

**Salud Mesoamérica Initiative**  
**Belize**  
**Health Facility Data Quality Report**  
**Second Follow-up Measurement**

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## Foreword

This Data Quality Report on the Salud Mesoamérica Initiative (SMI) Belize Health Facility Surveys was produced in agreement with the Inter-American Development Bank (IDB). All analyses and writing were conducted by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington.

### About IHME

IHME monitors global health conditions and health systems and evaluates interventions, initiatives, and reforms. Our vision is that better health information will lead to better-informed decision-making and higher achievement in health. To that end, we strive to build the objective evidence about what does and does not improve health conditions and health system performance. IHME provides high-quality and timely information on health, enabling policymakers, researchers, donors, practitioners, local decision-makers, and others to better allocate limited resources to achieve optimal results.

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# 1 Chapter 1: Survey Methodology

## 1.1 Overview

Salud Mesoamerica Initiative (SMI) is a regional public-private partnership that brings together Mesoamerican governments, private foundations and bilateral and multilateral donors with the purpose of reducing health inequalities affecting the poorest 20 percent of the population in the region. Funding focuses on supply- and demand-side interventions, including evidence-based interventions, the expansion of proven and cost-effective healthcare packages, and the delivery of incentives for effective health services. One of its defining features is the application of a results-based aid (RBA) model that relies on performance measurement and enhanced transparency and accountability. The initiative focuses its resources on integrating key interventions aimed at reducing health inequalities that stem from the lack of access to quality reproductive, maternal, neonatal and child health services (including immunization and nutrition services) for the poorest quintile of the population.

The objectives of the SMI evaluation are to assess whether countries are reaching the indicator targets set by the Initiative and to evaluate the results of specific interventions. In Belize, all data collection pertains to SMI intervention areas. Baseline data were collected in homes, marketplaces, and health facilities (2013). The first follow-up data collection took place at health facilities only (2014), and this second follow-up measurement was performed at household/marketplaces and health facilities in intervention areas (2017).

## 1.2 Health facility surveys

In general terms, the objectives of the health facility survey are to assess facility conditions, evaluate service provision and utilization, and measure quality of care. The medical record review (MRR) is implemented to collect retrospective data on facilities' treatment practices. Importantly, health facility data collection captures changes produced by interventions at the level of the health services access point, which may foretell changes in population health outcomes.

## 1.3 Contents and methods for data collection

### 1.3.1 Contents of the 2017 second follow-up measurement in health facilities

The second follow-up health facility survey includes three components: an interview questionnaire, an observation checklist, and MRRs. The questionnaire captures information reported by the facility director, manager, or person in charge of the health facility. Data are collected on general facility characteristics, infrastructure, and human resource composition, supply logistics, infection control, child health care, vaccine availability, family planning, and maternal, antenatal, delivery, and postpartum care. The checklist captures the direct observations of the surveyors at the time of the survey using an observation checklist, and in the case of some inputs, also reviewing administrative records to identify the presence of stock-outs in the three months prior to the survey. The MRR assesses the record keeping of the facilities and

captures facilities' treatment practices in the case of various medical complications that women and infants experience, as well as the care provided before, during, and after uncomplicated deliveries.

## **1.4 Sampling**

### **1.4.1 Health facility sampling**

There are a total of 20 health facilities in SMI districts in Belize. All of these facilities are included in the SMI Health Facility Survey, making this part of the study a census rather than sample. Facilities are grouped according to three levels of Essential Obstetric and Neonatal Care (EONC) services provided: ambulatory, basic, and complete. Ambulatory facilities provide outpatient care, basic facilities are able to attend uncomplicated deliveries and provide immediate emergency obstetric and neonatal care, and complete facilities have surgical capacity in addition to the services above and have capacity to attend complicated deliveries.

### **1.4.2 Medical record review sampling**

To complete the medical record portion of the survey, records are randomly selected according to the level of services provided at the facility and the number of facilities within the study sample in order to reach a set total sample size of records for each review module. In basic and complete level facilities, cases of obstetric and neonatal complications, uncomplicated deliveries, and immediate postpartum care records are collected. In ambulatory facilities, prenatal care, follow-up postpartum care, diarrhea, child services, and child growth and development records are collected.

In order to provide accurate comparisons from baseline to second follow-up evaluations given adjustments to indicator criteria over time, data from the time window of the baseline survey was recollected during the second follow-up measurement to capture two medical records review indicators: management of obstetric complications according to the norm and management of neonatal complications according to the norm. Baseline time period data were also recollected for follow-up postpartum care in ambulatory facilities.

Quotas of records per facility are set by dividing the total number of records to be reviewed in intervention areas by the number of data entry modules to be completed at each level of care, and then among all sampled facilities at each level. Quota calculations take into account the prevalence of each type of record as measured in the SMI baseline and first follow-up survey, as well as the statistical power necessary to detect projected differences from baseline to the second follow-up for performance indicators for SMI interventions. Cases of obstetric and neonatal complications were sampled at random from Ministry of Health registries and, if required, additional cases were sampled using a systematic sampling technique in-facility.

## **1.5 Survey implementation**

### **1.5.1 Data collection instruments**

All surveys are conducted using a computer-assisted personal interview (CAPI). The CAPI was programmed using DatStat Illume and installed onto computer netbooks. CAPI supports skip patterns, inter-question answer consistency, and data entry ranges. The aim of introducing CAPI to the field was to reduce survey time by prompting only relevant questions, maintain a logical answering pattern across different questions, decrease data entry errors, and permit rapid data verification remotely.

### **1.5.2 Training and supervision of data collectors**

Training sessions were conducted in Belize in September 2017. Two doctors and three nurses were trained to conduct the health facility surveys. All UNIMER contracted employees underwent a week long training, which included three days of classroom instruction and practice of interview application, and an introduction to the initiative as a group. Teams were split into their respective groups and given in-depth training and practice for each relevant component of data collection. The training included content of each survey, proper conduct of the survey, in-depth review of the instrument, and hands-on training on the CAPI software. Health facility surveyors participated in a pilot at health facilities of different EONC levels where they applied the questionnaire, conducted observation exercises, and practiced medical record sampling and review. Representatives from IHME, IDB, and the Belize Ministry of Health provided oversight during pilot exercises. IHME and UNIMER held debriefing and re-training sessions with surveyors post-pilot and provided continued training during the first week of data collection in sampled communities and health facilities. An IHME representative remained in Belize to supervise data collection activities for the first two weeks of data collection.

### **1.5.3 Data collection and management**

As described in Section 1.5.1, data were collected using computer netbooks equipped with CAPI software. Field team leaders monitored the implementation of the facility survey and reported feedback. Data collection using CAPI allowed data to be transferred instantaneously once a survey was completed via a secure link to IHME. IHME monitored collected data on a continuous basis and provided feedback. Suggestions, surveyor feedback, and any modifications were incorporated into the instruments and readily transmitted to the field.

### **1.5.4 Data analysis and report writing**

Data analysis was conducted at IHME. Analysis was done using STATA version 14. Performance indicators were calculated at IHME following indicator definitions provided by IDB. This report provides detailed information on key performance indicator components from the 20 facilities selected in intervention areas in Belize.

## 2 Chapter 2: Facility-level infrastructure, resources, management, and support

### 2.1 General description

#### 2.1.1 Health facility classification

A total of 20 facilities in intervention areas were visited for the second follow-up evaluation, as displayed below. The ambulatory level is comprised of Health Clinics, Health Posts, and Polyclinics. The basic level is comprised of Community Hospitals and the complete level includes all Regional Hospitals in SMI intervention areas. Though baseline and first follow-up data collection included 35 and 34 ambulatory-level units respectively, these included separate mobile units functioning out of physical units also in the sample. The second follow-up evaluation included these mobile units in the evaluation of the corresponding physical unit.

**Table 2.1: Health facility classification**

EONC	Baseline	First Follow-Up	Second Follow-Up
Ambulatory	35	34	16
Basic	2	2	2
Complete	2	2	2
Total	39	38	20

#### 2.1.2 Geographical representation

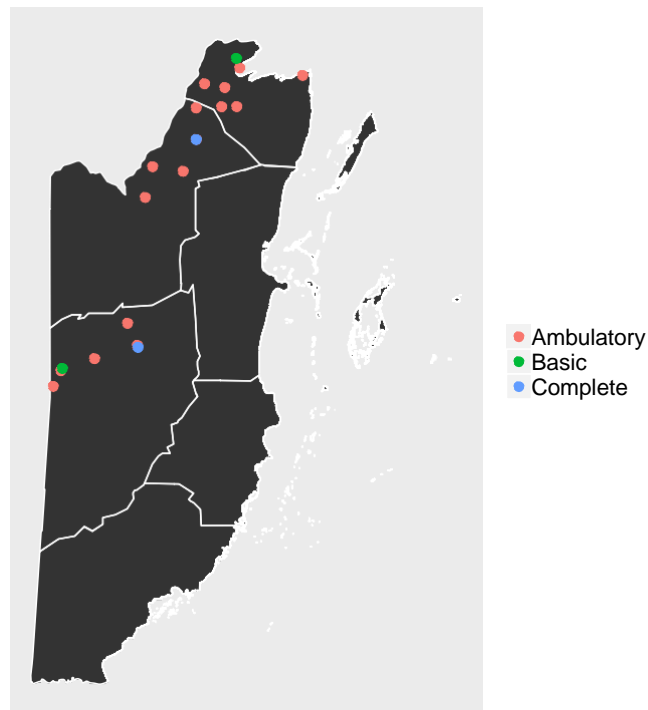
Facilities surveyed during the second follow-up evaluation were located in nine constituencies within three districts.



**Table 2.2: Number of facilities by constituency and district**

Constituency	Baseline Facilities	First Follow-up Facilities	Second Follow-up Facilities
<b>Cayo District</b>			
Belmopan	3	3	2
Cayo South	5	5	1
Cayo West	5	5	4
<b>Corozal District</b>			
Corozal Bay	2	2	2
Corozal North	2	2	-
Corozal South East	5	5	3
Corozal South West	3	3	2
<b>Orange Walk District</b>			
Orange Walk Central	2	2	2
Orange Walk East	2	2	-
Orange Walk North	3	3	1
Orange Walk South	7	6	3
<b>Total</b>	<b>39</b>	<b>38</b>	<b>20</b>

**Figure 2.1: Geographical representation of facilities**



### 2.1.3 Governing authority

All health facilities evaluated were public institutions governed by the Belize Ministry of Health.

## 2.2 Medical record extraction

**Table 2.3: Medical record extraction**

Record Type	Baseline			First Follow-up			Second Follow-Up		
	Ambulatory	Basic	Complete	Ambulatory	Basic	Complete	Ambulatory	Basic	Complete
Growth and development	195	12	46	409	10	10	322	0	0
Diarrhea	5	0	0	1	35	38	163	0	0
Antenatal care	141	14	37	157	49	39	156	0	0
Follow-up postpartum care	90	0	0	0	0	0	87	0	0
Immediate postpartum care	0	19	31	0	36	35	0	73	81
Uncomplicated delivery	0	28	48	0	57	35	0	73	81
Maternal complications	0	34	46	0	25	38	0	47	36
Neonatal complications	0	21	122	0	9	31	0	26	54
Family planning	72	4	15	176	0	0	0	0	0
Total	503	132	345	743	221	226	728	219	252

### 2.3 Referrals

During the questionnaire component of the survey, complete facility representatives were asked about whether the facility receives patient referrals from other facilities and whether the facility sends patient referrals to other facilities. Referral practices specific to routine and complicated deliveries were also evaluated.

**Table 2.4: Referrals, complete facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Receives referred patients from other facilities	2	100	2	100	2	100
Receives referred routine deliveries	-	-	-	-	2	100
Receives referred complicated deliveries	-	-	-	-	2	100
Sends patient referrals to other facilities	2	100	2	100	2	100
Sends referred routine deliveries	-	-	-	-	2	0
Sends referred complicated deliveries	-	-	-	-	2	100

Representatives at facilities which receive referred patients for routine and complicated deliveries were also asked about documents requested during referral processing.

**Table 2.5: Requested referral documents, second follow-up evaluation**

	Complete	
	N	%
<b>Routine Deliveries</b>		
Referral sheet	2	100
Patient medical record	2	100
Lab tests	2	0
Proof of insurance	2	0
Other documentation	2	0
<b>Complicated Deliveries</b>		
Referral sheet	2	100
Patient medical record	2	100
Lab tests	2	0
Proof of insurance	2	0
Other documentation	2	0

## 2.4 Personnel

### 2.4.1 Employed personnel

During the interview portion of the health facility surveys, representatives reported the types of staff employed at the facility. The following tables display the types of personnel employed from baseline to second follow-up by facility type. Each table displays the percent of facilities that employ at least one type of doctor or staff member listed. These tables do not reflect the total number or average number of staff employed at a given facility.

**Table 2.6: Personnel employed, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
General physician	35	28.6	34	23.5	16	43.8
Pediatrician	35	5.7	34	8.8	16	18.8
Professional nurse / midwife	35	51.4	34	70.6	16	62.5
Auxiliary nurse / midwife	35	80.0	34	5.9	16	37.5
Nutritionist	35	0.0	34	2.9	16	12.5
Pharmacist	35	5.7	34	14.7	16	18.8
Social worker	35	5.7	34	5.9	16	18.8
Lab technician	35	2.9	34	11.8	16	25.0
Health promoter	35	60.0	34	8.8	16	50.0
Pharmacy dispenser	35	8.6	34	8.8	16	18.8
Internist	35	0.0	34	0.0	16	6.2
Gynecologist	35	5.7	34	5.9	16	6.2
Surgeon	35	0.0	34	0.0	16	12.5
Anesthesiologist	35	0.0	34	0.0	16	0.0
Emergency medical technician	35	2.9	34	0.0	16	0.0
Radiology technician	35	0.0	34	0.0	16	18.8
Equipment maintenance worker	35	11.4	34	20.6	16	25.0
Building maintenance worker	35	14.3	34	52.9	16	31.2

**Table 2.7: Personnel employed, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
General physician	4	100	4	100	4	100
Pediatrician	4	100	4	100	4	75
Professional nurse / midwife	4	100	4	100	4	100
Auxiliary nurse / midwife	4	100	4	100	4	100
Nutritionist	4	50	4	25	4	50
Pharmacist	4	50	4	50	4	100
Social worker	4	50	4	50	4	75
Lab technician	4	100	4	100	4	100
Health promoter	4	75	4	100	4	100
Pharmacy dispenser	4	100	4	100	4	75
Internist	4	100	4	50	4	50
Gynecologist	4	100	4	50	4	75
Surgeon	4	75	4	50	4	50
Anesthesiologist	4	50	4	75	4	50
Emergency medical technician	4	25	4	25	4	25
Radiology technician	4	100	4	75	4	100
Equipment maintenance worker	4	100	4	100	4	75
Building maintenance worker	4	100	4	100	4	100

## 2.5 Electricity and water

In the health facility questionnaire, facility managers were asked about sources of electricity and water to the facility. Facilities in the table below may report more than one source of electricity and water. Most “other” responses specified that water was retrieved from community sources such as reservoirs and tanks.

**Table 2.8: Access to electricity and water, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Functional electricity	35	74.3	34	79.4	16	100.0
Central / private supply (Belize Electricity Limited)	26	100.0	27	100.0	16	100.0
In-facility generator	26	3.8	27	0.0	16	0.0
Solar source	26	0.0	27	0.0	16	0.0
Other	26	0.0	27	0.0	16	0.0
Do not know / did not respond	26	0.0	27	0.0	16	0.0
Functional water supply	35	82.9	34	82.4	16	100.0
Piped into facility	35	80.0	28	78.6	16	93.8
Public well (protected)	35	0.0	28	0.0	16	0.0
Facility well (protected)	35	2.9	28	3.6	16	0.0
Unprotected well	35	2.9	28	3.6	16	0.0
Hand pump	35	2.9	28	0.0	16	0.0
Bottled water	35	11.4	28	10.7	16	0.0
Tanker	35	5.7	28	14.3	16	25.0
Rainwater	35	5.7	28	14.3	16	12.5
Other	35	17.1	28	17.9	16	31.2
Do not know / declined to respond	35	5.7	28	0.0	16	0.0

**Table 2.9: Access to electricity and water, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Functional electricity	4	100	4	100	4	100
Central / private supply (Belize Electricity Limited)	4	100	4	100	4	100
In-facility generator	4	100	4	0	4	25
Solar source	4	0	4	0	4	0
Other	4	0	4	0	4	0
Do not know / did not respond	4	0	4	0	4	0
Functional water supply	4	100	4	100	4	100
Piped into facility	4	100	4	100	4	100
Public well (protected)	4	0	4	0	4	0
Facility well (protected)	4	0	4	25	4	0
Unprotected well	4	0	4	0	4	0
Hand pump	4	0	4	0	4	0
Bottled water	4	100	4	50	4	0
Tanker	4	50	4	50	4	25
Rainwater	4	25	4	0	4	0
Other	4	25	4	25	4	75
Do not know / declined to respond	4	0	4	0	4	0

## 2.6 Internet access

During the questionnaire, facility representatives were asked whether the facility has an internet connection.

