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# **SM2015 – GUATEMALA Study Protocol**

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14 November 2012

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This protocol on the SM2015-Guatemala surveys was produced in agreement with the Inter-American Development Bank (IDB). All analyses and report writing will be performed 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 more knowledgeable decision-making and higher achievements in health. To that end, we strive to build the needed base of objective evidence about what does and does not improve health conditions and health systems 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.

## CHAPTER 1: INTRODUCTION

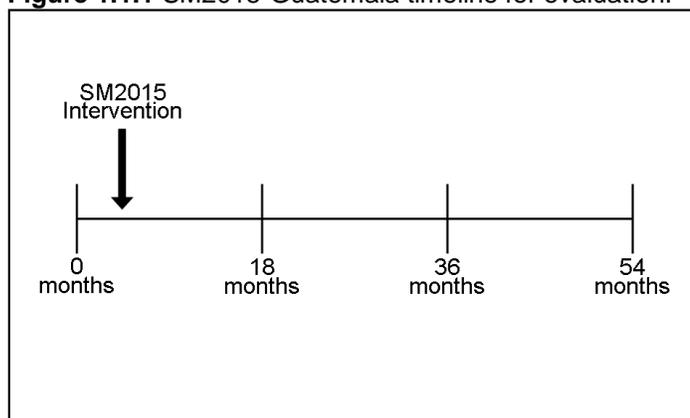
Salud Mesoamérica 2015 (SM2015) is a regional public-private partnership that brings together Mesoamerican countries, private foundations and bilateral and multilateral donors with the purpose of reducing health inequalities affecting the poorest 20 percent of the population in the region. Funding will focus on supply and demand-side interventions, including changes in policy, 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 serious performance measurement and enhanced transparency in reporting accountability and global impact assessment.

The initiative will focus its resources on integrating key interventions aimed at reducing health inequalities resulting from the lack of access to reproductive, maternal and neonatal health (including immunization and nutrition) for the poorest quintile of the population. A key element of SM2015 is the evaluation. In general, the evaluation will track the progress of the countries to reach a set of goals of the intervention, and will also estimate the impact of specific components of the intervention. The Inter-American Development Bank has contracted IHME to conduct this evaluation. In Guatemala, a local agency with experience in health and nutrition studies will be in charge of data collection.

### 1.1 Data Collection

In order to monitor efficacy of interventions and the status of indicators, data collection efforts are utilized. The overall data collection method employed in the initiative involves two major components: a health facility survey and a household survey. Twinning of both surveys is a defining and innovative feature designed to capture most accurately prevalence estimates of select key indicators. Indicator goals are established as a cooperative effort between IDB and the Guatemala Ministry of Health following the collection of baseline information. Periodic waves of data collection will allow for continued monitoring of indicators among the population. These evaluations will occur at 18, 36, and 54 months following baseline surveys (Figure 1.1.1).

**Figure 1.1.1** SM2015-Guatemala timeline for evaluation.



The principal objective of the SM2015-Guatemala Household Survey is to collect data on household characteristics, household expenditures, and numerous reproductive health, maternal and neonatal health, immunization, and nutrition indicators (including physical measurements) related to the strategic areas of the initiative in Guatemala. Performance for these indicators will be evaluated after the baseline and each subsequent data collection wave.

In general terms, the objectives of the health facility survey are assessing facility conditions, evaluating service provision and utilization, and measuring quality of care. Equally important, the facility survey will capture changes of interventions at the level of the health services access point, the facility, and predict changes in population health outcomes. The baseline health facility survey, recounted in this report, measured baseline prevalence estimates of various health indicators in aim to monitor future changes in those indicators.

