

# **SM2015 – El Salvador**

## **18-Month Final Report**

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This Final Report on the *Salud Mesoamérica 2015* (SM2015) 18-month El Salvador Health Facility Survey was produced in agreement with the Inter-American Development Bank (IDB). All analysis 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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## Chapter 1 SURVEY METHODOLOGY

### 1.1 Overview

*Salud Mesoamérica 2015 (SM2015)* 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 financing model (RBF) 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 reproductive, maternal and neonatal health services (including immunization and nutrition services) for the poorest quintile of the population.

The objectives of the SM2015 evaluation are to assess whether countries are reaching the targeted indicators set by the initiative and to evaluate the impact of specific interventions. In El Salvador, baseline data were collected at households and health facilities in intervention areas. The 18-month follow-up data collection took place at health facilities only. Future data collection will occur at 36 and 54 months at households and health facilities. This document describes the 18-month follow-up results in health facilities.

### 1.2 Health facility survey

The health facility survey is one of two (the other being a household survey) components of the overall data collection method employed in the initiative. The pairing of the two types of surveys is a defining and innovative feature designed to most accurately capture select key indicators. 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. These extractions capture the various medical complications that mothers and infants experience, along with how each case was treated. It also assesses the medical care provided before, during, and after normal deliveries. Importantly, this survey captures changes produced by interventions at the level of the health services access point, the health facility, which may foretell changes in population health outcomes. The 18-month health facility survey, recounted in this report, measured follow-up estimates of various health indicators with the aim of monitoring future changes in those indicators.

### 1.3 Contents and methods for data collection

#### 1.3.1 Contents of the 2014 18-month El Salvador health facility survey

The 18-month health facility survey includes 3 components: an interview questionnaire, an observation checklist, and medical record reviews. The questionnaire captures information reported by the facility director, manager, or person in charge of the health facility. 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 3 months prior to the survey. The medical record review assesses the record-keeping of the facilities and

captures facilities' treatment practices. In each part of the survey, data is 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. For the topics of child and maternal care and family planning, information is collected on the types of services provided, components of the care offered, equipment available, and quality of record keeping.

### **1.3.2 Methods of data collection**

The facility survey is conducted using a computer-assisted personal interview (CAPI). The CAPI was programmed using DatStat Illume and installed onto computer netbooks which are used by the surveyors throughout all data collection components. 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, and decrease data entry errors.

### **1.4 Sampling**

For this evaluation, a sample of 60 health facilities was selected from a list of all facilities serving the municipalities covered by the SM2015 initiative. This list was constructed according to a referral network outlined by the Ministry of Health. All hospitals and specialized ECOS serving SM2015 areas were included in the sample, due to small numbers. From the remaining family ECOS (ambulatory level), a simple random sample was drawn to achieve the quota of 60 total facilities.

For the medical record review, a systematic sampling method was used to reach the required sample of complications and delivery records in each facility, with some records for rare subtypes of complications manually over-sampled to get enough cases for the estimation of indicators. Records for all conditions were selected according to a quota set considering the Essential Obstetric and Neonatal Care (EONC) level that each facility provides. Cases of normal deliveries, maternal complications, and neonatal complications were sampled at random from Ministry of Health (Ministerio de Salud) registries. Records of antenatal care, postnatal care, and child care were selected using systematic sampling from in-facility registries of records.

### **1.5 Survey implementation**

#### **1.5.1 Data collection instruments**

All health facility surveys were conducted using computer netbooks equipped with CAPI programs (See Section 1.3.2)

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

Training sessions and health facility pilot surveys were conducted in El Salvador in January 2014. The 10 surveyors had medical backgrounds (physicians and nurses) and underwent four days of training. The training included an introduction to the initiative, proper conduct of the survey, in-depth review of the instrument, and hands-on training on the CAPI software. Training was followed by a two-day pilot of all components of the survey at currently operating health facilities.



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

As described in Section 1.3.2, data were collected using computer netbooks equipped with CAPI software. A lead surveyor 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 health facility instrument 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 13. Performance indicators were calculated at IHME following the indicator definitions provided by IDB. This report provides detailed information on key performance and monitoring indicator components from the 60 facilities selected in the intervention area in El Salvador.

## Chapter 2 FACILITY-LEVEL INFRASTRUCTURE, RESOURCES, MANAGEMENT, AND SUPPORT

### 2.1 General description

#### 2.1.1 Health facility classification

A total of 60 facilities in intervention areas were surveyed for the 18-month evaluation. There are 51 ambulatory EONC health units and 9 complete EONC health units included in the sample. Of all units classified as ambulatory EONC level, there is an important distinction between the facility types: “Family ECOS” and “Specialized ECOS”. While Family ECOS consist of one staff team serving a health unit, Specialized ECOS may consist of multiple staff teams that are based within the same physical structure or location. Health centers classified as Specialized ECOS include a team of specialized health care professionals, in addition to the more basic Family ECOS staff teams.

Family ECOS that are combined with Specialized ECOS each serve separate populations from designated areas; therefore, they hold separate registries and medical records. However, as these staffing teams are based at the same physical location, they are evaluated as a single unit in all indicators, with the exception of the indicator relating to staff composition.

**Table 2.1.1** Health facility classification

| EONC classification | Number |
|---------------------|--------|
| Ambulatory          | 51     |
| Complete            | 9      |
| Total               | 60     |

#### 2.1.2 Type of health facility

In contrast to the baseline evaluation, data were collected at hospitals instead of health centers at the 18-month evaluation. All indicator values at the baseline and the 18-month evaluations are restricted to data from ECOS. The sample sizes from baseline and 18-month data collection are further detailed in Table 2.1.2. The bulk of this report will detail the 18-month evaluation, although data from the baseline evaluation will also be included in order to assess key performance indicators, and the progression of those indicator values over time.

**Table 2.1.2** Health facility sample comparison

| Facility type    | BASELINE   | 18 MONTH   |
|------------------|------------|------------|
|                  | Number (%) | Number (%) |
| Family ECOS      | 55 (84.6)  | 48 (80)    |
| Specialized ECOS | 3 (4.6)    | 3 (5)      |
| Health center    | 7 (10.7)   | N/A        |
| Hospital         | N/A        | 9 (15)     |
| Total            | 65 (100)   | 60 (100)   |

### 2.1.3 Geographical representation

Facilities surveyed for the 18-month evaluation were located in 21 municipalities in a total of 8 departments (Table 2.1.3).

**Table 2.1.3** Geographical representation

| Department   | Municipality         | No. of facilities |
|--------------|----------------------|-------------------|
| Cabañas      | Ilobasco             | 9                 |
|              | Sensuntepeque        | 5                 |
| Morazan      | San Francisco Gotera | 1                 |
|              | Sociedad             | 3                 |
| La Union     | El Sauce             | 3                 |
|              | La Union             | 1                 |
| La Libertad  | Chiltiupan           | 1                 |
|              | La Libertad          | 1                 |
| Cuscatlan    | Cojutepeque          | 1                 |
|              | Monte San Juan       | 3                 |
|              | San Cristobal        | 3                 |
| San Vicente  | Apastepeque          | 3                 |
|              | San Esteban Catarina | 2                 |
|              | San Ildefonso        | 2                 |
|              | San Vicente          | 1                 |
|              | Tecoluca             | 8                 |
| Ahuachapan   | Ahuachapán           | 1                 |
|              | Tacuba               | 6                 |
| La Paz       | San Antonio Masahuat | 2                 |
|              | Santa Maria Ostuma   | 3                 |
|              | Zacatecoluca         | 1                 |
| <b>TOTAL</b> | <b>21</b>            | <b>60</b>         |

### 2.1.4 Medical record extraction

The 18-month health facility survey included a review of 1,621 medical records. The number and type of medical records reviewed varied depending on the type of facility and the services it provided. Records of maternal and neonatal complications were assessed only at the EONC-complete level. Records for child inscription and diarrhea were only reviewed in ambulatory facilities (Table 2.1.4).

**Table 2.1.4** Number of records by facility classification (EONC level)

|                        | Ambulatory | Complete | Total |
|------------------------|------------|----------|-------|
| Antenatal care         | 273        | 10       | 283   |
| Delivery               | 19         | 190      | 209   |
| Post partum care       | 11         | 112      | 123   |
| Maternal complications | 0          | 213      | 213   |
| Neonatal complications | 0          | 209      | 209   |
| Diarrhea               | 212        | 0        | 212   |
| Child inscription      | 372        | 0        | 372   |
| Total medical records  | 887        | 734      | 1621  |

### 2.1.5 Referrals

All hospitals and Specialized ECOS receive patients referred from other facilities. Less than half (43.8%) of Family ECOS reported the same.

### 2.1.6 Governing authority

All health facilities were public institutions governed by the Ministry of Health (Ministerio de Salud).

## 2.2 Basic infrastructure

### 2.2.1 Electricity and Water

In the health facility questionnaire, facility managers are asked about sources of electricity and water serving the facility. At the ambulatory level, 85.4% of Family ECOS and 100% of Specialized ECOS reported a functional electricity source. In total, 97.7% of all ECOS used a central electricity supply and 2.3% used an in-facility generator. All hospitals had functional electricity and used a central electricity supply; 33.3% also had an in-facility generator.

The majority of ECOS (70.6%) had water piped into the facility. Most hospitals had water piped in, at 88.9%, with facility wells also being an important source. Table 2.2.1 details the sources of electricity and water available at facilities. Interviewers asked facility representatives to indicate all sources of electricity and water for the health unit; therefore representatives could indicate more than one source serving the facility.

**Table 2.2.1** Electricity and water

|                        | Ambulatory |      |     | Complete |      |      |
|------------------------|------------|------|-----|----------|------|------|
|                        | N          | %    | SE  | N        | %    | SE   |
| Functional electricity | 51         | 86.3 | 4.8 | 9        | 100  |      |
| DK/DR                  | 0          |      |     | 0        |      |      |
| Source of electricity  |            |      |     |          |      |      |
| Central supply         | 44         | 97.7 | 2.3 | 9        | 100  |      |
| Private supply         | 44         | 0    |     | 9        | 0    |      |
| In-facility generator  | 44         | 2.3  | 2.3 | 9        | 33.3 | 15.7 |
| Solar generator        | 44         | 0    |     | 9        | 0    |      |
| Other source           | 44         | 2.3  | 2.3 | 9        | 0    |      |
| DK/ DR                 | 0          |      |     | 0        |      |      |
| Source of water        |            |      |     |          |      |      |
| Piped into facility    | 51         | 70.6 | 6.4 | 9        | 88.9 | 10.5 |
| Public well            | 51         | 11.8 | 4.5 | 9        | 0    |      |
| Facility well          | 51         | 2    | 1.9 | 9        | 44.4 | 16.6 |
| Unprotected well       | 51         | 0    |     | 9        | 0    |      |
| Hand pump              | 51         | 0    |     | 9        | 0    |      |
| Bottled water          | 51         | 3.9  | 2.7 | 9        | 0    |      |
| Tanker truck           | 51         | 0    |     | 9        | 0    |      |
| Rain water             | 51         | 0    |     | 9        | 0    |      |
| Other                  | 51         | 21.6 | 5.8 | 9        | 0    |      |
| DK/ DR                 | 0          |      |     | 0        |      |      |

### 2.2.2 Internet access

Only 30% of all facilities reported having access to the internet. More specifically, 12.5% of Family ECOS and 100% of Specialized ECOS and hospitals had internet access.

### 2.2.3 Access to safe blood

In the questionnaire component of the survey, health facility managers at hospitals are asked to indicate whether the facility has access to safe blood. All hospitals reported access to safe blood.

## 2.3 Personnel

### 2.3.1 Personnel in ECOS

In the questionnaire component of the survey, health facility managers are asked to indicate the number and availability of certain staff employed at the facility. Family ECOS and Specialized ECOS are evaluated based on separate criteria. Specialized ECOS that have Family ECOS within the same unit are asked to provide information on the personnel at each ECOS separately. Therefore, 53 Family ECOS are evaluated for the indicator related to staff composition for the 18-month evaluation.