**Table 2.10: Access to internet, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Internet connection	35	11.4	34	20.6	16	62.5

**Table 2.11: Access to internet, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Internet connection	4	100	4	100	4	100

## 2.7 Connection to Belize Health Information System (BHIS) - monitoring indicator

Representatives were asked about the ability of professionals at health facilities to submit and receive data from the Belize Health Information System (BHIS). Specifically, access to the BHIS was evaluated in both the maternity wards and Family and Community Health Departments (maternal and child health unit) at each basic and complete hospital in our sample. Additionally, two ambulatory facilities were evaluated based on general access to the BHIS. Overall 10 departments from six facilities were evaluated. The BHIS was evaluated at the same six facilities at both the first and second follow-up. This data was not captured at the baseline. Standards for BHIS connection are determined by the SMI monitoring indicator 7465.

**Table 2.12: BHIS access and reports, BHIS units**

	1st Follow-up		2nd Follow-Up	
	N	%	N	%
Equipment observed	10	100	10	60
Computer	10	100	10	90
Network connection	10	100	10	100
Printer	10	100	10	60
At least one BHIS report observed or produced	10	30	10	60
Report dated within last four weeks	10	20	10	50
BHIS connection according to SMI standard	10	20	10	30

\* BHIS connection according to standard includes functional computer, network connection, printer, and at least one report dated within last 4 weeks.

## 2.8 Patient satisfaction - monitoring indicator

During the questionnaire component of the survey, representatives were asked if there is a suggestion box available to patients for feedback and satisfaction surveys. Patient satisfaction is evaluated by the SMI monitoring indicator 7460.

**Table 2.13: Patient satisfaction, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Patient satisfaction suggestion box available	35	22.9	34	50	16	100



**Table 2.14: Patient satisfaction, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Patient satisfaction suggestion box available	4	0	4	100	4	100

### 3 Chapter 3: Child and adolescent health

#### 3.1 Child health care services provision

This chapter summarizes key aspects of child health care. In the questionnaire component of the survey, facility representatives were asked about service provision. In the observation component, interviewers observed the setting of the room in which child services are provided, functionality of equipment, stock of pharmacy inputs, stock of vaccines, and related educational materials. Slight discrepancies may exist between responses in the questionnaire and observation. Surveyors indicated that at the second follow-up evaluation, all hospitals shared facilities with an ambulatory-level urban health center. Child health care cases are typically referred to these urban health centers, which accounts for why three hospitals indicated that there was no child health care area to observe.

**Table 3.1: Child health care services provision, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Provides childcare services	35	97.1	34	97.1	16	100.0
Vaccinates children under five	35	88.6	34	97.1	16	100.0
<b>Child care area</b>						
Visual and auditory privacy	34	67.6	33	69.7	16	87.5
Non private area	34	26.5	33	18.2	16	0.0
Visual privacy only	34	2.9	33	9.1	16	12.5
Other	34	0.0	33	0.0	16	0.0
Do not provide service	34	2.9	33	3.0	16	0.0

\* Child care area observation data missing for one ambulatory facility at baseline and one ambulatory facility at first follow-up.

**Table 3.2: Child health care services provision, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Provides childcare services	4	100	4	100	4	100
Vaccinates children under five	4	100	4	100	4	100
<b>Child care area</b>						
Visual and auditory privacy	4	100	3	100	4	25
Non private area	4	0	3	0	4	0
Visual privacy only	4	0	3	0	4	0
Other	4	0	3	0	4	0
Do not provide service	4	0	3	0	4	75

\* Child care observation data missing for one basic facility at first follow-up.

### 3.2 Child health equipment

During the observation component of the survey, interviewers observed the presence and functionality (if possible) of equipment related to child health care. The equipment required for child health care is detailed in the SMI composite child health care indicator (7010). Unless otherwise specified, at least one functional item must be observed for each of the child care equipment requirements. Drug requirements for child health are detailed in section 3.3. Facilities which do not provide child care or for which interviewers did not enter the child care area during observation are excluded. During this evaluation period, health facility representatives at the hospitals indicated to our surveyors that services for children under five are conducted at the adjoining urban health centers.

**Table 3.3: Child health care equipment observed and functional, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Pediatric / salter scale	33	57.6	33	100.0	16	100.0
Height rod	33	66.7	33	97.0	16	100.0
Measuring tape	33	54.5	33	97.0	16	87.5
Stethoscope	33	66.7	33	100.0	16	100.0
Pediatric stethoscope	33	9.1	33	12.1	16	100.0
Lamp	33	45.5	33	75.8	16	100.0
Oto-ophthalmoscope	33	6.1	33	9.1	16	43.8
Examination table / stretcher	33	66.7	33	90.9	16	100.0
All equipment observed and functional	33	0.0	33	0.0	16	37.5

**Table 3.4: Child health care equipment observed and functional, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Pediatric / salter scale	4	100	4	100	1	100
Height rod	4	100	4	100	1	100
Measuring tape	4	100	4	100	1	100
Pediatric stethoscope	4	50	4	25	1	100
Lamp	4	100	4	100	1	100
Oto-ophthalmoscope	4	0	4	0	1	100
Examination table / stretcher	4	100	4	100	1	100
Pediatric blood pressure apparatus	4	25	4	100	1	100
Neonatal blood pressure apparatus	4	0	4	0	1	100
Binaural stethoscope for neonates	4	25	4	0	1	100
Reflex hammer	4	25	4	75	1	100
Negatoscope	4	0	4	100	1	100
All equipment observed and functional	4	0	4	0	1	100

### 3.3 Child health care pharmacy inputs

During the observation component of the survey, interviewers evaluated the presence and stock of pharmacy inputs related to child health care, such as deworming and diarrhea medication. The supplies required for child health care are detailed in the SMI composite child health care indicator (7010). Interviewers were instructed to observe each drug and review any kardex or written documentation for stock-out in the last three months. If the facility did not have three-month stock documentation at the first or second follow-up, the facility was considered to be stocked out of the drug and did not pass that portion of the indicator. Since the baseline survey did not capture whether or not stock information came from a kardex, it is assumed that all three-month stock data collected came from documentation, as was instructed. During the second follow-up evaluation, interviewers indicated that 11 ambulatory facilities were unable to produce drug stock records of any kind for pharmacy inputs. Due to this, these facilities were evaluated based on whether pharmacy inputs were observed only on the day of the survey. Interviewers were informed by facility representatives that a nationwide zinc shortage was occurring during the second follow-up evaluation time period, which is reflected below in day-of and three-month stock observation.

**Table 3.5: Child health care: observed drugs and supplements, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Oral rehydration salts	21	33.3	33	93.9	16	87.5
Ferrous sulfate drops / pills / multivitamins	21	57.1	33	87.9	16	93.8
Zinc sulfate / gluconate	21	19.0	33	81.8	16	37.5
Albendazole / mebendazole	21	57.1	33	97.0	16	87.5
Antibiotics	6	100.0	14	85.7	16	81.2
All drugs available on day of observation	21	19.0	33	72.7	16	25.0
All drugs available in past three months	21	19.0	33	72.7	5	0.0

\* Antibiotics were not required at mobile units and health posts at baseline and first follow-up evaluations.

**Table 3.6: Child health care: observed drugs and supplements, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Oral rehydration salts	4	75	4	100	1	100
IV / scalp vein set	4	50	4	100	1	100
Ferrous sulfate drops / pills / multivitamins	4	75	4	50	1	100
Zinc sulfate / gluconate	4	75	4	100	1	0
Albendazole / mebendazole	4	100	4	75	1	100
Antibiotics	4	100	4	100	1	100
Ringer's lactate / Hartman's / saline solution	4	100	4	100	1	100
All drugs available on day of observation	4	25	4	25	1	0
All drugs available in past three months	4	25	4	25	1	0

### 3.4 Child health care vaccine provision

During the observation component of the survey, interviewers used registries to evaluate the stock of vaccines administered to children at facilities which store vaccines. The standards for child immunization are determined by the SMI composite child health care indicator (7010). Interviewers were instructed to observe each vaccine and review any kardex or written documentation for stock-out in the last three months. If the facility did not have three-month stock documentation at the first or second follow-up, the facility was considered to be stocked out of the vaccine and did not pass that portion of the indicator. Since the baseline survey did not capture whether or not stock information came from a kardex, it is assumed that all three-month stock data collected came from documentation, as was instructed. During the second follow-up evaluation, interviewers indicated that seven ambulatory facilities were unable to produce three-month vaccine stock records of any kind. Due to this, these facilities were evaluated based on whether vaccines were observed only on the day of the survey. Most of the remaining facilities failed

this component based on stockouts of the influenza vaccine. Interviewers were informed that this is because influenza immunization occurs seasonally.

**Table 3.7: Child health care: observed vaccines, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Pentavalent / (DPT + HiB + HepB)	7	100.0	13	100.0	16	100.0
Polio	7	100.0	13	100.0	16	100.0
Measles, mumps, rubella	7	100.0	13	100.0	16	100.0
Influenza	7	100.0	13	61.5	16	18.8
BCG	7	85.7	13	100.0	16	100.0
All vaccines observed day of survey	7	85.7	13	61.5	16	18.8
All vaccines continuously available in past 3 months	6	100.0	11	63.6	9	11.1

\* Three-month vaccine stock not captured at first or second follow-up if not all vaccines available on the day of the survey.

† Three-month stock data only captured for MMR and BCG vaccines at baseline and first follow-up evaluations.

**Table 3.8: Child health care: observed vaccines, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Pentavalent / (DPT + HiB + HepB)	4	100	4	100.0	-	-
Polio	4	100	4	100.0	-	-
Measles, mumps, rubella	4	100	4	100.0	-	-
Influenza	4	75	4	25.0	-	-
BCG	4	100	4	100.0	-	-
All vaccines observed day of survey	4	75	4	25.0	-	-
All vaccines continuously available in past 3 months	3	100	3	33.3	-	-

\* Three-month vaccine stock not captured at first or second follow-up if not all vaccines available on the day of the survey.

† Three-month stock data only captured for MMR and BCG vaccines at baseline and first follow-up evaluations.

### 3.5 Composite child health care indicator

The tables below display composite performance in the SMI child health care indicator (7010). Facilities are evaluated on availability and functionality of equipment, continuous availability of pharmacy inputs, and continuous availability of vaccines (at facilities which store vaccines). At baseline and first follow-up evaluations, three month vaccine stock was only captured for the BCG and MMR vaccines. Vaccine stock

was only captured at facilities which indicated that they store vaccines and for which a vaccine registry was observed.

**Table 3.9: Child health care composite indicator, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
All equipment observed and functional	33	0.0	33	0.0	16	37.5
All pharmacy inputs observed day of survey	21	19.0	33	72.7	16	25.0
All pharmacy inputs continuously available in past three months	21	19.0	33	72.7	5	0.0
All vaccines continuously observed day of survey	7	85.7	13	61.5	16	18.8
All vaccines continuously available in past three months	6	100.0	11	63.6	9	11.1
Child health care provision according to standard	33	0.0	33	0.0	16	0.0

\* Three-month vaccine stock not captured at first or second follow-up if not all vaccines available on the day of the survey.

**Table 3.10: Child health care composite indicator, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
All equipment observed and functional	4	0	4	0.0	1	100
All pharmacy inputs observed day of survey	4	25	4	25.0	1	0
All pharmacy inputs continuously available in past three months	4	25	4	25.0	1	0
All vaccines continuously observed day of survey	4	75	4	25.0	-	-
All vaccines continuously available in past three months	3	100	3	33.3	-	-
Child health care provision according to standard	4	0	4	0.0	1	0

\* Three-month vaccine stock not captured at first or second follow-up if not all vaccines available on the day of the survey.

### 3.6 Medical record review: newborn enrollment in child services

During medical record review, surveyors evaluated child growth and development records from ambulatory facilities to determine whether newborn children were enrolled in child health services within seven days of birth. Standards for newborn child enrollment are determined by the SMI performance indicator 4420. At the baseline and first follow-up evaluations, the indicator is generated using the data collector's determination on whether the enrollment was within seven days. For the second follow-up evaluation, the indicator is generated using a calculation in the survey between date of birth and date of enrollment.

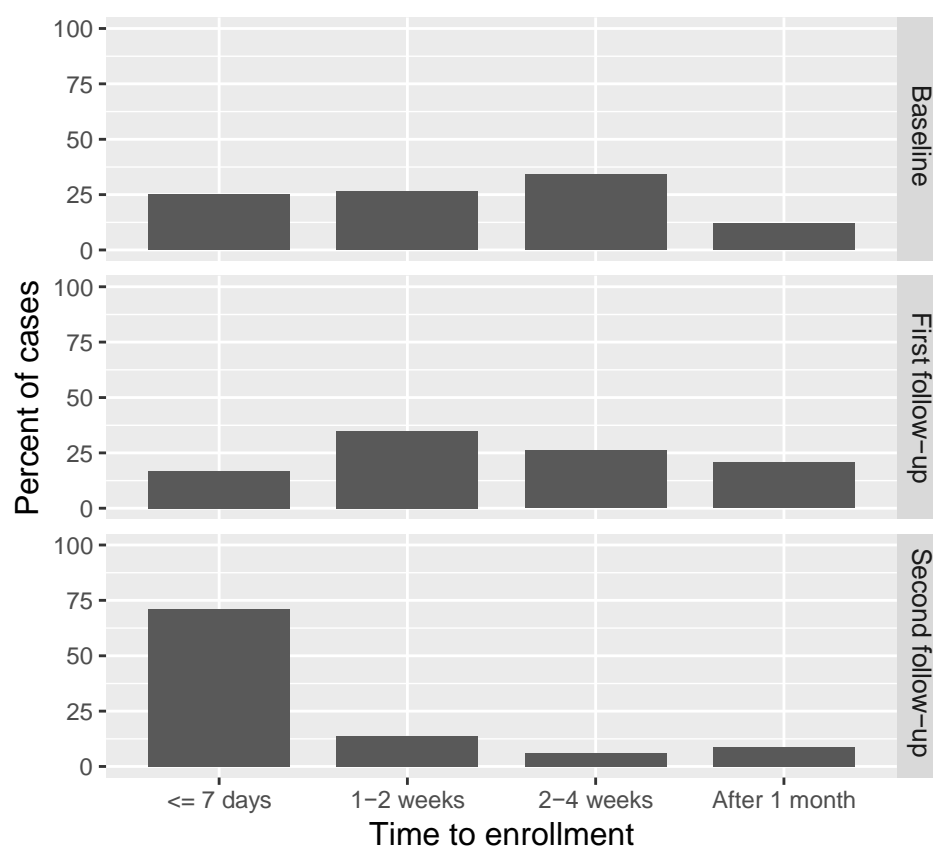
**Table 3.11: Newborn child services enrollment**

	Baseline			First Follow-Up			Second Follow-Up		
	N	%	CI	N	%	CI	N	%	CI
Newborn enrolled within 7 days	91	25.3	(16.7 - 35.5)	147	17	(11.3 - 24.1)	194	66.5	(59.4 - 73.1)

\* At baseline, enrollment data was collected from ambulatory, basic, and complete facilities, but only at ambulatory facilities during first and second follow-up. This baseline value includes medical records from basic and complete facilities. If restricted to only ambulatory facilities, 21.1% of records pass this indicator (N = 71).

The figure below displays enrollment timeliness using comparable measures from baseline, first follow-up, and second follow-up through interviewer-reported enrollment time.

**Figure 3.1: Newborn enrollment time frame, by collection period**



### 3.7 Medical record review: growth and development check-ups

During medical record review, surveyors evaluated child growth and development records of children under two years of age at ambulatory facilities in the past six months. Appropriate growth and



development treatment is determined by the SMI performance indicator 4410. At least one dose of vitamin A is required for children six months or older, albendazole/mebendazole is required for children one year or older, and the child's weight is to be recorded at all visits attended in the past six months.

**Table 3.12: Growth and development check-ups in past six months, ambulatory facilities**

	2nd Follow-Up		
	N	%	CI
Weight recorded at each visit	191	84.8	(78.9 - 89.6)
Vitamin A administered (6+ months old)	145	71.7	(63.7 - 78.9)
Albendazole/mebendazole administered (12+ months old)	64	65.6	(52.7 - 77.1)
Growth and development check-ups according to SMI standard	191	69.6	(62.6 - 76.1)

### 3.8 Medical record review: diarrhea treatment

During medical record review, surveyors evaluated diarrhea records of children under five years of age at ambulatory facilities in the past two years. Appropriate diarrhea treatment is determined by the SMI performance indicator 5135. Children must receive oral rehydration salts or intravenous rehydration therapy as well as zinc administration.

**Table 3.13: Diarrhea treatment, ambulatory facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Oral rehydration salts / IV rehydration administered	5	60	(14.7 - 94.7)	150	97.3	(93.3 - 99.3)
Zinc administered	5	40	(5.3 - 85.3)	150	96.0	(91.5 - 98.5)
Diarrhea treated according to SMI standard	5	20	(0.5 - 71.6)	150	95.3	(90.6 - 98.1)

### 3.9 Medical record review: deworming treatment

During medical record review, surveyors evaluated deworming records of children 12-59 months of age at ambulatory facilities in the past year. Appropriate deworming treatment is determined by the SMI performance indicator 5030. Children must receive at least two doses of deworming medication (400mg each if albendazole, 500mg each if mebendazole).

**Table 3.14: Deworming treatment**

	Baseline			First Follow-Up			Second Follow-Up		
	N	%	CI	N	%	CI	N	%	CI
Received at least two correct deworming doses	89	12.4	(6.3 - 21)	120	14.2	(8.5 - 21.7)	122	21.3	(14.4 - 29.6)

\* At baseline, deworming data was collected from ambulatory, basic, and complete facilities, but only at ambulatory facilities during first and second follow-up. This baseline value includes medical records from basic and complete facilities. If restricted to only ambulatory facilities at baseline, 10% of records pass this indicator (N = 70).

