



Government of Sierra Leone



MATERNAL AND NEONATAL QUALITY OF CARE

BASELINE ASSESSMENT REPORT



Bo Government Hospital,
Bo District, Sierra Leone

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Abbreviations

C-section	Caesarean section
CHC	Community Health Centre
CPAP	Continuous positive airway pressure
DHMT	District Health Management Team
EmONC	Emergency Obstetric and Neonatal Care
ETAT	Emergency Triage, Assessment and Treatment
HCW	Health care workers
IPC	Infection prevention and control
MCHA	Maternal Child Health Aide
MDSR	Maternal Death Surveillance and Response
MNH	Maternal and newborn health
MoHS	Ministry of Health and Sanitation
M&E	Monitoring and evaluation
PCMH	Princess Christian Maternity Hospital
PMTCT	Prevention of mother-to child transmission
QI	Quality improvement
QoC	Quality of care
SECHN	State Enrolled Community Health Nurse
SNCU	Special newborn care unit



1. Introduction

The poor quality of maternal and newborn health services has been a significant issue in Sierra Leone, in part due to the protracted civil war followed by the Ebola outbreak. During the epidemic, fewer pregnant women accessed health care, and for those who did, an increase in maternal mortality and stillbirths was observed. As these events came to an end, the country was faced with the significant task of revitalizing a seriously impaired health care system. Most maternal deaths occurred in health facilities and the Sierra Leone Ministry of Health and Sanitation (MoHS) related these deaths to poor quality of care. A variety of factors affected the quality of care (QoC) such as: inadequate staff, unavailability of essential medications and supplies, limited capacity to manage obstetrical emergencies, ineffective referrals, lack of clinical protocols, poor staff attitude and poor documentation and use of patient records.

In response to these issues, the MoHS created a five-year plan, the 'National Health Sector Strategic Plan, 2017-2021' which stated the vision: **"A well-functioning national health system that delivers efficient and high-quality health care and ultimately contributes to the socioeconomic development of the country. This care must be of high quality, accessible, affordable and equitable to all Sierra Leoneans."** Thus, a focus on improving the quality of services is a clear priority within this five-year plan.

In December 2017, the Government of Sierra Leone joined the Global Quality of Care network, which includes 10 countries taking the lead to improve the QoC of women and babies.

The vision of the QoC Network is that every pregnant woman, newborn and child receives quality care. The aim is to decrease facility deaths by 50 per cent among women and newborns, and stillbirths, within five years in the participating countries. One of the first steps was to establish a baseline assessment of the current state of maternal and newborn care.

The Maternal and Newborn Quality of Care Assessment in Sierra Leone was carried out to provide a baseline to guide planning for this quality improvement (QI) initiative.

1. S.A. Jones, S. Gopalakrishnan, C.A. Ameh, et al. 'Women and babies are dying but not of Ebola: the effect of the Ebola virus epidemic on the availability, uptake and outcomes of maternal and newborn health services in Sierra Leone'. *BMJ Global Health* (2016):1. e000065. doi:10.1136/bmjgh-2016-000065.

2. MoHS. 'Maternal Death Surveillance and Response, Annual Report 2016'. Directorate of Reproductive and Child Health: Freetown, S.L.

The assessment tool was adapted from the World Health Organization's (WHO) Integrated Maternal, Neonatal and Child Quality of Care Assessment and Improvement Tool and limited to the maternal and neonatal modules. Infrastructure, human resources, service statistics over a 12-month period, support services and case management were covered. The baseline assessment was designed to evaluate the QoC in six health care facilities (two hospitals and four health centres): Princess Christian Maternity Hospital (PCMH), Regent and Waterloo Community Health Centres (CHCs) in Western Rural District, and Bo Government Hospital and Jembe and Koribondo CHCs in Bo District.

This report describes the assessment of the Bo Government Hospital. It was conducted by an assessment team consisting of UNFPA, MoHS and the District Management Health Team (DHMT) staff (Appendix 2).

2. Methodology

This assessment was conducted as a QI initiative. Randomization and representative samples were not obtained, so the results are not generalizable. QI is an intrinsic part of good clinical practice where lessons learned are used to enhance future health care delivery for patients and staff at the institution in which the QI activity is implemented.

2.1. Overview of the assessment

As participants in the Global Health Network, the MoHS, UNFPA and partners planned this assessment to initiate QI in health care facilities to improve the QoC of mothers and newborns. A concept note was written and submitted to the MoHS. The overall objectives of the assessment were:

1. To determine the current knowledge and practices of health workers at EmONC health facilities regarding the assessment and management of mothers and newborns.
2. To use the information to prioritize and plan improvements in the QoC at health facilities, including staffing, facility organization, equipment requirements, drug and material supplies, and case management practices, training and supervision of health workers.

3.WHO. 'Integrated Maternal, Neonatal and Child Quality of Care Assessment and Improvement Tool'. Draft 2004.



2.2. Assessment design

From the start of the design phase, the Sierra Leone MoHS has been involved in identifying the need to assess the status of health services. UNFPA engaged an internationally recognized QI consultant to guide the process. At the national level, the Directorate of Reproductive and Child Health of the MoHS was consulted regarding the assessment. A QoC stakeholder orientation meeting was held in May 2018 regarding selection of learning facilities. The team agreed to limit the number of learning sites to provide an opportunity to develop an implementation plan, test approaches and learn from the experience prior to scaling up.

The six selected MoHS facilities were chosen to represent urban and rural settings, and hospitals and health care centres that provide emergency obstetrical and neonatal care (EmONC). Six facilities were selected: PCMH, Regent and Waterloo CHCs in the Western Rural District and three facilities in Bo District, namely Jembe and Koribondo CHCs and Bo Government Hospital. The intent was to provide a baseline for each facility to begin QI activities rather than make a comparative analysis between the facilities.

As the data collection for this assessment included a significant portion of clinical observation, professional staff interviews and medical record reviews, individuals from the cooperating agencies with extensive clinical experience and involvement with assessing facilities were chosen for the assessment team. Thus, the assessment team consisted primarily of nurses, midwives and physicians. DHMT nurses participated in the review of the tools and were represented on the assessment teams in their respective districts.

The baseline assessment was conducted in the six facilities between May 22 and June 13, 2018. The consultant participated in the first four facility assessments (Bo Government Hospital, Regent, Jembe and Koribondo CHCs) to guide the assessment process. At the end of each assessment, the assessors met with the facility team to review key findings.

2.3. Data collection tools

The WHO Integrated Maternal, Neonatal and Child QoC Assessment and Improvement Tool was designed to collect general information and information regarding the maternal and newborn patient care services and case management. The adapted tool was arranged in three modules: Module A-General Facility Information, Module B-Maternal Care and Module C-Neonatal Care. The WHO tool has another module on paediatric care but the team chose to focus on the first three modules, prior to collecting data on paediatric care. The content of the modules was as follows:

2.3.1. Module A - General facility information

General information on the basic infrastructure and layout of the facility and centre support systems including:

1. Infrastructure;
2. Staffing;
3. Facility statistics;
4. Health information system and medical records;
5. Essential drugs and blood products (when applicable);
6. Laboratory;
7. Guidelines and auditing.

2.3.2. Modules B and C – Patient care units and case management

This section of the tool had two modules, Module A on maternal care and Module B on neonatal care, which included:

1. Emergency care;
2. Wards;
3. Infection control and supportive care;
4. Essential drugs, equipment and supplies;
5. Case management;
6. Monitoring and follow-up.

The MoHS, WHO and UNICEF worked with the QI consultant to adapt the WHO Maternal and Newborn Health (MNH) assessment tool to the country context. The WHO tool was designed for hospital use and was extensive. Thus, the team prioritized areas for the assessment based on the time allotted to conduct the evaluation (one to two days for CHCs, and two to three days for hospitals). The remaining assessment criteria was classified for the two different levels of service according to the Sierra Leone Basic Package of Essential Services (2010–2015).

The WHO tool emphasized the use of direct observation as the primary data collection method. Recognizing that the ability to make direct observations during the planned assessments would be limited, especially in the CHCs, the team developed clinical simulations for each of the clinical modules, one for maternal emergency care (postpartum haemorrhage) and one for neonatal (resuscitation). In addition, a medical record review tool was created by the Sierra Leone team to review clinical documentation of care and treatments. (Appendix 8 exhibits the content of the medical record review.)

2.4. Training of assessors

The consultant oriented the assessors in use of the monitoring tools and scoring criteria in a one-day session in the UNFPA offices in Freetown. Ten assessors from collaborating partners, MoHS, DHMT and national hospitals were trained in using the assessment tool. The number of assessors considered the availability of team members and geographic locations. The training consisted of an introductory section, followed by a review of the modules to prepare participants to implement the forms and logistics. During the training, several adaptations were made by the assessors to clarify the questions in the tool.

2.5. Field testing

Most of the assessment team members participated in field testing the tool at Regent CHC. After the field test, the assessment team met to revise the tool and streamline the assessment process.

2.6. Data collection

Data was collected by teams of three to five people each. Each team consisted of a team leader (the QI consultant or UNFPA staff) who made team member assignments and supervised the data collection (although, as time permitted, the team leader also collected data).

The other team members collected data on the following forms:

1. General information;
2. Pharmacy;
3. Laboratory;
4. Guidelines and auditing;
5. Medical record review;
6. Maternal care;
7. Neonatal care;
8. Clinical simulations;
9. Health care worker interviews;
10. New mother interviews.

Clinicians with the most recent clinical experience were assigned to the medical record review, maternal and neonatal care and clinical simulations. The WHO tool provided the guidance for carrying out each aspect of the data collection. The teams generally arrived at 9 AM, as facilities began their day and finished data collection by 4 PM.

The assessment process involved a variety of methods to elicit information from various sources to determine the quality of maternal and newborn care. They included:

1. Interviews with the officer in charge, health care providers and clients;
2. Document review;
3. Observation of service delivery;
4. Observation of facility environment.

2.6.1. Interviews

Leadership

An interview with the officer in-charge of the facility focused on questions regarding the organization layout and structure, statistics, staffing and how data and information were used in making decisions.

Health care worker interviews

Due to time limitations and the limited number of staff available in some facilities, two available staff members were interviewed at each facility, who were selected by the in-charge. Staff opinions were sought about the QoC provided at the facility, staffing, availability of medications and supplies, availability of guidelines and training, and referral processes.

New mother interviews

Two women present at the facility, who had delivered at the facility, were identified by the clinic staff for interviews. Convenience sampling was required due to time constraints.



With verbal consent, the patient interview tool was used to guide the discussion to elicit information regarding the women's experience with the health care system, including labour and delivery, newborn care, staff attitudes, transport and referral processes and follow-up care.

2.6.2. Document review

Review of procedural documents

The assessors reviewed various documents including policies, procedures and staffing. Clinical protocols and treatment guidelines were located to determine if current national documents were readily available to staff. The assessors sought to determine if facility staff had been oriented and/or trained in the policies and procedures. Health information data also was reviewed to evaluate the accuracy and thoroughness of data management.

Review of medical records and registers

Maternal, newborn and referral registers were reviewed for accuracy and completeness. In addition, the registers were used to select records for the medical record review.

A medical record review tool, designed in Sierra Leone, was used to collect data from the patients' record. Five cases were selected from the maternal/newborn registers to review normal labour and delivery and newborn care documentation within the past six months. Cases with complications were obtained from the referral registers. When there were a limited number of complications, the review looked at the past 12 months.

The medical record review was done to validate the facility's compliance with required clinical documentation and whether protocols were followed. The group that adapted the assessment tools prioritized complications to be reviewed based on prevalence in Sierra Leone. The complications selected for medical record review included: mothers with infections, malaria, HIV, and preterm labour. (Post-partum haemorrhage was evaluated during a simulation). Records of low birth weight and sick newborns were reviewed; management of resuscitation was a simulation.

The original intent was to review five records for each type of case. In most facilities, this was possible for the normal deliveries; however, insufficient numbers of records were available at the day of the survey to fulfill the sample size expectation for complications. In some facilities, this was due to low number of complications experienced, and other times it was the inability to locate records. Interviews with the staff regarding management of complications was another means of gathering data.

2.6.3. Observation of service delivery

Case observations

In CHCs and hospitals, an effort was made to observe normal deliveries. Observations of a caesarean section (C-section) in hospitals was desired. In Bo Government Hospital, the team was able to observe four normal deliveries, but no C-section.

Simulations

Clinical simulations were created from current national protocols for maternal and neonatal emergency care, one for maternal emergency care (postpartum haemorrhage) and one for neonatal (resuscitation). Models were not available so that the assessors improvised with available equipment or asked the staff members to describe each of the steps of the intervention.

General observations

All assessors were tasked with making observations of infection prevention and control (IPC) practices in each area visited.

2.6.4. Observation of the environment

Maternity unit visits

Assessors visited areas where maternity patients are received and managed, e.g., outpatient department and maternity ward. Maternity and neonatal assessment tools were used to evaluate facility operations. During unit visits, there were observations of things such as cleanliness, patient flow, toilet facilities and whether drugs and equipment were available.

Support services

Visits were made to the laboratory and pharmacy (if present).

General environment

Additional observations were made regarding patient waiting areas, waste management sites and the general condition of the infrastructure and surrounding environment.

2.7. Facility visits

The MoHS sent the DHMT and facility in-charge a memo to inform them of the planned assessment approximately one week in advance. UNFPA staff made confirmation phone calls a day before the visits. Upon arrival, a meeting was held with facility staff to inform them of the purpose and process for the assessment.

Date of Visit	No. of staff	Staff Interviews		Mother Interviews		Observations made
		Planned	Conducted	Planned	Conducted	
May 22-23, 2018	342	2	2	2	2	4 normal deliveries

The in-charge assigned staff members to assist each of the assessors. Areas were located for interviews to take place privately and interruption to patient care was minimized as much as possible. During the assessment, the assessment team leader monitored progress toward completing the tasks according to the schedule planned. Assessors who completed assignments early assisted others in collecting data.