Family ECOS that consist of at least 1 general physician, 1 nurse, 1 polyvalent, and 3 health promoters

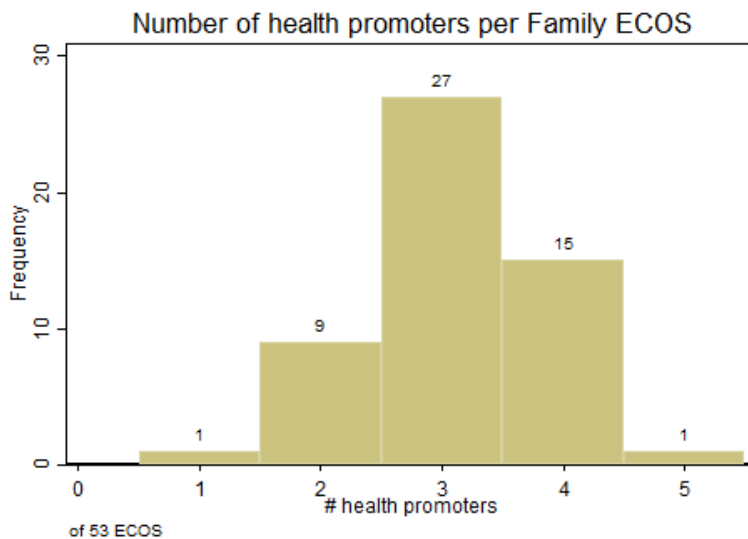
meet the staff composition indicator. Table 2.3.1 shows the changes in staffing at Family ECOS from baseline to the follow-up evaluation.

Although the average number of personnel at the 18-month evaluation suggest that all Family ECOS are meeting staffing requirements, only 77.4% of Family ECOS met the necessary criteria. This is attributed to the uneven distribution of health promoters across all ECOS. As seen in Figure 2.3.1, ten facilities have less than three health promoters on staff and therefore did not meet the indicator. This is likely due to one health unit that split (after the baseline study was conducted) into several sub-units, causing personnel to be distributed across multiple units.

**Table 2.3.1** Personnel in Family ECOS

|                 | BASELINE    |      |      | 18 MONTH    |      |      |
|-----------------|-------------|------|------|-------------|------|------|
|                 | Family ECOS |      |      | Family ECOS |      |      |
|                 | N           | mean | SE   | N           | mean | SE   |
| Doctor          | 51          | 1.1  | 0.12 | 53          | 1.4  | 0.15 |
| Nurse           | 51          | 2    | 0.09 | 53          | 1.1  | 0.07 |
| Polyvalent      | 50          | 0.8  | 0.06 | 53          | 1.1  | 0.08 |
| Health promoter | 50          | 3.2  | 0.14 | 53          | 3.1  | 0.11 |

**Figure 2.3.1** Number of health promoters per Family ECOS at 18-month evaluation



Specialized ECOS meet the staff composition indicator when they employ at least 1 pediatrician, 1 internist, 1 OB/GYN, 1 nurse, 1 auxiliary nurse, 3 dentists, 1 physiotherapist, and 1 health educator. In general, specialized ECOS are well staffed, with only one of the three facilities operating without an internist on-staff. Table 2.3.2 shows the transition in staffing among specialized ECOS from the baseline to the follow-up evaluation.

**Table 2.3.2** Personnel in Specialized ECOS

|                  | BASELINE         |      |     | 18 MONTH         |      |     |
|------------------|------------------|------|-----|------------------|------|-----|
|                  | Specialized ECOS |      |     | Specialized ECOS |      |     |
|                  | N                | mean | SE  | N                | mean | SE  |
| Pediatrician     | 3                | 1    |     | 3                | 1    |     |
| Internist        | 3                | 0.7  | 0.3 | 3                | 0.7  | 0.3 |
| OB/GYN           | 3                | 1    |     | 3                | 1    |     |
| Nurse            | 3                | 6.7  | 4.2 | 3                | 1.7  | 0.3 |
| Auxiliary nurse* | N/A              | N/A  | N/A | 3                | 2.3  | 1.3 |
| Dentists         | 3                | 2.7  | 0.3 | 3                | 4.7  | 1.2 |
| Physiotherapist  | 3                | 1    |     | 3                | 1    |     |
| Health educator  | 3                | 1    | 0.6 | 3                | 1    |     |

\*At baseline, the specialized ECOS were not asked to indicate the presence of auxiliary nurses. This may be accounted for in the number given for nurses.

### 2.3.2 Personnel in hospitals

Directors of hospitals are asked to indicate the number and availability of a large array of staff employed at the facility. Hospitals were not evaluated in the baseline round of data collection. Therefore, all data on hospital staff is from the 18-month evaluation. Table 2.3.3 details the average number of personnel reported per category in hospitals.

**Table 2.3.3** Personnel in hospitals

| Personnel type               | Hospitals |      |      |
|------------------------------|-----------|------|------|
|                              | N         | mean | SE   |
| Auxiliary nurse              | 9         | 68.6 | 37.2 |
| Nurse                        | 9         | 42.8 | 38.8 |
| General physician            | 9         | 17.8 | 14.5 |
| Laboratory technician        | 9         | 13.6 | 6.3  |
| OBGYN                        | 9         | 8    | 3.2  |
| Pharmacist                   | 9         | 7.3  | 4.2  |
| Polyvalent                   | 9         | 6.9  | 4.1  |
| Ambulance driver/ polyvalent | 9         | 6.7  | 1.9  |
| Surgeon                      | 9         | 5.9  | 7.5  |
| Pediatrician                 | 9         | 5.9  | 6.2  |
| Radiology technician         | 9         | 5.7  | 2.7  |
| Anesthesiologist             | 9         | 4.7  | 4.2  |
| Internist                    | 9         | 3.6  | 1.9  |
| Physiotherapist              | 9         | 3.2  | 2.1  |
| Social worker                | 9         | 3    | 2    |
| Dentist                      | 9         | 1.7  | 1.2  |
| Nutritionist                 | 9         | 1.2  | 0.7  |
| Emergency medical technician | 9         | 0.7  | 2    |
| Health educator              | 9         | 0.2  | 0.4  |
| Midwife                      | 9         | 0    | 0    |

All hospitals reported providing services 24 hours a day and 7 days a week (including weekends and holidays). In total, 55.6% of hospitals reported that an internist was available on call 24/7, 88.9% reported a gynecologist-obstetrician was available on call 24/7, and 55.6% reported that an anesthesiologist was available on call 24/7.

According to the indicator related to the constant availability of personnel, hospitals should have the following staff available on call to provide services 24 hours a day and 7 days a week: internist, gynecologist-obstetrician, and anesthesiologist. Of the nine hospitals in our sample, 44.4% met this requirement (Table 2.3.4).

**Table 2.3.4** 24/7 availability of hospital staff

| 24/7 availability of staff                                | Hospitals |      |      |
|-----------------------------------------------------------|-----------|------|------|
|                                                           | N         | %    | SE   |
| Internist                                                 | 9         | 55.6 | 16.6 |
| Gynecologist –obstetrician                                | 9         | 88.9 | 10.5 |
| Anesthesiologist                                          | 9         | 55.6 | 16.6 |
| Internist + Gynecologist –obstetrician + Anesthesiologist | 9         | 44.4 | 16.6 |



## Chapter 3 CHILD HEALTH

### 3.1 Child services offered – a background

All ECOS and hospitals in the 18-month evaluation provide child health care services and vaccination services.

**Table 3.1.1** Child health care services provision

|                                                     | Ambulatory |      |      | Complete |     |    |
|-----------------------------------------------------|------------|------|------|----------|-----|----|
|                                                     | N          | %    | SE   | N        | %   | SE |
| Unit offers child services                          | 51         | 100  |      | 9        | 100 |    |
| Unit vaccinates children under 5                    | 51         | 100  |      | 9        | 100 |    |
| Child care room                                     |            |      |      |          |     |    |
| Private room with visual and auditory privacy       | 51         | 78.4 | 5.76 | 9        | 100 |    |
| Non-private room without auditory or visual privacy | 51         | 5.9  | 3.29 | 9        | 0   |    |
| Visual privacy only                                 | 51         | 15.7 | 5.09 | 9        | 0   |    |

### 3.2 Child health care equipment and pharmacy inputs

In the health facility survey observation module, interviewers checked the availability and functional status of inputs needed for child care among children under 5 years old. The tables below (Tables 3.2.1 - 3.2.2) list medical equipment and pharmacy inputs relating to basic child health care in facilities that provide these services. Items were observed and checked for functionality by the surveyors, rather than merely reported by staff.

According to the performance indicator related to the availability of supplies and equipment needed for child care, all ECOS should have at least one functional infant scale, standing balance/scale for children and thermometer observed on the day of the survey, as well as availability of oral rehydration salts, zinc, and antihelmintics. Family ECOS at the 18-month evaluation were generally better equipped for basic child care services as compared to the baseline evaluation.

**Table 3.2.1** Child health care supplies and equipment in Family ECOS

|                                  | BASELINE    |      |     | 18 MONTH    |      |     |
|----------------------------------|-------------|------|-----|-------------|------|-----|
|                                  | Family ECOS |      |     | Family ECOS |      |     |
|                                  | N           | %    | SE  | N           | %    | SE  |
| Infant scale                     | 55          | 89.1 | 4.2 | 48          | 95.8 | 2.9 |
| Child Scale                      | 55          | 87.3 | 4.5 | 48          | 100  |     |
| Thermometer                      | 55          | 96.4 | 2.6 | 48          | 100  |     |
| Oral rehydration salts           | 55          | 89.1 | 4.2 | 48          | 97.9 | 2.1 |
| Zinc                             | 55          | 85.5 | 4.8 | 48          | 97.9 | 2.1 |
| Anthelmintics*                   | 55          | 49.1 | 6.8 | 48          | 100  |     |
| All above supplies and equipment | 55          | 38.2 | 6.6 | 48          | 91.7 | 4   |

\* Baseline only captures Albendazole but 18 month captures Albendazole or Mebendazole

Although none of the Specialized ECOS had all required supplies and equipment available at the baseline evaluation, all of them met all requirements at the 18-month evaluation.

**Table 3.2.2** Child health care supplies and equipment in Specialized ECOS

|                                  | BASELINE         |      |      | 18 MONTH         |     |  |
|----------------------------------|------------------|------|------|------------------|-----|--|
|                                  | Specialized ECOS |      |      | Specialized ECOS |     |  |
|                                  | N                | %    |      | N                | %   |  |
| Infant scale                     | 3                | 66.7 | 27.2 | 3                | 100 |  |
| Child Scale                      | 3                | 66.7 | 27.2 | 3                | 100 |  |
| Thermometer                      | 3                | 100  |      | 3                | 100 |  |
| Oral rehydration salts           | 3                | 100  |      | 3                | 100 |  |
| Zinc                             | 3                | 100  |      | 3                | 100 |  |
| Anthelmintics*                   | 3                | 33.3 | 27.2 | 3                | 100 |  |
| All above supplies and equipment | 3                | 0    |      | 3                | 100 |  |

\* Baseline only captures Albendazole but 18 month captures Albendazole or Mebendazole

According to the monitoring indicator related to the availability of supplies and equipment needed for child care, health facilities were evaluated for certain equipment, pharmacy inputs and vaccines needed for the provision of basic child care services. Tables 3.2.3 and 3.2.4 show the percentage of facilities that met the requirements. The vaccine component of this indicator is further detailed in chapter four (Table 4.4.1).