### 3.10 Adolescent education monitoring indicator

During the observation component of the survey, interviewers evaluated the presence of adolescent family planning educational materials in facilities which indicated that they provide family planning services. Standards for educational materials are determined by the SMI monitoring indicator 7420. Only ambulatory facilities indicated that they provide family planning services in the second follow-up evaluation due to referral practices at hospitals to urban health centers.

**Table 3.15: Adolescent educational materials, ambulatory facilities**

	1st Follow-up		2nd Follow-Up	
	N	%	N	%
Reproductive life plan worksheet	33	0.0	16	56.2
Contraceptives for adolescents flip chart	33	48.5	16	87.5
Thinking of having a baby? Ten reasons not to. (brochure)	33	54.5	16	100.0
Community-based adolescent sexual and reproductive health programme (brochure)	33	51.5	16	100.0
S & RH: Don't want to get pregnant right now? Birth Control (flyer)	33	51.5	16	68.8
Having sex? Things you need to know now (flyer)	33	57.6	16	75.0
Growing up? It's a normal part of life (puberty flyer)	33	51.5	16	50.0
Seek help from your CHW (poster)	33	63.6	16	75.0
At least three educational materials observed	33	57.6	16	93.8

**Table 3.15: Adolescent educational materials, ambulatory facilities**

	1st Follow-up		2nd Follow-Up	
	N	%	N	%
Reproductive life plan worksheet	4	25	-	-
Contraceptives for adolescents flip chart	4	75	-	-
Thinking of having a baby? Ten reasons not to. (brochure)	4	100	-	-
Community-based adolescent sexual and reproductive health programme (brochure)	4	100	-	-
S & RH: Don't want to get pregnant right now? Birth Control (flyer)	4	100	-	-
Having sex? Things you need to know now (flyer)	4	100	-	-
Growing up? It's a normal part of life (puberty flyer)	4	100	-	-
Seek help from your CHW (poster)	4	100	-	-
At least three educational materials observed	4	100	-	-

## 4 Chapter 4: Immunization services

### 4.1 Immunization services provision

This chapter summarizes key aspects of immunization services. In the questionnaire component of the survey, facility representatives were asked about service provision as well as vaccine logistics. In the observation component, interviewers observed the setting of the room in which immunizations are provided, as well as the availability and stock of vaccines. In the second follow-up evaluation, all four hospitals were adjoined by ambulatory urban health centers. Surveyors indicated that cases of child immunization are referred from the hospitals to the urban health centers.

**Table 4.1: Immunization services provision, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Vaccinates children under five	35	88.6	34	97.1	16	100.0
<b>Immunization area</b>						
Visual and auditory privacy	34	67.6	33	69.7	16	87.5
Non private area	34	29.4	33	18.2	16	0.0
Visual privacy only	34	0.0	33	9.1	16	12.5
Other	34	0.0	33	3.0	16	0.0
Do not provide service	34	2.9	33	0.0	16	0.0

\* Immunization area data missing for one facility at baseline and one facility at first follow-up evaluation.

**Table 4.2: Immunization services provision, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Vaccinates children under five	4	100	4	100	4	100
<b>Immunization area</b>						
Visual and auditory privacy	4	75	3	100	4	0
Non private area	4	0	3	0	4	0
Visual privacy only	4	25	3	0	4	0
Other	4	0	3	0	4	0
Do not provide service	4	0	3	0	4	100

\* Immunization area data missing for one facility at first follow-up evaluation.

## 4.2 Vaccine logistics: storage

In the questionnaire component of the survey, interviewers asked facility representative about vaccine storage methods at facilities which provide immunization services to children under five.

**Table 4.3: Vaccine storage, ambulatory facilities with immunization services**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Stores vaccines	31	41.9	33	48.5	16	100
Collected from another health facility	31	22.6	33	15.2	16	0
Delivered when immunization services provided	31	35.5	33	36.4	16	0
Does not store vaccines	31	0.0	33	0.0	16	0
Don't know / did not respond	31	0.0	33	0.0	16	0

**Table 4.4: Vaccine storage, hospitals with immunization services**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Stores vaccines	4	75	4	100	4	75
Collected from another health facility	4	25	4	0	4	25
Delivered when immunization services provided	4	0	4	0	4	0
Does not store vaccines	4	0	4	0	4	0
Don't know / did not respond	4	0	4	0	4	0

## 4.3 Vaccine logistics: supply

Among those facilities which provide immunization services to children under five and store vaccines, representatives were also asked about vaccine supply logistics.

**Table 4.5: Vaccine supply, ambulatory facilities with vaccine storage**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
<b>Ordering strategy</b>						
Determines own need	13	100.0	16	100	16	100.0
Need determined elsewhere	13	0.0	16	0	16	0.0
Both (differ by vaccine)	13	0.0	16	0	16	0.0
<b>Time to receive supplies</b>						
One day	13	92.3	16	100	16	81.2
2 - 6 days	13	0.0	16	0	16	0.0
One week or longer	13	7.7	16	0	16	18.8
<b>Reception of quantity ordered</b>						
Always	13	84.6	16	25	16	100.0
Almost always	13	7.7	16	75	16	0.0
Almost never	13	7.7	16	0	16	0.0

**Table 4.6: Vaccine supply, hospitals with vaccine storage**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
<b>Ordering strategy</b>						
Determines own need	3	100.0	4	100	3	100.0
Need determined elsewhere	3	0.0	4	0	3	0.0
Both (differ by vaccine)	3	0.0	4	0	3	0.0
<b>Time to receive supplies</b>						
One day	3	66.7	4	100	3	33.3
2 - 6 days	3	0.0	4	0	3	0.0
One week or longer	3	33.3	4	0	3	66.7
<b>Reception of quantity ordered</b>						
Always	3	100.0	4	0	3	100.0
Almost always	3	0.0	4	100	3	0.0
Almost never	3	0.0	4	0	3	0.0

#### 4.4 Refrigerators for vaccine storage

In the observation component of the survey, interviewers observed the number and functionality of each type of refrigerator used to store vaccines at facilities which indicated that vaccines are stored on-site or are transported to the facility directly before use.

**Table 4.7: Vaccine storage equipment, ambulatory facilities with vaccine storage**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
<b>At least one of the following refrigerator type used for vaccine storage</b>						
Electric fridge	6	83.3	9	100.0	15	100
Kerosene fridge	-	-	9	0.0	15	0
Gas fridge	-	-	9	0.0	15	0
Solar fridge	-	-	9	0.0	15	0
Cold box	5	80.0	9	11.1	15	100

\* Vaccine equipment responses were not required at baseline evaluation.

**Table 4.8: Vaccine storage equipment, hospitals with vaccine storage**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
<b>At least one of the following refrigerator type used for vaccine storage</b>						
Electric fridge	4	100	3	100	1	100
Kerosene fridge	1	0	3	0	1	0
Gas fridge	1	0	3	0	1	0
Solar fridge	1	0	3	0	1	0
Cold box	3	100	3	0	1	100

\* Vaccine equipment responses were not required at baseline evaluation.

## 4.5 Vaccines observed

In the observation component of the survey, interviewers observed vaccine stock on the day of the survey according to vaccine registries. Vaccine stock was only evaluated at facilities which indicated that vaccines are stored on-site or are transported to the facility directly before use, and for which vaccine registries were available. These tables differ from the vaccine tables found in chapter 3 because they are not constrained to facilities that provide child care services. They also display all vaccines captured in the survey, and not just those required for the child health immunization component of the 7010 monitoring indicator. Data for vaccine stock over the past three months was collected, however there does not appear to be a well established mechanism for tracking past vaccine stockouts in Belize. Only five ambulatory facilities were able to produce three-month stock records, and none of these indicated continuous supply of all vaccines captured in the survey. In these facilities, the breaks in vaccine supply were due to seasonal nature of influenza immunization and other vaccine shortages.

**Table 4.9: Vaccines observed, ambulatory facilities with vaccine storage**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Pentavalent (DPT + HepB + Hib)	7	100.0	13	100.0	16	100.0
Polio	7	100.0	13	100.0	16	100.0
Measles, mumps, rubella	7	100.0	13	100.0	16	100.0
Rotavirus	-	-	-	-	16	6.2
Pneumococcal conjugate	-	-	-	-	16	6.2
BCG	7	85.7	13	100.0	16	100.0
Influenza	7	100.0	13	61.5	16	18.8
Tetanus	-	-	26	84.6	16	93.8

\* Vaccine data missing for one facility at baseline and one facility at first follow-up evaluation.

**Table 4.10: Vaccines observed, hospitals with vaccine storage**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Pentavalent (DPT + HepB + Hib)	4	100	4	100	1	100
Polio	4	100	4	100	1	100
Measles, mumps, rubella	4	100	4	100	1	100
Rotavirus	-	-	-	-	1	0
Pneumococcal conjugate	-	-	-	-	1	0
BCG	4	100	4	100	1	100
Influenza	4	75	4	25	1	100
Tetanus	-	-	4	100	1	100



## 5 Chapter 5: Family planning services

### 5.1 Family planning services provision

This chapter summarizes key aspects of family planning services. In the questionnaire component of the survey, facility representatives were asked about family planning service provision. In the observation component, interviewers observed the setting of the room in which family planning services are provided, as well as the availability and stock of family planning methods. In the second follow-up evaluation, all four hospitals were adjoined by ambulatory urban health centers. Surveyors indicated that patients seeking family planning services are referred from the hospitals to the urban health centers.

**Table 5.1: Family planning services provision, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Offers family planning services	35	88.6	34	94.1	16	100.0
<b>Family planning area</b>						
Visual and auditory privacy	34	67.6	33	72.7	16	87.5
Non private area	34	26.5	33	15.2	16	0.0
Visual privacy only	34	2.9	33	9.1	16	12.5
Other	34	0.0	33	0.0	16	0.0
Do not provide service	34	2.9	33	3.0	16	0.0

\* Family planning area data missing for one facility at baseline and one facility at first follow-up evaluation.

**Table 5.2: Family planning services provision, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Offers family planning services	4	100	4	100	4	100
<b>Family planning area</b>						
Visual and auditory privacy	4	100	3	100	4	0
Non private area	4	0	3	0	4	0
Visual privacy only	4	0	3	0	4	0
Other	4	0	3	0	4	0
Do not provide service	4	0	3	0	4	100

\* Family planning area data missing for one facility at first follow-up evaluation.

## 5.2 Family planning services composite monitoring indicator

The family planning services composite indicator (7050) evaluates whether facilities have continuous three-month availability of appropriate contraceptive methods, as well as access to doctors trained in tubal ligation and vasectomy. The following table shows composite indicator performance among these facilities. During this evaluation, interviewers indicated that 12 ambulatory facilities were unable to produce family planning methods stock records of any kind. Due to this, these facilities were only evaluated based on whether family planning inputs were observed on the day of the survey. Additionally, since family planning services were referred from hospitals to adjoining ambulatory urban health centers, only ambulatory facilities qualify for this composite monitoring indicator.

**Table 5.3: Family planning composite indicator, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Male condom	15	86.7	16	100.0	16	100
Any oral pill	15	100.0	16	100.0	16	100
Any injectable	15	73.3	16	93.8	16	100
All methods continuously in stock in past three months	11	90.9	15	93.3	4	100
Family planning services according to SMI standard	15	66.7	16	87.5	16	100

**Table 5.4: Family planning composite indicator, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Male condom	4	100	4	100	-	-
Any oral pill	4	100	4	100	-	-
Any injectable	4	100	4	100	-	-
Intrauterine device	4	100	4	100	-	-
All methods continuously in stock in past three months	4	100	4	100	-	-
Doctor trained in tubal ligation and vasectomy	4	25	4	50	-	-
Family planning services according to SMI standard	4	75	4	100	-	-

\* All hospitals at second follow-up indicated family planning services are referred to adjoining ambulatory urban health centers.

## 5.3 Family planning procedures and surgeries

During the questionnaire component of the survey, interviewers asked about the capability of staff to perform family planning procedures and surgeries at hospitals.

**Table 5.5: Family planning procedures and surgeries, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Medical professional trained in IUD insertion	-	-	4	100	4	100
Medical professional trained in implant insertion	-	-	-	-	4	100
Doctor trained in tubal ligation	4	50.0	4	50	4	50
Doctor trained in vasectomy	3	33.3	4	75	4	50

\* Implant insertion capability not captured at first follow-up.

† One facility responded 'do not know' for vasectomy capability at baseline and is excluded.

#### 5.4 Quality of care job aid tools - monitoring indicator

During the observation component of the survey, interviewers observed the presence of quality of care job aid tools for reproductive health in all facilities, as determined by the SMI monitoring indicator 7410. Data for this indicator was not captured at the baseline evaluation.

**Table 5.6: Quality of care job aid tools, ambulatory facilities**

	1st Follow-up		2nd Follow-Up	
	N	%	N	%
5P checklist	34	2.9	16	0.0
COC fact sheet (what you need to know about contraception)	34	26.5	16	50.0
Checklist for contraception	34	55.9	16	62.5
DEPO fact sheet	34	11.8	16	62.5
Protect yourself (Use a condom the right way every time)	34	41.2	16	75.0
Dual protection	34	38.2	16	25.0
What you need to know about birth control (preventing unwanted pregnancies brochure)	34	50.0	16	87.5
STIs - herpes (flyer)	34	47.1	16	75.0
STIs - gonorrhea (flyer)	33	63.6	16	93.8
STIs - genital warts (flyer)	34	47.1	16	93.8
HIV/AIDS (flyer)	34	64.7	16	100.0
Abstain or use modern contraception (poster)	34	47.1	16	75.0
At least five job aid tools observed	34	50.0	16	93.8

**Table 5.7: Quality of care job aid tools, hospitals**

	1st Follow-up		2nd Follow-Up	
	N	%	N	%
5P checklist	4	0	4	0
COC fact sheet (what you need to know about contraception)	4	75	4	25
Checklist for contraception	4	100	4	25
DEPO fact sheet	4	50	4	25
Protect yourself (Use a condom the right way every time)	4	100	4	25
Dual protection	4	75	4	0
What you need to know about birth control (preventing unwanted pregnancies brochure)	4	100	4	25
STIs - herpes (flyer)	4	100	4	25
STIs - gonorrhoea (flyer)	4	100	4	25
STIs - genital warts (flyer)	4	100	4	25
HIV/AIDS (flyer)	4	100	4	50
Abstain or use modern contraception (poster)	4	100	4	25
At least five job aid tools observed	4	100	4	25

## 6 Chapter 6: Maternal health: antenatal care (ANC), delivery, and postpartum care (PPC)

### 6.1 Service provision

This chapter summarizes key aspects of maternal health. Interviewers observed the functionality of equipment, the continuous availability of drugs and supplements, and key lab inputs related to the provision of antenatal, delivery, and postpartum care. In addition to the questionnaire and observation component of the survey, interviewers reviewed antenatal care medical records in ambulatory facilities, as well as delivery and postpartum care medical records in complete facilities.

**Table 6.1: Antenatal care service provision, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Offers antenatal care services	35	82.9	34	67.6	16	100.0
<b>Antenatal care area</b>						
Visual and auditory privacy	34	67.6	32	62.5	16	87.5
Visual privacy only	34	5.9	32	9.4	16	12.5
Non private area	34	17.6	32	3.1	16	0.0
Do not provide service	34	8.8	32	25.0	16	0.0

\* ANC/PPC area data missing for one facility at baseline and two facilities at first follow-up evaluation.

**Table 6.2: Antenatal care service provision, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Offers antenatal care services	4	100	4	100.0	4	50
Offers (non-urgent) delivery services	4	100	4	100.0	4	100
<b>Antenatal care area</b>						
Visual and auditory privacy	4	100	3	100.0	4	25
Visual privacy only	4	0	3	0.0	4	0
Non private area	4	0	3	0.0	4	25
Do not provide service	4	0	3	0.0	4	50
<b>Delivery area</b>						
Visual and auditory privacy	4	50	3	66.7	4	100
Visual privacy only	4	25	3	33.3	4	0
Non private area	4	25	3	0.0	4	0
Do not provide service	4	0	3	0.0	4	0

\* ANC/PPC and delivery area data missing for one facility at first follow-up evaluation.

## 6.2 ANC and PNC equipment

At facilities which indicated that they provide the relevant services, surveyors observed the availability and functionality of equipment necessary for antenatal and postpartum care. The equipment required for antenatal and postpartum care are detailed in the SMI composite monitoring indicator (7020). The following tables display the percent of facilities at which at least one functional item of equipment was observed.

