

Baseline Assessment of Facility and District Capacity

Alcançar

Qualidade de Serviços de Saúde para Mulheres e Crianças

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Acronyms and Abbreviations

ANC	Antenatal Care
ANC4	At least 4 ANC visits
CHC	Community Health Committee
CSSN	Care for Small and Sick Newborns
DOCFR	Direct Obstetric Case Fatality Rate
DPS	<i>Direcção Provincial de Saúde</i>
EDM	<i>Electricidade de Mozambique</i>
EmONC	Emergency Obstetric and Newborn Care
FP	Family Planning
GIS	Geographic Information System
HR	Human Resources
IMNCI	Integrated Management of Neonatal and Childhood Illness
IYCF	Infant and Young Child Feeding
KMC	Kangaroo Mother Care
M&E	Monitoring and Evaluation
MDSR	Maternal Death Surveillance and Response Program
MNCH	Maternal, Newborn and Child Health
MCH	Maternal and Child Health
MISAU	<i>Ministério da Saúde</i>
PAC	Postabortion Care
PNC	Post-natal Care
PPH	Postpartum Haemorrhage
PY/PY2	Program Year/Program Year 2
QA	Quality Assurance
QI/QI&H	Quality Improvement/Quality Improvement and Humanization
RMC	Respectful Maternity Care
SDSMAS	<i>Serviço Distrital de Saúde, Género, Criança e Acção Social</i>
SIGLUS	<i>Sistema de Informação e Gestão de Logística para Unidades Sanitárias</i>
SIS-MA	<i>Sistema de Informação de Saúde para Monitoria e Avaliação</i>
STIs	Sexually Transmitted Infections
WASH	Water, Sanitation and Hygiene

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-Dr. Geoffrey Ezepue, Alcançar Chief of Party

Executive Summary

The Alcançar Baseline Assessment of Facility and District Capacity was conducted to establish an evidence base against which to measure project performance and impact over the life of the project and to inform project priorities and planning. The assessment includes a census of health centers and hospitals in Nampula province - the population of facilities that the project is expected to influence. Trained data collection teams interviewed facility and district staff to collect current information on (1) facility infrastructure and policies, (2) human resources, (3) ordering and management of maternal and child health (MCH) commodities, (4) provision of MCH services (5) knowledge of MCH care components, and (6) emergency referral capacity. Additionally, they reviewed and extracted data from facility registers over a 6-month period and observed antenatal care (ANC) consultations. Data collectors visited each of the district health offices (*Serviço Distrital de Saúde, Género, Criança e Acção Social, SDSMAS*) to gather information on district health capacity to provide clinical mentoring, implement quality improvement and death audits, and manage commodities. This assessment report presents selected results.

A snapshot of key results:

- Access to a reliable source of electricity remains a key issue throughout Nampula province, especially among health centers. Almost a quarter of health facilities in Nampula have no source of electricity. While 42% of health facilities are connected to the national electrical grid (EDM), almost half of those facilities experienced a power supply interruption of more than two hours in the week prior to data collection.
- Health centers oversee a significant majority of institutional deliveries throughout Nampula province, yet in comparison with hospitals, those facilities are much less equipped to provide sufficient beds for the volume of obstetric patients they receive.
- Nampula has 9 facilities that meet criteria for providing basic or comprehensive emergency obstetric and newborn care (EmONC). Eight facilities provide the full package of care for small and sick newborns (CSSN). An additional 52 fully functioning EmONC facilities are needed throughout Nampula province to meet global guidelines that recommend 5 EmONC facilities per 500,000 population.
- Many health facilities have been successful in maintaining a cold chain to keep vaccinations at an appropriate temperature, yet nearly one quarter of facilities reported that refrigerator temperature had fluctuated outside of the acceptable range in the month prior to data collection.
- Vaccinations services are widely available at health centers, hospitals, and through mobile units, though those services might not be offered daily.
- Our assessment calculated Nampula's institutional delivery rate at 85%, early initiation of ANC at 5%, coverage of at least four ANC visits (ANC4), as 42% immediate oxytocin after delivery at 79%, and postnatal care (PNC) within two days as 77%.
- Our assessment calculated Nampula's:
 - Institutional delivery rate at 85%, early initiation of ANC at 5%, coverage of ANC4 as 42%, immediate oxytocin after delivery at 79%, and PNC within two days as 77%.
 - Premature births rate at 19% of institutional births.
 - Pre-discharge newborn mortality rate is 3.7 newborn deaths per 1000 institutional deliveries, specifically 22.3 for hospitals and 1.6 for health centers.
 - Direct obstetric case fatality rate (DOCFR) over the time period was 5% - above the <1% target.
 - One-hundred and ninety-five child deaths due to pneumonia, malaria, diarrhea and of unknown cause were counted over the 6-month period. The vast majority of these (134) occurred at health centers, and malaria was the most common cause of death.
- More than half of the facilities included in the baseline assessment have established active quality improvement and humanization (QI&H) committees, created systems to collect and integrate service

user input in quality improvement (QI) initiatives, and implemented QI initiatives in the areas of maternal, newborn, and pediatric services. However, a higher percentage of hospitals than of health centers had implemented these QI structures.

- Findings highlight a need to strengthen death audit and other surveillance initiatives, particularly among health centers throughout Nampula province.
- During ANC consultations, more efforts are needed to fulfill women's rights to information and consent, through obtaining consent for lab tests and physical examinations, encouraging women to ask questions, and providing women with information on danger signs during pregnancy.
- Significant knowledge gaps exist among frontline health workers providing essential MNCH care, particularly regarding:
 - When a special birth plan is required
 - Observations to monitor during labor, such as maternal vital signs
 - Diagnosis of severe bleeding and treatment of post-partum hemorrhage
 - Diagnosis and management of sepsis in newborns
 - Comprehensive treatment for women who had unsafe abortions and rape victims
- Child health providers had better knowledge of assessment and treatment for sick children than the delivery of preventive care through well child check-ups.
- Stock outs of key MCH drugs and supplies are common across facilities in Nampula and impact providers' abilities to deliver high-quality MCH services to every patient. Alcançar project staff engaged in activities to strengthen the supply of critical drugs, equipment and supplies can use these results, complemented by additional information collected in the baseline assessment around systems and practices for commodities management and ordering, to tailor and target technical support.
- There are important areas for capacity building around data quality and data use which Alcançar can prioritize in the second program year (PY2). In most health centers, paper-based registration, aggregation and reporting remains the standard procedure. SDSMAS reports that all health facilities are contributing reports to the national health information system (Sistema de Informação de Saúde para Monitoria e Avaliação or SIS-MA), and most are doing so on time. Priority activities will likely focus on ensuring health providers understand the proper way to fill the registers, and to aggregate data into monthly reports. Efforts should be made to ensure facilities have the required registers.

Baseline Assessment of Facility and District Capacity

1.0 Background/Rationale

Alcançar is a five-year USAID-funded project, implemented by a consortium of international and local partners and led by FHI 360. The project's overall objective is to reduce maternal, neonatal and child mortality in Nampula province, and to make Nampula province a model of modern, high-quality, high-impact, patient-centered health services for mothers, newborns and children. These objectives will be achieved by direct support to Nampula Provincial Health Directorate (Direcção Provincial de Saúde, or DPS), the District Health Directorates (SDSMAS) and front-line maternal, newborn and child health (MNCH) providers to develop individual and organizational capacities enabling them to improve the quality and efficiency of MNCH services.

The Alcançar Baseline Assessment of Facility and District Capacity was conducted to establish an evidence base against which to measure project performance and impact over the life of the project. It is intended to inform project priorities – that is, to identify areas and ways in which Alcançar can most efficiently focus its resources to achieve its goals. Data collected through the assessment provide a broad perspective on the status of the health system and services in Nampula, in order to more fully understand the context and the constraints, and to identify areas even outside of Alcançar's project scope which are necessary for stakeholders to address if Nampula is to become a model health system.

The assessment includes a census of health centers and hospitals in Nampula province - the population of facilities that the project is expected to influence. The data collection tools gathered data necessary to calculate baseline values for 15 of the 46 indicators included in the project's Monitoring, Evaluation and Learning Plan (MELP) results framework (submitted separately). Further, the baseline provides rich information on facility, provider and district capacity to deliver quality, human-centered MNCH services and assessed the strength and functioning of key aspects of the health system required to sustainably provide these services.

2.0 Methods

2.1 Survey design and selection of facilities and respondents

The assessment represents a census of health facilities in Nampula Province that offer MNCH services. Facilities not expected to offer MCH services were not visited, and neither were facilities that only recently started providing services (Table 3.1.1 provides details of included facilities).

In each health facility, the data collection teams interviewed the facility in-charge, and persons responsible and/or most knowledgeable about: (1) facility infrastructure and policies, (2) human resources, (3) ordering and management of MCH commodities, (4) provision of ANC, services provided in the labor and delivery ward, immunizations, preventive and curative child health services. Additionally, data collectors interviewed one provider who performed the most deliveries in the previous month and who was present on the day of the interview, and one provider who was most experienced providing child health services to assess their level of knowledge on key MNCH topics. To gather 6-months of facility statistics, data collectors reviewed and extracted data from facility registers. Further, data collectors obtained consent from providers and clients to observe one ANC consultation per health facility visited. Data collectors also visited each of the 23 SDSMAS offices to interview the key district health official to gather information on district health capacity to provide clinical mentoring and supportive supervision, functioning of quality improvement and death review committees, use of data for decision-making and commodities management.

2.2 Data collection instruments and pre-testing

The assessment tools build on facility assessments that have been used in over 50 countries to monitor obstetric and newborn services for the past two decades, including twice in Mozambique. These data collection tools were expanded to include additional questions on routine care such as ANC and post-natal care (PNC), and preventive and curative care for the child, including integrated care for newborn and child illnesses (IMNCI), immunization, and nutrition. Indicators that can be calculated from these tools are aligned with global standards for monitoring outlined in:

- Emergency Obstetric and Newborn Care monitoring framework (WHO, UNICEF, UNFPA and the Averting Maternal Death and Disability Program (AMDD))
- Every Newborn Action Plan (WHO)
- Survive and Thrive Strategy (newly released by WHO and UNICEF)
- Joint Monitoring Program for WASH in Health Care Facilities and Birth Settings (WHO and UNICEF)
- Service Availability and Readiness Assessment (WHO)
- Service Provision Assessment (USAID)
- DELIVER project's Supply Chain Assessment (John Snow Inc. (JSI))
- Evaluating Respectful Care (White Ribbon Alliance tools)

In addition to the baseline indicators, the assessment provides information on:

- Access, quality and use of routine care: ANC, PNC, routine delivery, essential newborn care, and immunizations
- Facility and provider capacity to manage life-threatening complications: emergency obstetric and newborn care (EmONC), care for small and sick newborns (CSSN), integrated management of childhood illnesses (IMNCI) including child malaria, pneumonia, and diarrhea
- Facility readiness to provide respectful maternity care/patient-centered care and assessment of respectful care provision in ANC consultations through observation
- Presence and functioning of policies and structures for maternal, newborn and child death audits, quality improvement activities, facility and district-level use of routine data, supply chain functioning and management
- Provider knowledge of key MNCH actions to identify major gaps
- Frequency and quality of mentorship and supportive supervision

The baseline assessment included 9 modules:

- Module 1: Health Facility Identification, Infrastructure, and Emergency Referral Capacity
- Module 2: Human Resources
- Module 3: Essential Drugs, Equipment and Supplies for MNCH Services
- Module 4: Facility Case Statistics (over 6 months)
- Module 5: Performance of Signal Functions and Key Services in Obstetric, Newborn and Child Health
- Module 6a: Provider Knowledge of Obstetric and Newborn Care
- Module 6b: Provider Knowledge of Child Preventive and Curative Services and Immunization
- Module 7: Observation Checklist for Respectful Services during ANC
- Module 8: Interview with District Health Management Team

The Modules were pretested by Alcaçar staff in two facilities prior the training of data collectors. After the pretesting, the technical team corrected inconsistencies and other issues identified to ensure clarity and Alcaçar Baseline Assessment of Facility and District Capacity
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consistency, and to ensure alignment with terminology and practices within Mozambique. Modules were further revised as per corrections identified by data collectors during the field activity during the training.

2.3 Recruitment and training of data collectors, and organization of field work

The Assessment was carried out by a 20-person data collection team, working in 10 teams of two. Data collectors were recruited according to the following criteria:

- University degree. Masters or professional degree in medicine, midwifery, nursing, demography, biostatistics, or other social or health sciences preferred.
- Data collection experience
- Familiarity with clinical settings, services related to maternal, newborn and child health, health facilities, and clinical equipment and commodities.
- Familiarity with obstetric and newborn care and/or child health and immunization
- Ability to speak and write fluently in Portuguese. Additional knowledge of local language(s) in Nampula.
- Excellent interpersonal and communication skills.

Data collectors were trained over 5 days with a standardized curriculum that included didactic, participatory and applied learning, including one day of field practice. Alcaçar staff used training materials (i.e. presentation slides, handouts, activities, pre- and post-tests) adapted from the standardized curriculum to these specific modules. Successful completion of the data collectors' training was required for the training participant to engage in field work. Success was measured by an 80 percent or higher score on the post-training test, and trainer assessment of the participants performance during the training using a standard skills inventory.

Each data collection team was responsible for an average of 25 facilities. They traveled with an authorization letter from DPS. Health facilities and SDSMAS offices were officially notified by DPS of the baseline assessment field work ahead of data collection to facilitate entry to the facilities and participation by providers and district health management staff.

FHI 360 Alcaçar staff provided quality assurance to the teams while in the field via remote and on-site visits, most intensively in the early days of field work to quickly troubleshoot and resolve any data collection challenges.

2.4 Data entry, cleaning and analysis and dissemination

The data were double entered into CSPRO v7.3, a data entry program and exported into SPSS v21.0 and Stata v15. The two data entry attempts were validated within Stata v15 and inconsistencies were corrected by returning to the paper forms and indicating the correct entry. Final, clean analysis datasets were then analyzed by Alcaçar and FHI 360 staff, and selected results are presented in this report. Additional analyses and data products will be developed using the baseline data, as needed by Alcaçar or as requested by USAID, the Ministry of Health (Ministério da Saúde, or MISAU), DPS or others. Results will be further disseminated through various means and materials to facilities, SDSMAS, DPS, local partner organizations and other key stakeholders – including health facility staff and youth – during formal and informal dissemination events. Most importantly, the Alcaçar team will use results from the baseline assessment to develop a data-driven strategy and implementation plan for prioritized activities for PY2 and beyond. The data will be merged with geocoded master facility list to enable mapping and spatial analyses in response to specific DPS, SDSMAS and programmatic needs over the life of the project.

2.5 Quality assurance

Quality assurance involved multiple steps along a continuum of training, data collection in the field, and data processing at central level, especially during the first weeks of data collection, with experienced trainers accompanying the teams to mentor and help problem solve.

Quality assurance began with the recruitment of data collectors and team leaders with a health background. Data collectors took pre- and post-tests to assess their learning and knowledge of the assessment guidelines and standards for data collection. Each data collector was given a hard copy manual of the assessment guidelines.

Team leaders played a critical role in the correct completion of the modules as they reviewed all the questionnaires. The Alcançar coordinators visited and communicated with teams regularly to provide support and help when difficulties arose at individual facilities and supervised the teams in the field to ensure consistency and quality. When needed, the central data managers telephoned facilities for clarification and to ensure quality.

2.6 Research ethics

During the data collector training, the Alcançar trainers introduced the data collectors to principles of confidentiality and ethics in data collection. No person's name (except that of the data collector) was recorded on any of the modules. Permission to enter each facility, to interview the different employees, and to review registers was requested from the person in-charge at the beginning of each visit. The response from the medical director, matron and all other respondents with whom the team had contact was always respectful. The teams carried with them official letters of cooperation from the DPS. Providers who were interviewed for Modules 6A and 6B (knowledge interviews in maternal, newborn and child health) granted oral consent prior to the interview itself, and this oral consent was recorded in the module. Provider names were not recorded, and results of these knowledge interviews are presented in the aggregated to reduce deductive disclosure of respondents.

2.7 Organization of the report

Chapter 3.0 present selected results from the analysis. Results are organized into the sub-sections below:

- **Section 3.1.** This section presents the characteristics of facilities that were included in the assessment.
- **Section 3.2.** General service readiness including aspects of infrastructure (electricity, water, sanitation, waste management, and infection prevention), overview of MNCH services offered, availability of pharmacy, laboratory, blood transfusion and surgical services, and measures of facility capacity (i.e. beds per deliveries).
- **Sections 3.3 Maternal and Newborn Health) and 3.4 Child Health.** These sections present selected results that describe facility capacity to provide specific medical interventions that make up the packages of MNCH services. Presented results include availability of the minimum required infrastructure, presence of clinical guidelines, minimum human resources (HR) to provide each medical intervention, and availability of key drugs, equipment and supplies. We also present recent provision of specific components of MNCH services (e.g. within the previous 3 months). For section 3.3, we provide an analysis of the availability of EmONC and CSSN services; for Section 3.4 we discuss planning and implementation of immunization services.
- **Section 3.5.** Selection of indicators calculated using facility case statistics including indicators of ANC coverage and use, PNC use, institutional delivery rates and aspects of quality of care, distribution of maternal complications and deaths, newborn outcomes and number of child deaths by cause.
- **Section 3.6:** This section present results from across various modules that provide a picture of facility and district-level capacity to implement QI mechanisms and to deliver humanized services. This

section includes results of the ANC observations (Module 7), which are organized within the standards of the recent Respectful Maternity Care Charter.

- **Section 3.7.** This section presents characteristics of providers who participated in the knowledge interviews of maternal, newborn and child health, and the resulting knowledge score for each component of care included.
- **Section 3.8.** This section includes results related to stockouts of key drugs and oxygen supply.
- **Section 3.9.** Provides a beginning investigation into aspects of the HMIS systems including availability of computer/internet and registers, practices around classification of deaths, and validation of key indicators triangulated with SIS-MA data for the same period.

To minimize the length of this report, we do not present district-level results. However, we have analyzed most results to the district level, which will be used by project staff to inform activities and workplanning.

3.0 Results

3.1 Surveyed health facilities

Master facility lists provided to Alcañar by DPS indicate a total of 241 health facilities in Nampula (Table 3.1.1). Thirteen of these facilities were not visited during the baseline assessment because they no longer exist (e.g. Cimentos Health Center and Nataoa Health Center), were too new to have adequate statistics or staff, or because they are not expected to provide MNCH services.

Data collection teams visited a total of 228 hospitals and health centers during field work. All modules were attempted at each visited facility, and modules included filter questions to minimize asking of irrelevant questions (e.g. if a facility did not have surgical capacity, data collectors were skipped out of detailed questions about equipment in the operating theater).

Facilities determined to not currently provide maternity services, as per data collected during this assessment, are excluded from this report. The monitoring and evaluation (M&E) team will later analyze data from these facilities; however, for the purposes of identifying key gaps in facility capacity, the exclusion of these facilities is unlikely to substantially influence the interpretation of results.

Therefore, the maximum number of facilities included in the report tables is 200. This includes 9 hospitals and 191 health centers, the overwhelming majority of which are Type II Rural Health Centers (141). Most report tables collapse facilities into categories as per the groupings shown in Table 3.1.1.:

- Health Centers and Hospitals
- District Groups used by Alcañar to prioritize and phase activities.
 - *Innovation Districts* are the seven districts receiving the most intensive level of contact in PY1 and PY2. The seven Innovation Districts are also the location of the 35 health facilities (Innovation Facilities) that will launch the Quality Improvement Collaboratives.
 - There are six *Priority Districts* which also receive an intensive level of contact in PY1 and PY2, but which are not the site of the QI Collaboratives.
 - The remaining 10 districts receive a lower intensity of contact in PY1 and PY2, thus they are referred to as *Future Focal Districts*.

Table 3.1.1. Distribution of health facilities according to inclusion in the baseline assessment, by facility type and district

	Total number of health facilities in Nampula	Total facilities not visited for the assessment ¹	Total facilities visited for the assessment	Total facilities visited, but excluded from the report ²	Total facilities included in this report	Included facilities										
						Total Hospitals	Hospitals				Health Centers Total	Urban Health Centers			Rural Health	
							Central	General	Rural	District		A	B	C	Tipo I	Tipo II
Nampula	241	13	228	28	200	9	1	1	2	5	191	4	7	4	35	141
Distritos																
Innovation	96	2	94	12	82	7	0	0	2	5	75	1	3	1	6	64
Angoche	19	0	19	7	12	1	0	0	1	0	11	0	0	0	1	10
Erati	11	0	11	0	11	1	0	0	0	1	10	0	0	0	0	10
Memba	14	0	14	1	13	1	0	0	0	1	12	0	0	0	3	9
Moma	11	0	11	0	11	1	0	0	0	1	10	0	0	0	1	9
Monapo	17	0	17	0	17	1	0	0	0	1	16	0	0	0	0	16
Nacala	14	2	12	4	8	1	0	0	0	1	7	1	3	1	0	2
Ribaue	10	0	10	0	10	1	0	0	1	0	9	0	0	0	1	8
Priority	44	4	40	2	38	0	0	0	0	0	38	0	0	0	10	28
Liupo	3	0	3	0	3	0	0	0	0	0	3	0	0	0	0	3
Meconta	8	1	7	0	7	0	0	0	0	0	7	0	0	0	4	3
Mogovolas	8	1	7	0	7	0	0	0	0	0	7	0	0	0	1	6
Mossuril	12	2	10	1	9	0	0	0	0	0	9	0	0	0	1	8
Nacala-a-Velha	6	0	6	1	5	0	0	0	0	0	5	0	0	0	1	4
Nacaroa	7	0	7	0	7	0	0	0	0	0	7	0	0	0	3	4
Future Focal District	76	6	70	13	57	2	1	1	0	0	55	3	4	3	10	35
Distrito de Nampula	28	5	23	9	14	2	1	1	0	0	12	2	3	3	2	2
Ilha de Mocambique	5	0	5	0	5	0	0	0	0	0	5	1	1	0	0	3
Lalaua	7	0	7	0	7	0	0	0	0	0	7	0	0	0	2	5
Larde	7	1	6	2	4	0	0	0	0	0	4	0	0	0	0	4
Malema	10	0	10	1	9	0	0	0	0	0	9	0	0	0	2	7
Mecuburi	13	0	13	1	12	0	0	0	0	0	12	0	0	0	2	10
Mogincual	6	0	6	0	6	0	0	0	0	0	6	0	0	0	2	4
Muecate	11	0	11	0	11	0	0	0	0	0	11	0	0	0	5	6
Murrupula	6	0	6	0	6	0	0	0	0	0	6	0	0	0	2	4
Rapale	8	1	7	1	6	0	0	0	0	0	6	0	0	0	2	4

1. Facilities were excluded because they no longer exist or started operating in the last 6 months, because they were private facilities

2. Facilities that were not providing maternity services, as per data collected the baseline assessment, are excluded from this report.

