A mixed-methods assessment of surgical capacity in Tanzania's Lake Zone

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Supplementary File 1. SAT tools: quantitative and qualitative

This file contains the tools that were used in this mixed-methods study to collect data.

WHO-PGSSC Surgical Assessment Tool (SAT)
Hospital Walkthrough

For questions referring to 2017 or "this past year", we mean the calendar year from January 1st – December 31st of 2017. Please refer to the Administration Guide for further definitions and questions.

GENERAL QUESTIONS	
Country:	
Name of health care facility:	
Address of health care facility:	
Phone number and email of health care facility:	
Date of data collection (dd/mm/yyyy):	
Name and professional title of staff filling out form:	
Contact information of staff completing this assessment (phone and email):	
Level of facility being evaluated	□ Health Centre □ District Hospital □ Regional Referral Hospital
Type of facility being evaluated (select all that apply)	□ Public □ Private □ NGO □ Mission □ Other (please explain: _____)

INFRASTRUCTURE	
General Infrastructure - Thinking back over the past 12 months, how often has this item been available and functional?	
Electricity/operational power generator (power supply to the OR complex, labor room and surgical wards)	□ 0 (Never) □ 1-25% (Rarely) □ 26-50% (Sometimes) □ 51-75% (Often) □ 76-99% (Almost always) □ 100% (Always)
Running water (water in taps OR complex, labor room and surgical wards)	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Internet (hospital sponsored or mobile)	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Oxygen (cylinders/ oxygen concentrators in OR)	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Total number of admissions from February 1st, 2018 – April 30th, 2018 (wait until after this date to gather this information)	#
Total number of admissions in the past year (2017)	#
Total number of outpatients seen from February 1st, 2018 – April 30th, 2018 (wait until after this date to gather this information)	#
Total number of outpatients seen in the past year (2017)	#
Total number of inpatient hospital beds	#
Total number of functioning major operating rooms	#
Total number of functioning minor operating rooms	#
Total number of post-anaesthesia care beds (0 for none)	#
Total number of advanced care/ICU beds	#
Total number of functional ventilators in the ICU	#

Pharmacy – Thinking back over the past 12 months, how often has this item been available for surgery?		
	Inhalational general anaesthesia	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	IV sedation anaesthesia (Ketamine, Midazolam, Propofol)	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99%□ 100% (Always)
	Spinal anaesthesia	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	Regional anaesthesia available	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	Peri-operative antibiotics	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	IV fluids	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	Muscle relaxants/paralytics	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	Sedatives	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	Vasopressors	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	Post-op narcotics	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Radiology – Thinking back over the past 12 months, how often have you had access to functioning radiology equipment?		
	X-ray machine	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	Ultrasound	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99%□ 100% (Always)
	CT scanner	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	MRI scanner	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Blood Supply		
	How often are you able to administer a blood transfusion within 2 hours in your facility? (time from doctor's order being placed to administration of screened blood)	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Laboratory		
	How often is the lab able to run a Complete Blood Count (haemoglobin, haematocrit, WBC, platelets)?	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	How often is the lab able to run a chemistry panel (BUN, creatinine, Na, K, etc.)?	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	How often is the lab able to run coagulation studies (PT, PTT, BT, INR)?	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	How often is the lab able to do a urinalysis?	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	How often are you able to screen for hepatitis B virus?	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	How often are you able to screen for HIV?	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Access and referral systems		
	What is the population of the true catchment area for this facility?	#
	What is the catchment population served by this facility as assigned by PORALG?	#
	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)
	Total number of patients that you refer for surgical intervention to a higher-level facility from February 1st, 2018 – April 30th, 2018 (wait until after this date to gather this information)	#
	Total number of patients that you referred for surgical intervention to a higher-level facility in 2017	#