**Table 6.3: Antenatal and postnatal care equipment, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Scale with measuring rod	31	54.8	25	76	16	100
Gynecological exam table	31	54.8	25	100	16	100
Obstetric tape for CLAP	31	61.3	25	96	16	100
Pregnancy wheel	31	38.7	25	100	16	100
Lamp	31	48.4	25	96	16	100
Sphygmomanometer	31	41.9	25	100	16	100
Stethoscope	31	67.7	25	100	16	100
Fetoscope	31	22.6	25	92	16	100
Thermometer	31	61.3	25	100	16	100
Reflex hammer	31	6.5	25	64	16	100
Perinatal maternal card	31	54.8	25	96	16	100
Perinatal maternal medical history form / card	31	54.8	25	96	16	100
Referral forms	31	35.5	25	96	16	100
Stretcher sheets	31	41.9	25	88	16	100
All ANC equipment observed and functioning	31	3.2	25	44	16	100

**Table 6.4: Antenatal and postnatal care equipment, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Scale with measuring rod	4	100	4	100	2	100
Gynecological exam table	4	100	4	100	2	100
Obstetric tape for CLAP	4	100	4	100	2	100
Pregnancy wheel	4	0	4	100	2	100
Lamp	4	100	4	100	2	100
Sphygmomanometer	4	100	4	100	2	100
Stethoscope	4	100	4	100	2	100
Fetoscope	4	0	4	100	2	100
Thermometer	4	0	4	100	2	100
Reflex hammer	4	50	4	75	2	100
Perinatal maternal card	4	100	4	100	2	100
Perinatal maternal medical history form / card	4	100	4	100	2	100
Referral forms	4	25	4	100	2	100
Stretcher sheets	4	25	4	100	2	100
Instrument stand	4	0	4	100	2	100
IUD insertion kit	4	50	4	100	2	100
All ANC equipment observed and functioning	4	0	4	75	2	100

### 6.3 ANC and PNC pharmacy inputs

During the observation component of the survey, interviewers evaluated the presence and stock of pharmacy inputs related to antenatal and postpartum care. The supplies required for antenatal and postnatal care are detailed in the SMI composite monitoring indicator (7020). Interviewers were instructed to observe each drug and review any kardex or written documentation for stock-out in the last three months. If the facility did not have three-month stock documentation at the first or second follow-up, the facility was considered to be stocked out of the drug and did not pass that portion of the indicator. At the second follow-up evaluation, 11 ambulatory facilities were unable to produce any three-month stock information and were omitted from that requirement.



**Table 6.5: Antenatal and postnatal care pharmacy inputs, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Multivitamin / iron / folic acid	19	63.2	25	96	16	87.5
Nitrofurantoin	19	15.8	25	52	16	68.8
Cephalexin	19	36.8	25	48	16	75.0
Ayre palettes / swabs	19	31.6	25	72	16	93.8
PAP smear slides	-	-	25	76	16	100.0
Tetanus vaccines (if vaccines stored and provided)	6	100.0	12	100	16	93.8
All ANC drugs observed day of survey	19	15.8	25	24	16	62.5
All ANC drugs continuously available in past three months	19	15.8	20	10	5	0.0

\* PAP smear slides not captured at baseline.

**Table 6.6: Antenatal and postnatal care pharmacy inputs, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Multivitamin / iron / folic acid	4	75	4	100	2	100
Nitrofurantoin	4	100	4	75	2	100
Cephalexin	4	75	4	100	2	100
Ayre palettes / swabs	4	0	4	100	2	100
PAP smear slides	-	-	4	100	2	100
Tetanus vaccines (if vaccines stored and provided)	4	25	3	100	-	-
All ANC drugs observed day of survey	4	0	4	75	2	100
All ANC drugs continuously available in past three months	4	0	2	50	2	0

\* PAP smear slides not captured at baseline.

## 6.4 ANC and PNC laboratory inputs

At hospitals, surveyors also observed availability and functionality of laboratory inputs necessary for appropriate ANC and PNC as determined by the SMI composite monitoring indicator (7020).

**Table 6.7: Laboratory inputs, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
<b>Basic facility requirements</b>						
Rapid syphilis test (or dark field microscope or enzyme immunoassay)	2	100	2	100.0	1	100
Rapid HIV / AIDS test (or fluorescent microscope)	2	100	2	100.0	1	100
Urine protein strips (or urinalysis equipment)	2	100	2	100.0	1	100
Blood glucose strips (or glucose meter)	2	0	2	100.0	1	100
Hemocue (or automatic cell counter)	2	100	2	100.0	1	100
Microcuvettes	2	100	2	50.0	1	100
Pregnancy test	2	100	2	100.0	1	100
<b>Complete facility requirements</b>						
Dark field microscope	2	50	2	0.0	1	0
Enzyme immunoassay	2	50	2	0.0	1	0
Fluorescent microscope	2	0	2	0.0	1	0
Urinalysis equipment	2	100	2	100.0	1	100
Glucose meter	2	0	2	0.0	1	100
Automated cell counter	2	0	2	100.0	1	100
<b>Basic and complete</b>						
Reagents* observed and in continuous three month stock	4	100	3	100.0	2	100
All ANC lab inputs observed and in stock	4	0	3	33.3	2	50

\* Reagent three-month stock not captured at baseline.

† Syphilis antigen three-month stock not captured at first follow-up.

## 6.5 ANC/PNC composite indicator

The tables below displays performance on the SMI composite monitoring indicator for antenatal and postpartum care (7020). This indicator is evaluated at all facilities that provide antenatal or postnatal care.

**Table 6.8: Antenatal and postnatal care composite indicator, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
All equipment observed and functional	31	3.2	25	44	16	100.0
All drugs observed on the day of survey	19	15.8	25	24	16	62.5
All drugs continuously available in prior three months	19	15.8	20	10	5	0.0
Antenatal care provided according to SMI standards	31	3.2	25	16	16	43.8

**Table 6.9: Antenatal and postnatal care composite indicator, hospitals**

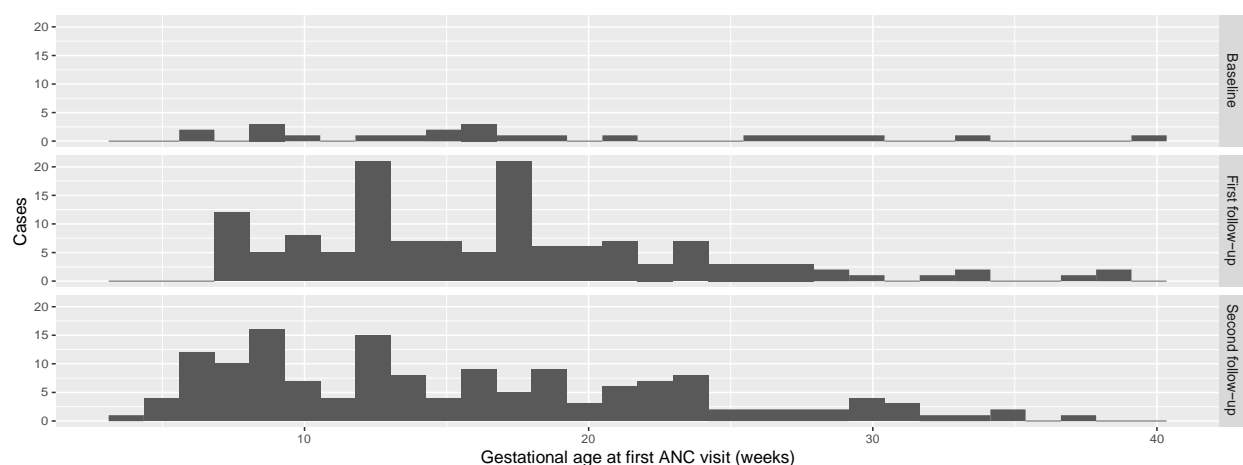
	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
All equipment observed and functional	4	0	4	75.0	2	100
All drugs observed on the day of survey	4	0	4	75.0	2	100
All drugs continuously available in prior three months	4	0	2	50.0	2	0
All lab inputs observed day of survey	4	0	3	33.3	2	50
All lab reagents continuously available in past three months	4	100	3	100.0	2	100
Antenatal care provided according to SMI standards	4	0	4	25.0	2	0

## 6.6 Medical record review: timely first antenatal care visit

Doctors and nurses systematically selected and reviewed antenatal care (ANC) records from ambulatory facilities for women who delivered in the last two years. Records were evaluated on the timeliness of the first ANC visit according to gestational age. As defined the SMI performance indicator (3040), the first antenatal care visit should occur at or within twelve weeks of gestation. Gestational age at first visit was reported at the first and second follow-up evaluations and calculated at the baseline evaluation.

**Table 6.10: Timely first ANC visit, ambulatory facilities**

	Baseline			First Follow-Up			Second Follow-Up		
	N	%	CI	N	%	CI	N	%	CI
First ANC visit within 12 weeks	22	31.8	(13.9 - 54.9)	138	29.7	(22.2 - 38.1)	148	39.9	(31.9 - 48.2)

**Figure 6.1: Histogram comparison of first ANC visit, by collection period**


## 6.7 Medical record review: active management of third stage of labor

Doctors and nurses systematically selected and reviewed delivery records from basic and complete facilities for women who delivered in the last two years. According to the SMI performance indicator (4095), which determines the standards for active management of the third stage of labor, oxytocin or another uterotonic should be administered after birth.

**Table 6.11: Active management of third stage of labor, basic facility medical records**

	Baseline			First Follow-Up			Second Follow-Up		
	N	%	CI	N	%	CI	N	%	CI
Oxytocin administered	15	53.3	(26.6 - 78.7)	57	89.5	(78.5 - 96)	69	100.0	(94.8 - 100)
Other uterotonic administered	15	6.7	(0.2 - 31.9)	57	0.0	(0 - 6.3)	69	2.9	(0.4 - 10.1)
Active management of third stage of labor	15	60.0	(32.3 - 83.7)	57	89.5	(78.5 - 96)	69	100.0	(94.8 - 100)

**Table 6.12: Active management of third stage of labor, complete facility medical records**

	First Follow-Up			Second Follow-Up		
	N	%	CI	N	%	CI
Oxytocin administered	33	63.6	(45.1 - 79.6)	87	97.7	(91.9 - 99.7)
Other uterotonic administered	33	6.1	(0.7 - 20.2)	87	1.1	(0 - 6.2)
Active management of third stage of labor	33	63.6	(45.1 - 79.6)	87	97.7	(91.9 - 99.7)

\* No medical records from complete facilities at baseline apply to this indicator.

## 6.8 Medical record review: Partograph revision

Doctors and nurses systematically selected and reviewed uncomplicated delivery records from basic and complete facilities in the past two years. During this review, delivery records were evaluated for partograph completion. Standards for the partograph are determined by the SMI monitoring indicator (4060). Partograph data from the baseline evaluation does not apply to this indicator. Cases of elective C-section or imminent birth are excluded in those cases where a partograph was not included and filed out. It is worth noting that the majority of cases for which dilation was not observed at greater than 4.5 cm, the record indicated a normal vaginal delivery. However, partograph records for which dilation is not observed at greater than 4.5 cm are required to result in an emergency cesarean section according to the indicator. In these cases, there may have simply been a failure to record the dilation exceeding 4.5 cm, but these records still fail.

**Table 6.13: Partograph revision, basic facility medical records**

	First Follow-Up			Second Follow-Up		
	N	%	CI	N	%	CI
Patient arrived in imminent birth or elective C-section (no partograph included)	57	7.0	(1.9 - 17)	71	0.0	(0 - 5.1)
Partograph included and filled out (regardless of delivery type)	57	91.2	(80.7 - 97.1)	71	100.0	(94.9 - 100)
<b>If partograph filled out:</b>						
Dilation $\geq$ 4.5 cm	52	69.2	(54.9 - 81.3)	71	53.5	(41.3 - 65.5)
Emergency C-section (if dilation < 4.5 cm)	16	0.0	(0 - 20.6)	33	0.0	(0 - 10.6)
Fetal heart rate and alert curve recorded (if dilation > 4.5 cm)	36	63.9	(46.2 - 79.2)	38	94.7	(82.3 - 99.4)
Fetal heart rate < 120 bpm	23	0.0	(0 - 14.8)	36	8.3	(1.8 - 22.5)
Note written within 30 minutes if fetal heart rate < 120 bpm	-	-	-	3	0.0	(0 - 70.8)
Alert curve surpassed	23	8.7	(1.1 - 28)	37	5.4	(0.7 - 18.2)
Note written within 30 minutes if alert curve surpassed	2	100.0	(15.8 - 100)	2	0.0	(0 - 84.2)
Partograph filled according to standard	57	47.4	(34 - 61)	71	43.7	(31.9 - 56)

**Table 6.14: Partograph revision, complete facility medical records**

	First Follow-Up			Second Follow-Up		
	N	%	CI	N	%	CI
Patient arrived in imminent birth or elective C-section (no partograph included)	33	9.1	(1.9 - 24.3)	68	5.9	(1.6 - 14.4)
Partograph included and filled out (regardless of delivery type)	33	90.9	(75.7 - 98.1)	68	60.3	(47.7 - 72)
<b>If partograph filled out:</b>						
Dilation $\geq$ 4.5 cm	30	83.3	(65.3 - 94.4)	41	29.3	(16.1 - 45.5)
Emergency C-section (if dilation < 4.5 cm)	5	20.0	(0.5 - 71.6)	29	3.4	(0.1 - 17.8)
Fetal heart rate and alert curve recorded (if dilation > 4.5 cm)	25	96.0	(79.6 - 99.9)	12	100.0	(73.5 - 100)
Fetal heart rate < 120 bpm	24	0.0	(0 - 14.2)	12	0.0	(0 - 26.5)
Note written within 30 minutes if fetal heart rate < 120 bpm	-	-	-	-	-	-
Alert curve surpassed	24	0.0	(0 - 14.2)	12	0.0	(0 - 26.5)
Note written within 30 minutes if alert curve surpassed	-	-	-	-	-	-
Partograph filled according to standard	33	84.8	(68.1 - 94.9)	68	25.0	(15.3 - 37)

**Figure 6.2: Partograph completion at the second follow-up evaluation**

### 6.8.1 Postpartum follow-up care

Doctors and nurses systematically selected follow-up postpartum records from women in the last two years at ambulatory facilities. The SMI performance indicator 4030 evaluates records on the timeliness of the first postpartum checkup after delivery using the date of delivery and date of the first postpartum checkup to calculate the number of days between the two events. If the date of the postpartum visit was not available, the record was excluded from the indicator. Surveyors collected these records from both the baseline and second follow-up evaluation time periods.

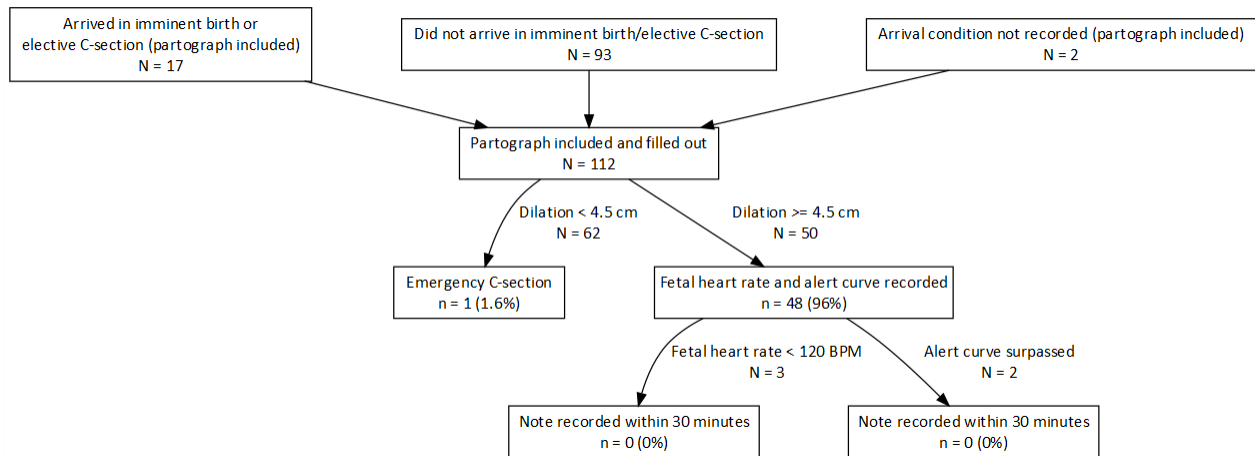


Figure 1:

**Table 6.15: Timely postpartum follow-up at ambulatory facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
First follow-up PPC visit within 7 days	36	41.7	(25.5 - 59.2)	69	75.4	(63.5 - 84.9)

## 6.9 Medical record review: immediate neonatal postpartum care

Doctors and nurses reviewed immediate postpartum records from uncomplicated deliveries in the past two years at basic and complete facilities. Standards for immediate neonatal postpartum care are determined by the SMI performance indicator (4103).

**Table 6.16: Immediate neonatal postpartum care, basic facility medical records**

	Baseline			First Follow-Up			Second Follow-Up		
	N	%	CI	N	%	CI	N	%	CI
Vitamin K administered	19	63.2	(38.4 - 83.7)	35	97.1	(85.1 - 99.9)	72	97.2	(90.3 - 99.7)
Application of oxytetracycline	19	63.2	(38.4 - 83.7)	35	94.3	(80.8 - 99.3)	72	84.7	(74.3 - 92.1)
ophthalmic prophylaxis / chloramphenicol									
APGAR score (1 or 5 minutes)	19	63.2	(38.4 - 83.7)	35	100.0	(90 - 100)	72	98.6	(92.5 - 100)
Pulse / heart rate	19	57.9	(33.5 - 79.7)	35	94.3	(80.8 - 99.3)	72	95.8	(88.3 - 99.1)
Respiratory rate	19	52.6	(28.9 - 75.6)	35	88.6	(73.3 - 96.8)	72	95.8	(88.3 - 99.1)
Weight	19	63.2	(38.4 - 83.7)	35	100.0	(90 - 100)	72	97.2	(90.3 - 99.7)
Height	19	26.3	(9.1 - 51.2)	35	91.4	(76.9 - 98.2)	72	98.6	(92.5 - 100)
Head circumference	-	-	-	35	91.4	(76.9 - 98.2)	72	98.6	(92.5 - 100)
Immediate neonate postpartum care according to SMI standard	19	21.1	(6.1 - 45.6)	35	82.9	(66.4 - 93.4)	72	79.2	(68 - 87.8)

\* Heart rate not captured as alternative to pulse at baseline or first follow-up evaluations.