When all data was collected, the assessors met to discuss and integrate key findings. A debriefing was held with staff to review key strengths and weaknesses.

2.8. Scoring

Scoring guidance was provided in the WHO tool. A one to five scoring method or, if preferred, a one to three rating, was recommended. The Sierra Leone team determined that the one to five range provided an opportunity to broaden the scoring options. Thus, for overall scoring, numbers from one to five (1-5) were awarded, five (5) being good practice complying with standards of care; four (4) showing little need for improvement to reach standards of care; three (3) meaning there was some need for improvement to reach standards of care; two (2) indicating considerable need for improvement to reach standards of care; and one (1) being services not provided, totally inadequate care or potentially life-threatening practices.

For each score marked, assessors were encouraged to write comments indicating why that score was given. Each of the sections ended with a summary table, in which the findings were summarized. The summary table was modified from the WHO summary table, because of the limited number of criteria selected for evaluation in Sierra Leone. In addition, each assessor identified the main strengths and weaknesses of the section. The summary score is the average score for the section.

2.9. Data process and analysis

The QI consultant functioned as the data manager. All data was entered by hand into the data forms by the end of each assessment day. The QI consultant reviewed each form for obvious error for correction. The data was exported into Excel for analysis.

The UNFPA's reproductive health team who were part of the assessment from the beginning, assisted in reviewing and clarifying the data. The reviewers edited the questionnaires in consultation with data collectors, and calling the health facilities when needed. Data processing was done at UNFPA's office in Freetown.

To maintain consistency of scores between assessors, percentages were set for each level (summary scores: 5 = between 86 to 100 per cent; 4 = 61 to 85 per cent; 3 = 51 to 70 per cent; 2 = 31 to 50 per cent; 1 = less than 30 per cent). Some questions required 'yes' or 'no' answers, in which case, the data was entered into the Excel database as '0' for negative responses and '1' for a positive response. These positive responses were added, and a percentage calculated based on the number of potential positive responses.

The data manager finalized the process by routinely backing up data and using password-protected computers ensuring maximum protection of data loss or corruption. Data was then entered into an Excel database.

3. Results

The summary findings provide an overview of the current QoC of Maternal and Newborn Health Services at Bo Government Hospital, which provides EmONC and sick newborn care 24/7. The findings include the structure, number of staff and training conducted, clinical services, and supplies and data management. The assessment tools were organized in three modules: Module A-general information, Module B-maternal care and Module C-neonatal care.

3.1. Section A: General

3.1.1. Infrastructure

Bo Government Hospital is a 280-bed district referral hospital for which UNFPA supported renovation of the maternity ward. The hospital has a 47-bed maternity ward, an operating theatre for performing C-sections and a 40-bed postnatal unit. In addition, a new 16-bed special newborn care unit (SNCU) opened one month before this visit with nine cots for babies born in the hospital and seven cots for out-born babies.

Power outages occur daily, and the backup power supply is not always functional because of a lack of fuel supply. Electricity is stable in some areas of the hospital, e.g. Ward 6 paediatrics has solar power. Solar power is also used for the vaccine refrigeration unit that holds oxytocin and vaccines. At the time of the assessment, solar power was being installed for the SNCU. The lack of power also affects the water pumps, and as a result the water supply to the hospital is irregular. Table 1 depicts the scoring for the infrastructure criteria. A consistent means for obtaining and acting upon patient feedback, e.g. suggestion boxes or exit interviews, has not been established.

Table 1. Infrastructure criteria scores

Criteria	Score (1-5)
Electricity available	2
Backup power supply	1
Running water/water for handwashing	2
Soap or disinfectant	5
Sharps disposal boxes	3
Refrigerator for drugs or vaccines	3
Complaint management system	1
Total	17
Percentage: Infrastructure	48.6%

3.1.2. Health information system

The overall score for the health information system was 36 percent. Various registers are used to collect and report data to the government. Service data is collected and aggregated manually at the end of the month, then sent to the Ministry.

The staff indicated that they do not receive feedback or summaries of the data. Nursing staff stated that they discuss the data that they have collected monthly although the discussion is mostly about missing and inaccurate data collection, rather than the use of the data to improve patient care.

There is a lack of coordination between the monitoring and evaluation (M&E) officers and the service providers. Periodic review and evaluation of the statistics by a multidisciplinary professional team was not evident. The hospital does not have a computerized system to manage patient flow (admissions, discharges) or to track key clinical indicators.

3.1.3. Health care policies

Sierra Leone has a policy to provide free services to vulnerable groups such as pregnant women. General consultations are free, as well as other services such as antenatal and postnatal care, delivery, family planning and prevention of mother-to-child transmission (PMTCT) of HIV/AIDS. The policies and procedures for IPC were current and comprehensive. However, hepatitis B immunizations are not available and there is no policy to provide them to health care workers. The facility is not certified by the Baby-friendly Hospital Initiative, but a policy was available regarding Kangaroo Mother Care. Specific policies on setting the expectations for staff to meet QoC standards and improve performance were not identified, as seen in Table 2. In general, most hospital policies were not easily accessible to staff.

Table 2. Health facility policies

Health facility policies	Yes/No
Hospital fee policy	Yes
Fees clearly displayed	Yes
Prohibits unofficial payments (bribes or asking patients to pay for services and supplies that are free)	No
Provision of services for emergency cases	No
Provision of certain drugs free for mothers & newborns	No
Community input on service delivery & QoC	No
Policy on immunizing health workers with Hepatitis B	No
Monitoring health care workers' hand hygiene	Yes
In-service training	No
QoC policies setting expectations for staff to meet standards	No
Participating in Baby-friendly Hospital Initiative	Yes
Kangaroo Mother Care	Yes
Process to communicate and reinforce policies for staff members	No
Total: Policies	5
Percentage: Policies	38.5%

3.1.4. Referrals

The hospital has a functional referral system as noted in Table 3; however, there is only one ambulance that serves the entire district and there are issues with having sufficient fuel. Patients who cannot be handled at the hospital can be referred to hospitals in Freetown. Staff were not sure if a policy and procedure existed regarding transfers and referrals.

Table 3. Referral scores

Criteria	Score (1-5)
Functioning vehicle available for emergency transportation	4
Free transport to higher level referral hospital is available	4
Emergency transfer and referral policies and procedures	3
Total: Referrals	11
Percentage: Policies	73.3%

3.1.5. Pharmacy

The hospital has a pharmacy store that is managed by a store keeper and four technicians. A review of the drugs available showed that many were stocked out. No expired drugs were found in stock. (A list is available in Appendix 4.) All drugs are free; however, with stock-outs, patients must buy their drugs, even for surgery. For example, Ketamine (for anaesthesia) has been stocked out since 2017. Also, antibiotic prophylaxis is given routinely after surgery based on availability or the patient has to buy it.

The pharmacy was clean and tidy, well-ventilated with sufficient lighting. A first-expiry, first out stocking process is used. The cold chain for maintaining vaccines is managed by the DHMT and thus not located within the hospital. Medications requiring refrigeration, e.g., oxytocin, are kept in a refrigerator in the labour ward.

3.1.6. Laboratory

A laboratory was present in which nearly 70 percent (69.2 per cent) of the required tests were available (listed in Appendix 3). Staff reported frequent stockouts of reagents and consumables (e.g., lack of slides) and regular power outages that affect the turnaround time for results. A blood glucose machine was present that was owned by a staff member. A blood bank was available that uses a replacement system, i.e., patients' relatives are asked to donate blood for their family member.

3.1.7. Medical record management

The assessors reviewed medical records in the maternity and neonatal wards. Table 4 shows the scores of the criteria for medical records management. Use of two patient identifiers was not the practice for mothers. However, in the SNCU, the names of mothers are taped to neonates' cots and on the chest of the newborn. There is an archive, but it was not visited. Each patient does have a permanent record. The files are placed in a plastic folder by ward for each month. These folders are kept in the ward for a couple months before sending them to the archive. It was difficult to locate individual files with this system, as it would require remembering the month of hospitalization and the ward, and then looking through a stack of records that were not filed systematically.

Table 4. Medical record management scores

Criteria	Score (1-5)
Use of two patient identifiers	1
Permanent record on file	5
Entries clear & legible	4
Entries dated and signed	2
Admission & discharge diagnosis	4
Drugs & treatments documented	5
Previous admission information available	1
Antenatal records available	1
ANC & intrapartum available during postpartum	1
Mothers have access to record	1
Total: Medical records	25
Average score: Medical records	50%



3.1.8. Guidelines and audits

Most of the guidelines/protocols for management of maternal and newborn care were not present in the wards (22.5 per cent available). (The list of guidelines are in Appendix 6.) Some wall charts were displayed to manage common emergency obstetric cases, e.g. pre-eclampsia/eclampsia, infections, postpartum haemorrhage and prolonged labour. Seventy percent of the audit criteria were met as seen in Table 5. Maternal death surveillance response (MDSR) audits are conducted routinely; however, not all relevant staff are involved in discussing the findings and acting upon the results.

Table 5. Audit scores

Criteria	Score (1-5)
Audits are conducted to review cases of deaths and complications for MDSR	5
MDSR audits involve all team members	3
MDSR audits include monitoring of facility flow and QoC	3
Recommendations from audits are discussed and implemented	1
Periodic staff meetings are held to discuss organizational aspects	2
Total: Audit	14
Percentage: Audit	56%

Summary of strengths & weaknesses in Section A: General

Strengths:

- Some solar power available
- Competent maternal and neonatal staff
- M&E system, focal person available
- Referral process; free ambulance service

Weaknesses:

- Unstable electricity and water supply
- Lack of ongoing equipment maintenance
- System for measuring patient satisfaction is not in place
- Lack of computers and access to internet
- Insufficient staff in some cadres
- Lack of coordination between M&E officers and clinical staff
- Lack of accessibility of facility policies and protocols to the staff
- Ineffective medical record system

3.2. Section B: Maternal care

3.2.1. Emergency obstetric care

During 2017, there were 22 maternal deaths, 115 neonatal deaths and 335 still births. Table 6 depicts the scores for the emergency obstetric care layout and structure. Women arriving with an emergency obstetric condition are received in the labour ward by a midwife; a triage area is not available. There was no obstetrical triage protocol; however, the staff were able to recall the steps of a rapid initial assessment. A space equipped for emergency management of pregnant women was not available, nor an emergency trolley. A plastic container was kept in a cupboard in the labour room that contained resuscitation equipment and other items, which was not optimum for a quick response. The staff indicated that UNICEF was planning to renovate a space for newborn resuscitation. The staff estimated that they receive referral notes from the peripheral health care units between 50 and 75 per cent of the time.

Table 6. Emergency obstetric care: Layout and structure

Criteria	Score (1-5)
1. Triage system present	1
2. Triage is done in a timely manner and not hindered	3
3. Staff in charge of triage are adequately trained and able to apply triage criteria	3
4. A skilled birth attendant (doctor/midwife/nurse) is always available to manage patients with emergency conditions	3
5. Essential emergency drugs always available	4
6. Essential lab tests always available	3
7. Equipment for emergency conditions always available	4
8. Job aids are displayed for the management of obstetric cases	4
Total: Layout & structure	4
Percentage: Layout & structure	26

3.2.2. Maternity ward

The maternity ward consisted of six rooms with 47 beds. In 2017, there were 1,575 normal deliveries, 879 C-sections and 52 assisted deliveries, with a total of 2,670 live births. The overall score for criteria referred to as 'hygiene and attention to seriously ill' was 68 percent as depicted in Table 7. The ward was quite warm and humid with no air-conditioning. The labour ward was overcrowded. Staff indicated that patients who were seriously ill were placed as close to the nurses' station as possible.

Toilets were accessible to patients separate from the public and staff, usually with running water (lack of electricity affects the water pumps). Beds and window curtains were worn out in the ward. The screens in the observation ward close to the operating theatre were faded and worn out. Patient beds were clean, some needed maintenance; most had mosquito nets. Patients had their own bed linen and some only had their 'Lappa's' (cover cloths).

Table 7. Hygiene and attention to seriously ill patients

Hygiene and attention to seriously ill	
Criteria	Score (1-5)
1. Toilets are accessible to patients and separate from public, or staff toilets	4
2. Toilets are clean	3
3. There is running water and patients can wash their hands after using the toilet	4
4. Patients have access to clean running water, soap and an appropriate space near the ward to wash them	3
5. Beds are safe, clean, well-maintained (free of rust), and have mattresses without rips/cracks and clean bed linen	3
6. Enough space is provided for mothers to wash their hands in rooming-in wards	3
7. Handwashing facilities (e.g., a sink with connected tap, a bowl with a water canister) are at the point of care and not blocked	3
8. Mosquito nets available for patient use	4
9. Ward is kept clean	3
10. Sharps are disposed of in a special container to prevent accidents	4
Percentage: Hygiene	68%
Attention to the most seriously ill	
11. Is there an emergency management area in or near to each ward?	No
12. Is there a heat source on the ward, and room temperatures kept above 25°C, (if applicable)?	Yes
13. Is there a cooling source (air-conditioning) in the ward?	No
Total	No
Percentage	73.8%

The maternity ward has approximately 80 percent of the required staff (Table 8). In addition to the gynaecologist from the MoHS, a consultant from Uganda was providing medical care supported by Doctors for Africa (CUAMM) and two foreign doctors were supporting neonatal/paediatric care. Four pre-registered doctors, two technical midwives and four volunteers also were assisting with patient care. Nonetheless, observation and interviews with staff suggested that the volume of patients exceeded the projected needs reflected in the basic package and thus, staffing needs were not perceived to be met.



Table 8. Maternity ward staffing

Type of staff	Number required*	Number present
Obstetrician-gynaecologist consultants	1	1 MoHS+ 1 CUAMM
Paediatrician consultants	1	1 MoHS+ 2 from other countries
Doctors	1 Family practice & 1 internal medicine	1
Medical officers	1-2 per specialty	2
State-registered nurse midwife	8	10
State-enrolled Community Health Nurse (SECHN)	12/ward	15
Maternal & Child Health Aide (MCHA)	Nurse's aide (12/ward)	0
Pre-registration doctor	0	4
Technical midwives	0	2
Volunteers	0	4
Total	38	30
		Percentage: 78.9%

Note: External support and positions not included in the Basic Essential Service Package are not included in the overall percent of staffing available.