**Table 3.2.3** Child health care equipment observed and functional

|                                        | ECOS |      |     | Hospitals |      |      |
|----------------------------------------|------|------|-----|-----------|------|------|
|                                        | N    | %    | SE  | N         | %    | SE   |
| Pediatric balance or scale             | 43   | 95.3 | 3.2 | 9         | 77.8 | 13.9 |
| Standing balance or scale for children | 43   | 100  |     | 9         | 100  |      |
| Tallimeter or stadiometer              | 43   | 65.1 | 7.3 | 9         | 88.9 | 10.5 |
| Stethoscope                            | 43   | 100  |     | n/a       | n/a  | n/a  |
| Oral/Axillary thermometer              | 43   | 100  |     | n/a       | n/a  | n/a  |
| Growth card*                           | 0    |      |     | 0         |      |      |
| Pediatric blood pressure apparatus     | n/a  | n/a  | n/a | 9         | 77.8 | 13.9 |
| Pediatric stethoscope                  | n/a  | n/a  | n/a | 9         | 88.9 | 10.5 |
| All equipment observed and functional  | 43   | 62.8 | 7.4 | 9         | 55.6 | 16.6 |

\* Growth card not captured in survey and thus could not be included in indicator calculation

**Table 3.2.4** Child health care observed drugs and supplements

|                                                                                                           | ECOS |      |     | Hospitals |      |      |
|-----------------------------------------------------------------------------------------------------------|------|------|-----|-----------|------|------|
|                                                                                                           | N    | %    | SE  | N         | %    | SE   |
| Packets/ Envelopes of oral rehydration salt                                                               | 43   | 97.7 | 2.3 | 9         | 88.9 | 10.5 |
| Ferrous sulfate drops                                                                                     | 43   | 100  |     | 9         | 100  |      |
| Albendazol/Mebendazol                                                                                     | 43   | 100  |     | 9         | 100  |      |
| Antibiotic*                                                                                               | 43   | 100  |     | 9         | 100  |      |
| Saline solutions**                                                                                        | n/a  | n/a  | n/a | 0         |      |      |
| All drugs available on the day of the survey                                                              | 43   | 97.7 | 2.3 | 9         | 88.9 | 10.5 |
| *Antibiotics for ECOS include erythromicine/ampicillin/benipenicillin/amoxicillin;                        |      |      |     |           |      |      |
| Antibiotics for hospitals include crystalline penicillin/ampicillin/amoxicillin                           |      |      |     |           |      |      |
| ** Saline solutions not captured in the survey and therefore are excluded from the indicator calculation. |      |      |     |           |      |      |

### 3.3 Enrollment of children in Family ECOS within eight days of birth

In Specialized and Family ECOS, medical records of children born in the last year were selected systematically and reviewed. According to the indicator related to child inscription, all records of child inscription in ECOS should be registered within eight days of birth. Of the 372 records of child inscription reviewed, 90% were registered within eight days after birth.

Table 3.3.1 details the breakdown of child inscription by demographic variables. Interestingly, 90.8% of rural-born children were inscribed in the medical system compared to 87.3% of urban-born children. Also, children born in hospitals have high rates of being registered at an ECOS within eight days, at 91%.

**Table 3.3.1** Child Inscription

|                    | Child inscription <= 8 days |      |      |
|--------------------|-----------------------------|------|------|
|                    | N                           | %    | SE   |
| All records        | 372                         | 90.1 | 1.6  |
| Area:              |                             |      |      |
| Urban              | 79                          | 87.3 | 3.7  |
| Rural              | 293                         | 90.8 | 1.7  |
| Birth attended in: |                             |      |      |
| Hospital           | 354                         | 91.0 | 1.5  |
| U. de S.           | 1                           | 0    |      |
| Household          | 6                           | 83.3 | 15.2 |
| Not registered     | 11                          | 72.7 | 13.4 |
| Social risks:      |                             |      |      |
| Yes                | 9                           | 100  |      |
| No                 | 341                         | 90.3 | 1.6  |
| Not registered     | 22                          | 81.8 | 8.2  |

### 3.4 Diarrhea management

In the medical record review section's diarrhea module, records of children from ECOS who had diarrhea in the last two years were selected systematically and reviewed. Of all diarrhea records reviewed, 97.6%

had the diagnosis of acute diarrhea without dehydration and 2.4% were diagnosed with another condition, such as bacterial or intestinal infection. Table 3.4.1 details the percentage of records with each treatment prescribed. Table 3.4.2 details the management of diarrhea according to the indicator criteria.

**Table 3.4.1** Children treated according to the degree of dehydration

|                                                 | Diarrhea records |      |     |
|-------------------------------------------------|------------------|------|-----|
|                                                 | N                | %    | SE  |
| Treatment prescribed for children with diarrhea |                  |      |     |
| Oral rehydration salts                          | 212              | 96.7 | 1.2 |
| IV rehydration therapy                          | 212              | 0    |     |
| Zinc                                            | 212              | 53.3 | 3.4 |
| Referred                                        | 212              | 0.4  | 0.5 |
| Other                                           | 212              | 9.9  | 2.1 |
| Not registered                                  | 212              | 0.4  | 0.5 |

**Table 3.4.2** Management of Diarrhea

| Record of checks and treatment                                        | Diarrhea records |      |     |
|-----------------------------------------------------------------------|------------------|------|-----|
|                                                                       | N                | %    | SE  |
| General condition                                                     | 212              | 64.2 | 3.3 |
| Eyes                                                                  | 212              | 57.1 | 3.4 |
| Thirst                                                                | 212              | 58.5 | 3.4 |
| Skin assessment                                                       | 212              | 48.6 | 3.4 |
| Pulse recorded                                                        | 212              | 30.2 | 3.2 |
| Capillary refill                                                      | 212              | 20.3 | 2.8 |
| ORS / or intravenous rehydration, oral rehydration therapy prescribed | 212              | 96.7 | 1.2 |
| Diarrhea managed according to the standard (meets all above criteria) | 212              | 13.7 | 2.4 |

### 3.5 Educational materials

Table 3.5.1 lists educational materials observed: both cards handed to caretakers and illustrations of disease management flowcharts hung on the unit walls. These child health educational materials were observed in all but one Family ECOS.

**Table 3.5.1** Child health education and awareness materials

| Educational materials                                      | ECOS |    |     | Hospitals |     |    |
|------------------------------------------------------------|------|----|-----|-----------|-----|----|
|                                                            | N    | %  | SE  | N         | %   | SE |
| Printed materials on child growth and child development    | 51   | 98 | 1.9 | 9         | 100 |    |
| Printed materials on danger signs and symptoms of children | 51   | 98 | 1.9 | 9         | 100 |    |

## Chapter 4 VACCINES

### 4.1 Vaccination services

This chapter summarizes vaccination services, logistics of ordering and receiving vaccine supplies, vaccine availability, and cold chain characteristics. When asked about vaccination services, all health facilities reported that they do vaccinate children. In the observation component of the survey, interviewers first recorded the setting of the room used for immunization and went on to observe related equipment and vaccine stocks in that particular room or area, finding that all hospitals and 70.6% of ECOS utilize private rooms for immunization services (Table 4.1.1).

**Table 4.1.1** Vaccination services

|                                                     | ECOS |      |      | Hospitals |     |    |
|-----------------------------------------------------|------|------|------|-----------|-----|----|
|                                                     | N    | %    | SE   | N         | %   | SE |
| Unit provides vaccination services                  | 51   | 100  |      | 9         | 100 |    |
| Immunization room                                   |      |      |      |           |     |    |
| Private room with visual and auditory privacy       | 51   | 70.6 | 6.38 | 9         | 100 |    |
| Non-private room without auditory or visual privacy | 51   | 7.8  | 3.76 | 9         | 0   |    |
| Visual privacy only                                 | 51   | 15.7 | 5.09 | 9         | 0   |    |
| No privacy                                          | 51   | 5.9  | 3.29 | 9         | 0   |    |

### 4.2 Vaccine logistics

#### 4.2.1 Storage

All hospitals and 76.5% of ECOS report storing vaccines within the facility. 23.5% of ECOS report picking up vaccines from other facilities when services are being provided (Table 4.2.2).

#### 4.2.2 Demand and supply

Facilities that store vaccines on site were asked logistical questions about the supply and demand of vaccines. All facilities reported they ordered vaccine supplies themselves, and ordered the same quantity each time. Facilities varied in their strategies for timing vaccine orders. Responses from facility representatives about the lag between submitting and receiving orders and whether or not they received the correct quantity are further detailed in Table 4.2.2.

**Table 4.2.2 Vaccine demand and supply**

|                                            | ECOS |      |      | Hospitals |      |       |
|--------------------------------------------|------|------|------|-----------|------|-------|
|                                            | N    | %    | SE   | N         | %    | SE    |
| <b>Storage</b>                             |      |      |      |           |      |       |
| Stored in facility                         | 51   | 76.5 | 5.94 | 9         | 100  |       |
| Picked up from another facility            | 51   | 23.5 | 5.94 | 9         | 0    |       |
| Delivered when services are being provided | 51   | 0    |      | 9         | 0    |       |
| None of the above                          | 51   | 0    |      | 9         | 0    |       |
| <b>Demand and Supply</b>                   |      |      |      |           |      |       |
| <b>Ordering Strategy</b>                   |      |      |      |           |      |       |
| Determines own needs                       | 39   | 100  |      | 9         | 100  |       |
| Need determined elsewhere                  | 39   | 0    |      | 9         | 0    |       |
| Both(differ by vaccine)                    | 39   | 0    |      | 9         | 0    |       |
| <b>Quantity to order strategy</b>          |      |      |      |           |      |       |
| Order same amount                          | 39   | 100  |      | 9         | 100  |       |
| Different per vaccine                      | 39   | 0    |      | 9         | 0    |       |
| <b>Time to order strategy</b>              |      |      |      |           |      |       |
| Fixed time, < once/week                    | 39   | 74.4 | 6.99 | 9         | 88.9 | 10.48 |
| Fixed time, > once/week                    | 39   | 10.3 | 4.86 | 9         | 0    |       |
| Order when needed                          | 39   | 15.4 | 5.78 | 9         | 0    |       |
| <b>Time to receive supplies</b>            |      |      |      |           |      |       |
| < 1 week                                   | 39   | 76.9 | 6.75 | 9         | 88.9 | 10.48 |
| 1-2 weeks                                  | 39   | 23.1 | 6.75 | 9         | 11.1 | 10.48 |
| > 2 weeks                                  | 39   | 0    | 0    | 9         | 0    | 0     |
| <b>Reception of quantity ordered</b>       |      |      |      |           |      |       |
| Always                                     | 39   | 92.3 | 4.27 | 9         | 88.9 | 10.48 |
| Almost always                              | 39   | 7.7  | 4.27 | 9         | 11.1 | 10.48 |
| Almost never                               | 39   | 0    |      | 9         | 0    |       |

### 4.3 Fridge availability

In the health facility observation checklist, surveyors observed the vaccine storage area in facilities that provide those services. According to the indicator related to fridge availability for vaccine storage, ECOS meet the criteria if they have at least one electric fridge, kerosene fridge, gas fridge, or solar fridge.

Of all Family ECOS at the baseline evaluation, 39.2% had at least one functional electric fridge. At the 18-month evaluation, 75% used electric fridges and 8.3% had a gas fridge. Table 4.3.1 details the increase in fridge availability for all Family ECOS from the baseline to 18-month evaluation. All Specialized ECOS at the baseline and 18-month evaluation had at least one functioning electric fridge (Table 4.3.2).

**Table 4.3.1** Fridge availability in Family ECOS

| Fridges used for vaccine storage        | BASELINE    |      |     | 18 MONTH    |     |     |
|-----------------------------------------|-------------|------|-----|-------------|-----|-----|
|                                         | Family ECOS |      |     | Family ECOS |     |     |
|                                         | N           | %    |     | N           | %   |     |
| At least one functional electric fridge | 51          | 39.2 | 6.8 | 48          | 75  | 6.3 |
| At least one functional kerosene fridge | 51          | 0    |     | 48          | 0   |     |
| At least one functional gas fridge      | 51          | 0    |     | 48          | 8.3 | 4   |
| At least one functional solar fridge    | 51          | 0    |     | 48          | 0   |     |

\* 8 facilities in the 18-month evaluation did not store vaccines in-facility. These facilities are included in the 18-month value with values of zero for fridge availability.

**Table 4.3.2** Fridge availability in Specialized ECOS

| Fridges used for vaccine storage        | BASELINE         |     |    | 18 MONTH         |     |    |
|-----------------------------------------|------------------|-----|----|------------------|-----|----|
|                                         | Specialized ECOS |     |    | Specialized ECOS |     |    |
|                                         | N                | %   | SE | N                | %   | SE |
| At least one functional electric fridge | 3                | 100 |    | 3                | 100 |    |
| At least one functional kerosene fridge | 3                | 0   |    | 3                | 0   |    |
| At least one functional gas fridge      | 3                | 0   |    | 3                | 0   |    |
| At least one functional solar fridge    | 3                | 0   |    | 3                | 0   |    |

#### 4.4 Vaccines observed

Table 4.3.1 indicates the percentage of facilities at which at least one unit of a specified vaccine was observed by the surveyors at the time of the survey. Vaccine availability was only observed in facilities that stored vaccines on site.