**Table 6.17: Immediate neonatal postpartum care, complete facility medical records**

	Baseline			First Follow-Up			Second Follow-Up		
	N	%	CI	N	%	CI	N	%	CI
Vitamin K administered	24	95.8	(78.9 - 99.9)	33	100.0	(89.4 - 100)	87	98.9	(93.8 - 100)
Application of oxytetracycline	24	91.7	(73 - 99)	33	100.0	(89.4 - 100)	87	98.9	(93.8 - 100)
ophthalmic prophylaxis / chloramphenicol									
APGAR score (1 or 5 minutes)	24	45.8	(25.6 - 67.2)	33	100.0	(89.4 - 100)	87	98.9	(93.8 - 100)
Pulse / heart rate	24	41.7	(22.1 - 63.4)	33	100.0	(89.4 - 100)	87	96.6	(90.3 - 99.3)
Respiratory rate	24	41.7	(22.1 - 63.4)	33	100.0	(89.4 - 100)	87	98.9	(93.8 - 100)
Weight	24	41.7	(22.1 - 63.4)	33	93.9	(79.8 - 99.3)	87	98.9	(93.8 - 100)
Height	24	41.7	(22.1 - 63.4)	33	97.0	(84.2 - 99.9)	87	98.9	(93.8 - 100)
Head circumference	-	-	-	33	97.0	(84.2 - 99.9)	87	98.9	(93.8 - 100)
Immediate neonate postpartum care according to SMI standard	24	37.5	(18.8 - 59.4)	33	90.9	(75.7 - 98.1)	87	96.6	(90.3 - 99.3)

\* Heart rate not captured as alternative to pulse at baseline or first follow-up evaluations.

## 6.10 Medical record review: postpartum contraception administration

Doctors and nurses reviewed immediate postpartum records from uncomplicated deliveries in the past year at basic and complete facilities to evaluate whether contraception was administered. Standards for postpartum contraception administration are determined by the SMI monitoring indicator (2500).

**Table 6.18: Postpartum contraception administration, basic facility medical records**

	Baseline			First Follow-Up			Second Follow-Up		
	N	%	CI	N	%	CI	N	%	CI
Administered	8	0	(0 - 36.9)	17	0	(0 - 19.5)	26	100.0	(86.8 - 100)
Not administered / not recorded	8	100	(63.1 - 100)	17	100	(80.5 - 100)	26	0.0	(0 - 13.2)
Condom	-	-	-	-	-	-	26	84.6	(65.1 - 95.6)
Pill	-	-	-	-	-	-	26	0.0	(0 - 13.2)
IUD	-	-	-	-	-	-	26	0.0	(0 - 13.2)
Implant	-	-	-	-	-	-	26	7.7	(0.9 - 25.1)
Tubal ligation	-	-	-	-	-	-	26	3.8	(0.1 - 19.6)
Received appropriate family planning method postpartum	8	0	(0 - 36.9)	17	0	(0 - 19.5)	26	92.3	(74.9 - 99.1)

\* At second follow-up, only progestin pills qualify. At baseline and first follow-up, any oral pills qualify.

† Implant not captured at baseline and first follow-up evaluations.

**Table 6.19: Postpartum contraception administration, complete facility medical records**

	Baseline			First Follow-Up			Second Follow-Up		
	N	%	CI	N	%	CI	N	%	CI
Administered	6	16.7	(0.4 - 64.1)	12	0	(0 - 26.5)	44	100.0	(92 - 100)
Not administered / not recorded	6	83.3	(35.9 - 99.6)	12	100	(73.5 - 100)	44	0.0	(0 - 8)
Condom	1	0.0	(0 - 97.5)	-	-	-	44	95.5	(84.5 - 99.4)
Pill	1	0.0	(0 - 97.5)	-	-	-	44	0.0	(0 - 8)
IUD	1	0.0	(0 - 97.5)	-	-	-	44	0.0	(0 - 8)
Implant	-	-	-	-	-	-	44	0.0	(0 - 8)
Tubal ligation	1	100.0	(2.5 - 100)	-	-	-	44	0.0	(0 - 8)
Received appropriate family planning method postpartum	6	16.7	(0.4 - 64.1)	12	0	(0 - 26.5)	44	95.5	(84.5 - 99.4)

\* At second follow-up, only progestin pills qualify. At baseline and first follow-up, any oral pills qualify.

† Implant not captured at baseline and first follow-up evaluations.



## 7 Chapter 7: Maternal and neonatal health: complications

### 7.1 Emergency obstetric and neonatal care service provision

This chapter summarizes key aspects of management of maternal and neonatal complications at complete facilities. The following tables display the type of setting in which emergency care takes place among facilities that provide delivery services.

**Table 7.1: Emergency care service provision, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
<b>Antenatal care area</b>						
Visual and auditory privacy	4	25	1	0	4	75
Visual privacy only	4	50	1	100	4	0
Non private area	4	25	1	0	4	25
Other	4	0	1	0	4	0
Do not provide service	4	0	1	0	4	0

\* Emergency area data missing for three facilities at first follow-up evaluation.

### 7.2 Emergency care composite indicator: equipment

At facilities which indicated that they provide the relevant services, surveyors observed the availability and functionality of equipment necessary for obstetric and neonatal emergency care. The equipment required for emergency care is detailed in the SMI composite monitoring indicator (7030). The following table displays the percent of facilities at which at least one functional item of equipment was observed and functional.

**Table 7.2: Emergency care equipment, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Blood pressure apparatus	4	100	4	100	4	100
Stethoscope	4	100	4	100	4	100
Pinard stethoscope / portable Doppler	4	75	4	50	4	100
Heat sterilizer / autoclave	4	50	4	100	4	100
Oxygen tank / central supply	4	100	4	100	4	100
Adult resuscitation bag	4	100	4	100	4	100
Neonate resuscitation bag	4	100	4	75	4	100
Laryngoscope	4	100	4	100	4	100
Vacuum aspiration / uterine curettage kit	4	0	4	50	4	75
Anesthesia equipment*	2	0	2	100	2	100
C-section equipment*	2	0	2	100	2	100
Pediatric / neonatal stethoscope*	2	50	2	0	2	100
All emergency equipment observed and functional	4	0	4	0	4	75

\* Anesthesia, C-section and pediatric/neonatal stethoscope equipment only required at complete facilities.

### 7.3 Emergency care composite indicator: pharmacy inputs

The SMI composite monitoring indicator (7030) also evaluates whether key drugs and supplements necessary for emergency care are observed on the day of the survey and in continuous supply for the past three months at hospitals that indicate that they provide maternal and neonatal emergency care services. Three month drug stocks were not evaluated for this indicator at the baseline evaluation.

**Table 7.3: Emergency care pharmacy inputs, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Dexamethasone / betamethasone	4	100	4	100	4	100
Penicillin crystals / IV ampicillin / amoxicillin	4	100	4	100	4	100
Atropine / epinephrine	2	100	4	100	4	100
Magnesium sulfate	4	100	4	100	4	100
Ergometrine / oxytocin	4	100	4	100	4	100
Amikacin / amikacin sulfate	4	50	4	100	4	100
Chloramphenicol / metronidazole (complete only)	4	100	4	100	4	100
Cefotaxime (basic only) / ceftriaxone	4	25	4	100	4	100
Hydralazine ampules / hydralazine hydrochloride (complete only)	4	75	4	100	4	100
Diazepam / midazolam hydrochloride (complete only)	4	100	4	100	4	100
<b>Required only at basic facilities:</b>						
Doxycycline	2	50	2	100	2	100
Procaine benzylpenicillin	2	100	2	100	2	100
Gentamicin ampules	2	100	2	100	2	100
Calcium gluconate	2	50	2	100	2	100
<b>Required only at complete facilities:</b>						
Nifedipine	2	50	2	100	2	100
Furosemide	2	100	2	100	2	100
Sevoflurane 100% / isoflurane	2	50	2	100	2	100
Succinylcholine chloride / suxamethonium	2	50	2	100	2	100
All drugs observed day of evaluation	4	0	4	100	4	100
All drugs continuously available in past 3 months	-	-	4	100	4	75

## 7.4 Emergency care composite indicator

The table below displays composite performance on the SMI emergency care monitoring indicator (7030) in hospitals which provide emergency care services.

**Table 7.4: Emergency care composite indicator, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
All equipment observed and functional	4	0	4	0	4	75
All drugs observed on the day of survey	4	0	4	100	4	100
All drugs continuously available in prior three months	-	-	4	100	4	75
Emergency care provided according to SMI standards	4	0	4	0	4	75

\* Pharmacy three-month stock not evaluated at baseline.

## 7.5 Uterine balloon tamponade availability

During the questionnaire component of the survey, representatives of facilities which provide delivery services were asked about the availability and staff training in the use of uterine balloon tamponades, a method of obstetric hemorrhage management.

**Table 7.5: uterine balloon tamponade for hemorrhage management, second follow-up evaluation**

	Complete Facilities	
	N	%
Facility uses tamponade to manage obstetric hemorrhage	4	75
<b>Type</b>		
Bakri	4	0
Foley catheter	4	0
Condom-based balloon	4	75
Do not know	4	0
<b>Assembly kit</b>		
Facility has tamponade kit	4	100
Kit commercially assembled	4	25
Kit prepared from available materials	4	75
<b>Staff training</b>		
Staff trained in tamponade use	4	100
Staff trained in tamponade assembly	4	100

\* Uterine balloon data not captured at baseline and first follow-up evaluations.

## 7.6 Distribution of obstetric and neonatal complications

During medical record review, surveyors systematically selected records from deliveries in the past two years for which complications arose. Specifically, maternal records were reviewed for cases of sepsis, hemorrhage, pre-eclampsia, and eclampsia, while neonate records were reviewed for cases of low birth weight, prematurity, sepsis, and asphyxia.

**Table 7.6: Distribution of obstetric complications, basic facilities**

	Baseline	Second Follow-up
Sepsis	7	3
Hemorrhage	11	16
Pre-eclampsia	12	26
Eclampsia	3	2

**Table 7.7: Distribution of obstetric complications, complete facilities**

	Baseline	Second Follow-up
Sepsis	2	2
Hemorrhage	25	20
Pre-eclampsia	15	9
Eclampsia	4	4

**Table 7.8: Distribution of neonatal complications, basic facilities**

	Baseline	Second Follow-up
Sepsis	8	4
Low birth weight	1	16
Asphyxia	0	4
Prematurity	2	4

**Table 7.9: Distribution of neonatal complications, complete facilities**

	Baseline	Second Follow-up
Sepsis	33	7
Low birth weight	9	21
Asphyxia	21	12
Prematurity	12	19

## 7.7 Obstetric complications management: sepsis

During the medical record review, doctors and nurses systematically evaluated records from the past two years which met the criteria for sepsis according to the SMI standards. The obstetric complications indicator determines the standard treatment for each cause of sepsis, as well as the management protocol based on facility EONC level. Sepsis management is defined as follows:

1. The woman must have the following vital signs checked (*basic and complete facilities*):
  - Pulse/ heart rate
  - Blood pressure
  - Temperature
2. The woman must have received the following laboratory tests (*complete facilities only*):
  - Complete blood test (or hemoglobin + hematocrit + platelets + leukocyte)
3. The woman must be administered antibiotics (*basic and complete facilities*):

4. If applicable, the woman must also have received appropriate care for any of the sepsis cause scenarios detailed in the SMI maternal complications indicator:

- If septic abortion: MVA or instrumental curettage or hysterectomy or (if basic) referred to complete facility
- If pelvic abscess: laparotomy or drainage or hysterectomy or surgical repair or (if basic) referred to complete facility
- If retained product: instrumental curettage or laparotomy or hysterectomy or (if basic) referred to complete facility
- If puerperal fever: antibiotic administration or (if basic) referred to complete facility
- If uterine perforation: surgical repair or hysterectomy or (if basic) referred to complete facility
- If postpartum endometritis: antibiotic administration or (if basic) referred to complete facility

**Table 7.10: Obstetric sepsis management, basic facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked:	7	100.0	(59 - 100)	3	100.0	(29.2 - 100)
Pulse / heart rate	7	100.0	(59 - 100)	3	100.0	(29.2 - 100)
Blood pressure	7	100.0	(59 - 100)	3	100.0	(29.2 - 100)
Temperature	7	100.0	(59 - 100)	3	100.0	(29.2 - 100)
Antibiotics administered	7	71.4	(29 - 96.3)	3	66.7	(9.4 - 99.2)
Causes treated appropriately:	3	100.0	(29.2 - 100)	-	-	-
Septic abortion	-	-	-	-	-	-
Pelvic abscess	-	-	-	-	-	-
Retained product	-	-	-	-	-	-
Puerperal fever	-	-	-	-	-	-
Uterine perforation	-	-	-	-	-	-
Postpartum endometritis	3	100.0	(29.2 - 100)	-	-	-
Neonatal sepsis managed according to SMI standard	7	71.4	(29 - 96.3)	3	66.7	(9.4 - 99.2)

**Table 7.11: Obstetric sepsis management, complete facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked:	2	100	(15.8 - 100)	2	100	(15.8 - 100)
Pulse / heart rate	2	100	(15.8 - 100)	2	100	(15.8 - 100)
Blood pressure	2	100	(15.8 - 100)	2	100	(15.8 - 100)
Temperature	2	100	(15.8 - 100)	2	100	(15.8 - 100)
Lab tests (blood biometry):	2	0	(0 - 84.2)	2	50	(1.3 - 98.7)
Leukocyte count	2	100	(15.8 - 100)	2	50	(1.3 - 98.7)
Platelet count	2	50	(1.3 - 98.7)	2	50	(1.3 - 98.7)
Hemoglobin	2	0	(0 - 84.2)	2	50	(1.3 - 98.7)
Hematocrit	2	100	(15.8 - 100)	2	50	(1.3 - 98.7)
Antibiotics administered	2	100	(15.8 - 100)	2	100	(15.8 - 100)
Causes treated appropriately:	2	100	(15.8 - 100)	1	100	(2.5 - 100)
Septic abortion	-	-	-	-	-	-
Pelvic abscess	-	-	-	-	-	-
Retained product	2	100	(15.8 - 100)	-	-	-
Puerperal fever	-	-	-	-	-	-
Uterine perforation	-	-	-	-	-	-
Postpartum endometritis	-	-	-	1	100	(2.5 - 100)
Neonatal sepsis managed according to SMI standard	2	0	(0 - 84.2)	2	50	(1.3 - 98.7)

## 7.8 Obstetric complications management: hemorrhage

During the medical record review, doctors and nurses systematically evaluated records from the past two years which met the criteria for hemorrhagic complication according to the SMI standards. The obstetric complications indicator determines the standard treatment for each cause of hemorrhage, as well as the management protocol based on facility EONC level. Hemorrhage management is defined as follows:

1. The woman must have the following vital signs checked (*basic and complete facilities*):
  - Pulse/ heart rate
  - Blood pressure
2. The woman must have the following laboratory tests (*complete facilities only*):
  - Hematocrit
  - Hemoglobin
  - Platelet count
3. The woman must be administered at least one of the following medications (*basic and complete facilities*):
  - Ringer's lactate / Hartmann's solution
  - Saline solution
4. If applicable, the woman must also have received appropriate care for any of the hemorrhage cause scenarios detailed in the SMI complications indicator:

- If hemorrhage following incomplete or complete abortion: MVA or instrumental curettage or (if basic) referred to complete facility
- If ectopic pregnancy: laparotomy or salpingectomy or surgical repair or (if basic) referred to complete facility
- If placenta previa with hemorrhage: C-section or hysterectomy or (if basic) referred to complete facility
- If uterine rupture: laparotomy or hysterectomy or surgical repair or C-section or (if basic) referred to complete facility
- If uterine atony: uterotonics + bimanual compression or uterine massage or hydrostatic balloon or uterine tamponade or hypogastric artery ligation or uterine artery ligation or B-lynch suture or (if basic) referred to complete facility
- If uterine inversion: uterotonics + repositioning of the uterus with anesthesia or sedation (nonsurgical procedures or surgical procedures) or hysterectomy or (if basic) referred to complete facility
- If retained product: uterotonics (oxytocin or others) + manual extraction or instrumental curettage or (if basic) referred to complete facility

**Table 7.12: Obstetric hemorrhage management, basic facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked:	11	100.0	(71.5 - 100)	16	100.0	(79.4 - 100)
Pulse / heart rate	11	100.0	(71.5 - 100)	16	100.0	(79.4 - 100)
Blood pressure	11	100.0	(71.5 - 100)	16	100.0	(79.4 - 100)
Ringer's lactate / Hartmann's / saline solution administered	11	90.9	(58.7 - 99.8)	16	75.0	(47.6 - 92.7)
Causes treated appropriately:	3	33.3	(0.8 - 90.6)	6	50.0	(11.8 - 88.2)
Abortion	-	-	-	1	100.0	(2.5 - 100)
Ectopic pregnancy	-	-	-	-	-	-
Placenta previa	3	33.3	(0.8 - 90.6)	4	25.0	(0.6 - 80.6)
Uterine rupture	-	-	-	-	-	-
Uterine atony	-	-	-	1	100.0	(2.5 - 100)
Uterine inversion	-	-	-	-	-	-
Retained product	-	-	-	-	-	-
Hemorrhage managed according to SMI standard	11	72.7	(39 - 94)	16	62.5	(35.4 - 84.8)