3.2 Facility infrastructure for general service readiness

In this section we present an overview of general service readiness including electrical supply and reliability, water sources, sanitation services, and availability of MNCH services.

Electricity

Widespread lack of energy access within the health sector in Mozambique, and sub-Saharan Africa generally, is a persistent barrier to the attainment of universal coverage of quality health services. Without electricity, many essential and life-saving services simply cannot be provided. The availability of reliable electricity supply is critical for the provision of quality MNCH health services, the safety of clients and providers alike at all facility levels.

WHO is developing minimum standards of electric service capacity required to delivery specified packages of services, and definitions of 'electric adequacy' have emerged. To ensure adequate services, electrical supply must be without gaps, and available throughout service hours to support the cold chain immunizations, blood and some medications; ensure continuous adherence to infection prevention practices including sterilization of medical equipment; support continuity of care through timely completion and reporting of laboratory test results, entry of patient data into the electronic medical record system, and ordering of commodities via electronic logistics and information systems.^{1,2}

The electricity supply must be of sufficient quality to avoid voltage fluctuations, often characteristic of the central grid supply that can damage laboratory equipment, refrigerators, and computers. Furthermore, health providers' job satisfaction is impacted by their ability to adequately perform their duties as well as the comfort and convenience of their work environment.^{3,4} For staff who live in on-site quarters, electricity access and lighting can contribute to improved satisfaction with living conditions (e.g. allowing electronic devices to be charged; providing heating, cooling, routine and security lighting, and television), thus influencing worker retention particularly in rural areas.⁵

Renewable energy solutions can address most of these challenges. In many countries, including Mozambique, rooftop solar panels and mini-systems have been used to address the immediate need for quality lighting and electricity in small facilities; on-site photovoltaic power systems are being installed as either primary or back-up sources for small health facilities as well as hospitals; and, hybrid solar-diesel (photovoltaic plus generator) systems can provide additional protections from any intermittent power interruptions.^{1,2}

In Nampula, almost one-quarter of health facilities are without any source of electricity (Figure 3.2.1). The primary source of electricity is *Electricidade de Mozambique* (EDM)'s electric transmission network (the grid) and 42% of health facilities in Nampula, including all 9 hospitals, are connected. Solar energy is also widely used by health centers, providing the sole source of energy to 35% of health centers.

Reliability of the EDM electric supply is poor (Figure 3.2.2.). Among the 83 facilities that are connected to the grid, more than 46% (38) indicated that they were without electric supply for more than 2 hours in the

¹ Adair-Rohani, Heather, et al. "Limited electricity access in health facilities of sub-Saharan Africa: a systematic review of data on electricity access, sources, and reliability." *Global Health: Science and Practice* 1.2 (2013): 249-261.

² World Health Organization. *Access to modern energy services for health facilities in resource-constrained settings: a review of status, significance, challenges and measurement.* World Health Organization, 2014.

³ Mutale, Wilbroad, et al. "Measuring health workers' motivation in rural health facilities: baseline results from three study districts in Zambia." *Human resources for health* 11.1 (2013): 1.

⁴ Mbindyo, Patrick M., et al. "Developing a tool to measure health worker motivation in district hospitals in Kenya." *Human Resources for Health* 7.1 (2009): 1.

⁵ Lehmann, Uta, Marjolein Dieleman, and Tim Martineau. "Staffing remote rural areas in middle-and low-income countries: a literature review of attraction and retention." *BMC health services research* 8.1 (2008): 1.

week previous week. An additional 12% (10) experienced an interruption that was less than 2 hours. Infrastructure to mitigate the unreliable power supply is rare, with just 10% of grid-connected facilities reporting a back-up generator. Among all facilities with a generator (10), one was not ready for use at the time of the survey, and only three were wired to automatically connect with a loss of power. It is worth noting that all hospitals were connected to EDM and most (8) had a backup generator ready to be used.

Figure 3.2.1 Availability and sources of electricity, by facility type

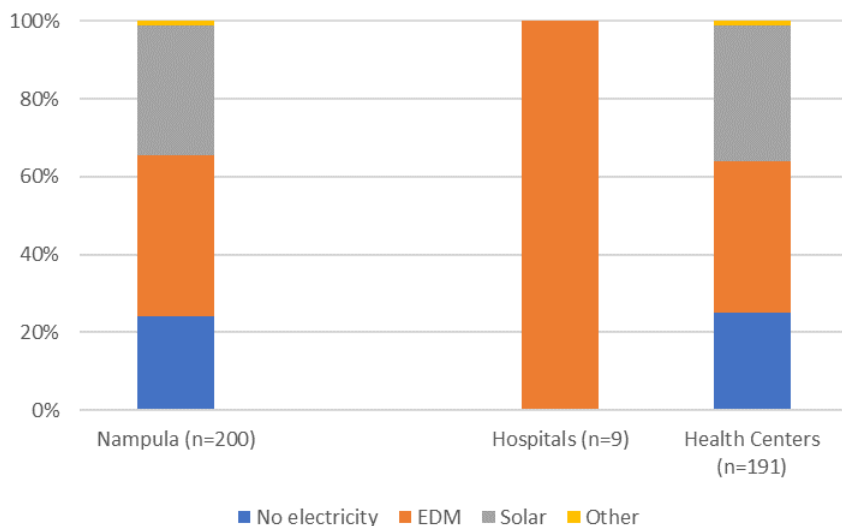
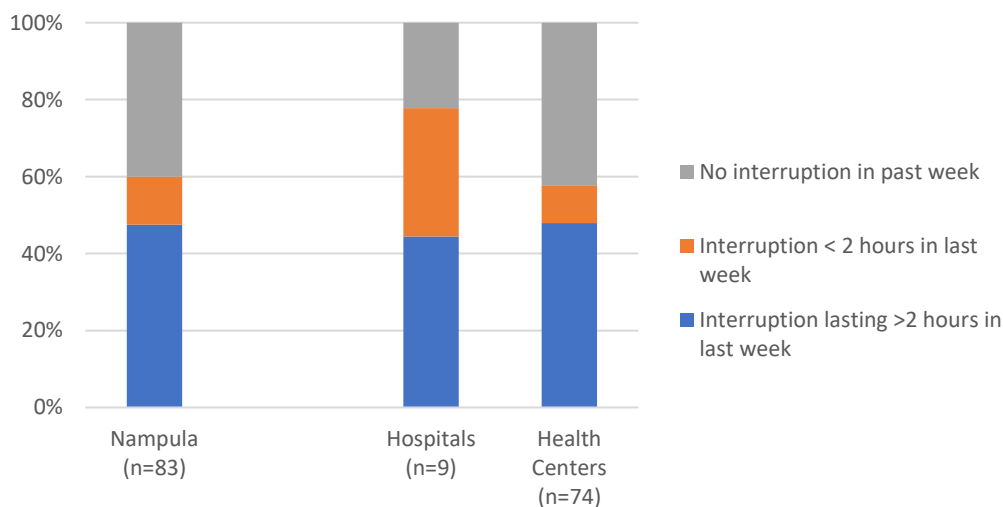


Figure 3.2.2 Reliability of supply, among facilities connected to the electrical grid, by facility type



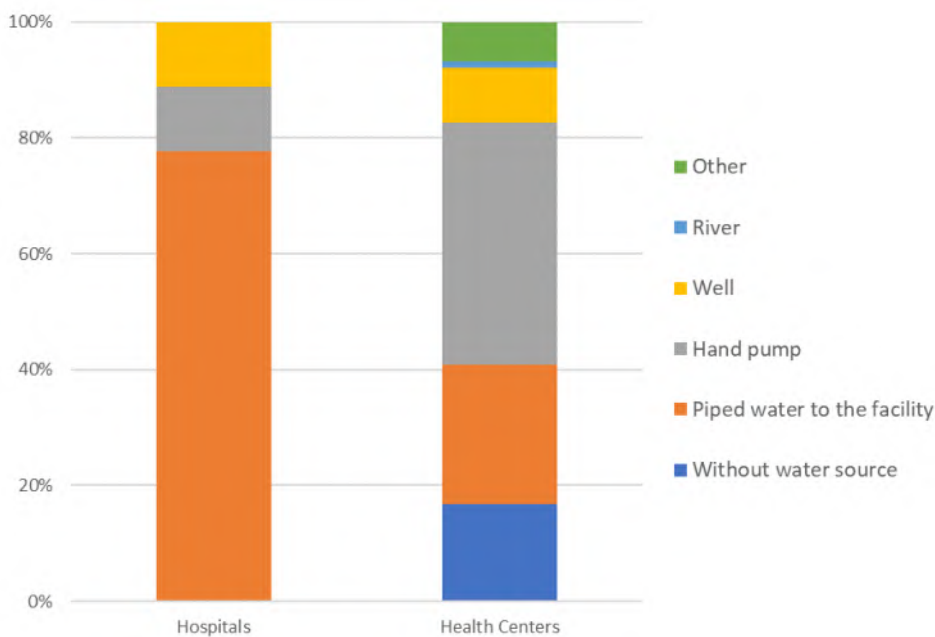
Water and Sanitation

Improved water, sanitation and hygiene (WASH) practices, at home and in health facilities, are critical determinants for survival. WASH has long been acknowledged as a primary intervention to prevent the two major causes of childhood deaths globally—diarrhea and acute lower respiratory infection and its role in preventing negative effects of infectious diseases on child growth and nutrition are well-established. With the advent of the Sustainable Development Goals, the importance of WASH in institutions – including health facilities – has come to the fore as a strategy to reduce newborn mortality. Infections account for 14% of newborn deaths in the early neonatal period and nearly half of late neonatal deaths – many of which are

attributable to inadequate hygiene.⁶ Expert opinion suggests that 27% of infections among babies born in hospitals could be reduced with clean delivery practices.⁷ Puerperal sepsis caused almost one in ten of all maternal deaths in 2013.⁸

In Nampula, 15% of health facilities are without a source of water (Figure 3.2.3). All hospitals have a source, with most (78%) of them reporting piped water into the facility. Just 29% of health centers have piped water. The most common source of water among health centers is a hand-pump. Variation in water supply across districts is worth noting – in Moma, Mossuril, Mecuburi, Muecate, and Murrupula districts, more than 30% of all health facilities report no source of water (data not shown). Further, more than 70% of facilities in Nacala, District of Nampula and Ilha de Mocambique have piped water.

Figure 3.2.3 Availability and sources of water, by facility type



All Nampula hospitals have sanitation facilities for employees and patients and just over half of health centers have a bathroom or a latrine for employees (54%), while 85% have a bathroom or latrine for patients (Figure 3.2.4). In hospitals, sanitation facilities are either flush or non-flush toilets (Figure 3.2.5). In health centers, employee facilities are most likely to be flush toilets, followed by a toilet without a flush; whereas, patient facilities are most commonly ventilated improved latrines (44%) or traditional improved latrines (24%).

⁶ WHO, UNICEF. Water, sanitation and hygiene in health care facilities: status in low and middle income countries and way forward [Internet]. Geneva: WHO; 2015. Available: http://www.who.int/water_sanitation_health/publications/wash-health-care-facilities/en/.

⁷ Blencowe H, Cousens S, Mullany LC, Lee ACC, Kerber K, Wall S, et al. Clean birth and postnatal care practices to reduce neonatal deaths from sepsis and tetanus: a systematic review and Delphi estimation of mortality effect. BMC Public Health. 2011; 11 Suppl 3: S11. doi: 10.1186/1471-2458-11-S3-S11 PMID: 21501428

⁸ Kassebaum, Nicholas J., et al. "Global, regional, and national levels and causes of maternal mortality during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013." The Lancet 384.9947 (2014): 980-1004.

Figure 3.2.4 Availability of sanitation facilities for patients and employees, by type of facility

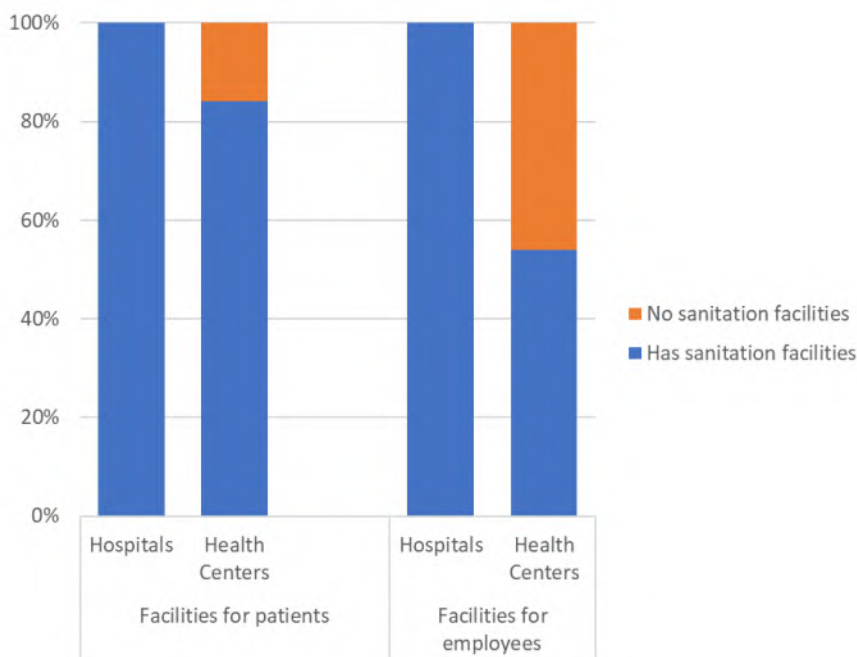
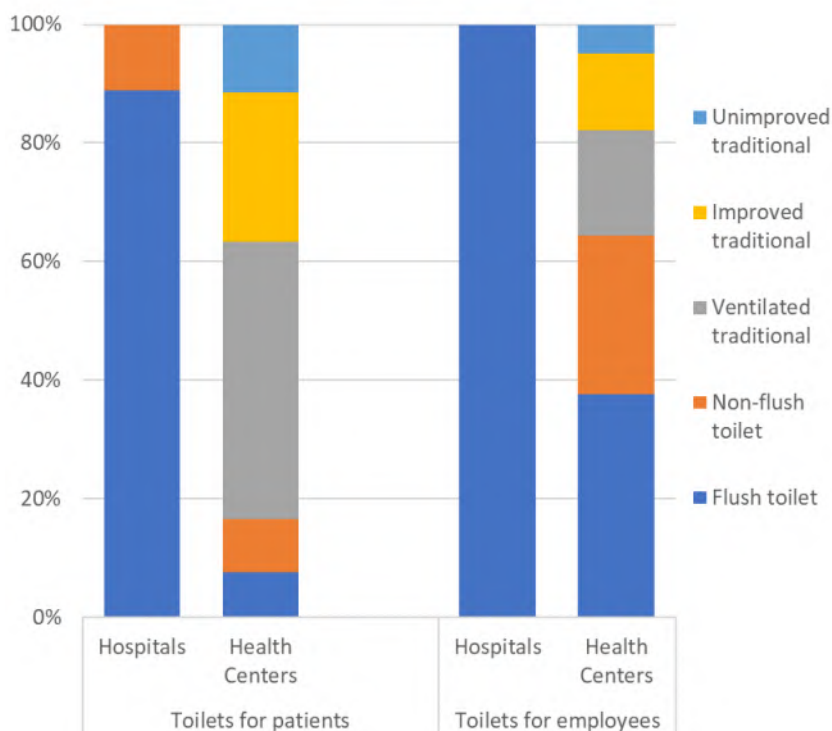


Figure 3.2.5 Types of sanitation facilities available for patients and employees, by type of facility



Availability of key RMNCH services by facility type

Across Nampula in general, reproductive and MNCH services are widely available. In the next section (3.3), we scrutinize facility capacity and readiness to provide important high-impact interventions and components of these care packages. In this Section, we look generally at broad availability of services.

Health Centers in Nampula widely offer most packages of reproductive and maternal health services including ANC and PNC, testing and treatment of STIs, and family planning (FP) (Figure 3.2.6). However, there are gaps in availability of postabortion care (PAC) and cervical cancer screening at health center level. All hospitals report providing PNC, screening and treatment of STIs, PAC, FP and cervical cancer screening, as well as obstetric surgery and radiology.

Availability of child health services, including routine vaccinations, growth monitoring and infant and young child feeding (IYCF), as well as screening and treatment of childhood illnesses and malnutrition, are widely available at health centers. It is worth noting that not all hospitals offer vaccination of newborns, growth monitoring or IYCF.

Figure 3.2.6 Availability of key RMNCH services, by facility type

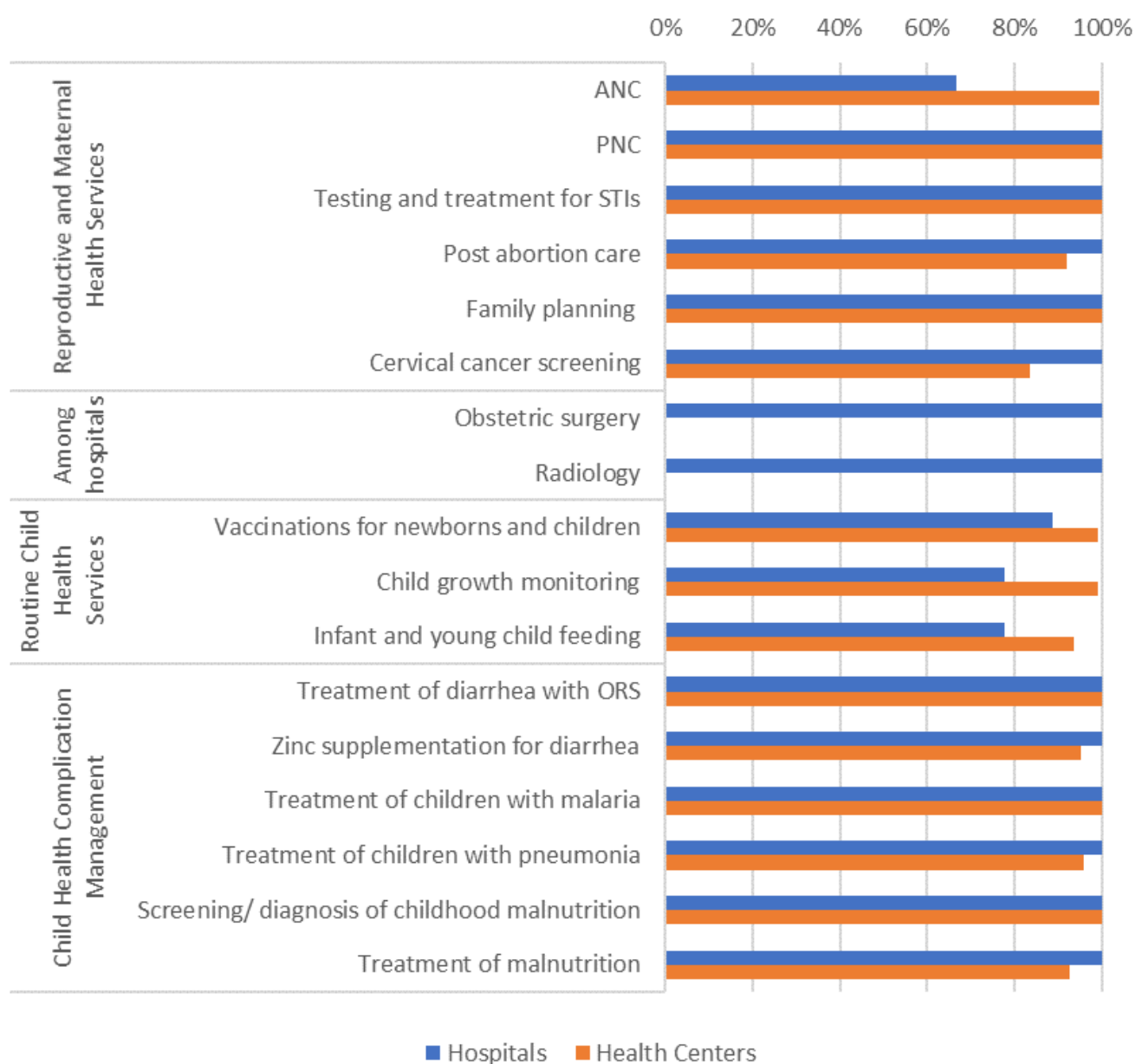


Table 3.2.6. Availability of pharmacy, laboratory, blood transfusion and obstetric surgery,, by facility type

	Total	Hospitals	Health Centers
Pharmacy			
Among all facilities	n=200	n=9	n=191
Facility has pharmacy/drug store	89%	100%	88%
Facility has no pharmacy or store but has a supply of medicines	100%	100%	99%
Number of facilities with either a pharmacy/drug store or a supply of medicines	n=199	n=9	n=190
Among those with pharmacy/supply of medicines, drug inventory register exists and is up-to-date	98%	100%	98%
Laboratory			
Among all facilities	n=200	n=9	n=191
Facility has a laboratory	29%	100%	26%
Among facilities with a laboratory	n=58	n=9	n=49
Has set of guidelines for laboratory	88%	100%	86%
Blood transfusion			
Among all facilities	n=200	n=9	n=191
Facility offers blood transfusion services	19%	100%	15%
Among facilities that offer blood transfusion	n=37	n=9	n=28
Average number of units of blood in stock	6	16	3
Had interruption in the availability of blood in the last 3 months	57%	22%	78%
Blood is always screened for infectious diseases before transfusion*	95%	89%	96%
Surgery			
Among all hospitals	n=9	n=9	-
Operating room for major surgeries	100%	100%	-
Separate operating rooms for obstetric patients only	56%	56%	-

*defined as always screening for HIV, Hep b, Hep C and syphilis

Across Nampula Province, most health facilities have a pharmacy or a drug store (89%) and all have a supply of medicine (even if no pharmacy), and the availability of an up-to-date drug inventory register is almost universal (98%) (Table 3.2.6). All hospitals have a laboratory, though just over one-quarter of health centers do. Further disaggregation of laboratory presence by Health Center types might reveal some patterns as to the which health centers are most likely to have laboratories. Among facilities with a laboratory, all hospitals had a set of guidelines in place but only 86% of health centers with a laboratory did.