SERVICE DELIVERY	
Procedures - Primary health care facility	
How many of the following procedures have been performed at this facility in the past 1 year (2017)?	
1. Normal obstetric delivery	#
2. Suturing laceration	#
3. Drainage of abscess	#
4. Male circumcision	#
5. Management of non-displaced fractures	#
6. Wound debridement	#
7. Removal of foreign body (throat/eye/ear/nose)	#
8. Biopsy (lymph node, mass, other)	#
Procedures - First-level hospital	
How many of the following procedures have been performed at this facility in the past 1 year (2017)?	
Obstetrics, gynaecology, family planning	
1. Caesarean birth	#
2. Breach delivery	#
3. Vacuum extraction/forceps delivery	#
4. Ectopic pregnancy	#
5. Manual vacuum aspiration and dilation and curettage	#
6. Tubal ligation	#
7. Vasectomy	#
8. Hysterectomy	#
9. Inspection with acetic acid, cryotherapy for cervical lesions	#
General Surgery	
10. Laparotomy	#
11. Appendectomy	#
12. Colostomy/ileostomy	#
13. Gallbladder disease	#
14. Hernia, including incarceration	#
15. Hydrocelectomy	#
16. Relief of urinary obstruction	#
Injury	
17. Resuscitation with advanced life support measures, including surgical airway	#
18. Tube thoracostomy (chest tube placement)	#
19. Trauma laparotomy	#
20. Fracture reduction	#
21. Irrigation and debridement of open fractures	#
22. Placement of external fixator	#
23. Escharotomy/fasciotomy	#
24. Amputations	#
25. Skin grafting	#
26. Burr hole	#
Non-trauma orthopaedic	
27. Drainage of septic arthritis	#
28. Debridement of osteomyelitis	#
Procedures – secondary and tertiary level	
How many of the following procedures have been performed at this facility in the past 1 year (2017)?	
1. Repair obstetric fistula	#
2. Repair of cleft lip and palate	#
3. Repair of club foot	#
4. Shunt for hydrocephalus	#
5. Repair of anorectal malformation and Hirschsprung's Disease	#
6. Cataract extraction and insertion of intraocular lens	#
7. Eyelid surgery for trachoma	#

Surgical Volume	
Number of laparotomies performed last year (2017)	#
Number of C-sections performed last year (2017)	#
Number of open fracture repairs performed last year (2017)	#
Number of surgeries performed last year (2017)	#
Number of paediatric surgeries (<15 yrs) performed last year (2017)	#
What percent of cases were emergency/urgent (non-elective) cases? (2017)	%
Quality and Safety	
What is the total number of post-operative, in-hospital deaths from February 1st, 2018 – April 30th, 2018 (wait until after this date to gather this information)?	#
What is the total number of post-operative, in-hospital deaths in 2017	#
What is the total number of in-hospital deaths from February 1st, 2018 – April 30th, 2018 (wait until after this date to gather this information)?	#
What is the total number of in-hospital deaths in 2017?	#
What is the total number of maternal deaths from February 1st, 2018 – April 30th, 2018 (wait until after this date to gather this information)?	#
What is the total number of maternal deaths in 2017?	#
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)
How often is pulse oximetry used in the operating rooms?	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)

Operating Room Equipment and Supplies – Thinking back over the past 12 months, how often were the following equipment available and functional for surgery?	
Total number of functional anaesthesia machines in the ORs	#
Pulse oximetry	#
Adult oropharyngeal airway	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Paediatric oropharyngeal airway	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99%□ 100% (Always)
Adult endotracheal tube	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Paediatric endotracheal tube	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Adult laryngoscope	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99%□ 100% (Always)
Paediatric laryngoscope	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Adult facemask bag valve	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Paediatric facemask bag valve	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Difficult airway kit (LMA)	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Adult Magill forceps	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Paediatric Magill forceps	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Blood pressure monitor or cuff	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Pulse oximeter	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Stethoscope	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Suction apparatus	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Thermometer	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Nasogastric Tube	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Light source	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Chest tube	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Electrocautery	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Autoclave/Sterilizer	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Forceps	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Syringes with needles	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Scalpel	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Scissors	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)

Needle holder	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Retractor	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Sterile gloves	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Urinary catheters	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Tourniquet	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99%□ 100% (Always)
Face masks (surgical masks or face shields)	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Provider Gowns	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Disinfectant hand wash	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Sterilizing skin prep	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Eye protection	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Closed-toe, water proof footwear	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Sharps disposal container	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Non-sterile Examination Gloves	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
Sutures	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)