**Table 7.13: Obstetric hemorrhage management, complete facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked:	25	88.0	(68.8 - 97.5)	20	90.0	(68.3 - 98.8)
Pulse / heart rate	25	92.0	(74 - 99)	20	90.0	(68.3 - 98.8)
Blood pressure	25	92.0	(74 - 99)	20	90.0	(68.3 - 98.8)
Lab tests:	25	4.0	(0.1 - 20.4)	20	75.0	(50.9 - 91.3)
Hematocrit	25	88.0	(68.8 - 97.5)	20	90.0	(68.3 - 98.8)
Hemoglobin	25	52.0	(31.3 - 72.2)	20	90.0	(68.3 - 98.8)
Platelet count	25	8.0	(1 - 26)	20	75.0	(50.9 - 91.3)
Ringer's lactate / Hartmann's / saline solution administered	25	72.0	(50.6 - 87.9)	20	85.0	(62.1 - 96.8)
Causes treated appropriately:	15	66.7	(38.4 - 88.2)	9	88.9	(51.8 - 99.7)
Abortion	4	100.0	(39.8 - 100)	3	100.0	(29.2 - 100)
Ectopic pregnancy	-	-	-	-	-	-
Placenta previa	5	40.0	(5.3 - 85.3)	1	100.0	(2.5 - 100)
Uterine rupture	-	-	-	-	-	-
Uterine atony	3	100.0	(29.2 - 100)	4	75.0	(19.4 - 99.4)
Uterine inversion	-	-	-	-	-	-
Retained product	3	33.3	(0.8 - 90.6)	1	100.0	(2.5 - 100)
Hemorrhage managed according to SMI standard	25	4.0	(0.1 - 20.4)	20	55.0	(31.5 - 76.9)

## 7.9 Obstetric complications management: pre-eclampsia

During the medical record review, doctors and nurses systematically evaluated records from the past two years which met the criteria for severe obstetric pre-eclampsia complication according to the SMI standards. The obstetric complications indicator determines the standard treatment as well as management protocol for pre-eclampsia cases based on facility EONC level. Pre-eclampsia management is defined as follows:

1. The woman must have the following vital signs checked:
  - Blood pressure
  - Patellar reflex (*complete facility only*)
  - Pulse / heart rate (*complete facility only*)
  - Respiratory rate (*complete facility only*)
2. The woman must have the following laboratory tests:
  - Urine protein
  - Platelet count (*complete facility only*)
  - Aspartate aminotransferase/ Glutamic-oxalacetic transaminase (GOT) (*complete facility only*)
  - Alanine transaminase/Glutamic-pyruvic transaminase (GPT) (*complete facility only*)
3. The woman was administered one of the following medications:
  - Magnesium sulfate
  - Ringer's lactate /Hartmann's solution / saline solution (*basic facility only*)
  - Hydralazine / labetalol / nifedipine (if diastolic blood pressure > 110 at first checkup) (*complete facility only*)

- Dexamethasone/Betamethasone (if gestational age  $\geq 24$  or  $< 34$  weeks) (*complete facility only*)
4. Woman was referred to a complete facility (*basic facility only*)

**Table 7.14: Maternal pre-eclampsia management, basic facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	12	100.0	(73.5 - 100)	26	92.3	(74.9 - 99.1)
Blood pressure	12	100.0	(73.5 - 100)	26	92.3	(74.9 - 99.1)
Lab tests	12	100.0	(73.5 - 100)	26	76.9	(56.4 - 91)
Urine protein	12	100.0	(73.5 - 100)	26	76.9	(56.4 - 91)
All appropriate medications administered	12	8.3	(0.2 - 38.5)	26	11.5	(2.4 - 30.2)
Magnesium sulfate	12	50.0	(21.1 - 78.9)	26	80.8	(60.6 - 93.4)
Ringer's lactate / Hartmann's / saline solution	12	25.0	(5.5 - 57.2)	26	15.4	(4.4 - 34.9)
Referred to complete facility	12	83.3	(51.6 - 97.9)	26	76.9	(56.4 - 91)
Pre-eclampsia managed according to SMI standard	12	8.3	(0.2 - 38.5)	26	7.7	(0.9 - 25.1)

**Table 7.15: Maternal pre-eclampsia management, complete facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	15	13.3	(1.7 - 40.5)	9	22.2	(2.8 - 60)
Pulse / heart rate	15	93.3	(68.1 - 99.8)	9	100.0	(66.4 - 100)
Blood pressure	15	100.0	(78.2 - 100)	9	100.0	(66.4 - 100)
Respiratory rate	15	93.3	(68.1 - 99.8)	9	100.0	(66.4 - 100)
Patellar reflex	15	13.3	(1.7 - 40.5)	9	22.2	(2.8 - 60)
Lab tests	15	40.0	(16.3 - 67.7)	9	44.4	(13.7 - 78.8)
Urine protein	15	60.0	(32.3 - 83.7)	9	77.8	(40 - 97.2)
Platelet count	15	66.7	(38.4 - 88.2)	9	44.4	(13.7 - 78.8)
Aspartate aminotransferase / glutamic-oxalacetic transaminase	15	66.7	(38.4 - 88.2)	9	77.8	(40 - 97.2)
Alanine transaminase / glutamic-pyruvic transaminase	15	73.3	(44.9 - 92.2)	9	77.8	(40 - 97.2)
All appropriate medications administered	15	60.0	(32.3 - 83.7)	9	88.9	(51.8 - 99.7)
Magnesium sulfate	15	73.3	(44.9 - 92.2)	9	88.9	(51.8 - 99.7)
Hydralazine / labetalol / nifedipine (if diastolic blood pressure > 110 at first checkup)	3	100.0	(29.2 - 100)	1	100.0	(2.5 - 100)
Dexamethasone / betamethasone (if gestational age >=24 or <34 weeks)	4	25.0	(0.6 - 80.6)	-	-	-
Pre-eclampsia managed according to SMI standard	15	6.7	(0.2 - 31.9)	9	11.1	(0.3 - 48.2)

## 7.10 Obstetric complications management: eclampsia

During the medical record review, doctors and nurses systematically evaluated records from the past two years which met the criteria for obstetric eclampsia complication according to the SMI standards. The obstetric complications indicator determines the standard treatment as well as management protocol for eclampsia cases based on facility EONC level. Eclampsia management is defined as follows:

1. The woman must have the following vital signs checked:
  - Blood pressure
  - Patellar reflex (*complete facility only*)
  - Pulse / heart rate (*complete facility only*)
  - Respiratory rate (*complete facility only*)
2. The woman must have the following laboratory tests:
  - Urine protein
  - Platelet count (*complete facility only*)
  - Aspartate aminotransferase/ Glutamic-oxalacetic transaminase (GOT) (*complete facility only*)

- Alanine transaminase/Glutamic-pyruvic transaminase (GPT) (*complete facility only*)

3. The woman was administered one of the following medications:
  - Magnesium sulfate
  - Ringer's lactate /Hartmann's solution / saline solution (*basic facility only*)
  - Hydralazine / labetalol / nifedipine (if diastolic blood pressure > 110 at first checkup) (*complete facility only*)
  - Dexamethasone/Betamethasone (if gestational age  $\geq 24$  or <34 weeks) (*complete facility only*)
4. Woman was referred to a complete facility (*basic facility only*)

**Table 7.16: Obstetric eclampsia management, basic facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	3	100.0	(29.2 - 100)	2	100	(15.8 - 100)
Blood pressure	3	100.0	(29.2 - 100)	2	100	(15.8 - 100)
Lab tests	3	66.7	(9.4 - 99.2)	2	0	(0 - 84.2)
Urine protein	3	66.7	(9.4 - 99.2)	2	0	(0 - 84.2)
All appropriate medications administered	3	33.3	(0.8 - 90.6)	2	50	(1.3 - 98.7)
Magnesium sulfate	3	66.7	(9.4 - 99.2)	2	100	(15.8 - 100)
Ringer's lactate / Hartmann's / saline solution	3	33.3	(0.8 - 90.6)	2	50	(1.3 - 98.7)
Referred to complete facility	3	100.0	(29.2 - 100)	2	100	(15.8 - 100)
Eclampsia managed according to SMI standard	3	33.3	(0.8 - 90.6)	2	0	(0 - 84.2)

**Table 7.17: Obstetric eclampsia management, complete facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	4	25	(0.6 - 80.6)	4	0	(0 - 60.2)
Pulse / heart rate	4	100	(39.8 - 100)	4	50	(6.8 - 93.2)
Blood pressure	4	100	(39.8 - 100)	4	100	(39.8 - 100)
Respiratory rate	4	100	(39.8 - 100)	4	50	(6.8 - 93.2)
Patellar reflex	4	25	(0.6 - 80.6)	4	25	(0.6 - 80.6)
Lab tests	4	25	(0.6 - 80.6)	4	25	(0.6 - 80.6)
Urine protein	4	75	(19.4 - 99.4)	4	50	(6.8 - 93.2)
Platelet count	4	50	(6.8 - 93.2)	4	50	(6.8 - 93.2)
Aspartate aminotransferase / glutamic-oxalacetic transaminase	4	25	(0.6 - 80.6)	4	50	(6.8 - 93.2)
Alanine transaminase / glutamic-pyruvic transaminase	4	25	(0.6 - 80.6)	4	50	(6.8 - 93.2)
All appropriate medications administered	4	50	(6.8 - 93.2)	4	100	(39.8 - 100)
Magnesium sulfate	4	50	(6.8 - 93.2)	4	100	(39.8 - 100)
Hydralazine / labetalol / nifedipine (if diastolic blood pressure > 110 at first checkup)	1	100	(2.5 - 100)	-	-	-
Dexamethasone / betamethasone (if gestational age >=24 or <34 weeks)	-	-	-	-	-	-
Eclampsia managed according to SMI standard	4	0	(0 - 60.2)	4	0	(0 - 60.2)

### 7.11 Obstetric complications indicator performance

The table below displays the percentage of medical records reviewed for obstetric complications that indicated appropriate treatment and management according to the SMI performance indicator (4080).

**Table 7.18: Obstetric complications management, basic facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Sepsis managed according to SMI standard	7	71.4	(29 - 96.3)	3	66.7	(9.4 - 99.2)
Hemorrhage managed according to SMI standard	11	72.7	(39 - 94)	16	62.5	(35.4 - 84.8)
Pre-eclampsia managed according to SMI standard	12	8.3	(0.2 - 38.5)	26	7.7	(0.9 - 25.1)
Eclampsia managed according to SMI standard	3	33.3	(0.8 - 90.6)	2	0.0	(0 - 84.2)
Complications managed according to SMI standard	33	45.5	(28.1 - 63.6)	47	29.8	(17.3 - 44.9)

**Table 7.19: Obstetric complications management, complete facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Sepsis managed according to SMI standard	2	0.0	(0 - 84.2)	2	50.0	(1.3 - 98.7)
Hemorrhage managed according to SMI standard	25	4.0	(0.1 - 20.4)	20	55.0	(31.5 - 76.9)
Pre-eclampsia managed according to SMI standard	15	6.7	(0.2 - 31.9)	9	11.1	(0.3 - 48.2)
Eclampsia managed according to SMI standard	4	0.0	(0 - 60.2)	4	0.0	(0 - 60.2)
Complications managed according to SMI standard	45	4.4	(0.5 - 15.1)	34	38.2	(22.2 - 56.4)

## 7.12 Neonatal complications management: sepsis

During the medical record review, doctors and nurses systematically evaluated records from the past two years which met the criteria for neonatal sepsis complication according to the SMI standards. The neonatal complications indicator determines the standard treatment as well as the management protocol for sepsis cases based on facility EONC level. Sepsis management is defined as follows:

1. The child must have the following vital signs checked:
  - Pulse/ heart rate
  - Respiratory rate
  - Temperature
  - Abdominal exam (*complete facilities only*)
2. The child must have received the following laboratory tests (*complete facilities only*):
  - Oxygen saturation
  - Complete blood test (or hemoglobin + hematocrit + platelets + leukocyte + neutrophil band ratio / absolute count)
  - C-reactive protein
3. The child must be administered antibiotics
4. Referral to complete facility (if neonate had septic shock or hemodynamic failure) (*basic facilities only*)
5. Evaluated by doctor (if basic facility) or specialist (if complete facility)

**Table 7.20: Neonatal sepsis management, basic facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	8	75.0	(34.9 - 96.8)	4	100	(39.8 - 100)
Pulse / heart rate	8	75.0	(34.9 - 96.8)	4	100	(39.8 - 100)
Respiratory rate	8	87.5	(47.3 - 99.7)	4	100	(39.8 - 100)
Temperature	8	87.5	(47.3 - 99.7)	4	100	(39.8 - 100)
Antibiotics administered	8	62.5	(24.5 - 91.5)	4	75	(19.4 - 99.4)
Evaluated by doctor	8	62.5	(24.5 - 91.5)	4	75	(19.4 - 99.4)
Referred to complete facility	-	-	-	-	-	-
Sepsis managed according to SMI standard	8	62.5	(24.5 - 91.5)	4	75	(19.4 - 99.4)

\* Referral to a complete facility only required in cases of septic shock or hemodynamic failure.

**Table 7.21: Neonatal sepsis management, complete facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	33	78.8	(61.1 - 91)	7	71.4	(29 - 96.3)
Pulse / heart rate	33	100.0	(89.4 - 100)	7	71.4	(29 - 96.3)
Respiratory rate	33	97.0	(84.2 - 99.9)	7	71.4	(29 - 96.3)
Temperature	33	87.9	(71.8 - 96.6)	7	71.4	(29 - 96.3)
Abdominal exam	33	90.9	(75.7 - 98.1)	7	100.0	(59 - 100)
Lab tests	33	0.0	(0 - 10.6)	7	0.0	(0 - 41)
Oxygen saturation	33	48.5	(30.8 - 66.5)	7	28.6	(3.7 - 71)
C-reactive protein	33	33.3	(18 - 51.8)	7	71.4	(29 - 96.3)
Complete blood count	33	0.0	(0 - 10.6)	7	0.0	(0 - 41)
Antibiotics administered	33	84.8	(68.1 - 94.9)	7	85.7	(42.1 - 99.6)
Evaluated by specialist	33	100.0	(89.4 - 100)	7	100.0	(59 - 100)
Sepsis managed according to SMI standard	33	0.0	(0 - 10.6)	7	0.0	(0 - 41)

### 7.13 Neonatal complications management: asphyxia

During the medical record review, doctors and nurses systematically evaluated records from the past two years which met the criteria for asphyxia complication according to the SMI standards. The neonatal complications indicator determines the standard treatment as well as the management protocol for asphyxia cases based on facility EONC level. Asphyxia management is defined as follows:

1. The child must have the following vital signs checked:



- Pulse/ heart rate
  - Respiratory rate
  - APGAR score at one minute
  - APGAR score at five minutes
2. The child must have received the procedures:
- Heat application
  - Oxygen application (if APGAR  $\leq$  3 at five minutes)
  - Evaluated by doctor (if basic facility) or specialist (if complete facility)
  - Oxygen saturation level lab test (if APGAR  $\leq$  3 at five minutes) (*complete facilities only*)
  - AMBU / positive pressure ventilation (if APGAR  $\leq$  3 at five minutes) (*basic facilities*)
  - AMBU / positive pressure ventilation / endotracheal intubation / chest compressions (if APGAR  $\leq$  3 at five minutes) (*complete facilities*)
  - Referral to complete facility (if APGAR  $\leq$  3 at five minutes) (*basic facilities only*)

**Table 7.22: Neonatal asphyxia management, basic facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	-	-	-	4	100	(39.8 - 100)
Pulse / heart rate	-	-	-	4	100	(39.8 - 100)
Respiratory rate	-	-	-	4	100	(39.8 - 100)
APGAR score at one minute	-	-	-	4	100	(39.8 - 100)
APGAR score at five minutes	-	-	-	4	100	(39.8 - 100)
Heat application	-	-	-	4	100	(39.8 - 100)
Oxygen application (if APGAR $\leq$ 3 at five minutes)	-	-	-	1	100	(2.5 - 100)
Evaluated by doctor	-	-	-	4	100	(39.8 - 100)
Referred to complete facility (if APGAR $\leq$ 3 at five minutes)	-	-	-	1	100	(2.5 - 100)
AMBU / positive pressure ventilation (if APGAR $\leq$ 3 at five minutes)	-	-	-	1	100	(2.5 - 100)
Asphyxia managed according to SMI standard	-	-	-	4	100	(39.8 - 100)

**Table 7.23: Neonatal asphyxia management, complete facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	21	95.2	(76.2 - 99.9)	12	100	(73.5 - 100)
Pulse / heart rate	21	100.0	(83.9 - 100)	12	100	(73.5 - 100)
Respiratory rate	21	95.2	(76.2 - 99.9)	12	100	(73.5 - 100)
APGAR score at one minute	21	100.0	(83.9 - 100)	12	100	(73.5 - 100)
APGAR score at five minutes	21	100.0	(83.9 - 100)	12	100	(73.5 - 100)
Oxygen saturation lab test (if APGAR ≤ 3 at five minutes)	-	-	-	-	-	-
Heat application	21	85.7	(63.7 - 97)	12	100	(73.5 - 100)
Oxygen application (if APGAR ≤ 3 at five minutes)	-	-	-	-	-	-
Evaluated by specialist	21	100.0	(83.9 - 100)	12	100	(73.5 - 100)
AMBU / positive pressure ventilation / endotracheal intubation / chest compressions (if APGAR ≤ 3 at five minutes)	-	-	-	-	-	-
Asphyxia managed according to SMI standard	21	81.0	(58.1 - 94.6)	12	100	(73.5 - 100)