* Sierra Leone Basic Essential Service Package (2015-2020).

An annual staff training plan has not been developed, and regular monthly in-services are not held. Staff do attend trainings to improve their performance such as emergency triage, assessment and treatment (ETAT) and EmONC; although, a list of these activities and staff who participated was not available.

3.2.3. Infection control and supportive care

Sixty-three percent of the criteria were met regarding infection control and supportive care. The criteria are available in Appendix 5. Portable handwashing stations (called Veronica buckets) were set up in strategic locations throughout the maternity ward. The maintenance of the units seemed lacking: recycled water bottles hung from the units that contained diluted soap. These bottles were not labelled as soap, and some were very dirty. A process for disinfecting the container was not in place. Staff reported that there are stock-outs of soap. Handwashing procedures were posted in various locations and staff were observed to wash their hands when caring for patients. Staff reported that they perform surgical scrubs prior to C-sections; however, there was no running water in the theatre at time of the visit. Protocols on surgical scrubbing were displayed on the walls.

3.2.4. Drugs, equipment and supplies

Less than half (42.9 per cent) the drugs required for obstetrical care were available in the labour ward (Appendix 4a). The delivery room, however, had most of the equipment recommended (82.4 per cent) as noted in Appendix 7.

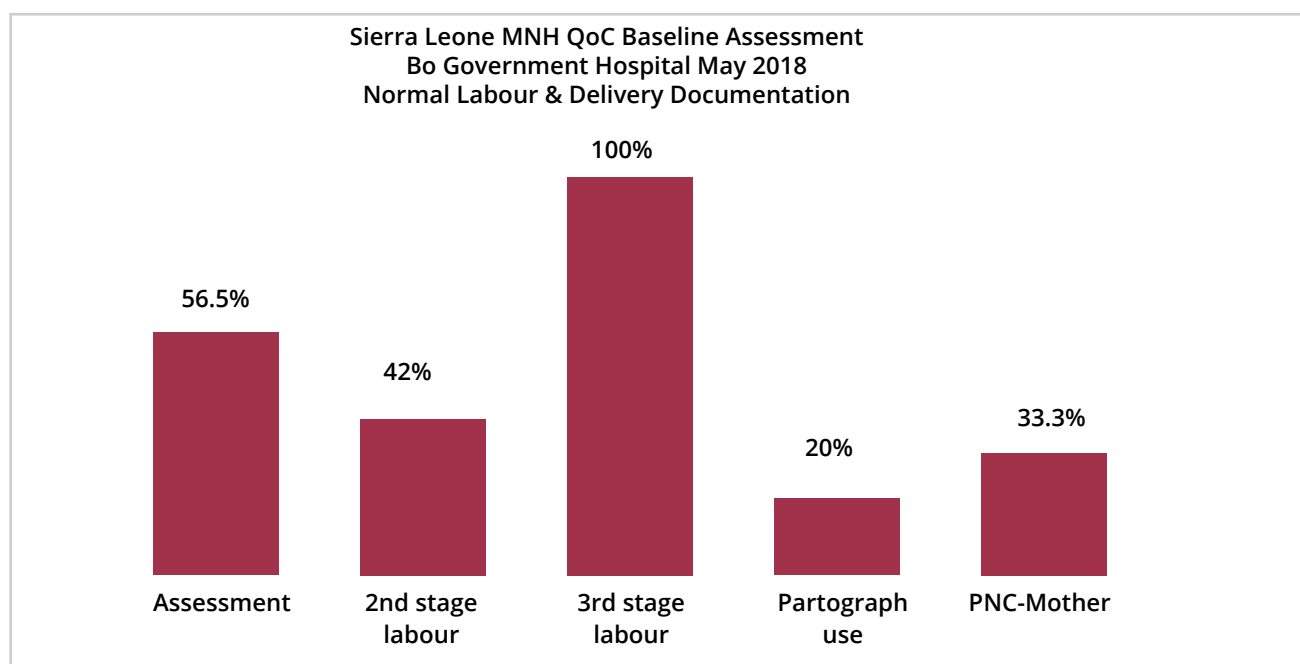
Food is not always available for hospitalized women. Staff interviewed indicated that intravenous fluids are administered according to protocol and are not considered a source of caloric intake for more than 24 hours. Currently, there is a stock-out of some intravenous fluids (normal saline and Ringer's lactate). Favourable practices included the prescription of drug treatment based on patient needs, rather than routine use, and not shaving pubic hair for delivery or C-sections. However, rather than removing a C-section dressing after 24 hours as recommended, dressings are removed when soiled.

3.2.5. Normal labour and delivery

During the visit, the assessment team observed four normal deliveries. In addition, four medical records of discharged patients were reviewed. Of the records reviewed, about half (50.4 per cent) of the maternal assessments were complete; the most common data not documented included foetal heart tones, blood pressure and temperature. In addition, partographs were not being used (20 per cent), which also explains the low score for documentation of second stage labour depicted in Figure 1. The assessor felt that the appropriate assessments and actions were taken during the observation, but staff did not either have the time or take time to document information on the partograph. Oxytocin and the outcome of the delivery were documented in 100 per cent of cases for the third stage labour. The average length of stay for a normal delivery was estimated at 24 hours.

The maternal/newborn registers included 100 percent of the data required in the records reviewed, except for documenting the number of babies breastfeeding at discharge. Refer to Appendix 9 for the list of criteria.

Figure 1. Normal labour and delivery documentation



3.2.6. Management of maternal complications

The most common obstetrical complication experienced in Bo Government Hospital in 2017 was obstructed labour (271 cases: 43 per cent), followed by eclampsia and postpartum haemorrhage (129 cases each: 21 per cent) and sepsis (97 cases: 15 per cent), with a total of 22 maternal deaths as seen in Figure 2. C-sections comprised 35 percent (879 deliveries) of the deliveries and 52 (2 per cent) were vacuum deliveries as seen in Figure 3.

Figure 2. Maternal complications in 2017

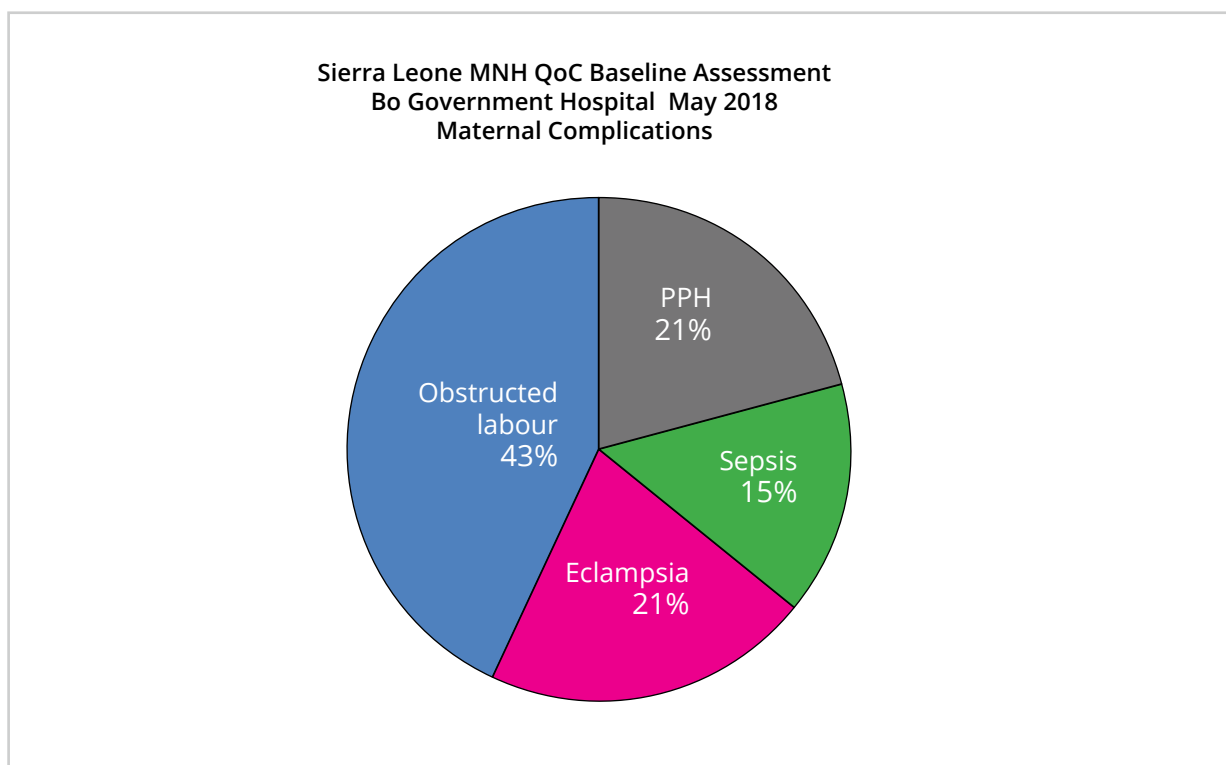
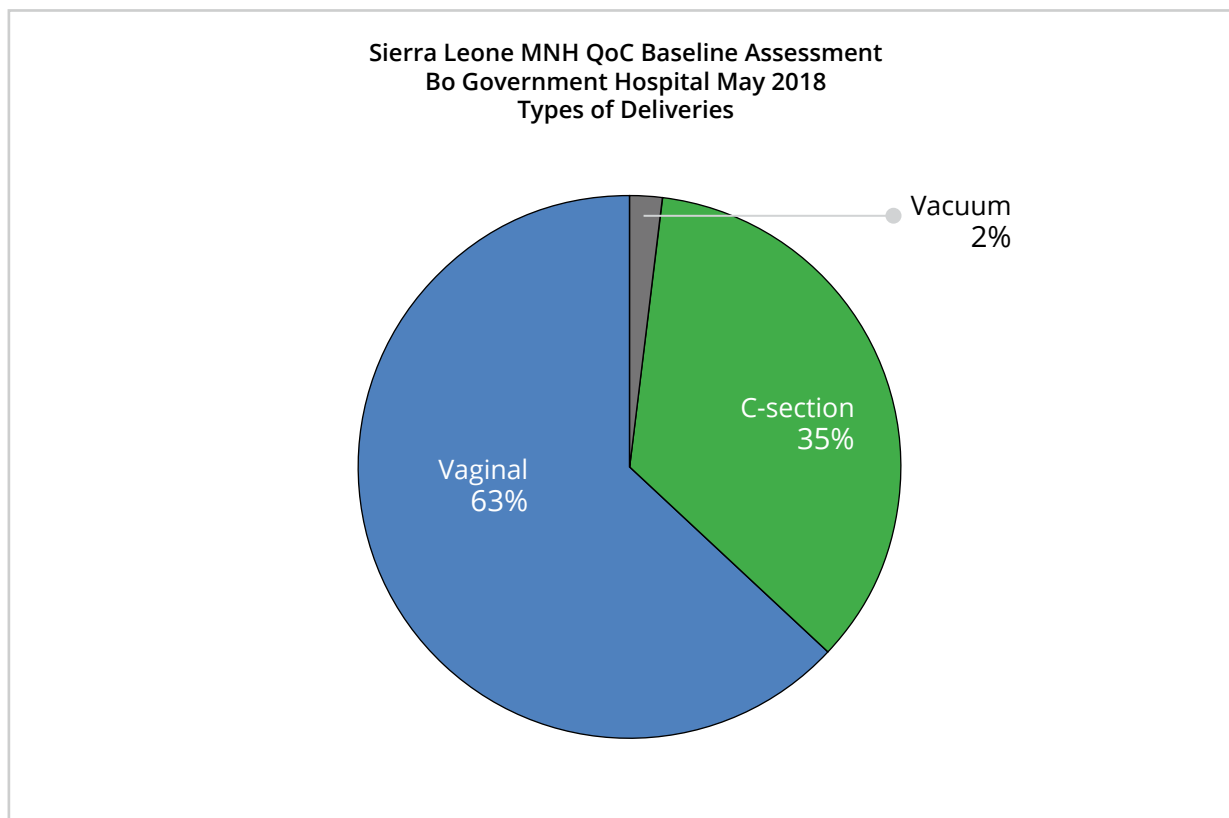