**Table 4.4.1** Vaccine stocks observed

| Vaccine type                | ECOS |      |     | Hospitals |      |      |
|-----------------------------|------|------|-----|-----------|------|------|
|                             | N    | %    | SE  | N         | %    | SE   |
| Pneumococcal conjugate      | 38   | 94.7 | 3.6 | 9         | 100  |      |
| Pentavalent                 | 38   | 100  |     | 9         | 100  |      |
| Polio*                      | 37   | 100  |     | 9         | 100  |      |
| Measles, mumps, and rubella | 38   | 97.4 | 2.6 | 9         | 100  |      |
| Influenza                   | 38   | 18.4 | 6.3 | 9         | 22.2 | 13.9 |
| Rotavirus                   | 38   | 97.4 | 2.6 | 9         | 100  |      |
| BCG                         | 38   | 92.1 | 4.4 | 9         | 100  |      |

\* Missing data on availability of Polio vaccine for one Family ECOS

#### 4.5 Cold chain

Facilities that report routinely storing vaccines are asked questions related to cold chain characteristics. When observing the cold chain practices of each facility, interviewer checked:

- whether health facility routinely stores vaccines

- availability, type and number of refrigerators and thermometers
- availability of temperature monitoring chart for each fridge
- whether temperature monitoring chart was completed twice daily during the last 30 days
- how many days during the last 30 days temperature range was between 2-8 C
- actions taken on the days when temperature was outside of range 2-8 C.

According to the indicator definition, 100% of hospitals and 71.1% of ECOS met the indicator for cold chain managed according to the standards (Table 4.5.1).

**Table 4.5.1** Cold chain according to standards

|                                                                                                                           | ECOS |      |      | Hospitals |     |    |
|---------------------------------------------------------------------------------------------------------------------------|------|------|------|-----------|-----|----|
|                                                                                                                           | N    | %    | SE   | N         | %   | SE |
| Temperature was 2-8 C on the day of the survey                                                                            | 38   | 92.1 | 4.37 | 9         | 100 |    |
| Temperature monitoring chart for each functioning fridge                                                                  | 38   | 94.7 | 3.62 | 9         | 100 |    |
| Temperature was recorded twice daily during the last 30 days for each fridge                                              | 38   | 78.9 | 6.61 | 9         | 100 |    |
| Temperature range was 2-8 C for each fridge in the last 30 days + if temperature wasn't 2-8 C there's a record of actions | 38   | 89.5 | 4.98 | 9         | 100 |    |
| Cold chain according to standards (meets above criteria)                                                                  | 38   | 71.1 | 7.36 | 9         | 100 |    |



## Chapter 5 FAMILY PLANNING

### 5.1 Service provision

This chapter summarizes key indicators related to family planning. In the questionnaire component of the survey, facility representatives are asked about service provision and logistics of ordering and receiving supplies. In the observation component of the survey, interviewers observe the stock of certain family planning methods in the last 3 months.

All ECOS and hospitals reported providing family planning services in-facility (Table 5.1.1). Interviewers recorded the setting of the room used for family planning services, finding that all complete level and most ambulatory level units offer private rooms for patients seeking family planning services. Contraceptive methods are provided and stored by all facilities in the 18-month evaluation.

**Table 5.1.1** Family Planning (FP) service provision

|                                                     | ECOS |      |      | Hospitals |     |    |
|-----------------------------------------------------|------|------|------|-----------|-----|----|
|                                                     | N    | %    | SE   | N         | %   | SE |
| Offers FP services                                  | 51   | 100  |      | 9         | 100 |    |
| FP room                                             |      |      |      |           |     |    |
| Private room with visual and auditory privacy       | 51   | 84.3 | 5.09 | 9         | 100 |    |
| Non-private room without auditory or visual privacy | 51   | 2    | 1.94 | 9         | 0   |    |
| Visual privacy only                                 | 51   | 13.7 | 4.82 | 9         | 0   |    |
| FP Storage                                          |      |      |      |           |     |    |
| Yes, stores contraceptives                          | 51   | 100  |      | 9         | 100 |    |
| No, delivered when services are being provided      | 51   | 0    |      | 9         | 0   |    |

### 5.2 Observed contraception methods and reported family planning services

Table 5.2.1 details the percent of ECOS and hospitals in which the surveyor observed at least one unit of a given contraception method at the time of the survey. In general, complete level facilities were better equipped for family planning services than ambulatory level facilities.

**Table 5.2.1** Observed contraception methods and reported services

|                                          | ECOS |      |     | Hospitals |      |      |
|------------------------------------------|------|------|-----|-----------|------|------|
|                                          | N    | %    | SE  | N         | %    | SE   |
| Observed FP methods                      |      |      |     |           |      |      |
| Any pill                                 | 51   | 100  |     | 9         | 100  |      |
| Combined oral pill                       | 51   | 98   | 1.9 | 9         | 100  |      |
| Progestin only pill                      | 51   | 15.7 | 5.1 | 9         | 55.6 | 16.6 |
| Any injectable                           | 51   | 98   | 1.9 | 9         | 100  |      |
| Combined injectable (1 month)            | 51   | 98   | 1.9 | 9         | 88.9 | 10.5 |
| Progestin only injectable (3 months)     | 51   | 52.9 | 7   | 9         | 66.7 | 15.7 |
| Male condom                              | 51   | 100  |     | 9         | 100  |      |
| Female condom                            | 51   | 5.9  | 3.3 | 9         | 22.2 | 13.9 |
| IUD*                                     | 51   | 94.1 | 3.3 | 9         | 100  |      |
| IUD insertion kit                        | N/A  | N/A  | N/A | 9         | 100  |      |
| Spermicide                               | 51   | 0    |     | 9         | 0    |      |
| Diaphragm                                | 51   | 0    |     | 9         | 0    |      |
| Emergency contraception pill             | 51   | 43.1 | 6.9 | 9         | 55.6 | 16.6 |
| Implant                                  | N/A  | N/A  | N/A | 9         | 0    |      |
| Reported services                        |      |      |     |           |      |      |
| Offers pregnancy test                    | 51   | 76.5 | 5.9 | 9         | 100  |      |
| Trained doctor for IUD insertion         | 51   | 64.7 | 6.7 | 9         | 100  |      |
| Trained doctor to perform tubal ligation | N/A  | N/A  | N/A | 9         | 100  |      |
| Trained doctor to perform vasectomy      | N/A  | N/A  | N/A | 9         | 66.7 | 15.7 |

\* IUD = intrauterine device

### 5.3 Composite family planning indicators

Facilities that meet the requirements of the composite family planning indicator offer family planning services and have certain family planning methods as observed by surveyors at the time of the survey.

Family and Specialized ECOS meet the criteria if they have the following family planning methods: male condom, combined oral pill or progestin only pill, combined injectable or progestin-only injectable, and intrauterine device (IUD).

Table 5.3.1 notes availability of family planning methods in Family ECOS. Male condoms were present in 100% of facilities at the 18-month study, an increase from 89.1% of facilities in the baseline. IUDs became much more prevalent at 93.8% in comparison to 14.5% at the baseline.

**Table 5.3.1** Availability of family planning methods in Family ECOS

|                           | BASELINE    |      |     | 18 MONTH    |      |     |
|---------------------------|-------------|------|-----|-------------|------|-----|
|                           | Family ECOS |      |     | Family ECOS |      |     |
|                           | N           | %    | SE  | N           | %    | SE  |
| Male condom               | 55          | 89.1 | 4.2 | 48          | 100  |     |
| Any pill                  | 55          | 87.3 | 4.5 | 48          | 100  |     |
| Any injectable            | 55          | 89.1 | 4.2 | 48          | 97.9 | 2.1 |
| IUD                       | 55          | 14.5 | 4.8 | 48          | 93.8 | 3.5 |
| All above methods present | 55          | 14.5 | 4.8 | 48          | 91.7 | 4   |

All Specialized ECOS had an observed availability of male condoms, any pill, any injectable, and an IUD at the baseline and 18-month evaluations (Table 5.3.2).

**Table 5.3.2** Availability of family planning methods in Specialized ECOS

|                | BASELINE         |     |    | 18 MONTH         |     |    |
|----------------|------------------|-----|----|------------------|-----|----|
|                | Specialized ECOS |     |    | Specialized ECOS |     |    |
|                | N                | %   | SE | N                | %   | SE |
| Male condom    | 3                | 100 |    | 3                | 100 |    |
| Any pill       | 3                | 100 |    | 3                | 100 |    |
| Any injectable | 3                | 100 |    | 3                | 100 |    |
| IUD            | 3                | 100 |    | 3                | 100 |    |

The family planning monitoring indicator is displayed in Table 5.3.3 and measures the continuous availability of family planning methods to facilities who provide the service. The family planning monitoring indicator requires health facilities to have continuous availability in the past three months of male condom, pill, and injectable. According to this indicator, hospitals are also required to have continuous availability of IUDs, the availability on the day of the survey of an IUD insertion kit, and trained staff to perform female and male sterilization.

**Table 5.3.3** Continuous availability of family planning methods

|                                                                     | ECOS |     |      | Hospitals |      |      |
|---------------------------------------------------------------------|------|-----|------|-----------|------|------|
|                                                                     | N    | %   | SE   | N         | %    | SE   |
| Male condom                                                         | 51   | 100 | 0    | 9         | 100  |      |
| Any pill                                                            | 51   | 100 | 0    | 9         | 100  |      |
| Any injectable                                                      | 51   | 98  | 1.96 | 9         | 100  |      |
| IUD*                                                                | n/a  | n/a | n/a  | 9         | 100  |      |
| IUD insertion kit*                                                  | n/a  | n/a | n/a  | 9         | 100  |      |
| Continuous availability of all items in the previous three months** | 51   | 98  | 1.96 | 9         | 100  |      |
| Trained doctor to perform female and male sterilization*            | n/a  | n/a | n/a  | 9         | 66.7 | 16.7 |

\*Item not required at any ambulatory facilities

\*\*Overall availability including availability of all inputs on the day of the survey and no stock out in the previous three months for all inputs excluding the IUD insertion kit

## 5.4 Teaching and awareness

Table 5.4.1 illustrates the percent of facilities that promote family planning through counseling, teaching, and educational graphics posted in the facility.

**Table 5.4.1** Teaching and awareness on family planning and STIs

|                                                                                              | ECOS |      |     | Hospitals |     |    |
|----------------------------------------------------------------------------------------------|------|------|-----|-----------|-----|----|
|                                                                                              | N    | %    | SE  | N         | %   | SE |
| Individual FP counseling                                                                     | 51   | 100  |     | 9         | 100 |    |
| Group FP counseling                                                                          | 51   | 100  |     | 9         | 100 |    |
| Guidelines or protocols for FP                                                               | 51   | 90.2 | 4.2 | 9         | 100 |    |
| Guidelines for care of people with data suggestive of Sexually Transmitted Infections        | 51   | 92.2 | 3.8 | 9         | 100 |    |
| Other guidelines or protocols for diagnosis and treatment of Sexually Transmitted Infections | 51   | 92.2 | 3.8 | 9         | 100 |    |

## Chapter 6 MATERNAL HEALTH: ANTENATAL CARE (ANC), DELIVERY, AND POSTPARTUM CARE (PPC)

### 6.1 Service provision

This chapter summarizes key indicators related to 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 also reviewed antenatal, delivery, and immediate postpartum care medical records in all applicable facilities.

All hospitals reported offering antenatal, delivery, and postpartum care services. Interviewers observed private rooms with auditory and visual privacy for these services in all hospitals in the 18-month evaluation.

All ambulatory level facilities reported offering antenatal care services. The antenatal care room, as observed by surveyors, was private with auditory and visual privacy for the majority of facilities. However, non-private rooms and rooms with visual privacy only were also observed (Table 6.1.1). Questions about delivery and postpartum care were not asked at the ambulatory level.

**Table 6.1.1** ANC service provision in ECOS

|                                                     | ECOS |      |     |
|-----------------------------------------------------|------|------|-----|
|                                                     | N    | %    | SE  |
| Offers ANC services                                 | 51   | 100  |     |
| ANC room                                            |      |      |     |
| Private room with auditory and visual privacy       | 51   | 82.4 | 5.3 |
| Non-private room without auditory or visual privacy | 51   | 2    | 1.9 |
| Visual privacy only                                 | 51   | 15.7 | 5.1 |
| No privacy                                          | 51   | 0    |     |

### 6.2 ANC - PPC equipment

In the health facility observation section, surveyors observed and recorded the presence and functionality of equipment used for basic antenatal care services. According to the composite ANC indicator, Family and Specialized ECOS should have, as observed by surveyors at the time of the survey, the following basic equipment: lamp for pelvic exam, blood pressure apparatus, stethoscope, standing scale, and any size vaginal speculum.