## 7.14 Neonatal complications management: low birth weight

During the medical record review, doctors and nurses systematically evaluated records which met the criteria for low birth weight complication according to the SMI standards. The neonatal complications indicator determines the standard treatment as well as the management protocol for cases of low birth weight based on facility EONC level. Low birth weight management is defined as follows:

1. The child must have the following vital signs checked:
  - Weight
  - Pulse/ heart rate
  - Respiratory rate
  - Head circumference
  - Skin evaluation
  - Length
  
2. The child must have received the procedures:
  - Gestational age calculated using Capurro/Ballard method
  - Classification according to weight (if neonate was born in the facility)
  - Heat application
  - Breastfed or given glucose
  - Evaluated by doctor (if basic facility) or specialist (if complete facility)

3. The child must have received the appropriate management for any complications due to low birth weight (pneumonia, diarrhea, convulsions, neurologic complications, and hypoglycemia)
4. The child must be referred to a complete facility if associated complication (above) arose or weight <1500 gr (if basic facility)

**Table 7.24: Neonatal low birth weight management, basic facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	1	100	(2.5 - 100)	16	87.5	(61.7 - 98.4)
Weight	1	100	(2.5 - 100)	16	100.0	(79.4 - 100)
Pulse / heart rate	1	100	(2.5 - 100)	16	93.8	(69.8 - 99.8)
Respiratory rate	1	100	(2.5 - 100)	16	93.8	(69.8 - 99.8)
Head circumference	1	100	(2.5 - 100)	16	100.0	(79.4 - 100)
Skin evaluation	1	100	(2.5 - 100)	16	87.5	(61.7 - 98.4)
Length	1	100	(2.5 - 100)	16	100.0	(79.4 - 100)
Gestational age calculated using Capurro/Ballard	1	0	(0 - 97.5)	16	100.0	(79.4 - 100)
Weight classification (if in-facility)	1	100	(2.5 - 100)	15	100.0	(78.2 - 100)
Heat application	1	100	(2.5 - 100)	16	87.5	(61.7 - 98.4)
Breastfed / given glucose	1	100	(2.5 - 100)	16	93.8	(69.8 - 99.8)
Evaluated by doctor	1	100	(2.5 - 100)	16	87.5	(61.7 - 98.4)
Referred to a complete facility (if complications or weight < 1500 g)	-	-	-	2	100.0	(15.8 - 100)
Low birth weight managed according to SMI standard	1	0	(0 - 97.5)	16	62.5	(35.4 - 84.8)

**Table 7.25: Neonatal low birth weight management, complete facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	9	33.3	(7.5 - 70.1)	21	81.0	(58.1 - 94.6)
Weight	9	88.9	(51.8 - 99.7)	21	95.2	(76.2 - 99.9)
Pulse / heart rate	9	55.6	(21.2 - 86.3)	21	90.5	(69.6 - 98.8)
Respiratory rate	9	33.3	(7.5 - 70.1)	21	90.5	(69.6 - 98.8)
Head circumference	9	88.9	(51.8 - 99.7)	21	95.2	(76.2 - 99.9)
Skin evaluation	9	88.9	(51.8 - 99.7)	21	100.0	(83.9 - 100)
Length	9	77.8	(40 - 97.2)	21	95.2	(76.2 - 99.9)
Gestational age calculated using Capurro/Ballard	9	33.3	(7.5 - 70.1)	21	90.5	(69.6 - 98.8)
Weight classification (if in-facility)	9	88.9	(51.8 - 99.7)	19	63.2	(38.4 - 83.7)
Heat application	9	22.2	(2.8 - 60)	21	95.2	(76.2 - 99.9)
Breastfed / given glucose	9	77.8	(40 - 97.2)	21	95.2	(76.2 - 99.9)
Evaluated by specialist	9	100.0	(66.4 - 100)	21	100.0	(83.9 - 100)
Appropriate management of any associated complications	2	100.0	(15.8 - 100)	1	100.0	(2.5 - 100)
Low birth weight managed according to SMI standard	9	0.0	(0 - 33.6)	21	42.9	(21.8 - 66)

## 7.15 Neonatal complications management: prematurity

During the medical record review, doctors and nurses systematically evaluated records from the past two years which met the criteria for prematurity complication according to the SMI standards. The neonatal complications indicator determines the standard treatment as well as the management protocol for cases of prematurity based on facility EONC level. Prematurity management is defined as follows:

1. The child must have the following vital signs checked:
  - Weight
  - Pulse/ heart rate
  - Respiratory rate
  - Head circumference
  - Skin evaluation
  
2. The child must have received the procedures:
  - Gestational age calculated using Capurro/Ballard method
  - Classification according to gestational age (if neonate was born in the facility)
  - Glycemia lab test
  - Oxygen saturation (*complete only*)
  - Heat application
  - Breastfed or given glucose
  - Evaluated by doctor (if basic facility) or specialist (if complete facility)
  
3. The child must have received the appropriate management for any complications due to prematurity (pneumonia, diarrhea, convulsions, neurologic complications, and hypoglycemia)

4. The child must be referred to a complete facility if associated complications (above) arose or gestational age  $\leq 34$  weeks (if basic facility)

**Table 7.26: Neonatal prematurity management, basic facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	2	100	(15.8 - 100)	4	25.0	(0.6 - 80.6)
Weight	2	100	(15.8 - 100)	4	75.0	(19.4 - 99.4)
Pulse / heart rate	2	100	(15.8 - 100)	4	50.0	(6.8 - 93.2)
Respiratory rate	2	100	(15.8 - 100)	4	50.0	(6.8 - 93.2)
Head circumference	2	100	(15.8 - 100)	4	75.0	(19.4 - 99.4)
Skin evaluation	2	100	(15.8 - 100)	4	50.0	(6.8 - 93.2)
Gestational age calculated using Capurro/Ballard	2	100	(15.8 - 100)	4	100.0	(39.8 - 100)
Gestational age classification (if in-facility)	2	50	(1.3 - 98.7)	4	25.0	(0.6 - 80.6)
Glycemia lab test	2	50	(1.3 - 98.7)	4	50.0	(6.8 - 93.2)
Heat application	2	50	(1.3 - 98.7)	4	100.0	(39.8 - 100)
Breastfed / given glucose	2	100	(15.8 - 100)	4	50.0	(6.8 - 93.2)
Evaluated by doctor	2	100	(15.8 - 100)	4	75.0	(19.4 - 99.4)
Referred to complete facility (if complications or gestation $\leq 34$ weeks)	1	0	(0 - 97.5)	3	66.7	(9.4 - 99.2)
Prematurity managed according to SMI standard	2	0	(0 - 84.2)	4	25.0	(0.6 - 80.6)

**Table 7.27: Neonatal prematurity management, complete facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Vital signs checked	12	66.7	(34.9 - 90.1)	19	94.7	(74 - 99.9)
Weight	12	91.7	(61.5 - 99.8)	19	100.0	(82.4 - 100)
Pulse / heart rate	12	91.7	(61.5 - 99.8)	19	100.0	(82.4 - 100)
Respiratory rate	12	83.3	(51.6 - 97.9)	19	100.0	(82.4 - 100)
Head circumference	12	66.7	(34.9 - 90.1)	19	94.7	(74 - 99.9)
Skin evaluation	12	100.0	(73.5 - 100)	19	100.0	(82.4 - 100)
Gestational age calculated using Capurro/Ballard	12	41.7	(15.2 - 72.3)	19	89.5	(66.9 - 98.7)
Gestational age classification (if in-facility)	12	33.3	(9.9 - 65.1)	18	66.7	(41 - 86.7)
Glycemia lab test	12	41.7	(15.2 - 72.3)	19	57.9	(33.5 - 79.7)
Oxygen saturation lab test	12	83.3	(51.6 - 97.9)	19	94.7	(74 - 99.9)
Heat application	12	91.7	(61.5 - 99.8)	19	94.7	(74 - 99.9)
Breastfed / given glucose	12	83.3	(51.6 - 97.9)	19	100.0	(82.4 - 100)
Evaluated by specialist	12	100.0	(73.5 - 100)	19	100.0	(82.4 - 100)
Appropriate management of any associated complications	2	50.0	(1.3 - 98.7)	2	100.0	(15.8 - 100)
Prematurity managed according to SMI standard	12	8.3	(0.2 - 38.5)	19	31.6	(12.6 - 56.6)

## 7.16 Neonatal complications indicator performance

The tables below display the proportion of medical records reviewed for neonatal complications that showed appropriate treatment and management according to the SMI performance indicator.

**Table 7.26: Neonatal prematurity management, basic facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Sepsis managed according to SMI standard	8	62.5	(24.5 - 91.5)	4	75.0	(19.4 - 99.4)
Asphyxia managed according to SMI standard	-	-	-	4	100.0	(39.8 - 100)
Low birth weight managed according to SMI standard	1	0.0	(0 - 97.5)	16	62.5	(35.4 - 84.8)
Prematurity managed according to SMI standard	2	0.0	(0 - 84.2)	4	25.0	(0.6 - 80.6)
Complications managed according to SMI standard	10	50.0	(18.7 - 81.3)	24	66.7	(44.7 - 84.4)

**Table 7.27: Neonatal prematurity management, complete facilities**

	Baseline			Second Follow-Up		
	N	%	CI	N	%	CI
Sepsis managed according to SMI standard	33	0.0	(0 - 10.6)	7	0.0	(0 - 41)
Asphyxia managed according to SMI standard	21	81.0	(58.1 - 94.6)	12	100.0	(73.5 - 100)
Low birth weight managed according to SMI standard	9	0.0	(0 - 33.6)	21	42.9	(21.8 - 66)
Prematurity managed according to SMI standard	12	8.3	(0.2 - 38.5)	19	31.6	(12.6 - 56.6)
Complications managed according to SMI standard	67	19.4	(10.8 - 30.9)	51	43.1	(29.3 - 57.8)

## 8 Chapter 8: Infection control

### 8.1 Disposal equipment and methodology

During the questionnaire component of the survey, facility representatives were asked about equipment and methodology pertaining to infection control and biohazard disposal.

**Table 8.1: Infection control and disposal, ambulatory facilities**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Incinerator at facility	35	2.9	33	3.0	16	12.5
Contract with other facility for disposal (if no incinerator)	35	71.4	33	42.4	16	56.2
Manual for decontamination	32	40.6	34	35.3	16	81.2

\* Three facilities at baseline selected 'do not know' for decontamination manual, and were omitted.

† One facility at first follow-up selected 'do not know' for incinerator availability and disposal contract and was omitted.

**Table 8.2: Infection control and disposal, hospitals**

	Baseline		1st Follow-up		2nd Follow-Up	
	N	%	N	%	N	%
Incinerator at facility	4	0	4	0	4	50
Contract with other facility for disposal (if no incinerator)	4	0	4	75	4	25
Manual for decontamination	4	75	4	75	4	100

## Appendix A: Indicator matrices

**Table A.1: Performance indicator matrix**

Code	Description	Baseline			First Follow-Up			Second Follow-Up		
		N	%	CI	N	%	CI	N	%	CI
2500	Postpartum contraception administration	14	7.1	(0.2 - 33.9)	29	0.0	(0 - 11.9)	70	94.3	(86 - 98.4)
3040	First ANC visit within 12 weeks	22	31.8	(13.9 - 54.9)	138	29.7	(22.2 - 38.1)	148	39.9	(31.9 - 48.2)
4030	Maternal PPC within 7 days	36	41.7	(25.5 - 59.2)	-	-	-	69	75.4	(63.5 - 84.9)
4070	Neonatal complications management	77	23.4	(14.5 - 34.4)	-	-	-	75	50.7	(38.9 - 62.4)
4080	Maternal complications management	78	21.8	(13.2 - 32.6)	-	-	-	81	33.3	(23.2 - 44.7)
4095	Active management of third stage of labor	15	60.0	(32.3 - 83.7)	90	80.0	(70.2 - 87.7)	156	98.7	(95.4 - 99.8)
4103	Immediate postpartum neonatal care	43	30.2	(17.2 - 46.1)	68	86.8	(76.4 - 93.8)	159	88.7	(82.7 - 93.2)
4410	Growth and development	-	-	-	-	-	-	191	69.6	(62.6 - 76.1)
4420	Newborn child services enrollment	91	25.3	(16.7 - 35.5)	147	17.0	(11.3 - 24.1)	194	66.5	(59.4 - 73.1)
5135	Diarrhea treatment	5	20.0	(0.5 - 71.6)	-	-	-	150	95.3	(90.6 - 98.1)

**Table A.2: Monitoring indicator matrix**

Code	Description	Baseline			First Follow-Up			Second Follow-Up		
		N	%	CI	N	%	CI	N	%	CI
I4060	Partograph revision	-	-	-	90	83.3	(74 - 90.4)	122	70.5	(61.6 - 78.4)
I5030	Deworming treatment	89	12.4	(6.3 - 21)	120	14.2	(8.5 - 21.7)	122	21.3	(14.4 - 29.6)
I7010	Childcare services composite	37	0.0	-	37	0.0	-	17	0.0	-
I7020	Pre/postnatal care composite	35	2.9	-	29	17.2	-	18	38.9	-
I7030	Emergency care composite	4	0.0	-	4	0.0	-	4	75.0	-
I7050	Family planning composite	19	68.4	-	20	90.0	-	16	100.0	-
I7410	Job aid tools	-	-	-	38	55.3	-	20	80.0	-
I7420	Adolescent education	-	-	-	37	62.2	-	16	93.8	-
I7460	Patient satisfaction	39	20.5	-	38	55.3	-	20	100.0	-
I7465	BHIS connection	-	-	-	10	20.0	-	10	30.0	-

\*Facility-level indicators do not include confidence intervals because data collection occurred at a full census of facilities in SMI intervention areas.



## Appendix B: Indicator definitions

### Performance indicators

#### **2500: Women who were given an appropriate family planning method after delivery in the last year**

*Denominator:*

Total number of postpartum records in the last year in the sample, excluding women who were referred for family planning and those who did not deliver in the facility

*Formula:*

Observe the following in the record: woman received at least one of the following: (condom/oral progestogen-only/implant/IUD/tubal ligation)

#### **3040: Reproductive-aged women who attended their first antenatal care (ANC) visit at or before 12 weeks gestation in the last two years**

*Denominator:*

Total number of antenatal care records in the sample at ambulatory facilities

*Formula:*

Ambulatory: Observe the following in the record: woman had the first ANC visit at  $\leq 12$  weeks gestation

#### **4030: Women who received their first postpartum visit within seven days of delivery in the last two years**

*Denominator:*

Total number of postpartum care records in the sample at ambulatory facilities

*Formula:*

Observe the following in the record: [date of first postpartum checkup] - [date of delivery]  $\leq 7$  days

#### **4070: Neonatal complications (prematurity, low birth weight, sepsis, and asphyxia) managed according to the norm in the last two years**

*Denominator:*

Total number of records of neonates with birth complications (prematurity, birth asphyxia, or sepsis) in the sample at basic and complete facilities.