Figure 3. Types of deliveries



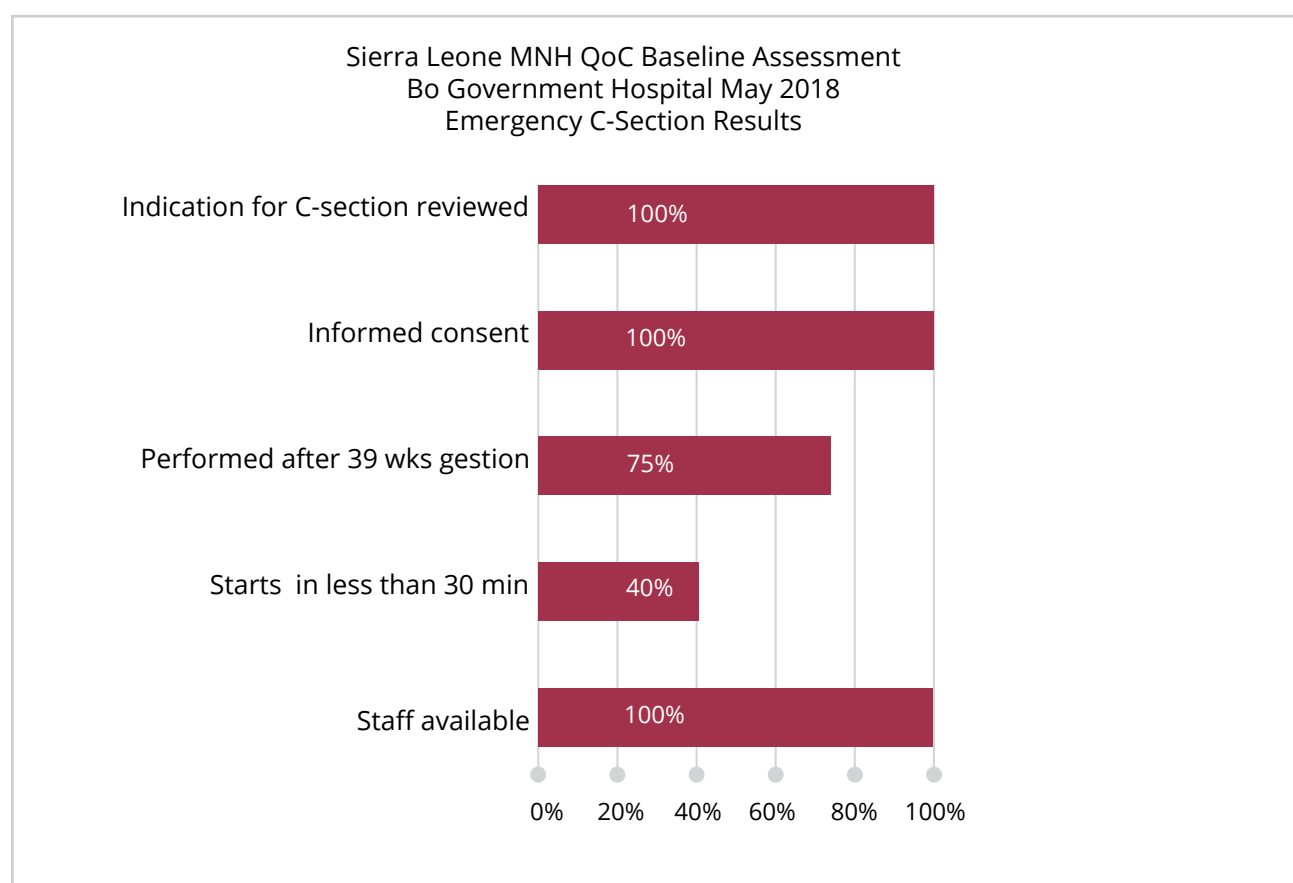
During two simulations, assessors used a checklist to evaluate whether all steps of the management of postpartum haemorrhage and newborn resuscitation were done. The staff members performed most steps according to the protocols (overall 86.4 per cent).

Nine complicated deliveries were reviewed; five of which underwent a C-section; two experienced prolonged labour and one woman had HIV. In addition, five records of women that received blood transfusions were reviewed. The overall score for managing these cases was 87.3 percent (Appendix 8d). The process for locating the records was difficult due to the medical record filing process.

Of the five women who had an emergency C-section, the average score was 77.8 percent for emergency management as depicted in Figure 4 and post-C-section care was 82.9 percent as displayed in Figure 6. During interviews with staff, the assessor received affirmative responses suggesting that the following criteria are used when making decisions regarding performing a C-section:

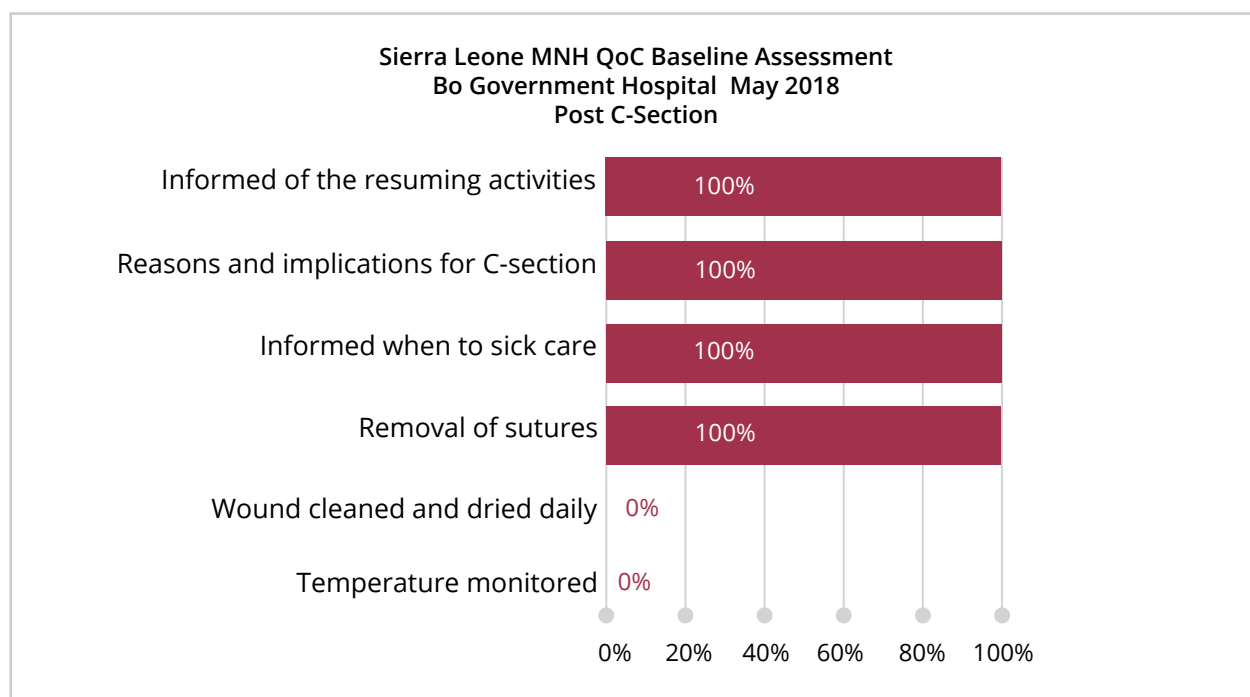
- A C-section on maternal request is not allowed;
- Women with breech presentation are offered the option of an external cephalic version;
- A C-section is performed if external cephalic version fails;
- Elective C-section is performed in uncomplicated twin pregnancies only if the first twin is not a vertex lie;
- C-section not routinely offered in pre-term pregnancies or a full-term baby that is small for gestational age;
- C-section not routinely offered for maternal viral infections other than primary HSV infection in the third trimester;
- C-section is not routinely done for mothers with HIV infection.

Figure 4. Emergency C-section results



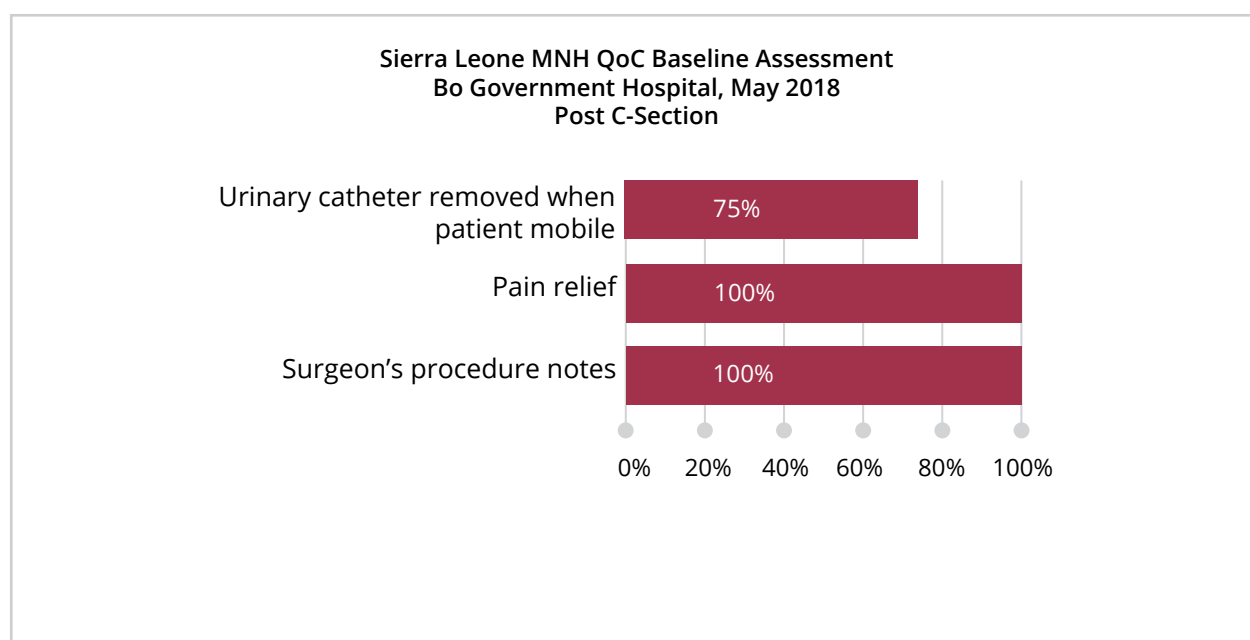
The in-charge stated that staff were always on duty to assist with a C-section. A signed informed consent was in each of the records reviewed. Only two of the five records reviewed (40 per cent) started surgery within 30 minutes of the decision.

Figure 5. C-section procedure results



As noted in Figure 5, the key criteria reviewed during the procedure were met in all cases, except for monitoring temperature (as there were no thermometres) and the wound is not being cleaned and dried daily (as dressings were not changed until soiled).

Figure 6. Post-C-section results



3.2.7. Monitoring and follow-up

The in-charge indicated that the average length of stay for a C-section was seven days. Vital signs and the post-natal assessment of the mother and baby were not well documented (20.1 per cent). All the records included the surgeon's procedure notes and medications for pain were administered. Urinary catheters were removed when patients were mobile in 75 per cent of the records reviewed. Staff explained that catheters were left in place for 14 days for women with obstructed labour to avoid the development of a fistula. The mother's discharge condition and follow-up instructions were not documented in any of the patient records reviewed.

3.2.8. New mothers' perception of services

Two women who delivered their babies at the hospital were interviewed regarding their perception of care received. The interview questions and responses are in Appendix 10. Both women attended at least seven antenatal care visits and neither reported seeking traditional treatment prior to coming to the hospital. The mothers described an initial exam that included a vaginal exam and listening to the baby's heartbeat. One mother had four vaginal exams and the other mother remembered having one or two during labour. Intravenous fluids were given to both and each was in labour approximately four hours.

Staff did not introduce themselves to either woman but both felt that they were treated kindly during labour. Both delivered live full-term babies vaginally and were breastfeeding their babies. They both reported that the hospital was clean. From there on, the women's experiences diverged. One woman was brought to the hospital bleeding by her husband on a motorbike, taking two hours to reach the hospital. She had delivered the day before the interview. This mother delivered a healthy baby but said that she was separated from the baby after birth. She was offered pain relief during labour, but she indicated that she did not receive support or advice about breastfeeding. She remarked that the beds were "too small for two" and she needed rest. She found the doctors polite and helpful, but the nurses and cleaners were sometimes rude. Her suggestion for improvement was to improve communication between nurses and patients.

The other woman felt that she was receiving excellent care. Although the baby was born unhealthy (no reason described), the baby was placed skin-to-skin and she was provided support for breastfeeding. "During labour, the midwife was reassuring and giving me words of courage," she told the assessment team. But she had not received instructions on care of the baby at the time of the interview. Her recommendation for improvement was to provide adequate beds for mothers whose babies are in the neonatal unit.

3.2.9. Health care workers' perception of services

Two interviews were conducted with health care workers (HCWs). One staff member was from the maternity ward with one year of service and the other from the SNCU with six years. The questions and responses are in Appendix 11.

The HCWs affirmed other data collected during the assessment, e.g., inadequate drug supplies, laboratory services and staff, unstable electricity and water supplies. They identified these factors as the main reasons for dissatisfaction among both staff and patients as well as having an impact on patient outcomes. The facility was described as sometimes clean; however, accommodations for patients were felt to be overcrowded.

They both said that they were aware of clinical guidelines in their units and were positive about the supportive supervision provided. Staff meetings were held irregularly. Both felt that they could freely offer suggestions for improvement although one felt that feedback regarding decisions made was not provided. Another reason for dissatisfaction among staff was the rotation every six months and the impression that "SECHNs are being driven from the MoHS."

Both described situations that made them proud of the care they provided and the outcomes. They said that poor outcomes were mainly because of late referrals/presentation at the hospital. The main suggestions for improvement related to infrastructure and lack of resources.

Summary of strengths & weaknesses in section B. Maternal care

Strengths:

- Management of maternal complications
- Equipment and supplies available in the delivery room

Weaknesses:

- Ineffective clinical triage
- Frequent and multiple drug stock-outs of essential drugs
- Partographs not used
- Incomplete documentation of vital signs and post-natal care
- Lack of bed linen and well-maintained screens/curtains

3.3 Section C. Neonatal care

3.3.1. Neonatal resuscitation

Eighty-five percent of the criteria for neonatal resuscitation were met, as the guidelines and equipment were available. National ETAT guidelines for resuscitation were present and staff were knowledgeable about them. An emergency trolley was present in the SNCU; however, the drugs and equipment were in disarray. The staff produced a notebook for documenting that the contents of the cart are checked each shift, but the list was inaccurate and incomplete.

3.3.2. Nursery facilities

UNICEF constructed a new neonatal unit, which became operational about one month prior to this visit. Two rooms were created: one for inborn babies and another for out-born. Each had a sink with running water and hand soap. Mothers are not permitted in the patient care areas. There was a bench in the entry way of the unit where mothers could sit to breast feed, which was crowded. Mothers of the newborns stayed in a room within the same building. The room was sparsely furnished with two beds with sheets and some mattresses on the floor. The unit was not air-conditioned and everyone was sweating and uncomfortable.

While in the neonatal unit, the power went out for the next hour that the assessors were present. There were backup generators, but not enough fuel supply. Some of the neonates were on oxygen provided by a concentrator and staff indicated that the babies were to be moved to Ward 6 (where solar power is used) when this occurred. No babies were moved during the assessors' visit. The power reportedly goes out multiple times a day.