Family ECOS were well equipped, with only one facility lacking a functional lamp. This facility also reported not having electricity (Table 6.2.1). Detailed in Table 6.2.2, Specialized ECOS remained well supplied at the 18-month evaluation, with 100% having all necessary inputs observed and functional on the day of the survey.

**Table 6.2.1** Observed and functional ANC - PPC equipment in Family ECOS

|                          | BASELINE    |      |      | 18 MONTH    |      |     |
|--------------------------|-------------|------|------|-------------|------|-----|
|                          | Family ECOS |      |      | Family ECOS |      |     |
|                          | N           | %    | SE   | N           | %    | SE  |
| Lamp for pelvic exam     | 55          | 54.5 | 6.7  | 48          | 97.9 | 2.1 |
| Blood pressure apparatus | 55          | 89.1 | 4.2  | 48          | 100  |     |
| Stethoscope              | 55          | 90.9 | 3.9  | 48          | 100  |     |
| Standing scale           | 55          | 98.2 | 98.2 | 48          | 100  |     |
| Any speculum             | 55          | 74.5 | 5.9  | 48          | 100  |     |

**Table 6.2.2** Observed and functional ANC - PPC equipment in Specialized ECOS

|                          | BASELINE         |     |    | 18 MONTH         |     |    |
|--------------------------|------------------|-----|----|------------------|-----|----|
|                          | Specialized ECOS |     |    | Specialized ECOS |     |    |
|                          | N                | %   | SE | N                | %   | SE |
| Lamp for pelvic exam     | 3                | 100 |    | 3                | 100 |    |
| Blood pressure apparatus | 3                | 100 |    | 3                | 100 |    |
| Stethoscope              | 3                | 100 |    | 3                | 100 |    |
| Standing scale           | 3                | 100 |    | 3                | 100 |    |
| Any speculum             | 3                | 100 |    | 3                | 100 |    |

### 6.3 ANC medical record review

#### 6.3.1 First prenatal care visit before 12 weeks of gestation

According to the indicator related to early catchment for antenatal care (ANC), records of women who visited a Family or Specialized ECOS to receive ANC services, for a birth in the previous two years, should have their first ANC visit with a doctor or nurse within the first trimester of pregnancy, or within 12 weeks of gestation.

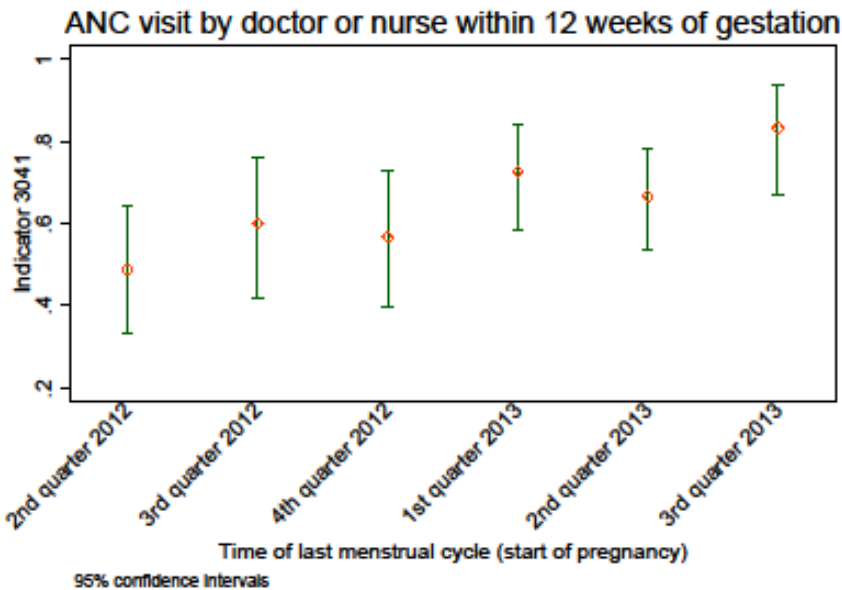
Records of women with date of last menstruation between 03/2012 and 07/2013 were selected systematically and reviewed. The criteria were defined as follows: first ANC visit was attended by a doctor or nurse and the date of the woman's first visit ANC visit minus the date of the woman's last menstrual period was within 12 weeks.

Table 6.3.1 details the percentage of women in both Family ECOS and Specialized ECOS that met the indicator, and furthermore, in which trimester women arrived for their first ANC visit. Figure 6.3.1 details the proportion of ANC records that met the indicator over time from the second quarter of 2012 to the third quarter of 2013. Table 6.3.2 provides the point estimates by quarter.

**Table 6.3.1** First prenatal care visit with a doctor or nurse before 12 weeks of gestation

|                                                                                                        | Family ECOS |      |     | Specialized + Family ECOS |    |     |
|--------------------------------------------------------------------------------------------------------|-------------|------|-----|---------------------------|----|-----|
|                                                                                                        | N           | %    | SE  | N                         | %  | SE  |
| <b>Indicator according to the norm (first visit with doctor or nurse within 12 weeks of gestation)</b> | 240         | 64.6 | 3.1 | 25                        | 68 | 9.3 |
| First ANC visit with a doctor or nurse                                                                 | 240         | 100  | 0   | 25                        | 88 | 6.5 |
| First ANC visit during first trimester of pregnancy (gestational age <= 12 weeks)                      | 240         | 64.6 | 3.1 | 25                        | 76 | 8.5 |
| First ANC visit during second trimester of pregnancy (gestational age > 12 weeks & <= 26 weeks)        | 240         | 30.4 | 3.0 | 25                        | 20 | 8   |
| First ANC visit during third trimester of pregnancy (gestational age > 26 weeks)                       | 240         | 5    | 1.4 | 25                        | 4  | 3.9 |

**Figure 6.3.1** All ANC records meeting early catchment of ANC indicator, by quarter



**Table 6.3.2** All ANC records meeting early catchment of ANC indicator, by quarter

|                  | ANC records |      |     |
|------------------|-------------|------|-----|
|                  | N           | %    | SE  |
| 2nd quarter 2012 | 43          | 48.8 | 7.6 |
| 3rd quarter 2012 | 35          | 60   | 8.3 |
| 4th quarter 2012 | 37          | 56.8 | 8.1 |
| 1st quarter 2013 | 51          | 72.6 | 6.3 |
| 2nd quarter 2013 | 63          | 66.7 | 5.9 |
| 3rd quarter 2013 | 36          | 83.3 | 6.2 |

### 6.3.2 ANC managed according to the norm

In the ANC medical record review component of the survey, interviewers were asked to review all ANC visits in selected medical records of women who gave birth in the previous two years. Tables 6.3.3 details the percentage of women in our sample who had at least four ANC visits with a doctor or nurse and had record of certain check-ups and lab tests performed over the course of pregnancy. The indicator regarding antenatal care managed according to the norm includes the following criteria and is calculated from medical records at Family ECOS:

1. At least four ANC visits at a health facility
2. Each visit attended by a doctor or nurse
3. Each visit with record of physical checkups (weight + blood pressure + fundal height)
4. Fetal checkup for heart rate and movement (if the fetus is between 20-42 weeks)
5. Certain laboratory tests performed at least once during pregnancy

**Table 6.3.3** Four ANC visits with doctor or nurse and managed according to the norm

|                                                                                                     | Family ECOS |      |     |
|-----------------------------------------------------------------------------------------------------|-------------|------|-----|
|                                                                                                     | N           | %    | SE  |
| At least 4 ANC visits with a doctor or nurse                                                        | 182         | 79.1 | 3   |
| Vital signs recorded during each visit                                                              |             |      |     |
| Weight + blood pressure + fundal height                                                             | 182         | 61.0 | 3.6 |
| Fetal checkup for heart rate and movement (if the fetus is between 20-42 weeks during first visit)* | 21          | 71.4 | 9.9 |
| Lab tests performed at least once                                                                   |             |      |     |
| Blood type                                                                                          | 182         | 90.1 | 2.2 |
| Blood glucose level                                                                                 | 182         | 93.4 | 1.8 |
| Hb level                                                                                            | 182         | 82.4 | 2.8 |
| HIV test                                                                                            | 182         | 94.5 | 1.7 |
| Rh test                                                                                             | 182         | 91.8 | 2.0 |
| Urinalysis                                                                                          | 182         | 97.3 | 1.2 |
| Indicator 3030 according to the norm*                                                               | 182         | 46.2 | 3.7 |

\*Fetal heart rate and movements could only be evaluated in the first visit where gestational age was between 20-42 weeks, because gestational age was not captured at each ANC visit in the survey.

### 6.4 Delivery medical record review

#### 6.4.1 Partograph revision in hospitals

Delivery records of women who gave birth in hospitals in the previous two years were selected systematically and reviewed. There are three ways in which the indicator was calculated as met:

1. No partograph observed + woman arrived with imminent birth or elected c-section
2. Partograph observed + Fetal Heart Rate (FHR) + alert curve note if dilation was greater than 4.5 cm + FHR > 120 beats per minute (bpm) or did not surpass the alert curve



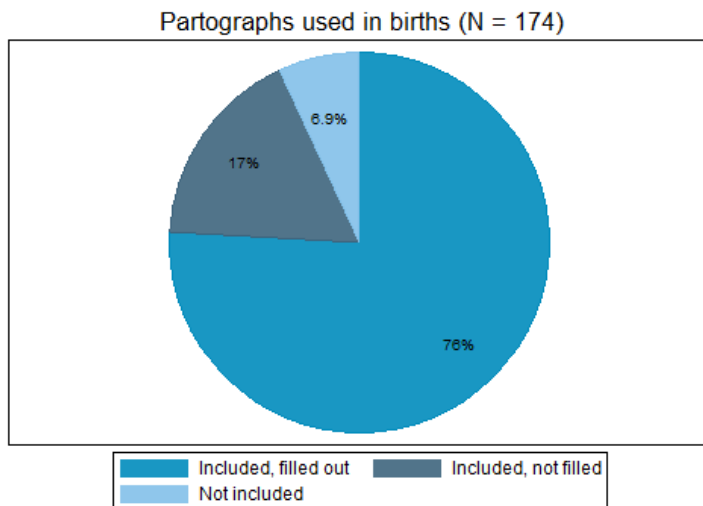
3. Partograph observed + FHR + alert curve note if dilation was greater than 4.5 cm + a note within 30 minute if FHR < 120 bpm or surpassed the alert curve.

Table 6.4.1 details the findings of the partograph records in hospitals. Figure 6.4.1 indicates that 76% of delivery records had a partograph included and filled out. After accounting for women who arrived in imminent birth and C-section, 78.7% of records met the indicator according to the norm.

**Table 6.4.1** Partograph revision

| Partograph revision during birth in Hospitals                                               | N   | %    | SE   |
|---------------------------------------------------------------------------------------------|-----|------|------|
| Partograph included and filled out or woman arrived in imminent birth or elective C-section | 174 | 81.0 | 3.0  |
| Women with dilation > 4.5 cm                                                                | 132 | 95.5 | 1.8  |
| Fetal heart rate and alert curve are recorded if dilation > 4.5 cm                          | 126 | 99.2 | 0.8  |
| Women with alert curve surpassed                                                            | 132 | 52.3 | 4.3  |
| Oxytocin was admistered for women with alert curve surpassed                                | 69  | 98.6 | 1.4  |
| C-section performed for women with alert curve surpassed                                    | 69  | 1.5  | 1.4  |
| Fetal heart rate < 120 lm                                                                   | 132 | 3.8  | 1.7  |
| There exists a note within 30 minutes for FHR <120 lm                                       | 5   | 40   | 21.9 |
| Note indicated artificial rupture of membranes                                              | 2   | 50   | 50   |
| Note indicated clinical monitoring every 15 minutes                                         | 2   | 50   | 50   |
| Note indicated left lateral decubitus                                                       | 2   | 50   | 50   |

**Figure 6.4.1**



### 6.4.2 Active management of delivery

During the review of delivery medical records in hospitals, interviewers reported administration of 10 IU of intramuscular oxytocin after deliveries in the last two years. 88.4% of records reported the administration of oxytocin or another uterotonic after delivery. When considering timing, only 26.8% of delivery records recorded the administration of oxytocin or another uterotonic within one minute after delivery.

## 6.5 Immediate PPC medical record review

### 6.5.1 Immediate PPC for women

Records of women who received postpartum care immediately after birth in the last two years in hospitals were selected systematically and reviewed. According to the country indicator manual, the postpartum care monitoring indicator assesses the record of vital signs immediately after delivery. None of the evaluated records reported blood pressure being checked at discharge. Therefore, none of the postpartum care records were managed according to these standards (Table 6.5.1).