Blood transfusion services are universally available among hospitals, and 15% of health centers offer blood transfusion. On average, facilities that offer transfusion services have 6 units of blood in stock and 57% of facilities (including 22% of hospitals) have experienced a stock out of blood supply in the previous 3 months. Further, almost all (but not all) hospitals or health centers report *always* screening donated blood for HIV, Hep B, Hep C and syphilis before transfusion. Regarding surgical capacity, all hospitals offer surgery but not all have a separate operating theatre for obstetric patients.

Table 3.2.7. Availability of infection prevention supplies in the maternity, by facility type

	Total n=200	Hospitals n=9	Health Centers n=191
Basic items			
Soap	45%	78%	43%
Antiseptics	80%	100%	79%
Disposable latex examination gloves	81%	100%	80%
Elbow length gloves	78%	89%	77%
Heavy duty gloves	80%	100%	79%
Eye shields	52%	89%	50%
Mask	78%	100%	77%
Non-sterile protective clothing	60%	100%	58%
Decontamination container	83%	100%	82%
Bleach or bleaching powder (chlorine)	70%	89%	69%
Prepared disinfection solution	59%	100%	57%
Regular trash bin	89%	100%	88%
Covered contaminated waste trash bin	89%	100%	88%
Puncture proof sharps container	95%	100%	94%
Mayo stand/table (or equivalent to establish sterile field)	41%	89%	39%
Surgeon's hand brush with nylon bristles	8%	56%	5%
Surgeon's boots	6%	67%	3%
Disinfectants and antiseptics			
Chlorhexidine solution (Savlon)	50%	67%	49%
Ethanol (75%)	32%	100%	29%
Ethanol (95%)	22%	89%	18%
Polyvidone iodine	17%	33%	16%
Alcohol-based rub	71%	100%	70%

¹ For hospitals or large health centers, the maternity area was likely to be a specific room and these questions were related to the items available in that specific room. Smaller health centres may not have had a specific room devoted to a maternity and these questions were therefore related to whether the facility, in general, had the items available.

To ensure the safety of health providers and patients and to prevent the spread of infections, health facilities must have an adequate and reliable supply of infection prevention equipment and, along with well-defined standards and procedures, infrastructure to sterilize equipment and properly dispose of hazardous wastes.

Eighty percent or more of health facilities in Nampula had antiseptics, disposable gloves, heavy duty gloves, decontamination containers, covered waste bins, and sharps container available in the maternity area (Table 3.2.7). Not quite half of health facilities in Nampula had soap available in the maternity ward – whereas, 71% reported having alcohol-based rub for hand sanitizing. In general, hospitals were better supplied than health centers, but some hospitals lacked soap, elbow length gloves, a mayo stand, hand brush and boots.

Equipment for sterilization is not widely available (Table 3.2.8). Only 22% of hospitals have an autoclave devoted to the maternity area. In general, autoclave space is shared across areas of the facility. Many health centers are without modern sterilization equipment. On the other hand, functioning incinerators and placenta pits are widely available for final disposal of waste.

Table 3.2.8. Availability of sterilization infrastructure in the maternity

	Total n=200	Hospitals n=9	Health Centers n=191
Physical space for autoclave (% distribution)*			
Has separate equipment and space	35%	22%	36%
Shares space and equipment with other services	60%	78%	59%
Other	3%	-	3%
Sterilization equipment			
Autoclave with temperature and pressure gauges	39%	89%	37%
Hot air sterilizer (dry oven)	16%	56%	14%
Steam sterilizer	16%	56%	14%
Steam instrument sterilizer/pressure cooker, electric	13%	56%	11%
Sterilizer/pressure cooker, kerosene heated	21%	33%	20%
Sterilization drum	21%	33%	20%
Sterilization drum stand	16%	33%	15%
Waste management and disposal			
Functioning incinerator	73%	100%	72%
Placenta pit	83%	100%	82%

¹ For hospitals, the maternity area was likely to be a specific room and these questions were related to the items available in that specific room. Health centres may not have had a specific room devoted to a maternity and these questions were therefore related to whether the facility, in general, had the items available.

*one health center is not included due to missing data (n=187)

Table 3.2.9. Average number of beds per facility and ratio of beds to deliveries

	Number of facilities	Total annual institutional deliveries ²	Total number of beds in facilities	Total number of obstetric beds ³	Total number of delivery beds	Average number of beds per facility	Ratio of obstetric beds per 1,000 institutional deliveries	Ratio of delivery beds per 1,000 institutional deliveries
Nampula	200	232,256	3,770	1,215	425	19.3	5.2	1.8
Type of facility								
Hospitals	9	26,274	1,339	253	28	148.8	9.6	1.1
Health Centers	191	205,982	2,431	962	397	14.0	4.7	1.9
District group								
Innovation	82	93,714	1,639	511	168	20.2	5.5	1.8
Priority	38	51,820	534	195	92	14.4	3.8	1.8
Future Focal District	80	86,602	1,597	509	165	22.7	5.9	1.9

¹ According to the *Essential elements of obstetric care at first referral level* (WHO, 1991) there should be 24 beds per 1,000 deliveries in the maternity ward (for both prenatal and postnatal clients). The labour and delivery room should have 6-8 beds. Overall, therefore, the standard would be approximately 30-32 beds per 1,000 deliveries at a facility that would be considered 'first referral level.' This is the equivalent to a district level hospital for about 100,000 population.

² Deliveries from the period of January through June 2019, and doubled to estimate a 12-month volume.

³ For antenatal, postpartum, post-operative, post-abortion (etc.) clients.

The estimated annual volume of institutional deliveries in Nampula province is just over 232,000 (Table 3.2.9). Health centers account for the vast proportion of these deliveries compared to hospitals (205,982 annual deliveries vs. 26,274) yet the physical capacity to accommodate these patients – at least as described by the

ratio of obstetric beds to institutional deliveries – is inadequate among health centers. Health centers have, on average, 4.7 beds for every 1000 deliveries they attend, whereas hospitals have 9.6 beds per 1000 deliveries. According to some interpretations of WHO standards, the number of obstetric beds per 1000 deliveries should be just over 20 to adequately accommodate pre-labor, labor and post-partum patients.

It is worth noting that facilities in Alcançar’s Innovation and Priority districts account for 63% of all institutional deliveries in Nampula Province (145,534 deliveries of 232,253).

Summary of key findings and recommendations

Key Findings:

- Access to a reliable source of electricity remains a key issue throughout Nampula province, especially among health centers. Almost a quarter of health facilities in Nampula have no source of electricity. While 42% of health facilities are connected to the national electrical grid (EDM), almost half of those facilities experienced a power supply interruption of more than two hours in the week prior to data collection.
- Nampula province health facilities have achieved mixed success in improving WASH practices. Not all health centers in Nampula have some form of sanitation facility. Most have a sanitation facility for patients (85%) but just 54% of health centers have a toilet or latrine of some kind for employees to use. There are significant disparities in access to water according to facility type and district. Of note, 30% of health facilities in Moma, Mossuril, Mecuburi, Muecate, and Murrupula districts report no source of water.
- MNCH and pharmacy services are widely available across Nampula health facilities, though provision of PAC, cervical cancer screening, newborn vaccinations, child growth monitoring, and IYCF varies by facility type.
- Laboratories and blood transfusion services are universally available among hospitals, but much less prevalent among health centers. Achieving universal screening of blood and reducing stock outs of blood are key challenges to the provision of optimal care.
- Infection prevention materials were available in most facilities, though critical gaps remain in the supply of sterilization equipment and soap.
- Health centers oversee a significant majority of institutional deliveries throughout Nampula province, yet in comparison with hospitals, those facilities are much less equipped to provide sufficient beds for the volume of obstetric patients they receive.

Recommendations:

- Increased infrastructure is needed to ensure reliable access to electricity and water, especially among health centers and facilities in Moma, Mossuril, Mecuburi, Muecate, and Murrupula.
- Improvements in facility access to water should be accompanied by increased provision of soap to promote recommended WASH practices.
- Increased management systems and supplies are needed to ensure the screening of blood for transfusions and prevent blood supply stockouts.
- Special attention is needed to provide adequate space and patient beds for the high volume of women receiving care around the time of childbirth in health centers.

3.3 Capacity to provide the continuum of pre-pregnancy, delivery, post-partum and newborn care (IR 2.1 and IR 2.2)

In this section we present results on the key components of facility MNH readiness including availability of critical infrastructure, guidelines, minimum staffing, drugs and equipment, provision of routine interventions, and an analysis of EmONC coverage.

Infrastructure and guidelines

Table 3.3.1. Infrastructure in maternity and L&D areas

	Total (n=200)	Hospitals (n=9)	Health Centers (n=191)
Sufficient light source to perform tasks during the day	82%	100%	81%
Sufficient light source to perform tasks at night	53%	100%	51%
Means of ventilation	47%	78%	45%
Functioning toilet for patient use	76%	89%	75%
Heating/heating arrangements	20%	89%	17%
Functional fan/air conditioning	10%	33%	8%
Curtains/means of providing patient privacy	58%	78%	57%
Waiting area for visitors and family	29%	44%	28%
Rest area for health personnel	14%	22%	13%
Functioning toilet for visitors' and family use	48%	78%	46%

Basic infrastructure for maternity and labor and delivery services includes adequate light to complete tasks during the day and night, bathrooms for patients and their visitors, a source of heat and a fan or air conditioning, privacy curtains, a waiting area, and a place for facility staff to rest. Overall, infrastructure in these areas is inadequate. Hospitals are significantly better equipped in the maternity and labor and delivery areas, yet the majority of Nampula hospitals still lack working fans or air conditioning, waiting areas for visitors, working bathrooms for visitors, and space where staff can rest. Almost half of health centers are without adequate lighting to perform tasks at night.

Table 3.3.2. Presence of relevant MNH guidelines

	Total (n=200)	Hospitals (n=9)	Hospitals (n=9)
Guidelines, protocols, or job aids			
National ANC Guidelines	27%	56%	26%
Checklist or guidelines for ANC	35%	33%	35%
TIP checklists and / or guidelines (including graphics)	36%	44%	35%
Provision of respectful maternity care	50%	89%	48%
Prevention of mother-to-child transmission of HIV	74%	100%	72%
Management protocols for selected obstetric topics (for health centers, hospitals)	37%	78%	35%
Infection prevention guidelines	60%	89%	59%
Integrated management of pregnancy, delivery, postpartum and newborn care	54%	78%	53%
Care for premature and low birthweight babies, including KMC	46%	67%	45%
Newborn resuscitation	50%	89%	48%
Integrated management of newborn and childhood illnesses (IMNCI)	37%	56%	36%
Referral and counter-referral norms	63%	78%	62%
Post partum family planning	82%	100%	81%

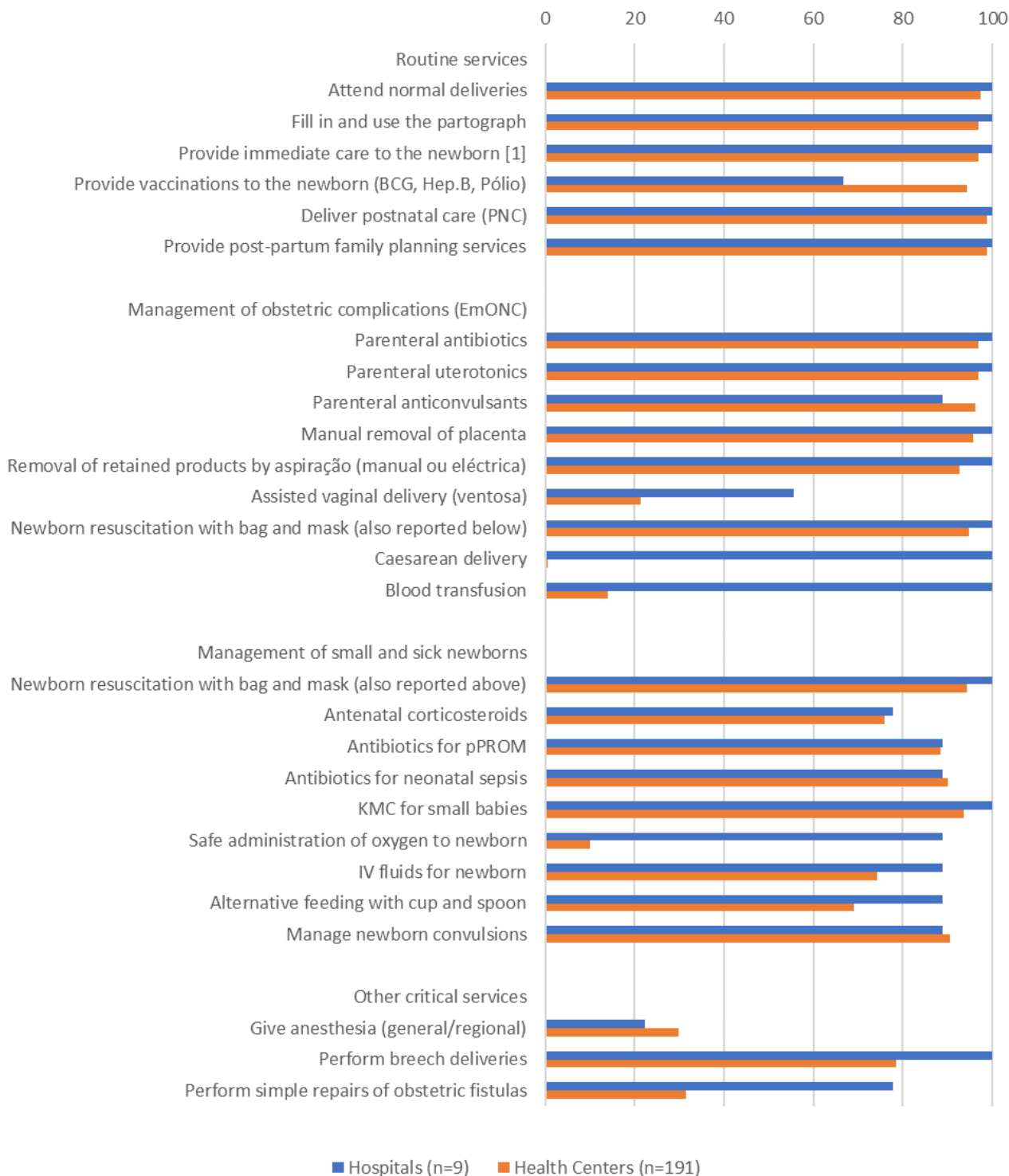
IMNCI = integrated management of neonatal and childhood illness; KMC = kangaroo mother care; PMTCT = prevention of mother-to-child transmission (of HIV).

¹ For hospitals, the maternity area was likely to be a specific room and these questions were related to the items available in that specific room. Health centres may not have had a specific room devoted to maternity and these questions were therefore related to whether the facility, in general, had the items available.

The most commonly available guidelines related to maternal and newborn health were for post-partum family planning, PMTCT, infection prevention, and referral and counter-referral norms. Notably, only a quarter of health centers had the national guide for pre-natal care/ANC available on the day of the survey.

Human Resources

Figure 3.3.3. Percent of facilities with at least one provider capable of providing key MNH services, by facility type



A strategic objective of the health system is to ensure the availability of the right mix of adequately skilled and motivated staff who are committed to work and stay in a well-managed sector. This includes expanding the availability of critical human resource categories by scaling-up the training of professionals who are in scarce supply such as MNCH nurses and *APEs* - which Mozambique is committed to - and by improving the motivation and retention of HR through the implementation of evidence-based financial and non-financial incentives.

Data collected during this baseline assessment can help inform health planners in Nampula about the strengths and gaps in availability and posting of human resources. At each health facility, data collectors asked facility staff (e.g. human resource or administrative directors, or the facility in-charge) about the availability of personnel, the training they have received, and the specific medical interventions that each cadre is routinely providing. Data collectors gathered information on the total number of health workers (in 25 different cadres) that are currently posted at each facility, how many have recently left, and the total number of male and female workers (in each cadre). Further, we gathered information on the number of each cadre that have received training in critical skills packages for MNCH (e.g. EmONC, Helping Babies Breathe, Integrated Care for Childhood Illnesses, Immunization, FP, etc.).

In this preliminary report, we present a summary result indicating the percent of health facilities where at least one health provider currently posted at that facility can provide critical MNH interventions (Figure 3.3.3). (Results on the availability of staff who can provide components of child Health services are presented in Section 3.4).

Hospitals and health centers are at least minimally staffed to provide most routine MNCH services including normal deliveries, use of the partograph, PNC and post-partum family planning. There are important gaps, in health centers particularly, in human resources to provide newborn vaccinations.

Health centers and hospitals appear to be minimally staffed to manage most obstetric complications. Ninety percent or more of hospitals and health centers have staff to provide six of the seven basic emergency obstetric and newborn care (EmONC) signal functions (i.e. parenteral antibiotics, uterotonics, anticonvulsants, manual removal of the placenta, removal of retained products of conception and newborn resuscitation). However, it is worth noting that staffing to provide these critical life-saving interventions is not universally available at health centers or hospitals in Nampula – an important area for potential improvement. Further, few facilities have staff to provide assisted vaginal delivery (i.e. delivery of a baby with the use of a vacuum extractor or forceps). The lack of this emergency intervention further emphasizes the importance of timely access to surgical delivery for every pregnant woman. All hospitals are at least minimally staffed to provide caesarean delivery and blood transfusion.

The World Health Organization has recently released a strategy to transform the care of small and sick newborns (CSSN).⁹ Results of this baseline assessment indicate important areas for improvement around staffing for the practices identified as key components of that strategy. An important discussion for Alcançar to have with MISAU, DPS and others is around identifying the appropriate levels of the health system where each CSSN practice can and should be delivered. For example, health centers are currently best staffed to provide newborn resuscitation, antibiotics for preterm, premature rupture of membranes (pPROM), antibiotics for newborn sepsis, KMC for small babies, and management of newborn convulsions. Currently, in Nampula, administration of safe oxygen to newborns is predominately within the purview of hospitals. Further, fewer than 80% of health centers are staffed to provide antenatal corticosteroids, IV fluids to newborns, or alternative feeding.

⁹ World Health Organization, 2019. Survive and thrive: transforming care for every small and sick newborn. Alcançar Baseline Assessment of Facility and District Capacity
January 2020

Drugs, equipment and supplies for maternal and newborn care

Another critical component of facility capacity to provide quality services is the availability of commodities, drugs and supplies. Tables 3.3.4A and 3.3.4B present results on the proportion of facilities that had specific MNH drugs and supplies available on the day of the survey (results related to key child health drugs and supplies are presented in Section 3.4). Important gaps are noted in the availability of antibiotics, magnesium sulphate, and oxytocin at health centers.

Table 3.3.4A. Availability of key drugs, equipment and supplies for maternal health services (on the day of the survey), by facility type

	Total (n=200) %	Hospitals (n=9) %	Health Centers (n=191) %
Antibiotics (any)			
Ampicillin (injection)	51%	78%	50%
Penicillin G (benzyl)	67%	100%	67%
Gentamicin (injection)	58%	100%	56%
Kanamycin (injection) amp 2g	2%	0%	2%
Metronidazole (injection)	49%	44%	49%
Chloramphenicol (injection)	33%	89%	30%
Cephalosporin (injection)	19%	78%	16%
Anticonvulsants (any)			
Magnesium sulphate (injection)	77%	100%	75%
Diazepam (injection)	89%	67%	90%
Antihypertensives (any)			
Dihydralazine (injection) 25 mg	33%	100%	30%
Methyldopa	41%	100%	38%
Nifedipine	14%	56%	12%
Oxytocics and prostaglandins (any)			
Oxytocin (injection) amp 10UI/MI	87%	89%	87%
Misoprostol (Cytotec), cp 200mg	32%	67%	30%
Ergometrine	13%	33%	12%
Drugs used in emergencies (any)			
Adrenaline (epinephrine)	90%	89%	90%
Calcium gluconate	6%	11%	5%
Atropine	15%	78%	12%
Dopamine (injection)	1%	0%	1%
Aminophylline	49%	100%	47%
IV fluids (any)			
Dextrose (5%), 1L bottles	78%	100%	77%
Dextrose (30%)	38%	100%	35%
Sodium Bicarbonate	21%	22%	20%
Normal saline, 1L bottles	81%	100%	80%
Dextran or plasma gel	8%	22%	7%
Ringer's lactate	82%	100%	81%

¹ If facility reported neither a pharmacy nor a supply of medicines, that facility was assumed not to have the drug. Missing information was also taken as not having the drug.

Table 3.3.4B. Availability of key drugs, equipment and supplies for maternal health services (on the day of the survey), by facility type

	Total (n=200) %	Hospitals (n=9) %	Health Centers (n=191) %
Antimalarials (any)			
Coartem (artemether/lumefantrine)	87%	100%	86%
Quinine (injection)	5%	11%	4%
Quinine, oral	59%	100%	57%
Artesunate	47%	89%	45%
Other drugs and supplies			
Ferrous sulphate or fumarate	72%	100%	70%
Folic acid	33%	44%	32%
Ferrous sulphate with folic acid	91%	100%	91%
Anti-tetanus serum/TAT	22%	0%	23%
Tetanus toxoid vaccine	92%	89%	92%
Anti-rho (D) immune globulin	10%	11%	10%
ITNs	26%	0%	27%
Mebendazole	92%	100%	92%
Metoclopramide	86%	100%	85%
Equipment			
Filled O ₂ cylinder, carrier, and key	9%	89%	5%
Ultrasound	5%	89%	1%
Cardiotocography (external or internal)	2%	33%	1%
Blood pressure cuff	51%	89%	49%
Stethoscope (for adult)	65%	100%	63%
Stethoscope (for foetus)	86%	78%	86%
Doppler	6%	56%	4%
Thermometer (clinical)	80%	89%	80%
Thermometer (low reading)	29%	33%	28%
Supplies			
Suture needles/suture materials	92%	100%	91%
Catheter for IV line (16-18)	83%	100%	82%
IV infusion stand(s)	87%	100%	86%
Urinary catheters	42%	89%	40%
IV cannulae (24 gauge)	50%	100%	48%
Dipstick for urinalysis	5%	33%	3%
Ventilator bag and mask (for adult)	54%	100%	52%
Partograph form	71%	100%	69%
Watch or clock with second hand that can be easily seen	29%	67%	27%
Measuring tape	93%	100%	92%
Obstetric wheel	33%	67%	31%
Tubing for oxygen administration	12%	89%	8%
Pulse oximeter	15%	33%	14%
Apnoea monitor	4%	22%	3%
HIV rapid test kit	93%	100%	93%

¹ If facility reported neither a pharmacy nor a supply of medicines, that facility was assumed not to have the drug. Missing information was also taken as not having the drug.