## 1.2 Objectives in Guatemala

### 1.2.1 Health Issues and Health System Constraints in Guatemala

The departments of Sololá, San Marcos, Huehuetenango, Quiché, and Alta Verapaz in Guatemala have been selected as targets for SM2015-Guatemala because of the current health status, health inequalities, and capacity for interventions. San Marcos and Huehuetenango will start operations in an initial phase, and the other departments mentioned above will start operations later. The goal of the initiative in this region is to reduce maternal, newborn, and child morbidity and mortality in the poorest municipalities of these jurisdictions. It is expected that there will be an increase in coverage, quality, and use of reproductive, maternal, newborn, and child health services, and an improvement in the health status and nutrition of women of reproductive age and children under 5 years old.

Guatemala faces important health problems and its indicators of malnutrition, maternal mortality and institutional delivery are amongst the lowest in the region. There have been some important health improvements in Guatemala in the last decade. Between 2002 and 2008, the rate of institutional delivery increased from 42% to 51%. In the same time period, the infant mortality rate fell from 39 per 1,000 live births to 30 per 1,000 live births. However there are still challenges to improve health outcomes.

Nationally, maternal mortality has been calculated as 136 deaths per 100,000 live births in 2007. Teen pregnancy rates are more than 100 per 1,000 births. 21.4% of women age 15-49 years have anemia. There are also significant health disparities within Guatemala. Prevalence of modern contraceptive use is 54% in non-indigenous populations but is 28% in indigenous populations as of 2008. Non-indigenous populations have a 70% rate of skilled birth attendance, while it is 29.2% for indigenous populations. There are also significant disparities with regards to growth retardation, anemia prevalence, and infant mortality between these populations. Differences are also observed when comparing rural and urban populations, and poor and wealthy populations.

### 1.2.2 Targets for Improvement

Goals for maternal, newborn, and child health will be achieved through a network of community interventions, health system improvements, and education. Identified areas strengthened by the SM201 Initiative include neonatal care, obstetric emergencies and institutional births, incorporation of nutrition prevention to the first level of care, reproductive health and

adolescents, and existence of sparsely inhabited places without coverage. There are four components to achieving these goals. The first component is improved access and quality to health care services in the community for women, newborns and children. This involves mobile outreach teams, and improved recognition of obstetric emergencies and neonatal complications, and family planning education. The second component is strengthening and improvement of quality in regular health services offered, which involves remodeling or expanding existing delivery facilities, strengthening of cold chain supply, and building the capacity for implementing interventions. The third component is overcoming access barriers to health care services. This incorporates intercultural awareness of health care providers, community and network consultation, and incentives to encourage references. The fourth component is strengthening monitoring and supervision systems, and health management information systems.

## CHAPTER 2: METHODOLOGY

There are two components of the overall data collection method employed in the initiative: a household survey and a health facility survey. Twinning of both surveys is a defining and innovative feature designed to capture most accurately prevalence estimates of select key indicators.

### 2.1 Household Survey Methods

#### 2.1.1 Segment Sample Selection

The sample for the SM2015-Guatemala Household Survey is designed to provide estimates of the coverage of key health interventions and indicators among the lowest wealth quintile of the population. Indicators are used to calculate the sample size necessary to provide estimates with sufficient power (80%) and Type I error (0.05). The indicator with the highest sample size requirement is post-partum care within 48 hours measured at 36 months from baseline. There will be approximately 4,599 intervention households, and 750 control households. Additional indicator sample size calculations can be found in Appendix B.

The primary administrative units in Guatemala are departments. There are a total of 22 departments in Guatemala, and IDB identified 5 departments in which the intervention will take place: Sololá, San Marcos, Huehuetenango, Quiché, and Alta Verapaz. Within two of these departments, 17 intervention municipalities will be targeted in the first stage. Another three departments will be sampled during the second stage. There will be a set of 10 control municipalities with similar socio-economic characteristics and ethnic composition (Table 2.1.1). From all selected municipalities, a random sample of 254 census segments will be selected with probability of selection proportional to size (where size is represented by the number of occupied households within the segment, as captured on the 2002 Guatemala Population Census). In addition, a set of alternate segments is selected using identical methodology, to be surveyed in the event that any of the selected segments cannot be surveyed and needed to be replaced for any reason (e.g., security concerns or high proportion of absent households). In the next stage of sampling, households that contain women and children under five years old will be randomly selected to provide an expected sample of 5, 349 households (4,599 intervention and 750 control households).