3.3.3. Staffing/training

Thirteen nurses staff the SNCU unit with one nurse's aide. (Staffing cadres and numbers are in Table 9.) Eleven staff have been trained in ETAT and the other two are currently in training. A Congolese surgeon was overseeing the neonatal unit until a few months ago, when he was transferred to the paediatric ward. A month ago, a foreign neonatologist was brought on board to provide services. In the hiatus between physicians, the nursing staff managed the patients.

Table 9. Neonatal ward staffing

Type of staff	Number required*	Number present
Paediatrician/neonatologist	1	1
SECHN	13	13
Nurse's aide	1	1
Volunteers	0	0
Total	15	15

3.3.4. Infection control

The neonatal unit was new and very clean. Staff were observed to wash hands between patients and use gloves when handling the babies. The staff indicated that they only used sterile gloves when they had stock-outs of regular gloves. Standard cardboard sharps disposal boxes were in each patient care area; the one next to the emergency trolley was located on the floor. Bandages on IV catheters were changed every 72 hours rather than daily, per the assessment criteria. Although, staff had a verbal understanding, a policy regarding visitors was not present.

A concern in the SNCU was nasal oxygen prongs that appeared to have mould growing in the tubing. The staff said that they washed these items in the sink in the unit. Sick neonates delivered outside the hospital were kept in a separate room, while hospital-born potentially infectious neonates were placed within the main room of the SCNU. Toilets were available for mothers near their sleeping room; which were locked. Sinks with running water were available (if the water pump was functioning); last month the staff reported that there was a stock-out of soap for handwashing.

3.3.5. Supportive care

Intravenous fluids are provided to babies unable to feed adequately. New electronic infusion pumps were available. Even though the IV bottle was hung on the pump, not all were being used to regulate the flow, as frequent failure of electricity impacted their use. Micro-drop chambers were used to safely maintain the flow. ETAT protocols were being followed for use of intravenous fluids and drug use. Central venous and umbilical catheters are not used in this hospital. Staff stated that glucose levels are measured every four hours and before discharge. Blood transfusions were available for administration of severe anaemia; only screened blood from relations is used.

3.3.6. Essential neonatal drugs

Less than half (42.9 per cent) of the essential drugs for neonatal care were present (Appendix 4b). Some drugs had been out of stock for months. When medications are not available for patients, they are given prescriptions.

3.3.7. Essential neonatal equipment and supplies

The unit was equipped with new high-tech machines to provide phototherapy, warmth, oxygen, etc. Most of the neonatal equipment and supplies were available (83.3 per cent) (Appendix 7a). The equipment that was not available included: continuous positive airway pressure (CPAP), multi-function monitors and breast pumps. Exchange blood transfusions were not being done at the hospital; and thus, transfusions kits were not stocked. Much of this equipment requires electricity so is not functional during power outages. A maintenance plan for the equipment was not identified.

3.3.8. Routine newborn care

Newborn and immediate assessment and exclusive breastfeeding were carried out according to protocols. Appendix 8e shows the scoring of criteria for newborn assessment and immediate care. Immunizations are not given immediately after birth; babies are referred to an expanded programme of immunization after discharge. Babies are treated with ampicillin or gentamycin, instead of benzylpenicillin, when mothers are RPR-positive for syphilis.

Although there were no guidelines to teach mothers how to care for their baby at home, staff described that they taught the mother about cord care and care of their breasts. Baby's assessments were documented prior to discharge, including feeding and jaundice. Only babies born in the hospital were included in the delivery room register.

3.3.9. Case management of the sick newborn

Stillbirths were the most common neonatal complication (335) in Bo Government Hospital in 2017; followed by low birthweight babies (168) and birth asphyxia (105), as depicted in Figure 7. Through interviews and observation, the neonatal staff demonstrated knowledge and skills in providing basic SNCU care. Some assessment items were scored low. For instance, some laboratory tests were not available that are recommended, e.g., checking calcium levels for convulsions, Coombs and bilirubin tests for jaundiced babies, and lumbar punctures to rule out meningitis.

Figure 7. Neonatal complications 2017

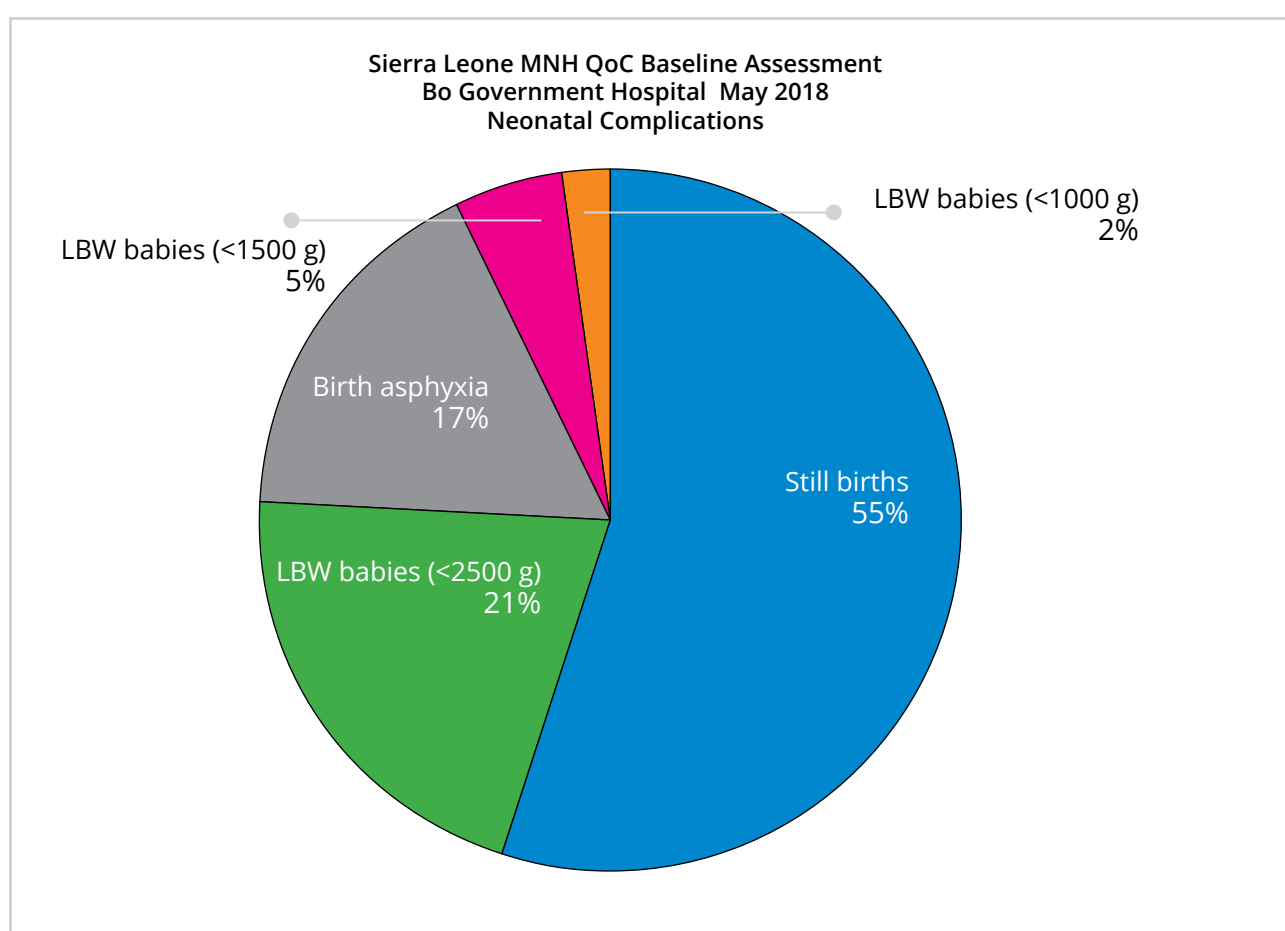


Table 10 shows the scoring for management of neonatal complications. Guidelines for the use of oxygen, resuscitation and management of convulsions are covered in the ETAT guide; however specific protocols for managing other complications like sepsis, and phototherapy for the management of jaundice, were not located during the visit. Concentrated oxygen used in the SCNU requires electricity and when the power goes out, oxygen is not delivered. Two pulse oximeters were available to monitor oxygen levels primarily for the pre-term infants.

Table 10. Scores for case management of sick newborns

Management of neonatal complications	
Criteria	Score (1-5)
All preterm and low birth weight neonates receive warmth & feeding	5
Kangaroo medical care is in practice in the facility	5
Guidelines are available for use of oxygen in pre-term births	3
Neonatal sepsis is diagnosed and investigated according to the protocol	1
Neonatal sepsis is treated according to protocol	1
Antibiotics are given according to age and weight of the baby	4
Clinical status and the response to treatment is monitored and recorded	4
Severe jaundice is recognized and appropriately managed	4
Convulsions are diagnosed and managed according to protocol	4
Specific feeding needs of low birth weight and other sick newborns are met	4
All pre-term and low birth weight babies are admitted for monitoring	4
Mothers' milk is given to low birth weight babies as much as possible.	4
Frequent feedings (at least eight per day) are provided to low birth weight babies and intake is monitored	5
Babies unable to feed are given expressed breast milk by cup, spoon or fed by nasogastric tube in adequate amounts according to age. Intake is monitored	4
Room temperature is kept between 25 °C-28 °C	2
Heat loss is minimized by Kangaroo Mother Care and a cap on the head	4
Babies are weighed daily	5
Oxygen need is routinely assessed using a pulse oximeter	2
Preterm babies with oxygen therapy have O2 saturation monitored	5
Total	70
Percentage	73.7%

3.3.10. Monitoring and follow-up of sick neonates

Table 11 provides the scores for the criteria for monitoring sick newborns. A standardized monitoring chart is not used to capture vital signs, treatments, feedings, etc. An exercise book is used for documentation. The nurses record information about the weight and nutritional status of the neonates in the book. Feeding plans were not included. Physicians assess sick neonates daily, although they are off-duty at 4 p.m. and do not make routine rounds on Sundays. On weekends and holidays, doctors may be called in for a review. Mothers of babies in the SNCU occupy a room down the corridor; they return to the unit for breastfeeding.

Initial follow-up of the babies is at the hospital; arrangements with local health facilities was not apparent. Verbal advice is given to mothers explaining the babies condition and follow-up needs; written discharge notes are not provided. The staff indicated that the discharge criteria listed in the assessment tool was used; however, there were no written discharge criteria identified.

Table 11. Monitoring sick newborns

Monitoring of sick newborns	
Criteria	Score (1-5)
Sick babies are kept in a separate unit or room from healthy babies	3
Sick newborns delivered outside of the facility are kept in a separate room from babies delivered in the facility	5
Mothers are NOT routinely separated from babies and can room-in together	1
At the time of admission, a monitoring plan is made according to the severity of the neonate's condition	1
A standard monitoring chart is used with patient details: vital signs, fluid balance, clinical signs, treatments, feeding & outcome	1
Nutritional status is assessed and recorded daily in all sick neonates	5
Weight is recorded at least daily	5
Special feeding needs are included in the plan/record	1
Routine medications are NOT given if no specific indications	5
Key risk signs are monitored and recorded by a nurse.	2
Dosages and time are recorded for every patient receiving medications and IV fluids given by the nurse	5
Nurses use the results of patient monitoring to alert the physicians of problems or changing patient status warranting their attention	3
Reassessment by physicians	
Seriously ill neonates are assessed by a doctor upon admission and reviewed at least twice daily until improved	5
Sick neonates or new admissions are reviewed by a physician on weekends and holidays	2
Follow-up	
Follow-up is arranged before discharge in the health facility closest to the patient's home that can provide the necessary follow-up treatment	2
All mothers/caretakers of admitted neonates receive a discharge note explaining their condition and providing information for the staff at the follow up facility	1
Babies are discharged when:	3
baby is breathing and breastfeeding well	
baby is gaining weight on three consecutive days	
baby's body temperature is between 36.5°C and 37.5°C on three consecutive days	
Mother able and confident in caring for baby and has no concerns.	
Total: Follow-up	50
Percentage	58.8%

Summary of strengths and weaknesses in Section C: Neonatal care

Strengths:

- New neonatal unit equipped with essential neonatal equipment and supplies
- Neonatal staff trained in ETAT and guidelines used for providing care and treatment
- Free health care and drug policy
- Early and exclusive breastfeeding is encouraged by staff
- Management of routine newborn care

Weaknesses:

- Power outages without sufficient backup for the neonatal unit
- Disinfection of respiratory therapy masks and tubing not effective
- Free drugs and supplies are not always available.
- Maintenance plan for the equipment was not present
- Lack of guidelines for routine newborn care and management of complications (other than ETAT) and teaching mothers how to care for their babies at home
- Lack of organization and maintenance of the emergency trolley in the SCNU
- Frequent and multiple drug stock-outs
- Tuberculosis and polio vaccines are not given at birth per WHO guidelines
- Babies with RPR+ for syphilis are not treated with benzylpenicillin
- Babies born outside the hospital are not included in the delivery register
- A standard monitoring chart of vital signs, treatments, feedings, etc. is not used
- Written discharge criteria were not present
- Follow-up arrangements with local facilities are not made
- Mothers are not given written discharge instructions

4. Summary evaluation scores

The summary findings provide an overview of the current quality of Maternal and Newborn Health Services at the hospital, including the structure, numbers and training of staff, clinical care, supplies and data management.

The summary shown in Table 12 helps to identify the most critical areas as a basis for identifying priorities and a workplan. There are three sections: General, Maternal Care and Neonatal Care. A '5' is the highest rating and a '1' is the lowest. At the end of each section, the scores are added, and an overall percentage of the section given.

Table 12. Summary evaluation scores

Summary scores: 5=between 86%-100%; 4=71%- 85%; 3: 51%-70%; 2=31-50%; 1= less than 30%. (5 being good practice complying with standards of care; 4 showing little need for improvement to reach standards of care; 3 meaning some need for improvement to reach standards of care; 2 indicating considerable need for improvement to reach standards of care; and 1 being services not provided, totally inadequate care or potentially life-threatening practices.)