Table 3.3.5. Availability of key drugs, equipment and supplies for newborn health services (on the day of the survey), by facility type

	Total (n=200) %	Hospitals (n=9) %	Health Centers (n=191) %
Basic newborn care			
Baby weighing scale	90%	100%	90%
Cord ties/clips	94%	100%	93%
Thermometer for newborn	46%	56%	46%
Caps or hats to prevent heat loss	17%	67%	14%
Towels/blankets or cloth for newborn	15%	44%	13%
Vitamin K (for newborn)	66%	100%	64%
Chlorhexidine (4% gel)	51%	67%	50%
Phenobarbital	29%	100%	25%
Nystatin (oral, for newborn)	72%	44%	73%
Newborn resuscitation			
Neonatal resuscitating corner	49%	89%	47%
Mucus extractor/simple suction	77%	100%	76%
Neonatal face masks (size 0)	43%	89%	41%
Neonatal face masks (size 1)	41%	89%	39%
Neonatal size ambu (ventilatory bag)	87%	100%	86%
Suction catheter (10, 12Ch)	28%	33%	27%
Infant laryngoscope with spare bulb and batteries	3%	11%	3%
Endotracheal tubes (3.5, 3.0, 2.5mm)	5%	44%	3%
Disposable uncuffed tracheal tubes (sizes 2.0-3.5)	12%	56%	10%
Suction apparatus (foot- or electrically-operated)	14%	67%	12%
Mucus trap for suction	8%	33%	7%
Newborn anatomical model (for practice)	29%	89%	26%
Small and sick newborns			
Register for sick babies	93%	100%	92%
Daily patient chart	88%	100%	87%
IV fluid (neonatal giving) set	42%	78%	40%
Exchange transfusion set	12%	89%	8%
Umbilical catheter	9%	44%	7%
Syringes (0.5, 1.0ml)	71%	78%	71%
Radiant warmer	22%	78%	19%
Incubator	4%	44%	2%
Designated space or beds for KMC	38%	78%	36%
KMC register	60%	78%	59%
Nasogastric feeding tube (#4)	28%	89%	25%
Cup and spoon for infant feeding	23%	56%	21%
Cup for breast milk expression	13%	44%	11%
Ictrometer	1%	11%	0%
Fluorescent tubes for phototherapy to treat jaundice	7%	56%	5%
Oxygen source for newborns	9%	89%	5%
Laryngoscope (newborn size)	1%	11%	0%
Respirator for neonates	7%	78%	3%
CPAP machine	19%	56%	17%

CPAP = continuous positive airway pressure; KMC = kangaroo mother care.

Availability of maternal and newborn health services

In addition to asking about whether facilities were staffed and equipped to provide services, we gathered information on whether each facility had recently provided specific MNH interventions (report on provision of child health services are reported under Section 3.4).

Routine services for maternal and newborn care are provided widely in hospitals and health centers (Figure 3.3.6). However, health centers are unlikely to provide alternative feeding to newborns or a surgical method of family planning, the latter is not surprising and the former mirrors the findings on staffing in health centers for alternative feeding. Of note is that application of chlorhexidine to the umbilical cord is not universally available at health centers or hospitals. Clarification around DPS and MISAU objectives regarding chlorhexidine application may be useful.

Management of complications for newborns and pregnant women, women in labor or in the post-partum period— i.e. provision of the signal functions of EmONC – appears to be concentrated in hospitals, with the notable exception of antibiotics and oxytocics. The low provision of anticonvulsants at health centers is worth investigating as it is a practice that can be decentralized to health center level, thus mitigating the need for rapid referral of women with severe pre-eclampsia or eclampsia. Manual removal of placenta and removal of retained products are also life-saving interventions that can be safely provided at health center level – and many health centers are providing these services. Further analysis of provision of these services that disaggregates health centers by type may be useful in better understanding the patterns seen here.

Despite what we saw in Figure 3.3.3 which indicated that many health centers were at least minimally staffed to provide many of the components of care for small and sick newborns, Figure 3.3.6 indicates that in practice, outside of newborn resuscitation and KMC, health centers are not providing these life-saving services for babies. This could be an important area for collaborative discussion with MISAU, DPS and USAID and other stakeholders, to create a clear strategy for ensuring availability and provision of these services.

Figure 3.3.6. Recent provision of key MNH services (in previous 3 months)

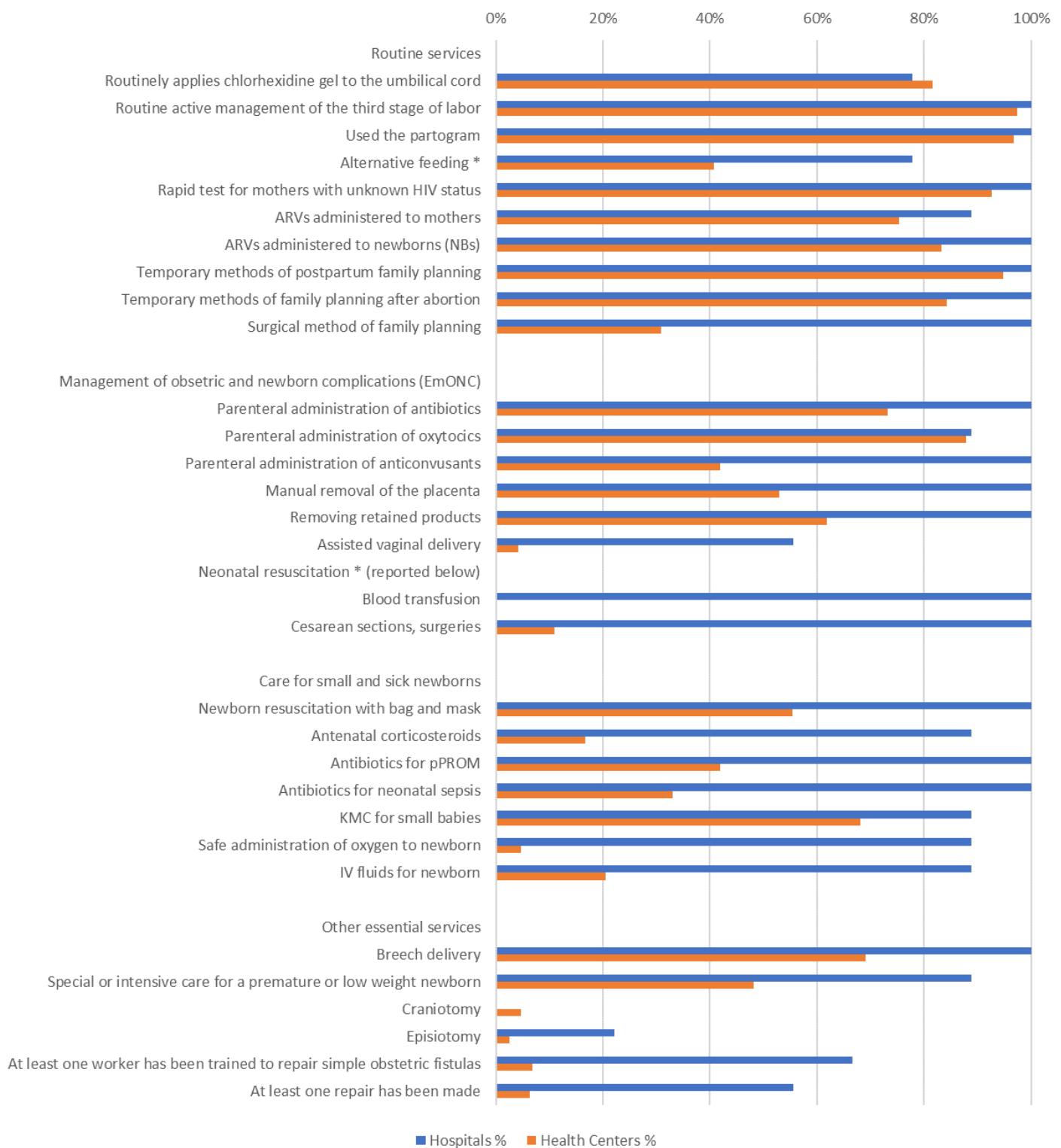


Table 3.3.7. Number of facilities providing full and almost full EmONC and CSSN packages, by facility type and district groups

	Emergency Obstetric and Newborn Care			Care for Small and Sick Newborns			
	Number of facilities	Fully EmONC functioning (in last 3 months) ¹	Almost EmONC (missing 1-2 EmONC signal functions) ²	Other	Performed all key components in last 3 months ¹	Performed most key components within last 3 months ²	Other
Nampula	200	9	67	124	8	27	165
Facility Type							
Hospitals	9	4	5	0	7	1	1
Health Centers	181	5	62	124	1	26	164
District Group							
Innovation	82	3	30	49	6	10	66
Priority	38	0	12	26	0	4	34
Future Focal District	80	6	25	49	2	13	65

¹ Almost there indicates those facilities providing some signal functions but missing 1-2 EmONC signal functions/1-2 components of the Care for Small and Sick Newborn packages.

² Other indicates those facilities missing more than 2 EmONC signal functions (relative to facility type) or missing more than 3 components of Care for Small and Sick Newborns

EmONC refers to a package of life-saving interventions or signal functions used to treat the direct obstetric complications that make up approximately 70-80% of maternal deaths globally.¹⁰ A facility is classified as functionally basic EmONC if the first seven signal functions have been performed at that facility in the 3 months prior to the assessment (parenteral antibiotics, oxytocics and anticonvulsants, manual removal of placenta, removal of retained products, assisted vaginal delivery and newborn resuscitation).¹¹ A facility qualifies as functionally comprehensive EmONC if caesarean delivery and blood transfusion services have been provided *in addition to* the seven basic signal functions.

The baseline assessment collected information from each facility on the recent provision of each signal function, and we classified facilities as either fully EmONC functioning (basic EmONC for health centers or comprehensive EmONC for hospitals) or as almost fully EmONC (i.e. they are missing one or two signal functions) (Table 3.3.7). Facilities that do not meet these criteria are included under Other. The seven interventions included under CSSN have not yet been organized into basic or comprehensive packages; therefore, we classified facilities as recently performing all components of the CSSN package, or most components of the package (i.e. 5 or 6). Facilities that do not fall into those two categories are included in Other.

Nampula has 9 facilities that are functioning as either fully Basic or fully Comprehensive EmONC, and an additional 67 facilities that are almost doing so. Similarly, just 8 facilities provided the full package of CSSN, including 7 hospitals. An additional 27 facilities (mostly health centers) are providing almost the entire package.

It is useful to quantify the number of facilities that are ‘almost’ providing the full package in order to more efficiently target efforts to raise the capacity of those facilities to expand coverage of these life-saving services.

¹⁰ Austin A, Langer A, Salam RA, Lassi ZS, Das JK, Bhutta ZA. Approaches to improve the quality of maternal and newborn health care: an overview of the evidence. *Reprod Health* 2014, 11 Supple 2:S1.

¹¹ WHO, UNFPA, UNICEF, AMDD. Monitoring emergency obstetric care: a handbook. Geneva: World Health Organization; 2009. Alcançar Baseline Assessment of Facility and District Capacity January 2020

While population-based targets for the appropriate level of coverage of CSSN have not yet been developed, they are well-established for EmONC services (Table 3.3.8).

Table 3.3.8. EmONC coverage per population (relative to WHO Guidelines)

	Total population	Comprehensive and Basic EmONC facilities			Comprehensive EmONC facilities		
		Recommended ²	Actual	(Gap) Surplus	Recommended ²	Actual	(Gap) Surplus
		N	N	N	N	N	N
Nampula	6,102,867	61	9	(52)	12	4	(8)
Districts							
Innovation							
Angoche	399,092	4	0	(4)	1	0	(1)
Erati	372,844	4	1	(3)	1	1	0
Memba	313,507	3	0	(3)	1	0	(1)
Moma	310,706	3	0	(3)	1	0	(1)
Monapo	413,694	4	0	(4)	1	0	(1)
Nacala	225,034	2	1	(1)	0	1	1
Ribaue	290,244	3	1	(2)	1	1	0
Priority							
Liupo	174,278	2	0	(2)	0	0	(0)
Meconta	250,425	3	0	(3)	1	0	(1)
Mogovolas	415,407	4	0	(4)	1	0	(1)
Mossuril	142,787	1	0	(1)	0	0	(0)
Nacala-a-Velha	241,536	2	0	(2)	0	0	(0)
Nacaroa	145,643	1	0	(1)	0	0	(0)
Future Focal District							
Distrito de Nampula	743,125	7	3	(4)	1	1	(0)
Ilha de Mocambique	65,712	1	0	(1)	0	0	(0)
Lalaua	102,890	1	1	(0)	0	0	(0)
Larde	85,971	1	0	(1)	0	0	(0)
Malema	223,791	2	2	(0)	0	0	(0)
Mecuburi	283,984	3	0	(3)	1	0	(1)
Mogincual	337,207	3	0	(3)	1	0	(1)
Muecate	175,075	2	0	(2)	0	0	(0)
Murupula	215,208	2	0	(2)	0	0	(0)
Rapale	174,707	2	0	(2)	0	0	(0)

1. Source of the population estimate is INE - National Institute of Statistics, CENSO, 2017 "Relatório Preliminar".

2. WHO, UNFPA and UNICEF recommend a minimum of 5 fully-functioning EmONC facilities per 500,000 population where at least one is a fully functioning Comprehensive EmONC facility (Monitoring emergency obstetric care: a handbook, 2009).

WHO, UNICEF, and UNFPA recommend a minimum of 5 fully functioning EmONC facilities per 500,000 population, where at least one is a fully functioning Comprehensive EmONC facility. This target is useful for high-level planning of services, perhaps at the provincial level. Table 3.3.8 provides the recommended number of EmONC facilities for each district in Nampula. These district-level results only guide health planners and identify potential geographic gaps in services. However, a province-wide strategy to ensure universal timely access to emergency obstetric and newborn care service must consider geographic placement of these facilities relative to population centers, navigable roads, and should arrange systems and mechanisms for referral between communities and facilities, and between lower and higher-level facilities. At the provincial level, Nampula needs an additional 52 fully functioning EmONC facilities – 8 comprehensive EmONC facilities and the remaining providing at least Basic EmONC. It would be worth investigating whether the 67 facilities

that are “almost EmONC” (Table 3.3.7) are appropriate candidates for capacity and service strengthening to upgrade to fully functioning, and if by doing so Nampula would achieve an efficient geographic coverage of emergency services.

The most commonly missing signal function (Table 3.3.6) is assisted vaginal delivery (AVD) with vacuum extraction or forceps. In some cases, countries have opted to eliminate pre-service training in this skill or have developed strategies that do not encourage AVD at health center level. In that case, one might re-think the definition of basic EmONC by excluding that signal function from the definition. If we were to exclude AVD as a basic signal function, Nampula would have 38 fully functioning basic EmONC facilities. Of course, eliminating health center access to that life-saving intervention will have implications – namely, increasing the importance of a functioning emergency referral system and timely access to surgery.

Summary of key findings and recommendations

Key findings:

- In comparison with hospitals, health centers are less equipped with basic infrastructure for maternity and labor and delivery services. A high proportion of health centers lack infrastructure to provide sufficient lighting for performing tasks at night, means of privacy, ventilation, heating, and rest areas for facility personnel.
- Over half of Nampula facilities have available guides or protocols related to post-partum family planning, infection prevention, PMTCT, referral norms, and integrated management of pregnancy, delivery, postpartum and newborn care. Similar materials for ANC, and RMC, among others were found in a smaller number of facilities.
- Almost all facilities have at least one provider able to perform key components of routine MNH services and EmONC signal functions. However, the provision of these services is more prevalent in hospitals, with the exceptions of providing antibiotics and oxytocics. Among both types of facilities, there is a need for personnel able to perform assisted vaginal deliveries.
- Results indicate critical gaps in the availability of antibiotics, magnesium sulphate, and oxytocin at health centers. Chlorhexidine for umbilical cord care is not universally available at either health centers or hospitals.
- Nampula has 9 facilities that meet criteria for being fully Basic or fully Comprehensive EmONC. Eight facilities provide the full package of CSSN. An additional 52 fully functioning EmONC facilities are needed throughout Nampula province to meet global guidelines that recommend 5 EmONC facilities per 500,000 population. There are 67 health facilities that are missing just one or two of the EmONC signal functions, and therefore are potential candidates for service strengthening to meet the target.

Recommendations:

- Overall, more efforts are needed to better equip health facilities to perform EmONC functions. Initial efforts could investigate the state of “almost EmONC” facilities and determine best strategies to upgrade those facilities to fully functioning. There are 67 health facilities that are missing just one or two of the EmONC signal functions, and therefore are potential candidates for service strengthening to meet EmONC coverage targets.
- More efforts are needed to improve the availability of personnel and services to provide care for small and sick newborns. More specifically, we recommend increased discussion to determine the rollout of the CSSN strategy at different types of health facilities, and more initiatives needed to ensure the delivery of lifesaving newborn health services at health centers.
- We recommend the expansion of lighting, ventilation, and other basic infrastructure to provide optimal care for women giving birth at health facilities and their newborns.
- More research is needed to determine the causes detracting from the provision of anticonvulsants and other life-saving interventions at health centers.

- Supply chain initiatives are recommended to ensure the availability of lifesaving drugs at health centers.
- More investigation and programs are warranted to examine why few personnel are trained to perform assisted vaginal deliveries and increase capacity in that area.

3.4 Capacity to provide child health services including immunizations, integrated management of childhood illnesses and management of malnutrition (IR 2.1 and 2.2)

In this section we present results on the key components of facility child health readiness including availability of critical infrastructure, guidelines, minimum staffing, drugs and equipment, provision of routine interventions.

Infrastructure and guidelines

Table 3.4.1 Immunization infrastructure

	Total (n=200) %	Hospitals (n=9) %	Health Centers (n=191) %
At least one refrigerator / freezer in operation and available for EPI	93%	67%	94%
Energy used to operate the refrigerator			
Electricity (EDM)	38%	78%	36%
Solar (with or without batteries)	30%	0%	31%
Gas	29%	0%	30%
Generator (Gasoline / Diesel)	0%	0%	0%
Power supplied to the refrigerator 24 hours a day, 7 days a week	83%	78%	83%
On the day of the survey, the temperature of the refrigerator / glacier was monitored by:			
Thermometer	81%	44%	82%
Continuous temperature recorder	49%	67%	48%
The temperature log was completely filled in the last 30 days	77%	56%	78%
The temperature was out of range in the past 30 days			
yes	24%	33%	24%
not available/ no register	14%	33%	13%
no	63%	33%	64%

Ensuring the integrity and effectiveness of vaccinations requires a reliable cold-chain. In Nampula, refrigerators used to keep vaccinations at the proper temperature are widely available (though, notably three hospitals reported not having one). Health centers used a diversity of electricity sources to operate the EPI refrigerator, including the grid (36%), solar (31%) and gas refrigerators (30%). More than 80% of health facilities indicated that power was supplied to the refrigerator constantly, however almost one-quarter of facilities indicated that the temperature had been out of acceptable range in the previous 30 days posing risk to the integrity of the vaccine supply.

Table 3.4.2. Presence of relevant child health guidelines

	Total (n=200) %	Hospitals (n=9) %	Health Centers (n=191) %
Guidelines, protocols, or job aids			
The national guide for routine childhood vaccination (noted)	55%	44%	54%
IMCI guidelines for the diagnosis and treatment of childhood illnesses	39%	56%	38%
Checklist or guidelines for the management of childhood illnesses	31%	44%	30%
National guide for growth monitoring	51%	67%	50%

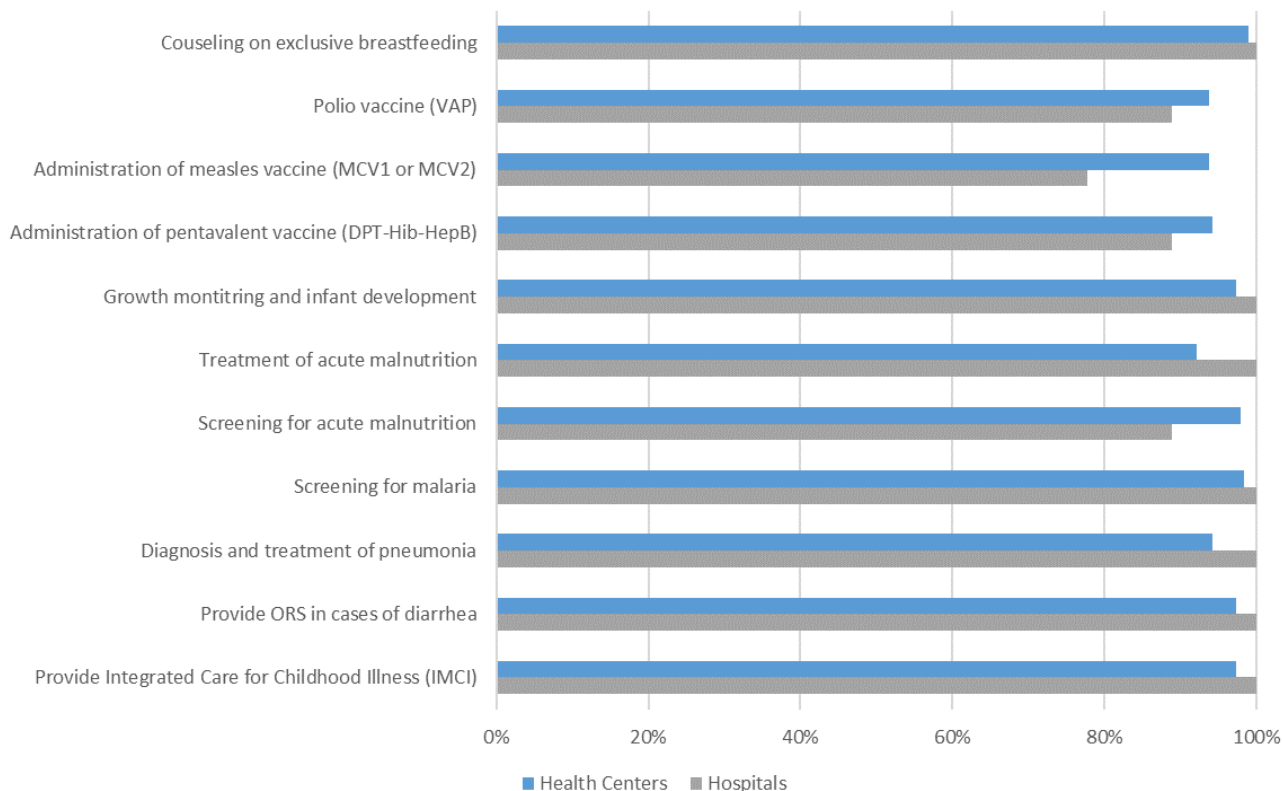
Important guidelines for child health include national guide for vaccinations, IMCI guidelines and checklists, and the national guide for growth monitoring. However, these important guidelines are not widely available with 55% or fewer of facilities having them.