WORKFORCE

Surgeon/Anaesthesiologist/Obstetrician/Provider Density

	Year of 2017 (count those who were employed for at least 6 months of the year of 2017)		**Today (as of SAT administration)**	
Providers	Full-Time	Part-Time	Full-Time	Part-Time
Number of certified surgeons	#	#	#	#
Number of certified paediatric surgeons	#	#	#	#
Number of certified OBGYNs	#	#	#	#
Number of certified anaesthesiologists	#	#	#	#
Number of general doctors providing surgery	#	#	#	#
Number of general doctors providing C-sections	#	#	#	#
Number of general doctors providing anaesthesia	#	#	#	#
Number of non-physicians providing surgery	#	#	#	#
Number of non-physicians providing C-sections	#	#	#	#
Number of non-physician providing anaesthesia	#	#	#	#
Number of midwives	#	#	#	#
Number of nurses on the surgical wards	#	#	#	#
Number of certified radiologists	#	#	#	#
Number of certified pathologists	#	#	#	#
Number of certified pharmacists	#	#	#	#
Number of certified biomedical technicians	#	#	#	#
How often is a surgical provider available for 24 hours a day?	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)			
How often is an obstetrics/gynaecology provider available for 24 hours a day?	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)			
How often is an anaesthesia provider available for 24 hours a day?	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)			

Continuing Medical Education

How often do you offer continuing medical education to your staff each year?	□ Never □ Monthly □ Quarterly □ Yearly □ Other

INFORMATION MANAGEMENT		
Information Systems		
	What is the method of record keeping in your hospital?	□ Electronic □ Paper □ Both □ None
	Are there personnel in charge of maintaining medical records?	□ Yes □ No
	Are charts accessible across multiple visits for the same patient?	□ Yes □ No
	How often is data prospectively collected for patient outcomes, such as surgical site infection, post op sepsis, maternal sepsis? (How often do events get recorded as they occur?)	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	How often is data prospectively collected for post-operative mortality rate? (How often is mortality recorded and reported as it occurs?)	□ 0 (Never) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (Always)
	How often are you required to report information to the Ministry of Health or an equivalent agency?	□ Never □ Monthly □ Quarterly □ Yearly
	Do you use telemedicine? (Telemedicine is defined as an institutional tie-up with formal patient-related communication)	□ Yes □ No
Research Agenda		
	How often does your hospital participate in quality improvement projects, such as mortality and morbidity conferences?	□ Never □ Monthly □ Quarterly □ Yearly
	How many currently ongoing research projects does the hospital have?	#
	How many currently ongoing research projects does the department of surgery have?	#

FINANCING		
Health financing and accounting		
	What percentage of your patients have health insurance? (percentage of NHIF patients)	□ 0 (None) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (All)
Budget Allocation – please state in TZS		
	What is your total annual hospital operating budget? (in TZS)	#
	How much of your annual hospital operating budget is allotted to surgery and anaesthesia? (in TZS)	□ 0 (None) □ 1-25% □ 26-50% □ 51-75% □ 76-99% □ 100% (All)
Cost – please state in TZS		
	What is the average out-of-pocket cost to a patient for a C section?	#
	Average out-of-pocket cost to a patient for an open fracture repair?	#
	Average out-of-pocket cost to a patient for a laparotomy?	#
	Average out-of-pocket cost to a patient for a CBC?	#
	Average out-of-pocket cost to a patient for a Chest X-ray?	#
	Average out-of-pocket cost to a patient for surgery-associated lodging per day?	#
	Average out-of-pocket cost for patient and family transportation per surgery/hospital stay?	#
	Average out-of-pocket cost to a patient for surgery-associated medication per surgery/hospital stay?	#
	Average out-of-pocket cost to a patient for other necessities (e.g. laundry/food) per surgery/hospital stay?	#

SS2020 Tanzania
SAT Semi-Structured Interview:
Hospital Administrator or SS2020 Data Collector

I would like to interview you to understand surgical capacity at your facility, including the following domains: infrastructure, service delivery, human resources, information management and financing. This semi-structured interview aims to use your perspective to gather an in-depth understanding of the surgical capacity at this facility. We want to understand how surgical capacity at this facility affects the provision of safe, affordable and timely surgical care. We also want to understand the challenges you face and areas for improvement.

I am a researcher at the Program for Global Surgery and Social Change at Harvard Medical School. Participation in this interview is voluntary. This interview will take about one hour. I am going to take notes and record the conversation so I can review it, but I will never share anything you say in connection with your name or the name of your facility. You are welcome to skip any questions that you would rather not answer. If you don't understand any of the questions, please let me know and I will explain them.

