



**Lira District Child Survival Project in Uganda**  
Child Health and Development in a Transitional Region

*Erute North Sub-District, Uganda*  
October 2009 – September 2013

In Partnership with

Uganda Ministry of Health  
Lira District Health Office

**Final Knowledge, Practice, and Coverage Report**

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## ACRONYMS

<b>ACT</b>	Artemisinin-based Combination Therapies
<b>ANC</b>	Antenatal Care
<b>ARI</b>	Acute Respiratory Infection
<b>BCC</b>	Behavior Change Communication
<b>BL</b>	Baseline Assessment
<b>CATCH</b>	Core Assessment Tool on Child Health
<b>CDD</b>	Control of Diarrheal Diseases
<b>CHW</b>	Community Health Workers
<b>C-HIS</b>	Community Health Information System
<b>C-IMCI</b>	Community IMCI
<b>CI</b>	Confidence Interval
<b>CL</b>	Confidence Limits
<b>CMR</b>	Crude Mortality Rate
<b>CS</b>	Child Survival
<b>CORE</b>	Collaborations and Resources Group
<b>CSHGP</b>	Child Survival and Health Grant Program
<b>CSP</b>	Child Survival Project
<b>D</b>	Precision
<b>DHO</b>	District Health Office
<b>DHS</b>	Demographic and Health Survey
<b>EBF</b>	Exclusive Breastfeeding
<b>EPI</b>	Expanded Program of Immunizations
<b>FE</b>	Final Evaluation
<b>HHI</b>	Hands to Hearts International
<b>HC</b>	Health Center
<b>HF</b>	Health Facility
<b>HIV/AIDS</b>	Human Immune Deficiency Virus/ Acquired Immune Deficiency Syndrome
<b>HQ</b>	Headquarters of MTI located in Portland, Oregon
<b>IDP</b>	Internally Displaced Person
<b>IMCI</b>	Integrated Management of Childhood Illnesses
<b>IMR</b>	Infant Mortality Rate
<b>IPTp</b>	Intermittent Preventive Treatment during pregnancy
<b>ITN</b>	Insecticide Treated Net
<b>IYCF</b>	Infant and Young Child Feeding
<b>KPC</b>	Knowledge, Practice, and Coverage Survey
<b>LLITN</b>	Long Lasting Insecticide Treated Net
<b>M&amp;E</b>	Monitoring and Evaluation
<b>MCH</b>	Maternal and Child Health
<b>MICS</b>	Multiple Indicator Cluster Survey
<b>MNC</b>	Maternal Newborn Care
<b>MOH</b>	Ministry of Health
<b>MT</b>	Midterm
<b>MTE</b>	Midterm Evaluation
<b>MTI</b>	Medical Teams International
<b>MTI Uganda</b>	Medical Teams International Uganda
<b>N</b>	Sample size
<b>NGO</b>	Non-Governmental Organization
<b>NMCP</b>	National Malaria Control Program
<b>NUMAT</b>	Northern Uganda Malaria AIDS & Tuberculosis
<b>ORS</b>	Oral Rehydration Salts
<b>PCM</b>	Pneumonia Case Management
<b>PDC</b>	Parish Development Committee
<b>PHC</b>	Primary Health Care
<b>POU</b>	Point Of Use

<b>Rapid CATCH</b>	Core Assessment Tool on Child Health
<b>R-HFA</b>	Rapid Health Facility Assessment
<b>SP</b>	Sulfadoxine-Pyrimethamine
<b>SS</b>	Statistically Significant
<b>SSD</b>	Statistically Significant Decline
<b>SSI</b>	Statistically significant Improvement
<b>SO</b>	Strategic Objective
<b>TBA</b>	Traditional Birth Attendant
<b>TOT</b>	Training of Trainers
<b>TT</b>	Tetanus Toxoid
<b>U5MR</b>	Under 5 Mortality Rate
<b>USAID</b>	United States Agency for International Development
<b>VHT</b>	Village Health Team
<b>WFA</b>	Weight for Age

## Executive Summary

At the outset of the project Uganda was a priority country for child survival efforts, with an IMR estimated in 2006 of 78/1,000 live births, U5MR of 134/1,000 live births, and an MMR of 550/100,000 which had not declined during the past ten years. The leading causes of child morbidity in Lira District were (in rank order): malaria, anemia, diarrhea, respiratory infections, and pneumonia. Causes of child mortality were: pneumonia, anemia, malaria, diarrhea, and respiratory infection. Malnutrition was an important contributing factor to infant and child deaths. The targeted location was Erute North Sub-district in Lira District in Northern Uganda. Direct beneficiaries were 25,498 children <5 and 25,498 WRA for a total of 50,996 direct beneficiaries. Capacity building activities with the DHO were aimed to improve the quality of health care for three sub-districts of Lira, Ogur and Aromo with a total population of 124,379.

The project goal was to reduce child morbidity and mortality in Uganda. Objectives were: 1) Communities assume responsibility for their own health through strengthening community capacity (Village Health Team volunteers (VHTs), Parish Development Councils, and Health Sub-districts); 2) Improved health (C-IMCI) and child care (ECD) behaviors among mothers of children <5 years; 3) Improved quality of health facility services through strengthened IMCI and MNC capacity; 4) Strengthened institutional capacity of MTI and DHO to implement effective and efficient child survival activities. These objectives support MoH goals and strategies as well as those of USAID Uganda. MTI utilized a two-pronged strategy: a) promoting behavior change and community mobilization to take appropriate responsibility for health; and b) building DHO capacity to provide sustainable, quality service delivery at the facility and community levels. The levels of effort by intervention for this Child Survival Project (CSP) were: 25% MNC, 25% PCM, 20% IYCF, 20% CDD, and 10% EPI.

MTI incorporated Early Childhood Development (ECD) activities into its CS project to enhance the impact and sustainability of technical interventions. Past research confirmed that child survival is indivisible from ECD – including health, physical, social/emotional, and language/cognitive domains. The CSP, therefore, integrated ECD into community health activities in order to improve feeding, care giving, and care-seeking behaviors by increasing women's participation in CHW (VHT) structures and integrating ECD into C-IMCI and ANC/EPI outreaches.

The primary implementing partner for this project was the Lira DHO, which regularly met with the design team and committed human resources to the implementation of the proposal, in order to harmonize approaches and plan for sustainability. Hands to Hearts International (HHI) was a collaborate partner, providing ECD TOT trainings for Peer Educators, and HF and MTI staff, and working with MTI and DHO to adapt the HHI curriculum to the local context. The project also coordinated with other CS stakeholders in country.

This FE Knowledge, Practices, and Coverage (KPC) survey was performed in August, 2013. The overall objective of this FE survey was to estimate the current level of chosen indicators as per the monitoring and evaluation (M&E) Matrix of specific objectives and intervention logic in the areas of maternal newborn care (MNC), nutrition and Infant and Young Child Feeding (IYCF),

control of diarrheal disease (CDD), pneumonia case management (PCM), and Expanded Program of Immunization (EPI), along with the indicators of the Rapid Core Assessment Tool on Child Health (CATCH). A 30-cluster stratified sampling design was utilized to select the mothers of children aged 0-23 months. A total of thirty clusters were sampled in Lira District, with twelve households from each cluster being selected for interviews. The KPC FE survey was designed utilizing participatory principles of evaluation in the spirit of partnership and capacity building.<sup>1</sup> The main findings in the areas of MNC, nutrition and IYCF, control of diarrheal disease, pneumonia case management, EPI, and ECD are as follows:

### ***MNC***

Eleven of the 12 MNC indicators, including all 6 of the indicators in the project Logframe and all the Rapid CATCH indicators for MNC, were statistically significantly improved (SSI) through the life of the project. In fact, the only MNC indicator not SSI is the rate of use of modern contraception.

- The rate of mothers receiving at least 2 TT immunizations was already relatively high at baseline (BL) (73%), but still the project was able to show a SSI in this indicator to 89%.
- Additionally the rate of mothers taking proper IPT medication while pregnant was SSI from only 35% at BL to 68% at FE, and the rate of mothers who received iron while pregnant was SSI from 59% at BL to 91% at FE.
- Also, regarding health messaging, there was a statistically significant improvement in the rate of mothers who are able to correctly identify at least 2 neonatal danger signs for which they should seek immediate care, from 2% at BL to 51% at FE.
- At FE, 84% of all childbirths occur under the supervision of a skilled birth attendant, which is SSI from a BL rate of 35%.
- There was a SSI in this the rates of both mothers and children who received a postnatal visit from a trained HW within 2 days after birth. Mothers received a visit at a rate of 50% at FE (up from only 17% at BL), and children received a postnatal visit at a rate of 41% at FE (up from 16% at BL).
- The number of mothers with children aged 0 – 23 months who use a modern method of contraception was 33% at BL and 28% at FE.

### ***Anthropometry AND IYCF***

- At FE, The percentage of children with a Z-score of <-2SD at FE was 20%, not significantly decreased from the BL rate of 28%. However, the IYCF indicator relating to the proper feeding frequency and food diversity for children aged 6-23m was SSI from only 23% at BL to 49% at FE.
- The % of children aged 0-5m who were exclusively breastfed during the 24 hours prior to the survey, while already high at 74% at BL, was SSI to 88% at FE.
- Immediate BF practices for newborns was dramatically and SSI from 29% at BL to 79% at FE. There was also a SSI in the rate of mothers who did not give their child prelacteal feeds (from 47% at BL to 87% at FE), and therefore the summary indicator of immediate and exclusive breastfeeding was SSI from only 16% at BL to 71% at FE.

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<sup>1</sup> KPC 2000+ Field Guide, The Child Survival Technical Support Project and CORE, <http://www.childsurvival.com/kpc2000/kpc2000.cfm>, August 2001.

- There has been a SSI in the composite IYCF indicator (the rate at which children aged 6-23m are fed the proper frequency and food group variety in their diet dependant on their age and breastfeeding status) from 23% at BL to 49% at FE. There was a SSI in proper feeding frequency in breastfed children (31% at BL to 66% at FE) which was the driving factor behind this improvement.
- The % of children receiving Vitamin A in the past 6m at FE (85%) was SSI from BL (70%).

### ***Pneumonia Case Management***

- The % of children age 0-23 months with ARI who were treated with an antibiotic increased significantly from BL to FE (35% at BL to 69% at FE).
- The % of children with ARI who were taken to an appropriate health provider increased significantly over the first half of the project (58% at BL to 86% at MT, but the FE result of 74% was not a SSI from BL).

### ***Control of Diarrheal Disease***

- There was a SSD in the prevalence in the rate of diarrhea at FE (24.3%) from BL (36%), which highlights the gains made in hygiene and water and sanitation (see below in this paragraph).
- There has been a SSI in the % of children who received ORS when suffering from diarrhea since baseline (47% at BL to 62% at FE).
- Zinc usage in children to treat diarrhea, which was almost non-existent at BL (2.6%), was still low but SSI to 18% by FE.
- Hygiene was improved, with the % of mothers who have soap at the place for hand washing and reported washing their hands with soap at least 2 of the appropriate times during a 24 hour recall period (after defecation and at one of the following: before food preparation, before feeding children, or after attending to a child who has defecated) SSI from 54% at BL to 88% at FE.
- The rate of safe feces disposal was SSI from 13% at BL to 61% at FE.
- The % of households of children 0-23m that treat water effectively was SSI from 28% to 38% from BL to FE.

### ***Expanded Program of Immunization***

The project drastically improved immunization coverage in the project area, with 9 of the 11 measured EPI indicators statistically significantly improved. These are excellent achievements that verify excellent gains in immunization at the HF's and through outreach, as well as IMCI, HF supervision, and drug chain management at the HF level.

- Full EPI Coverage (% of children aged 12-23 months who received a BCG, DPT3, OPV3, and measles vaccination before the age of 12 months, card verified) showed a SSI from 16% at BL to 56% at FE.
- Card verified DPT1 was raised from 47% at BL to 91% at FE, and card verified DPT3 was raised from 35% at BL to 85% at FE.
- Card verified measles vaccination was raised from 11% at BL to 66% at FE.