Human Resources

As mentioned in Section 3.3, the right mix of adequately skilled and motivated staff, and the thoughtful expansion of critical human resource categories is an important strategy for the health sector to achieve its health targets and to sustain them.

As for maternal and newborn health, we present the percent of health facilities where at least one health provider currently posted at that facility can provide critical child health interventions (Figure 3.4.3). Data collected during this baseline assessment can provide further insight into the gaps, turnover, training, and sex-ratio of staff. We will analyze and share these data at a later date.

Figure 3.4.3. Availability of at least one provider to provide key components of child health services, by facility type



Hospitals and health centers are at least minimally staffed to provide IMNCI and ORS, diagnose and treat pneumonia, screen for malaria, provide growth monitoring, and counsel on exclusive breastfeeding. Health centers are also minimally staffed for screening of malnutrition. Slightly fewer health centers are able to treat acute malnutrition, but 100% of hospitals are staffed to do so. There are some notable gaps in minimum staffing at health centers for several vaccines: polio, measles (MCV1 and MCV2), and pentavalent.

Table 3.4.4. Availability of key drugs, equipment and supplies for child health (on the day of the survey), by facility type

	Total (n=200) %	Hospitals (n=9) %	Health Centers (n=191) %
Supplies for child health consultations			
Watch or clock with second hand	29%	67%	27%
Clinical thermometer	80%	89%	80%
Newborn/infant scale	90%	100%	90%
Measuring tape	93%	100%	92%
Child growth curve charts	63%	78%	62%
23-25 gauge needles	61%	89%	60%
Syringes (1 ml, 2 ml, 5 ml, 10 ml, 15 ml)	92%	100%	91%
Child health medicines			
Paracetamol	94%	89%	94%
Artemeter+Lumenfatrina (Coartem)	87%	100%	86%
Artesunato (inj)	47%	89%	45%
Oral rehydration solution	97%	100%	97%
Salbutamol	37%	89%	35%
Mebendazol	92%	100%	92%
Ferrous sulfate	72%	100%	70%
Ampicilin	51%	78%	50%
Penicillin G/ Benzylpenicillin	67%	100%	65%
Gentamicin	58%	100%	56%
Quinine EV/IM.	5%	11%	4%
Diazepam	89%	67%	90%
Vaccines			
Pentavalent vaccine (DTP-HepB-Hib)	84%	56%	85%
Polio vaccine	87%	89%	87%
Vaccine against measles and the diluent	90%	56%	91%
BCG vaccine and the diluent	91%	89%	91%
Anti-tetanus serum/TAT	22%	0%	23%
Tetanus toxoid vaccine	92%	89%	92%

Most facilities had supplies for child health consultations, except for child growth curve charts and needles. Several medicines important for the treatment of childhood illnesses were not widely available including salbutamol to treat respiratory illness; drugs used for the treatment of infections and pneumonia such as ampicillin, penicillin G., and gentamicin; and the antimalarials artesunate and quinine. Anti-tetanus serum was only present in one-fifth of health centers and not at all in hospitals.

Availability of child health services

In Table 3.4.5, we provide detail on methods used to diagnose and treat malnutrition, as well as recent diagnosis or treatment. Eighty-nine percent of hospitals and 93% of health centers had diagnosed malnutrition in the 3 months before the assessment, and slightly more report treating a child with malnutrition. For hospitals and health centers, the most widely used methods to diagnose malnutrition were mid-upper arm circumference (MUAC), followed by weight for age, and weight for height. Far fewer

facilities use cranial circumference or BMI measurements. Reported methods for treating malnutrition vary widely across all facilities.

Figure 3.4.5. Provision of child health services

	Total (n=200) %	Hospitals (n=9) %	Health Centers %
Child health services			
Methods to diagnose malnutrition			
Arm circumference (MUAC)	87%	100%	86%
Weight for Age	82%	78%	82%
Cranial circumference	34%	44%	33%
Weight for height	75%	78%	74%
BMI for Age	47%	56%	46%
Clinical Diagnosis	43%	56%	42%
Height for age	54%	67%	53%
Diagnosed malnutrition in the last 3 months	93%	89%	93%
How do you treat acute malnutrition in this facility?			
Provide vitamin A	36%	56%	35%
Provide iron	28%	33%	27%
Provide oral rehydration salts	30%	56%	29%
Provide zinc	24%	56%	23%
Growth monitoring	38%	67%	36%
Provide antibiotics	28%	67%	26%
Administration of therapeutic milk (LOA)	29%	56%	28%
Treated a child who suffered from malnutrition in the last 3 months	92%	100%	92%
Vitamin A Supplementation	94%	100%	93%
Iron Supplementation	89%	100%	88%
Zinc supplementation for any child with diarrhea	83%	100%	82%
Growth curve monitoring	94%	89%	94%
Treated a child suffering from pneumonia or respiratory infection	90%	100%	89%

Table 3.4.6. Provision and planning of immunization services, by facility type

	Total	Hospitals	Health Centers
	%	%	%
Has vaccination services	99%	78%	99%
Offered services on the day of the survey	73%	78%	72%
Participated in the last vaccination coordination meeting with SDSMAS	66%	67%	66%
Of facilities with vaccination services			
Birth doses (hepB0, BCG, OPV0)			
Not offered	0%	0%	0%
Offered			
In the facility and mobile units	85%	33%	87%
In the facility only	14%	44%	12%
In mobile units only	-	-	-
Vaccination of infants >1 year old			
Not offered	3%	33%	1%
Offered			
In the facility and mobile units	86%	33%	88%
In the facility only	12%	33%	10%
In mobile units only	-	-	-
Vaccination of adolescents/adults (HPV, tetanus, flu)			
Not offered	4%	22%	3%
Offered			
In the facility and mobile units	84%	44%	86%
In the facility only	10%	22%	9%
In mobile units only	3%	11%	2%
Vaccination sessions in facilities planned last month	3127	145	2982
Vaccination sessions conducted in facilities last month	3402	163	3239
Mobile vaccination sessions planned last month	721	12	709
Mobile vaccination sessions conducted last month	385	3	382

Nampula has achieved great gains in vaccination coverage and currently has coverage rates of 100% (or higher) for polio 1 and polio 3; measles at 9 months; and Bacille Calmette Guerin (BCG), Hepatitis B and oral polio vaccine (OPV0) during the first month of life. Measles containing vaccine by 18-months of age (MCV2) is 75% (data from another source). In a decentralized system like that of Mozambique, immunization services are typically provided at the local level, which is reflected in the assessment findings. Virtually all health centers and seven out of nine hospitals provide vaccinations at birth as well as for infants, adolescents, and adults. Mobile unit coverage also appears strong, with about 85% of facilities employing mobile units for vaccination. However, services may not be offered every day. On the day of the survey, only 72% of health centers had vaccination services available. It is interesting to note that hospitals and health centers conducted more facility-based vaccination sessions than they had planned in the last month. However, health centers conducted about half of the mobile vaccination sessions that had been planned and hospitals conducted one quarter of planned mobile sessions, an indication of the difficulty in arranging adequate staffing, supplies, transportation and fuel for these mobile brigades. Further, just two-thirds of facilities participated in coordination meetings of immunization services with the district. Participation is

often hindered by lack of financial support, or staff available to participate, or potentially inefficient communication about this timing of the meeting.

Summary of key findings and recommendations

Key Findings:

- Many health facilities have been successful in maintaining a cold chain to keep vaccinations at an appropriate temperature, yet nearly one quarter of facilities reported that refrigerator temperature had fluctuated outside of the acceptable range in the month prior to data collection.
- National guidelines related to child health are not widely available at health facilities.
- A large majority of health facilities have at least one provider able to perform key components of child health services, though a few gaps remain in personnel capacity to treat acute malnutrition and provide various vaccines among health centers.
- At both hospitals and health centers, there are notable shortages of essential medicines to treat respiratory illnesses, pneumonia, malaria, and tetanus.
- Services to diagnose malnutrition are widely available at hospitals and health centers, though treatment methods vary across facilities.
- Vaccination services are widely available at health centers, hospitals, and through mobile units, though those services might not be offered daily and there are gaps between planned and implemented mobile campaigns.

Recommendations:

- Infrastructure improvements are needed to ensure proper refrigeration for vaccines at all facilities.
- We recommend increased dissemination of national child health guidelines.
- Key areas for action are supply chain efforts to ensure the availability of essential medicines for children at all health facilities.
- We recommend additional training to increase health center personnel capacity to provide the full range of essential vaccines.
- Technical, logistical and planning support to ensure improved planning and implementation of mobile immunization campaigns.

3.5 Service statistics and service indicators for maternal, newborn and child health

In this section, we present a selection of indicators that have been calculated using facility case statistics including indicators of ANC coverage and use, PNC use, institutional delivery rates and aspects of quality of care, distribution of maternal complications and deaths, newborn outcomes, and number of child deaths by cause.

Data collectors extracted facility case statistics from facility registers to calculate important indicators of MNCH coverage and quality. In this preliminary report, we present a selection of indicators at the population- and institutional-levels including the number of deliveries, obstetric complications, caesarean deliveries, maternal deaths, stillbirths, and pre-discharge early neonatal deaths, number of child death. In all cases, statistics were collected over a 6-month period and in some cases 6-month sums are multiplied by 2 to estimate annual totals.

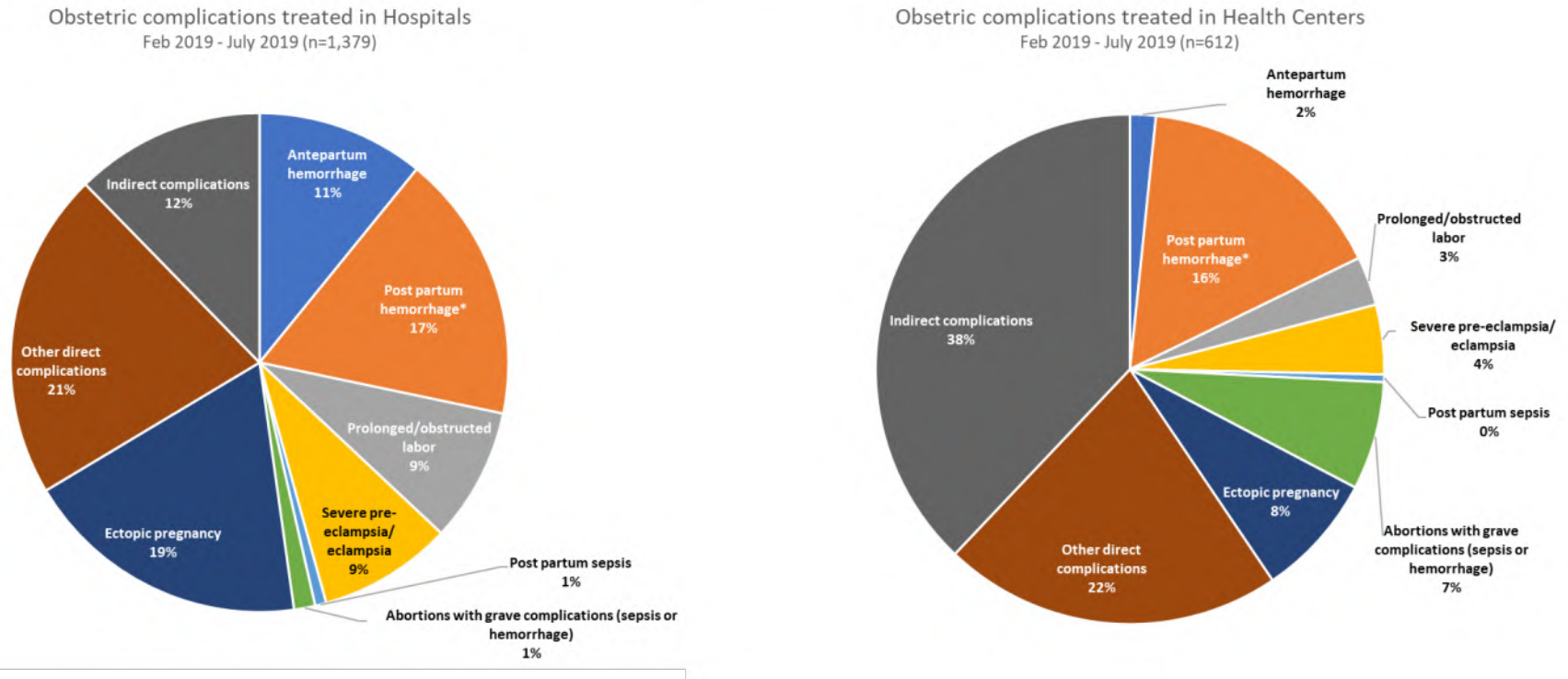
Table 3.5.1. Indicators of ANC coverage and use, institutional delivery and aspects of quality of intrapartum and newborn care, and PNC coverage of 6-month period, by district groups

	Nampula		Innovation		District Group Priority		Future Priority	
	Total number	Rate	Total number	Rate	Total number	Rate	Total number	Rate
Total population	6,102,867		2,325,121		1,370,076		2,407,670	
Total expected pregnancies over 6 months period*	152,572		58,128		34,252		60,192	
Total expected deliveries over a 6 months period**	137,315		52,315		30,827		54,173	
<i>Among expected pregnancies in the population</i>								
Pregnant women who initiate ANC early (<12 weeks) (MEL Indicator)	7,844	5%	3,338	6%	1,221	4%	3,285	5%
Pregnant women who complete at least ANC 4 (MEL Indicator)	63,470	42%	23,483	40%	18,188	53%	21,799	36%
TIP2 coverage	107,512	70%	43,861	75%	24,228	71%	39,423	65%
TIP3 coverage	80,764	53%	31,132	54%	20,013	58%	29,619	49%
TIP4 coverage	55,992	37%	20,443	35%	16,073	47%	19,476	32%
<i>Among expected deliveries in the population</i>								
Institutional delivery rate (MEL Indicator)	116,128	85%	46,857	90%	25,971	84%	43,301	80%
Post partum women receiving contraceptive method	31,615	23%	15,842	30%	5,818	19%	9,955	18%
Cesarean delivery rate (MEL Indicator)	2,881	2%	1,204	2%	60	0%	1,617	3%
Mothers accompanied to delivery	108,339	79%	44,815	86%	24,934	81%	38,590	71%
Women receiving AMTSL (immediate oxytocics) (MEL Indicator)	108,300	79%	43,744	84%	24,027	78%	40,529	75%
Newborns with severe breathing difficulties	727		234		100		393	
Newborns resuscitated	714	98%	264	113%	91	91%	359	91%
<i>Among institutional deliveries</i>								
Total PNC registrations over 6 months and rate among institutional deliveries	99,276	85%	41,711	89%	24,025	93%	33,540	77%
Newborns receiving postnatal health check within two days of birth (MEL Indicator)	89,129	77%	36,339	78%	22,593	87%	30,197	70%

* expected pregnancies over 6-months = population * 5% divided by 2

** expected deliveries over 6-months = population * 4.5% divided by 2

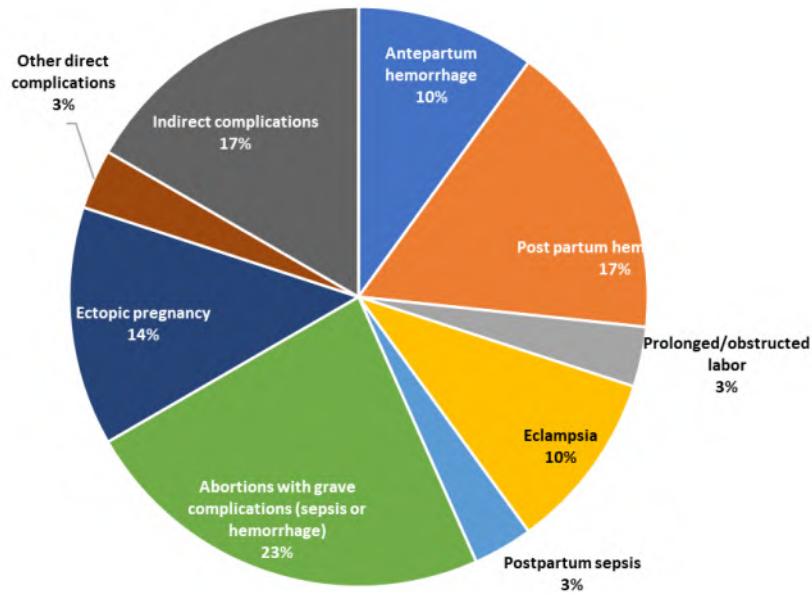
Figures 3.5.2A and 3.5.2B. Distribution of maternal complications by cause and facility type



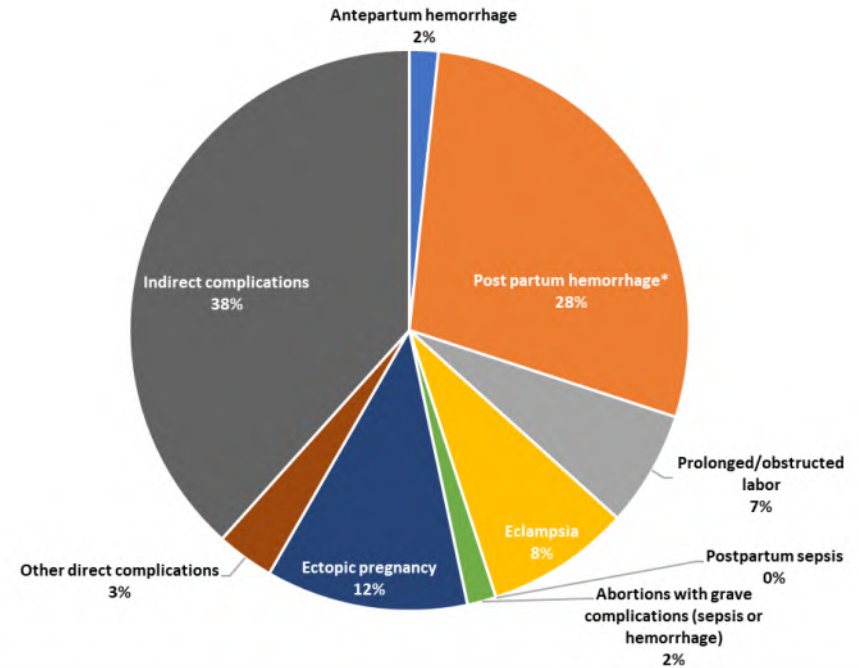
Figures 3.5.2A and 3.5.2B show the distribution of all obstetric complications treated at any facility in Nampula over a 6-month period, by facility type. The most striking difference between hospitals and health centers, aside from the volume of complications – hospitals treated twice as many complications as health centers despite health centers accounting for 89% of all institutional deliveries over the same time period –, is the proportion of indirect complications. Thirty-eight percent of all obstetric complications treated at health centers are due to indirect causes (malaria, HIV, anemia, and tuberculosis), whereas among hospitals the percentage is 12%. Among direct obstetric complications, post-partum hemorrhage accounts for approximately the same proportion of complications regardless of location (~16%).

Figures 3.5.3A and 3.5.3B. Distribution of maternal deaths by cause and facility type

Maternal deaths in Hospitals, excluding the Central Hospital
Feb 2019-Jul 2019 (n=30)



Maternal deaths in Health Centers
Feb 2019 - July 2019 (n=60)



Figures 3.5.3A and 3.5.3B present the proportion of all institutional maternal deaths in Nampula (excluding those that occurred in the Central Hospital) over a 6-month period.¹² A total of 90 maternal deaths were counted over the period, with 28% of deaths among women in health centers attributed to postpartum hemorrhage, and 38% due to indirect complications (i.e., malaria, tuberculosis, HIV and anemia). At hospitals, abortions with grave complications account for almost one-quarter of deaths. Of course, the Central Hospital treats a large volume of maternal complications (588 over the 6-month period were counted in our assessment, or 43% of total complications), and receives the most complicated cases; therefore, we would expect a high number of obstetric deaths to occur there as well. Thus, these results should be considered representative of General, Rural and District Hospitals only.

¹² Maternal deaths that were counted at the Central Hospital in Nampula are excluded from Figure 3.5.3A because the number and classifications of the deaths need to be further validated.

Table 3.5.4. Cause-specific case fatality rates for maternal death

	Number of women with direct complications ¹	Number of women who died of direct complication	Cause-specific mortality rate
Total direct obstetric case fatality rate (MEL Indicator)	1164	59	5%
Cause-specific case fatality rates			
Antepartum hemorrhage	160	4	3%
Postpartum hemorrhage	339	22	6%
Prolonged/obstructed labor	139	5	4%
Severe pre eclampsia\ eclampsia	147	8	5%
Postpartum sepsis	13	1	8%
Abortions with serious complications (sepsis, hemorrhage)	61	8	13%
Ectopic pregnancy	305	11	4%

¹ Women with uncomplicated abortions are not included. If the woman died of an abortion, by definition she died from a severe complication

The direct obstetric case fatality rate (DOCFR) is the proportion of women with major direct obstetric complications in facilities who die before discharge. It is an indicator of the quality of how these complications are managed. The international benchmark is less than one percent. An accurate estimate of the DOCFR depends on the correct diagnosis, complete recording of obstetric complications, maternal deaths, and causes of death. The results presented here should be interpreted with caution, yet they provide an important benchmark for both improvements service quality and in data quality.

The DOCFR over the time period was 5%, higher than the <1% target. Cause-specific case fatality rates for all causes are higher than one would hope.

It is worth noting that obstetric deaths counted at the Central Hospital in Nampula are excluded from the calculations in Table 3.5.4, though the Hospital's complications are included. Therefore, the actual case fatality rates are likely higher than this. We excluded the Central Hospital deaths because the numbers and classifications of the deaths need to be further validated.