*Formula:*

**Low Birth Weight: excluding neonates who weight <2500 gr**

*Basic:*

Observe the following in the record: Evaluated by a doctor + gestational age calculation using Capurro or Ballard + classification based on birth weight (if neonate was born in the facility) + weight + (heart rate / pulse) + respiratory rate + length/height + head circumference + skin evaluation + heat application/warm chain + (early breastfeeding / glucose solution: (oral / IV)) + referred to a complete facility (if neonate weight < 1500 gr or has pneumonia, respiratory distress, neurologic complications, convulsions, diarrhea, hypoglycemic/ glucose level < 25mg)

*Complete:*

Observe the following in the record: Evaluated by a specialist + gestational age calculation using Capurro or Ballard + classification based on birth weight (if neonate was born in the facility) + weight + (heart rate / pulse) + respiratory rate + length/height + head circumference + skin evaluation + heat application/warm chain + (early breastfeeding / glucose solution: (oral / IV)) + any of the following if they apply:

- if pneumonia: antibiotics
- if diarrhea: IV solution + antibiotics
- if convulsions: anticonvulsant
- if hypoglycemia / glucose level < 25mg/dl: glucose IV

**Prematurity: excluding neonates with a gestational age of  $\geq 37$  weeks**

*Basic:*

Observe the following in the record: Evaluated by a doctor + gestational age calculation using Capurro or Ballard + classification based on gestational age (if neonate was born in the facility) + weight + (heart rate / pulse) + respiratory rate + head circumference + skin evaluation + glycemia lab test + heat application/warm chain + (early breastfeeding / glucose solution: (oral / IV)) + referred to a complete facility (if neonate gestational age  $\leq 34$  weeks or has pneumonia, respiratory distress, neurologic complications, convulsions, diarrhea, hypoglycemic/ glucose level < 25mg)

*Complete:*

Observe the following in the record: Evaluated by a specialist + gestational age calculation using Capurro or Ballard + classification based on gestational age (if neonate was born in the facility) + weight + (heart rate / pulse) + respiratory rate + head circumference + skin evaluation + glycemia lab test + oxygen saturation level + heat application/warm chain + (early breastfeeding / glucose solution: (oral / IV)) + any of the following if they apply:

- if pneumonia: antibiotics
- if diarrhea: IV solution + antibiotics

- if convulsions: anticonvulsant
- if hypoglycemia / glucose level < 25mg/dl: glucose IV

### **Asphyxia: excluding neonates who were not born in the facility**

#### *Basic:*

Observe the following in the record: Evaluated by a doctor + heat application/warm chain + heart rate/pulse + respiratory rate + APGAR score at 1 minute + APGAR score at 5 minutes + oxygen administration (if APGAR score at 5 minutes is  $\leq 3$ ) + AMBU/positive pressure ventilation (if APGAR score at 5 minutes is  $\leq 3$ ) + referred to a complete facility (if APGAR score at 5 minutes is  $\leq 3$ )

#### *Complete:*

Observe the following in the record: Evaluated by a specialist + heat application/warm chain + heart rate/pulse + respiratory rate + APGAR score at 1 minute + APGAR score at 5 minutes + oxygen saturation level (if APGAR score at 5 minutes is  $\leq 3$ ) + oxygen administration (if APGAR score at 5 minutes is  $\leq 3$ ) + AMBU/positive pressure ventilation/ chest compressions/endotracheal intubation (if APGAR score at 5 minutes is  $\leq 3$ ) + referred to a complete facility (if APGAR score at 5 minutes is  $\leq 3$ )

### **Sepsis**

#### *Basic:*

Observe the following in the record: Evaluated by a doctor + temperature + heart rate/pulse + respiratory rate + antibiotic administered + referred to a complete facility (if hemodynamic failure or septic shock)

#### *Complete:*

Observe the following in the record: Evaluated by a specialist or doctor + temperature + heart rate/pulse + respiratory rate + abdominal examination + oxygen saturation + complete blood count (platelets + leukocytes + neutrophil band ratio/absolute neutrophil count + hemoglobin + hematocrit) + protein c reactive + antibiotic administered

### **4080: Women with obstetric complications (sepsis, hemorrhage, severe pre-eclampsia and eclampsia) managed according to the norm in the last two years**

#### *Denominator:*

Total number of records of women with maternal complications (hemorrhage, severe pre-eclampsia, eclampsia, or sepsis) in the sample at basic and complete facilities.

#### *Formula:*

### **Hemorrhage: excluding cases of hemorrhage caused only by lacerations**

#### *Basic:*

Observe the following in the record: (heart rate/pulse) + blood pressure + (Ringer's lactate/Hartmann's/saline solution) + appropriate care (below)

- If hemorrhage following incomplete or complete abortion: MVA/instrumental curettage/refer to complete facility
- If ectopic/broken ectopic pregnancy: laparotomy/salpingectomy/surgical repair/refer to complete facility
- If placenta previa with hemorrhage: C-section/hysterectomy/refer to complete facility
- If uterine rupture: laparotomy/hysterectomy/surgical repair/C-Section/refer to complete facility
- If uterine atony: uterotonic + bimanual compression/uterine massage/hydrostatic balloon/uterine tamponade/hypogastric artery ligation/uterine artery ligation/B-lynch suture/refer to Complete facility
- If uterine inversion: uterotonic + repositioning of the uterus with anesthesia/sedation by nonsurgical or surgical procedures/hysterectomy/refer to Complete facility
- If retained product: uterotonic + manual extraction/instrumental curettage/refer to Complete facility

*Complete:*

Observe the following in the record: (heart rate/pulse) + blood pressure + hematocrit + hemoglobin + platelet count + (Ringer's lactate/Hartmann's/saline solution) + appropriate care (below)

- If hemorrhage following incomplete or complete abortion: MVA/instrumental curettage
- If ectopic/broken ectopic pregnancy: laparotomy/salpingectomy/surgical repair
- If placenta previa with hemorrhage: C-section/hysterectomy
- If uterine rupture: laparotomy/hysterectomy/surgical repair/C-section
- If uterine atony: uterotonic + bimanual compression/uterine massage/hydrostatic balloon/uterine tamponade/hypogastric artery ligation/uterine artery ligation/B-lynch suture/hysterectomy
- If uterine inversion: uterotonic + repositioning of the uterus with anesthesia/sedation by nonsurgical or surgical procedures/hysterectomy
- If retained product: uterotonic + (manual extraction/instrumental curettage)

**Severe Pre-eclampsia & Eclampsia:**

*Basic:*

Observe the following in the record: blood pressure + urine protein test + (Ringer's lactate/Hartmann's/saline solution) + magnesium sulfate + referred to a complete facility

*Complete:*

Observe the following in the record: (heart rate/pulse) + blood pressure + respiratory rate + patellar reflex + urine protein test + platelet count + (aspartate aminotransferase/glutamic-oxalacetic

transaminase) + (alanine aminotransferase/glutamic-pyruvic transaminase) + magnesium sulfate + hydralazine/labetalol/nifedipine (if diastolic blood pressure is > 110 at first check) + dexamethasone/betamethasone (if gestational age is  $\geq 24$  weeks & < 34 weeks)

### **Sepsis:**

#### *Basic:*

Observe the following in the record: (heart rate/pulse) + blood pressure + temperature + antibiotics administered + appropriate care (below)

- If septic abortion: MVA / instrumental curettage / hysterectomy / refer to complete
- If uterine perforation: surgical repair / hysterectomy / refer to complete
- If pelvic abscess: laparotomy / drainage / hysterectomy / surgical repair / refer to complete
- If postpartum endometritis: antibiotic administration / refer to complete
- If retained product: instrumental curettage / laparotomy / hysterectomy / refer to complete
- If puerperal fever: antibiotic administration / refer to complete

#### *Complete:*

Observe the following in the record: (heart rate/pulse) + blood pressure + temperature + hemoglobin + hematocrit + platelet count + leukocyte count + antibiotics administered + appropriate care (below)

- If septic abortion: MVA / instrumental curettage / hysterectomy
- If uterine perforation: surgical repair / hysterectomy
- If pelvic abscess: laparotomy / drainage / hysterectomy / surgical repair
- If postpartum endometritis: antibiotic administration
- If retained product: instrumental curettage / laparotomy / hysterectomy
- If puerperal fever: antibiotic administration

### **4095: Oxytocin/other uterotonic administration following delivery in the last two years**

#### *Denominator:*

Total number of in-facility delivery records in the last two years in our sample from basic & complete facilities

#### *Formula:*

Observe the following in the record: oxytocin/other uterotonic was administered after delivery

#### **4103: Appropriate immediate postpartum care for neonates following delivery in the last two years**

*Denominator:*

Total number of postpartum records from in-facility deliveries at basic and complete facilities

*Formula:*

Observe the following in the record: vitamin K + (oxytetracycline ophthalmic prophylaxis/chloramphenicol) + Apgar score (at 1 or 5 minutes) + (heart rate/pulse) + respiratory rate + weight + height + head circumference

#### **4410: Growth and development checks for children 0 - 23 months of age were completed according to the norm in the previous 6 months**

*Denominator:*

Growth and development records from ambulatory facilities in the previous 6 months for children aged 0-23 months

*Formula:*

All children need at least 1 visit in the past 6 months:

- For children 6 months or older: At least one dose of Vitamin A in the past 6 months
- For children 12 months or older: At least one dose of albendazole/mebendazole in the past 6 months
- For all children: Weight recorded in every visit attended in the past 6 months

#### **4420: Newborn children enrolled in child services within seven days of birth in the last two years**

*Denominator:*

Total number of growth and development records from the previous two years from ambulatory facilities

*Formula:*

Observe the following in the record: [date of enrollment for child services] - [date of birth] <= 7 days. If a date of enrollment is not recorded, the child's record does not pass the indicator.

### **5135: Children aged 0 - 59 months with diarrhea prescribed ORS and zinc treatment in the last years**

*Denominator:*

Total number of diarrhea records for children aged 0 - 59 months at ambulatory facilities in the sample

*Formula:*

Observe the following in the record: (oral rehydration salts/IV fluids) + zinc treatment

## **Monitoring indicators**

### **4060: Partograph revision in the last two years**

*Denominator:*

Total number of birth records from the previous two years

*Numerator:*

Observe the following in the record: If woman did not arrive on imminent birth or planned C-Section: [partograph included and filled] + if dilation <4.5 cm: [Emergency C-Section] + if dilation >=4.5 cm: [FHR and alert curve are registered] + if FHR <120 bpm or the alert curve was surpassed: [there is a note on the partograph or medical records within 30 min].

### **5030: Deworming treatment for children 12-59 months in the past year**

*Denominator:*

Total number of deworming records in the past year at ambulatory facilities

*Numerator:*

Observe the following in the record: two doses of albendazole (400 mg) or mebendazole (500 mg) were administered to the child. The combination or only one drug is considered as a requirement to meet this indicator

### **7010: Child care services**

*Denominator:*

Total number of facilities that provide child care services

*Numerator:*

**Ambulatory facilities:**

Observe the following in the facility: Pediatric scales + measuring tape + height rod + stethoscope + pediatric stethoscope + oto-ophthalmoscope + hand lamp + examination table or stretcher + continuous three month supply of the following vaccines (if stored): [pentavalent (DPT + Hib HepB) + polio + MMR + influenza + BCG] + continuous three month supply of the following drugs: [oral rehydration salts packets + ferrous sulfate drops/multivitamins + zinc sulfate/zinc gluconate + albendazole/mebendazole + benzatinic penicillin/erythromycin trimetropin sulfa/azithromycin + Ringer's lactate/Hartman's/saline solution]

**Basic and complete facilities:**

Observe the following in the facility: pediatric scales + height rod + measuring tape + pediatric blood pressure apparatus + neonatal blood pressure apparatus + pediatric stethoscope + hand lamp + binaural stethoscope for newborns + reflex hammer + negatoscope + pantoscope/oto-ophthalmoscope + examination table or stretcher + continuous three month supply of the following vaccines (if stored): [pentavalent (DPT + Hib HepB) + polio + MMR + influenza + BCG] + continuous three month supply of the following drugs: [oral rehydration salts packets + ferrous sulfate drops/multivitamins + zinc sulfate/zinc gluconate + albendazole/mebendazole + benzatinic penicillin/erythromycin trimetropin sulfa/azithromycin IV + Ringer's lactate/Hartman's/saline solution]

**7020: Antenatal and postpartum care services**

*Denominator:*

Total number of facilities that provide antenatal/postpartum care services

*Numerator:*

**Ambulatory facilities:**

Observe the following in the facility: scale with measuring rod + gynecological examination table or stretcher + obstetric tape for CLAP + pregnancy wheel + swan neck lamp / pelvic examination lamp / headlight + sphygmomanometer + stethoscope + fetoscope (pinard stethoscope or doppler) + oral / axillary thermometer + reflex hammer + perinatal maternal medical history + perinatal maternal card + referral forms + stretcher sheets or robes for patients + continuous three month supply of the following drugs: [multivitamin / (iron and folic acid) + tetanus vaccine (if stored) + nitrofurantoin + cephalexin + ayre palettes (for consideration of cervical cytology) or swabs + PAP Smear slides]

**Basic facilities:**

Observe the following in the facility: scale with measuring rod + gynecological examination table or stretcher + obstetric tape for CLAP / measuring tape + equipment cart or stand + pregnancy wheel + swan neck lamp / pelvic examination lamp / headlight + sphygmomanometer + stethoscope + set for IUD insertion + fetoscope (Pinard stethoscope / doppler) + oral / axillary thermometer + reflex hammer + perinatal maternal medical history + perinatal maternal card + referral forms + stretcher sheets or robes



for the patients + continuous three month supply of the following drugs: [multivitamin / (iron and folic acid) + tetanus vaccine (if stored) + nitrofurantoin + cephalexin + ayre palettes (for consideration of cervical cytology) or swabs + PAP Smear slides] + if lab available: rapid syphilis test (if none: dark field microscope) + Rapid HIV/AIDS test (if none: fluorescent microscope) + urine protein strips (if none: urinalysis equipment) + blood glucose strip (if none: glucometer) + hemocue (if none: automated cell counter) + microcuvettes + pregnancy test + continuous three month supply of the following lab reagents: [blood type antibody + RH factor antibody + if enzyme immunoassay equipment: (syphilis antigen + HIV/AIDS antigen)]

#### **Complete facilities:**

Observe the following in the facility: scale with measuring rod + gynecological examination table or stretcher + obstetric tape for CLAP / measuring tape + equipment cart or stand + pregnancy wheel + swan neck lamp / pelvic examination lamp / headlight + sphygmomanometer + stethoscope + set for IUD insertion + fetoscope (Pinard stethoscope / doppler) + oral / axillary thermometer + reflex hammer + perinatal maternal medical history + perinatal maternal card + referral forms + stretcher sheets or robes for the patients + continuous three month supply of the following drugs: [multivitamin / (iron and folic acid) + tetanus vaccine (if stored) + nitrofurantoin + cephalexin + ayre palettes (for consideration of cervical cytology) or swabs + PAP Smear slides] + if lab available: dark field microscope + fluorescent microscope + urinalysis equipment + glucometer + automated cell counter + continuous three month supply of the following lab reagents: [blood type antibody + RH factor antibody + if enzyme immunoassay equipment: (syphilis antigen + HIV/AIDS antigen)]

#### **7030: Emergency care services**

##### *Denominator:*

Total number of basic and complete facilities that provide emergency care services

##### *Numerator:*

#### **Basic facilities:**

Observe the following in the facility: blood pressure apparatus + stethoscope + pinard stethoscope / portable doppler + autoclave / dry heat sterilizer + tank of oxygen / central oxygen supply + reanimation resuscitation bag for adult + neonatal resuscitation bag + laryngoscope + starter kit for curettage + continuous three month supply of the following drugs: [dexamethasone / betamethasone atropine / epinephrine penicillin crystals / IV ampicillin / amoxicillin + benzylpenicillin G procainic + doxycycline + amikacin + chloramphenicol + cefotaxime / ceftriaxone + gentamicin ampules + magnesium sulfate + hydralazine ampules + diazepam + calcium gluconate + ergometrine / oxytocin]

#### **complete facilities:**

Observe the following in the facility: blood pressure apparatus + stethoscope + pediatric stethoscope / neonatal stethoscope + portable doppler / pinard stethoscope + autoclave / dry heat sterilizer + tank of oxygen / central oxygen supply + reanimation resuscitation bag for adult + neonatal resuscitation bag + laryngoscope + MVA kit + equipment for anesthesia + equipment for C-section + continuous

three month supply of the following drugs: [dexamethasone / betamethasone + amikacin sulfate + atropine / epinephrine + IV ampicillin / penicillin crystals / amoxicillin + ceftriaxone + chloramphenicol / metronidazole + magnesium sulfate + hydralazine ampules / hydralazine chlorhydrate + nifedipine + furosemide + diazepam / midazolam chlorhydrate + sevofluran 100% / succinylcholine + ergometrine / oxytocin]

### **7050: Family planning services**

*Denominator:*

Total number of facilities that provide family planning services

*Numerator:*

#### **Ambulatory facilities:**

Observe the following family planning methods in continuous supply in the past three months: male condom + oral contraceptive pill + injectable

#### **Basic facilities:**

Observe the following family planning methods in continuous supply in the past three months: male condom + oral contraceptive pill + injectable + intrauterine device

#### **Complete facilities:**

Observe the following family planning methods in continuous supply in the past three months: [male condom + oral contraceptive pill + injectable + intrauterine device] + trained staff in tubal ligation + trained staff to perform vasectomy

### **7410: Job aid tools**

*Denominator:*

Total number of facilities in the sample

*Numerator:*

Observe at least five of the following job aid tools in the facility:

- 5 P Checklist COC Fact Sheet
- Checklist for Contraception
- DEPO Fact Sheet
- Protect yourself

- Dual Protection
- What you need to Know about Birth Control: preventing unwanted pregnancies brochure
- Use a condom the right way every time you have sex (Poster)
- STIs: Herpes
- STIs: Gonorrhea
- STIs: Genital Warts
- HIV / Aids
- Abstain or use a modern contraceptive method (Poster)

#### **7420: Adolescent education**

*Denominator:*

Total number of facilities in the sample

*Numerator:*

Observe at least five of the following job aid tools in the facility:

- Reproductive life-plan worksheet
- Contraceptives for Adolescents flip-chart
- Thinking of Having a Baby? - 10 reasons not to from those who know... (Brochure)
- Community-Based Adolescent Sexual and Reproductive Health Programme (Brochure)
- S & RH - Don't want to get pregnant right now? Birth control (Flyer)
- Having Sex? Things you need to know (Flyer)
- Growing up? It's a normal part of life! (Puberty - Flyer)
- Seek help from your CHW (Poster)

#### **7460: Patient satisfaction feedback**

*Denominator:*

Total number of facilities in the sample

*Numerator:*

Observe a suggestion box in use at the facility

## **7465: BHIS connection**

### *Denominator:*

Total number of eligible health departments at facilities in the sample (includes 2 ambulatory facilities and 2 departments in each of the 4 hospitals)

### *Numerator:*

Observe the following in the health department: computer + printer + network connection + able to generate or produce one of the following reports from BHIS dated in the last 4 weeks:

- Pregnancies by age range
- Antenatal Gestational Encounter 16 wks
- Antenatal Related Diagnoses
- Antenatal Preexisting Diagnoses
- Postnatal Related Diagnoses
- Live Births by Gender
- Feeding practices of children aged 6 months
- Feeding practices of children aged 12 months
- Nutritional status children < 5 years
- Weight for length/height
- Height for age
- Immunizations by location