**Table 6.5.1** PPC for women

|                                                | Hospitals |      |     |
|------------------------------------------------|-----------|------|-----|
|                                                | N         | %    | SE  |
| Checked at least four times in the first hour: |           |      |     |
| Blood pressure: diastolic                      | 86        | 25.6 | 4.7 |
| Blood pressure: systolic                       | 86        | 26.7 | 4.7 |
| Pulse                                          | 86        | 23.3 | 4.6 |
| Respiratory rate                               | 86        | 25.6 | 4.7 |
| Temperature                                    | 86        | 27.9 | 4.8 |
| Checked at least twice in the second hour:     |           |      |     |
| Blood pressure: diastolic                      | 86        | 26.7 | 4.8 |
| Blood pressure: systolic                       | 86        | 25.6 | 4.7 |
| Pulse                                          | 86        | 20.9 | 4.4 |
| Respiratory rate                               | 86        | 23.3 | 4.6 |
| Temperature                                    | 86        | 19.8 | 4.3 |
| Checked at discharge:                          |           |      |     |
| Blood pressure                                 | 86        | 0    |     |
| Pulse                                          | 86        | 12.8 | 3.6 |
| Respiratory rate                               | 86        | 22.1 | 4.5 |
| Temperature                                    | 86        | 22.1 | 4.5 |

## Chapter 7 MATERNAL AND NEONATAL HEALTH: COMPLICATIONS

### 7.1 Emergency obstetric and neonatal care service provision

This chapter summarizes key indicators related to the management of maternal and neonatal complications in hospitals. Interviewers observed equipment in the room designated for emergency obstetric and neonatal care and certain related drugs in the pharmacy. In addition, interviewers reviewed medical records of women and neonates with one or more complication.

**Table 7.1.1** Emergency obstetric and neonatal care service provision

|                                                      | Hospitals |      |       |
|------------------------------------------------------|-----------|------|-------|
|                                                      | N         | %    | SE    |
| Emergency room                                       |           |      |       |
| Private room with visual and auditory privacy        | 9         | 66.7 | 15.71 |
| Non-private room without auditory nor visual privacy | 9         | 0    |       |
| Visual privacy only                                  | 9         | 0    |       |
| No privacy                                           | 9         | 0    |       |
| Don't provide this service                           | 9         | 33.3 | 15.71 |

### 7.2 Supplies and equipment needed for emergency obstetric and neonatal care

According to the indicator related to emergency obstetric and neonatal care, all complete EONC facilities providing emergency obstetric and neonatal services should have certain functional equipment and drugs available on the day of the survey. Tables 7.2.1 and 7.2.2 detail the hospitals that meet these specific criteria.

**Table 7.2.1** Observed and functional equipment for emergency care in hospitals

|                                         | Hospitals |      |      |
|-----------------------------------------|-----------|------|------|
|                                         | N         | %    | SE   |
| Anesthesia equipment                    | 6         | 50   | 20.4 |
| Autoclave/Dry heat sterilizer           | 6         | 50   | 20.4 |
| Blood pressure apparatus                | 6         | 83.3 | 15.2 |
| Kit for C-sections                      | 6         | 33.3 | 19.2 |
| Laryngoscope                            | 6         | 83.3 | 15.2 |
| MVA kit/Curettage kit                   | 6         | 83.3 | 15.2 |
| Neonatal/Pediatric stethoscope          | 6         | 66.7 | 19.2 |
| Oxygen tank                             | 6         | 66.7 | 19.2 |
| Portable doppler/Pinard stethoscope     | 6         | 83.3 | 15.2 |
| Reanimation resuscitation bag for adult | 6         | 66.7 | 19.2 |
| Neonatal resuscitation bag              | 6         | 83.3 | 15.2 |
| All equipment observed and functional   | 6         | 16.7 | 15.2 |

**Table 7.2.2** Drugs needed for emergency and neonatal care in hospitals

|                                                                                                                                                                                                                            | Hospitals |      |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|------|
|                                                                                                                                                                                                                            | N         | %    | SE   |
| Oxytocin/Metilergovina/ ergometrina                                                                                                                                                                                        | 6         | 100  |      |
| Dexamethasone/Betamethasone                                                                                                                                                                                                | 6         | 100  |      |
| Antibiotics*                                                                                                                                                                                                               | 6         | 100  |      |
| Chloramphenicol/ Metronidazol**                                                                                                                                                                                            | 0         |      |      |
| Magnesium sulfate                                                                                                                                                                                                          | 6         | 100  |      |
| Hydralazine hydrochloride                                                                                                                                                                                                  | 6         | 100  |      |
| Nifedipine**                                                                                                                                                                                                               | 0         |      |      |
| Furosemide                                                                                                                                                                                                                 | 6         | 100  |      |
| Diazepam/ midazolam                                                                                                                                                                                                        | 6         | 100  |      |
| Sevoflurane                                                                                                                                                                                                                | 6         | 83.3 | 15.2 |
| Succinylcholine                                                                                                                                                                                                            | 6         | 100  |      |
| All drugs available on the day of the survey**                                                                                                                                                                             | 6         | 83.3 | 15.2 |
| * Antibiotics include: Amoxicilina / ampicillin / amikacina / chrystalline penicillin / ceftriaxona. Due to survey programming, these components cannot be evaluated separately as defined in the country indicator manual |           |      |      |
| ** Although indicator 7030 requires the availability of chloramphenicol/ metronidazol and nifedipine, this was not captured in the survey and cannot be included in the indicator calculation                              |           |      |      |

### 7.3 Management of obstetric and neonatal complications

Interviewers reviewed records of women with complications of sepsis, hemorrhage, pre-eclampsia and eclampsia and neonates with sepsis, asphyxia, prematurity, and low birth weight. These records were evaluated for vital signs, laboratory tests, correct treatment, and appropriate procedural actions.

Records of women and infants who had one of the maternal or neonatal complications of interest in the last two years were selected systematically and reviewed. In total, interviewers reviewed the records of 213 women and 209 infants with one or more complication (Tables 7.3.1 - 7.3.2).

**Table 7.3.1** Distribution of obstetric complications

|                          |     |
|--------------------------|-----|
| Women with sepsis        | 45  |
| Women with hemorrhage    | 109 |
| Women with pre-eclampsia | 48  |
| Women with eclampsia     | 11  |
| Total                    | 213 |

**Table 7.3.2** Distribution of neonatal complications

|                                |     |
|--------------------------------|-----|
| Neonates with low birth weight | 62  |
| Neonates with prematurity      | 22  |
| Neonates with sepsis           | 74  |
| Neonates with asphyxia         | 51  |
| Total                          | 209 |

## 7.4 Management of obstetric complications (sepsis, hemorrhage, pre-eclampsia and eclampsia)

### 7.4.1 Maternal sepsis

The maternal complications medical record review evaluated important criteria in the management of maternal sepsis. Detailed in Table 7.4.1, the majority of women with sepsis had record of important vital signs checks (blood pressure, pulse, and temperature), 75.6% had record of antibiotic administration and only 53.3% had a leucocyte test performed.

**Table 7.4.1** Management of sepsis

|                                   | Sepsis records |      |     |
|-----------------------------------|----------------|------|-----|
|                                   | N              | %    | SE  |
| <b>Vital signs</b>                |                |      |     |
| Diastolic blood pressure recorded | 45             | 100  |     |
| Systolic blood pressure recorded  | 45             | 100  |     |
| Pulse recorded                    | 45             | 100  |     |
| Temperature recorded              | 45             | 95.6 | 3.1 |
| <b>Treatment</b>                  |                |      |     |
| Antibiotics administered          | 45             | 75.6 | 6.4 |
| <b>Laboratory tests</b>           |                |      |     |
| Leucocyte count performed         | 45             | 53.3 | 7.4 |

### 7.4.2 Maternal hemorrhage

Detailed in Table 7.4.2, the majority of women with hemorrhage complications did not have record of important laboratory tests performed. Less than half of evaluated hemorrhage complications reported testing of hemoglobin (HB), hematocrit, platelet count, prothrombin time (PT), and partial thromboplastin time (PTT). In addition, only 25.7% of women had record of oxytocin or other uterotonic administration. Diastolic and systolic blood pressure were recorded for all women and a cause was listed for 95.4% of women.

**Table 7.4.2** Management of maternal hemorrhage

|                                           | Hemorrhage records |      |     |
|-------------------------------------------|--------------------|------|-----|
|                                           | N                  | %    | SE  |
| Cause recorded                            | 109                | 95.4 | 2   |
| Vital signs                               |                    |      |     |
| Diastolic blood pressure recorded         | 109                | 100  |     |
| Systolic blood pressure recorded          | 109                | 100  |     |
| Treatment                                 |                    |      |     |
| Oxytocin or other uterotonic administered | 109                | 25.7 | 4.2 |
| Laboratory tests                          |                    |      |     |
| Hemoglobin (HB)                           | 109                | 48.6 | 4.8 |
| Hematocrit                                | 109                | 43.1 | 4.7 |
| Platelet count                            | 109                | 48.6 | 4.8 |
| Protrombin time (PT)                      | 109                | 9.2  | 2.8 |
| Partial thromboplastin time (PTT)         | 109                | 7.3  | 2.5 |

### 7.4.3 Pre-eclampsia and eclampsia

The recording of important vital signs, laboratory tests, and treatments in the management of pre-eclampsia and eclampsia are detailed in Tables 7.4.3 and 7.4.4. All reviewed cases of women with pre-eclampsia and eclampsia had diastolic blood pressure, systolic blood pressure, pulse, and respiratory rate recorded. However, important laboratory tests were not included in a majority of these cases. Least prevalent was the lactate dehydrogenase test in cases of pre-eclampsia and aspartate aminotransferase for women with eclampsia. The outcome of pregnancy was listed in the records of 87.5% of women with pre-eclampsia and 63.6% of women with eclampsia.

**Table 7.4.3** Management of pre-eclampsia

|                                                              | Pre-eclampsia records |      |      |
|--------------------------------------------------------------|-----------------------|------|------|
|                                                              | N                     | %    | SE   |
| Outcome of pregnancy recorded                                | 48                    | 87.5 | 4.8  |
| Vital signs                                                  |                       |      |      |
| Diastolic blood pressure recorded                            | 48                    | 100  |      |
| Pulse recorded                                               | 48                    | 100  |      |
| Respiratory rate recorded                                    | 48                    | 100  |      |
| Patellar reflexes                                            | 48                    | 100  |      |
| Systolic blood pressure recorded                             | 48                    | 100  |      |
| Laboratory tests                                             |                       |      |      |
| Alanine aminotransferase                                     | 48                    | 27.1 | 6.4  |
| Aspartate aminotransferase                                   | 48                    | 27.1 | 6.4  |
| Lactate dehydrogenase                                        | 48                    | 14.6 | 5.1  |
| Platelet count                                               | 48                    | 89.6 | 4.4  |
| Check for urine protein                                      | 48                    | 56.3 | 7.2  |
| Treatment                                                    |                       |      |      |
| Dexamethasone/Betamethasone (if gestational age 26-34 weeks) | 8                     | 0    |      |
| Hydralazine / nifedipine (if diastolic BP>110)               | 4                     | 75   | 21.7 |
| Magnesium sulfate administered                               | 48                    | 70.8 | 6.6  |

**Table 7.4.4** Management of eclampsia

|                                                              | Eclampsia records |      |      |
|--------------------------------------------------------------|-------------------|------|------|
|                                                              | N                 | %    | SE   |
| Outcome of pregnancy recorded                                | 11                | 63.6 | 14.5 |
| <b>Vital signs</b>                                           |                   |      |      |
| Diastolic blood pressure recorded                            | 11                | 100  |      |
| Pulse recorded                                               | 11                | 100  |      |
| Respiratory rate recorded                                    | 11                | 100  |      |
| Patellar reflexes                                            | 11                | 27   | 13.4 |
| Systolic blood pressure recorded                             | 11                | 100  |      |
| <b>Laboratory tests</b>                                      |                   |      |      |
| Alanine aminotransferase                                     | 11                | 54.5 | 15   |
| Aspartate aminotransferase                                   | 11                | 36.4 | 14.5 |
| Lactate dehydrogenase                                        | 11                | 45.5 | 15   |
| Platelet count                                               | 11                | 90.9 | 8.7  |
| Check for urine protein                                      | 11                | 45.5 | 15   |
| <b>Treatment</b>                                             |                   |      |      |
| Dexamethasone/Betamethasone (if gestational age 26-34 weeks) | 1                 | 0    |      |
| Hydralazine / nifedipine (if diastolic BP>110)               | 1                 | 100  |      |
| Magnesium sulfate administered                               | 11                | 90.9 | 8.7  |

## 7.5 Neonatal complications (low birth weight, prematurity, sepsis and asphyxia)

### 7.5.1 Low birth weight (LBW) and prematurity

The neonatal complications medical record review captured important criteria in the management of low birth weight and prematurity. Detailed in Tables 7.5.1 and 7.5.2 are relevant vital signs and laboratory tests as recorded in medical records of neonates with low birth weight and prematurity in the last two years. All neonates were evaluated by a doctor at admission. None of the reviewed records had Silverman score or Downes score reported.