Summary scores - General		5	4	3	2	1
A.1-A.2.	Infrastructure				2	
A.3.	Staffing and training (maternity and neonatal ward staffing)		4			
A.4.	Health information system				2	
A.5.	Health care policies				2	
A.6.	Referral		4			
A.7.	Pharmacy stores (Refer to Maternity & Neonatal Modules) – not applicable			3		
A.8.	Laboratory			3		
A.9.	Medical records				2	
A.10.	Guidelines and auditing				2	
Module A TOTAL SCORE: GENERAL		0	8	6	10	0
Percentage: General		24/45=53%				

Table 12. Summary evaluation scores

Summary scores – Maternal care		5	4	3	2	1
B.1.	Emergency obstetric care			3		
B.2.	Maternity wards			3		
B.3.	Infection control and supportive care			3		
B.4.	Essential drugs				2	
	Equipment and supplies		4			
B.5.	Normal labour and vaginal delivery				2	
B.6.	Management of maternal complications	5				
B.7.	Monitoring and follow-up					1
Module B TOTAL SCORE: MATERNAL CARE		5	4	9	4	1
Percentage: Maternal care		23/40=57.5%				

Summary scores - Neonatal care		5	4	3	2	1
C.1.	Neonatal resuscitation		4			
C.4.	Essential drugs				2	
	Equipment and supplies		4			
C.5	Routine newborn care	5				
C.6.	Case management of the sick newborn		4			
Module C	TOTAL SCORE: NEONATAL CARE	5	12	0	2	0
Percentage: Neonatal care		19/25=76%				

Section A	Total score: General	0	8	6	10	0
Section B	Total score: Maternal care	5	4	9	4	1
Section C	Total score: Neonatal care	5	12	0	2	0
Overall score		66/110=60%				

5. Recommendations

The recommendations are organized into three themes: forming QI teams, addressing short-term quality gaps (quick fixes) and medium- and long-term problems that require more complex investigation and problem-solving.

5.1. Maternal and newborn quality teams

QI needs to be integrated into the structure of the DHMT and facility. The DHMT can begin by organizing a committee at the district level and training their staff in QI. The DHMT can then provide guidance to the facility to organize a QI team to improve the quality of maternal and neonatal care. The suggestions below provide some steps to get started:

1. Organize a maternity and newborn quality team that will take the lead in improving the QoC. The following types of professionals are recommended:

- Obstetrician
- Paediatrician
- Staff physicians
- Midwife
- Maternity in-charge
- Maternity and neonatal nurse
- District supervisor

(Input from pregnant women, mothers and their families is highly desired.)

2. Select a team leader

3. Review the assessment findings

5.2. Short-term improvements (quick fixes)

4. Identify gaps that can be resolved more easily with quick fixes. Examples for the Bo Government Hospital QI team include the following:

- a. Development of a protocol and an emergency obstetrical triage process;
- b. Development of a process for obtaining client feedback, take action on issues identified and measure improvements;
- c. Obtain clinical guidelines/protocols from the MoHS;
- d. Use partographs routinely to make clinical decisions;
- e. Improve infection control practices, e.g., maintenance of hand hygiene stations;
- f. Develop guidelines for teaching mothers how to take care of their babies at home;
- g. Organize and maintain emergency equipment and supplies;
- h. Use data to make decisions, e.g., collaborating with M&E officer;
- i. Improve documentation, e.g., postpartum care of mother and newborn;
- j. Design a systematic process for providing instructions and teaching mothers how to care for their babies and document.

5.3. Medium and long-term improvements

Bo Government Hospital has some problems that require more collaborative efforts to address them. The physical space, power outages and lack of drugs are the most concerning issues. Support from the district and perhaps, national level and partners will be needed to resolve these issues.

The Basic Package of Essential Services recognized that recommended staffing is not meant to be limiting. "In some contexts, more than the recommended number of staff may be deployed to a particular facility, or a cadre which is not specified in the recommendation may be placed at a facility. The districts can choose to add staff based on the identified needs in their localities."

Thus, workload studies would be a means of identifying the actual staffing needs at Bo Government Hospital.

A broad range of QI techniques are available to assist teams to analyse data, select solutions and monitor improvements. Training will be required in QI and guidance from a QI facilitator to learn ways to implement a sustainable approach to improving maternal and newborn QoC.

5.3.1. Infrastructure

- a. Continue to develop plans and implement solutions to the power outages and water shortages.
- b. Develop a comprehensive biomedical equipment maintenance programme with trained technicians.
- c. Plan and budget for computer systems to provide rapid internet service and ability to track key clinical indicators.

5.3.2. Staffing

- a. Consider conducting a workload study to determine maternity ward staffing needs.
- b. Explore factors that motivate and demotivate staff: incentives, career structures, task-shifting, rotations.
- c. Develop a culture of quality that is oriented towards results, both individually and organizationally.
- d. Strengthen community participation in improving the quality of services.

5.3.3. Supply chain management

- a. Continue to work toward efficient and effective procedures for facility-level logistics functions (forecasting, procurement, storage, inventory control, and distribution) within the facility.
- b. Train and assign personnel who can manage the supplies at the facility level.

5.3.4. Medical records management

- a. Develop a more effective medical records management system so that the records are easily accessible and available to clinicians.
- b. Design a plan to introduce computers to manage patient flow (admissions, discharges, etc.).



6. Conclusion

The baseline assessment conducted at Bo Government Hospital identified gaps in providing maternal and neonatal QoC. These findings are intended to guide the facility team, with support from the DHMT and partners, to prioritize the gaps and develop plans to make improvements. The results indicated that policies and guidelines were not in place to guide care. In addition, the poor management of patient records and availability of drugs were significant hurdles to providing QoC.

Some of the quality gaps identified are quick fixes and can be addressed immediately, e.g., ensuring clinical guidelines are readily available to staff. Other issues will be more difficult, e.g., supply management, which will require concerted efforts to find and test solutions. Thus, organizing a quality team and using a systematic approach to QI will be important to improving maternal and newborn QoC.

We would like to thank the staff at Bo Government Hospital for participating in this assessment and we look forward to working with the team to improve the QoC for mothers and babies who seek care at the hospital. An excellent reference to guide implementation of maternal and newborn QoC can be found at the website of the The Network for Improving Quality of Care for Maternal, Newborn and Child Health, <http://qualityofcarenetwork.org>.



7. Appendices

Appendix 1. Maternal and newborn QoC stakeholders

Name	Organization	Position
Santigie Sesay	Reproductive and Child Health Directorate/MoHS	Director Reproductive and Child Health
Sulaiman Conteh	Reproductive and Child Health Directorate/MoHS	Reproductive Health Programme Manager
Ernest Jabbie	MoHS	M&E Focal Point QoC
Sylvia Fasuluku	UNFPA	SRH Coordinator
Riad Mahmud	UNFPA	RH-TS
James Akpablie	UNFPA	RH-TA
Mariama Mustapha	UNICEF	Health Specialist
Asha Pun	UNICEF	MNH Specialist
A.L. Kamara	UNICEF	Health Officer
Fatu Forna	WHO	Lead, RH/Maternal Health
Binyam Getachew	WHO	Medical Officer, Child Health RMNCAH
James Bunn	WHO	Child Health
Patricia Titulaer-Van Ham	WHO	Technical Officer, Maternal Health
Saidu Bangura		Sr. Public Health Officer
Betty Sam	Liverpool School of Tropical Medicine	Sr. Technical Advisor
Florence Bull	Liverpool School of Tropical Medicine	Technical Officer
Jourdan Anne Schiffer McGinn	Partners in Health	Director of Policy & Partnerships
Jirina Kafkova	Solthis	Medical Officer
Ginika Egesimba	ICAP (Columbia University)	Sr. QI Advisor
Enzo Pisani	CUAMM- Doctors with Africa	Medical Director
Lavinia Turchetti	CUAMM-Doctors with Africa	Administrator
Donald Conteh	CHAI-Clinton Health Access Initiative	Technical Advisor

Appendix 2. Assessment team

Name	Organization	Position
Sylvia Fasuluku	SRH Coordinator	UNFPA
Patricia Bah	Programme Specialist, ASRH	UNFPA
Memuna Bome	Sr. Public Health Sister	RH/FP MoHS
Mariama Mamoh	Sr. Public Health Sister	RH/FP MoHS
Gladys A. Sisay	Sr. Public Health Sister	DHMT- Bo
Joanne Ashton	QI Consultant	UNFPA

Appendix 3. Laboratory tests

Lab test	Available (Yes or No)
Random blood sugar (FROM POCT TO LAB BASED)	Yes
Haemoglobin	Yes
Haematocrit (PCV)	No
Immature to total neutrophil ratio	wbc diff
Leukocyte count	Yes
Blood gas analysis	No
Blood grouping	Yes
Blood cross match	No
Bilirubin	Yes
Rhesus antibodies	Yes
Urine dipstick	Yes
Urine microscopy	Yes
Bacteriology (culture)	Yes
Bacterioscopy (smear)	Yes
Full blood count	Yes
Coagulation tests	Yes
Liver function tests	No
Bilirubin	No
Renal function tests	NA
Electrolytes	No
HIV I and II test (Recombigen)	Yes

Appendix 3. Laboratory tests

Lab test	Available (Yes or No)
CD4 count or HIV plasma viral loads	Yes
Coombs' test: direct and indirect	No
Serum protein and albumin	Yes
Urinalysis	Yes
Rapid test for syphilis	Yes
Microscopy or rapid diagnostic test (RDT) for malaria parasites	NA
CSF microscopy	Yes
Total: Laboratory	18
Percentage: Laboratory	69.2%

Appendix 4. Pharmacy stock

Drugs	
Criteria	Available (Yes or No)
General anaesthetics and oxygen	
Halothane inhalation - bottle	No
Ketamine injection (50mg/ml vial)	No
Thiopental IV (1g vial)	Yes
Local anaesthetics	
Lidocaine injection (1% & 2% vials)	Yes
Ephedrine injection	Yes
Preoperative medications and sedations for short term procedures	
Atropine IV (1mg/ml vial)	Yes
Promethazine IV (25mg/ml ampoule)	No
Analgesics, antipyretics, non-steroidal anti-inflammatory drugs	
Acetylsalicylic acid (ASA tabs)	Yes
Ibuprofen	Yes
Paracetamol (bottles, tablets, suppositories)	Yes
Morphine sulfate (10mg tabs)	Yes
Anti-histamines/anti-anaphylactic	
Chlorpheniramine (4mg tablets)	No
Epinephrine injection (1mg/ml ampoule)	Yes

Appendix 4. Pharmacy stock

Drugs	
Criteria	Available (Yes or No)
Corticosteroids	
Dexamethasone IM (4mg/ml)	Yes
Hydrocortisone IV (100mg ampoule)	Yes
Prednisolone po (5mg tablets)	Yes
Anticonvulsants and antiepileptics	
Diazepam IV (5mg/ml ampoule)	Yes
Magnesium sulphate injection (50% ampoule)	Yes
Phenobarbital (100mg/ml ampoule)	No
Anti-helminthic	
Albendazole (400mg tablets)	Yes
Antibacterials	
Amoxicillin (tablets & suspension)	Yes
Ampicillin IV	No
Benzathine benzylpenicillin injection	Yes
Cefixime	Yes
Ceftriaxone IM	Yes
Ciprofloxacin (500mg tablets)	Yes
Ciprofloxacin (250gm vial)	No
Co-trimoxazole (200 + 40mg/5ml suspension)	No
Co-trimoxazole (tablets)	Yes
Doxycycline 100mg (caps or tablets)	No
Erythromycin (500mg tablets)	Yes
Gentamicin IV (40mg/ml ampoule)	Yes
Metronidazole (200 or 250mg tablets)	Yes
Metronidazole (500mg/100mls vial)	Yes
Antifungal medicines	
Clotrimazole (100mg pessary)	No
Clotrimazole cream (30g)	No
Miconazole	Yes

Appendix 4. Pharmacy stock

Drugs	
Criteria	Available (Yes or No)
Antiviral medicines	
All anti-HIV drugs according to HIV programme	No
All anti-malaria drugs needed according to national malaria control programme	No
Medicines affecting the blood	
Ferrous salt + Folic acid (tablets)	Yes
Ferrous sulphate (syrup)	Yes
Respiratory Drugs	
Aminophylline	Yes
Cardiovascular medicines	
Hydralazine (20mg tablets)	No
Methyldopa po (250 & 500mg tablets)	Yes
Furosemide (10mg/ml ampoule)	No
Furosemide (40mg tablets)	No
Disinfectants and antiseptics (topical)	
Chlorhexidine gluconate 5% 1 litre bottle	Yes
Povidone iodine 10% solution	Yes
Insulins and other antidiabetic agents	
Insulin injection (soluble)	No
Intermediate acting insulin	No
Vaccines	
BCG vaccine ampoule	No
Diphtheria + tetanus vaccine	No
Measles vaccine	No
Rubella vaccine	No
Hepatitis B vaccine	No
Poliomyelitis vaccine	No
Pertussis vaccine	No
Ophthalmological preparations (topical)	
Tetracycline 1% (eye drops & ointment)	No
Oxytocics and anti-oxytocics	
Oxytocin injection (10 i.u./ml ampoule)	Yes
Misoprostol tablets	No

Appendix 4. Pharmacy stock

Drugs	
Criteria	Available (Yes or No)
Solutions correcting water, electrolyte and acid-base disturbances	
Glucose 5-10-50%	Yes
Glucose with sodium chloride	No
Sodium chloride 0.9% isotonic	No
Ringer's lactate	No
Water for injection	Yes
Vitamins and minerals	
Vitamin A oral	Yes
Vitamin K IM	Yes
Questions	
List of essential drugs	Yes
Expired drugs	Yes
Cold-chain respected for vaccines	NA
Blood Bank	Yes
Blood units for transfusion	Yes
Total: Drugs	41
Percentage: Drugs	57.7%