### ***Early Childhood Development***

MTI incorporated ECD activities into its CS project to enhance the impact and sustainability of technical interventions. Research confirms that child survival is positively linked to ECD – including health, physical, social/emotional, and language/cognitive domains.

- Six of the 7 ECD indicators that pertain to ECD behaviors at least 2 times per week were SSI over the course of the project.
  - There has been a SSI from BL of mothers of children aged 0-23 months who report playing games with their child in which they have their child identify their body parts, imitate actions, pretend play, or name objects (38% at BL to 76% at FE).
  - There has been a significant increase from BL of mothers report engaging their children in linguistic learning activities such as telling their child stories, singing them songs, or naming objects for them at least twice weekly (23% at BL to 64% at FE).
- Beliefs regarding the importance of several ECD components were also SSI. All of the indicators measuring beliefs regarding the fundamental principles behind ECD were SSI, except for one which was already above 90% before ECD messaging began.
- There has been a SSI from BL in the rate of mothers who report that they talk or sing to the child while feeding the child (58% at BL to 84% at FE).

### ***Malaria***

The project did not have a malaria component but rates of malaria and malaria prevention and care seeking practices improved.

- Over the course of the project, the rate of malaria in children under 2 was SSD from 75% at BL to 58% at FE.
- There has been a SSI in the use of bed nets in mothers of children under 2 since BL (41% at BL to 57% at FE), which is commendable considering there is a decrease in the availability of ITNs. However, the rate of children under 2 sleeping under a bed net was not statistically changed from 51% at BL to 58% at FE.
- The rate of households that contained at least 1 ITN was SSD from 82% at BL to 58% at FE. This correlates with the findings of the health facility assessment at final that should a lack of available nets for distribution in the entire project area.
- There has been a SSI in the rate of children treated with an antimalarial drug within 24 hours of the start of the fever, from 25% at BL to 52% at FE. The driving factor behind this increase is the fact that the rate of care seeking (mothers who sought care for their child with fever within 24 hours) was SSI from only 22% at BL to 83% at FE.

### ***Health Contacts***

A great success of this project was the very significant increase in contact rates between mothers in the project area and qualified health workers or sources of accurate health information regarding MNC and mother and child health.

- Due to the projects strengthening of community capacity through VHTs, Parish Development Committees (PDCs), Mother Leader Groups, and Health sub-districts, the rate of mothers having contact with trained health personnel in the previous month was SSI from only 29% at BL to 92% at FE.
- Contact with VHTs led the SSI, with a rate of 81% by FE, up from only 10% at BL.

- Mothers now (at FE) attend a monthly meeting of some type in order to discuss their health or the health of their baby at a rate of 85%, a very large SSI from the baseline rate of 23%.
- There is a high saturation of health messaging in all villages from the VHTs, at 80% at FE, and also Health Educators, at 61% at FE.
- There is also high saturation of health messaging through the radio, which is shown by the high rate of mothers who report hearing health messaging from the radio, at 82% at FE.
- There are high rates of mothers hearing each important health topic (hand washing, treating water, danger signs/care seeking, diarrhea care, and SBA), with all rates above 75% (see the table for Health Contacts in the Results section).

Working in partnership with the DHO, MTI Uganda completed a project that improved the health of village communities in Lira District through building DHO capacity to provide sustainable, quality service delivery at the facility and community levels, and through promoting behavior change and community mobilization to take appropriate responsibility for health. This was accomplished through a combination of interventions, including providing supplementary training, supervision, and follow-up coaching of VHTs. The results of this FE KPC Survey reveal the many sustainable successes were accomplished in Lira District, as well as some continuing challenges of this project area that may be used in future projects as lessons learned.

# CHAPTER 1

## BACKGROUND, PROCESS AND PARTNERSHIP BUILDING, AND METHODS

### 1.1 Background

#### Program Strategy and Interventions

##### Goal and Objectives

The project goal was to reduce child morbidity and mortality in Uganda. These objectives supported MoH goals and strategies.

- **Objective 1:** Communities assume responsibility for their own health through strengthening community capacity (VHTs, Parish Development Councils, and Health Sub-districts).
- **Objective 2:** Improved health (C-IMCI) and child care (ECD) behaviors among mothers of children <5 years.
- **Objective 3:** Improved quality of HF services through strengthened IMCI and MNC capacity.
- **Objective 4:** Strengthened institutional capacity of MTI and DHO to implement effective and efficient child survival activities.

**Strategic Approaches:** MTI utilized a two-pronged strategy: a) promoting behavior change and community mobilization to take appropriate responsibility for health; and b) building DHO capacity to provide sustainable, quality service delivery at the facility and community levels. The CSP implemented activities that strengthen community volunteer capacity to improve maternal and child health, based on the MoH policy prioritizing Village Health Teams (VHTs). Through the CSP, supplementary training, supervision, and follow-up coaching of VHTs was provided. The CSP worked hand-in-hand with DHO and HF staff that functions as support for VHTs. At present, the Senior Health Educator of the DHO oversees VHT activities.

At their request, the CSP assisted the DHO to build on previous training and strengthen the *health facility staff skills* through refresher trainings focused on selected topics within IMCI, such as CDD management with ORS+zinc and PCM.

**Technical Interventions:** The level of effort by intervention for this CSP was: 25% Maternal and Newborn Care, 25% Pneumonia Case Management, 20% Infant and Young Child Feeding, 20% Control of Diarrheal Disease, and 10% Immunization. The CSP coordinated with the DHO and other actors in support of programs directed towards malaria control and HIV/AIDS. ECD supported the proposed technical interventions through cross-sectoral collaboration, focused on reinforcing positive early child care practices and interaction.

### Objectives of the KPC Survey

The FE KPC survey was conducted in September of 2013. The objectives of the KPC survey were as follows:

- Appropriately collect data on the major areas of child and maternal health, including: maternal and newborn care, infant and young child feeding (IYCF), anthropometry, immunization coverage, diarrhea, acute respiratory infection (ARI), fever and malaria, water and sanitation, and hygiene. The survey collected the appropriate data by interviewing 33 mothers of children aged from 0-23m of each age and previous illness category needed to obtain 33 answers to each question in each of 6 SAs. Therefore, this produced a sample size of 198 for each question/indicator. This data will be used to determine progress of all indicators in the Project Design and, combined with qualitative studies, will determine areas of success and challenges, and direct the project in its second half.
- Promote capacity building: staff members were trained in the use of survey training methodology in order to facilitate future monitoring and evaluation.
- Train staff members in data analysis through the use of LQAS hand tabulation and training sessions following data collection.
- Train staff members in making changes to the monitoring and evaluation plan and health information system by relating the indicators used to the projects objectives, outputs, and activities during the data analysis training.
- Promote community awareness and acceptance through follow up Community Feedback Sessions.
- Partnership building: The survey utilized the concept of partnership building in all phases of training, data collection, and data analysis by involving all key stakeholders in all phases of the survey process.

### **1.2 Process and Partnership Building**

MTI had two principal implementing partners in the project, the DHO and Hands to Hearts International. The project was coordinated with other CS stakeholders in country as well. The DHO is the local representative of the MOH, and therefore was a critical partner for long-term strengthening of county health services. An inclusive process was followed to involve all stakeholders in the design, training, implementation, and analysis of the KPC survey. The DHO, HHI, and USAID were all invited to participate in all aspects of the survey via letters and personal contact that outlined the exact process and dates of the training and survey. The DHO was interested all phases of the survey, and helped in areas where they were able, including, getting the word out to all villages via radio and personal visits, and reviewing and discussing results. They were also helpful during the baseline in adapting the survey to the local context and ensuring that the survey was performed in a culturally appropriate manner. Permission to conduct the survey was obtained from the MOH. The survey team was comprised to be as inclusive as possible in order to foster partnership. . Six supervisors and twenty four enumerators were chosen from members of MTI Uganda and the communities of Lira District.

### 1.3 Methods

The overall objective of this FE survey was to estimate the current level of chosen indicators as per the M&E Matrix of specific objectives and intervention logic in the areas of nutrition, immunization, pneumonia case management, and control of diarrheal disease, along with the indicators of the Rapid CATCH. In addition to this, questions and indicators were chosen to measure areas of Early Childhood Development. The survey was designed using LQAS methodology so that the project area may be divided into 6 management areas (Supervision Areas), and each of these areas monitored along with the project area as a whole. This provides the project with MT results for the entire project as well as a breakdown by SA so that actions based on the results may be targeted not only by indicator but also by management area. The KPC FE survey was designed utilizing participatory principles of evaluation in the spirit of partnership and capacity building.<sup>2</sup> The Core Team consisted of members of MTI Uganda, with backstopping by the Sr. Advisor in M&E from HQ. The survey team was comprised of 6 supervisors, who were members of MTI Uganda, and the communities of Lira. The enumerators were devised of members of MTI Uganda, , and local survey takers (enumerators) chosen from Lira District. Selection of the team members was based on their skills and their future role in the project and thus provided ownership of the survey and the project itself. The Sr. Advisor in M&E HQ, Africa Health Program Advisor, MTI Uganda Child Survival Program Manager, MTI Monitoring and Evaluation Officer George Aguze, , and MTI Uganda country office staff were involved in the evaluation planning process, including the development of the questionnaires and the recruitment of various team members. The trainings for the KPC Survey, data entry, and data analysis were directed by the Sr. Advisor in M&E HQ. Data analysis was performed utilizing Epi Info by the Sr. Advisor in M&E HQ and shared back with the MTI Uganda Core staff for discussions so that the results could be shared with the country staff and then the communities of Lira District through Community Feedback sessions. Final data analysis was performed in MTI HQ.

#### a. Development of the Questionnaire

The evaluation team reviewed the project documents including the detailed M&E Matrix with the project's goal, objectives, and activities. Key indicators were then chosen based on these parameters in conjunction with the newly revised Rapid CATCH (2008) and KPC 2000+ modules.<sup>3</sup> The initial draft questionnaire was developed and shared with the MTI Uganda staff for comments, suggestions, and feedback. Local and regional translators then translated the finalized version of the questionnaire into Luo. Separate translators then translated the questionnaires back into English to ensure that the wording of the questions and answer choices were accurate. Any changes necessary were made at that time. Additional changes important to the local context were made throughout the

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<sup>2</sup> KPC 2000+ Field Guide, The Child Survival Technical Support Project and CORE, <http://www.childsurvival.com/kpc2000/kpc2000.cfm>, August 2001.

<sup>3</sup> *ibid.*

training, and the final questionnaire was completed following the fourth day of the training which included a field test of the questionnaire.

In addition to the questionnaires, anthropometric measurements consisting of age, gender, and weight of the eligible children aged 0-23 months were taken at the time of the survey from those children randomly chosen for the main questionnaire. Salter hanging scales were used for the weight measurement, which were calibrated prior to each weighing to ensure accuracy. The measurements were taken in order to calculate the child's weight for age and corresponding Z-scores.

### **b. Sampling design**

A 30-cluster stratified sampling design was utilized to select the mothers of children aged 0-23 months. A total of thirty clusters were sampled in Lira district, with twelve households with children under the age of 24 months from each cluster being selected for interviews. The overall sample size of 360 households was derived from modifying the simple random sampling design. In a simple random sampling design, a sample size (n) of 96 is derived based on the formula:

$$n = z^2 (pq) / d^2$$

With a desired precision of  $d=0.05$ :

The estimated proportion  $p=0.5$  (chosen as it requires the largest sample size, thus ensuring that an adequate sample size is chosen), and  $q=1-p$ .

The desired Confidence Interval=95% leads to a  $z^2 = 1.96$

The required sample size (n) = 96.