**Table 7.5.1** Management of low birth weight

|                                    | LBW records |      |     |
|------------------------------------|-------------|------|-----|
|                                    | N           | %    | SE  |
| Evaluated by a doctor at admission | 62          | 100  |     |
| <b>Vital signs</b>                 |             |      |     |
| Pulse recorded                     | 62          | 72.6 | 5.7 |
| Respiratory rate recorded          | 62          | 88.7 | 4   |
| Silverman/Downes score recorded    | 62          | 0    |     |
| <b>Laboratory tests</b>            |             |      |     |
| Glycemia test                      | 62          | 64.5 | 6.1 |
| Oxygen saturation level            | 62          | 25.8 | 5.6 |

**Table 7.5.2** Management of prematurity

|                                    | Prematurity records |      |      |
|------------------------------------|---------------------|------|------|
|                                    | N                   | %    | SE   |
| Evaluated by a doctor at admission | 22                  | 100  |      |
| Vital signs                        |                     |      |      |
| Pulse recorded                     | 22                  | 45.5 | 10.6 |
| Respiratory rate recorded          | 22                  | 63.6 | 10.3 |
| Silverman/Downes score recorded    | 22                  | 0    |      |
| Laboratory tests                   |                     |      |      |
| Glycemia test                      | 22                  | 40.9 | 10.5 |
| Oxygen saturation level            | 22                  | 27.3 | 9.5  |

### 7.5.2 Sepsis

Included in the review of neonatal complications were indicators relevant to the management of infants with sepsis. All records of neonatal sepsis included a doctor's evaluation at admission. Table 7.5.3 details important vital signs, laboratory tests and treatment as recorded in medical records of neonates with sepsis in the last two years.

**Table 7.5.3** Management of neonatal sepsis

|                                    | Sepsis records |      |     |
|------------------------------------|----------------|------|-----|
|                                    | N              | %    | SE  |
| Evaluated by a doctor at admission | 74             | 100  |     |
| Vital signs                        |                |      |     |
| Pulse recorded                     | 74             | 64.9 | 5.5 |
| Temperature recorded               | 74             | 81.1 | 4.6 |
| Laboratory tests                   |                |      |     |
| Erythrocyte sedimentation rate     | 74             | 43.2 | 5.8 |
| Leucocyte count                    | 74             | 73   | 5.2 |
| C reactive protein                 | 74             | 47.3 | 5.8 |
| Treatment                          |                |      |     |
| Antibiotics administered           | 74             | 85.1 | 4.1 |

### 7.5.3 Asphyxia

Table 7.5.4 details important components in the management of infants with asphyxia, such as record of vital signs checked, relevant laboratory tests and the administration of antibiotics. All evaluated cases of neonatal sepsis included a doctor's evaluation at admission. None of these cases reported a Silverman Score.



**Table 7.5.4** Management of asphyxia

|                                    | Asphyxia records |      |     |
|------------------------------------|------------------|------|-----|
|                                    | N                | %    | SE  |
| Evaluated by a doctor at admission | 51               | 100  |     |
| <b>Vital Signs</b>                 |                  |      |     |
| Pulse recorded                     | 51               | 60.8 | 6.8 |
| Respiratory rate recorded          | 51               | 80.4 | 5.6 |
| Silverman/Downes score recorded    | 51               | 0    |     |
| <b>Laboratory test</b>             |                  |      |     |
| C reactive protein                 | 51               | 11.8 | 4.5 |
| Erythrocyte sedimentation rate     | 51               | 9.8  | 4.2 |
| Glycemia                           | 51               | 39.2 | 6.8 |
| HB                                 | 51               | 58.8 | 6.9 |
| Oxygen saturation level            | 51               | 47.1 | 7   |
| Chest radiography                  | 51               | 66.7 | 6.6 |
| <b>Treatment</b>                   |                  |      |     |
| Antibiotics administered           | 51               | 54.9 | 7   |

## Chapter 8 INFECTION CONTROL

### 8.1. Equipment for disposal

Staff at health facilities were asked about certain items available related to biohazard disposal, including incinerators, manuals specifying decontamination methods, and contracts with other facilities for biohazard disposal (Table 8.1.1).

**Table 8.1.1** Equipment for disposal

|                                                     | ECOS |     |     |       | Hospitals |      |      |       |
|-----------------------------------------------------|------|-----|-----|-------|-----------|------|------|-------|
|                                                     | N    | %   | SE  | DK/DR | N         | %    | SE   | DK/DR |
| Incinerator at facility                             | 51   | 3.9 | 2.7 | 0     | 9         | 22.2 | 13.9 | 0     |
| Contract with other facility for biohazard disposal | 50   | 84  | 5.2 | 1     | 9         | 100  |      | 0     |
| Manual for decontamination                          | 50   | 78  | 5.9 | 1     | 9         | 100  |      | 0     |

### 8.2 Decontamination and sterilization

Table 8.2.1 lists the different techniques used for decontaminating and sterilizing equipment.

**Table 8.2.1** Decontamination and sterilization

|                                                                       | ECOS |      |     | Hospitals |      |      |
|-----------------------------------------------------------------------|------|------|-----|-----------|------|------|
|                                                                       | N    | %    | SE  | N         | %    | SE   |
| <b>Decontamination methods</b>                                        |      |      |     |           |      |      |
| Submerged in disinfectant, then scrubbed with a brush, soap and water | 51   | 78.4 | 5.8 | 9         | 66.7 | 15.7 |
| Scrubbed with a brush, soap and water, then submerged in disinfectant | 51   | 13.7 | 4.8 | 9         | 33.3 | 15.7 |
| Scrubbed with a brush, soap and water only                            | 51   | 0    |     | 9         | 0    |      |
| Submerged in disinfectant, without scrubbing with brush               | 51   | 0    |     | 9         | 0    |      |
| Cleaned with water and soap, without scrubbing with a brush           | 51   | 0    |     | 9         | 0    |      |
| Equipment never reused                                                | 51   | 0    |     | 9         | 0    |      |
| Other                                                                 | 51   | 37.3 | 6.8 | 9         | 22.2 | 13.9 |
| <b>Sterilization methods</b>                                          |      |      |     |           |      |      |
| Dry heat                                                              | 51   | 5.9  | 3.3 | 9         | 11.1 | 10.5 |
| Autoclave                                                             | 51   | 82.4 | 5.3 | 9         | 100  |      |
| Boiling                                                               | 51   | 0    |     | 9         | 0    |      |
| Steam                                                                 | 51   | 0    |     | 9         | 11.1 | 10.5 |
| Chemical sterilization                                                | 51   | 0    |     | 9         | 0    |      |
| Processed away from facility                                          | 51   | 7.8  | 3.8 | 9         | 0    |      |
| Facility doesn't sterilize                                            | 51   | 0    |     | 9         | 0    |      |
| Other                                                                 | 51   | 3.9  | 2.7 | 9         | 0    |      |

## Appendix A: SM2015 Indicators

### A.1 Indicator matrices

**Table A.1.1** Performance indicators measured at the facility level

| Indicator                                                                                               | BASELINE EVALUATION* |    |                      |                      | 18-MONTH EVALUATION |    |                      |                      |
|---------------------------------------------------------------------------------------------------------|----------------------|----|----------------------|----------------------|---------------------|----|----------------------|----------------------|
|                                                                                                         | N                    | n  | Percent (95% CI)     | # of ECOS (95% CI)** | N                   | n  | Percent (95% CI)     | # of ECOS (95% CI)** |
| Health facilities with availability of refrigerator                                                     | 54                   | 23 | 42.6% (29.2 - 56.8%) | 33 (23 - 44)         | 51                  | 40 | 78.4% (64.7 - 88.7%) | 60 (50 - 68)         |
| Health facilities with availability of supplies and equipment needed for child care***                  | 58                   | 21 | 36.2% (24 - 49.9%)   | 28 (18 - 38)         | 51                  | 47 | 92.2% (81.1 - 97.8%) | 71 (62 - 75)         |
| Health facilities with continuous availability of supplies and equipment needed for prenatal care       | 58                   | 28 | 48.3% (35 - 61.8%)   | 37 ( 27 - 48)        | 51                  | 50 | 98% (89.6 - 100%)    | 75 (69 - 77)         |
| Health facilities with supplies of modern family planning methods (oral pill, injectable, barrier, IUD) | 58                   | 11 | 19% (9.9 - 31.4%)    | 15 (8 - 24)          | 51                  | 47 | 92.2% (81.1 - 97.8%) | 71 (62 - 75)         |
| Health facilities with availability of staff                                                            | 53                   | 37 | 69.8% (55.7 - 81.7%) | 54 (43 - 63)         | 56                  | 43 | 76.8% (63.6 - 87%)   | 59 (49 - 67)         |

\* Baseline values listed in this table have been updated to reflect the changes to the indicators, including the incorporation of data from Family and Specialized ECOS only.

\*\* Expected number that meet the indicator from the total universe of 77 ECOS

\*\*\*Baseline value captures Albendazole only, while the 18-month value captures Albendazole or Mebendazole. Also at 18 months, scales found in the prenatal section were included in the indicator calculation.

**Table A.1.2** Performance indicators measured at the medical record level

| Indicator                                                                                                                                                | 18-MONTH EVALUATION |     |                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----|----------------------|
|                                                                                                                                                          | N                   | n   | Percent (95% CI)     |
| Women of reproductive age (15-49) who received $\geq 4$ ANC visits by qualified personnel according to best practices for a birth in the last two years* | 182                 | 84  | 46.2% (38.8 - 53.5%) |
| First prenatal care visit within 12 weeks of gestation, with doctor or nurse                                                                             | 265                 | 172 | 64.9% (58.8 - 70.6%) |
| Enrollment of children in ECOS Familiares within 8 days of birth                                                                                         | 372                 | 335 | 90.1% (86.6 - 92.9%) |

\*Indicator value does not include fetal heart rate and fetal movement checks at each visit (only in the first visit if gestational age is greater than 20 weeks).

**Table A.1.3** Health facility monitoring indicators

| Indicator                                                                                                                                                                                                         | 18-MONTH EVALUATION |    |                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----|----------------------|
|                                                                                                                                                                                                                   | N                   | n  | Percent (95% CI)     |
| Institutional postpartum patients evaluated and registered in clinical records, at least every 15 min during the first hour and 30 min until 2 hours after birth, and upon leaving hospital in the last two years | 86                  | 0  | 0% (0.0 - 0.4%)      |
| Neonates with complications (low birth weight, prematurity, birth asphyxia and sepsis) managed according to standards in the last two years                                                                       | 199                 | 15 | 7.5% (4.3 - 12.1%)   |
| Women with obstetric complications (sepsis, hemorrhage, severe pre-eclampsia and eclampsia) managed according to the norm in the last two years                                                                   | 211                 | 27 | 12.8% (8.6 - 18.1%)  |
| Administration of 10 IU of intramuscular oxytocin within one minute after delivery in most recent birth in the last two years                                                                                     | 164                 | 44 | 26.8% (20.2 - 34.3%) |
| Children diagnosed with diarrhea seen at the health unit evaluated, classified and treated according to the de-gree of dehydration in the last two years                                                          | 212                 | 29 | 13.7% (9.4 - 19.1%)  |
| Health facilities with cold chain according to standards                                                                                                                                                          | 47                  | 36 | 76.6% (62.0 - 87.7%) |
| Health facilities with permanent availability of inputs and equipment necessary for pediatric, vaccination and nutrition health care, for monitoring purposes*                                                    | 52                  | 3  | 5.8% (1.2 - 15.9%)   |
| Health facilities with permanent availability of inputs and equipment necessary for prenatal and postpartum care, for monitoring purposes**                                                                       | 51                  | 33 | 64.7% (50.1 - 77.6%) |
| Health facilities with permanent availability of inputs and equipment necessary for emergency obstetric and neonatal care***                                                                                      | 6                   | 1  | 16.7% (0.4 - 64.1%)  |
| Health facilities that have continuous supply of modern family planning methods (condom, oral, injectable barrier, IUD), for monitoring purposes                                                                  | 60                  | 56 | 93.3% (83.8 - 98.2%) |
| Hospitals with 24/7 availability of OB, neonatologist and pediatric anesthesiologist in complete level                                                                                                            | 9                   | 4  | 44.4% (3.9 - 85.0%)  |
| Hospitals with access to safe blood                                                                                                                                                                               | 9                   | 9  | 100% (66.4 - 100%)   |

\* Indicator value represents all criteria listed in country indicator manual excluding growth cards and saline solutions.