Appendix 4a. Essential labour ward drugs

Labour ward drugs	Available (Yes or No)
Water for injection	No
Normal saline IV	No
Ringer's lactate IV	No
Hydralazine tablets 20mg	No
Oxytocin injection: 10 IU in 1- mL	Yes
Misoprostol tablets: 200 micrograms	Yes
Ergometrine injection: 0.5%mg/ml ampoule	No
Oxytocin/Ergometrine (Syntometrine) 5 units/500mcg/ml injection	No
Salbutamol 2mg & 4 mg tablets	No
Salbutamol 0.5mg/ml ampoule	No

Appendix 4a. Essential labour ward drugs

Labour ward drugs	Available (Yes or No)
Calcium gluconate 10% injection 10ml	Yes
Magnesium sulphate injection 500mg/ml & 200 mg/m	Yes
Diazepam injection 5mg/ml	Yes
Ampicillin / Amoxicillin injection	Yes
Benzylpenicillin injection	No
Gentamycin injection	No
Metronidazole	Yes
Tetracycline 1% eye ointment	Yes
Lignocaine 2% or 1% injection	Yes
Halothane inhalation	No
Ketamine injection 50mg/ml	No
Total: Labour room drugs	9
Percentage available: Labour room drugs	42.9%

Appendix 4b. Essential neonatal drugs

Essential neonatal drugs	Available (Yes or No)
Ampicillin/Amoxicillin	Yes
Benzyl penicillin	No
Ciprofloxacin	No
Co-trimoxazole	No
Chloramphenicol	No
Gentamicin	Yes
Phenobarbital	No
Phenytoin	Yes
Sodium bicarbonate	Yes
Chlorhexidine	No
Tetracycline eye ointment	Yes
Vitamin K 1mg vial	Yes
Vitamin D	No
Ferrous sulfate	No
Total: Neonatal drugs	6
Percentage available: Neonatal drugs	42.9%

Appendix 5. Infection control and support care scores

Hand hygiene	
Criteria	Score (1-5)
Handwashing stations are in a good state of repair (free from visible signs of damage, cracks, fitted correctly and clean)	3
Water and soap or alcohol-based hand rub is available at the point of care	3
Protocols on handwashing and disinfection for various procedures are available and all staff has been briefed	2
Hands are washed with soap and water when visibly dirty or visibly soiled with blood or other body fluid or after using the toilet	3
Hand hygiene is performed: <ul style="list-style-type: none"> • before and after touching the patient • after contact with body fluids or excretions • before and after removing sterile and non-sterile gloves 	3
Surgical scrub/hand and forearm disinfection before surgery	3
If hands touch a contaminated surface during procedure, surgical scrub is repeated	3
Use of gloves	
Sterile gloves are used for performing vaginal examination, delivery, cord cutting, manual removal of placenta, repair of episiotomy or tear	3
The use of gloves does not replace hand hygiene by either hand-rubbing or handwashing	3
Gloves are used when it can be anticipated that contact with blood or other potentially infectious materials, mucous membranes or non-intact skin will occur	3
Gloves are removed after caring for a patient. The same pair of gloves is not used for the care of more than one patient.	3
Gloves are changed or removed during patient care if moving from a contaminated body site to either another body site (including non-intact skin, mucous membrane or medical device) within the same patient or the environment	3
Gloves are used when handling soiled instruments and when disposing of contaminated waste items	3
Practices for infection control	
Routine disinfection of premises performed, and facilities are closed regularly for disinfection	3
Routine policy of changing dress and footwear by staff observed	4
Bandages on aseptic wound (c-section) kept on for one day	4
Bodily hair is NOT routinely removed preoperatively	4
There is an infection control policy for visitors in the hospital, that may require restriction of access to some patients	4
Percentage: Infection control	63.3%

Appendix 5. Infection control and support care scores

Supportive care	
Criteria	Score (1-5)
Nutritional needs of hospitalized pregnant women/mothers are met (sufficient and nutrient-rich diet)	3
IV-glucose should not be used as calorie source for more than 24 hours	3
Intravenous fluids are given only when indicated according to guidelines	3
Appropriate fluids are chosen	3
The flow rate is monitored closely	3
Routine use of drugs/supplements of unproven effectiveness is NOT practised	4
Drugs are only given for an established or highly suspected diagnosis, or under clear indication for usage	4
Routine use of sedative drugs or anti-histamines is NOT practised	4
Blood is only given when indicated (PPH, loss of large volume of blood, and severe anaemia)	4
Only screened blood is used	4
The flow rate is monitored (before starting transfusion, onset of transfusion, 15 minutes after starting, every hour during and every four hours after completion)	4
Percentage: Supportive care	70.9%
Percentage: Infection control & supportive care	65.5%

Appendix 6. Maternal and neonatal guidelines/protocols available

Maternal guidelines/protocols	
Numbered criteria scored 1-5. Checkmarks indicate documents present for that criteria	Score (1-5)
1. Management of normal labour	1
2. Management of emergency conditions for mothers	2
Emergency obstetric triage guidelines available	
Pre-eclampsia and eclampsia guidelines and protocols available	✓
Infections in pregnancy guidelines and protocols available	✓
HIV in pregnant women guidelines and protocols available	
Severe malaria in pregnant women guidelines and protocols available	
Preterm labour guidelines and protocols available	
Caesarean section guidelines and protocols available	
Postpartum haemorrhage guidelines and protocols available	✓
Prolonged and unsatisfactory progress of labour guidelines and protocols	✓
3. Recent obstetric text book is readily available	1
4. Staff meetings are held monthly to discuss and revise protocols	1

Appendix 6. Maternal and neonatal guidelines/protocols available

Newborn guidelines/protocols	
Numbered criteria scored 1-5. Checkmarks indicate documents present for that criteria	Score (1-5)
5. Guidelines/protocols on routine care for newborns available	1
Assessment & immediate care	
Early & exclusive breast feeding	
Vertically transmitted infectious diseases	
Monitoring newborns before discharge	
Information & counselling for mothers	
6. Management of emergency conditions for newborns	1
Sick newborn guidelines	
Neonates' resuscitation	√
Preterm & low birth weight	
Neonatal sepsis	
Jaundice	
Convulsions	√
Feeding of sick newborns	
7. Recent neonatal textbook is readily available	1
8. Monthly staff meeting to discuss and revise protocols	1
Total: Guidelines/protocols	9
Percentage: Guidelines/protocols	22.5%



Appendix 7. Delivery room equipment and supplies

Delivery room equipment and supplies	Available (Yes or No)
Adequate lighting	Yes
Examination light (flashlight acceptable)	No
Wall clock	Yes
Delivery pack	Yes
WHO partograph forms	Yes
Heating lamp for neonates	No
Towels for drying newborn babies	No
Oxygen cylinder	Yes
Oxygen concentrator	Yes
Central oxygen supply	No
Flow-meters for oxygen	Yes
Equipment to administration oxygen (nasal prongs and masks)	Yes
Self-inflating bags for respiratory support	Yes
Bags and masks (adult)	Yes
Anaesthetic equipment	No
Normal thermometer (body temperature)	Yes
Sterile gloves (disposable)	Yes
Sterile gauze	Yes
Foetal stethoscope	Yes
Stethoscope	Yes
Sphygmomanometer	Yes
Infusion sets	Yes
Infusion pumps/dosimeters	No
IV catheters	Yes
Urinary catheter	Yes
Syringes	Yes
Needles	Yes
Suturing set (scissors, needles holder)	Yes
Suturing material	Yes
Balance for baby	Yes
Cord cutting/cord clamping set	Yes
Episiotomy scissors	Yes
Vacuum extractor	Yes
Forceps	Yes

Appendix 7. Delivery room equipment and supplies

Delivery room equipment and supplies	Available (Yes or No)
Vacuum aspirator	Yes
Number of delivery beds	4
Number of regular beds	36
Number of operating theatre beds	3
Neonatal equipment	
Resuscitation table (with heat source) (for newborn resuscitation)	Yes
Incubator	N
Tracheal tubes	No
Newborn bag and mask size 1 for full-term babies	Yes
Newborn bag and mask size 0 for pre-term babies	Yes
Laryngoscope blades	No
Oropharyngeal airways	Yes
Breathing valves	Yes
Electric suction pump (for suction apparatus)	Yes
Suction catheter (for suction apparatus)	Yes
Suction bulb, single use (penguin)	Yes
Suction bulb, sterilizable multi-use (for suction apparatus)	Yes
Baby scales	Yes
Total: Labour room equipment	42
Percentage available	82.4%

Appendix 7a. Essential neonatal equipment and supplies

Essential neonatal equipment & supplies	Available (Yes or No)
Incubators	Yes
Radiant infant warmers	Yes
Heated mattress cots	Yes
Phototherapy lamps	Yes
Ambu-bag – neonatal	Yes
Oxygen supply/concentrator	Yes
Face masks (sizes 0 and 1)	Yes
CPAP systems	No
Multi-function monitors	No

Appendix 7a. Essential neonatal equipment and supplies

Essential neonatal equipment & supplies	Available (Yes or No)
Pulse-oximeters	Yes
Breast pumps	No
Nasogastric tubes (sizes 5 & 8)	Yes
Microdroppers	Yes
Exchange transfusion kit	NA
Stethoscope	Yes
Glucometer	Yes
Suction apparatus (penguin)	Yes
Thermometer	Yes
Weighing scale (baby)	Yes
Total: Neonatal equipment - supplies	15
Percentage available	83.3%

Appendix 8a. Maternal general assessment

Maternal general assessment	Score (1-5)
Reason for visit	4
Significant findings	3
Procedures performed	0
Drugs and treatments	4
Discharge condition	0
Follow-up instructions	0
Clear & legible	3
Dated & signed	2
Danger signs	0
Foetal heart sounds	2
Blood pressure	2
Temperature	2
Abdominal assessment	3
Obstetric history	3
Medical and surgical history	1
Pelvic examination	4
Onset of labour	2
Assessment total	35
Average scores	56.5%

Appendix 8b. Partograph

Initial partograph	Score (1-5)
Name	1
Age	1
Gravida/para	1
Arrival time	1
State of membranes	1
Foetal heart rate	1
Liquor colour	1
Molding at each cervical examination	1
Partograph started at 4 cm	1
Blood pressure	1
Temperature	1
Maternal pulse rate	1
Cervical dilatation	1
Head descent	1
Contractions	1
Hour & time	1
Hourly monitoring of women	1
Urine passed	1
Physician orders	1
Meds or fluids	1
Total: Partograph	20
Percentage: Partographs	20%

**Partographs were not being used.*

Second stage labour	Score (1-5)
Emergency signs monitored every 5 min	1
FHR monitored every 5 min	1
Perineum thinning & bulging	1
Head descent	1
Mood & behaviour	1
Active labour monitored every 30 minutes	1
Episiotomy NOT routine	5
Anaesthesia if episiotomy	NA
Enemas NOT routine	3
Pubic shaving NOT routine	5
Vagina swabbed with antiseptics NOT routine	2
Second stage labour percentage	42%

Third stage labour	Score (1-5)
10 IU Oxytocin IM given	5
Outcome of the baby	5
Percentage: Third stage labour	100%

Appendix 8c. Postnatal assessment: Mother

Postnatal Assessment: Mother	Score (1-5)
Vaginal bleeding	1
Uterine contraction	1
Fundal height	1
Temp & HR 1st 24 hours	1
B/P after birth	1
Retake B/P in six hours	1
Void in six hours	1
Monitored per protocol	1
Minor tears NOT stitched	1
Vagina NOT swabbed with antiseptics postpartum	1
Bladder catheterization not routine	5
Cervix not routinely checked postpartum	5
Percentage: Postnatal assessment: Mother average	33.3%

**Note: The percentages in this table may be misleading, as there was only one record with some of the postnatal documentation in the five records reviewed. This is the result of using a 1-5 scoring system.*

Appendix 8d. Maternal complications

Labour disorders (two records reviewed)	Score (1-5)
Prolonged active phase diagnosed	5
Uterine contractions assessed	5
ARM performed if indicated	5
Cephalopelvic disproportion diagnosed & C-section done	5
Obstructed labour correctly managed	5
Amniotomy performed correctly	5
Supine position in labour not encouraged; woman encouraged to walk around	1
Birth companion present in labour	1
Oxytocin used according to protocol	5
Prostaglandins are NOT used for induction or augmentation	5

Appendix 8d. Maternal complications

Antibiotic use in pregnancy (five records reviewed)	Score (1-5)
Antibiotic prophylaxis for C-sections	5
Management of HIV in pregnant women (one record reviewed)	
Triple ARVs (ART)	5
HIV pregnant women receive additional interventions, e.g.:	5
STI screening	
Nutritional support	
Infant feeding	
Family planning counselling	
Facility-based delivery promoted	5
Unnecessary instrumentation and premature rupture of membranes are avoided by using a partograph to monitor stages of labour.	1
Blood transfusions (Five records reviewed)	
Blood given only when indicated	4
Only screened & cross-matched blood given	4
Flow rate is monitored	4
Respiration & pulse checked every 15 minutes	4
IV furosemide given if fluid overload	NA
Total: Maternal complications	83

Appendix 8e. Newborn assessment and immediate care

As there was no provision for documentation on newborns, the following score was derived from observation during birth delivery.