A cluster sample introduces bias in the form of the design effect into the sampling frame, meaning that households in close proximity have more in common than households that are from different areas of the same community, which decreases their possible variation. Therefore, the number of households should be doubled to at least 192. Taking into account that KPC surveys are used to estimate coverage for many different interventions at the same time, which requires looking at sub-samples (such as children less than 6 months old in order to estimate rates of exclusive breastfeeding), it is recommended that the sample size be increased even further, and therefore a sample size of 360 was chosen. Consequently, a 30-cluster stratified sampling design was adapted for the catchment area, with ten households interviewed in each cluster. The true estimate of the survey results include a margin of error as derived using the formula of 95% confidence limits:

$$P = p \pm z \sqrt{(pq/n)}$$

**P** = the actual rate or proportion

$p$  = the survey estimate

$p$  = prevalence

$q$  =  $1-p$

$z$  = the confidence level (1.96 for a confidence level of 95%)

$n$  = sample size

Choosing 30 clusters of 12 mothers, for a total sample size of 360, was done to ensure that the 95% confidence interval of each estimate would be narrow enough to distinguish differences in indicators over time in a meaningful way. The number of mothers per cluster was raised slightly, from the average KPC Survey that utilizes 10 mothers, to 12 mothers, so that a certain number of ECD related indicators would have a sample size large enough to be able to effectively compare certain health related outcomes between Aromo sub county, which continued to implement ECD in the second half of the project, and Ogur and Lira sub counties, which did not continue to implement ECD in the second half of the project.

### **c. The Selection Process:**

The MTI Africa Health Program Advisor, MTI Uganda Child Survival Program Manager, MTI Monitoring and Evaluation Officer, along with other country office staff, met with the DHO and various local leaders and community personnel to determine the respective populations of each of the villages included in the survey sampling frame. Population figures obtained from MOH Lira district statistics for 2011 were used in conjunction with mapping techniques and visualization of the areas by MTI Uganda staff. Each village in the project area was listed randomly, with its population beside it. When the list was complete, the cumulative population of each village was determined by summing the total population of that village with the combined population of all the preceding villages on the list. The total cumulative population of the villages in the catchment area was then divided by 30 (corresponding to the 30 clusters needed) to obtain the sampling interval for that region. A random number was then chosen, with the stipulation being that the number had to be less than or equal to the sampling interval. The cumulative population of each village was then consulted, and the village containing the random number (the village whose cumulative population is equal to or larger than the random number, and whose preceding village had a cumulative population less than the random number) was chosen as cluster number 1. The second cluster was then identified by adding the sampling interval to the random number. The village whose cumulative population contained this number was chosen as the location of cluster number 2. The remaining clusters were then identified by continuing to add the sampling interval to the number that identified the previous cluster. In this way, each cluster was randomly chosen, with proper weight assigned to each village based on its population size. The larger the size of a population of a village, the greater the chance of having one or more clusters assigned to it.

The center of each cluster was determined by allowing the supervisors and enumerators local to these villages enlist the help of the Village Chief or elders to determine the spot where they felt that an equal number of households were on each side. The survey team then chose a random starting direction by spinning a bottle in the physical center of the cluster. The team would then walk in the direction the bottle pointed, and count the number of households in that direction until they reached the end of the households in that cluster. The survey team would return to the center and then choose a random number from a random number table, with the requirement that it had to be less than the number of homes in that direction. They then counted the doorways in the direction the bottle was pointing until they reached the doorway that corresponded to the random number chosen. This was deemed the first house. A protocol was established and written during the training sessions, prior to the survey, that determined which households, children, and thus mothers would be eligible for the survey. If the chosen household contained a child aged 0-23 months that was present and sleeps in the house at night, and a mother that was present and sleeps in the house at night, the survey would be taken at this household. If there was no child under two present, or the mother was not available for the interview, the survey team would move to the household that had the closest door relative to the doorway of the household just eliminated. This procedure was then repeated until 12 successful interviews with eligible mothers were conducted in that cluster.

#### **d. Training of Supervisors and Enumerators**

The training of supervisors and enumerators required 4 days in total. The training curriculum was adapted from the CORE Group's Knowledge, Practice, and Coverage (KPC) Survey Training Curriculum. The training curriculum was shared with the Core team prior to the training, and the Core team was fully involved with all aspects of the training in order to strengthen the local capacity to conduct future small-sample surveys.

Six supervisors were chosen for the FE survey from MTI Uganda staff. The training regimen of the supervisors included: the objective of the evaluation, the sampling process of a 30-cluster sampling frame, proper selection of the clusters, households, children, and mothers, accepted technique and protocol regarding data collection, and an in-depth review of the questionnaires to be used. Measurement of weight was first demonstrated, and then performed, to ensure proper technique. Training methods used included several days of mini lecture followed by discussions, demonstrations, role-play, group work, and pre-testing of the questionnaires. Their responsibilities included supervising twenty-four local enumerators, taking part in every aspect of the data collection, and taking the lead in choosing each cluster's center, the household chosen, the eligible infant, and then the eligible mother. The training of the enumerators took place with the training of the supervisors and consisted of a several day process that was similar in nature to the training regimen of the supervisors. It included the same several days of mini lecture followed by discussions, demonstrations, role-play, and group work including the measurement of weight, using several children under two for practice. Repeated practice administering the questionnaires and completing each set of 8 questionnaires properly was performed on local volunteer mothers who were not eligible for inclusion in the

actual survey. The survey teams then performed a field test of the questionnaire in nearby Lira district villages that had not been randomly selected for the survey, under the watchful eyes of the Core team. Following the field test the training concluded with a meeting to discuss any issues that arose during the field test and make final changes or adjustments of the questionnaire so that it would be as accurate and context appropriate as possible for the survey. These changes were then made to the questionnaire prior to making copies for the survey.

#### **e. Data Collection**

Each supervisor was assigned four enumerators for a total of six groups, each consisting of four enumerators and one supervisor. A supervisor went to the first chosen house, with two of the enumerators in his/her team, to determine the eligibility of that household, choose the eligible child aged 0-23 months, choose the eligible mother, and weigh the child chosen, using the protocol developed previously. The supervisor would then help determine which questionnaires in the set of 8 questionnaires could be asked at that household (always beginning with the main questionnaire). As the 2 enumerators conducted the rest of the interview with the appropriate questionnaires, the supervisor would then take the other two enumerators in the team to the next eligible household and repeat this process, and would therefore alternate between the two groups of two enumerators. The supervisor would then help each group find the remaining eligible children to complete the set of questionnaires. This allowed the supervisor to take the lead role in determining the eligibility of the household, the weighing process, and immediately checking and correcting any problems with each finished questionnaire while the mother was still available. Each evening the supervisors and Core team met and discussed any issues that arose during the day in order to ensure consistency in the data collection process. The data collection process required 5 days in total, with an average length of interview of approximately 35 minutes.

#### **f. Data Analysis**

A preliminary analysis of the data was performed by calculating frequency distributions of major indicators were prepared using the Epi-info 3.5.3 database, so that MTI Uganda staff had some immediate results to guide programmatic decisions and guide community feedback sessions. These results were then used in discussing the Project design in detail with the MTI Uganda staff in order to increase their capacity in developing project designs and formulating monitoring plans from the objectives, outputs, activities, and indicators chosen.

The final analysis was then performed, also using the Epi-info 3.5.3 database. All Rapid CATCH indicators, indicators from the M&E Matrix, several indicators chosen from the KPC 2000+ modules, and indicators dealing with ECD and Health Contacts were presented in the analysis. A 95% confidence interval and a precision of 0.5 were used for each indicator, and 95% confidence limits were calculated for each.

## **g. Results and Discussion**

The results are organized into sections that represent each area of the different study indicators. The following chapters represent the program intervention areas, as per the M&E Matrix. Each table contains the indicators measured for that intervention area, with the M&E Matrix indicators denoted with a red box. Also, all Rapid CATCH Indicators are highlighted with orange font. All indicators that have shown a statistically significant improvement at FE have the FE data in red font, and any indicators showing a statistically significant decline are highlighted with a yellow font.

## CHAPTER 2

### MATERNAL AND NEWBORN CARE

Project Matrix Indicators Are Denoted with Red Boxes  
 Rapid CATCH Indicators Highlighted in Orange Font  
 Data at FE that show a SSI are indicated with a red font  
 Data at FE that show a SSD are indicated with a yellow font

MATERNAL AND NEWBORN CARE						
<ul style="list-style-type: none"> <li>• Key to comments on the right:               <ul style="list-style-type: none"> <li>&gt; SS=Statistically Significant</li> <li>&gt; SSI=Statistically Significant Increase</li> <li>&gt; SSD= Statistically Significant Decrease</li> </ul> </li> <li>• RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>• ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
10. % of mothers of children age 0-23m who had <u>one</u> or more antenatal visits when they were pregnant with the youngest child	85.7	81.2-89.4			96.1	93.4-97.8
11. % of mothers of children age 0-23m who had <u>four</u> or more antenatal visits when they were pregnant with the youngest child	35.3	29.9-41.0	49.6	42.6-56.4	57.8	52.5-62.9
12. % of mothers of children aged 0-23m who received at least 2 TT vaccinations before the birth of their youngest child	75.7	70.4-80.4	73.5	67.3-79.6	89.4	85.8-92.4
13. % of mothers with children age 0-23 months who received at least 2 doses of IPT during the pregnancy with this youngest child.	35.0	29.6-40.7	59.1	52.3-66.0	68.3	63.3-73.1
14. % of mothers of children aged 0-23m who received iron tablets/syrup while pregnant	58.6	52.3-64.6			91.0	87.6-93.8
15. % of mothers who took iron tablets/syrup for at least 12 weeks	0.0	0.0-0.0			51.4	46.1-56.6
16. % of children aged 0-23m whose births were attended by skilled personnel	35.3	29.9-41.0	53.3	46.4-60.2	83.9	79.7-87.5
17. % of children aged 0-23m whose births were attended by a traditional birth attendant	48.3	42.6-54.1			11.9	8.9-15.9
18. % of mothers of children aged 0-23m who received a post-natal visit from an appropriate trained health worker within two days after birth	16.7	12.5-20.9	30.0	23.7-36.4	50.3	45.0-55.5
19. % of mothers of children aged 0-23m who know at least 2 maternal danger signs	2.0	0.7-4.3	20.0	14.4-25.6	51.1	45.8-56.4
20. % of children aged 0-23m who received a post-natal visit from an appropriate trained health worker within two days after birth	16.3	12.2-20.5	18.8	13.3-24.2	40.8	35.7-46.1
21. % of mothers of children aged 0-23m who are currently	33.3	28.0-39.0	30.0	23.6-36.4	28.1	23.5-33.1
using modern contraception						

Every MNC indicator measured, except for modern contraception, was statistically significantly improved (SSI) over the life of this project. All project indicators were SSI, including the following:

- **Tetanus Toxoid:** The percentage of mothers receiving at least two tetanus toxoid immunizations in Lira District was SSI from BL (73%) to FE (89%), despite the fact that there was no SSI at MTE. This increase indicates excellent improvement of antenatal care services and tetanus immunizations being performed by antenatal health care staff, as well as increased utilization of these services.

- **IPT:** At baseline only 35% of mothers took proper anti-malarial medication at least 2 times during pregnancy with their youngest child. By FE this was SSI to 68%, which speaks to the utilization of ANC services as well as improved HF Supervision and drug chain improvements.
- **Iron While Pregnant:** The percentage of mothers who received iron while pregnant was SSI from 59% at BL to 91% at FE, which again shows the excellent increase in utilization of ANC services, supportive supervision at the HF level, and drug chain improvements.
- **Skilled Birth Attendant:** At FE 84% of all childbirths now occur under the supervision of a skilled birth attendant, which is SSI from BL (35%). MTI has accomplished this through focus on increasing the use of health facilities and skilled birth attendants through VHTs, and mothers groups who are being trained in health promotion. This training also included the importance of ensuring that both mother and child receive follow up care including a post partum visit with a trained health professional within 3 days of birth.
- **Danger Signs:** There was a SSI in the rate of mothers who are able to report at least 2 maternal danger signs from 2% at BL to 51% at FE. This is due to extensive health messaging performed throughout the project.
- **Mother Postnatal Visit:** There was a SSI in this indicator, from 16.7% at BL to 28% at FE, also due to increased activity of VHTs and mothers groups.

## CHAPTER 3

### ANTHROPOMETRY AND INFANT AND YOUNG CHILD NUTRITION

#### 4.1 Anthropometry-Nutritional status of children aged 0-23 months

Malnutrition and under-nutrition are major determinants in the increased vulnerability of children to many infectious diseases, including diarrhea, ARI, and febrile illness. Inversely, many infectious diseases may be the cause under-nutrition in children. In addition, the nutritional status of children indirectly reflects the health and nutrition status of mothers. Therefore, the nutritional status of children aged 0-23 months is an important indicator in relation to child survival and community health programs.

In this survey, nutritional status was assessed through the anthropometric measurement of weight-for-age in children aged 0-23 months. The weight of each child was taken and combined with the age and gender of the child to calculate the weight-for-age indicator. The indicator is expressed in standard deviations (Z-score) from the median values of weight-for-age of the CDC reference population from the year 2000.

#### ANTHROPOMETRY

**Project Matrix Indicators Are Denoted with Red Boxes**

**Rapid CATCH Indicators Highlighted in Orange Font**

**Data at FE that show a SSI are indicated with a red font**

**Data at FE that show a SSD are indicated with a yellow font**

ANTHROPOMETRY						
WFA Children 0-23m (Undernutrition)						
<ul style="list-style-type: none"> <li>• Key to comments on the right:                             <ul style="list-style-type: none"> <li>➢ SS=Statistically Significant</li> <li>➢ SSI=Statistically Significant Increase</li> <li>➢ SSD= Statistically Significant Decrease</li> </ul> </li> <li>• RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>• ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
			*LQAS measured all Project Indicators and Rapid CATCH Indicators			
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
22. % distribution of moderately malnourished children (-3< Z-score >-2)	17.0	12.9-21.7			10.1	7.3-13.8
23. % distribution of moderately malnourished female children (-3< Z-score >-2)	15.5	10.2-22.2			7.4	4.2-11.8
24. % distribution of moderately malnourished male children (-3< Z-score >-2)	18.6	12.6-25.9			13.8	8.8-20.3
25. % distribution of severely malnourished children (Z-score <-3)	10.7	7.4-14.7			10.1	7.3-13.8
26. % distribution of severely malnourished female children (Z-score <-3)	9.0	5.0-14.7			10.3	6.5-15.3
27. % distribution of severely malnourished male children (Z-score <-3)	12.4	7.5-18.9			9.9	5.6-15.8
28. % of children classified as being Underweight (Z-score <-2)	27.7	22.7-33.1	17.6	12.3-22.9	20.2	16.3-24.9
29. % of female children classified as being Underweight (Z-score <-2)	24.5	18.0-32.1			17.6	12.7-23.6
30. % of male children classified as being Underweight (Z-score <-2)	31.0	23.6-39.2			23.7	17.2-31.3

- **Undernutrition:** The % of children with a Z-score of <-2SD at FE is 20%, not significantly decreased (SSI) from the BL rate of 28%. However, the IYCF indicator (see the next section on IYCF) was SSI from only 23% at BL to 49% at FE.

## 4.2 Infant and Young Child Feeding (IYCF)-Nutrition

Health promotion and education regarding nutrition and breastfeeding was one of the interventions of MTI Uganda. The project worked to improve the nutritional status of children through the promotion of correct breastfeeding and complimentary feeding practices, including immediate breastfeeding following childbirth, exclusive breastfeeding of children under 6 months of age, and the introduction of digestible and nutritional complimentary foods in children 6 months and greater.

### BREAST FEEDING AND INFANT AND YOUNG CHILD FEEDING (IYCF)

Project Matrix Indicators Are Denoted with Red Boxes

Rapid CATCH Indicators Highlighted in Orange Font

Data at FE that show a SSI are indicated with a red font

Data at FE that show a SSD are indicated with a yellow font

BREAST FEEDING AND INFANT AND YOUNG CHILD FEEDING (IYCF)						
<ul style="list-style-type: none"> <li>Key to comments on the right:                             <ul style="list-style-type: none"> <li>SS=Statistically Significant</li> <li>SSI=Statistically Significant Increase</li> <li>SSD= Statistically Significant Decrease</li> </ul> </li> <li>RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
31. % of children aged 0-23m who were ever breastfed	96.6	93.8-98.4			99.2	97.4-99.8
32. % of mothers of children aged 0-23m practicing immediate initiation of breastfeeding (within 1 hour of birth)	29.0	23.9-34.5	22.7	16.9-28.6	78.9	74.3-83.0
33. % of mothers of children aged 0-23m who did NOT give prelacteal feeds during the first 3 days after delivery	46.6	40.8-52.5	56.0	48.1-62.0	87.2	9.6-16.8
34. % of mothers of children aged 0-23m practicing immediate and exclusive breastfeeding of newborns	16.3	12.3-21.0			71.1	66.1-75.7
35. % of children aged 0-5m who were exclusively breastfed in the last 24h	73.6	59.7-84.7	67.7	61.2-74.2	88.2	79.8-93.9
36. % of infants aged 6-9m who receiving breast milk and complementary foods	69.8	55.7-81.7	84.1	79.1-89.2	85.5	74.2-93.1
37. % of mothers of children aged 0-23m who continue to breastfeed their child aged 6-11m	97.5	91.4-99.7			97.9	92.7-99.7
38. % of mothers of children aged 0-23m who continue to breastfeed their child aged 12-17m	87.8	79.6-93.5			87.7	78.5-93.9
39. % of mothers of children aged 0-23m who continue to breastfeed their child aged 18-23m	68.3	55.3-79.4			78.2	68.0-86.3

- Exclusive Breastfeeding:** The % of children aged 0-5m who were exclusively breastfed during the 24 hours prior to the survey was SSI at FE (88%) from MTE (68%), but not from BL (73.6). This could be due to the fact that the Confidence Intervals (CIs) are larger due to the lower sample size of mothers with children aged 0-5m.
- Immediate Breastfeeding:** There was a very large and SSI of Immediate BF practices for newborns, which was only 29% at BL and 23% at MTE. By FE this was increased to 79%.
- No Prelacteal Feeding:** there was also a very large and SSI in the % of mothers who do not give their infant prelacteal feeds, rising from 47% at BL to 87% at FE.
- Complimentary feeding:** Complimentary feeding was relatively high at BL, at 70%, and was also high but not SSI at FE (86%). This is not significantly higher than at BL because the sample size of mothers of children aged 6-9m was small (n=53) due to 30 cluster methodology. However, a complimentary feeding rate of 86% is quite high.
- Continued BF in children to 23m:** Continued BF is statistically unchanged in all categories, which were already high

## IYCF INDICATORS

Project Matrix Indicators Are Denoted with Red Boxes

Rapid CATCH Indicators Highlighted in Orange Font

Data at FE that show a SSI are indicated with a red font

Data at FE that show a SSD are indicated with a yellow font

IYCF Indicator and Tabulation Plan Indicators						
<ul style="list-style-type: none"> <li>Key to comments on the right:                             <ul style="list-style-type: none"> <li>SS=Statistically Significant</li> <li>SSI=Statistically Significant Increase</li> <li>SSD= Statistically Significant Decrease</li> </ul> </li> <li>RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
47. Minimum frequency of feeding (FF) for breastfed children 6-23m: % of breastfed children aged 6-23m who ate solid or semi-solid foods at least the minimum recommended number of times in the 24 hours preceding the survey	31.3	25.0-38.0			66.5	60.1-72.6
48. Minimum frequency of feeding (FF) for non-breastfed children 6-23m: % of non-breastfed children aged 6-23m who ate solid or semi-solid foods at least the minimum recommended number of times in the 24 hours preceding the survey	14.7	5.0-31.1			6.5	0.8-21.4
49. Minimum frequency of feeding (FF): % of children aged 6-23m who ate solid or semi-solid foods at least the minimum recommended number of times in the 24 hours preceding the survey	28.8	23.1-34.5			59.5	53.3-65.4
50. Minimum dietary (food group) diversity for breastfed children 6-23m: % of breastfed children aged 6-23m who received minimum dietary (food group) diversity in the 24 hours preceding the survey	65.4	58.5-71.8			79.4	73.6-84.4
51. Minimum dietary (food group) diversity for non-breastfed children 6-23m: % of non-breastfed children aged 6-23m who received minimum dietary (food group) diversity in the 24 hours preceding the survey	50.0	32.4-67.6			16.1	5.5-33.7
52. Minimum dietary (food group) diversity for children 6-23m: % of children aged 6-23m who received minimum dietary (food group) diversity in the 24 hours preceding the survey	63.2	57.1-69.3			72.0	66.1-77.3
53. IYCF Indicator: % of children age 6-23m fed according to a minimum of appropriate feeding practices	23.1	18.4-27.9	42.3	36.4-49.1	48.9	42.7-55.1
Vitamin A Supplementation						
54. % of children aged 0-23m who received Vitamin A supplementation in the 6m preceding the survey	70.1	63.3-76.4	55.5	48.6-62.4	85.3	80.1-89.5

- IYCF Indicator:** There has been a significant improvement in this indicator, increasing from 23% at BL to 49% at FE. There was a SSI in proper feeding frequency in breastfed children (31% at BL to 66% at FE) which was the driving factor in this improvement.

The results reveal that feeding practices for children aged 6-23m have improved significantly, particularly with the immediate and exclusive BF of newborns and children aged 0-5m, respectively, as has proper infant and young child feeding.

- Vitamin A:** The % of children receiving Vitamin A in the past 6m at FE (85%) was SSI from BL (70%).

## CHAPTER 4

### PNEUMONIA CASE MANAGEMENT

**Project Matrix Indicators Are Denoted with Red Boxes**  
**Rapid CATCH Indicators Highlighted in Orange Font**  
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**Data at FE that show a SSD are indicated with a yellow font**

PNEUMONIA CASE MANAGEMENT						
<ul style="list-style-type: none"> <li>• Key to comments on the right:                             <ul style="list-style-type: none"> <li>&gt; SS=Statistically Significant</li> <li>&gt; SSI=Statistically Significant Increase</li> <li>&gt; SSD= Statistically Significant Decrease</li> </ul> </li> <li>• RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>• ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
			*LQAS measured all Project Indicators and Rapid CATCH Indicators			
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
75. % mothers of children 0-23m who report that their child had a cough and difficulty breathing/fast breaths in the 2 weeks prior to the survey	49.0	43.2-54.8			24.7	20.4-29.6
76. % of children age 0-23m with chest-related cough and fast/difficult breathing in the last two weeks who were taken to an appropriate health provider	57.8	49.4-65.9	86.1	81.3-90.9	74.2	63.8-82.9
77. % of children age 0-23m with chest-related cough and fast/difficult breathing in the last two weeks who were taken to an appropriate health provider within 2 days of the start of symptoms	41.5	33.4-49.9			61.8	50.9-71.9
78. % of children age 0-23m with chest-related cough and fast/difficult breathing in the last two weeks who received antibiotics	34.7	27.0-43.0	64.4	57.7-71.0	68.5	57.8-78.0
79. % of children age 0-23m with chest-related cough and fast/difficult breathing in the last two weeks who were taken to a health facility or who received antibiotics from an alternative source.	78.2	70.7-84.6			87.6	79.0-93.7
HYGIENE						

Acute Respiratory Infection is recognized as one of the major public health problems in Uganda. Most children were given symptom relieving not curative medicines in the form of cough syrups or country medicines. Objectives of the project included the recognition of the danger signs of pneumonia, improved access to quality care, and the promotion of optimal and timely health seeking behaviors among mothers/caretakers. The present evaluation estimates the prevalence of ARI among children aged 0-23 months, the mother’s knowledge concerning ARI, the mother’s management of ARI, and timely health seeking behaviors in relation to ARI.