Table 3.5.5. Newborn outcomes including prematurity rate and KMC coverage, perinatal and pre-discharge mortality rates over the 6-month period

	Facility Type			District Group		
	Total	Hospitals	Health Centers	Innovation	Priority	Future Priority
Total live births plus stillbirths	105,821	11,019	94,802	42,841	24,435	38,545
Live births						
≥2500g	104,590	10,286	94,304	42,147	24,368	38,075
2000 - 2499g	4,367	1,196	3,171	1,374	713	2,280
<1999 g	1,404	465	939	455	185	764
Live births with unspecified weight	1,491	40	1,451	489	40	962
Live births premature (<37 weeks or <8 months)	19,531	1,898	17,633	6,544	4,827	8,060
Prematurity rate (among live births)	19%	18%	19%	16%	20%	21%
Small babies (<2000 g) with immediate skin-to-skin contact or KMC initiated	2,615	411	2,204	1,632	182	801
KMC coverage (among live births<1999 g and unspecified weight)	90%	81%	92%	173%	81%	46%
Pre-discharge neonatal mortality	382	229	153	78	20	284
≥2500g	167	67	100	40	20	107
<2000g	180	147	33	17	0	163
Unspecified birth weight	35	15	20	21	0	14
Pre-discharge neonatal mortality rate per 1000 live births (MEL Goal Indicator 3)	3.7	22.3	1.6	1.9	0.8	7.5
Stillbirths ²	1,231	733	498	694	67	470
Intrapartum stillbirths (stillbirths with heartbeat upon admission)	63	31	32	21	0	42
Macerated stillbirths	260	114	146	122	23	115
Stillbirths with timing not specified	908	588	320	551	44	313
Perinatal deaths (intrapartum stillbirths and newborn deaths before discharge)	445	260	185	99	20	326
Institutional perinatal mortality rate (perinatal deaths/1000 total births) (MEL Goal Indicator 4)	4.2	23.6	2.0	2.3	0.8	8.5

1. Pre-discharge neonatal death is defined as deaths that occur within 24 hours after delivery or before discharge
2. Total stillbirths = macerated stillbirths + intrapartum stillbirths (with heartbeat upon admission) + unspecified stillbirths
3. Intrapartum and early neonatal fetal death rate = (intrapartum deaths + early neonatal deaths) / (Number of deliveries)

For the 6-month period of February 2019-July 2019, data collectors extracted from facility registers information on newborn outcomes, weights, and gestational age to calculate important indicators of newborn health and survival (Table 3.5.5). Over the period, just over 105,800 births occurred in health facilities in Nampula. The vast majority (99%) were live and of normal birth weight. A small number of live births did not have their weight recorded (1%) but for the purposes of later indicators, we have assumed these were of low-birth weight.

Nineteen percent of institutional births were premature, and this rate varies slightly across district groups, from 16% among Innovation Districts to 21% among Future Priority Districts (though, this latter rate is likely influenced by the presence of the Central Hospital in that group of Districts).

We calculated KMC coverage out of small babies (i.e. those under 2000 grams at birth). The Province-wide coverage rate is 90%, yet the variation across district groups is worth noting. Innovation Districts indicated more than 1,600 babies received immediate skin-to-skin (a proxy for KMC); but there were under 1000 small babies recorded. We will look into this anomaly to determine if there is a misunderstanding of the register indicator. It is worth noting that hospitals and Future Focal Districts have the lowest KMC coverage rates.

The pre-discharge newborn mortality rates is 3.7 newborn deaths per 1000 institutional deliveries for Nampula, 22.3 for hospitals and 1.6 for health centers. The high rate in hospitals is likely due to the high proportion of complicated cases they receive, yet further investigation is warranted to better understand if there are other contributing factors.

The institutional perinatal mortality rates mirror the pattern seen among the pre-discharge newborn mortality rate.

Table 3.5.6. Numbers of child deaths February 2019 – July 2019

Institutional child deaths over 6 month period (Feb 2019 - Jul 2019)					
	Total	Deaths due to pneumonia	Deaths due to malaria	Deaths due to diarrhea	Unknown cause
Nampula	195	28	104	14	49
Facility Type					
Hospitals	61	6	34	3	18
Health Centers	134	22	70	11	31
Districts					
Innovation	58	9	39	6	4
Priority	29	5	21	1	2
Future Focal District	78	14	44	7	13

One-hundred and ninety-five child deaths due to pneumonia, malaria, diarrhea and of unknown cause were counted over the 6-month period. The vast majority of these (134) occurred at health centers, and malaria was the most common cause of death.

Summary of key findings and recommendations

- Our assessment calculated Nampula's institutional delivery rate at 85%, early initiation of ANC at 5%, coverage of ANC4 as 42%, immediate oxytocin after delivery at 79%, and PNC within two days as 77%.
- Nineteen percent of institutional births were premature
- The pre-discharge newborn mortality rates is 1.7 newborn deaths per 1000 institutional deliveries for Nampula, 22.3 for hospitals and 1.6 for health centers.
- The DOCFR over the time period was 5%, higher than the <1% target. Cause-specific case fatality rates for all causes are higher than one would hope.
- One-hundred and ninety-five child deaths due to pneumonia, malaria, diarrhea and of unknown cause were counted over the 6-month period. The vast majority of these (134) occurred at health centers, and malaria was the most common cause of death.

3.6 Capacity for QI (IR 4.1 and 4.2) and provision of humanized services (IR 2.3)

This section present results from across various modules that provide a picture of facility and district-level capacity to implement quality improvement (QI) mechanisms and to delivery humanized services. This section includes results of the ANC observations (Module 7), which are organized within the standards of the recent Respectful Maternity Care Charter.

Facility capacity for quality improvement and environment to provide humanized services

Numerous facilities in Nampula have established at least some QI&H structures and practices (Table 3.6.1). Overall, 67 percent of facilities throughout the province have established QI&H committees, and 64 percent had committees that had met within the six months prior to the baseline assessment. Committee establishment and activity varied significantly by facility type; while 100 percent of hospitals had achieved these indicators, only 66 percent and 62 percent of health centers had established committees and had active committees, respectively. Nevertheless, in comparison with hospitals, a higher percentage of health centers were implementing QI initiatives in maternal and newborn health, as well as in child health at the time of the baseline assessment. Overall, 80 percent of total facilities were implementing initiatives to improve the quality of maternal and newborn care, and 74 percent were implementing QI initiatives for pediatric services. In the area of pediatric care, there is a need to expand QI initiatives in Innovation districts where only 62% of facilities were implementing QI approaches in comparison to 84 percent and 80 percent of facilities in priority and future focal districts, respectively.

Overall, most facilities (65 percent) had implemented systems to collect and incorporate service user suggestions in QI initiatives. However, these systems were more prevalent in hospitals and in Innovation district facilities. Whereas 89 percent of hospitals had implemented user input systems, only 64 percent of health centers had established those mechanisms. Additionally, despite efforts to promote humanized services, a minimal number of facilities had a Guide for Humanized Care that was observed to be available to service users. Only 16 percent of total facilities promoted this Guide to service users, though that figure was higher among hospitals, 67 percent of which had a guide available.

Activities to monitor maternal, neonatal, and pediatric deaths were also prevalent among a higher percentage of hospitals than health centers. Sixty-seven percent of hospitals had an active maternal, perinatal, and neonatal death audit committee, in contrast with 9 percent of health centers. No significant differences were found by district type. Similarly, 89 percent of hospitals were using the MPDSR system in comparison with 42 percent of health centers. Overall, 44 percent of total facilities were using the MPDSR system and 12 percent had an active committee performing death audits. Less than half of total facilities conducted maternal, neonatal, and pediatric death audits. These findings highlight a need to strengthen death audit initiatives and systems to promote service user input among health centers throughout Nampula province.

Table 3.6.1. Presence and functioning of key QI&H structures and practices within the health facility

	US Total	Quality Improvement				User input			Death Audits				# of hospitals and health centers conducting maternal, neonatal & pediatric death audits (MEL Indicator)		
		Facility has QI&H body/committee established to monitor and support QI&H (MEL Indicator)	Facilities with active ¹ QI&H committees (MEL Indicator)	Facilities implementing MNH QI activities	Facilities implementing QI for child health	Facility has a mechanism to collect patient suggestions	Facility has a system to respond to user suggestions	Facility has a Guide for Humanized Care that is promoted to service users	Use the MPDSR system	Have Comite de Auditoria de Morte Materna, Perine Neonatal	Facilities with an active ¹ committee	Met last time there was a death			
		%	%	%	%	%	%	%	%	%	%	%	maternal	newborn	child
Nampula	200	67%	64%	80%	74%	65%	65%	16%	44%	20%	12%	6%	91	89	63
Tipo de US															
Hospitals	9	100%	100%	78%	67%	89%	89%	67%	89%	89%	67%	22%	9	9	7
Health Centers	191	66%	62%	80%	74%	64%	64%	14%	42%	16%	9%	5%	82	80	56
Distritos															
Innovation	82	68%	65%	74%	62%	67%	71%	15%	32%	16%	9%	6%	33	34	21
Priority	38	66%	63%	87%	84%	58%	58%	13%	55%	18%	11%	5%	20	20	13
Future focal districts	80	66%	63%	83%	80%	66%	63%	19%	51%	24%	15%	5%	38	35	29

Table 3.6.2. Presence and functioning of key QI/QA structures and practices within the district health office

Table 3.4.2: Presence and functioning of key QI/QA structures and practices within the district health office

	Districts n=23
District implemented QI initiatives last fiscal year	70%
District has a QI Department/Unit	44%
Facilities in district have a Quality Officer	
All facilities	17%
Some facilities	52%
No facilities	30%
District routinely carries out quality assurance (QA) activities	74%
Types of recognition included in QA activities*	
Recognition of best performing facilities	77%
Recognition of best performing individuals	88%
Other	12%
Performs QA activities related to MNH services (spontaneous responses)*	
MDSR	47%
Morbidity audit	77%
Model Maternity Initiative scoring	35%
Other	41%
MDSR is implemented in: (% distribution)	
All facilities	65%
Some facilities	35%
No facilities	0%
How SDSMAS¹ participates in MDSR activities	
Participates in maternal death reviews	87%
Prepares reports on death reviews	78%
Participates in review meetings	83%
Develops action plan	65%
Implements action plan	48%
Other	13%
Does not participate in MDSR activities	0%
How communities participate in QI activities in catchment facilities	
As part of community quality assurance committees	87%
Participate in exit interviews and suggestion boxes	65%
Other**	30%
They are not involved in everything	100%

MDSR = maternal (and perinatal) death surveillance and response; QA = quality assurance; QI = quality improvement.

*percentage out of 17 districts that carry out QA activities

Results indicate that districts have achieved some progress in the implementation of quality improvement (QI) and quality assurance (QA) initiatives, though more work is needed in this area (Table 3.6.1). Overall, 16 (70 percent) of the 23 districts had implemented QI initiatives in the fiscal year prior to the baseline assessment. Nearly half of the districts (44 percent) had created specific QI departments or units at the district health office. While only 17 percent of districts had established Quality Officers in all facilities, 52 percent or 12 districts had installed Quality Officers in at least some facilities.

Seventeen (74 percent) of the 23 districts also reported regular execution of QA activities. Of those districts, 77 percent (13 districts) and 88 percent (15 districts) had systems to recognize best performing facilities and best performing individuals, respectively. In the area of MNH services, districts most often reported conducting morbidity audits as key QA activities. Also related to surveillance, MDSR (maternal death surveillance and response) was implemented to some extent in every district, with 15 districts (65 percent of the total) reporting the operation of MDSR in every facility, and 8 districts (35 percent) reporting the integration of MDSR in at least some facilities. SDSMAS was reported to actively contribute to MDSR activities and was involved in maternal death reviews and review meetings in 87 percent and 83 percent of districts, respectively. Though the type of participation varied by district, all respondents reported that SDSMAS was involved in at least some MDSR activities.

More initiatives are needed to promote the inclusion and active participation of community members and groups in facility QI activities. Though 20 (87 percent) of 23 facilities mentioned the existence of community QA committees, every district reported that communities were not involved in all QI activities. More active and inclusive participation of community members is recommended to improve equity, service utilization, and success of QI initiatives.

Table 3.6.3. Facility structural readiness to provide respectful maternity care and services

	Nampula n=200 %	Hospitals n=9 %	Health n=191 %
Financial accessibility			
Fee structure for services posted in a visible and public place	23%	78%	20%
Women bring their own supplies or medicines to receive assistance during labor or delivery	4%	0%	4%
Women bring their own supplies or medicines to receive attention for newborn	2%	0%	2%
Supportive environment			
Standard length of stay after normal delivery at least 24 hours	97%	89%	97%
Standard length of stay after assisted vaginal delivery at least 48 hours	13%	56%	11%
Standard length of stay after cesarian delivery at least 72 hours, reported by hospitals only	78%	78%	-
Women allowed female companion during labor	96%	100%	96%
Women allowed female companion during normal delivery	95%	89%	95%
Women allowed female companion during cesarean delivery, reported by hospitals only	11%	11%	-
Women allowed to ambulate during labor	97%	100%	97%
Women allowed position of choice during labor/delivery	83%	100%	82%
Women allowed to consume food and liquids during labor	94%	100%	93%
Adequate space. In last 3 months,			
Delivery patients have never shared beds	47%	33%	48%
Delivery patients have never slept on the floor	74%	89%	73%
Delivery patients have never delivered on the floor, in the hall, or bathroom	77%	78%	76%
Facility Monitoring of Humanized Care			
Facility has a QI&H Committee that has met within the past six months	64%	100%	62%
Facility has a system to incorporate service user suggestions in Quality Improvement	65%	89%	64%
Facility has a Guide for Humanized Care that is promoted to service users*	16%	67%	14%
All facility personnel are trained according to Guide for Humanized Care**	21%	44%	20%

*these values represent facilities where data collectors observed the Guide

**facilities where all personnel are trained according to the guide

All women have the right to high quality, humanized maternity care. The Global Respectful Maternity Care Council's 2019 Charter defines respectful maternity care (RMC) as comprising ten fundamental rights to which women and children are entitled: (1) the right to freedom from harm and ill-treatment, (2) the right to information, informed consent, and respect for choices and preferences; (3) the right to privacy and confidentiality; (4) the right to dignity and respect; (5) the right to equality, freedom from discrimination and equitable care; (6) the right to health care and the highest attainable level of health (7) the right to liberty, autonomy, self-determination, and freedom from arbitrary detention; (8) the rights of children to be with their parents and guardians; (9) the right to an identity and nationality; and (10) the right to nutrition and clean water. Fulfilling these rights requires action not only from health care providers, but also from health facilities to create policies and structures that enable the provision of respectful maternity care and demand accountability for instances of disrespect and mistreatment. Given its multi-level nature, the Alcançar baseline assessment integrated RMC items throughout different modules focusing on facility infrastructure, policies, and provider knowledge. Also included was an observation checklist for RMC practices performed during ANC consultations at each facility.

Table 3.6.3 displays results from the assessment of facility readiness to provide respectful care and services. These results highlight, in some cases, significant differences between hospitals and health centers in the achievement of readiness. For example, while 78% (seven of nine) of hospitals had made their fee structure visible to service users, only 20 percent of health centers had achieved this transparency. Also, in the area of financial accessibility, a few health centers reported that women needed to bring their own supplies for labor, delivery, and newborn care, whereas such conditional care was not reported by hospitals.

Similar disparities between hospitals and health centers were found in facility monitoring of humanized care. Whereas all nine hospitals throughout the province had an active Quality Improvement & Humanization (QI&H) committee, only 62 percent of health centers had a similar committee that had met within the six months prior to the assessment. In comparison with health centers, a higher percentage of hospitals had also implemented systems to incorporate user suggestions and promote the Guide for Humanized Care (see Table 3.6.1 for more details by district type). Overall, more efforts are needed to train facility personnel according to the Guide for Humanized Care, though such training was reported in a higher number of hospitals.

Both hospitals and health centers had instituted policies to promote a supportive environment for women seeking maternity care. On average, most hospitals and health centers did not discharge patients for at least 24 hours following normal deliveries. Seven of nine hospitals reported that women undergoing cesarean deliveries were able to stay at least three days before being discharged on average. Overall, most facilities had also established policies permitting women to ambulate during labor (97 percent of facilities), consume food or liquids during labor (94 percent), and be accompanied by a female companion during labor and normal delivery (96 and 95 percent, respectively). Additional policies are needed to allow the presence of a female companion during cesarean deliveries and to promote women's choice of position during labor and delivery. While all hospitals permitted women to choose their preferred position during childbirth, only 82 percent of health centers had similar policies.

A key area for improvement is the provision of adequate space for women receiving delivery care. Less than half (47 percent) of facilities overall reported that patients had not shared beds in the three months prior to the baseline assessment. Overcrowding appears to be of particular issue in hospitals where only 33 percent (three of nine) facilities had never required patients to share beds. It is possible that this issue might be associated with higher volumes of women seeking care at hospitals. Additionally, more than 20% of facilities overall indicated that patients may have slept on the floor, or given birth in the hall, bathroom, or floor in the past three months. Overall, more efforts are needed to ensure women giving birth have adequate space and fulfill their rights to privacy and dignity.

ANC observations

As described previously, this baseline assessment included directed observations of ANC consultations at facilities in each district. These observations sought to evaluate the extent to which pregnant women receive humanized treatment from health care providers and facilities while seeking ANC. To be included in the observations, facilities had to be offering ANC consultations the day of data collection, and data collectors were required to obtain informed consent from both the health care provider and service user participating in the consultation before conducting an observation. No more than one observation was conducted at each facility.

Table 3.6.4. Response rate for ANC observations

	Total facilities	Percent of total facilities that were providing ANC consults on day of visit	Percent of facilities providing ANC where providers and women consented to observation	Proportion of all facilities where ANC consultations were observed
	#	%	%	%
Nampula	200	81%	96%	77%
Tipo de US				
Hospitals	9	67%	100%	67%
Health Centers	191	81%	96%	77%
Distritos				
Innovation	82	77%	100%	77%
Priority	38	92%	100%	89%
Future priority	80	79%	89%	70%

Table 3.6.4 shows the final sample of ANC consultation observations. Of the 200 facilities included in the baseline assessment, 161 (81%) were offering consultations on the day of data collection. Only four percent of providers and service users at those facilities declined to have their consultation observed. Ultimately, observations were conducted at 153 facilities, 77 percent of the total facilities in the baseline assessment. These facilities comprised six hospitals and 147 health centers. Of note, observations were collected from a high percentage (89 percent or 34 facilities) of the facilities in priority districts, and from 77 percent and 70 percent of facilities in the innovation and future priority districts, respectively.

Table 3.6.5. Demographics of women observed during ANC

	ANC observations total (n=153)	Type of health facility		District group		
		Hospitals (n=6)	Health Centers (n=147)	Innovation (n=63)	Priority (n=34)	Future priority (n=56)
Age (in years)						
14-18	22%	17%	22%	21%	26%	20%
19-34	67%	83%	67%	70%	65%	66%
35+	9%	0%	9%	8%	6%	11%
Unknown	3%	0%	3%	2%	3%	4%
Parity						
Zero (first pregnancy)	29%	33%	29%	29%	26%	32%
One	15%	17%	15%	11%	29%	11%
Two	17%	50%	16%	13%	26%	16%
Three	12%	0%	12%	13%	12%	11%
≥Four	26%	0%	27%	33%	6%	30%
Previous ANC Consultations						
Zero (first visit)	61%	67%	61%	60%	68%	57%
One	5%	0%	5%	3%	0%	11%
Two	22%	33%	22%	19%	21%	27%
Three	9%	0%	9%	11%	6%	7%
≥Four	2%	0%	2%	5%	0%	0%
Gestational Age						
<14 weeks / <4 months	7%	0%	8%	5%	12%	7%
14-28 weeks / 4-6 months	36%	17%	37%	29%	50%	36%
>28 weeks / >7 months	19%	0%	20%	16%	18%	23%

Table 3.6.5 displays demographic information of women participating in the observed ANC consultations. The ages of women seeking ANC consultations ranged from 14 to 40 years. The average age among women was 23.6 years, and two thirds of those participants were between 19 to 35 years old. Overall, more than a fifth of participants were adolescents. In priority districts, adolescents comprised more than a quarter (26 percent) of participants. Conversely, in future priority districts, nearly 11 percent of the women participants were over 35 years old. These figures are significant given that both adolescents and women over 35 years of age may be at higher risk for complications during pregnancy and delivery and may therefore need more specialized ANC.

Nearly 30 percent of women were seeking ANC for their first pregnancy. Reflective of Nampula provinces' fertility rate of 5.2 [DHS 2015], another quarter of women (26 percent) seeking care had given birth at least four times prior to their current pregnancy. However, this percentage differed at hospitals and at facilities in priority districts where no women and only six percent of women, respectively, had at least four prior births.

Current WHO guidelines advise women to seek ANC within the first 12 weeks of their pregnancy and achieve at least eight contacts with healthcare providers prior to childbirth [WHO 2016]. Among service users participating in the baseline assessment, 93 women (61 percent of the total) reported the observed consultation as their first ANC visit for their current pregnancy. Only three women overall (zero seeking care in hospitals, priority districts, and future priority districts) had received four or more ANC consultations prior to the observed visit. Additionally, only seven percent of participants were 12 or fewer weeks pregnant at the

time of seeking the consultation. The average gestational age of participants was 23.7 weeks with a minimum and maximum of 4 weeks and 40 weeks, respectively. While more research is needed, these figures indicate potential gaps in promoting the uptake of early ANC and at least eight ANC visits. It also should be noted that the module did not ask specifically if women had previously sought ANC from traditional birth attendants or individuals outside of the formal health system.

Table 3.6.6. Characteristics of the consultation

	Total ANC observations (n=153)	Facility type		District group		
		Hospitals (n=6)	Health Centers (n=147)	Innovation (n=63)	Priority (n=34)	Future priority (n=56)
Healthcare Provider Attending Consultation						
SMI nurse - superior	1%	17%	0%	2%	0%	0%
SMI Nurse - medium	82%	100%	81%	81%	85%	80%
SMI Nurse - basic	10%	0%	10%	8%	15%	9%
Midwife	0%	0%	1%	2%	0%	0%
Agente de servico	5%	0%	5%	5%	3%	5%
Tecnico de Medicina	3%	0%	3%	3%	0%	4%
Consultation length						
<20 minutes	60%	83%	59%	70%	56%	50%
20 - 40 minutes	33%	0%	35%	25%	41%	38%
40 - 60 minutes	2%	0%	2%	2%	0%	4%
>60 minutes	1%	0%	1%	0%	0%	4%
User accompanied in consultation by*						
Not accompanied	42%	50%	42%	41%	38%	45%
Mother	5%	0%	5%	6%	6%	4%
Father	1%	0%	1%	0%	0%	2%
Partner	55%	33%	55%	52%	56%	55%
Step-parent	1%	0%	1%	0%	3%	2%
Other relative	2%	17%	1%	2%	3%	2%

*multiple responses allowed.