If your questions, concerns or complaints are not being answered by the research team, or if you want to talk to someone besides the research team, the Office of Human Research Administration (OHRA) can be reached at +1 617-432-2157.

Is it okay with you to proceed? Procession of this interview validates that verbal consent was given to participate in this interview.

Facility:

Interviewer(s):

Interviewee name & title:

Interviewee contact information:

	INFRASTRUCTURE
	Facility readiness
1.	What factors, if anything, prevent the team from making a diagnosis?
2.	What factors, if anything, prevent the team from performing a surgery? ▪ Lack of materials or equipment (e.g. sutures, gloves, etc.)? ▪ Lack of operating space? ▪ Lack of medical utilities (e.g. oxygen, electricity, etc.)? ▪ Inadequate perioperative services?
3.	What are common reasons for delays in care at this facility? (a delay in care = a time when a patient does not receive care when they should, for some reason, it happens later)
4.	On average, when you experience delays in care, how long are these delays? (Q3 gets at what are the delays in care, Q4 aims to know how long)
5.	What are the key challenges your facility faces in terms of infrastructure?
	Equipment and Supplies
6.	What is the mechanism for equipment maintenance in the hospital?
7.	What is the process for procuring supplies?

	WORKFORCE
	Healthcare staff
8.	How is the clinical work shared amongst the surgical team at this facility? (including providing for on-call coverage) **(During a typical shift, how does the surgical team share responsibilities?)**
9.	What type of administrative staff does the hospital employ?
10.	Is there management training for persons in administrative positions?
11.	Tell us what it is like to work in this facility, in general. How would you characterize the way people interact and what it feels like to be in this facility? (the part of this question most easily understood is to ask **"how do staff members interact at this facility?")**
	Educational opportunities
12.	Describe any career support and education offered at this facility. What would you like to see at your facility? (break into two questions for ease of understanding the question; (a) other words for "career support and education" used in this context include "seminars" or "trainings"; (b) **what seminars or trainings do you think could benefit your facility?)**
13.	What are the key challenges your facility faces in terms of human resources?

	SERVICE DELIVERY
	Surgical volume
14.	What are the 5 most common surgical diagnoses at your facility? (at a health centre, not likely to see 5, more realistically 3)
15.	What are the 5 most common surgical procedures performed at your facility? (at a health centre, again, not likely to see 5, more realistically 3)
	Access and referrals
16.	What percentage of your patients live within 2 hours of the hospital? (within 2 hours of the hospital, using the most common mode of transportation)
17.	What are the most common reasons for referring a patient to a higher-level facility? (higher-level versus same-level facility not commonly understood, perhaps put into context, ex: if at a district hospital, "common reasons for referring to regional hospital?")
18.	What are the most common reasons for referring a patient to a same-level facility? (to note, many facilities only refer up and do not refer to same level. again, put into context, ex: if at a district hospital, "common reasons for referring to another district hospital?")
19.	When referring a patient to another facility, how often do you send them information on the patient's history and the reason for referral? (response options: "always," "most of the time," "sometimes," "seldom or never," and "not applicable.") **(When you do send information, how do you send another facility information on the patient's history and reason for referral?)**
20.	On the flip side, how often do you receive information on the patient's history and reason for referral about referred patients from referring facilities (response options: "always," "most of the time," "sometimes," "seldom or never," and "not applicable.") **(When you do receive information about referred patients from referring facilities, how is it received?)**
21.	Do you have systems in place to track whether referrals where completed? **(If yes, describe the systems in place?)**
22.	Do you believe that there are patients who should be referred out to other facilities that do not actually get referred? If yes, why do you think this happens?
	Quality improvement and patient safety
23.	What are your processes for improving the quality of care? Can you give us examples of work you have done over the past year to improve quality of care and improve patient outcomes? **(What does the facility do to improve quality of care? Can you give us examples of what the facility has done over the past year to improve quality of care and improve patient outcomes?)**
24.	What are key challenges your facility faces in delivering safe, high quality surgical care? (this question aims to get at quality, ask about challenges to quality care)
	Coordination of care
25.	Do you coordinate care with other health providers outside your facility for a given patient? If yes, can you please describe how this happens?
26.	What are the factors that make coordination of care with other facilities work? What are the barriers to coordinating care with other facilities?

	FINANCING
	Health financing and accounting
27.	What happens if the patient is or becomes unable to pay for services? What are the alternatives?
	Budget
28.	How is your budget determined?
29.	Is there a system for regularly re-evaluating the budget?
30.	What are key challenges in terms of financing surgery?

	INFORMATION MANAGEMENT
	Information systems
31.	Do you have easy access to medical records related to a patient's current visit? Past visit? **(If yes, describe the process of accessing these medical records)**
32.	After discharge is the patient responsible for their records or is it kept at the facility?
33.	What are the key challenges you face in terms of accessing patient information?

SS2020 Tanzania
SAT Semi-Structured Interview: Surgical Provider

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I am a researcher at the Program for Global Surgery and Social Change at Harvard Medical School. Participation in this interview is voluntary. This interview will take about one hour. I am going to take notes and record the conversation so I can review it, but I will never share anything you say in connection with your name or the name of your facility. You are welcome to skip any questions that you would rather not answer. If you don't understand any of the questions, please let me know and I will explain them.

If your questions, concerns or complaints are not being answered by the research team, or if you want to talk to someone besides the research team, the Office of Human Research Administration (OHRA) can be reached at +1 617-432-2157.

Is it okay with you to proceed? Procession of this interview validates that verbal consent was given to participate in this interview.

Facility:

Interviewer(s):

Interviewee name & title:

Interviewee contact information:

	INFRASTRUCTURE
	Facility readiness
1. 2. 3. 4.	What factors, if anything, prevent you from making a diagnosis? What factors, if anything, prevent you from performing a surgery? ▪ Lack of materials or equipment (e.g. sutures, gloves, etc.)? ▪ Lack of operating space? ▪ Lack of medical utilities (e.g. oxygen, electricity, etc.)? ▪ Inadequate perioperative services? (inadequate perioperative services = having an OR for major or minor surgeries that is not adequate, perhaps it is not sterile, without electricity or water?) What are common reasons for delays in care at this facility? (a delay in care = a time when a patient does not receive care when they should, for some reason, it happens later) On average, when you experience delays in care, how long are these delays? (Q3 gets at what are the delays in care, Q4 aims to know how long)
5.	What are the key challenges your facility faces in terms of surgical infrastructure? (surgical infrastructure = surgery department; try not to get at physical infrastructure)

	WORKFORCE
	Healthcare staff
6. 7. 8.	How is the clinical work shared amongst the surgical team at this facility? (this is to mean how clinical work is shared during each shift among the surgical team) What types of surgical staff are available on-call? Tell us what it is like to work in this facility, in general. How would you characterize the way people interact and what it feels like to be in this facility? (the part of this question most easily understood is to ask "**how do staff members interact at this facility?**")
	Educational opportunities
9.	Describe any career support and education you receive at this facility. What would you like to see at your facility? (break into two questions for ease of understanding the question; (a) other words for "career support and education" used in this context include "seminars" or "trainings"; (b) **what seminars or trainings do you think could benefit your facility?**)
10.	What are the key challenges your facility faces in terms of surgical workforce? (surgical workforce = type of surgical staff members (by qualification) and numbers of staff members)

	SERVICE DELIVERY
	Surgical volume
11.	What are the 5 most common surgical diagnoses at your facility? (at a health centre, not likely to see 5, more realistically 3)
12.	What are the 5 most common surgical procedures performed at your facility? (at a health centre, again, not likely to see 5, more realistically 3)
	Access and referrals
13.	What percentage of your patients live within 2 hours of the hospital? (within 2 hours of the hospital, using the most common mode of transportation)
14.	What are the most common reasons for referring a patient to a higher-level facility? (higher-level versus same-level facility not commonly understood, perhaps put into context, ex: if at a district hospital, "common reasons for referring to regional hospital?")
15.	What are the most common reasons for referring a patient to a same-level facility? (to note, many facilities only refer up and do not refer to same level. again, put into context, ex: if at a district hospital, "common reasons for referring to another district hospital?")
16.	When referring a patient to another facility, how often do you send them information on the patient's history and the reason for referral? (response options: "always," "most of the time," "sometimes," "seldom or never," and "not applicable.") **(When you do send information, how do you send another facility information on the patient's history and reason for referral?)**
17.	On the flip side, how often do you receive information on the patient's history and reason for referral about referred patients from referring facilities (response options: "always," "most of the time," "sometimes," "seldom or never," and "not applicable.") **(When you do receive information about referred patients from referring facilities, how is it received?)**
18.	Do you have systems in place to track whether referrals where completed? **(If yes, describe the systems in place?)**
19.	Do you believe that there are patients who should be referred out to other facilities that do not actually get referred? If yes, why do you think this happens?
	Quality improvement and patient safety
20.	What are your processes for improving the quality of care? Can you give us examples of work you have done over the past year to improve quality of care and improve patient outcomes? **(What does the facility do to improve quality of care? Can you give us examples of what the facility has done over the past year to improve quality of care and improve patient outcomes?)**
21.	What are key challenges your facility faces in delivering safe, high quality surgical care? (this question aims to get at quality, if need to repeat, stress that we'd like to know about challenges to quality care)
	Coordination of care
22.	Do you coordinate care with other health providers outside your facility for a given patient? If yes, can you please describe how this happens?
23.	What are the factors that make coordination of care with other facilities work? What are the barriers to coordinating care with other facilities?

	FINANCING
	Health financing and accounting
24.	What happens if the patient is or becomes unable to pay for services? What are the alternatives?
	Budget
25.	How are you able to influence budgeting for provision of care?
26.	What are key challenges in terms of financing surgery?

	INFORMATION MANAGEMENT
	Information systems
27.	Do you have easy access to medical records related to a patient's current visit? Past visit? **(If yes, describe the process of accessing these medical records)**
28.	Describe the process of maintaining patient data before, during and after a surgical procedure? Whose responsibility is it to record data?
29.	After discharge is the patient responsible for their records or is it kept at the facility?
30.	What are the key challenges you face in terms of accessing patient information?

SS2020 Tanzania
SAT Semi-Structured Interview: Nurse

I would like to interview you to understand surgical capacity at your facility, including the following domains: infrastructure, service delivery, human resources, information management and financing. This semi-structured interview aims to use your perspective to gather an in-depth understanding of the surgical capacity at this facility. We want to understand how surgical capacity at this facility affects the provision of safe, affordable and timely surgical care. We also want to understand the challenges you face and areas for improvement.

I am a researcher at the Program for Global Surgery and Social Change at Harvard Medical School. Participation in this interview is voluntary. This interview will take about one hour. I am going to take notes and record the conversation so I can review it, but I will never share anything you say in connection with your name or the name of your facility. You are welcome to skip any questions that you would rather not answer. If you don't understand any of the questions, please let me know and I will explain them.

If your questions, concerns or complaints are not being answered by the research team, or if you want to talk to someone besides the research team, the Office of Human Research Administration (OHRA) can be reached at +1 617-432-2157.

Is it okay with you to proceed? Procession of this interview validates that verbal consent was given to participate in this interview.

Facility:

Interviewer(s):

Interviewee name & title:

Interviewee contact information:

	INFRASTRUCTURE
	Facility readiness
1.	What factors, if anything, prevent you from carrying out necessary procedures? ▪ Lack of materials or equipment (e.g. sutures, gloves, etc.)? ▪ Lack of procedure space? ▪ Lack of medical utilities (e.g. oxygen, electricity, etc.)? ▪ Inadequate perioperative services? (inadequate perioperative services = having an OR for major or minor surgeries that is not adequate, perhaps it is not sterile, without electricity of water?)
2.	In urgent settings, how do you communicate with physician teams (e.g. phone call, direct contact, etc.)? **(When a patient needs a doctor's attention immediately and the doctor is not in the ward, how do you communicate with physicians?)**
3.	Do you have a centralized nurses' station from where you monitor your patients?
4.	How do patients alert you to their needs? **(If a patient needs nursing attention immediately, how do they tell you?)**
	Equipment and Supplies
5.	On the ward, how readily do you have access to emergency equipment and supplies such as pain medicine, bag mask valves, etc.? **(If there is an emergency, do you have access to emergency equipment? what equipment?)**
6.	How readily accessible are patient-care supplies (e.g. sutures, bandages, etc.)? What is the process of procuring supplies when there is a shortage? **(What is the process of procuring supplies, in general and how does this happen?)**
7.	What are the key challenges your facility faces in terms of nursing infrastructure? (term infrastructure can get confusing here as many might thing this means physical infrastructure, perhaps rephrase as "key challenges your facility faces in terms of nursing")