- **Rate of ARI:** The rate of ARI was SSD from 49% at BL to 25% at FE, indicating improved hygiene (see the hygiene section, below).
- **Health Seeking for ARI:** The % of children with ARI who were taken to an appropriate health provider increased significantly over the first half of the project (58% t BL to 86% at MT), but there was not a SSI from BL to FE (74%). The sample sizes were smaller at FE (n=89) due to lower rates of pneumonia, which is good, but this increased the CI and therefore the result at FE was not SSI.
- **Antibiotics for ARI:** The % of children aged 0-23 months with ARI who were treated with an antibiotic also increased significantly form BL to MT (35% to 64%), and this remained SSI at FE (69%).
- **Timely care seeking for ARI:** There was a SSI in timely care seeking behaviors for ARI, rising from 42% at BL to 62% at FE. This corresponds with a SSI in timely care seeking for fever/malaria as well (see the Malaria section for details).

## CHAPTER 5

### CONTROL OF DIARRHEA

Project Matrix Indicators Are Denoted with Red Boxes

Rapid CATCH Indicators Highlighted in Orange Font

Data at FE that show a SSI are indicated with a red font

Data at FE that show a SSD are indicated with a yellow font

DIARRHEA						
<ul style="list-style-type: none"> <li>• Key to comments on the right:                             <ul style="list-style-type: none"> <li>➢ SS=Statistically Significant</li> <li>➢ SSI=Statistically Significant Increase</li> <li>➢ SSD= Statistically Significant Decrease</li> </ul> </li> <li>• RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>• ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
			*LQAS measured all Project Indicators and Rapid CATCH Indicators			
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
66. % of mothers of children 0-23m who report that their child had a diarrhea in the 2 weeks prior to the survey	37.5	31.9-43.4			24.3	20.0-29.2
67. % of children 0-23m with diarrhea in the last two weeks who received Oral Rehydration Therapy (ORT) and/or recommended home fluids.	47.2	37.5-57.1	53.5	46.6-60.5	61.2	50.0-71.6
68. % of children 0-23m with diarrhea in the last two weeks who were treated with Zinc	0.9	0.0-5.1	2.6	0.4-4.8	17.6	10.2-27.4
69. % of children 0-23m with diarrhea in the last two weeks who were treated with anti-diarrheals or antibiotics, which is incorrect treatment for watery diarrhea	22.2	14.8-31.2			40.0	29.5-51.2
70. % of children 0-23m with diarrhea in the last two weeks who were offered more fluids during the illness (more fluid and/or more breast milk if exclusively breastfeeding)	9.3	4.5-16.4			27.1	18.0-37.8
71. % of children 0-23m with diarrhea in the last two weeks who were offered the same amount or more food during the illness	21.0	13.5-30.3			11.4	7.6-15.2
72. % of children aged 0-23m with diarrhea in the last two weeks who were offered increased fluids and the same amount or more food during the illness.	2.0	0.2-7.0			5.3	3.3-8.3

Diarrhea was a common cause of childhood morbidity and mortality in Lira District and, and Uganda as a whole. It is well proven that diarrhea is one of the major contributors to malnutrition in children. MTI Uganda made a high priority the reduction of childhood diarrhea prevalence and morbidity through preventive and curative measures. This diarrhea management initiative was an intervention aimed at raising the awareness of mothers/caretakers about the necessary steps required to both prevent and treat diarrheal disease. Interventions aimed at the prevention of diarrhea included instruction in the importance of appropriate hand washing behaviors as well as the promotion of the use of latrines. Diarrhea case management at the household level included proper feeding and fluid management during diarrhea episodes, including the proper preparation and use of Oral Rehydration Salts (ORS).

- **Incidence of Diarrhea:** The rate of diarrhea was SSD from 38% at BL to 24% at FE, which highlights the improvements in hygiene and the treatment of water in the household (see these sections for greater detail).
- **ORS Use:** At MTE there was no SSI (47% at BL to 54% at MTE), but by FE a SSI was shown, with a rate of 61%. This SSI from BL is due to health messaging and availability and proper treatment at the HFs.

- **Zinc:** Zinc usage was SSI from only 1% at BL to 18% at FE, when there was no change at MTE, so this shows increased effect of health messaging, IMCI, HF supervision, and drug chain management in the last half of the project.
- **Increased Fluids with Diarrhea:** The rate of mothers who offer their child more to drink with diarrhea was SSI from 9% at BL to 27% at FE. However, because the amount of food offered was not SSI, the overall indicator of increased fluids and the same or More Food offered was not SSI (2% at BL and 5% at FE).

## HYGIENE

**Project Matrix Indicators Are Denoted with Red Boxes**  
**Rapid CATCH Indicators Highlighted in Orange Font**  
**Data at FE that show a SSI are indicated with a red font**  
**Data at FE that show a SSD are indicated with a yellow font**

HYGIENE						
<ul style="list-style-type: none"> <li>• Key to comments on the right:               <ul style="list-style-type: none"> <li>➢ SS=Statistically Significant</li> <li>➢ SSI=Statistically Significant Increase</li> <li>➢ SSD= Statistically Significant Decrease</li> </ul> </li> <li>• RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>• ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
			*LQAS measured all Project Indicators and Rapid CATCH Indicators			
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
82. % of households with that has soap at the place for hand washing	85.0	80.4-88.8			96.4	93.7-98.0
83. % of mothers of children 0-23m who live in households with soap at the place for hand washing that washed their hands with soap at least 2 of the appropriate times during a 24 hour recall period(after defecation and at one of the following: before food preparation, before feeding children, or after attending to a child who has defecated).	54.0	48.2-59.7	75.3	69.3-81.4	87.8	83.9-91.0

- **Soap at the Place for Hand washing:** This indicator, despite being high at BL (85%), was still SSI through the project’s health messaging, to 96% at FE.
- **Appropriate hand washing with soap:** There has been a significant increase from 45% at BL to 88% at FE, which effectively contributed to a lower rate of diarrhea at FE (see the diarrhea section, above).

## WATER AND SANITATION

Project Matrix Indicators Are Denoted with Red Boxes

Rapid CATCH Indicators Highlighted in Orange Font

Data at FE that show a SSI are indicated with a red font

Data at FE that show a SSD are indicated with a yellow font

WATER AND SANITATION						
84. % of households with an improved source for drinking water	91.0	87.2-94.0			89.4	85.8-92.4
85. % of households of children 0-23m that treat water effectively	11.3	8.0-15.5	10.7	6.4-15.0	41.4	36.3-46.7
86. % of households using an improved toilet facility	27.7	22.7-33.1			38.1	33.1-43.3
87. % of households who safely disposed of their child's feces the last time s/he passed stool	13.0	9.4-17.3				
88. % of households using a traditional latrine						

- Point of Use water treatment:** There had been no significant change in the rate at BL (11%) to MTE (11%). Investigation following the midterm revealed that most households did not feel that they needed to treat water because they had access to an improved water source (91.0% of households in Lira District have access to an improved water source). However, health messaging around the importance of treating water was increased and at FE there was a SSI increase at FE to 41%.

# CHAPTER 6

## IMMUNIZATION

Project Matrix Indicators Are Denoted with Red Boxes

Rapid CATCH Indicators Highlighted in Orange Font

Data at FE that show a SSI are indicated with a red font

Data at FE that show a SSD are indicated with a yellow font

In this survey Expanded Program of Immunization (EPI) Access is measured by the percentage of children aged 12-23 months who received a DPT1 vaccination before the age of 12 months as verified by a vaccination card, and EPI Coverage is measured by the percentage of children aged 12-23 months who received a BCG, DPT3, OPV3, and measles vaccination before the age of 12 months verified by an immunization card, meaning that they received full vaccination coverage. Added to these measurements is the drop-out rate which measures the number of children aged 12-23 months who received a DPT1 vaccination by card verification or mothers recall but who were not continued in a vaccination program and therefore did not receive a DPT3 vaccination. These indicators provide an excellent picture of immunization services with regard to access, coverage, and completion of immunizations. Since MTE four additional health facilities were opened in the project area and immunization outreach was expanded. As a result immunization services access, performance and coverage has improved.

IMMUNIZATION						
<ul style="list-style-type: none"> <li>Key to comments on the right:                             <ul style="list-style-type: none"> <li>SS=Statistically Significant</li> <li>SSI=Statistically Significant Increase</li> <li>SSD= Statistically Significant Decrease</li> </ul> </li> <li>RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
	*LQAS measured all Project Indicators and Rapid CATCH Indicators					
56. % of mothers of children 0-23m who were ever given a vaccination card for their youngest child 0-23m	78.0	72.9-82.6			90.8	87.4-93.6
57. % of children 0-23m that currently have a vaccination card (verified)	50.9	42.9-58.9			84.5	78.2-89.6
Vaccination Card verified by 12m of age						
58. % of children aged 12-23m who are fully vaccinated (received BCG, DPT3, OPV3, and measles vaccines) by 12 months of age, card verified	15.5	10.3-22.1	37.9	31.1-44.6	56.0	48.1-63.6
59. % of children aged 12-23m that received a DPT1 vaccine, as verified by a vaccination card, by 12m of age.	42.2	34.5-50.3			87.5	81.5-92.1
60. % of children aged 12-23m that received a DPT3 vaccine, as verified by a vaccination card, by 12m of age.	30.4	23.4-38.2			79.2	72.2-85.0
61. Drop-out Rate by 12m of age (DPT1-DPT3)/DPT1: % of children aged 12-23m who received DPT1 but did not receive follow up card verified immunization and therefore did not receive DPT3, vaccination	14.3	9.3-20.7			11.3	6.9-17.1
62. % of children aged 12-23m that received a measles vaccine, as verified by a vaccination card, by 12m of age.	26.1	19.5-33.6			61.9	54.1-69.3

- Vaccination Card:** The % of children with a vaccination card was SSI from only 51% at BL to 85% at FE due to health messaging and IMCI in the HFs
- Vaccinations, Card Verified, by 12m:** Every indicator regarding the immunization of children by 12m of age was SSI, because all health units were supplied with cards, fridges and vaccines, and mothers now have cards. Mother leader groups were trained to teach mothers not to lose cards, and were going house to house and bringing children to HFs for immunization. Also, because more cards were present at survey, a higher % of children could be verified as having

been vaccinated. This resulted in a DPT1 vaccination rate of 88%, a DPT3 vaccination rate of 79%, and a measles immunization rate of 62% at FE. This measles rate, which was 62% at FE, was the limiting factor, which culminated in a full vaccination rate of 56% at FE.

Vaccination Card Verified						
<ul style="list-style-type: none"> <li>Key to comments on the right:               <ul style="list-style-type: none"> <li>SS=Statistically Significant</li> <li>SSI=Statistically Significant Increase</li> <li>SSD= Statistically Significant Decrease</li> </ul> </li> <li>RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
	*LQAS measured all Project Indicators and Rapid CATCH Indicators					
63. % of children aged 12-23m that received a DPT1 vaccine, as verified by a vaccination card	47.2	39.3-55.2			90.5	85.0-94.5
64. % of children aged 12-23m that received a DPT3 vaccine, as verified by a vaccination card	34.8	27.5-42.7			85.1	78.8-90.1
65. % of children aged 12-23m that received a measles vaccine, as verified by a vaccination card	33.5	26.3-41.4			73.2	65.8-79.7
66. % of children aged 12-23m that received a Vitamin A injection, as verified by a vaccination card	10.6	6.3-16.4			66.1	58.4-73.2

- Again, all card verified vaccination rates were SSI by FE, with a DPT1 rate of 91% and a DPT3 rate of 85% at FE. The limiting factor was measles vaccination, which was SSI from 34% at BL to 73% at FE. This excellent SSI in immunization rates shows an increased availability of vaccines and IMCI at the HFs as well as outreach and access to immunization days.
- Vitamin A:** The Vitamin A rate was SSI from 11% at BL to 66% at FE, also showing increased drug availability, IMCI, immunization outreach and immunization access through immunization days.