**Table 2.1.1** Intervention and control municipalities

Intervention Municipalities		Control Municipalities	
Department	Municipality	Department	Municipality
Huehuetenango	San Gaspar Ixchil	Huehuetenango	Santiago Chimaltenango
Huehuetenango	Santa Bárbara	Huehuetenango	Santa Eulalia
Huehuetenango	Colotenango	Huehuetenango	San Sebastián Coatán
Huehuetenango	San Sebastián Huehuetenango	Huehuetenango	Barillas
Huehuetenango	San Juan Atitán	Huehuetenango	San Rafael la Independencia
Huehuetenango	San Ildelfonso Ixtahuacán	San Marcos	La Reforma
Huehuetenango	Todos Santos Cuchumatán	San Marcos	San Miguel Ixtahuacan
Huehuetenango	San Miguel Acatán	San Marcos	San Lorenzo
Huehuetenango	San Pedro Necta	San Marcos	Tacana
Huehuetenango	San Mateo Ixtatan	San Marcos	Muevo Progreso
Huehuetenango	San Rafael Petzal		
San Marcos	Tajumulco		
San Marcos	Concepcion Tutuapa		
San Marcos	Comitancillo		
San Marcos	Sibinal		
San Marcos	Ixchiguan		
San Marcos	San Jose Ojetenam		
Sololá (2 <sup>nd</sup> stage)			
Quiché (2 <sup>nd</sup> stage)			
Alta Verapaz (2nd stage)			

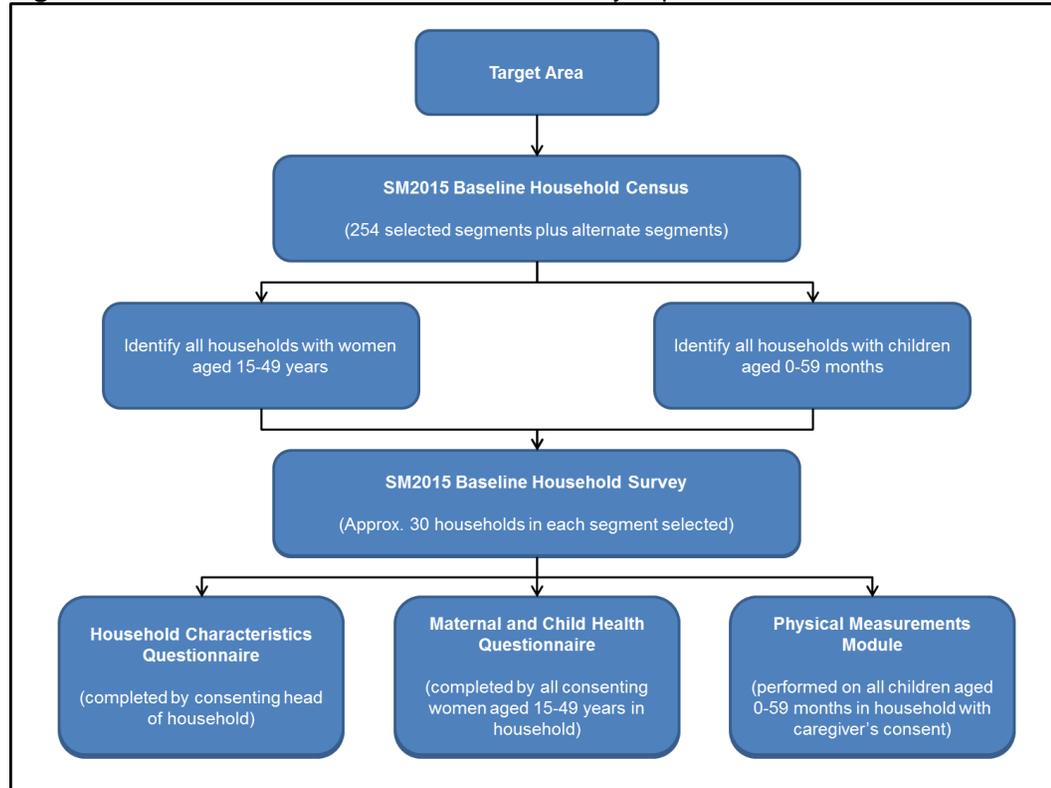
### 2.1.2 Household Census

In each of the selected segments, the SM2015-Guatemala Household Census is conducted in order to identify eligible women and children for the survey. Interviewers visit every household in the segment and create a household roster capturing the age and sex distribution of household members. Information from the census is used to sample which households will complete the SM2015-Guatemala Household Survey.

### 2.1.3 Household Survey

Using demographic data collected during the household listing exercise, households are then systematically selected for participation in the SM2015-Guatemala Household Survey (i.e., if age-eligible women and children were listed as residents). All women aged 15-49 years who are residents of the household are eligible to be interviewed, and all children aged 0-59 months who are residents of the household are eligible for the physical measurement module. A schematic diagram of the survey implementation is shown in Figure 2.1.2.

**Figure 2.1.2 SM2015-Guatemala Household Survey implementation scheme**



## 2.2 Health Facility Survey Methods

A total of 60 health facilities present in the intervention segments selected for household survey are to be sampled. Health facilities will be selected at random from the network of health facilities of the Ministry of Health in the study areas. As it will be detailed later, in each facility we will review also an average of 30 medical records.

## CHAPTER 3: INSTRUMENTS

The SM2015 Surveys are used to generate a rapid assessment of current coverage rates of health interventions in the strategic areas of the Initiative (reproductive, maternal and neonatal health, immunization, and nutrition). Standardized questionnaires as well as surveys of health facilities and data from the health information systems are used to provide the information needed to establish the current status of these indicators.

### 3.1 Electronic Data Entry

The SM2015-Guatemala Surveys are conducted using a computer-assisted personal interview (CAPI). CAPI is programmed using DataStat Illume and installed into computer notebooks which are used by the surveyors at all times of the interview. CAPI supports skip patterns, inter-question answer consistency, and data entry ranges. The aim of introducing CA-

PI to the field is to reduce survey time by prompting only relevant questions, to maintain a logical answering pattern across different questions, and to decrease data entry errors. The use of CAPI also allows instantaneous data transfer via a secure link to IHME. Data can be continuously monitored, and modifications to the instrument can be updated remotely.

### **3.2 Household Survey**

There are three components to the SM2015-Guatemala Household Survey (in addition to the SM2015 Household Census): the Household Characteristics Questionnaire, the Maternal and Child Health Questionnaire, and the Physical Measurements Module.

The content of the household questionnaires is developed to measure the coverage of key health interventions and indicators, and many items are adapted from existing Demographic and Health Surveys (DHS). The questionnaires are initially developed in English, and then translated to Spanish. To best reflect the issues most relevant to the region under study and the local language, the Spanish-language questionnaires are revised following input from key stakeholders and at the conclusion of the pilot study (described below). The revised Spanish-language surveys are then back-translated to English. Given that study areas include a substantial proportion of indigenous populations, the household survey will be also translated and back-translated to the most common indigenous languages in the study areas, mainly Mam.

#### **3.2.1 Household Census Instrument**

The SM2015 Household Census is used to capture the age and sex distribution of all of the usual members of all of the households in the selected segments. Basic information including relationship to the head of the household and marital status is also collected. Children aged 0-59 months who had one or more parent residing in the same household are linked to their mother and/or father by way of unique household member identification codes. All data for the census is recorded using an electronic data entry program.

As previously mentioned, data from the SM2015 Household Census is then used to systematically select households for the detailed interviews and the physical measurements module (Figure 2.1.1). Selected households are revisited typically within two weeks of the census and these questionnaires are completed during this visit.

#### **3.2.2 Household Characteristics Questionnaire**

The Household Characteristics Questionnaire collects information on the source of water, type of toilet facilities, exposure to secondhand smoke, ownership of various assets including durable goods, agricultural land, and livestock, and household expenses and sources of health care financing.

#### **3.2.3 Maternal and Child Health Questionnaire**

The Maternal and Child Health Questionnaire is used to collect information from all women of reproductive age (15-49 years). These women are asked questions on the following topics: background characteristics (including education, occupation, and exposure to media), access to health care, current health status, recent history of illness and associated medical expenses, birth history (including relevant questions about pregnancies that ended in mis-

carriage, stillbirth, or abortion), antenatal, delivery, and postpartum care, fertility preferences, knowledge and use of family planning methods (including barriers to use), exposure to health system interventions, and satisfaction with community health workers. Those with children aged 0-5 years are asked detailed questions in reference to each child born in the past five years on topics such as: birth spacing, antenatal care, labor and delivery, postpartum care, breastfeeding and infant feeding practices, child's current health status, recent history of illness including diarrhea, fever, and acute upper respiratory infection and associated medical expenses, child's exposure to health system interventions, immunization and supplementation history.

### **3.2.4 Physical Measurements Module**

The Physical Measurements Module captures weight, height/length, and hemoglobin levels of children aged 0-59 months. Portable scales and stadiometers are used for the anthropometric measurements and hemoglobin levels are assessed in the field using a portable HemoCue™ machine. Medically trained personnel (i.e., professional nurses) perform all assessments.

## **3.3 Health Facility Survey**

The health facility survey includes three components: an interview questionnaire, an observation checklist, and a medical record review. The questionnaire captures information reported by the facility director or manager about the services provided and the general characteristics of the facility, human resource composition, supply logistics, infection control. The checklist captures objective data observed by the surveyors at the time of the survey about equipment and supplies required for prenatal and postnatal care, delivery care, emergency maternal and neonatal care, family planning and immunizations, depending on the level of the medical facility. Finally, we will conduct a review of medical records of cases of delivery, maternal and neonatal complications, prenatal and child care to collect information about the quality of health care.

## **CHAPTER 4: TRAINING AND MONITORING OF DATA**

### **4.1 Training of Field Personnel**

#### **4.1.1 Training for Health Survey**

Individuals are recruited and trained to serve as supervisors, male and female interviewers, and reserves for the household census and survey. Multiple data collection teams, consisting of multiple male and female interviewers are necessary to conduct the SM2015 Household Census. A fewer number of data collection teams are used to conduct the SM2015 Household Survey, each consisting of female interviewers. All field staff are required to have formal education through high school and exhibited sufficient literacy and speaking abilities in the language of the survey, as well as basic arithmetic skills. Personnel in charge of physical measures are required to have previous experience in anthropometry and collection of blood samples.

A multi-day training exercise is to be undertaken consisting of three primary training components. The first component of training is spent briefing and training the supervisors. The next component is devoted to classroom training for all field staff. The final component is devoted to field training. Staff from the data collection agency and invited experts from IHME lead the training, which is conducted mainly in Spanish and includes a variety of lectures, presentations, demonstrations, and role-playing exercises. Nutrition experts lead the training sessions on height and weight measurements and hemoglobin testing for the professional nurses who are hired to perform the physical assessments of children. These personnel are trained to perform standardized anthropometric and hemoglobin measurements using standard techniques.

During the classroom training sessions, supervisors and interviewers are briefed on the Salud Mesoamerica 2015 Initiative (SM2015) and the specific survey instruments developed for the Initiative. Supervisors and interviewers then receive training on survey implementation (including interviewing skills), and fieldwork procedures (including map reading for locating selected households), review the content of the household questionnaires in close detail, and receive basic instruction on the principles of, and strategies for, data quality monitoring, team communication and problem-solving. Household teams engage in role-playing scenarios to practice administering the initial census survey and the full household questionnaire. A specialized team is trained in anthropometry and collection of a blood specimen. Trainers and supervisors provide feedback on the practice interviews. Specific issues noted during observation of the practice interviews are discussed with the whole group.

Field training sessions are initiated in the last days of the training period. Household teams and anthropometry teams spend multiple days in the field collecting data. This field practice provides the interviewers with an opportunity to become aware of any issues with the survey that they did not previously understand. The field training sessions also provide an opportunity to conduct cognitive testing of the survey among target respondents. At the end of each day, the trainers and trainees review the questionnaires and discuss any problems that arise. Minor revisions to the questionnaires may be implemented based on feedback from the field training sessions.

All field staff are evaluated on survey concepts and procedures by means of short, periodic quizzes and tests following completion of the classroom training sessions and field training sessions. In addition to these evaluations, all field staff are observed by the trainers in order to fully assess their ability to administer the questionnaires.

#### **4.1.2 Training for Health Facility Survey**

Training sessions and health facility pilot surveys are conducted in Guatemala over a three-day period. Approximately thirteen surveyors with a medical background undergo training. The training includes an introduction to the initiative, proper conduct of survey, in depth view of the instrument, and hands-on training on the CAPI software. Training is followed by a multi-day pilot at health facilities.

## **4.2 Data Monitoring**

Information that is collected by each survey component is monitored by both field supervisors and analysts at IHME to ensure data quality and adherence to survey protocols. Data files are uploaded to a secure FTP site where they can be accessed by the data analysis

team at IHME. After census, household, and health facility data is received, data is rigorously reviewed for quality with regards to consistency, clarity, and completeness. Prompt evaluation of data quality allows for clarification from data collectors regarding inadequacies and irregularities, and rapid correction of procedural errors.

#### **4.2.1 Household Survey**

For quality assurance, the data collected during the SM2015 Census are compared to data from the 2002 Guatemala Population Census on an ongoing basis. When 20% fewer than expected households or people are captured on the SM2015 Baseline Census, or when more than 5% of households are classified as “absent”, field staff are instructed to return to segments and attempt to capture missing households. In most cases, households considered occupied on the 2002 Census but not captured on the SM2015 Baseline Census are unoccupied because former residents had relocated for work.

To assure completeness of the sample for the SM2015-Guatemala Household Survey, field staff are instructed to return to selected households up to three times (on different days, and at different times during the day) in an attempt to complete the Household Characteristics Questionnaire, the Maternal and Child Health Questionnaire, and the Physical Measurements Module. Supervisors are responsible for reviewing all questionnaires for quality and consistency prior to departing each segment.

#### **4.2.2 Health Facility Survey**

Data collection for facility surveys is done by physicians, given the familiarity required with medical equipment and procedures in the observation checklist and medical record review. Data is collected using computer netbooks equipped with CAPI software. A lead surveyor monitors conduction of the facility survey and reports feedback. Data collection using CAPI allows data to be transferred instantaneously once a survey is completed via a secure link to IHME. IHME monitors collected data on a continuous basis and provides feedback. Suggestions, surveyor feedback, and any modifications are incorporated into the health facility instrument and readily transmitted to the field. The new instrument can be ready for use on the following day of data collection.

## **CHAPTER 5: PLAN FOR ANALYSES**

Analyses done by IHME are tailored to evaluate the collaboratively predetermined indicators. These indicators are detailed in Appendix A. Data collection is designed to cover all the initiative indicators, although special care is taken for the measurement of payment indicators.

In the data analysis, frequencies of indicators and variables of interest will be obtained at baseline. Cross-tabulations with some demographic characteristics (education, age, etc.), as well as in intervention and control areas, will be also calculated for selected variables. Baseline information will be used later to assess changes when comparing against data collected at 18, 36 and 54 months, and estimating the effect of interventions.

All analyses are performed by IHME using STATA Version 11.2 (StataCorp, College Station, Texas), incorporating survey weights developed by IHME and robust standard errors to account for intra-class correlation within clusters (segments).

## CHAPTER 6: REPORTS

A report will be published in the middle point and end of baseline, 18 month, 36 month, and 54 month SM2015-Guatemala survey waves. These reports will highlight the status of the survey, data quality measures, and indicators of interest.

## CHAPTER 7: ETHICAL ISSUES AND CONFIDENTIALITY

All SM2015-Guatemala surveys, protocols, and procedures are reviewed by Institutional Review Boards (IRB). IHME activities are monitored by the IRB of the University of Washington; at the national level, the data collection agency will obtain approval from the national IRB. In addition, authorization from the Ministry of Health has been obtained to collect information from medical units. Previous to data collection, authorization to collect data in the community is also obtained from local authorities. This is especially relevant in the five selected departments of Guatemala, where some indigenous communities rule themselves by uses and traditions. Signed informed consent letters are obtained from informants prior to collecting any information at the household or health facility level.

The confidentiality of study participants' information is of critical importance. Any personal information captured is treated with the paramount concern for the participant's privacy. Assurance of confidentiality can provide more accurate data from respondents who are certain their personal information will remain secure. Interviewers are trained to present the SM2015-Guatemala confidentiality agreement and address the concerns of the participants. Participation is completely elective, and efforts are made for each individual to be adequately informed when making the decision to participate. All data that is uploaded to IHME from survey sites lack personally identifiable information; there are no names, dates of birth, or addresses of study participants.

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## APPENDIX A: SM2015-GUATEMALA INDICATORS

Indicator	Months	Source of Verification
Number of maternal deaths per 100,000 live births	0, 36, 54	Maternal mortality surveillance system
Number of deaths during the first 28 days of life per 1,000 live births in a given year or period	0, 36, 54	Vital records National surveys
Number of deaths during the first year of life per 1,000 live births in a given year or period	0, 36, 54	Vital records National surveys
Number of deaths of children under five per 1,000 live births in a given year or period	0, 36, 54	Vital records National surveys
Children 6 to 23 months of age who have a hemoglobin <110 g / L	0, 36, 54	Household survey
Children 0-59 months with height <-2 SD from the mean of the reference population for age-length	0, 36, 54	Household survey
Women of reproductive age (15-49) currently using (or whose partner is using) a modern method of family planning	0, 36, 54	Household survey
Women of reproductive age (15-49) who did not wish to become pregnant and who were not using / did not have access to family planning methods	0, 36, 54	Household survey
Women of reproductive age (15-29) receiving four prenatal care sessions by a physician or nurse performed according to the standard of care in their most recent pregnancy in the last two years	0, 36, 54	Health facility survey
Women of reproductive age (15-49) whose most recent birth in the past two years was done in a health facility for delivery care	0, 36, 54	Household survey
Women of reproductive age (15-49) who received postpartum care by qualified personnel within the first 48 hours after their most recent birth in the last two years	0, 36, 54	Household survey
Institutional postpartum patients of reproductive age, evaluated and recorded in clinical records at least every 15 minutes during the first hour and every 30 minutes to complete the two hours and being discharged from the hospital in her most recent birth in the last two years	0, 36, 54	Health facility survey
Women correctly referred due to an emergency following the partograph in their most recent delivery in the last 2 years	0, 36, 54	Health facility survey
Infants who developed a complication managed according to standard (sepsis, low birth weight, asphyxia, prematurity) in the last two years	0, 36, 54	Health facility survey
Women with obstetric complications (hemorrhage, sepsis and severe pre-eclampsia, eclampsia) managed according to standards in their most recent birth in the last two years	0, 36, 54	Health facility survey

Births with active management of the third period (given oxytocin / 10 IU intramuscular carbetocin one minute after birth, uterine massage and traction cord strain relief) and late cord clamping in the most recent birth in the last two years	0, 36, 54	Health facility survey
Infants receiving neonatal care by skilled personnel in a health unit within the first 48 hours after birth in the last two years	0, 36, 54	Household survey
Mothers or caregivers that can recognize danger signs in a newborn for most recent birth in the last two years	0, 36, 54	Household survey
Deliveries attended at CAPs and CAIMIs following the protocols from the Operation Manuals according to the unit level in the last year	0, 36, 54	Health facility survey
Women who received institutional delivery care with at least one cultural pertinence feature (position, drinks, language, dress and presence of other people) as defined in the Operation Manual	0, 36, 54	Household survey
Children 0-59 months fully immunized identified for age	0, 36, 54	Household survey
Children aged 12-59 months who received 2 doses of deworming in the last year	0, 36, 54	Household survey
Children 0-5 months who were fed exclusively on breast milk during the previous day	0, 36, 54	Household survey
Mothers/caregivers administering Oral Rehydration Salts (ORS) and zinc to children aged 0 to 59 months in the most recent episode of diarrhea in the last two weeks	0, 36, 54	Household survey
Children 6 to 23 months included in the program who received 60 packets of micronutrient in the last semester	0, 36, 54	Household survey
Health units that have the equipment and supplies necessary for child care (anthropometry equipment, oral rehydration salts, zinc, anthelmintic, MNP)	0, 18, 36, 54	Health facility survey (verification of supplies)
Health units that have equipment and supplies necessary for prenatal care (supplies and equipment defined in the Operations Manual in accordance with the level of care)	0, 18, 36, 54	Health facility survey (verification of supplies)
Health services with personnel trained in the attention of obstetric and neonatal emergencies according to the level of care	0, 18, 36, 54	Health facility survey
Health units authorized for childbirth care that have the necessary supplies and equipment for emergency obstetric and newborn care, postpartum care and newborn care as defined in the Operations Manual (according to level of care)	0, 18, 36, 54	Health facility survey (verification of supplies)
Health services that record shortages in stocks of any of the four family planning methods (injectable, oral, condoms and IUDs) at the time of the interview, verified through observation and according to level of care	0, 18, 36, 54	Health facility survey

Maternal deaths reported and investigated according to Protocol Monitoring Maternal Mortality in force in the last year	0, 18, 36, 54	External review of maternal death records
Municipal Health Districts (DMS) that can access data and generate regular reports on vaccination, maternal, newborn and child care (in the first 12 days of the month) in the framework of the implementation of the Law on Safe Motherhood	0, 18, 36, 54	Health facility survey record review
Eligible communities which have emergency committees who have received anticipated funds from the rotating fund	0, 18, 36, 54	Household survey
Updating the national strategic guidelines of micronutrient supplementation in children under 5 years according to international scientific evidence	0, 18, 36, 54	External review of MoH strategic guidelines
Children 0 to 23 months who were monitored in growth according to their age, registered in the MSPAS boys and girls notebooks	0, 18, 36, 54	Health facility survey Registration of MSPAS boys and girls notebooks
Areas with a control board already piloted following the guidelines of supervision and monitoring of the Operation Manual	0, 18, 36, 54	External review of control boards

## APPENDIX B: SAMPLE SIZE CALCULATIONS BY INDICATOR

Indicator	Target time (months)	Baseline (%)	Target (%)	Sample size needed	Relevant age group to determine inclusion	Number of households needed to sample 1 person in this age-sex group	Total households needed
Unmet need for contraception	36	25	21	1,368	Women 15-49* (4/3)	1	1,824
	54	25	18	425		1	567
In-facility delivery	36	31	38	569	Children 0-2 years *(4/3)	2.8	2,124
	54	31	44	170		2.8	635
Institutional birth with cultural pertinence	36	50	70	73	Children 0-2 years *(4/3)	2.8	273
	54	50	80	30		2.8	112
Post-partum care within 48 hours	36	50	55	1,232	Children 0-2 years *(4/3)	2.8	4,599
	54	50	58	479		2.8	1,788
Post-partum care for neonate within 48 hours	36	50	55	1,232	Children 0-2 years *(4/3)	2.8	4,599
	54	50	58	479		2.8	1,788
ORS and zinc	36	50	60	305	Children 0-59 months *1/0.145	1.1	2,314
	54	50	65	133		1.1	1,009
Prevalence of anemia 6-23 months	54	15	0	45	Children 6-23 months	3.6	162