	WORKFORCE
	Healthcare staff
8.	What are the typical nurse-patient ratios on the varying wards (ED, post-surgical, etc.)? **(on average, how many patients does a nurse at this facility care for during their shift?)**
9.	Do skill/training level of nurses match the needs at this facility?
10.	Is there a nurse available 24 hours a day in all wards for all departments?
11.	How is patient care divided between nursing staff on the wards?
12.	Tell us what it is like to work in this facility, in general. How would you characterize the way people interact and what it feels like to be in this facility? (the part of this question most easily understood is to ask **"how do staff members interact at this facility?")**
	Educational opportunities
13.	Describe any career support and education you receive at this facility for nursing staff. What would you like to see at your facility? (break into two questions for ease of understanding the question; (a) other words for "career support and education" used in this context include "seminars" or "trainings"; (b) **what seminars or trainings do you think could benefit your facility?)**
14.	What are the key challenges your facility faces in terms of nursing workforce? (nursing workforce = type of nurses (by qualification) and numbers of nurses)

	SERVICE DELIVERY
15.	Do you have protocols or policies that govern high-risk procedures such as IV medication administration, blood transfusion, and codes? **(If yes, do you have any examples of these policies?)**
16.	What is the nurses' role in post-operative care? (e.g. suture removal, wound dressing) **(What is the responsibility of the nurse in caring for patients after they've had a surgical procedure?)**
17.	What is the mechanism of feedback between doctors and nurses? **(How do doctors and nurses communicate with each other?)**
	Access and referrals
18.	What percentage of your patients live within 2 hours of the hospital? (within 2 hours of the hospital, using the most common mode of transportation)
19.	By what mode of transport do patients typically arrive?
20.	Do you believe that there are patients who should be referred out to other facilities that do not actually get referred? If yes, why do you think this happens?
21.	What is the criteria for transferring a patient to another facility and how does that happen?
	Coordination of care
22.	Do you coordinate care with other health providers <u>outside</u> your facility for a given patient? If yes, can you please describe how this happens?
23.	What are the factors that make coordination of care with other facilities work? What are the barriers to coordinating care with other facilities?

	FINANCING
	Health financing and accounting
24.	What happens if the patient is or becomes unable to pay for services? What are the alternatives?
25.	What are key challenges in terms of financing surgical care?

	INFORMATION MANAGEMENT
	Information systems
26.	What information do you enter into the patient's record? Where is this recorded?
27.	What information do nurses systematically monitor and document on every patient? **(Does this always happen? If no, why not?)**
28.	Do you have easy access to medical records related to a patient's current visit? Past visit? **(If yes, describe the process of accessing these medical records)**
29.	After discharge is the patient responsible for their records or is it kept at the facility?
30.	What are the key challenges you face in terms of accessing patient information?
31.	What suggestions do you have for improving the management of patient information at your facility?

SS2020 Tanzania
SAT Semi-Structured Interview: Anesthesia Provider

I would like to interview you to understand surgical capacity at your facility, including the following domains: infrastructure, service delivery, human resources, information management and financing. This semi-structured interview aims to use your perspective to gather an in-depth understanding of the surgical capacity at this facility. We want to understand how surgical capacity at this facility affects the provision of safe, affordable and timely surgical care. We also want to understand the challenges you face and areas for improvement.

I am a researcher at the Program for Global Surgery and Social Change at Harvard Medical School. Participation in this interview is voluntary. This interview will take about one hour. I am going to take notes and record the conversation so I can review it, but I will never share anything you say in connection with your name or the name of your facility. You are welcome to skip any questions that you would rather not answer. If you don't understand any of the questions, please let me know and I will explain them.

If your questions, concerns or complaints are not being answered by the research team, or if you want to talk to someone besides the research team, the Office of Human Research Administration (OHRA) can be reached at +1 617-432-2157.

Is it okay with you to proceed? Procession of this interview validates that verbal consent was given to participate in this interview.

