix)?	#
154. What is the average out-of-pocket cost to a patient for other necessities (e.g. laundry/food) per visit?	#

Report the average cost that the majority of patients pay per visit (understanding that the number of days per visit varies depending on the required surgical procedure).

Report the average cost that the majority of patients pay for medication per visit (understanding that the number of days per visit varies depending on the required surgical procedure).

Emergency Visits: Report the out-of-pocket costs that the majority of patients pay for emergency visit transportation (understanding that costs will vary by mode of transportation and distance from health facility).

Elective Visits: Report the out-of-pocket costs that the majority of patients pay for elective visit transportation (understanding that costs will vary by mode of transportation and distance from health facility).

Report the average aggregated cost that the majority of patients pay per visit (understanding that the number of days per visit varies depending on the required surgical procedure). **Please note if the facility does not provide laundry or food services.**

OB/GYN (Surgeon/IESO if not available)

Cost	
26. What is the average out-of-pocket cost to a patient for a C-section (procedure only)?	#
27. What is the average out-of-pocket cost to a patient for surgery-associated lodging (e.g. bed, overnight stays) per visit? **Surgery-associated lodging:** defined as in a single visit, before returning home (include lodging for patient *and* lodging for the caretaker)	#
28. What is the average out-of-pocket cost to a patient for surgery-associated medication per visit (e.g. perforated appendix)?	#
29. What is the average out-of-pocket cost to a patient for other necessities (e.g. laundry/food) per visit?	#

Report the average cost that the majority of patients pay per visit (understanding that the number of days per visit varies depending on the required surgical procedure).

Report the average cost that the majority of patients pay for medication per visit (understanding that the number of days per visit varies depending on the required surgical procedure).

Report the average aggregated cost that the majority of patients pay per visit (understanding that the number of days per visit varies depending on the required surgical procedure). **Please note if the facility does not provide laundry or food services.**

2.6.7 Information Management

Hospital Director

Information Systems	
29. What is the method of record keeping in your hospital?	☐None ☐Paper ☐ Electronic ☐Both
30. Are there personnel in charge of maintaining medical records?	☐Yes ☐No
31. Are charts accessible across multiple visits for the same patient?	☐Yes ☐No
32. How often is data prospectively collected for monthly peri-operative adverse events, such as unexpected return to OT or surgical site infection?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)
33. How often is data prospectively collected for monthly post-operative mortality rate?	☐ 0 (Never) ☐ 1-25% ☐ 26-50% ☐ 51-75% ☐ 76-99% ☐ 100% (Always)
34. How often are you required to report information to the Ministry of Health or an equivalent agency? *If applicable, may check more than one option.*	☐Never ☐Monthly ☐Quarterly ☐Yearly
35. Do you use telemedicine?	☐Yes ☐No

Select one answer.

Please note that these answers should reflect the **monthly** data collection.

If applicable, answer may involve checking more than one option (i.e. both monthly and yearly).

Research Agenda questions for the Hospital Director/CEO are meant to assess research activities throughout all departments of the hospital facility. Similar questions for Surgeon/IESO, OB/GYN and Anesthesia provider are specified to the surgical department, obstetric department and anesthesia department, respectively.

Research Agenda	
36. How many quality improvement projects were done in the hospital in the past year?	#
37. How many ongoing research projects are being done in the hospital? Exclude resident, intern and student research projects.	#
38. How many papers have been published by hospital staff in the last year? Exclude resident, intern and student research papers.	#

If applicable, answer may involve checking more than one option (i.e. both monthly and yearly).

Surgeon/IESO

Research Agenda	
155. How many ongoing research projects does the department of surgery have? Exclude resident, intern and student research papers.	#

OB/GYN (Surgeon/IESO if not available)

Research Agenda	
30. How many ongoing research projects does the department of obstetrics have? Exclude resident, intern and student research papers.	#

Anesthetist/Nurse

Research Agenda	
How many ongoing research projects does the department of anesthesia have?	#

Report the best estimate based on experience.

2.6.8 Surgical Sets

These questions are intended to assess the availability and completeness of surgical sets needed to complete the three Bellwether procedures: open fractures, laparotomies, and Caesarean sections (Meara et al., 2015). The number of both complete and incomplete sets for each procedure should be recorded. If incomplete surgical sets are reported, please prompt the participant to detail what supplies and/or equipment is missing from that set and record the response as completely as possible. In this context, '*missing'* is defined as any part of a surgical set that is absent or non-functional.

Example: