

Final Knowledge, Practice and Coverage Survey Report
for
Improving Maternal and Newborn Health
In Timor-Leste

Primary Partner: Timor-Leste Ministry of Health

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ABBREVIATIONS USED

ANC	Antenatal Care
CS	Child Survival
DHS	Demographic and Health Surveys
DOS	Directorate of Statistics
HAI	Health Alliance International
HMIS	Health Management Information System
IMCI	Integrated Management of Childhood Illness
KPC	Knowledge, Practices and Coverage
MCH	Maternal and Child Health
MCHWG	Maternal and Child Health Working Group
MNC	Maternal and Newborn Care
MOH	Ministry of Health
NGO	Nongovernmental Organization
PSF	Promotor Saude Familiar (Family Health Promoter)
Rapid CATCH	Core Assessment Tool on Child Health
TAIS	Timor-Leste Assistencia Integrada Saude (a project of BASICS3)
TBA	Traditional Birth Attendant
TT	Tetanus toxoid

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Executive Summary

Health Alliance International received a USAID Child Survival Grant in 2004 to assist the Ministry of Health in Timor-Leste to improve maternal and infant morbidity and mortality in the seven districts of the Central Region. Initial efforts were focused on the four districts of Liquisa, Manatuto, Aileu and Ermera. During the third year, program efforts expanded to include Manufahi and Ainaro districts. Supporting both the quality of clinical services and improved community practices during the pregnancy, delivery, postpartum and newborn periods, HAI assisted in policy development, training programs for midwives, supportive supervision for district-based midwives, and community health promotion. They helped to develop consistent key messages with visual aids and an educational film to show to small audiences. Efforts also included training and supervisory support for a new cadre of health volunteer, PSFs and for the newly forming SISCa outreach clinics.

In July 2008 the project conducted a final evaluation of four years of effort, of which this report is a part. It summarizes key community-level outcomes for program objectives as well as USAID's Rapid CATCH Indicators within the 6 districts that are the focus of HAI's work in Timor-Leste. Data for this study were collected in June 2008 using a cluster-sample method: 43 clusters of 7 participants were identified, and women who had given birth in the previous two years were asked to participate. Partnership from the Directorate of Statistics (DOS) in Timor-Leste allowed for use of high quality maps of the districts; the DOS also provided a talented pool of interviewers and supervisors as well as the utilization of their building space for training and data entry.

Substantial improvements were seen at the community level in coverage of antenatal care, skilled birth attendance, postnatal care, and breastfeeding practices. Key improvements over 2003 DHS statistics for the initial four program districts include:

- Women reporting receipt of at least one antenatal care visit rose from 50% to 82%
- Women reporting at least two tetanus toxoid injections during their last pregnancy rose from 48% to 69%
- Skilled birth attendance increased from 16% to 37%
- Vitamin A intake postpartum rose from 28% to 49%
- Exclusive breast feeding for children 0-5 months of age rose from 29% to 68%

The targeted improvement was not seen in the ability of mothers to recognize serious signs of newborn illness. No baseline number was available, but the final result showed that only 2% of women could name three or more signs of illness in a newborn. Fully 88% of mothers could name at least one sign, however.

This report documents that the MOH has made substantial improvements in maternal health and breastfeeding practices during the past four years. Future efforts will need to focus more heavily on supporting improved home care and care-seeking practices to promote the health of the newborn.

Background

Country and project background:

Timor-Leste became an independent nation in May 2002. Massive post-referendum violence in 1999 had left the country with the task of rebuilding, with limited resources, an entire infrastructure including the health care system. The health problems of Timorese, particularly women and infants, are great. In 2003 maternal mortality was estimated to be 800/100,000 live births and neonatal mortality 33/1000 live births. An estimated 109 children/1000 died before reaching age five. Use of antenatal care, skilled health providers at delivery, and postpartum and newborn care were all very low, and fertility in 2003 was the highest recorded globally. A large proportion of women are non-literate, with an estimated 40% of families living under conditions of extreme poverty on less than \$0.55 per day – a number that reaches nearly 50% in rural areas. Much of the population is rural, where nearly half of the families live more than an hour's walk from a health facility. Traditional beliefs and practices around childbearing and child rearing are strong.

Health Alliance International's four-year child survival program was funded in 2004 to assist the newly developing Timor-Leste Ministry of Health (MOH) to develop and implement a comprehensive approach to the spectrum of maternal and newborn care. After the first two years of intensive pilot efforts in four focus districts (Ermera, Liquica, Aileu, and Manatuto), the project expanded to an additional two districts (Manufahi and Ainaro). Additional selected activities in Dili District were not addressed in this survey. The six target districts for this survey include approximately 66,500 women of childbearing age and 18,000 infants born to them annually.

Goals and objective:

The goal of the project is to improve health and reduce mortality and morbidity for mothers and their infants in Timor-Leste. Key objectives are:

Health system objectives:

1. 90% of MOH health facilities in the program districts will have at least one staff member skilled in the key elements of antenatal care (ANC) and in communications skills for maternal and newborn services
2. 90% of MOH health facilities in the program districts will have at least one staff member skilled in the key elements of essential postpartum/newborn care including resuscitation skills
3. 90% of MOH health facilities in the program districts will have available and accessible the essential supplies and equipment for antenatal and safe delivery care
4. 90% of MOH health facilities in the program districts will have available and accessible the essential supplies and equipment for postpartum/newborn care

Family and community objectives:

5. Antenatal care utilization in program districts (one or more visits) will increase from an estimated 45% to 70%
6. Tetanus toxoid immunization during the last pregnancy (two or more injections) will increase from 48% to 70%
7. Deliveries by a skilled birth attendant in program districts will increase from 16% to 30%
8. The proportion of women who have given birth in the past year who have had high-dose Vitamin A supplementation within 8 weeks of the delivery will increase from 28% to 60%
9. The proportion of infants ages 0-5 months who are exclusively breastfed will increase from 29% to 45%
10. 50% of mothers of a child ages 0-23 months will know the danger signs of newborn illness

Strategies and activities

The program aimed to accomplish these objectives by: 1) supporting the MOH to improve the quality of and access to antenatal and postnatal/newborn care services, and 2) increasing appropriate home care and care-seeking practices for maternal and newborn care (MNC) by mothers and other community members. HAI has worked closely with national-level MOH staff as well as district staff and other partners to promote the development of sound maternal and newborn care policies and assist with their implementation in target districts. During the first two years of the project, the program area included Liquisa, Manatuto, Aileu and Ermera districts; during the final two years activities expanded to include Manufahi and Ainaro districts. HAI staff promoted the development of an MOH district program officer for MCH; supported skills-based training and supportive supervision of MOH midwives; participated actively in the Maternal and Child Health Working Group (MCHWG), which is advisory to the MOH; and served as one of the MOH's primary source of technical support for MNC.

Project staff gathered qualitative baseline information to fill in current gaps regarding knowledge, beliefs, and practices related to reproduction, pregnancy, childbirth, the postpartum period, newborn care, breastfeeding, and the use of health services. A number of mass media communication approaches and materials have been developed and disseminated to promote key messages, including theater and community theater; posters and photo health education cards; "The Women's War", a two-part film on MNC, using scenes from traditional rural life; and radio messages.

Survey objectives

This survey sought to cover a wide range of MCH indicators. The objectives include:

- Provide data for the final evaluation for the CS grant, including information at both the initial 4-district and final 6-district levels
- Provide midterm data related to HAI's child spacing grant
- Provide MCH data on all 6 current districts to serve as a baseline for future program efforts

Partnership with MOH

HAI conducted this survey with support from the Ministry of Health and in close collaboration with the Directorate of Statistics (DOS) in Timor in all steps of the process. For cluster selection, the DOS assisted by providing population sizes for enumeration areas, as well as lists of the residents and the GPS coordinates for their households for each enumeration area selected, obtained from the previous census. DOS staff provided detailed maps of the survey districts, highlighting selected enumeration areas, households of the selected individuals, and locations of health facilities. DOS staff also designed our data entry system in CS Pro 3.3. Interviewers and supervisors were selected from a list of trained professionals that the DOS often hires for surveying, and rooms in their building were used for training and data entry. Working with the Directorate of Statistics allowed HAI to both have access to trained interviewers and to strengthen its relationship with the government of Timor-Leste. The type of random sampling and household selection methodology used was new for them, and their involvement increased their future capacity to conduct small-sample surveys.

The results of the survey will be disseminated widely within the MOH, and will contribute to their systems for tracking progress in the national maternal care program. Lessons learned about conducting a survey locally will be shared with a few of HAI's other local partners, including TAIS and The Alola Foundation.

Methods

Questionnaire development

The questionnaire was developed using the KPC 2000+ Rapid Catch Survey as an outline and adding questions taken from the DHS questionnaire and other standardized surveys. Additional questions on media and on practices surrounding birth were developed by project staff. The survey's 82 questions cover antenatal care (including birth plans and tetanus toxoid immunization), birthing practices (including skilled birth attendance and immediate breastfeeding), postnatal care, family planning and contraceptive use, childhood immunization and illnesses, and exposure to media messages about a family planning. The survey questionnaire was developed by Marisa Harrison and field tested by Jennifer Hulme and HAI staff in Timor-Leste prior to and during the course of the survey training. Both the English and Tetun version of the questionnaire are included in Appendix D of this report. Further translation into local languages of Galolen, Mambae, and Tetun Terik was done by interviewers at the time of the interview, as needed.

The study was reviewed and approved by the University of Washington Human Subjects Review Board and also by the equivalent Timor-Leste group in the Ministry of Health.

Study indicators

Program objectives # 5-10 are population-level objectives that are the focus of this survey (objectives 1-4 are health system objectives). All of USAID's Rapid CATCH indicators were also included in this survey, as well as other indicators pertinent to program objectives and HAI's child spacing grant. A complete list of indicators can be found in **Appendix C**. Only the objectives relevant to the maternal and newborn care grant are included in the text of this report; results from the other indicators will be included in future reports.

Sampling design

This survey used a cluster sampling method, with samples drawn at three levels: district (the primary sampling unit), *suco* or village level, and enumeration areas that have been previously defined based on a recent census. The first two were selected according to population size, and the last was an approximation of population size. Because this survey was intended to provide follow-up information for the four initial districts, 30 clusters of 7 households were selected within the original four districts. Overall population of the original four districts was 232,678 and the total population of the six districts is 330,104. Thirteen additional clusters were drawn from Manufahi and Ainaro, based on population size of these districts, to provide a full sample of 43 clusters for the six districts of the project. See **Appendix E** for population numbers.

Once the enumeration areas were selected, a house number was drawn randomly from a list of households enumerated in the census. The *aldeia* (neighborhood) nearest to that house was used as a starting point, and if the *aldeia* contained more than 200 households the sub-area within the *aldeia* nearest to the randomly selected household was chosen. This was done by plotting the GPS location on a map of the area and measuring to the nearest *aldeia*. If the household was not close to any defined *aldeia*, the District Administrators and/or *Chefe de Suco* were consulted to determine the closest population center.

The three reasons occasionally needed for choosing an alternate cluster for the survey were: there was no *aldeia* near the selected household, the *aldeia* was more than 1 hour walk from the road (which only occurred twice), and the originally selected *aldeia* did not contain enough participants. When the latter occurred, the survey team continued with the next nearest *aldeia*. When a problem occurred, the District Administrator, a *Chefe de Suco*, or *Chefe de Aldeia* were consulted to identify the nearest populations.

After the *aldeia* (or *sub-aldeia*) was identified, the starting household was determined by the spin-the-

bottle method. Supervisors would identify the center of the community—the area where there were roughly equal number of houses in all directions as identified by the *Chefe de Aldeia*—and spin a water bottle, with the two ends of the bottle indicating the directions for team pairs to follow. Each pair, consisting of a supervisor and interviewer or two interviewers, would follow as straight a line as possible from the bottle site until they reached the edge of the *aldeia*. As they walked, they would number the houses within ~15 feet from their path. When they got to the edge, they would use a currency note to identify the initial house and return to that house for the start of the surveying process. Additional houses were identified as the nearest visible door from the doorway of the initial house. Teams conducted 3 or 4 interviews as agreed upon prior to spinning the bottle, then returned to a central meeting area to review the questionnaires when finished.

Selection process

Women were included in the survey if they were between the ages of 15-49 and had a child who was under 24 months old. If two women fit that description within one household, we interviewed the mother of the youngest child. If a woman meeting the selection criteria was absent from the house, we would determine if she would return within 30 minutes or whether we could return in the afternoon to interview her. If she would be unavailable at these times, we would move on to another household. Sixteen eligible women were excluded from the survey because they were not at home and not expected to return home.

Consent

Women were approached with an explanation of the survey and asked if they would participate (see consent form). It was made clear that they could refuse to participate, but refusals were rare. Most refusals occurred in coffee-growing areas, as it was coffee harvest time, as well as in one district that had experienced recent civil unrest. Fifteen women refused to participate out of a total of 332 approached.

Training

Interviewers were selected from a list of staff available through the Directorate of Statistics (DOS) Timor-Leste. Almost all had previous experience doing quantitative surveys in the field, although most had not covered health topics. Additional interviewers came from HAI office staff, all of whom had assisted in field testing the questionnaire and were familiar with the health topics. Team supervisors came from the HAI office staff as well as from the Directorate of Statistics. Because there were more female team members than male, every interview was conducted by a team containing at least one woman.

Training took place over 5 days in June, with two days of supervisor training and an additional three days that included supervisors and interviewers. The training was conducted by Jennifer Hulme and Paul Vasconcelos, HAI staff, and covered good interviewing skills, random sampling, confidentiality and consent, and detailed review of the survey questionnaire. Time was given to practice the survey, including a half day field test on Day 3. See **Appendix G** for the complete training schedule.

Data Collection

Data were collected between June 23rd and July 2nd by 6 teams that included 1-3 supervisors and 2-3 interviewers. The teams stayed in the districts while conducting the survey, with one day off on either Saturday or Sunday. The majority of the interviews took place in the morning and early afternoon. Typically one cluster was finished each day, but sometimes close proximity allowed for two clusters to be completed. On average, it took 33 minutes to complete an interview.

Supervisors were given a checklist for monitoring the interviews. They were required to fill out one checklist per day and provide feedback to the interviewer observed. In addition to the interview checklist, supervisors were required to list any problems or notable events for each cluster, and turn those reports in with the completed questionnaires. They were asked to check-in via text message or phone call with one of the survey coordinators daily (when they had cell phone coverage) to report on any problems

encountered or receive updates.

Problems with the data collection process were relatively few. There was slight confusion over the vitamin A supplementation question for women since the samples shown to illustrate the vitamin were yellow and the type being distributed was often red, but we were able to clarify this difference after day one of surveying. There could be a slight possibility of underestimation, but we believe it unlikely.

Data Analysis

Data entry was conducted by three assistants suggested by the DOS. Entry was done with CS Pro 3.3, with the system designed by a staff member of the DOS. Data were compiled at the end of each day and all daily files were exported into Excel and checked for common coding mistakes that might have been made during entry. Additionally, because CS Pro does not allow for double entry, files were randomly examined to ensure correct individual data. Data cleaning was done in Excel before entry into Stata 10.0 IC for analysis. For most results the 95% confidence interval was calculated.

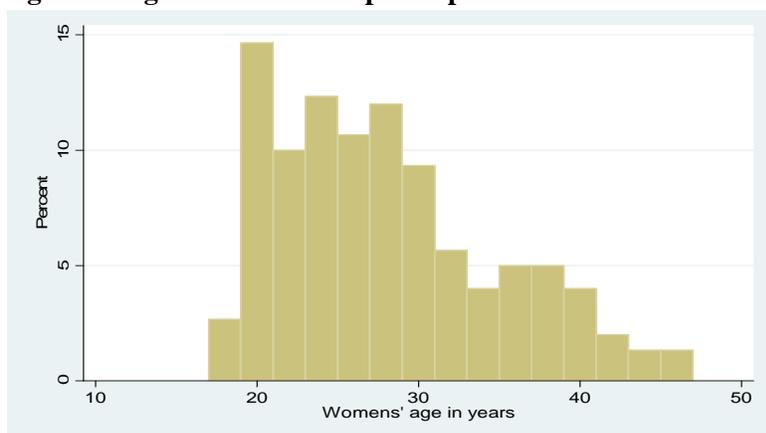
Results

This section includes results for all the key indicators of concern for HAI's child survival project. The data indicating the level of achievement of project objectives at the beginning of each topic are based on only the original four districts of the project, since the baseline levels were also based on those four districts. The remainder of the results unless otherwise indicated refer to the entire surveyed population (all 301 women from all 6 districts). Where important differences exist between results from the smaller and full sample, both will be presented. Results for program objectives include 95% confidence intervals where appropriate.

Characteristics of survey population

A total of 301 women were interviewed for this survey, of whom 210 were in the initial 4 districts and 91 were in the two expansion districts. The average age of the participants was 27.8 years, with most falling between the ages of 20 and 39 (see **Figure 1**). All were between the ages of 15 and 49.

Figure 1: Age distribution of participants



All but three of the women were married and their average number of children was 4.5. Approximately 57% of women had some formal schooling and 41% percent had finished primary school or beyond. Eleven percent of respondents had completed secondary school or higher. See **Table 1** for a summary of demographic characteristics for the initial four districts and the whole survey sample.

Housing characteristics and wealth index

We examined key housing characteristics in order to estimate family wealth and to determine any associations with selected measures of health and health care. A summary of typical housing characteristics is found in **Table 2**. Most participants had metal roofing (72.8%), most had earthen floors (73.4%), and most did not have electricity (74.8%). The most common location of a toilet was outside the house, and almost 20% of respondents had no toilet at all. Radios were found in 41% of homes.

To analyze the effects of household wealth on our objectives, we used a simple 5-point scale with one point each given if a household had cement flooring, metal roofing material, a toilet or latrine, electricity, and a radio. Those with 0-1 points were put in the “lowest” category, those with 2-3 in the “middle” category, and scores of 4-5 were considered the “richest” category.

Table 1: Demographic characteristics of survey population

	Four initial districts		All six program districts	
	Number	(Percent)	Number	(Percent)
Age group				
15-19	15	(7.1)	23	(7.6)
20-24	74	(35.2)	96	(31.9)
25-29	54	(25.7)	78	(25.9)
30-34	31	(14.8)	47	(15.6)
35-39	16	(7.6)	31	(10.3)
40-44	17	(8.1)	21	(7.0)
45-49	3	(1.4)	5	(1.7)
Average age	27.5 (95% CI: 26.2, 28.8)		27.8 (95%CI: 26.7, 28.9)	
Number of children				
1	50	23.8	65	21.6
2-3	53	25.2	75	24.9
4-5	35	16.7	62	20.6
6-7	32	15.2	43	14.3
8-9	22	10.5	33	11.0
10+	18	8.6	23	7.6
Average number of children	4.5 (95% CI: 4.0, 5.0)		4.5 (95% CI: 4.1, 4.9)	
Educational level				
Never attended	95	45.2	129	42.9
Some primary	34	16.2	49	16.3
Completed primary	18	8.6	24	8.0
Some middle school	18	8.6	25	8.3
Completed middle school	15	7.1	23	7.6
Some secondary	13	6.2	17	5.7
Completed secondary or higher	17	8.1	34	11.3
Total women	210	100.0	301	100.0

Table 2: Housing characteristics

	Number	Percentage
Roofing material		
Natural materials	80	26.6
Iron/Zinc	219	72.8
Other	2	0.7
Flooring material		
Earth	221	73.4
Concrete	78	25.9
Wood or Bamboo	1	0.3
Other	1	0.3
Electricity in house		
Yes	76	25.3
No	225	74.8
Location of toilet		
Inside the house	2	0.7
Outside the house	240	79.7
Have no toilet	59	19.6
Possession of radio		
Yes	124	41.2
No	174	58.5
Missing	1	0.3

Results by program objective:

Objective #5: Percent of mothers of children age 0-23 months who received one or more antenatal care visits during their last pregnancy in program districts will increase from an estimated **50% to 70%. Result: 82%**

Women were asked if they saw a skilled health professional (doctor, nurse, or midwife) for care during their last pregnancy, and if so, whom they saw. Women were encouraged to list all individuals that they consulted. In the six districts in which HAI is currently active, 84.1% of women reported visiting a health professional for antenatal care at least once (95% CI: 77.2%, 90.9%), slightly higher than the 81.9% of women reporting seeing a health professional for the original 4 districts (95% CI: 72.5%, 91.3%). Furthermore, 55.8% of women reported attending four or more ANC visits (95% CI: 46.8%, 64.8%). The average number of times a woman attended ANC, including those who never attended, was 3.8 (95% CI: 3.3, 4.3). A large percentage (43.1%) of women initiated ANC during their first trimester (see **Table 3**).

Table 3: Distribution of all women reporting antenatal care during last pregnancy, all six districts

Number and timing of ANC visits	Number of women	Percent	Confidence Limits
Received antenatal care			
Yes	253	84.1	(75.6, 89.8)
No	48	15.9	(10.2, 24.1)
Number of times received ANC			
1 time	12	4.0	(1.8, 8.5)
2 times	39	13.0	(9.0, 18.3)
3 times	34	11.3	(7.7, 16.3)
4 or more times	168	55.8	(46.7, 64.5)
Did not receive ANC	48	15.9	(10.2, 24.1)
Total	301	100.0	
Number of months pregnant when initiated ANC			
1-3 months	109	43.1	(*)
4-5 months	77	30.4	(*)
6-9 months	67	26.5	(*)
Total	253	100.0	

* confidence intervals not calculated because not enough data for 1+ strata

There is a trend towards greater use of ANC for women who are younger, have fewer children and some formal education (see **Table 4**). Women who are less likely to receive antenatal care are women who are over 35 years of age (p=0.029), have never attended school (p=0.001), and are among the poorest in household wealth (p=0.025).

Of the 253 women in this survey who reported being seen by a health professional for ANC, 43 reported seeing more than one type of health provider. **Table 5** indicates which providers were seen according to the most qualified professional. Twelve percent of women reported seeing a doctor for one or more of their ANC visits. While 70.4% of women report receiving ANC from a midwife overall, for only 63.5% of women was a midwife the most highly skilled professional seen.

Table 4: Distribution of all women receiving only antenatal care visit (ANC1) and four or more ANC visits (ANC4) according to age, parity, and education level, all six districts

Background Characteristics	Percentage ANC1	Confidence Limits	Percentage ANC4	Confidence Limits
Age group				
15-19	87.0	(66.4, 95.8)	47.8	(28.2, 68.2)
20-34	86.9	(78.1, 92.5)	57.9	(48.4, 66.9)
35-49	71.9	(56.1, 83.7)	50.9	(35.2, 66.4)
Number of children				
1	92.3	(80.2, 97.3)	61.5	(46.9, 74.3)
2-3	84.0	(67.3, 93.1)	53.3	(39.1, 67.0)
4-5	87.1	(74.6, 94.0)	62.9	(46.5, 76.8)
6+	76.8	(65.6, 85.1)	49.5	(37.9, 61.2)
Educational level				
Never attended	72.9	(60.4, 82.5)	41.9	(31.3, 53.2)
Some primary	89.8	(74.8, 96.3)	63.3	(45.1, 78.3)
Completed primary	95.8	(75.3, 99.4)	75.0	(53.7, 88.6)
Some middle school or higher	92.9	(85.7, 96.7)	65.7	(54.3, 75.5)
Household wealth index				
Poorest	71.9	(56.1, 83.6)	28.1	(17.6, 41.7)
Middle	84.4	(75.6, 90.4)	59.0	(49.2, 68.1)
Richest	95.3	(84.7, 98.7)	75.0	(64.3, 83.3)
Total	84.1	(76.0, 89.8)	55.8	(46.8, 64.8)

Table 5: Percent distribution of ANC providers by background characteristics

Background Characteristics	Doctor**	Midwife	Nurse	TBA	No one	Total women
Age group						
15-19	8.7	73.9	4.4	0.0	13.0	23
20-34	14.0	62.0	10.9	0.9	12.2	221
35-49	5.3	64.9	1.8	3.5	24.6	57
Birth order						
1	15.4	64.6	12.3	1.5	6.2	65
2-3	14.7	57.3	12.0	1.3	14.7	75
4-5	8.1	74.2	4.8	0.0	12.9	62
6+	10.1	60.6	6.1	2.0	21.2	99
Educational level						
Never attended	7.0	58.1	7.8	0.8	26.4	129
Some primary	14.3	63.3	12.2	4.1	6.1	49
Completed primary	16.7	70.8	8.3	0.0	4.1	24
Some middle school or higher	16.2	68.7	8.1	1.0	6.1	99
Household wealth index						
Poorest	9.4	51.6	10.9	0.0	28.1	64
Middle	6.4	68.8	9.3	2.3	13.3	173
Richest	29.7	60.9	4.7	0.0	4.7	64
Total	12.0	63.5	8.6	1.3	14.6	301
Total confidence limits	(7.2, 19.1)	(54.8, 71.3)	(4.9, 14.8)	(0.5, 3.5)	(9.2, 22.4)	

Women with higher levels of education and a higher score on household wealth index have

higher utilization of doctors for ANC than do other groups. It is unclear if the higher percentages in those groups are due to educational attainment or the greater availability of education near health centers. Similarly, it is unclear whether the richest women, according to our index, have more money and thus seek out doctors or if they have utilities such as electricity because they live nearer to a town where there would also be health facilities.

Objective #6: Percentage of mothers with children age 0–23 months who received at least two tetanus toxoid injections during their last pregnancy in the program districts will increase from **48% to 70%. Result: 69%**

Tetanus toxoid (TT) receipt during pregnancy was determined by the recall of the interviewee. We found that, during their most recent pregnancy, 79.7% of women received at least one TT (95% CI: 71.9%, 87.6%), and approximately 69% of respondents from both the original four and all six HAI program districts reported receiving two or more TT. While it is policy to provide TT twice during pregnancy, many women reported receiving three or more injections during their pregnancy (21.3%).

The Rapid Catch Indicator asks whether women have received 2 or more TT injections in their lifetime before the birth of their youngest child. Approximately 81% of women (80.7%, 95%CI: 73.1, 88.3) reported 2 or more TT (see Table 6).

Over 40% of respondents reported receiving five or more TT injections over their lifetime prior to the birth of their youngest child. The percent of women who reported receiving 5 or more TT over their lifetime rises to 50.4% (95%CI: 40.6, 60.3) when women who have had only one child are excluded from the calculation. Forty one participants, or 13.6%, reported never receiving a TT injection over their lifetime.

Table 6: Reported timing of tetanus toxoid injections by survey respondents, all six districts

Background Characteristics	During most recent pregnancy				Lifetime TT				Never	Total
	0	1	2	3+	1	2	3-4	5+		
Age group										
15-19	13.0	17.4	47.8	21.7	17.4	43.5	13.0	13.0	13.0	23
20-34	18.1	8.6	51.1	22.2	5.0	19.0	24.4	40.3	11.3	221
35-49	31.6	17.5	33.3	17.5	3.5	10.5	12.3	50.9	22.8	57
Birth order										
1	12.3	7.7	56.9	23.1	9.2	50.8	26.2	3.1	10.8	65
2-3	20.0	6.7	46.8	22.7	1.3	13.3	42.7	29.3	13.3	75
4-5	14.5	16.1	46.8	22.6	11.3	8.1	12.9	61.3	6.5	62
6+	29.3	13.1	39.4	21.3	3.3	10.1	7.1	59.6	20.2	99
Educational level										
Never attended	31.0	10.1	39.5	19.4	5.4	19.4	20.2	31.8	23.3	129
Some primary	16.3	16.3	51.0	16.3	8.2	20.4	10.2	46.9	14.3	49
Completed primary	4.2	8.3	70.8	16.7	0.0	8.3	16.7	75.0	0.0	24
Some middle school or higher	12.1	10.1	50.5	27.3	6.1	21.2	29.3	39.4	4.0	99
Household wealth index										
Poorest	35.9	6.3	43.8	14.1	7.8	21.9	12.5	29.7	28.1	64
Middle	19.7	12.1	46.2	22.0	4.6	19.7	24.3	38.7	12.7	173
Richest	6.3	12.5	54.7	26.6	6.3	15.6	21.9	54.7	1.6	64
Total	20.3	11.0	47.5	21.3	5.7	19.3	21.3	40.2	13.6	301
Total confidence limits	13.5, 29.3	7.6, 15.6	40.7, 54.4	15.5, 28.5	3.4, 9.4	15.1, 24.3	16.3, 27.2	32.2, 48.7	7.9, 22.6	

Objective #7: Percentage of children age 0–23 months whose last delivery was assisted by a skilled

health attendant in program districts will increase from **16% to 30%**. **Result: 37%**

Skilled birth attendants (SBA) are defined in this survey as a doctor, nurse, or midwife, and exclude “dukuns”, or traditional birth attendants (TBAs). To determine levels of SBA utilization, mothers were asked to list all persons present at the birth of their youngest child. SBA were reported to have assisted at 36.7% of births in the original four districts (95% CI: 23.8%, 49.6%), and 31.9% for all six program districts (95% CI: 21.5%, 42.3%). **Table 7** reflects the overall attendance at birth. Midwives were the most common of the trained professionals, present at approximately 30% of births. Approximately 16% of births are attended by a TBA, and family or friends are present at 73% of births (sometimes with an SBA as well).

Table 7: Attendance at birth by skilled professionals, TBAs, friends of family, all six districts

Assisted by	Number	Percent	Confidence Limits
Health professional			
Doctor	10	3.3	(1.4, 5.2)
Nurse	9	3.0	(0.5, 5.4)
Midwife	90	29.9	(19.9, 39.9)
Traditional birth attendant (“dukun”)	49	16.3	(10.8, 21.8)
Family health promoter (PSF)	5	1.7	(0.0, 3.4)
Relative or friend	221	73.4	(65.2, 81.7)
No one	7	2.3	(0.7, 4.0)
Total	393*		

* Numbers do not add up to 301 because multiple answers were possible

Table 8: Assistance at birth according to age, parity, and education level, all six districts

Background Characteristics	Skilled birth attendants				Untrained attendants				No one
	Doctor**	Midwife	Nurse	Total trained	TBA	PSF	Relative or friend	Total untrained	
Age group									
15-19	0	26.1	0	26.1	8.7	0	65.2	73.9	0
20-34	4.1	27.2	2.3	33.5	17.2	1.4	46.2	64.7	1.8
35-49	1.8	24.6	1.8	28.1	14.0	0	52.6	66.7	5.3
Birth order									
1	9.2	30.8	3.1	43.1	18.5	0	38.5	56.9	0
2-3	2.7	25.3	2.7	30.7	20.0	1.3	45.3	66.7	2.6
4-5	1.6	30.7	1.6	33.9	9.7	0	54.8	64.5	1.6
6+	1.0	22.2	1.0	24.2	15.2	2.0	54.6	71.7	4.0
Educational level									
Never attended	1.6	14.0	1.6	17.1	13.2	0.8	65.1	79.1	3.9
Some primary	2.0	22.5	4.1	28.6	20.4	0	49.0	69.4	2.0
Completed primary	0	33.3	0	33.3	20.8	8.3	37.5	66.7	0
Some middle school or higher	7.1	43.4	2.0	52.5	16.2	0	30.3	46.5	1.0
Household wealth index									
Poorest	0.0	10.9	0.0	10.9	14.1	3.1	67.2	84.4	4.7
Middle	1.7	26.0	1.2	28.9	16.2	0.6	52.0	68.8	2.3
Richest	10.9	43.8	6.3	60.9	17.2	0.0	21.9	39.1	0.0
Total	3.3	26.6	2.0	31.9	16.0	1.0	48.8	65.8	2.3
Total confidence limits	(1.9, 5.8)	(18.3, 36.9)	(0.8, 4.9)	(22.5, 43.1)	(11.2, 22.2)	(0.3, 3.1)	(40.0, 57.8)	(55.0, 75.2)	(1.1, 4.7)

**If a doctor was present, they were considered the highest ranking skilled attendance, then midwife, then nurse.

The association between age and use of a skilled birth attendant is not consistent, with the middle age

group of 20-34 most likely to utilize an SBA (Table 8). Women’s parity, education level, and wealth index appear to influence SBA use. As the number of children increases, the use of trained attendants decreases. Better educated women and those from wealthier homes are more likely to use an SBA.

We found that 22.3% of women used a hospital, clinic, or birthing facility (see Table 9); only 5 women in the sample had utilized the Birth-Friendly Facilities.

Table 9: Locations of birth, all six districts

Location of birth	Number	Percent (95% Conf Limits)
Home	234	77.7 (67.9, 85.2)
Health facilities (total)	67	22.3 (14.8, 32.1)
Hospital	35	11.6 (7.3, 18.0)
Health center	27	9.0 (4.3, 17.8)
“Birth friendly” facility	5	1.7 (0.3, 8.3)

Table 10: Percent of women having a home or facility delivery by background characteristics, in all six districts

Background Characteristics	Health Facility	Home	Total births
Mother’s age			
15-19	13.0	87.0	23
20-34	24.0	76.0	221
35-49	19.3	80.7	57
Birth Order			
1	38.5	61.5	65
2-3	17.3	82.7	75
4-5	21.0	79.0	62
6+	16.2	83.8	99
Maternal Education			
Never attended	13.2	86.8	129
Some primary	10.2	89.8	49
Completed primary	20.8	79.2	24
Some middle school or higher	40.4	59.6	99
Antenatal Care			
None	0.0	100.0	48
1	0.0	100.0	12
2-3	15.1	84.9	73
4+	66.7	33.3	168
Household wealth index			
Poorest	7.8	92.2	64
Middle	19.1	80.9	173
Richest	45.3	54.7	64
Total Number	67	234	301
Total Percent	22.3	77.7	100.0
	(14.8, 32.1)	(67.9, 85.2)	

Women giving birth for the first time had a higher percentage of facility births than the overall average; however, the youngest age group had fewer facility births (Table 10). Women attaining middle school or higher also had a higher percentage of facility births, as did women from the richest household wealth group. Having a facility birth was strongly associated with having had antenatal care: all women in this study who had not attended ANC or had received only one ANC visit delivered at home. Of those

women who received 4 or more ANC visits, two-thirds gave birth in a facility. This may be an issue of access—women who live closer to health facilities are more likely to visit those facilities for antenatal care and are also more likely to be able to go to the facility to give birth. The wealth index was also a strong predictor of a facility birth [P<0.001].

Assuming that all skilled birth attendants properly sanitized their cord cutting instruments, we asked all women not attended by a skilled professional what type of instrument they had used to cut their child’s umbilical cord and how they had cleaned the instrument prior to use. The best method of sanitizing the cord-cutting instrument is to boil it in water for 5 minutes. In this analysis, using a new razor was also considered adequate. **Table 11** shows the results. Very few women boiled their instruments, and a few tried to use alcohol. None reported the use of fire to sanitize the instrument. “Other” techniques included washing the instrument with water or wiping the instrument with cotton, cloth or gauze.

Table 11: Cord cutting techniques
Percent of women using appropriately cleaned instruments for cutting the umbilical cord

Instrument used to cut the cord	Clean method**	Unsanitary techniques			Total
		Did nothing	Used alcohol	Other	
Skilled attendant cut the cord	100.0	--	--	--	96
Unskilled attendant used new razor blade	100.0	--	--	--	45
Other Instruments					
Old razor blade	0.0	73.7	0.0	26.3	19
Knife or scissors	3.4	54.2	3.4	39.0	118
Bamboo	0.0	60.0	0.0	40.0	20
Other	0.0	33.3	0.0	66.7	3
Total	48.2	30.2	1.3	20.3	301
Confidence Intervals	(38.9, 57.6)	(24.1, 37.2)	(0.5, 3.5)	(15.4, 26.3)	

**“Clean methods” include using a new razor blade, boiling the instrument for 5 or more minutes, or the cord was cut by a SBA.

Objective #8: Percent of women with children age 0-23 months who received a Vitamin A dose in the first two months after their last delivery will increase from **28% to 60%**. **Result: 49%**

This objective was not met. Vitamin A uptake was assessed by mother’s recall. We had sample capsules of Vitamin A (a capsule that is squirted into the mouth) and asked whether women received a similar capsule within two months of giving birth. Within the initial 4 districts, 48.8% of women reported receiving Vitamin A (95% CI: 37.2%, 60.5%). In the full six district sample, 44.0% of women reported receiving the capsule (95% CI: 35.2, 52.8).

Vitamin A is usually obtained during postpartum care. In order to verify that women had received full post partum care (PPC), we asked women who claimed to have had PPC whether or not they had received a physical exam. Our analysis includes only those women who verified they had received a physical exam at their PPC. In our sample districts, 15.3% of women had received PPC within 3 days of giving birth (95% CI: 9.5, 23.7), 29.6% had received PPC by the end of the first week (95% CI: 21.5, 37.7), and 47.8% had been examined within one month of delivery (95% CI: 39.2, 56.5). **Table 12** illustrates the timing of the first PPC check according by age group, parity, mother’s educational level, and the household wealth index. The number of women who received no PPC at all increases somewhat with the

age of the mother and her parity. The strongest associations are with education and wealth levels. As educational level increases, substantially more women get PPC and have it sooner after delivery. Women from wealthier households are more than four times as likely obtain early PPC (within three days) than those from the poorest households. Conversely, women who never attended school or who are from the poorest strata are twice as likely as the best educated or wealthiest women to have no PPC at all.

Table 12: Postpartum care by background characteristics, all six districts

Background Characteristics	Timing of first postpartum check				Did not receive PPC	Number of women
	Within 3 days of delivery	4-7 days of delivery	8-28 days of delivery	28-56 days of delivery		
Age group						
15-19	17.4	13.0	21.7	0.0	47.8	23
20-34	14.9	15.4	19.0	3.2	47.5	221
35-49	15.8	10.5	17.5	1.8	54.4	57
Birth order						
1	20.0	18.5	20.0	0.0	41.5	65
2-3	12.0	25.3	12.0	4.0	46.7	75
4-5	19.4	9.7	24.2	1.6	45.2	62
6+	12.1	6.1	20.2	4.0	57.6	99
Educational level						
Never attended	7.0	10.9	17.1	3.1	62.0	129
Some primary	10.2	10.2	26.5	4.1	49.0	49
Completed primary	16.7	8.3	16.7	8.3	50.0	24
Some middle school or higher	28.3	22.2	18.2	0.0	31.3	99
Household wealth index						
Poorest	7.8	14.1	12.3	3.1	62.5	64
Middle	11.0	13.3	22.0	3.5	50.3	173
Richest	34.4	17.2	17.2	0.0	31.3	64
Total	15.3	14.3	18.9	2.7	48.8	301
Total confidence limits	(9.5, 23.7)	(9.3, 21.3)	(13.9, 25.2)	(1.1, 6.5)	(40.2, 57.6)	

Table 13 shows the association between receipt of PPC and receipt of Vitamin A capsules among all women in the project areas. Women who received no antenatal care were the least likely to have postpartum care: 83.3% received neither a physical exam nor Vitamin A. There is an apparent discrepancy between women claiming to have received Vitamin A and women who received a physical exam within 1 month of delivery. On average, 38.7% of women received neither service, 30.7% received one or the other, and 30.7% received both a post-partum physical exam and Vitamin A capsule. Those 30.7% of women who receive one or the other are being seen by the medical system within 2 months of delivery, perhaps for a check-up on their child's health, but they are not receiving full recommended care for themselves.

Table 13: Vitamin A and post partum check by background characteristics, all six districts

Background Characteristics	Neither	Received Vit A, no PPC	Received PPC, no Vit A	Received both	Number of births*
Mother's age					
15-19	43.5	4.3	17.4	34.8	23
20-34	35.9	15.0	17.3	31.8	220
35-49	47.4	10.5	17.5	24.6	57
Birth Order					
1	29.7	10.9	21.9	37.5	64
2-3	37.3	13.3	16.0	33.3	75
4-5	32.3	14.5	17.7	35.5	62
6+	49.5	14.14	15.2	21.2	99
Maternal Education					
Never attended	51.9	13.2	14.0	20.9	129
Some primary	36.7	16.3	16.3	30.6	49
Completed primary	41.7	20.8	8.3	29.2	24
Some middle school or higher	21.4	10.2	24.5	43.9	98
Antenatal Care					
None	83.3	4.2	4.2	8.3	48
1	58.3	25.0	16.7	0.0	12
2-3	32.8	15.1	23.3	28.8	73
4+	27.0	14.4	18.6	40.1	167
Household wealth index					
Poorest	50.0	17.2	7.8	25.0	64
Middle	42.4	11.6	17.4	28.5	172
Richest	17.2	14.1	26.6	42.2	64
Total Percent	38.7	13.3	17.3	30.7	300*
Confidence Intervals	(30.4, 47.6)	(9.6, 18.2)	(13.0, 22.7)	(23.1, 39.4)	100.0

*Missing data on Vitamin A uptake for one woman

Objective #9: Percentage of children age 0–5 months who were exclusively breastfed during the last 24 hours will increase from **29% to 45%**. **Result: 68%**

Over two-thirds of women with children under 5 months in both the 4- and 6-district samples reported providing only breastmilk to their infants in the previous 24 hours (95% CI: 56.6, 77.4), far exceeding the target. Female children were less likely to be exclusively breastfed: 60.4% of girls (95% CI: 46.6%, 74.4%) and 72.9% of boys (95% CI: 58.0, 87.9) were reported to receive only breastmilk.

A high percentage of respondents reported initiating breastfeeding within one hour of delivery: 72.8% (95% CI: 66.6, 78.1). Almost all women reported breastfeeding within the first day: 93.3% (95% CI: 89.1, 96.0). Time of initiation did not vary much between the sex of the child, by educational level, or by household wealth index. Fewer women who had given birth with a traditional birth attendant, however, reported starting breastfeeding within the first hour (see **Table 14**). Women who had given birth with TBAs also reported the highest percentage of pre-lacteal feeding—giving the child liquids or semisolid foods before providing breastmilk. Over one-third of women report giving their child pre-lacteal feeds: 50% of women attended by a TBA gave plain water, sugar water, or formula to their infant before breastfeeding. Pre-lacteal feeding after SBA or facility delivery was half that for TBAs or home births.

Table 14: Percentage of women who initiated breastfeeding within one hour or one day, with or without pre-lacteal feeds, for all six districts

Background Characteristics	Percentage who started breastfeeding		Percentage receiving prelacteal liquid*	Number of children breastfed
	Within 1 hour	Within 1 day		
Sex of child				
Male	73.6	93.1	36.8	174
Female	71.7	93.7	38.6	127
Educational level				
Never attended	75.2	93.8	40.3	129
Some primary	67.4	93.9	44.9	49
Completed primary	70.8	91.7	37.5	24
Some middle school or higher	72.7	92.9	30.3	99
Household wealth index				
Poorest	71.9	92.2	37.5	64
Middle	74.0	93.6	35.8	173
Richest	70.3	93.7	42.2	64
Assistance at delivery				
Health professional	78.1	96.8	24.0	96
Traditional birth attendant	64.6	91.7	50.0	48
Friend, family member, PSF	71.3	92.0	42.7	150
No one	85.7	85.7	28.6	7
Place of delivery				
Health facility	79.0	98.4	19.4	62
Home	72.2	91.9	41.5	234
Birth friendly facility	20.0	93.3	8.0	5
Total	72.8	93.3	37.5	301
Total confidence limits	(66.6, 78.1)	(89.1, 96.0)	(30.0, 45.8)	

*Reported prelacteal foods include water, sugar water, and formula.

Table 15 shows that almost 90% of women exclusive breastfeed their infants for the first two months after birth and then some slowly add water-based and milk-based complementary foods. After 2-3 months of birth, mothers begin to introduce solid and semi-solid foods and by nine months, over 80% are complementary feeding: 84.4% of infants between 6-9 months received both breastmilk and a solid or semi-solid food in the previous 24 hours (95% CI: 73.0%, 95.8%). Of the 45 infants in this age group for which we had data, 7 did not receive either breastmilk or food, and 2 did not receive breastmilk. The remaining 5 had consumed only breastmilk in the previous 24 hours, and were between the ages of 7-9 months.

Table 15: Breastfeeding status for children under the age of 9 months, for all six districts

Age in months	Breastfeeding and consuming:						Total children per age group
	Not breast-feeding	Exclusively breastfed	Plain water	Water based liquids or juice	Other milk	Comple-mentary foods	
<2	0.0	71.8	0.0	3.6	7.2	0.0	82.6
2-3	0.0	33.3	5.1	5.2	2.6	15.4	59
4-5	8.7	4.4	4.2	0.0	8.3	54.2	74
6-7	0.0	18.2	0.0	0.0	0.0	87.0	23
8-9	0.0	0.0	0.0	0.0	0.0	81.8	22
Total number	2	66	3	3	5	57	136
Total percentage	1.5	48.5	2.2	2.2	3.7	41.9	100.0

**Categories were defined in a similar way to the DHS groupings. Each of the six groups are mutually exclusive: not breastfeeding at all, exclusively breastfeeding, breastmilk plus plain water, breastmilk plus other water-based liquids or juice, breastmilk plus other milk products, and breastmilk plus complimentary solid or semi-solid foods.

Objective #10: Percent of mothers of children under one year in program districts who can list at least 3 signs of serious newborn illness will increase to **50%**. **Result: 2%**

Only 2% of all women could correctly cite three or more signs of newborn illness warranting a visit to a health facility (95% CI: 0%, 3.9%). Although the target was not met, 88% of mothers of children under one year of age identified at least one serious sign, and 16% recognized two or more signs (see **Table 16**).

Table 16: Number of signs of newborn illness stated by mothers of children 0-11 mo, all six districts

Number of recognized signs	Frequency	Percent
0	20	12%
1	118	72%
2	24	15%
3	3	2%
Total women	165	

The most commonly reported signs of newborn illness warranting medical treatment were fever, frequent vomiting, fast/difficult breathing, and poor feeding (see **Table 17**).

Table 17: Signs of serious newborn illness reported by mothers of infants, all six districts

Signs of serious illness	Number mothers reported	Percent (95% confidence interval)
Fever	138	83.6 (75.2, 89.6)
Fast/difficult breathing	6	3.6 (1.7, 7.8)
Poor feeding	8	4.9 (2.3, 10.0)
Blood in stool	1	0.1 (0.0, 4.4)
Convulsions	1	0.1 (0.0, 4.4)
Frequent vomiting	17	10.3 (6.6, 15.9)
Jaundice	0	0
Redness around the cord	1	0.1 (0.0, 4.4)
Red/discharging eye	3	1.8 (0.6, 5.6)

Project Interest: Dispersion of maternal health messages by mass media and film

Of the women in the rural central program districts, 17.9% report ever reading newspapers or magazines (95% CI: 12.3, 23.5), 64.1% report ever listening to the radio (95% CI: 56.4, 71.9), and 35.2% report ever watching television (95% CI: 26.6, 43.9). Forty two percent of women report having a radio in the household (95% CI: 34.6, 47.8). **Table 18** shows the percentage of women who access mass media sources less than or more than once a week. Maternal age and education level, as well as household wealth index, are important factors in determining the types and amount of media a woman can access. Younger age was associated with more frequent newspaper reading [P=0.01] and increased television viewing [P=0.034]. Higher levels of education were associated with increased paper reading [P<0.001] and television watching [P<0.001]. Increasing wealth was associated with increased reading [P=0.034], listening [P=0.011] and watching [P<0.001], which is expected due to the financial investment required to buy the newspaper, radio or television. While listening to the radio was strongly associated with wealth, it was not strongly associated with age [P=0.531] or educational level [P=0.312]. Radio remains the most popular and widest reaching form of mass media.

Table 18: Percent media coverage by background characteristics, all six districts

Background Characteristics	Reads newspaper or magazine		Listens to the radio		Watches television		No exposure to all form of mass media	Exposed to all types of mass media	Total women
	Less than once a week	More than once a week	Less than once a week	More than once a week	Less than once a week	More than once a week			
Mother's age									
15-19	13.0	17.4	13.0	52.2	39.1	13.0	21.7	21.7	23
20-34	9.1	10.4	21.7	44.3	12.7	23.1	25.3	10.4	221
35-49	1.8	5.3	17.5	38.6	14.0	12.3	38.6	5.3	57
Maternal Education									
Never attended	3.0	2.3	24.8	31.8	11.6	7.8	39.5	1.6	129
Some primary	2.0	4.1	18.4	42.9	6.1	18.4	28.6	2.0	49
Completed primary	8.3	8.3	16.7	41.7	25.0	25.0	25.0	8.3	24
Some middle school or higher	17.2	23.2	16.2	60.6	21.2	36.4	12.1	26.3	99
Household wealth index									
Poorest	3.1	1.6	25.0	21.9	10.9	4.7	46.9	1.6	64
Middle	9.3	5.8	19.1	42.2	15.6	15.0	29.5	8.7	173
Richest	9.4	29.7	18.8	70.3	17.2	50.0	3.1	23.4	64
Total Percent	7.8	10.0	20.3	43.9	15.0	20.3	27.6	10.3	301
Confidence Intervals	(5.3, 11.9)	(6.3, 15.5)	(15.9, 25.5)	(36.7, 51.3)	(11.6, 19.1)	(13.4, 29.4)	(19.6, 35.5)	(6.4, 14.2)	100.0

Of all women, 42.9% report hearing messages about maternal and child care on the radio (95% CI: 35.5, 50.2) and 27.2% report hearing family planning messages (95% CI: 20.7, 33.8). In order for radio campaigns promoting child spacing or family planning to be most effective, messages must reach the widest audience. Early morning, later afternoon, and early evening appear to be the times when the greatest numbers of women are listening to the radio (see **Table 19**); the 6am-8am and 6pm-8pm time slots had the highest listening rates.

Table 19: Common hours women listen to the radio

Hour time slots	Number of women who reported listening during time slot	Percent of women who report listening to the radio during time slot
6 AM - 8 AM	100	51.8
8 AM - 10 AM	23	11.9
10 AM - 2 PM	19	9.8
2 PM - 4 PM	11	5.7
4 PM - 6 PM	57	29.5
6 PM - 8 PM	77	39.9
8 PM - 10 PM	14	7.3

As part of their program, HAI has been showing a film about maternal and child health in Timor-Leste titled “Feto Nia Funo”, or “The Women’s War”, in communities within their target districts. Almost fifteen percent of respondents reported viewing the film (95% CI: 7.6, 21.6).

Discussion:

This community survey of 301 mothers of children under age two in Timor-Leste provides useful information both about the extent to which HAI’s formal objectives have been met in the project districts, and a comparison of the survey findings with that reported via the national health information system.

For four of the project’s six population-based objectives the targets were met or exceeded. Women reporting one or more ANC visits has increased to 82% in the original four program districts, and to 84% in the entire project area. The MOH target for ANC visits is four or more during a pregnancy, which was reported by 56% of women overall. Our results are substantially higher than the national estimates reported in the 2007 Annual Health Statistics report. In 2007, 55.5% coverage was reported for ANC1 and for 31.0% for ANC4. On average women reported 3.8 ANC visits, which is also higher than the national average reported visits of 1.6 ANC visits per pregnancy. Although there is a real possibility that mothers overestimated the numbers of visits made, the substantially greater numbers of visits in program districts than that reported nationally is encouraging. Further attempts to verify these numbers might include examining the mother’s antenatal care record in the “Lisio” when available.

Tetanus toxoid coverage during the previous pregnancy nearly reached the 70% goal with 69 % of women receiving two or more injections in both the smaller and full samples. Information on the total numbers of tetanus toxoid immunizations received suggest that an even larger number the women in this study were fully protected against tetanus, since 81% stated that they had received two or more tetanus injections over their lifetime. This rate was twice that found by the MOH at the national level in 2007.

The 37% of women in the original four districts who reported the use of skilled attendants at birth exceeded the project target of 30%, and matched the national reported levels for birth attendance¹. Substantially fewer, 32%, reported an SBA in the full six district sample. Skilled birth attendance is substantially higher than that reported in the 2003 DHS, when only 11% of births in the rural central districts were attended by health professionals. An increasing number of women are also giving birth in health facilities: in the 2003 DHS 4% of women living in the rural central region reported giving birth in a health facility and the remaining 96% at their home, while in our survey 22% reported a facility delivery. Postpartum vitamin A coverage was lower than the project target of 60%: only 44% of women reported taking the capsule within two months of delivery. In 2007, the national health data average for Vitamin A

¹ SBA: Manatuto 61.4%, Liquica 30.0%, Manufahi 17.1%, Ermera 22.7%, Aileu 22.3%, Ainaro 15.2%

was reported to be 30.2%², ranging at the district level from 10.2% in Ainaro to a reported 55.9% in Manatuto District. The MOH suspects that these statistics, however, are underestimated due to the multiple locations in which these data can be recorded: IMCI register, the nutrition clinic register, and the Filariasis Control Programme data.

Results for indicators of improved newborn care were of a mixed nature. Exclusive breastfeeding was reported by 68% of women who had an infant under 6 months of age, far exceeding our target of 45%. This result also represents a marked increase from the 18% of mothers in the 2003 DHS who reported that their infant was exclusively breastfed at that age. A number of groups in addition to HAI, most notably the Alola Foundation, have been educating communities intensively on the benefits of exclusive breastfeeding. This dramatic increase in reported exclusive breastfeeding should be validated by additional studies, but even if it is shown to be lower than reported here it is likely that practices in respect to this important determinant of infant and child health are substantially improved over previous years.

Results for the other indicator of improved newborn care, recognizing signs of newborn illness, were dismal. Only 2% of mothers could cite three or more serious symptoms warranting consultation with a health professional. Fully 88% were able to identify at least one sign, with fever the sign most frequently reported. This gap was likely the result of the project's lack of success in getting district midwives trained in newborn care, due to a range of circumstances including the civil unrest that has wracked the country since 2006. The curriculum for the training is ready for implementation, and includes a component of training pregnant women to recognize the signs of newborn illness. Nonetheless, the MNC film "The Women's War" included a number of the signs that should be recognized in assessing the health of a newborn. Over half the women interviewed reported that their last baby's cord was cut using inappropriately cleaned instruments, which should also be an important topic for health promotion efforts. Future work with the film should include attempts to reinforce those messages related to newborn illness and newborn care.

Finally, it was encouraging to see that nearly 15% of respondents had seen the film on maternal and newborn care; film will continue to be an important part of the MOH's and HAI's outreach efforts. The information on radio listening patterns also will be useful in determining the best times for radio programming.

Dissemination of findings

The results of this survey confirm that substantial health progress is being made in the central region of Timor-Leste, particularly in the areas of antenatal and delivery care. More focused efforts will be needed to bring levels of postpartum and newborn care up to levels that meet national standards.

A report of the survey findings for all relevant indicators will be submitted to the MOH for its use in measuring progress and determining the needs for focused efforts in the coming period. The Timor-Leste Directorate of Statistics will be provided a copy of the raw data from the survey as well, with identifiers removed, to be included in its national health data base. The MOH and other partners such as TAIS will be provided with additional analysis of indicators particularly relevant to their efforts upon request.

The primary author of this report plans to use selected survey data for her MPH thesis in 2008-9, and she and other HAI staff also plan to develop paper for publication from the survey results covering health progress made in Timor-Leste since full independence in 2002.

² 2006 Health Statistics Report, HMIS May 2007

References cited:

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List of Appendices

Appendix A—Summary tables for results for project objectives and Rapid Catch indicators

Appendix B—Further analysis of Rapid Catch indicators

Appendix C— Study indicators covered in questionnaire

Appendix D— English and Tetun copies of questionnaire

Appendix E— Population data used for sampling

Appendix F— Survey budget

Appendix G—Training schedule

Summary statistics for program objectives for 4 initial districts (n=210) and full program districts (n=301)

PROGRAM OBJECTIVE INDICATORS	DISTRICTS SAMPLED	NUMERATOR	DENOMINATOR	%	CONFIDENCE LIMITS
OBJECTIVE #5: Percent of mothers of children age 0-23 months who received one or more antenatal care visits during their last pregnancy in program districts will increase from an estimated 50% to 70%	Original	172	210	81.9	(72.5, 91.3)
	Final	253	301	84.1	(77.2, 90.9)
OBJECTIVE #6: Percentage of mothers with children age 0-23 months who received at least two tetanus toxoid injections during their last pregnancy in the program districts will increase from 48% to 70%	Original	144	210	68.6	(57.7, 79.4)
	Final	207	301	68.8	(60.1, 76.6)
OBJECTIVE #7: Percentage of children age 0-23 months whose last delivery was assisted by a skilled health attendant in program districts will increase from 16% to 30%	Original	77	210	36.7	(23.8, 49.6)
	Final	96	301	31.9	(21.5, 42.3)
OBJECTIVE #8: Percent of women with children age 0-23 months who received a Vitamin A dose in the first two months after their last delivery will increase from 28% to 60%	Original	102	210	48.8	(37.2, 60.5)
	Final	132	301	44.0	(35.2, 52.8)
OBJECTIVE #9: Percentage of children age 0-5 months who were exclusively breastfed during the last 24 hours will increase from 29% to 45%	Original	45	66	68.2	(56.9, 81.6)
	Final	61	91	67.0	(56.6, 77.4)
OBJECTIVE #10: Percent of mothers of children under one year in program districts who can list at least 3 signs of serious newborn illness will increase to 50%	Original	2	115	1.7	(0.7, 4.2)
	Final	3	165	1.8	(-0.2, 3.9)

Rapid Catch Indicators for all program districts

INDICATOR	NUMERATOR	DENOMINATOR	PERCENT	CONFIDENCE LIMITS
Percentage of children age 0–23 months who are underweight (-2 SD from the median weight-for-age, according to the WHO/NCHS reference population)	19	147	12.9	(7.3, 18.5)
Percentage of children age 0–23 months who were born at least 24 months after the previous surviving child	157	233	67.7	(62.1, 73.2)
Percentage of mothers with children age 0–23 months who received at least two tetanus toxoid injections before the birth of their youngest child	243	301	80.7	(73.1, 88.3)
Percentage of children age 6–9 months who received breastmilk and complementary foods during the last 24 hours	38	45	84.4	(73.0, 95.8)
Percentage of children age 12–23 months who are fully vaccinated (against the five vaccine-preventable diseases) before the first birthday	52	80	65.0	(53.8, 76.2)
Percentage of children age 12–23 months who received a measles vaccine	103	136	75.7	(66.7, 84.8)
Percentage of children age 0–23 months who slept under an insecticide-treated net (in malaria risk areas) the previous night	182	301	60.5	(49.6, 71.3)
Percentage of mothers with children age 0–23 months who cite at least two known ways of reducing the risk of HIV infection	6	301	2.0	(0.2, 3.8)
Percentage of mothers with children age 0–23 months who report that they wash their hands with soap/ash before food preparation, before feeding children, after defecation, and after attending to a child who has defecated	0	301	0.0	---
Percentage of mothers of children age 0–23 months who know at least two signs of childhood illness that indicate the need for treatment	81	301	27.0	(21.6, 32.4)
Percentage of sick children age 0–23 months who received increased fluids and continued feeding during an illness in the past two weeks	3	168	1.8	(-0.3, 3.8)

APPENDIX B—FURTHER ANALYSIS OF RAPID CATCH INDICATORS

Child spacing

Rapid Catch Indicator: Percentage of children age 0–23 months who were born at least 24 months after the previous surviving child: **67.7%**

We found that 67.7% of children born on our program districts were born at least 24 months after their most recent living sibling (95% CI: 62.1%, 73.2%).

As **Table B1** illustrates, the number of months since previous birth tends to be somewhat shorter for the younger age groups and somewhat higher for the older age groups. The most recent DHS suggested that there was a difference between the spacing of children according to mother’s age. Our data supports this: for every 5 years of age, there is an average of 2.0 additional months between the ages of a woman’s previous two births (95% CI: 0.8, 3.1, p-value=0.002).

The DHS report also suggested that women with no-education and those with less than completion of primary schooling had increased spacing between their children. We found that those who had completed primary schooling or above had on average 3.2 fewer months between their children than those with less schooling, although the difference was not significant (95% CI: -6.7, 0.2, p-value=0.065).

Table B1: Characteristics effecting number of months between previous two live births

Characteristics	Number of months since previous birth					Average difference in age (# months)
	<18	18-23	24-35	36-47	48+	
Total	13.8	18.5	42.2	13.8	11.6	30.3
Age group						
15-19	0	50.0	25.0	0	25.0	32.0
20-24	15.1	28.3	47.2	7.6	1.9	25.1
25-29	13.9	13.9	45.8	16.7	9.7	30.2
30-34	13.0	17.4	37.0	15.2	17.4	33.5
35-39	19.4	16.1	41.9	16.1	6.5	28.3
40-44	4.8	9.5	38.1	14.3	33.3	38.7
45-49	20.0	20.0	20.0	20.0	20.0	34.0
Educational level						
Never attended	13.3	19.1	40.0	15.2	12.4	30.9
Some primary	7.5	20.0	35.0	22.5	15.0	33.1
Completed primary	28.6	9.5	57.1	0.0	4.8	24.7
Some middle school	6.3	25.0	37.5	12.5	18.8	32.3
Completed middle school	11.1	16.7	55.6	11.1	5.6	28.5
Some secondary	10.0	30.0	50.0	10.0	0.0	25.5
Completed secondary or higher	22.7	13.6	40.9	9.1	13.6	29.9

Childhood nutrition

Rapid catch indicator: Percentage of children age 6–9 months who received breastmilk and complementary foods during the last 24 hours: **84.4%**

See results and discussion of complementary feeding under Objective #9.

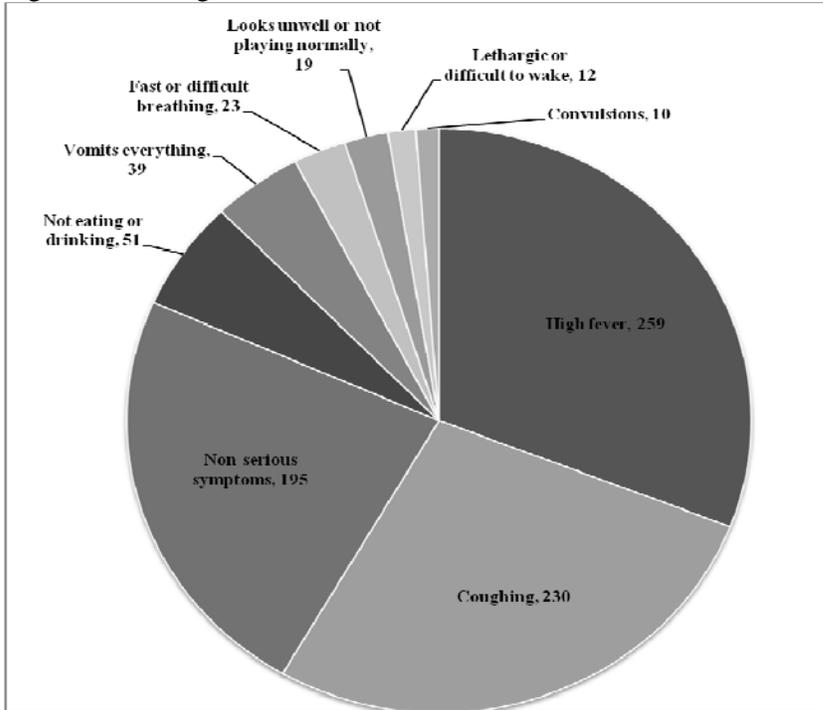
Maternal knowledge of childhood illness and proper treatment

Rapid Catch Indicator: Percentage of mothers of children age 0–23 months who know at least two signs of childhood illness that indicate the need for treatment: **27.0%**

APPENDIX B—FURTHER ANALYSIS OF RAPID CATCH INDICATORS

Twenty-seven percent of women reported 2 or more correct signs of childhood illness (95% CI: 21.6, 32.4). **Figure B2** shows the common responses to the question “What are the signs of illness that would indicate your child is sick and needs to be taken to a clinic?”, and the number of women identifying each symptom. All symptoms predetermined to be “serious” are listed individually and “Non-serious symptoms” include all additional responses. While the majority of these responses were diarrhea or stomachache, a few serious symptoms are included in the “other” category, such as malaria or measles.

Figure B2: Recognition rate for serious and non-serious childhood illnesses



Rapid Catch Indicator: Percentage of sick children age 0–23 months who received increased fluids and continued feeding during an illness in the past two weeks: **1.8%**

Over fifty percent of women reported that their child had suffered from an illness in the two weeks prior to the survey. Only 3 out of 168 sick children (1.8%) received both increased fluids and continued feeding during their illness. Most children received lower amounts or fluids than usual and less food (see **Table B2**).

APPENDIX B—FURTHER ANALYSIS OF RAPID CATCH INDICATORS

Table B2: Childhood nutrition during illness

	Number	Percent
Number of children sick	168	55.8%
Amount of fluids offered during illness		
Less than usual	91	54.2
Same amount	70	41.7
More than usual	7	4.2
Amount of food offered during illness		
Less than usual	113	67.3
Same amount	51	30.4
More than usual	2	1.2
Missing data	2	1.2

Childhood immunizations and anthropometry

Rapid Catch Indicator: Percentage of children age 12–23 months who are fully vaccinated (against the five vaccine-preventable diseases) before the first birthday: **65.0%**

Rapid Catch Indicator: Percentage of children age 12–23 months who received a measles vaccine: **75.7%**

We found that 65.0% of children over the age of 1 year had received all their immunizations (95% CI: 53.8, 76.2). All of the children who had complete coverage also had record of receiving of the vaccine for BCG. Oral reporting of measles vaccination was 75.7% (95% CI: 66.7, 84.8).

History of the five vaccine-preventable childhood immunizations (3 DPT, 3 Polio, and 1 measles) was determined by viewing and recording information from the *lisio*, an antenatal and postnatal care booklet that a woman is given at her first antenatal visit. If the *lisio* was not present, no attempt was made to determine the immunization records for a child beyond the receipt of a measles vaccine. Measles is the final vaccine given at one year of age, and is usually recognized as such, however we feel it may be over estimated in our sample due to the high false positive response in women with children under 1 year of age.

Out of 301 households, only 181 had available *lisios*, of which only 80 were for children over 1 year of age. The most recent Annual Health Statistics Report (MOH, 2007) reported that 34% of children under 5 in Timor-Leste possessed *lisios*. We found that 60% of respondents had their *lisios* in the home, higher than the national estimate. This could be due to the younger age group (under 2 years versus under 5 years). Common responses for why the *lisio* was absent included that it was being held at the clinic and that it was collected after all immunizations were provided. Of the 181 *lisios* seen, 23 were suspected of having incomplete vaccination records based on receipt of a later vaccination but not a primary immunization in a series, or receipt of either DPT or polio but not the other when both are usually provided at the same time. Having consistent national policy for distribution and possession of *lisios* would ensure that this method could be repeated with more validity in the future.

Indicator: Percentage of children age 0–23 months who are underweight (-2 SD from the median weight-for-age, according to the WHO/NCHS reference population): **12.9%**

We did not take weight measurements for the children included in this survey. Instead, we looked at the last recorded weight on the growth chart included in the *lisio*. If the weight recorded was on or under the red line on the *lisio*, which represents the lowest 5th percentile, they were

APPENDIX B—FURTHER ANALYSIS OF RAPID CATCH INDICATORS

considered underweight. This technique was employed by the MOH for reporting on childhood malnourishment for the 2007 Health Statistics Report³. Of the 181 children with *lisios*, 147 had recently recorded weights on their growth chart. About 13% percent of these children were found to be underweight (12.9%, 95%CI: 7.3%, 18.5%).

Household sanitation

Indicator: Percentage of mothers with children age 0–23 months who report that they wash their hands with soap/ash before food preparation, before feeding children, after defecation, and after attending to a child who has defecated: **0%**

None of the women surveyed met all the criteria for this indicator because the question required women to spontaneously report each of the times they washed their hands throughout the day instead of reading the options aloud. Eighty-four percent of women, however reported having soap in the household for hand washing (95%CI: 79%, 90%), 40.1% report using the soap at one or more of the above times, 20.9% at 2 or more times, and 8.0% at 3 or more times. Of those women who reported having soap, 63.0% reported washing their hands prior to food preparation, 24.8% reported washing their hands prior to feeding their children, 22.8% after defecation, and 15.4% after attending to a child who has defecated. The other responses given were usually “while bathing” and “after working”.

Malaria prevention

Indicator: Percentage of children age 0–23 months who slept under an insecticide-treated net (in malaria risk areas) the previous night: **60.5%**

Use of a bed-net was common among households surveyed—60.5% of women reported their use for young children (95% CI: 49.6%, 71.3%). The majority of bed-nets (90.1%) were procured at a health center, and the remaining were purchased.

HIV prevention

Indicator: Percentage of mothers with children age 0–23 months who cite at least two known ways of reducing the risk of HIV infection: **1.8%**

Only one third (33.5%) of the women interviewed reported hearing about the disease “HIV or AIDS” (95%CI: 26.3%, 40.9%). Because of the lack of overall familiarity with HIV, it is not surprising that only two percent of women could report two or more ways of reducing HIV infection. Abstaining from sexual intercourse was the most widely reported method of prevention: 34.7% of the women who recognized HIV reported abstinence. Using a condom and being faithful to one partner were only cited by 8% and 9% respectively. Thirty-eight percent said they knew of no ways to prevent HIV.

³ MOH, Annual Health Statistics Report 2007

List of all indicators to be included in survey

Antenatal care & birth plan
% of women with children age 0-23 months who received one or more antenatal care visits during their last pregnancy
% of women with children age 0-23 months who received four or more antenatal care visits during their last pregnancy
% of pregnant women will make a plan for transport in case of obstetric emergency
Tetanus toxoid immunization
% of women with children age 0-23 months who received at least two Tetanus Toxoid injections during their last pregnancy
% of mothers with children age 0-23 months who received at least two Tetanus Toxoid injections before the birth of their youngest child
Skilled birth attendant
% of women with children age 0-23 months whose last delivery was assisted by a skilled birth attendant
% children age 0-23 months who had clean cord care at the time of birth
Vitamin A
% of women with children age 0-23 months who received a Vitamin A dose in the first two months after their last delivery
% of children under 23 months who have received a Vitamin A dose
% of children under 23 months who have received a Vitamin A dose in the past 6 months
Breastfeeding and childhood nutrition
% breastfed within one hour without pre-lacteal feeds
% breastfed colostrum
% of infants aged 0-5 months who are exclusively breastfed in program districts
% of children age 6–9 months who received breastmilk and complementary foods during the last 24 hours
% of children 0-23 months who are underweight (-2 SD for the median weight for age, according to WHO/NCHS reference population)
Contraception and birth spacing
Contraceptive prevalence rate (CPR) among women of reproductive age (WRA) who are married or in union
% of married women will be using a modern method of child spacing
Unmet need for family planning
% of children age 0-23 months who were born at least 24 months after the previous surviving child
% respondents who know about at least three methods of family planning
% mothers with children <12 months who received counseling about birth spacing at prenatal or postpartum check
% of sexually active respondents who report discussing family planning with their spouse or sexual partner in the past 12 months

% of beneficiaries that live within 5 kilometers of a family planning service delivery point
% of respondents of reproductive age who report discussing family planning with a health or family planning workers or promoter in the past 12 months
% of married WRA in our program districts know where to obtain child spacing information or methods
Postnatal & postpartum visits
% of women who give birth will receive a postpartum care visit within three days of delivery
Childhood immunizations
% of children age 12-23 months who received a measles vaccination
% of children age 12-23 months who are fully vaccinated (against the five vaccine-preventable diseases) before their first birthday
Malaria
% of children age 0-23 months who slept under an insecticide-treated bed net the previous night
Childhood illnesses
% of mothers of children under one year in program districts who can list at least 3 signs of serious newborn illness
% of mothers of children age 0–23 months who know at least two signs of childhood illness that indicate the need for treatment
% of sick children age 0–23 months who received increased fluids and continued feeding during an illness in the past two weeks
Household sanitation
% of mothers with children age 0–23 months who report that they wash their hands with soap/ash before food preparation, before feeding children, after defecation, and after attending to a child who has defecated
Knowledge of HIV
% of mothers of children age 0-23 months who cite at least 2 known ways of reducing the risk of HIV infection
Media exposure
% viewed Feto Nia Funo
% of married WRA who have seen or heard FP messages in our program districts via the following media: -Broad cast media (radio or TV) -Print media -Drama or film

APPENDIX E—POPULATION DATA FOR SAMPLING

District	District population	Sub-district	Sub-district population	Suco	Suco pop	Cumulative population	Selected clusters					
Ainaro	52,476	Ainaro	12,640	Ainaro	4,741	4,741	1					
				Suro-Craic	996	5,737						
				Soro	1,252	6,989						
				Manutasi	1,972	8,961						
				Cassa	450	9,411						
				Mau-Ulo	954	10,365						
				Mau-Nuno	2,275	12,640						
				Mulo	5,791	18,431		2				
				Nuno-Mogue	3,038	21,469						
				Hatubulica	10,807	Mau-Chiga		1,978	23,447	3		
		Leolima	4,976			28,423						
		Hato Udo	8,817	Foho-Ai-Lico	3,841	32,264	4					
				Maubisse	4,947	37,211						
		Maubisse	20,212			Manelobas	920	38,131	5			
						Manetu	2,133	40,264				
						Aitutu	5,032	45,296				
						Edi	2,305	47,601				
						Maulau	2,453	50,054				
						Horai-Quic	1,188	51,242				
						Suco Liurai	542	51,784				
Fatu-Besi	692					52,476						
Aituha	643					53,119						
Manufahi	44,950					Alas	6,485	Dotic		1,578	54,697	8
		Taitudac	1,355	56,052								
		Mahaquidan	1,637	57,689								
		Uma Berloic	1,272	58,961								
		Fatuberlihu	6,326					Bubususo	615	59,576		
								Clacuc	2,601	62,177		
								Fahinehan	1,221	63,398		
								Fatucahi	727	64,125		
		Same	26,066					Caicasa	1,162	65,287	9	
								Letefoho	5,939	71,226		
Holarua	5,266					76,492						
Babulo	4,027					80,519						
Betano	4,577					85,096						
Daisua	3,789					88,885						
Grotu	881					89,766						
Rotuto	33					89,799						
Turiscai	6,073			Tutuluro	1,554	91,353	12					
				Aitemua	757	92,110						
				Beremana	589	92,699						
				Caimauc	678	93,377						
				Lesuata	529	93,906						
				Liurai	450	94,356						
				Manumera	1,255	95,611						
				Matorec	560	96,171						
				Mindelo	430	96,601						
				Orana	366	96,967		13				

APPENDIX E—POPULATION DATA FOR SAMPLING

				Foholau	219	97,186	
				Fatucalo	240	97,426	
Manatuto	36,719	Barique/Natarbora	4,781	Aubeon	1,267	98,693	
				Uma Boco	1,696	100,389	
				Abat Oan	432	100,821	
				Barique	578	101,399	
				Manehat	808	102,207	
		Laclo	7,558	Lacumesac	2,167	104,374	14
				Umacaduac	3,261	107,635	
				Uma Naruc	434	108,069	
				Hohorai	1,696	109,765	
		Laclubar	8,034	Orlalan	2,402	112,167	15
				Funar	1,078	113,245	
				Manelima	1,875	115,120	
				Batara	1,609	116,729	
				Fatumaquerec	505	117,234	
				Sanana'in	565	117,799	
		Laleia	3,205	Lifau	760	118,559	16
				Haturalan	881	119,440	
				Cairui	1,564	121,004	
		Manatuto	10,449	Cribas	1,881	122,885	
				Aiteas	743	123,628	
				Ma'abat	1,678	125,306	
				Sau	4,553	129,859	17
				Iliheu	1,286	131,145	
				Ailili	308	131,453	
		Soibada	2,692	Samoro	480	131,933	
				Leo Hat	661	132,594	
				Fatumacerec	694	133,288	
				Manlala	412	133,700	18
				Manufahi	445	134,145	
Aileu	37,926	Aileu	17,166	Aisirimou	1,262	135,407	
				Bandudato	1,098	136,505	
				Fahiria	760	137,265	
				Fatubosa	2,031	139,296	
				Lahae	512	139,808	
				Lausi	599	140,407	
				Hoholau	806	141,213	
				Seloi Malere	2,460	143,673	19
				Seloi Craic	2,558	146,231	
				Saboria	699	146,930	
				Suco Liurai	4,381	151,311	20
		Laulara	5,448	Cotolau	555	151,866	
				Talitu	2,097	153,963	
				Madabeno	1,397	155,360	
				Tohumeta	602	155,962	
				Fatise	797	156,759	21
		Liquidoe	5,819	Namoleso	1,209	157,968	
				Acubilitoho	975	158,943	
				Betulau	375	159,318	

APPENDIX E—POPULATION DATA FOR SAMPLING

			Faturilau	668	159,986		
			Bereleu	685	160,671		
			Fahiso	1,464	162,135		
			Manucasa	443	162,578		
		Remexio	9,493	Acumau	1,775	164,353	22
				Tulataqueo	1,777	166,130	
				Suco-Liurai	294	166,424	
				Faturasa	1,538	167,962	
				Fadabloco	927	168,889	
				Maumeta	362	169,251	
				Hautoho	1,555	170,806	
				Fahiso	1,265	172,071	23
Ermera	103,199	Atsabe	16,037	Paramin	952	173,023	
				Atara	2,361	175,384	
				Baboi Craic	1,731	177,115	
				Obulo	1,758	178,873	
				Lasaun	974	179,847	24
				Batumanu	1,036	180,883	
				Tiarlelo	323	181,206	
				Laubono	1,189	182,395	
				Atadame/ Malabe	1,776	184,171	
				Leimea Leten	1,623	185,794	
				Laclo	1,112	186,906	
				Beboi Leten	1,202	188,108	25
		Ermera	27,293	Poetete	5,115	193,223	
				Ponilala	3,056	196,279	26
				Talimoro	1,875	198,154	
				Mirtutu	3,115	201,269	
				Leguimea	1,228	202,497	27
				Humboe	1,889	204,386	
				Riheu	4,306	208,692	
				Lauala	1,882	210,574	28
				Raimerhei	1,999	212,573	
				Estado	2,828	215,401	
		Hatolia	30,659	Leimea Sorimbalu	567	215,968	
				Coliate-Leotelo	3,048	219,016	29
				Asulau	1,767	220,783	
				Ailelo	1,944	222,727	
				Leimeacraic	1,192	223,919	
				Samara	548	224,467	
				Manusae	3,873	228,340	30
				Hatolia	2,774	231,114	
				Urahou	2,905	234,019	
				Mau-Ubu	2,539	236,558	31
				Lissapat	2,794	239,352	
				Fatubolu	3,242	242,594	32
				Fatubessi	3,466	246,060	
		Letefoho	19,917	Ducurai	4,439	250,499	33
				Hauptu	3,881	254,380	

APPENDIX E—POPULATION DATA FOR SAMPLING

				Lauana	1,907	256,287	
				Catrai-Craic	2,170	258,457	34
				Catrai Leten	2,340	260,797	
				Goulolo	1,444	262,241	
				Eraulou	1,727	263,968	
				Hatugau	2,009	265,977	35
		Railaco	9,293	Lihu	1,228	267,205	
				Matata	1,395	268,600	
				Tocoluli	946	269,546	
				Fatuquero	1,462	271,008	
				Railaco Craic	1,180	272,188	36
				Railaco Leten	1,067	273,255	
				Samalete	1,193	274,448	
				Deleco	293	274,741	
				Taraco	529	275,270	
Liquicá	54,834	Bazartete	20,190	Fatumasi	1,551	276,821	
				Fahilebo	1,020	277,841	
				Tibar	2,571	280,412	37
				Motaulun	1,477	281,889	
				Metagou	1,422	283,311	
				Lauhata	3,207	286,518	
				Leorema	4,425	290,943	38
				Maumeta	2,097	293,040	
				Ulmera	2,420	295,460	39
		Liquica	18,304	Dato	6,115	301,575	
				Loidahar	2,352	303,927	40
				Darulete	1,256	305,183	
				Luculai	1,019	306,202	
				Hatuquessi	3,012	309,214	
				Acumano	1,705	310,919	41
				Leoteala	2,845	313,764	
		Maubara	16,340	Lissadila	2,549	316,313	
				Guico	1,405	317,718	
				Vatuvou	3,272	320,990	42
				Vatuboro	1,950	322,940	
				Maubaralissa	1,190	324,130	
				Viviquinia	2,716	326,846	43
				Gugleur	3,258	330,104	

APPENDIX F—SURVEY BUDGET

	No.	Level of effort	Unit	Total
Staff				3,731
Contract Supervisors and Interviewers	15	14 days	9	1,850
Foreign consultants - Technical Assistance	1	1 month	1488	1,488
Data Entry System Designer	1	8 days	14	110
Data Entry Operator	3	4 days	26	105
Temporary Drivers	1	17 days	10	178
Travel allowance for HAI staff				3,773
Per diem for HAI staff	7	9 nights	19	1,174
Per diem for contracted staff	15	9 nights	17	2,295
Drivers	4	9 nights	8	304
Transportation				3,324
Car rental	2	8 days	55	885
Fuel Field Operations	6	18 days	8	836
Taxi reimbursement in Dili				23
International Travel - Technical Assistance	1	1 roundtrip ticket		1,580
Materials				324
Pens, clipboards, etc.		1 months		324
Document reproduction				502
Questionnaires	500		1	502
Training				575
Meals and snacks	30	5 days	4	575
Communication				176
Phone cards		1 months	176	176
TOTAL				12,405

<p>In Kind</p> <ul style="list-style-type: none"> Directorate of Statistics Staff--assistance with creation of maps, 5 days Maps Office space <ul style="list-style-type: none"> Training conference room: 4 days Data Entry computers and library use: 4 days Health Alliance International <ul style="list-style-type: none"> Staff--total estimated time: 116 days <ul style="list-style-type: none"> In Field--9 days X 7 staff and 4 drivers = 99 days In Office--estimated 15 days staff time for development of questionnaire and field testing
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Health Alliance International Maternal and Newborn Health Survey 2008
Training Schedule
June 17th – 24th 2008

Supervisor Training, June 17th and 18th

Objectives for the Supervisor training:

1. Introduction to the questionnaire
2. Understanding of role of supervisor
3. Understanding of survey methodology
4. To be ready to train interviewers in defined roles (facilitating small groups)

Tuesday, June 17

9 am	Introductions and welcome
9:10	Review of Schedule of Events for Training
9:20	Expectations of Participants for Training
9:30	Role and Responsibility of Supervisors
10:45	BREAK
11:00	Walk through survey
12:15	LUNCH
1:00	Walk through survey continued
3:30	BREAK
3:45	Tips for collecting good data
4:00	Intro to supervisor checklist
5:00	Process lessons from the day, address questions and feedback on questionnaire, and describe role of supervisors for the next few days

Wednesday, June 20

9 am	Review of Day 1 and schedule for Day 2
9:15	Survey methodology: selection of households and respondents, next house, returning to house, daily log
10:45	BREAK
11:00	Logistics of work in field--field assignments, suco randomization, how to plan/make arrangements for overnights, lunch, driving, etc.
12:00	LUNCH
12:45	Review supervision checklist briefly Practice questionnaire with supervision checklist in groups of 3--only for 20 min or so then give feedback, switch
3:15	Recap of day
3:30	Return to office

APPENDIX F—SURVEY BUDGET
Interviewer Training, June 19th-20th, 23rd-24th

By the end of this training, each participant will have:

1. Knowledge on purpose and objective of the MCH survey
2. Complete understanding of the content of the questionnaires and how to use them
3. Skill in collecting and recording complete, consistent and accurate data

Thursday, June 19th

9 am	Introductions and welcome Review of Schedule of Events for Training Introduction to the Project <ul style="list-style-type: none"> • Project Goals • Project Methods
9:30	Role of Interviewer and Supervisor
10:00	Skit of questionnaire (Narrator can explain skip pattern and lisio)
11:00	BREAK
11:15	Review of Interviewing Principles Challenging questions: how to probe and reword questions
12:15	Lunch
1:00	Review tips for good interviewing
1:15	Practice with survey, supervisors practice using supervisor checklist
3:15	BREAK
3:30	Practice cleaning data from surveys
5:15	Recap of day

Friday, June 20th

9 am	Review previous day
9:15	Methodology: brief intro to random sampling, cluster sampling, and household selection
10:45	BREAK
11:00	Importance of informed consent and confidentiality
12:00	Lunch
1:00	Interviewers/supervisors practice in pairs and give each other feedback
3:00	BREAK
3:20	Miscellaneous review session as needed
3:45	Prep for field exercise
4:15	Recap days events

APPENDIX F—SURVEY BUDGET

Monday, June 23rd

8am	Meet at HAI office for transport to field exercise
9-12ish	Field Exercise
1:00	Lunch
2:00	Groups clean data
4:00	BREAK
4:15	Recap of days events
4:45	Logistics for week