Facility:

Interviewer(s):

Interviewee name & title:

Interviewee contact information:

	INFRASTRUCTURE
	Facility readiness
1.	What factors, if anything, prevent you from carrying out necessary procedures? ▪ Lack of materials or equipment (endotracheal tubes, bronchoscope, pulse oximeter, monitors, anesthesia machine, etc.) ▪ Lack of procedure space? (post-operative care unit, induction space, operating rooms) ▪ Lack of medical utilities (e.g. oxygen, electricity, etc.)? ▪ Inadequate perioperative services? (inadequate perioperative services = having an OR for major or minor surgeries that is not adequate, perhaps it is not sterile, without electricity of water?)
2.	What services are available for critically ill patients?
3.	What systems are in place for the safe transfer of patients to a higher level of care?
4.	What challenges do you face with the safe and efficient transfer of critically ill patients to a higher level of care?
5.	What are the key challenges your facility faces in terms of anesthesia infrastructure? (anesthesia infrastructure = anesthesia providers/procedures within the department of surgery ; try not to get at physical infrastructure)
	Equipment and Supplies
6.	On the ward, how readily do you have access to emergency equipment and supplies such as pain medicine, bag mask valves, etc.? **(if there is an emergency, do you have access to emergency equipment? what equipment?)**

	WORKFORCE
	Healthcare staff
7.	How is clinical work shared amongst the anesthesia providers at this facility? (including out of hours and on-call coverage) **(Who are anesthesia providers at this facility? How do the providers share out-of-hours and on-call coverage? On a typical shift, how does the anesthesia team share responsibilities?** (note: often there is only 1 on each shift, so this might not be relevant))
8.	What happens when no anesthesia is available? **(How often does that happen?)**
9.	What is the role of non-physician providers in anesthesia care? (note: in most of these facilities nurse anesthetists provide anesthesia, it's rare to find a physician provider, perhaps approach this question by asking: "**What is the role of the anesthesia providers at this facility in providing anesthesia care?"**
10.	Tell us what it is like to work in this facility, in general. How would you characterize the way people interact and what it feels like to be in this facility? (the part of this question most easily understood is to ask "**how do staff members interact at this facility?**")
	Educational opportunities
11.	Describe any career support and education you receive at this facility for anesthesia providers. What would you like to see at your facility? (break into two questions for ease of understanding the question; (a) other words for "career support and education" used in this context include "seminars" or "trainings" for anesthesia providers; (b) **what seminars or trainings do you think could benefit anesthesia providers at your facility?**)
12.	Who receives training in anesthesia care at this facility?
13.	What are the key challenges your facility faces in terms of anesthesia workforce? (anesthesia workforce = type of providers and number of providers)

	SERVICE DELIVERY
	Access and referrals
14.	What percentage of your patients live within 2 hours of the hospital? (within 2 hours of the hospital, using the most common mode of transportation)
15.	Do you believe that there are patients who should be referred out to other facilities that do not actually get referred? If yes, why do you think this happens?
	Quality improvement and patient safety
16.	What safety mechanisms do you employ in anesthesia care?
17.	What are your processes for improving the quality of anesthesia care? Can you give us examples of work you have done over the past year to improve quality of care and improve patient outcomes? (**What does the facility do to improve quality of anesthesia care? Can you give us examples of what the facility has done over the past year to improve quality of anesthesia care and improve patient outcomes?**)
18.	What are key challenges your facility faces in delivering safe, high quality anesthesia care? (this question aims to get at quality, if need to repeat, stress that we'd like to know about challenges to quality care)

	FINANCING
	Health financing and accounting
19.	What happens if the patient is or becomes unable to pay for anesthesia services? What are the alternatives?
20.	What are key challenges in terms of financing surgery?

	INFORMATION MANAGEMENT
	Information systems
21.	What information do you enter into the patient's record? How is this recorded?
22.	What information do anesthesia providers systematically monitor and document on a patient? **(Does this always happen? If no, why not?)**
23.	Do you have easy access to medical records related to a patient's current visit? Past visit? **(If yes, describe the process of accessing these medical records)**
24.	After discharge is the patient responsible for their records or is it kept at the facility?
25.	What are the key challenges you face in terms of accessing patient information?