Newborn assessment and immediate care	Score (1-5)
The room is warm	4
The newborn is assessed	4
The newborn is dried	4
Routine suctioning of the nose or catheterization of oesophagus not done	5
Newborn is kept in skin-to-skin contact with mother	4
Umbilical cord is clamped after pulsation stops	4
Stump of umbilical cord is left without dressing	4
Mother and baby are covered together	5

Appendix 8e. Newborn assessment and immediate care

Newborn assessment and immediate care	Score (1-5)
Baby given warm hat	4
Bathing or washing are postponed	NA
Eye prophylaxis is provided	5
Vitamin K is given IM	5
Immunization are administered per protocol	NA
Exam of infections in newborns	
Baby's breathing and warmth are monitored every 15 minutes in the first hours after birth	4
Complete clinical examination of the baby is done including weighing the baby	4
If the mother was RPR-positive for syphilis, baby is treated with benzathine (benzylpenicillin) intramuscular at the appropriate dose.	1
If mother is known to be HIV positive, ARV is given to newborn	4
Total: Newborn assessment	61
Overall percentage: Newborn assessment	71.8%

Appendix 8f. Early and exclusive breastfeeding

Early and exclusive breastfeeding	Score (1-5)
Newborn is put on the abdomen or to breast for skin contact immediately after birth, if no need for resuscitation	5
Initiation of breastfeeding is encouraged within the first hour, and mothers are given a quiet atmosphere to do so	4
Staff are trained to assist mothers and babies in initiating breastfeeding correctly	4
There is no promotion of infant formula on the ward and samples are not distributed to mothers or staff	5
No restrictions on the frequency or length of breastfeeding	5
At discharge, exclusive breastfeeding is recommended until the age of six months and complementary breastfeeding until 24 months	4
Expressed breast milk is given by cup or NG-tube when the child is unable to feed or if the mother cannot stay with the child all the time	4
Infant formula, glucose supplementation and water supplementation are not used unless upon written medical instruction	5
Exceptions to exclusive breastfeeding are based on current evidence	5
Total: Early & exclusive breastfeeding	41
Percentage: Breastfeeding	91.1%

Appendix 8g. Monitoring of newborns before discharge

Monitoring newborns before discharge	Score (1-5)
Baby is not discharged before it is 12 hours old	5
Breathing rate is assessed and documented in the first day of life	4
Documentation maintained on frequency of breastfeeding	4
Documentation maintained on absence or presence of jaundice	4
Immunizations are administered according to the local policy	5
Total: Monitoring of newborns before discharge	22
Percentage: Monitoring	88.0%

Appendix 8h. Information and counselling of mothers

Information and counselling of mothers	Score (1-5)
Mothers shown how to bathe the baby, how to take care of the umbilical stump and their breasts	1
Every baby is recorded in the delivery room register	4
Documentation recorded includes:	3
Gestational age is recorded in the information provided to mothers	No
Weight at birth is recorded in the information provided to mothers	✓
Length is recorded in the information provided to mothers	✓
Head circumference is recorded in the information provided to mothers	✓
Weight at discharge is recorded in the information provided to mothers	✓
Mother is advised on danger signs and when to return for routine post-natal care	5
Total: Information & counselling of mothers	13
Percentage: Information & counselling of mothers	65%
Total: Routine newborn care	159
Percentage: Routine newborn care	88.3%

Appendix 9. Maternal and neonatal registers

Information regarding mothers	Score (1-5)
Age	5
Residence /village	5
Admission, delivery and discharge times	5
Mode of delivery	5
Delivery attendant	5
Expected postpartum visit date	5
Percentage recorded	100%
Data Compiled: Mothers	Yes/No
Number of vaginal, vacuum extraction, forceps deliveries	Yes
Total deliveries	Yes
Obstructed labour	Yes
Postpartum haemorrhage	Yes
Sepsis	Yes
Eclampsia	Yes
Total complications	Yes
Maternal deaths	Yes
Percentage compiled	100%
Information regarding newborn	Score 1-5
Apgar score	5
Gestational age	5
Sex	5
Birth weight	5
Delivery outcome	5
Birth registration	5
Percentage recorded	100%
Data compiled: Newborns	Yes/No
Stillbirths	Yes
Low birth weight babies	Yes
Birth asphyxia	Yes
Total newborn outcomes	Yes
Breastfeeding initiation	Yes
Breastfeeding at discharge	No
Neonatal deaths first 24 hours	Yes
Percentage: Data compiled	87.5%

Appendix 10. New mother interviews

No.	Questions	Responses	
		#1	#2
	Personal data		
1	Age of mother	27	22
2	Number of children	3	2
3	Level of education attained	tertiary	secondary
4	Type of birth (vaginal, C-section)	V	V
5	Do you live close to the facility? (<15 minutes)	Y	N
6	How long does it take you to get to the facility from home?	15	120
	Antenatal visits		
7	Number of antenatal visits during pregnancy	7	10
8	Number of ultrasounds during pregnancy	0	2
	Admission to the facility		
9	Full-term pregnancy?	Y	Y
10	Danger signs experienced?	N	Y-bleeding
11	Family member present during admission?	Y	Y
12	Vaginal examination during admission?	Y	Y
13	Baby's heart rate listened to at admission?	Y	Y
	Labour and Delivery		
14	Labour duration (hours)	4	4
15	How long did you push? (minutes)	Less than 1 hr	Less than 1 hr
16	Vein puncture?	Y	Y
17	Vaginal examination during labour?	Y	Y
18	Number of vaginal examinations	4	1-2
19	Attained consent prior to examination?	Y	Y
20	How did they listen to the baby?	pinard	pinard & stethoscope
21	Did the delivery team introduce themselves?	N	N
22	Were you offered something for pain relief?	N	Y
23	Healthy baby delivered?	N-reason not identified	Y
24	Baby's weight?	4 kg	No answer
25	Skin-to-skin contact immediately after delivery?	Y	No answer
26	Baby stayed in the room during entire admission?	Y	N
27	Baby separated from mother at birth?	N	Y
28	Reason for baby separation	NA	No answer

Appendix 10. New mother interviews

No.	Questions	Responses	
	Newborn care	#1	#2
29	Current age of baby?	1 week	1 day
30	What are you feeding your baby?	breast	breast
31	Who was the most supportive member of staff that assisted you with breastfeeding?	nurse	No one
32	When were you asked to initiate breastfeeding after delivery?	immed	Not asked
33	How often were you advised to breastfeed your baby?	No answer	No advice
34	How did you find the quality of the facilities?		
	Was the facility clean?	Y	Y
	Was the facility cluttered?	N	Y
	Was the facility dirty?	N	N
	Was the facility crowded?	N	Y
35	Did you feel that you could ask questions & that your questions would be answered?	Y	Y
	Attitude of staff		
36	What was the attitude of the staff most of the time?		
	Polite and helpful?	Y	Y-doctors
	Rude or unhelpful?	N	Y-some nurses & cleaning staff
	Discharge and follow-up		
37	Instructions on how to care for baby provided?		
	Instructions for feeding options	Y	N
	Instructions for immunizations?	Y	
	Instructions for cord care	Y	
	Instructions for bathing	Y	
	Other instructions	Y	
38	Instructions on specific circumstances to bring baby back to health care facility?	NA	NA
39	Instruction on how to care for yourself after discharge?	Y	N

Appendix 10. New mother interviews

No.	Questions	Responses	
	Drugs and supplies	#1	#2
40	Were you given a prescription to fill?	Y	Y
41	Were you given information about birth control options provided?	Y	N
42	Information about access to birth control options provided?	Y	N
43	Do you feel that birth control an option for you?	Y	N-1st baby died
44	Overall, how satisfied were you with your care at the facility? (excellent, good, fair, poor)	Excellent	Good
45	What do you think could be done to improve care?	Adequate beds for mothers who have babies in SNCU	Improve communication between nurses & patients
	Access to health facility care		
	Traditional medicine		
46	Mother sought assistance within community during pregnancy?	N	N
	Referrals		
47	Referred to clinic from community?	N	Y
48	Treatment received before referral?	NA	N
49	Referral note received from health care provider?	NA	Y
50	What kind of transport did you use to get to the centre?	NA	Motorbike
51	How much did you pay?	NA	Husband owned vehicle

Appendix 11. Health care worker interviews

No.	Question	Response #1	Response #2
	Ward		
1	For mothers and babies staying in the facility (satisfactory, occasionally inadequate, or usually inadequate/not available):		
	Accommodations	Occasionally inadequate	Inadequate space
	Toilets and washing facilities	Satisfactory	Occasionally inadequate – lack of running water
	Cleanliness of the ward	Satisfactory	Occasionally inadequate – crowded
	Food given to patients	Not available	Sometimes no food

Appendix 11. Health care worker interviews

No.	Question	Response #1	Response #2
Mortality and causes			
2	What are the most common reasons for neonatal death?	Neonatal sepsis	Late presentation of patient, lack of drugs & equipment, insufficient staffing
3	What are the most common reasons for maternal death?	Nature of disease, late presentation of patient, difficulty obtaining blood	Same as above, also inadequate water for maintaining hygiene
Quality of care			
4	What do you think about the quality of care given to patients? (satisfactory, occasionally inadequate, or usually inadequate/not available):		
	Quality of information and education about their condition given to patient and their families	Satisfactory	Occasionally inadequate
	Time available to explain patient's conditions to them and their families	Satisfactory	Inadequate – overcrowding in labour ward
	Perception that families have of the quality of the care that the staff provides to patients	Satisfactory	Occasionally inadequate
5	How can staff improve patient's understandings of their conditions?	Frequent information & counselling	Expand labour ward, add admission area, implement emergency triage system
6	Can you recall a patient that you recently cared for that you were pleased with the clinical outcome?	1.5 kg preterm baby; timely feedings, temperature monitored; discharged	Effective emergency management of abruptio placenta with ultimate discharge
7	Were you satisfied with the QoC you provided?	Yes	Yes
8	Can you recall a patient that you recently cared for that you were not pleased with the clinical outcome?	Severe birth asphyxia, on CPAP, power outage, revived with bag & mask; but died	Patient referred from PHU semi-conscious
9	What aspects of care went poorly?	Lack of stable electricity	No referral notes, late referral
Drugs and supplies			
10	Are the following readily available? (satisfactory, occasionally inadequate, usually inadequate):		
	Medications	Occasionally inadequate	Satisfactory
	Oxygen	Not available	Not available
	Blood for transfusion	Occasionally inadequate	Satisfactory

Appendix 11. Health care worker interviews

No.	Question	Response #1	Response #2
	Drugs and supplies		
	IV fluids	Occasionally inadequate	Occasionally inadequate
	Food/special milk for malnutrition	Not available	Occasionally inadequate
	Laboratory tests	Not adequate	Occasionally inadequate
	Functional equipment	Occasionally inadequate; power outages	Satisfactory
	Staffing		
11	Staff availability (satisfactory, occasionally inadequate, usually inadequate):		
	Number of skilled staff available to care for patients at any time	Occasionally inadequate	Occasionally inadequate
	Time available to provide the best care for a patient	Occasionally inadequate	Occasionally inadequate
	Number of trained nursing staff available during night hours	Occasionally inadequate	Occasionally inadequate
	Suitable number of trained nursing staff available on weekends and holidays	Occasionally inadequate	Occasionally inadequate
12	Is there a fixed rotation of nursing staffing in the clinic at regular intervals?	No answer	Yes
	What is the rotation?		
	Are you comfortable with the rotation schedule?		
13	What do you think about the number and qualifications of staff available?	Additional midwife	Only one trained lab technician
	Guidelines, auditing and in-service training		
14	Are you clear in what your job description is?	Yes	Yes
15	Were you provided with terms of reference?	Yes	Yes
16	Do you perform any functions outside of what your role and responsibilities should be?	No	Yes:
17	Do you feel confident with your level of knowledge of maternal/neonatal illnesses?	Yes	Usually inadequate

Appendix 11. Health care worker interviews

No.	Question	Response #1	Response #2
	Guidelines, auditing and in-service training		
18	If you feel that your knowledge is inadequate what areas would you want training in?	NA	Neonatal and paediatric
19	Are opportunities for continual professional education available to you?	On-the-job training on sick newborns & IPC	Training based on needs of hospital; all staff involved
20	If you are having problems, is it because there are not enough skilled people to call?	NA	Yes
21	If you are having problems is it because you are unable to contact the right people?	NA	Yes
22	If you are having problems is it because the response to your request is too slow?	NA	Yes
23	Are there any other reasons why you have issues getting help?	No	Written, not all stakeholders respond to problems
24	What kinds of guidelines are provided to you to do your work?	Drugs, oxygen, fluids	EmONC protocols and manual
25	Are you satisfied with the available supportive supervision and mentorship provided from senior clinical staff to help manage sick patients?	Yes	Yes
26	Do you participate in regular staff meetings?	Yes	Briefing meetings only for in-charges
27	How often are they held?	No answer	General staff meetings not held regularly
28	What are the topics of these meetings?	No answer	No answer
29	Are there forums where you can make suggestions/inform supervisors on issues?	Yes	No
30	Have you made suggestions for improvement to the clinical manager?	Yes	Yes
31	Did your suggestion generate a result?	No answer	No
32	Is feedback on decisions of managers & supervisors provided to staff?	Yes	No

Appendix 11. Health care worker interviews

No.	Question	Response #1	Response #2
Guidelines, auditing and in-service training			
33	Are reviews done to examine QoC and/or patient mortality at the clinic?	Yes	Yes
34	What kind of reviews are done?	IPC	MDSR
35	When was the last review done?	No answer	8/5/18
36	Overall do you feel that the quality of care provided to patients in this clinic is good?	Yes	Sometimes
37	Do you have suggestions on what can be done to improve the care provided to patients?	No suggestions	Space, staffing, water, lights, drug supply
38	Do you think that most of your colleagues are satisfied with their work in the clinic?	Yes	No
39	Why are people dissatisfied with their work?	NA	Trained SECHNs driven out of MoHS
Referrals			
Responses: (Always, often, sometimes, rarely, never)			
40	Do you feel that referred patients receive appropriate pre-referral treatment before being transferred?	Always, when they come from a PHU	Sometimes
41	Are referral patients provided with referral notes stating the condition, reason for referral and any treatment given?	Sometimes	Sometimes
42	Are patients able to get to the hospital without major delay when advised that they need referral care?	Sometimes	Rarely
43	Do patients and caregivers adequately recognize signs and symptoms that require contact with health services?	Sometimes	Sometimes
44	Are patients and caregivers given adequate information and advice about where and how to refer to hospital?	Sometimes	Sometimes
45	Are sick children and women brought to the hospital without significant delay?	Sometimes	Sometimes