As displayed in Table 3.6.6, none of the observations included in the assessment were attended by OBGYNs or other physicians. SMI nurses with medium level of training attended the vast majority of consultations (100 percent of consultations in hospitals and 82 percent overall). Additionally, observations indicated that ANC consultations were brief with 60 percent or 91 consultations lasting less than 20 minutes. The average consultation length was 20.3 minutes and the median time was 17 minutes. Only five consultations (three percent of the total) lasted longer than 40 minutes, none of which occurred in facilities in priority districts. The brevity of consultations is notable given that around 50 percent of women experienced delays of 10 or more minutes during their consultation, as described in Table 3.6.7 below. More investigation is warranted to examine possible associations between shorter consultation lengths and volume of service users attending facilities, number of health care providers at the facilities, risk categorization or complications of pregnancies, and other elements of respectful care explored in Table 3.6.7.

Table 3.6.7 Respectful Maternity Care Charter fulfilment during ANC consultations

	Total ANC observations (n=153) %	Type of facility		District group		
		Hospitals (n=6) %	Health Centers (n=147) %	Innovation (n=63) %	Priority (n=34) %	Future priority (n=56) %
Users receiving lab tests	70%	83%	69%	71%	74%	66%
Users receiving physical exams	94%	100%	93%	97%	85%	95%
1. Everyone has the right to freedom from harm and ill-treatment.						
Provider use of physical force*	1%	0%	1%	0%	6%	0%
2. Everyone has the right to information, informed consent, and respect for their choices and preferences, including companion of choice during maternity care and refusal of medical procedures.						
Informed Consent						
Users that provided consent for lab tests administered**	86%	100%	85%	80%	92%	89%
Users who provided consent for physical examinations administered***	72%	67%	72%	72%	76%	70%
Users whose questions were answered by health care personnel †	100%	100%	100%	100%	100%	100%
Information						
Users who had lab tests explained to them**	98%	100%	98%	100%	96%	97%
Users who received lab tests results**	98%	100%	98%	100%	96%	97%
Users who had physical examinations explained to them***	73%	67%	73%	74%	79%	68%
Users who were encouraged to ask questions*	59%	7%	59%	57%	74%	52%
Users who received information on danger signs during pregnancy*	54%	67%	54%	52%	65%	50%
Users who received instructions for follow up care*	95%	100%	95%	98%	94%	93%
Companion						
Users accompanied during consultation*	58%	50%	59%	59%	62%	55%
3. Everyone has the right to privacy and confidentiality.						
Consultations conducted in private setting*	87%	83%	87%	97%	85%	77%
Users who were covered with sheet during physical examination administered***	25%	50%	24%	31%	21%	21%
4. Everyone is their own person from the moment of birth and has the right to be treated with dignity and respect.						
Friendly treatment during consultation *	90%	83%	91%	90%	97%	86%
Clients or companions interrupted during interactions *	4%	0%	4%	2%	6%	5%
Verbal abuse *	2%	0%	2%	2%	3%	2%
5. Everyone has the right to equality, freedom from discrimination and equitable care.						
Consultation conducted in appropriate language*	95%	100%	95%	100%	94%	89%
Rejection of user beliefs or fears*	5%	17%	5%	5%	9%	4%
6. Everyone has the right to healthcare and to the highest attainable level of health						
Delays of more than 10+ minutes during consultation*	50%	50%	50%	46%	47%	55%
Provider disinfecting hands before administering examination***	20%	33%	19%	23%	10%	21%

*denominator: 153 ANC consultations observed

**denominator: 107 users receiving lab tests

***denominator: 143 users receiving physical examinations

†denominator: 83 users who asked questions during their consultations

Table 3.6.7 displays observations of respectful maternity care practices as categorized by rights defined in the White Ribbon Alliance’s Respectful Maternity Care Charter. Practices related to (7) the right to liberty, autonomy, self-determination, and freedom from arbitrary detention; (8) the rights of children to be with their parents and guardians; and (9) the right to an identity and nationality were determined to be of greater relevance to delivery and neonatal care than to ANC, and consequently were not included in observations. Items related to (10) the right to nutrition and clean water were not observed during ANC consultations but are detailed in Table 3.2.3 and in several places in section 3.4.

Overall, observations revealed a high level of respectful care delivered during ANC consultations. Data collectors observed the fulfillment of women's rights to dignity and respect, with 90 percent of women receiving friendly treatment. Similarly, in only four percent of observations were women or their support person interrupted by providers. Three women (two percent of the total) were subjected to threats, insults, shaming or other actions that might constitute verbal abuse. Similar success was noted in the fulfillment of women's rights to equitable care and freedom from discrimination, with 95 percent of consultations conducted in an appropriate language for the service user. Data collectors recorded eight instances (five percent of consultations) in which providers rejected women's beliefs or fears, though this percentage was higher in priority district facilities where those instances occurred in nine percent of observations.

Fulfillment of women's rights to information, consent, and choice of companion was less consistent. A high level of information was delivered to women receiving lab tests during their consultations, with 98 percent of women receiving information on lab test procedures and results. However, consent for lab tests was provided by only 86 percent of participants, and only 80 percent of participants in innovation district facilities. Only 72 percent of women provided consent for physical examinations and 73 percent received explanations of those examinations. While only 59 percent of participants were encouraged to ask questions, 100 percent of women who asked questions received answers. Finally, whereas 95 percent of women received instructions on follow-up care, only 54 percent of women received information on danger signs during pregnancy.

Only 58 percent of women were joined by a friend, family member, or other support person during their consultation. As shown in Table 3.6.6, this individual was most often a partner. Of note, data collectors did not record why women did not have a companion during their consultation, and thus more data is needed to determine if attending ANC alone resulted from facility policies, women's preference, or other reasons.

Observation results highlight the need for more initiatives to ensure women's rights to privacy and confidentiality, as well as their right to the highest attainable level of health. Protecting patient privacy and confidentiality is critical to promoting trust and acceptability of health services, yet only 87 percent of consultations occurred in a private setting and only a quarter of women receiving examinations were covered with a sheet. These figures were even lower in future priority district facilities where 77 percent of visits occurred in private settings and 21 percent of women were covered during examinations. Additionally, only 20% of providers overall and 10 percent of providers in priority district facilities washed or disinfected their hands before performing examinations. Delays were also frequent with about half of participants experiencing delays of more than 10 minutes during their consultations.

Finally, data collectors observed two consultations, in which providers used physical force against services users, thus violating their rights to freedom from ill-treatment. Though these instances were observed in only one percent of all consultations, increased efforts are needed to ensure that no woman is subjected to ill-treatment or potential physical harm.

Summary of key findings and recommendations

Key findings:

- More than half of the facilities included in the baseline assessment have established active QI&H committees, created systems to collect and integrate service user input in QI initiatives, and implemented QI initiatives in the areas of maternal, newborn, and pediatric services. However, a higher percentage of hospitals than of health centers had implemented these QI structures.

- In comparison with health centers, a significantly higher percentage of hospitals had established active maternal, perinatal, and neonatal death audit committees, and had integrated the MPDSR system.
- MDSR is implemented to some extent in every district, and SDSMAS has been widely involved in maternal death reviews and death audits.
- 20 (87%) of 23 districts had established community QA committees, though every district reported that community was not involved in all aspects of QI.
- Overall, results indicate a high level of facility readiness to ensure humanized maternity care, particularly in the creation of a supportive environment. However, in comparison with health centers, a higher percentage of hospitals had improved financial accessibility of services and established systems to monitor humanized care.
- During ANC consultations, most service users experienced friendly treatment in the appropriate language, with minimal instances of being interrupted, having their fears or concerns dismissed, or verbal abuse. Similarly, high percentage of women received information regarding lab tests and physical examinations being performed.

Recommendations:

- More efforts are needed to train all facility personnel according to the Guide for Humanized Care and promote that guide to facility service users.
- Findings highlight a need to strengthen death audit and other surveillance initiatives, particularly among health centers throughout Nampula province.
- More work is needed at the district level to implement QI and QA initiatives, especially those including the establishment of facility Quality Officers and district QI departments.
- More initiatives are needed to promote the inclusion and active participation of community members and groups in facility QI activities.
- Additional policies are needed to allow the presence of a female companion during cesarean deliveries and to promote women's choice of position during labor and delivery.
- Increased efforts are needed to reduce overcrowding of facilities and provide women with their own facility bed around the time of childbirth.
- It is possible that there is a need for more time to be allocated to ANC consultations.
- During ANC consultations, more efforts are needed to fulfill women's rights to information and consent, through obtaining consent for lab tests and physical examinations, encouraging women to ask questions, and providing women with information on danger signs during pregnancy.
- Increased efforts are needed to ensure privacy and sanitation during ANC consultations.

3.7 Provider knowledge of MNH and Child health services

This section presents characteristics of providers who participated in the knowledge interviews of maternal, newborn and child health, and the resulting knowledge score for each component of care included.

Provider knowledge of key aspects of ANC, routine delivery, complication management, essential newborn care, and newborn resuscitation

Overall, 196 providers participated in anonymous interviews about their knowledge of maternal and newborn care (9 at hospitals and 187 at health centers). Data collectors were instructed to select the provider who had attended the most deliveries in the last month. In most cases, this was an Enfermeiro SMI (MCH Nurse). Enfermeiro SMI Medio (MNCH Nurse Medio) or a general nurse with about 2 years of formal training. Enfermeiro SMI Medio are nurses who specialize in MNCH care, who typically stay at the facility and are on call 24/7 for deliveries in addition to providing ANC, newborn and postpartum care. Seven doctors or other cadres with 4 or more years of training were interviewed, and 27 basic level nurses with 1-2 years of professional training were interviewed. In the following section, these categories are used to describe the knowledge level of the three types of health professionals. Two providers were interviewed who were P. Traditional (traditional birth attendants), but they are not included in the following figures and tables because they are not officially part of the health system and would only provide facility-based services in cases where there are no other staff available.

On average, interviewed providers had about 3.5 years of experience working in their professional role. The average number of deliveries attended in the past month was 63, which reflects the high delivery attendance by the MNCH specialty nurse cadres (SMI medio and SMI basico). Doctors attended just 4 deliveries in the past month on average.

Table 3.7.1. Demographic characteristics of respondents to MNH knowledge survey

	Providers interviewed	Professional experience		
		Number of deliveries attended in past month	Number of years since receiving professional qualification	Number of providers who have had qualification for ≥3 years
	n	mean	mean	%
Nampula	196	62.8	3.6	42%
Facility type				
Hospital	9	96.9	6.4	89%
Health Center	187	61.1	3.4	40%
Health worker cadre				
Doctor/Tecnico				
Médico obstetra	0	0.0	0.0	-
Médico generalista	1	0.0	2.0	0%
Técnico médio de Medicina	6	4.2	2.7	50%
Anestesiologista	0	0.0	0.0	-
Enf SMI (superior/medio/geral)				
Enf. SM superior	2	11.5	5.0	50%
Enf. SMI médio	153	65.6	2.9	35%
Enfer. Geral	5	19.0	2.6	20%
Enf SMI (basico, elementar)				
Enf. SMI básico	24	69.3	7.2	88%
Enf. Elementar	1	20.0	25.0	100%
Agente Servico	2	42.0	4.0	50%
Others				
P. Tradicional	2	33.5	0.0	0%

Providers were asked about several beliefs and practices related to respectful maternity care. Nearly all providers said women were allowed to labor in a position they prefer, bring a companion into the delivery room, have tea in the delivery room, and walk around while in labor (Table 3.7.2). This reflects the policies related to humanized care that have been instituted at most facilities and are described in Table 3.6.3. The vast majority of providers also believe it is worthwhile to explain what is happening to woman in labor, though a few basic level nurses did not agree. The greatest areas for improvement are related to a woman’s right to elect or refuse a medical intervention. Only one in ten providers said women have the right to pain medication and four in ten said a woman can refuse a medical procedure. Further, providers were asked about things they can do if a woman disagrees with a recommended procedure. Most answered that they can explain why the procedure is important and about one-fifth said they can ask a colleague to help explain. Very few providers (5%) said the woman has no choice or ‘I have to do the procedure anyway’.

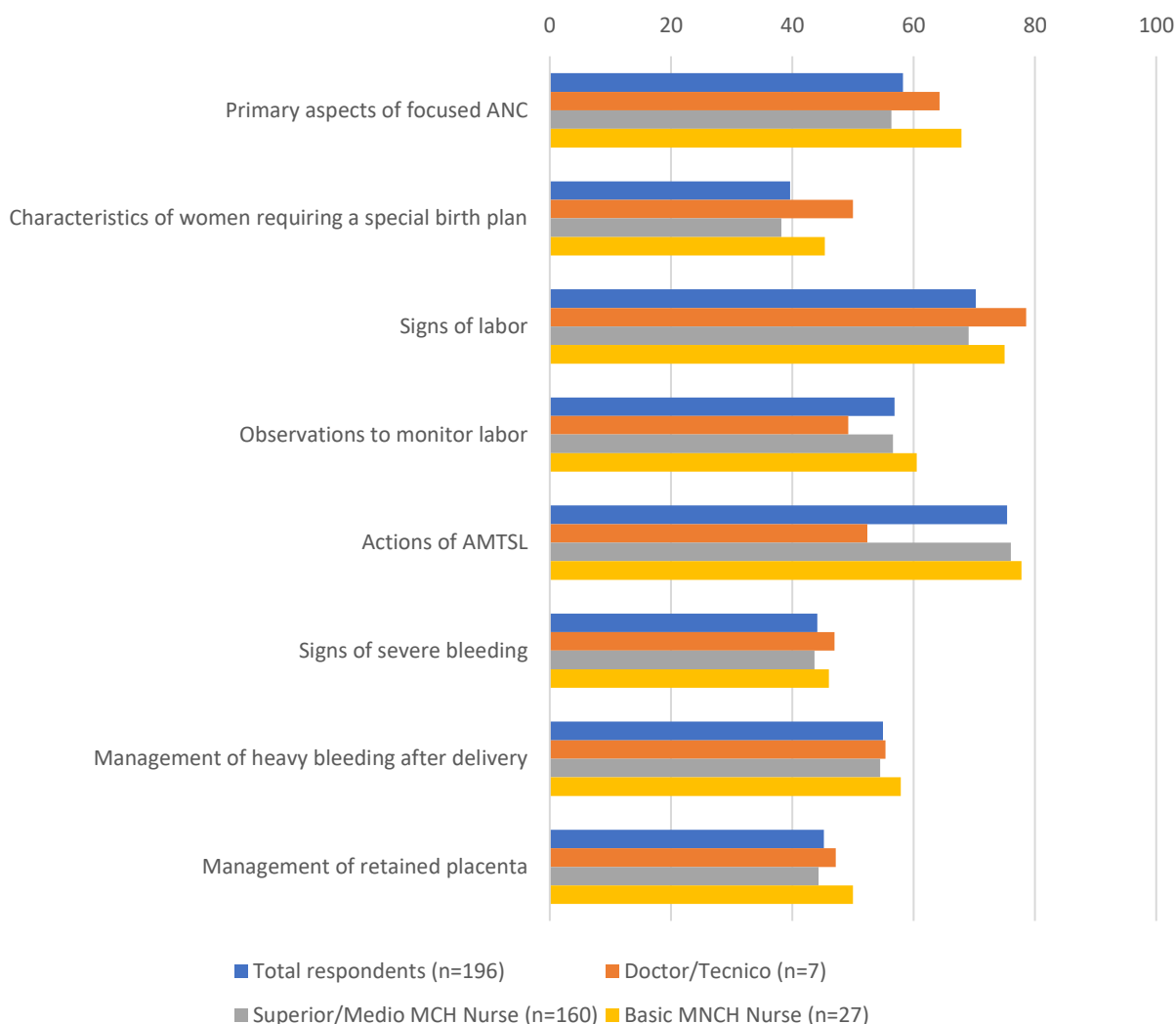
Table 3.7.2. Provider beliefs and practices related to respectful maternity care

	Total n=196	Doctor/Tecnico n=7	MCH Nurse and Nurse (superior/medio/ geral) n=160	MCH Nurse and Nurse (basico, elementar) n=27
Pregnant women are allowed to choose:				
The position they prefer during labor	93%	100%	94%	93%
Whether to use pain medication	11%	14%	11%	11%
Whether someone accompanies her in the delivery room	95%	100%	97%	93%
Whether she will breastfeed or not	71%	71%	78%	37%
Whether to have tea in the delivery room	97%	100%	99%	93%
Walking / walking inside the maternity enclosure during labor	96%	100%	99%	89%
To refuse a medical procedure or medication	39%	71%	39%	30%
It is worth explaining to pregnant women what is happening during labor / delivery	96%	100%	99%	85%
If she doesn't agree with any procedure I recommend				
It never happens	15%	14%	16%	15%
She has no choice / I have to do it anyway	5%	14%	4%	7%
I explain why the procedure is important	83%	86%	84%	81%
I call another colleague to explain	22%	29%	24%	15%

*multiple responses allowed

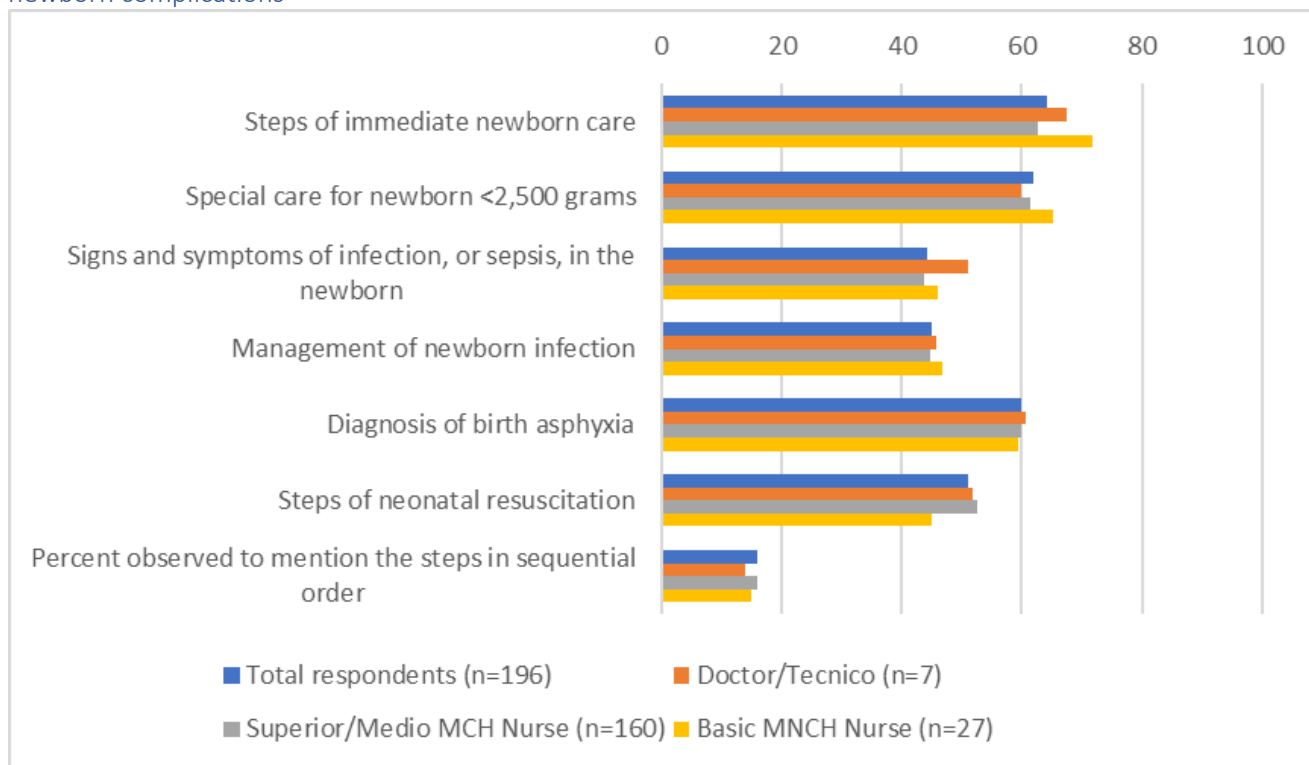
MNCH knowledge was assessed by asking providers multiple response questions about routine steps of care and signs or symptoms of complications. Composite knowledge scores were calculated as a percent of the total number of items spontaneously mentioned. For example, actions taken during ASTML includes three items: immediate uterotonic, controlled cord traction, and check uterine tone and massage if soft. Providers were asked “what actions do you do during the active management of the third stage of labor?” Providers received a score of 33%, 66%, or 100% for mentioning one, two, or all three items, respectively. The spontaneous recall method of evaluating knowledge means that scores of 100% are not a reasonable expectation or benchmark. In most cases, composite scores of 70-80% would indicate adequate knowledge of the topic area.