Vaccination Card or Mothers Recall						
<ul style="list-style-type: none"> <li>Key to comments on the right:               <ul style="list-style-type: none"> <li>SS=Statistically Significant</li> <li>SSI=Statistically Significant Increase</li> <li>SSD= Statistically Significant Decrease</li> </ul> </li> <li>RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
	*LQAS measured all Project Indicators and Rapid CATCH Indicators					
65. % of children aged 12-23m that received a DPT1 vaccine, as verified by a vaccination card or by mothers recall	87.0	80.8-91.7	88.9	84.5-93.3	97.0	93.2-99.0
66. % of children aged 12-23m that received a DPT3 vaccine, as verified by a vaccination card or by mothers recall	85.1	78.6-90.2	73.2	67.1-79.4	91.7	86.4-95.4
67. % of children aged 12-23m that received a measles vaccine, as verified by a vaccination card or by mothers recall	77.0	69.7-83.3	79.7	74.1-85.3	82.1	75.5-87.6

- DPT1:** There was a SSI in DPT1 immunization, both card verified and card or mother's recall. DPT1 immunization by card or mother recall was SSI from 87% at BL, which was already quite high, to 97% at FE, which is almost universal coverage.
- Measles vaccination (card verified or mother's recall):** There has been no significant change in measles vaccination coverage (82% at FE), as coverage was already quite high (77% at BL).

# CHAPTER 7

## EARLY CHILDHOOD DEVELOPMENT

Project Matrix Indicators Are Denoted with Red Boxes  
 Rapid CATCH Indicators Highlighted in Orange Font  
 Data at FE that show a SSI are indicated with a red font  
 Data at FE that show a SSD are indicated with a yellow font

EARLY CHILDHOOD DEVELOPMENT						
<ul style="list-style-type: none"> <li>• Key to comments on the right:               <ul style="list-style-type: none"> <li>➢ SS=Statistically Significant</li> <li>➢ SSI=Statistically Significant Increase</li> <li>➢ SSD=Statistically Significant Decrease</li> </ul> </li> <li>• RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>• ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
87. % of mothers of children aged 0-23 months who report helping their child walk, playing a lap game with their child, massaging or rubbing them gently, or by giving them objects with which to play	63.2	56.6-67.8			84.2	80.0-87.8
88. Cognitive Stimulation: % of mothers of children aged 6-23 months who report playing a game like “Where is your nose? or Where are your eyes?...”), or by encouraging imitation (making different faces) or by encouraging pretend play or by showing them common objects and asking them to name them	38.0	31.9-44.5	68.5	62.0-74.9	76.3	71.6-80.6
89. % of mothers of children aged 0-23 months who report teaching their child new words, telling stories, singing a song, or saying prayers to their child	34.8	29.4-40.5			78.8	74.2-82.9
90. Linguistic Learning % of mothers of children aged 0-23 months who told their child a story, sang a song to the child or named objects for their child (linguistic learning) at least 2 times per week	22.7	18.1-27.8	40.1	33.2-46.9	64.4	59.3-69.4
91. % of mothers of children aged 0-23 months who played with their child at least 2 times per week	61.0	55.2-66.6			88.3	84.6-91.5
92. % of mothers of children aged 0-23 months who sang or played music for their child at least 2 times per week	40.0	34.4-45.8			72.2	67.3-76.7
93. % of mothers of children aged 0-23 months who massaged, hugged, or cuddled with their child at least 2 times per week	64.3	58.6-69.8			74.2	69.3-78.6

- All ECD indicators that pertain to ECD behaviors at least 2 times per week, except for 1, were SSI over the course of the project, including: physical interaction (playing, massaging, etc.) cognitive stimulation, teaching, linguistic learning, and singing/music. The indicator “The percentage of mothers aged children 0 – 23 months who massaged, hugged, or cuddled with their child at least 2 times per week” increased but not significantly. This indicates excellent saturation of ECD messaging to mothers as well as excellent adaption of ECD behaviors by the mothers in the project area.
- **Cognitive Stimulation:** There was a significant increase from 38% at BL to 76% at FE, with all SAs meeting the DR.
- **Linguistic development:** There has been a significant increase from 23% at BL to 64% at FE, indicating a substantial increase in mothers teaching children linguistics.

### BELIEFS REGARDING ECD

<ul style="list-style-type: none"> <li>• Key to comments on the right:                             <ul style="list-style-type: none"> <li>&gt; SS=Statistically Significant</li> <li>&gt; SSI=Statistically Significant Increase</li> <li>&gt; SSD= Statistically Significant Decrease</li> </ul> </li> <li>• RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>• ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
	*IQAS measured all Project Indicators and Rapid CATCH Indicators					
94. % of mothers of children aged 0-23 months who believe that playing with a child helps a young child to learn and think well	94.0	90.7-96.4			98.6	96.6-99.5
95. % of mothers of children aged 0-23 months who believe Parents should find or make things with which young children may play	72.0	66.6-77.0			98.3	96.2-99.3
96. % of mothers of children aged 0-23 months who believe playing helps young children learn	78.3	73.2-82.9			98.1	95.9-99.1
97. % of mothers of children aged 0-23 months who believe Making toys and play things for children under 6 helps them get ready for school	88.3	84.1-91.7			95.8	93.1-97.6

- Likewise, all beliefs regarding the efficacy of the fundamental principles behind ECD were SSI, except for one which was already above 90% before ECD messaging began. This again relates to excellent saturation and uptake of ECD messaging.
- The % mothers who believe that they should provide things for their child with which to play was SSI from 72% at BL to 98% at FE, and those who feel that playing helps the child learn was SSI from 78% at BL to 98% at FE. Also, the rate of mothers who believe playing with toys helps the child prepare for school was SSI from 88% at BL to 96% at FE.

## ECD ACTIVITIES

<ul style="list-style-type: none"> <li>• <b>Key to comments on the right:</b> <ul style="list-style-type: none"> <li>➢ <b>SS=Statistically Significant</b></li> <li>➢ <b>SSI=Statistically Significant Increase</b></li> <li>➢ <b>SSD= Statistically Significant Decrease</b></li> </ul> </li> <li>• <b>RED BACKGROUND INDICATES PROJECT INDICATOR</b></li> <li>• <b>ORANGE FONT INDICATES Rapid CATCH INDICATOR</b></li> </ul>	BL		MTE*		FE	
			*LQAS measured all Project Indicators and Rapid CATCH Indicators			
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
98. % of mothers of children aged 0-23 months who report playing with their child by chatting with the child	40.3	34.7-46.1			42.8	37.6-48.1
99. % of mothers of children aged 0-23 months who report playing with their child by dancing before the child	37.3	31.8-43.1			44.4	39.3-49.7
100. % of mothers of children aged 0-23 months who report playing with their child by telling stories to the child	21.0	16.5-26.1			29.4	24.8-34.5
101. % of mothers of children aged 0-23 months who report playing with their child by singing songs to the child	34.8	29.4-40.5			78.6	74.0-82.7
102. % of mothers of children aged 0-23 months who report playing with their child by putting the child on her belly and playing with the child	79.3	74.3-83.8			81.1	76.7-85.0
103. % of mothers of children aged 0-23 months who report playing with their child by playing with toys with them	28.3	23.3-33.8			32.2	27.5-37.4
104. % of mothers of children aged 0-23 months who report looking into their child's eyes while feeding them	87.3	83.0-90.9			93.6	90.4-95.8
105. % of mothers of children aged 0-23 months who report talking or singing to their child while feeding them	57.7	51.9-63.3	65.4	58.7-72.0	83.6	79.4-87.3
106. % of mothers of children aged 0-23 months who report showing them affection in some other way while feeding them	53.7	47.8-59.4			91.3	87.7-93.8
107. % of mothers of children aged 0-23 months who report holding their child close to their body while feeding them	71.7	66.2-76.7			95.6	92.7-97.4

- **Increased verbal stimulation:** Verbal Stimulation through singing was SSI from 35% at BL to 79% at FE.
- **Stimulation while feeding:** There has been a SSI in all of the ECD feeding indicators, except for looking into the child's eyes while feeding, which was already at 87%. Talking to the child while feeding was SSI from 58% at BL to 84% at FE.

## ECD INDICATORS BY SUBCOUNTY

INDICATORS BROKEN DOWN BY SUBCOUNTY TO REVIEW THE EFFECTS OF ECD						
INDICATOR	LIRA		OGUR		AROMO	
1. Cognitive Stimulation: % of mothers of children aged 6-23 months who report playing a game like "Where is your nose? or Where are your eyes?..." or by encouraging imitation (making different faces) or by encouraging pretend play or by showing them common objects and asking them to name them	83.3	74.4-90.2	72.1	64.3-79.0	76.1	67.0-83.8
2. Linguistic Learning % of mothers of children aged 0-23 months who told their child a story, sang a song to the child or named objects for their child (linguistic learning) at least 2 times per week	63.9	53.5-73.4	63.0	54.8-70.6	67.0	57.3-75.7
3. % of mothers of children aged 0-23 months who report talking or singing to their child while feeding them	83.5	74.6-90.3	83.8	77.0-89.2	83.5	75.2-89.9
4. IYCF Indicator: % of children age 6-23m fed according to a minimum of appropriate feeding practices	33.0	23.8-43.3	38.3	30.6-46.5	34.9	26.0-44.6
5. % of mothers of children 0-23m who live in households with soap at the place for hand washing that washed their hands with soap at least 2 of the appropriate times during a 24 hour recall period(after defecation and at one of the following: before food preparation, before feeding children, or after attending to a child who has defecated).	86.6	78.2-92.7	83.8	77.0-89.2	94.5	88.4-98.0
6. % of children age 0-23m with chest-related cough and fast/difficult breathing in the last two weeks who were taken to an appropriate health provider	80.0	59.3-93.2	83.3	67.2-93.6	89.3	71.8-97.7

- There are no statistically significant differences in the uptake of ECD between the counties, and therefore, likewise, there are no statistically significant differences in health outcomes measured due to ECD.

## CHAPTER 8

### MALARIA AND THE MANAGEMENT OF FEBRILE ILLNESS

Lira District is a malaria endemic area and the incidence of fever in children less than 24 months is quite high in these areas. Malaria is highly endemic in Uganda (90-98% *P. falciparum*) and is the leading cause of morbidity and mortality nearly country-wide.<sup>4</sup> In Lira District, malaria accounts for 34% of the disease burden. The present evaluation estimates the prevalence of febrile illness (a proxy for malaria) among children aged 0-23 months, the mother's knowledge concerning malaria and health seeking behaviors in relation to malaria.

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**Rapid CATCH Indicators Highlighted in Orange Font**  
**Data at FE that show a SSI are indicated with a red font**  
**Data at FE that show a SSD are indicated with a yellow font**

MALARIA						
<ul style="list-style-type: none"> <li>• Key to comments on the right:               <ul style="list-style-type: none"> <li>➢ SS=Statistically Significant</li> <li>➢ SSI=Statistically Significant Increase</li> <li>➢ SSD= Statistically Significant Decrease</li> </ul> </li> <li>• RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>• ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
108. % of households that contain at least 1 insecticide treated bed net	82.0	76.3-86.9			58.3	53.0-63.4
109. % of children aged 0-23 months that slept under an insecticide treated mosquito net the previous night.	51.3	45.5-57.1	43.3	36.4-50.2	58.3	53.0-63.4
110. % of mothers of children aged 0-23 months that slept under an insecticide treated mosquito net the previous night.	41.7	36.0-47.5			56.7	51.4-61.8
111. % of mothers of children 0-23m who report that their child had a fever in the 2 weeks prior to the survey	74.8	69.5-79.7			58.4	53.0-63.5
112. % of children 0-23m who had a fever in the 2 weeks prior to the survey that were brought to a health facility within 24 hours of the start of symptoms	22.3	17.0-28.4			82.5	76.6-87.4
113. % of children 0-23m who had a fever in the 2 weeks prior to the survey that were treated with an antimalarial medication within 24 hours of the start of symptoms	25.0	19.4-31.3	69.2	62.8-75.7	51.5	44.4-58.5
114. % of mothers who know the cause of malaria	85.0	81.0-89.0			84.7	80.6-88.3

- **ITN in home:** There has been a SSD in the rate of households that have an ITN, from 82% at BL to on 58% at FE. This correlates with the findings of the health facility assessment at final that show a lack of available nets for distribution in the entire project area.
- **ITN use (mothers and Children under 2:** There has been a SSI in the use of bed nets in mothers of children under 2 since BL (41% at BL to 57% at FE), which is commendable considering there is a decrease in the availability of ITNs. However, the rate of children under 2 sleeping under a bed net was not statistically changed from 51% at BL to 58% at FE.
- **Treatment of malaria:** There has been a significant increase in the proper treatment of malaria (25% at BL to 52% at FE). This was not an intervention area of this project, so this SSI is

<sup>4</sup> Uganda Malaria Control Strategic Plan: 2005-6 – 2009-10.

indicative of the increased awareness of mothers of the importance of immediate care seeking through our other health messaging, and our efforts at the HF level that have caused an increased effectiveness of the HFs in IMCI, supervision, and increased availability of medications at the HF.

# CHAPTER 9 HEALTH CONTACTS

**Project Matrix Indicators Are Denoted with Red Boxes**  
**Rapid CATCH Indicators Highlighted in Orange Font**  
**Data at FE that show a SSI are indicated with a red font**  
**Data at FE that show a SSD are indicated with a yellow font**

## CONTACT WITH TRAINED HEALTH PERSONNEL

HEALTH CONTACTS						
**Trained health personnel refers to: Doctor, Nurse/Midwife, Auxiliary Midwife, TBA, CHW, Health Educator (VHT or CHP), or Growth Monitoring Person ***Any type of meeting refers to: Mother's Group, Care Group, Breastfeeding Group, Health Education Group, Village Development Committee, Savings/Finance Group						
<ul style="list-style-type: none"> <li>• Key to comments on the right:               <ul style="list-style-type: none"> <li>➢ SS=Statistically Significant</li> <li>➢ SSI=Statistically Significant Increase</li> <li>➢ SSD= Statistically Significant Decrease</li> </ul> </li> <li>• RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>• ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
			*LQAS measured all Project Indicators and Rapid CATCH Indicators			
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
115. Percentage of mothers of children aged 0-23 months who reported having a trained health personnel contact them or to talk to them about their health or the health of their child at least 1 time in the last month*	29.3	24.2-34.5			92.5	89.1-94.9
116. Percentage of mothers of children aged 0-23 months who reported having a TBA contact them or to talk to them about their health or the health of their child at least 1 time in the last month	8.3	5.5-12.1			22.2	18.1-26.9
117. Percentage of mothers of children aged 0-23 months who reported having a CHW/VHT contact them or to talk to them about their health or the health of their child at least 1 time in the last month	10.3	7.1-14.3			81.4	77.0-85.3
118. Percentage of mothers of children aged 0-23 months who reported having a Health Educator contact them or to talk to them about their health or the health of their child at least 1 time in the last month	6.0	3.6-9.3			56.9	51.6-62.1
119. Percentage of mothers of children aged 0-23 months who reported having a Growth Monitoring Person contact them or to talk to them about their health or the health of their child at least	6.3	3.9-9.7			42.8	37.6-48.1
1 time in the last month						

- Due to the projects ability to strengthen community capacity through VHTs, Peer Educators, PDCs, Mother Leader Groups, and Health sub-districts, the rate of mothers having contact with trained health personnel in the previous month was SSI from only 29% at BL to 92% at FE. This is a noteworthy achievement, and the breakdown of this contact may be seen in the table, above. Contact with VHTs was SSI the greatest, with a rate of 81% by FE, up from only 10% at BL.

## HEALTH MEETING ATTENDANCE

<ul style="list-style-type: none"> <li>• Key to comments on the right:                             <ul style="list-style-type: none"> <li>&gt; SS=Statistically Significant</li> <li>&gt; SSI=Statistically Significant Increase</li> <li>&gt; SSD= Statistically Significant Decrease</li> </ul> </li> <li>• RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>• ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
	*LQAS measured all Project Indicators and Rapid CATCH Indicators					
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
120. Percentage of mothers of children aged 0-23 months who reported having attended any type of meeting in the community in the past month in which their health or the health of their child was discussed**	22.7	18.0-27.4			84.7	80.6-88.3
121. Percentage of mothers of children aged 0-23 months who reported having attended a Mother's Group meeting in the community in the past month in which their health or the health of their child was discussed	7.3	4.7-10.9			62.5	57.3-67.5
122. Percentage of mothers of children aged 0-23 months who reported having attended a Care Group meeting in the community in the past month in which their health or the health of their child was discussed	3.3	1.6-6.0			31.9	27.2-37.1
123. Percentage of mothers of children aged 0-23 months who reported having attended a Breast Feeding Group meeting in the community in the past month in which their health or the health of their child was discussed	2.3	0.9-4.7			38.9	33.9-44.2
124. Percentage of mothers of children aged 0-23 months who reported having attended a Health Education Group meeting in the community in the past month in which their health or the health of their child was discussed	8.3	5.5-12.1			56.7	51.4-61.8
125. Percentage of mothers of children aged 0-23 months who reported having attended a Health Village Development Meeting	7.0	4.4-10.5			43.3	38.2-48.6
in the community in the past month in which their health or the health of their child was discussed						
126. Percentage of mothers of children aged 0-23 months who reported having attended a Savings Finance Group Meeting in the community in which their health or the health of their child was discussed	8.0	5.2-11.7			53.3	48.0-58.6
127. Percentage of mothers of children aged 0-23 months who reported having attended a another type of meeting in the community in the past month in which their health or the health of their child was discussed	4.0	2.1-6.9			5.6	3.5-8.6

- At FE mothers were attending a monthly meeting of some type on order to discuss their health or the health of their baby at a rate of 85%. This is a very large SSI from the baseline rate of 23%. Meeting facilitated by VHTs, Mother Group Leaders and Peer Educators allows this accessibility and created the demand for these groups, and this is another sustainable change in the community. The rate of attendance of each type of group is indicated in the table, above, with the largest SSI noted in Mother's Groups (63% at FE), which is excellent. There is a SSI in the rate of attendance in each type of specific group.

### HEALTH MESSAGING BY SOURCE

<ul style="list-style-type: none"> <li>• Key to comments on the right:                             <ul style="list-style-type: none"> <li>&gt; SS=Statistically Significant</li> <li>&gt; SSI=Statistically Significant Increase</li> <li>&gt; SSD=Statistically Significant Decrease</li> </ul> </li> <li>• RED BACKGROUND INDICATES PROJECT INDICATOR</li> <li>• ORANGE FONT INDICATES Rapid CATCH INDICATOR</li> </ul>	BL		MTE*		FE	
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
128. Percentage of mothers of children aged 0-23 months who reported having received health messages from radio in the past month	NA	NA			82.4	78.0-86.2
129. Percentage of mothers of children aged 0-23 months who reported having received health messages from the newspaper in the past month	NA	NA			8.9	6.3-12.5
130. Percentage of mothers of children aged 0-23 months who reported having received health messages from television in the past month	NA	NA			5.9	3.8-9.0
131. Percentage of mothers of children aged 0-23 months who reported having received health messages from a health educator in the past month	NA	NA			61.3	56.1-66.4
132. Percentage of mothers of children aged 0-23 months who reported having received health messages from a CHW/VHT in the past month	NA	NA			80.3	75.8-84.3
133. Percentage of mothers of children aged 0-23 months who reported having received health messages from another source in the past month	NA	NA			15.7	11.5-20.8

- There is high saturation of health messaging from the VHTs, 80% at FE, and also Health Educators, 61% at FE. This excellent saturation of the community with health messaging from the VHTs and health educators was a major factor in the many health indicators that showed a SSI over the course of the project.
- There is a very high saturation of health messaging through the radio in all villages of the project area, which is shown by the high rate of mothers who report hearing health messaging from the radio, 82% at FE.

## TOPICS OF HEALTH MESSAGING

<ul style="list-style-type: none"> <li>• <b>Key to comments on the right:</b> <ul style="list-style-type: none"> <li>➢ <b>SS=Statistically Significant</b></li> <li>➢ <b>SSI=Statistically Significant Increase</b></li> <li>➢ <b>SSD= Statistically Significant Decrease</b></li> </ul> </li> <li>• <b>RED BACKGROUND INDICATES PROJECT INDICATOR</b></li> <li>• <b>ORANGE FONT INDICATES Rapid CATCH INDICATOR</b></li> </ul>	BL		MTE*		FE	
	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)	PERCENT (%)	95% CONFIDENCE INTERVAL (%-%)
132.Percentage of mothers of children aged 0-23 months who reported having heard any messages about hand washing in the last month	NA	NA			88.2	84.3-91.3
133.Percentage of mothers of children aged 0-23 months who reported having heard any messages about treating of drinking water in the last month	NA	NA			89.1	85.4-92.2
134.Percentage of mothers of children aged 0-23 months who reported having heard any messages about danger signs of diarrhea and seek timely health care in the last month	NA	NA			87.7	83.9-90.9
135.Percentage of mothers of children aged 0-23 months who reported having heard any messages about home care for children with diarrhea in the last month	NA	NA			79.9	75.4-83.9
136.Percentage of mothers of children aged 0-23 months who reported having heard any messages about the importance of antenatal and postnatal care in the last month	NA	NA			90.0	86.4-92.9
137.Percentage of mothers of children aged 0-23 months who reported having heard any messages about care seeking for danger signs in the last month	NA	NA			78.2	73.6-82.4
138.Percentage of mothers of children aged 0-23 months who reported having heard any messages about skilled birth attendance at delivery and birth preparedness in the last month	NA	NA			91.8	88.4-94.4

- The high rate of mothers hearing each messages on key health topic again reveals the excellent saturation of this project area with health messages through community volunteers and health staff. Improvement in many key health practices can be attributed to the solid coverage of health messages. Each topic is broken down in the table, above, and all rates are quite high. These were not measured at BL, so no determination of SSI was possible.

## CHAPTER 10

### SUMMARY

The goal of the Lira District Child Survival Project was to reduce child morbidity and mortality in Uganda. Objectives were: 1) Communities assume responsibility for their own health through strengthening community capacity (VHTs, Parish Development Councils, and Health Sub-districts); 2) Improved health (C-IMCI) and child care (ECD) behaviors among mothers of children <5 years; 3) Improved quality of health facility services through strengthened IMCI and MNC capacity; and 4) Strengthened institutional capacity of MTI and DHO to implement effective and efficient child survival activities. These objectives support MoH goals and strategies as well as those of USAID Uganda. MTI used a two-pronged strategy that included promoting behavior change and community mobilization to take appropriate responsibility for health and building DHO capacity to provide sustainable, quality service delivery at the facility and community levels. The level of effort by intervention for this Child Survival Project (CSP) was as follows:

1. 25% MNC
2. 25% PCM
3. 20% IYCF
4. 20% CDD
5. 10% EPI.

#### *MNC*

11 of the 12 MNC indicators, including all 6 of the indicators in the project Logframe and all the Rapid CATCH indicators for MNC, were SSI through the life of the project. In fact, the only MNC indicator not SSI is the rate of use of modern contraception. The rate of mothers receiving at least 2 TT immunizations was already relatively high at BL (73%), but still the project was able to sow a SSI in this indicator to 89% at FE. Additionally the rate of mothers taking proper IPT medication while pregnant was SSI from only 35% at BL to 68% at FE, and the rate of mothers who received iron while pregnant was SSI from 59% at BL to 91% at FE. These statistically significant increases highlight the gains made in health messaging regarding the importance of ANC, HF support and supervision, and drug chain improvements. Also, regarding health messaging, there was a statistically significant improvement in the rate of mothers who are able to correctly identify at least 2 neonatal danger signs for which they should seek immediate care, from 2% at BL to 51% at FE. This is due to extensive health messaging performed throughout the project. Also, at FE 84% of all childbirths now occur under the supervision of a skilled birth attendant, which is SSI from BL (35%). MTI accomplished this through focus on increasing the use of health facilities and skilled birth attendants through VHTs, and mothers groups who trained in health promotion. This training also included the importance of ensuring that both mother and child receive follow up care including a post partum visit with a trained health professional within 3 days of birth, which is why there was a SSI in this the rates of both mothers and children who received a postnatal visit from a trained HW within 2 days after birth. Mothers received a visit at a

rate of 50% at FE (up from only 17% at BL), and children received a postnatal visit at a rate of 41% at FE (up from 16% at BL).

### ***Anthropometry AND IYCF***

The nutritional status of children aged 0-23 months was of major concern in Lira District. The overall rate of under-nutrition at BL was 27.7%, with 17.0% moderately underweight and 10.7% severely underweight. This is similar to the results found by a DHS study in 2006 which revealed the overall rate of under-nutrition to be 21.8% in the Northern region of Uganda. At FE, The percentage of children with a Z-score of <-2SD at FE is 20%, not significantly decreased from the BL rate of 28%. However, the IYCF indicator relating to the proper feeding frequency and food diversity for children aged 6-23m was SSI from only 23% at BL to 49% at FE

The percentage of children aged 0-5m who were exclusively breastfed during the 24 hours prior to the survey, while already at 74% at BL, was SSI to 88% at FE. Immediate BF practices for newborns was dramatically and SSI from 29% at BL to 79% at FE. There was also a SSI in the rate of mothers who did not give their child prelacteal feeds (from 47% at BL to 87% at FE), so the summary indicator of immediate and exclusive breastfeeding was SSI from only 16% at BL to 71% at FE. The complementary feeding rate for 6-9m old children was already high at BL (70%), and this was not SSI, but was 88% at FE. This is not significantly higher than at BL because the sample size of mothers of children aged 6-9m was small (n=53) due to 30 cluster methodology. However, a complimentary feeding rate of 88% is quite high.

There has been a significant improvement in the composite IYCF indicator, which determines the rate at which children aged 6-23m are fed the proper frequency and food group variety in their diet dependant on their age and breastfeeding status. There was a SSI in this indicator from 23% at BL to 49% at FE. There was a SSI in proper feeding frequency in breastfed children (31% at BL to 66% at FE) which was the driving factor behind this improvement, and was stressed in health messaging throughout the project. Also, the % of children receiving Vitamin A in the past 6m at FE (85%) was SSI from BL (70%). This is excellent, particularly since the indicator was SSD at midterm. Efforts were made by the project to work with the facilities and mothers to ensure both a high supply and demand of Vitamin A.

### ***Pneumonia Case Management***

Pneumonia is the fifth-highest contributor to Lira District's burden of disease, but is the primary cause of child mortality.<sup>5</sup> Objectives of the project were the recognition of the danger signs of pneumonia, improving the access to quality care, and promoting optimal and timely health seeking behavior among mothers/caretakers. The % of children age 0-23 months with ARI who were treated with an antibiotic increased significantly from BL to FE (35% at BL to 69% at FE). This again speaks to the project interventions of improving care seeking behaviors, IMCI and supervision at the HFs, and drug supply chain management. The % of children with ARI who were taken to an appropriate health provider increased significantly over the first half of the project (58% at BL to 86% at

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<sup>5</sup> Lira District Health Office Annual Report, July 2008

MT, but the FE result of 74% was not a SSI from BL.

### ***Control of Diarrheal Disease***

MTI Uganda made a high priority the reduction of childhood diarrhea prevalence and morbidity through preventive and curative measures. This diarrhea management initiative was an intervention aimed at raising the awareness of mothers/caretakers about the necessary steps required to both prevent and treat diarrheal disease. Interventions aimed at the prevention of diarrhea included instruction in the importance of appropriate hand washing behaviors as well as the promotion of the use of sanitary latrines. Diarrhea case management at the household level includes proper feeding and fluid management during diarrhea episodes, including the proper preparation and use of Oral Rehydration Salts (ORS).

There was a SSD in the prevalence in the rate of diarrhea at FE (24.3%) from BL (36%), which highlights the gains made in hygiene and water and sanitation (see the hygiene and water and sanitation paragraphs below.) There has been a SSI in the % of children who received ORS when suffering from diarrhea since baseline (47% at BL to 62% at FE), which is impressive as there was no SSI at MT (54%). This reveals that continuing efforts in health messaging created results over time. In addition, zinc usage in children to treat diarrhea, which was almost non-existent at BL (2.6%), was SSI to 18% by FE. This again highlights gains in both drug chain management and supervision at the HFs as well as IMCI.

Hygiene was improved, with the percentage of mothers who have soap at the place for hand washing that washed their hands with soap at least 2 of the appropriate times during a 24 hour recall period (after defecation and at one of the following: before food preparation, before feeding children, or after attending to a child who has defecated) SSI from 54% at BL to 88% at FE. Also, the % of households with soap present at the place for washing was SSI from an already high 85% at BL to 96% at FE. Likewise, the rate of safe feces disposal was SSI from 13% at BL to 61% at FE. These results are due to excellent saturation of health messaging by the project, which resulted in a SS lower rate of diarrhea and better treatment of diarrhea cases that did occur.

With regards to Water and Sanitation, the % of households of children 0-23m that treat water effectively was SSI from 28% to 38% from BL to FE.

### ***Expanded Program of Immunization***

Immunization coverage improved in the project area, with 9 of the 11 measured EPI indicators statistically significantly improved. This can be attributed to the opening of four additional health facilities, expansion of immunization outreach and the CSP's efforts to support immunization services. EPI Coverage is measured by the percentage of children aged 12-23 months who received a BCG, DPT3, OPV3, and measles vaccination before the age of 12 months verified by an immunization card, meaning that they received full vaccination coverage. The project showed a significant increase in EPI coverage from BL (16% at BL to 56% at FE). In addition, there has been a SSI in the coverage of DPT1, DPT3, and measles immunization, both card verified and card

verified to be by 12m of age. Card verified DPT1 was raised from 47% at BL to 91% at FE, and card verified DPT3 was raised from 35% at BL to 85% at FE. Also, card verified measles vaccination was raised from 11% at BL to 66% at FE. These are excellent achievements that verify excellent gains in immunization at the HFs and through outreach, as well as IMCI, HF supervision, and drug chain management at the HF level. While measles coverage was SSI by both card verified and card verified by 12m, it was not SSI by card or mothers recall (82% at FE) as coverage was already quite high (77% at BL).

### ***Early Childhood Development***

MTI incorporated ECD activities into its CS project to enhance the impact and sustainability of technical interventions. Research confirms that child survival is positively linked to ECD – including health, physical, social/emotional, and language/cognitive domains. Six of the 7 ECD indicators that pertain to ECD behaviors at least 2 times per week were SSI over the course of the project, including: physical interaction (playing, massaging) cognitive stimulation, teaching, linguistic learning, and singing/music. This indicates excellent saturation of ECD messaging to mothers as well as excellent adoption of ECD behaviors by the mothers in the project area. There has been a SSI from BL of mothers of children aged 0-23 months who report playing games with their child in which they have their child identify their body parts, imitate actions, pretend play, or name objects (38% at BL to 76% at FE). These are important builders of cognitive, motor, or linguistic functions. In addition, there has been a significant increase from BL of mothers report engaging their children in linguistic learning activities such as telling their child stories, singing them songs, or naming objects for them at least twice weekly (23% at BL to 64% at FE).

Beliefs regarding the importance and efficacy of several ECD components were also SSI. All of the indicators measuring beliefs regarding the fundamental principles behind ECD were SSI, except for one which was already above 90% before ECD messaging began. The % mothers who believe that they should provide things for their child with which to play was raised from 72% at BL to 98% at FE, and those who feel that playing helps the child learn was SSI from 78% at BL to 98% at FE. Also, the % of mothers who believe playing with toys helps the child prepare for school was SSI from 88% at BL to 96% at FE. This again relates to excellent saturation and uptake of ECD messaging. All 3 indicators measuring interaction with their child during feeding were SSI. There has been a SSI from BL in the rate of mothers who provide report that they talk or sing to the child while feeding the child (58% at BL to 84% at FE).

### ***Malaria***

The prevalence of fever in children aged 0-23 months in Lira District was found to be quite high in the baseline KPC Survey at 74.8%. Malaria is highly endemic in Uganda (90-98% *P. falciparum*) and is the leading cause of morbidity and mortality nearly country-wide.<sup>6</sup> In Lira District, malaria accounted for 34% of the disease burden at the start of the project. Over the course of the project, the rate of malaria in children under 2

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<sup>6</sup> Uganda Malaria Control Strategic Plan: 2005-6 – 2009-10.

was SSD from 75% at BL to 58% at FE. There has been a SSI in the use of bed nets in mothers of children under 2 since BL (41% at BL to 57% at FE), which is commendable considering there is a decrease in the availability of ITNs. However, the rate of children under 2 sleeping under a bed net was not statistically changed from 51% at BL to 58% at FE. The rate of households that contained at least 1 ITN was SSD from 82% at BL to 58% at FE. This correlates with the findings of the health facility assessment at final that should a lack of available nets for distribution in the entire project area.

Of the children who had a fever in the 2 weeks prior to the survey, at BL only 25% were treated with an antimalarial drug within 24 hours of the start of the fever. There has been a significant increase in the proper treatment of malaria to 52% at FE. The driving factor behind this increase is the fact that the rate of care seeking (mothers who sought care for their child with fever within 24 hours) was SSI from only 22% at BL to 83% at FE.

### ***Health Contacts***

One of the greatest successes of this project was the very significant increase in contact rates between mothers in the project area and qualified health workers or accurate health information regarding MNC and mother and child health. Due to the project's strengthening of community capacity through VHTs, PDCs, Peer Educators, Mother Leader Groups, and Health sub-districts, the rate of mothers having contact with trained health personnel in the previous month was SSI from only 29% at BL to 92% at FE. Contact with VHTs led the SSI, with a rate of 81% by FE, up from only 10% at BL. Also, mothers now (at FE) attend a monthly meeting of some type in order to discuss their health or the health of their baby at a rate of 85%. This is a very large SSI from the baseline rate of 23%. The structure and function of these groups, supported by the CSP, allows this accessibility and created the demand for these groups, and this is another sustainable change in the community. The rate of attendance of each type of group is indicated in the table, above, with the largest rates noted in Mother's Groups (63%), which is excellent.

In addition, the saturation of the project area with health messaging on important MNC topics was excellent throughout the project. There is a high saturation of health messaging in all villages from the VHTs, with a rate of 80% at FE, and also Health Educators, with a rate of 61% at FE, due to the project initiatives utilizing VHTs and Health educators to reach mothers. Good saturation of the community with VHTs and health educators is evidenced by the many improved health indicators indicating changes in health behaviors in this project. There is a very high saturation of health messaging through the radio in all villages of the project area, which is shown by the high rate of mothers who report hearing health messaging from the radio, with a rate of 82% at FE. Finally, there is a very high rate of mothers hearing messages on each key health topic (hand washing, treating water, danger signs/care seeking, diarrhea care, and SBA) again reveals the excellent saturation of this project area with health messages through our project sources, which related to the high SSI achieved with health outcomes.

In conclusion, by working in partnership with the DHO, MTI Uganda implemented a project that improved the health of village communities in Lira District through building DHO capacity to provide sustainable, quality service delivery at the facility and community levels, and through promoting behavior change and community mobilization to take appropriate responsibility for health. This was accomplished through a combination of interventions, including providing supplementary training, supervision, and follow-up coaching of VHTs. The results of this FE KPC Survey reveal the many sustainable successes that were accomplished in Lira District, as well as a few continuing challenges of this project area that may be used in future projects as lessons learned.