Amoxicillin was added as an alternative antibiotic at the ambulatory level.

\*\* Indicator value does not include the continuous stock of pharmacy inputs in the last three months.

\*\*\* Indicator value does not include the continuous stock of pharmacy inputs in the last three months. This value does not include all pharmacy inputs as defined by the indicator manual. Please see section 7.3.2 of this report for further details.

## A.2 Indicator Definitions for 18-month data collection

### 1. Health facilities with availability of staff

Denominator:

Total number of Family and Specialized ECOS in the sample.

Formula:

*Family ECOS:* 1 general physician + 1 nurse + 1 polivalent + 3 health promoters

*Specialized ECOS:* 1 pediatrician + 1 internist + 1 obstetrician-gynecologist + 1 nurse + 1 auxiliary nurse + 3 dentists + 1 physiotherapist + 1 health educator

### 2. Health facilities with availability of inputs for prenatal care

Denominator:

Total number of Family and Specialized ECOS in the sample.

Formula:

*Family and Specialized ECOS:* Observed on the day of the survey: lamp for pelvic exam (flashlight or light) + apparatus to take blood pressure + stethoscope + standing scale + any-sized speculum

### 3. Health facilities with availability of modern family planning methods

Denominator:

Total number of Family and Specialized ECOS in the sample.

Formula:

*Family and Specialized ECOS:* Observed on the day of the survey: any pill (combined oral pill or progestin-only pill) + any injectable (combined injectable or progestin-only injectable) + male condom + IUD

#### 4. Health facilities with availability of inputs for child care

Denominator:

Total number of Family and Specialized ECOS in the sample that offer child care services.

Formula:

*Family and Specialized ECOS:* Observed on the day of the survey: scale with infantometer + standing scale + thermometer + oral rehydration salts + zinc + anthelmintic

#### 5. Health facilities with availability of refrigerators for preserving vaccines

Denominator:

Total number of Family and Specialized ECOS in the sample that store vaccines.

Formula:

*Family and Specialized ECOS:* Observed on the day of the survey: at least one of the following refrigerators: electric, kerosene, gas or solar.

#### 6. Women of reproductive age (15-49) who received $\geq 4$ antenatal care visits by a qualified personnel according to best practices for a birth in the last two years.

*Family ECOS:* Observe the following in the record: woman had at least 4 ANC visits, each a doctor/nurse + physical checkups performed (weight + blood pressure + fundal height). At the first visit fetal checkups (fetal heart rate + fetal movement) were performed (if gestational age is  $>20$  weeks and  $\leq 42$  weeks). Lab tests performed at least once: blood type + Rh factor + blood glucose level + HIV test + Hb level + urinalysis.

**7. Women who received one prenatal visit by a doctor or nurse before 12 weeks of gestation in the last year**

Denominator:

Total number of antenatal care records in the sample.

Formula:

*Family and Specialized ECOS:* First ANC visit performed by a doctor/nurse + (date of 1<sup>st</sup> ANC visit – date of last menstrual period = before 12 weeks gestation)

**8. Enrollment of children in Family ECOS within eight days of birth**

Denominator:

Total number of records of children one year of age.

Formula:

*Family ECOS:* date of inscription – date of birth  $\leq$  8 days

**9. Institutional postpartum patients evaluated and registered in clinical records, at least every 15 min during the first hour and 30 min until 2 hours after birth, and upon leaving hospital in the last two years**

Denominator:

Total number of postpartum records in the sample.

Formula:



*Complete:* Check the following four times in the first hour, two times in the second hour and once before discharge: diastolic blood pressure + systolic blood pressure + temperature + respiratory rate + pulse

**10. Neonates with complications (low birth weight, prematurity, birth asphyxia and sepsis) managed according to standards in the last two years**

Denominator:

Total number of neonatal complication records in the sample

Formula:

Low birth weight and prematurity:

*Complete:* All checkups reported (pulse + respiratory rate + Downes or Silverman score) + lab tests performed (oxygen saturation level + blood glucose level) + neonate evaluated by a doctor at admission

Asphyxia:

*Complete:* All checkups reported (pulse + respiratory rate + chest radiograph + Downes or Silverman score) + lab tests performed (oxygen saturation level + hemoglobin + C-reactive protein + erythrocyte sedimentation rate + blood glucose level) + treatment with antibiotics

Sepsis:

*Complete:* All checkups reported (temperature + pulse) + lab tests performed (leukocyte count + C-reactive protein + erythrocyte sedimentation rate) + treatment with antibiotics + neonate evaluated by a doctor at admission.

**11. 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 obstetric complication records in the sample

Formula:

Sepsis:

*Complete:* Vital signs checked (temperature + pulse + diastolic + systolic blood pressure) + leucocyte count + antibiotics administered

Hemorrhage:

*Complete:* Vital signs checked (diastolic + systolic blood pressure) + lab tests performed (Ht + Hb + PT + PTT + platelet count) + oxytocin or other uterotonic administered + the cause of hemorrhage recorded.

Severe pre-eclampsia and eclampsia:

*Complete:* Vital signs checked (diastolic + systolic blood pressure + pulse + respiratory rate + patellar reflex) + lab tests performed (urine protein + platelet count + aspartate aminotransferase + alanine aminotransferase + lactate dehydrogenase) + outcome of pregnancy recorded + correct treatment given. Correct treatment is evaluated as follows: if diastolic blood pressure is greater than 110 then administration of hydralazine/nifedipine + if gestational age is 26-34 weeks, then administration of dexamethasone/betamethasone + administration of magnesium sulfate

**12. Administration of 10 IU of intramuscular oxytocin within one minute after delivery in most recent birth in the last two years**

Denominator:

Total number of delivery records in the sample

Formula:

*Complete:* Time of delivery – time of oxytocin administration/other uteronic = within one minute

**13. Children diagnosed with diarrhea seen at the health unit evaluated, classified and treated according to the degree of dehydration in the last two years**

Denominator:

Total number of diarrhea records in the sample

Formula:

*Ambulatory:* Symptoms recorded (general condition + eyes + thirst + skinfold) + vital signs checked (pulse + capillary refill time) + treatment administered (oral rehydration salts/intravenous rehydration/oral rehydration therapy prescribed)

#### 14. Health facilities with cold chain according to standards

Denominator:

Total number of health facilities that store vaccines in the sample.

Formula:

*Ambulatory and Complete:* Observe the following on the day of the survey: Temperature of each fridge used to store vaccines 2-8C on the day of the survey + each functioning fridge used to store vaccines has a temperature monitoring chart + temperature recorded at least twice daily during the past 30 days for each fridge + monitoring chart shows that temperature was 2-8C each day for 30 days before the survey + monitoring chart shows action taken when temperature falls outside the range of 2-8C.

#### 15. Health facilities with permanent availability of inputs and equipment necessary for pediatric, vaccination and nutrition health care\*\*

Denominator:

Total number of health facilities in the sample that provide child care services and store vaccines.

Formula:

*Ambulatory:* Observe the following on the day of the survey: pediatric scale + standing scale for children + stadiometer + stethoscope + oral/axillary thermometer + packets/envelopes of oral rehydration salts + drops of ferrous sulfate/micronutrients + albendazole/mebendazole + erythromycin/ampicillin/benzathine penicillin/amoxicillin + pentavalent/(DPT + Hib + HepB) vaccine + polio vaccine + MMR vaccine + influenza vaccine + rotavirus vaccine + pneumococcal conjugate vaccine + BCG vaccine. No break in supply of the following vaccines in the last three months (including the day of the survey: MMR + BCG

*Complete:* Observe the following on the day of the survey: pediatric scale + standing scale for children + stadiometer + pediatric blood pressure apparatus + pediatric stethoscope + packets/envelopes of oral rehydration salts + drops of ferrous sulfate/micronutrients + albendazole/mebendazole + crystalline penicillin/ampicillin/amoxicillin + pentavalent/(DPT + Hib + HepB) vaccine + polio vaccine + MMR vaccine + influenza vaccine + rotavirus vaccine + pneumococcal conjugate vaccine + BCG vaccine. No break in supply of the following vaccines in the last three months (including the day of the survey): MMR + BCG

#### 16. Health facilities with permanent availability of inputs and equipment necessary for prenatal and postpartum care

Denominator:

Total number of health facilities in the sample that provide prenatal and postnatal services (and complete level health facilities that have a laboratory)

*Ambulatory:* Observe the following on the day of the survey: balance/standing scale + stadiometer + gynecological exam table + CLAP obstetrical tape/measuring tape + gooseneck/hand lamp + blood pressure apparatus + stethoscope + IUD insertion kit + perinatal maternal medical history + perinatal maternal card + multivitamin/(iron + folic acid) + Ayre's spatula/swabs + microscope slides + nitrofurantoin + erythromycin/ampicillin/benzathine penicillin/amoxicillin

*Complete:* Observe the following on the day of the survey: balance/standing scale + stadiometer + gynecological exam table + CLAP obstetrical tape/measuring tape + gooseneck/hand lamp + blood pressure apparatus + stethoscope + IUD insertion kit + perinatal maternal medical history + perinatal maternal card + multivitamin/(iron + folic acid) + Ayre's spatula/swabs + microscope slides + nitrofurantoin + cephalixin + dark field microscope + equipment for enzyme immunoassays + fluorescence microscope + urinalysis equipment + blood glucose meter + automated cell counter + blood-type antibody + Rh factor antibody + syphilis reagent (if equipment for enzyme immunoassays is observed) + HIV/AIDS reagent (if equipment for enzyme immunoassays is observed)

**17. Health facilities with permanent availability of inputs and equipment necessary for emergency obstetric and neonatal care\*\*\*\***

Denominator:

Total number of complete-level health facilities in the sample that provide emergency care.

Formula:

*Complete:* Observed on the day of the survey: blood pressure apparatus + neonatal/pediatric stethoscope + Portable Pinard/Doppler stethoscope + autoclave/dry heat sterilizer + oxygen tank + adult resuscitation bag + neonatal resuscitation bag + laryngoscope + starter kit for curettage + equipment for anesthesia + equipment for C-sections + ergometrine/oxytocin + dexamethasone/betamethasone + amoxicillin/ampicillin/amikacin/crystalline penicillin/ceftriaxone + magnesium sulfate + hydralazine/hydralazine chlorhydrate + furosemide + diazepam/midazolam chlorhydrate + sevoflurane + succinylcholine

**18. Health facilities that have continuous supply of modern family planning methods (condom, oral, injectable barrier, IUD)**

Denominator:

Total number of health facilities that store family planning methods in the sample.

Formula:

*Ambulatory with doctor:* Observed on the day of the survey: male condom + any birth control pill + any inject No break in supply of the following inputs in the last three months (including the day of the survey): male condom + any birth control pill + any injectable.

*Complete:* Observed on the day of the survey: male condom + any birth control pill + any injectable + IUD device + trained doctor to perform female sterilization + trained doctor to perform male sterilization. No break in supply of the following inputs in the last three months (including the day of the survey): male condom + any birth control pill + any injectable + IUD insertion kit

**19. Hospitals with 24/7 availability of OB, neonatologist and pediatric anesthesiologist in complete level**

Denominator:

Total number of complete-level health facilities in the sample.

Formula:

*Complete:* 24 hours a day and 7 days a week availability of: internist + obstetrician and gynecologist + anesthesiologist

**20. Hospitals with access to safe blood**

Denominator:

Total number of complete level health facilities in the sample.

Formula:

*Complete:* Facilities with access to safe blood