Figure 3.7.3. Provider knowledge scores on key aspects of ANC, routine intrapartum care and management of obstetric complications



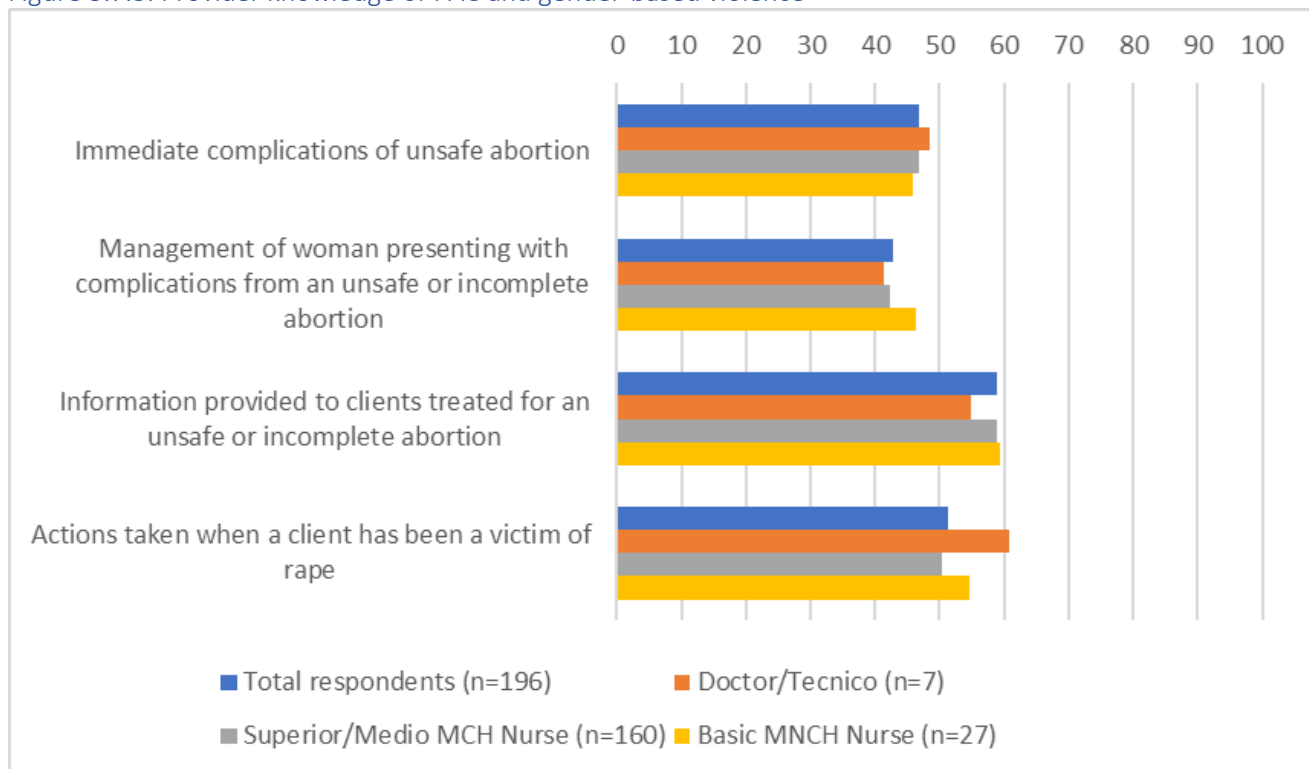
Knowledge of key aspects of ANC, intrapartum care, and obstetric complications shows room for improvement. Average scores were all below 80% and some were as low as 40% (Figure 3.7.3). Provider knowledge was highest for labor signs and actions taken during the active management of the third stage of labor. Mean knowledge scores were lowest for naming the characteristics of women requiring a birth plan, signs of severe bleeding, and steps involved in the management of retained placenta. For women who require a birth plan and signs of severe bleeding scores for individual items were low in general, but under retained placenta, there was significant variation in levels of knowledge among the 10 items included in the score. Most providers mentioned giving oxytocin, manual removal of the placenta, and administering IV fluids but only half mentioned examining whether the uterus is well contracted and hardly any respondents mentioned blood typing or preparing to operate. These detailed results will be useful for identifying specific areas for improvement of provider knowledge.

Figure 3.7.4. Provider knowledge scores on key aspects of routine newborn care and management of newborn complications



Knowledge of aspects of newborn care and how to manage newborn complications ranged from 44% to 64% on average (Figure 3.7.4). Composite knowledge scores were highest for immediate newborn care: providers correctly identified about 7 or 8 of the 11 things to do for newborns following delivery, on average. Knowledge of the correct diagnosis and management of newborn sepsis and asphyxia is lacking, with average scores around 50% or less. Providers were asked to list seven steps of neonatal resuscitation in order and they named three or four, on average. Only 16% of providers mentioned the steps in sequential order.

Figure 3.7.5. Provider knowledge of PAC and gender-based violence



Provider knowledge of aspects of PAC is somewhat lower than their knowledge of ANC, intrapartum care, and newborn care, ranging from 43% to 59% on average (Figure 3.7.5), with the highest scores for information provided to clients treated for an unsafe or incomplete abortion and the lowest scores for management of women presenting with complications resulting from abortion. Within these categories, the most commonly mentioned items were providing FP counseling and services to women who had had an unsafe or incomplete abortion and providing counseling for HIV testing to rape victims. Few respondents spontaneously recalled that shock and genital and abdominal injuries can result from an unsafe abortion; that treatment for abortion complications should include taking vital signs, a vaginal exam and assessment of vaginal bleeding, counseling, referral, and evacuation with curettage; or that labs should be requested and referrals provided to victims of rape (data not shown). Doctors had better knowledge of what to do when a client has been a victim of rape.

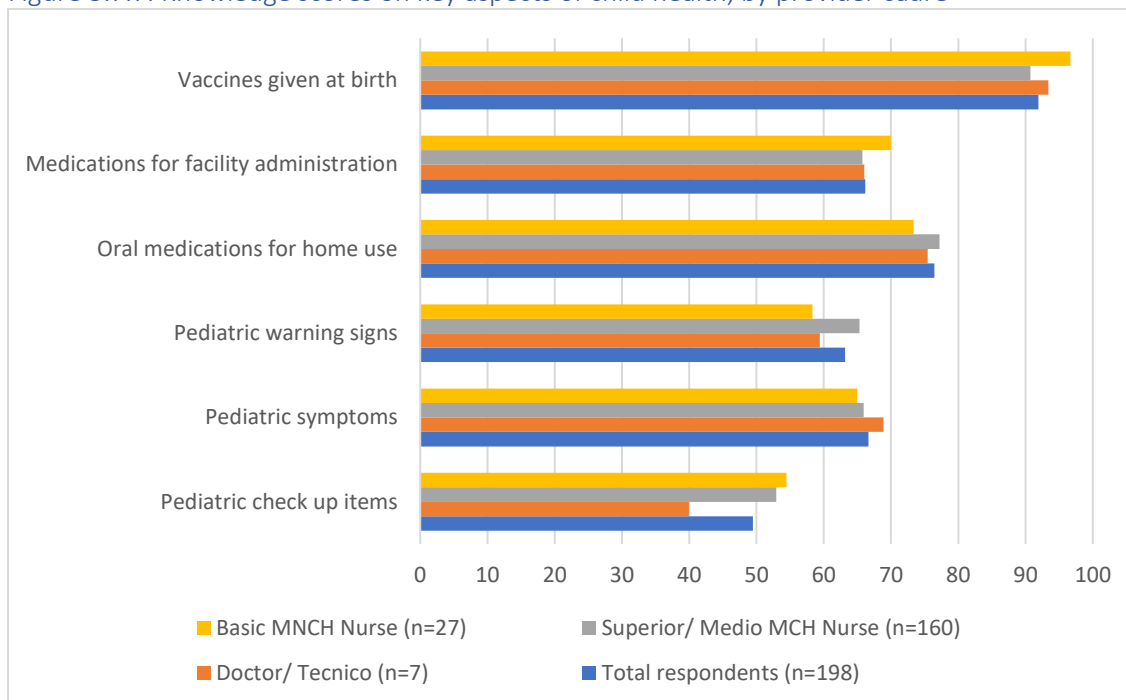
Provider knowledge of child health service provision

To assess child health knowledge, providers who routinely provide pediatric care services were asked to participate in a brief anonymous survey that was structured and scored similarly to the maternal and newborn health knowledge portion of the assessment. In total, 198 providers participated (Table 3.7.6). As with the respondents to the maternal and newborn health knowledge module, the largest cadre among respondents to the child health module was MNCH nurses, accounting for nearly 50% of respondents for this portion of the assessment. Together with general nurses, this category of health professionals, all of whom have about 2 years of formal education, makes up 60% of respondents. An additional quarter of respondents were medical technicians, who have more education, and about 10% were basic nurses or lower level cadres. A few other cadres responded but they are excluded from the knowledge analysis that follows because they have little formal health education. On average, child health providers interviewed have 4.5 years of experience in practice. This is influenced by a handful of providers who have practiced for over 20 or 30 years. About half obtained their medical qualification more than 3 years ago.

Table 3.7.6. Demographic characteristics of respondents to child health knowledge survey

	Providers interviewed	Professional experience	
	n	Mean number of years since receiving professional mean	Providers who have qualification for ≥3 years %
Nampula	198	4.5	48%
Facility type			
Hospital	9	6.3	67%
Health Center	189	4.4	50%
Health worker cadre			
Doctor/Tecnico			
Médico generalista	4	2	25%
Técnico Médio de Medicina	45	4	47%
Técnico Basico de Medicina	4	5	100%
Enf SMI (superior/medio/geral)			
Enf. SMI superior	1	2	100%
Enf. SMI médio	95	3	34%
Enf. Geral Superior	2	6	50%
Enf. Geral Medio	26	4	50%
Enf SMI (basico, elementar)			
Enf. SMI Básico	11	7	100%
Enf. Geral Basico	4	4	100%
Others			
Ag. Servico	3	20	33%
Aux. Tec. Saude	1	20	100%
Ag. Voluntario	1	4	100%
Ag. Medicina	1	7	100%

Figure 3.7.7. Knowledge scores on key aspects of child health, by provider cadre



Provider knowledge of child health was generally good, especially for pediatric medications and vaccines given at birth: knowledge of the two vaccinations given at birth was over 90%. Provider knowledge of warning signs includes if the child eats, is vomiting, has convulsions, and whether the child plays; the last item was not commonly mentioned. The score for symptoms was also good except that very few providers mentioned that they ask about ear problems (data not shown). There is room for improvement on the components of a pediatric check-up, notably verifying the child’s HIV status, and asking about vitamin A and deworming/parasitic infection (data not shown). The higher-level cadres performed particularly poorly on knowledge of pediatric check-up items.

Summary of key findings and related recommendations

Key Findings

- In Nampula health facilities, the maternal and newborn health provider who attends the most deliveries has over 3 years of experience on average and attends over 60 births per month (more than 2 births/day).
- Providers generally have a good knowledge and acceptance of respectful delivery services, except that few providers believe that a woman in labor has the right to pain medication and some do not believe a woman can refuse a procedure
- Significant knowledge gaps exist among frontline health workers providing essential MNCH care, particularly regarding:
 - When a special birth plan is required
 - Observations to monitor during labor, such as maternal vital signs
 - Diagnosis of severe bleeding and treatment of post-partum hemorrhage
 - Diagnosis and management of sepsis in newborns
 - Comprehensive treatment for women who had unsafe abortions and rape victims
- Child health providers had better knowledge of assessment and treatment for sick children than the delivery of preventive care through well child check-ups.

Recommendations

- Raise awareness among providers about joint patient-provider decision making and the patient's role in deciding what medical interventions are performed
- Referral was a component of treatment for several health problems that was less commonly recalled by providers. Refresher trainings on referral for mothers, newborns, and rape victims are needed to close knowledge gaps about when referral is recommended.
- Build skills of staff who attend deliveries on how to assess severe bleeding and manage post-partum bleeding.
- Low scores on assessing and treating abortion complications may reflect stigma and a general lack of attention to this issue, which should be further explored to ensure that comprehensive, humanized care is given to women who have had unsafe or incomplete abortions.
- Additional training on the diagnosis and management of sepsis in newborns is recommended

3.8 Stock outs of key MNH drugs (IR 3.3)

This section includes results related to stockouts of selected MCH drugs and oxygen supply.

One module administered by the data collectors examined the availability of medications, equipment, and supplies available in multiple service points within each health facility (e.g. labor and delivery, outpatient preventative and curative childcare, laboratory services). This module also gathered rich information about infrastructure, equipment and commodities available in the operating theater. We gathered information on the pharmacy management systems in place, stock ordering and monitoring practices, as well as the availability of key drugs, equipment and supplies on the day of the survey. Information gathered will inform Alcançar priorities for IR 3.3 around improved supply chain and MCH commodities management. Below we present results related to stock-outs of key drugs (Table 3.8.1).

Table 3.8.1. Stock outs of key MCH drugs in the 3 months prior to the survey

	Total (n=200)	Hospitals (n=9)	Health Centers (n=191)
	%	%	%
Gentamicina (injec)	40%	11%	41%
Magnesium sulfate	34%	33%	34%
Ketamina	67%	67%	67%
Dexamethasona	64%	67%	64%
Antiretrovirais (ARV)	23%	22%	23%
ORS	12%	11%	12%
Zinc	51%	78%	49%
Amoxicilina Oral	20%	0%	20%
Arteméter-Lumefantrina	33%	22%	33%
Artesunato-Amodiaquina	63%	100%	61%
Quinina oral	48%	22%	49%
Vacina pentavalente (DPT-Hib-HepB)	31%	44%	30%
Vacina contra sarampo e diluente	20%	33%	19%
Vacina BCG	25%	22%	25%
Vacina contra Tétano	17%	22%	17%
Siringas	36%	33%	36%
Luvas	40%	33%	40%
Oxytocin	15%	22%	15%
<i>Among facilities with stockout of oxytocin</i>	<i>(n=30)</i>	<i>(n=2)</i>	<i>(n=28)</i>
Stock-out of oxytocin was due to interruption in the cold chain	70%	50%	71%
Average length of rupture (days without oxitocina)	12.0	6.0	12.0

Every one of the 18 key MCH drugs had been stocked out at one or more facilities in the three months prior to the survey, and several drugs had been stocked out at over half of Nampula facilities, including ketamine, dexamethasone, zinc, and artesunate amodiaquine. Oxytocin had been stocked out in the previous three months at 15% of facilities, including 2 hospitals. Among those experiencing a stockout, most indicated the rupture in supply was due to an interruption of the cold chain. The average number of days without oxytocin ranged from 6.0, among hospitals, to 12.0 among health centers.

Table 3.8.2. Interruption of oxygen supply in L&D, neonatal and paediatric wards in the 12 months prior to the survey

	Total (n=200) %	Hospitals (n=9) %	Health Centers (n=191) %
Labour and delivery ward			
Has safe supply of oxygen	11%	78%	7%
Of those with oxygen, has had interruption in last 12 months	19%	14%	21%
Neonatal ward			
Has safe supply of oxygen	11%	78%	7%
Of those with oxygen, has had interruption in last 12 months	29%	29%	29%
Paediatric ward			
Has safe supply of oxygen	10%	67%	7%
Of those with oxygen, has had interruption in last 12 months	32%	33%	31%
Among those with any interruption, interruption due to electricity supply (% yes)	67%	50%	75%

Availability of oxygen in key service points is not universal among hospitals and is rare within health centers (Table 3.8.2). Just 7% of (or 13) health centers had a supply of oxygen in the labor and delivery ward, 7% in the neonatal ward (or neonatal area) and 7% in the pediatric ward. Among hospitals, oxygen supply was available in the labor and delivery ward and the newborn ward/area in 7 of the 9 hospitals, and 6 hospitals had a safe oxygen supply in the pediatric ward. Among those few facilities with a safe oxygen supply, between 20% and 32% had experienced an interruption in the previous 12 months, and interruption in the electricity supply was a substantial contributor to the rupture in supply.

Summary of key findings and recommendations

Stock outs of key MCH drugs and supplies are common across facilities in Nampula and impact providers' abilities to deliver high-quality MCH services to every patient. Alcançar project staff engaged in activities to strengthen the supply of critical drugs, equipment and supplies can use these results, complemented by additional information collected in the baseline assessment around systems and practices for commodities management and ordering, to tailor and target technical support.

3.9 Data and data systems for decision-making (IR 3.1)

Begins an investigation into aspects of the HMIS systems including availability of computer/internet and registers, practices around classification of deaths, and validation of key indicators triangulated with SIS-MA data for the same period.

3.9.1 Availability of health information systems and characteristics

	Nampula n=200	Hospitals n=9	Health Centers n=191
Have a data manager who is responsible	30%	100%	27%
Facility has:			
Computer	27%	100%	23%
Internet	11%	78%	8%
Facility regularly calculates:			
Institutional births rates	93%	100%	92%
Stillbirth rate	77%	100%	76%
Vaccination coverage rate (DPT3)	94%	89%	94%
Coverage rate of fully vaccinated children	94%	89%	94%
Facility uses ICD 10 ¹ to classify deaths	89%	89%	90%
Regularly share indicators with community	50%	56%	50%
Uses SIGLUS to monitor and report stock data	56%	0%	58%
As reported by SDSMAS			
Facilities that send data for SIS-MA	100%	-	-
Facilities that submitted reports on-time, last month	79%	-	-

1. ICD 10 = International Statistical Classification of Diseases and Related Health Problems v. 10

One pillar of Alcançar’s technical strategy is to support all levels of the health system to use accurate data to identify problems and implement solutions that strengthen the system. The quality of data reported into routine health information systems, electronic logistics management systems, and into other systems is not only critical to accurately inform health planning, but also to build trust among data users in the data’s reliability, and thus contribute to a culture of data use.

Hospitals are reasonably well-prepared to use and optimize data systems – all have a data manager responsible for managing the process, and all have at least one computer (though just 78% have internet access). Health centers, on the other hand, are less prepared to use electronic information systems. Most facilities report regularly calculating key indicators and are using the International Classification of Diseases, Tenth Revision, better-known as ICD 10, to classify deaths (one of the proposed Disbursement Linked Indicators for the anticipated performance-based financing scheme). However, engagement with the community – through sharing of indicators – was reported by only 50% of facilities. This is clearly an important area for improvement.

From interviews with SDSMAS staff, all facilities are sending information to be entered into SIS-MA, and 79% submitted their last monthly report on-time.

3.9.2. Availability of MNCH registers

	Nampula (n=200)	Hospitals (n=9)	Health Centers (n=191)
	%	%	%
Death certificates	29%	100%	25%
Referral Register	90%	89%	90%
Operating Room Registration*	100%	100%	-
Family Planning Consultation Register	99%	100%	98%
Antenatal Register (ANC)	98%	100%	99%
Maternity Admission Register	98%	100%	97%
Maternity Register	98%	100%	97%
Kangaroo Mother Care Register	28%	33%	27%
Postpartum Consultation Register	99%	100%	98%
Gynecology Emergency Admissions	95%	100%	94%
Newborn Register	30%	78%	27%
Immunization Register	92%	67%	93%
Well Child Visit Register (CCS)	96%	67%	97%
Sick Child Consultation Book (CCD)	92%	78%	92%
Pediatric Inpatient Register	26%	78%	23%
Child at Risk Consultation Register	96%	67%	97%

*Only among hospitals

The quality of data reported begins with proper completion of the numerous registers and recording tools available for MCH services. Many of these registers are essentially universally available; though, it is concerning that even a few health centers are without key tools such as an FP register, ANC register, maternity admissions and labor register, well and sick child consultation registers. Registers the least available are pediatric inpatient registers (however, re-calculating this among only those facilities that have pediatric inpatient services would be a better measure), newborn registers and KMC registers. Just 29% of health centers have a death certificate register.

3.9.3. Validation of two key indicators with SIS-MA data

	Total number of deliveries (Feb 2019 - July 2019)			Total number of maternal deaths (Feb 2019 - July 2019)		
	SIS-MA	Alcançar	Percent difference relative to SIS-MA	SIS-MA	Alcançar	Absolute difference
Nampula	117,400	116,123	-1.1%	94	230	136
Facility Type						
Hospital Central	4,048	4,472	10.5%		140	-
General, Rural and District Hospitals	8,443	8,665	2.6%		30	-
Health Centers	104,909	102,991	-1.8%		60	-
Districts						
Angoche	6,644	6,748	1.6%	2	4	2
Distrito de Nampula	15,638	16,046	2.6%	53	168	115
Erati	6,082	6,048	-0.6%	2	2	0
Ilha de Mocambique	1,620	1,627	0.4%	2	13	11
Lalaua	1,895	1,774	-6.4%	0	1	1
Larde	1,751	1,855	5.9%	0	0	0
Liupo	2,371	2,357	-0.6%	0	0	0
Malema	4,804	4,403	-8.3%	1	0	(1)
Meconta	4,401	4,349	-1.2%	1	1	0
Mecuburi	4,410	4,351	-1.3%	1	1	0
Memba	5,243	5,262	0.4%	3	20	17
Mogincual	2,399	2,371	-1.2%	0	0	0
Mogovolas	10,022	9,789	-2.3%	1	0	(1)
Moma	6,330	5,938	-6.2%	4	7	3
Monapo	9,478	9,579	1.1%	0	3	3
Mossuril	3,545	3,124	-11.9%	0	0	0
Muecate	3,488	3,276	-6.1%	1	0	(1)
Murupula	3,282	3,240	-1.3%	2	0	(2)
Nacala	7,007	6,935	-1.0%	10	1	(9)
Nacala-a-Velha	2,779	2,761	-0.6%	2	0	(2)
Nacaroa	3,507	3,590	2.4%	0	0	0
Rapale	4,295	4,358	1.5%	0	2	2
Ribaue	6,409	6,347	-1.0%	9	7	(2)

The data we collected via extraction from facility registers allows the Alcançar team not only to calculate baseline indicators, but also to validate the data entered into SIS-MA. Table 3.9.3 show the results of that validation for institutional deliveries and institutional deaths. The baseline assessment data's concurrence with SIS-MA on deliveries is very high – with a 1% overall difference. The district-level breakdown helps to highlight districts, and eventually facilities, where data quality TA may be most critical.

Regarding deaths, the data collected in the assessment varies substantially with what is in SIS-MA. Our data collectors counted substantially more maternal deaths than were reported into SIS-MA during the same period. The Monitoring and Evaluation team is already investigating the source of these differences. One important area to scrutinize is the cause of the difference between deaths reported into SIS-MA at the Central Hospital and deaths counted during our assessment. Please note that while overall we found substantially more deaths than SIS-MA reports, there are some districts that reported more deaths than we

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found. This could mean that we failed to review all the proper source material (i.e. registers) or perhaps we did not have access to all the proper registers. Because institutional mortality is a primary indicator that we will use to measure the success of the project, we must work to improve the quality and consistency of the SIS-MA data. Regarding death reporting, there are many factors that can impact accurate reporting including incentives to under-report and providers' fear of

Summary of key findings and recommendations

There are important areas for capacity building around data quality and data use which Alcañar can prioritize in PY2. In most health centers, paper-based registration, aggregation and reporting remains the standard procedure. SDSMAS reports that all health facilities are contributing to their data, and most are doing so on time. Priority activities will likely focus on ensuring health providers understand the proper way to fill the registers, and to aggregate data into monthly reports. Efforts should be made to ensure facilities have the required registers.

A thoughtful strategy to improve death reporting in SIS-MA is necessary and can coincide and be informed by our engagement with the Provincial and District death audit committees, and through the facility-level QI and MPDSR strengthening.