EVALUATION

EVALUATION OF ENCOURAGING POSITIVE PRACTICES FOR IMPROVING CHILD SURVIVAL, EAST MAMPRUSI, GHANA, WEST AFRICA

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Evaluation of Encouraging Positive Practices for Improving Child Survival, East Mamprusi, Ghana, WEST AFRICA

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ACRONYMS

5A	Fives Alive!
AED/GSCP	Academy for Educational Development's Ghana for Sustainable Change Project (USAID funded)
ANC	Antenatal Care
AR	Annual Report
BCC	Behavior Change Communication
BF/EBF	Breastfeeding/Exclusive Breastfeeding
BL	Baseline
BMC	Baptist Medical Center
C4D	Communication for Development (UNICEF)
CBA	Community-Based Agent
CBIS	Community-Based Information System
CETS	Community Emergency Transport System
CDO	Community Development Officer
CHAG	Christian Health Association of Ghana
CHPS	Community-Based Health Planning and Services
CHC	Community Health Committee
CHV	Community Health Volunteer
CHO	Community Health Officer
CIMACS	Community-Led Initiative for Mother and Child Survival
CIS	Community Information System
CoC	Council of Champions
C-PreS	Community Pregnancy Surveillance
CRS	Catholic Relief Services
CSPs	Community based Surveillance Programs
DA	District Assembly
DDHS	Director District Health Services
DHMT	District Health Management Team
DIMS	District Information Management System
DIP	Detailed Implementation Plan
DOTS	Directly Observed Treatment Short course
ECOWAS	Economic Community of West African States
EL	Endline
EMD	East Mamprusi District
EmOC	Emergency Obstetrical Care
ENA	Essential Nutrition Actions
ENC	Essential Newborn Care
EPPICS	Encouraging Positive Practice for Improving Child Survival
FE	Final Evaluation

FP	Focal Person
FGD	Focus Group Discussion
FtF	Feed the Future
GDHS	Ghana Demographic and Health Survey (2008)
GHI	Global Health Initiative
GHS	Ghana Health Services
HHs	Households
Hb	Hemoglobin
HDM	Household Decision Makers
HF	Health Facility
HFA	Height for Age
HIRD	High Impact Rapid Delivery
HIS/HMIS	Health Information System/Management Information System
HMNCCs	Healthy Mothers and Newborn Care Committee
HW / CHW	Health Workers / Community Health Workers
IFA	Iron Folic Acid
IMCI	Integrated Management of Childhood Illnesses
IMR	Infant Mortality Rate
IPTp	Intermittent preventive therapy (Pregnancy)
IPT3	Intermittent preventive therapy (3 doses of SP)
IRS	Indoor Residual Spraying
ITN/LLIN	Insecticide Treated Net/Long Lasting Insecticidal Nets
IYCF	Infant and Young Child Feeding
KPC	Knowledge Practice and Coverage Survey
LAM	Lactation Amenorrhea Method
LAQS	Lot Quality Assurance Sampling
LOE	Level of Effort
MAMAN	Minimum Package for Mothers and Newborns
MAF	MDG Accelerated Framework
MCH	Maternal Child Health
MD/MW	Medical Doctor/Midwife
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MICS	Multi-Indicator Cluster Survey
MIS	Malaria Indicator Survey
MIP	Malaria in Pregnancy
MMR	Maternal Mortality Ratio
MMT	Modified Motor Tricycle
MNC	Maternal and Newborn Care
MN/N	Maternal, Newborn and Nutrition
MNCH	Maternal, Newborn and Child Health
MOH	Ministry of Health
MOP	Malaria Operational Plan (PMI)
NNMR	Neonatal Mortality Rate

NR	Northern Region
OR	Operations Research
PRABs	Practices, Rituals, Attitudes and Beliefs
PD/PDI	Positive Deviance/Positive Deviance Inquiry
PDM	Positive Deviant Mothers
PDQ	Partnership Defined Quality
PMI	Project Management Institute
PMTCT	Prevention of Mother to Child Transmission of HIV
PRA/PLA	Participatory Rural Appraisal/Participatory Learning and Action
P/L M	Pregnant/Lactating Mothers
PP	Post-Partum Care
QA	Quality Assurance
RF	Results Framework
RHFA	Rapid Health Facility Assessment
RTI	Research Triangle Institute
SBCC	Social Behavior Change Communication
SD	Sub-district
SO	Strategic Objective
TA	Technical Assistance
TBA/TTBA	Traditional Birth Attendant/Trained TBA
TT	Tetanus Toxoid (Immunization)
UDS	University for Development Studies
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WFP	United Nations World Food Program
WRA	Women of Reproductive Age

Evaluation of the Encouraging Positive Practices for Improving Child Survival Project - Executive Summary

November 2015

An expectant mother in Bongbini poses in front of her community's Wall of Good Health, which shows progress towards improved maternal neonatal practices. Photo: CRS

Key Findings:

Maternal and Newborn Care indicators improved from baseline to endline: Four plus antenatal care visits increased by 18%; use skilled assisted deliveries increased by 33% and postnatal care for newborn within first two days increased by 52%.

The Wall of Good Health is a creative tool used to track and pictorially present at least two key MNC indicators in each project community.

The Council of Champions (CoC) strategy is useful for addressing challenging PRABs related to MNC service uptake – women were 2.9 and 1.7 times more likely to use ANC within first trimester and early PNC respectively in communities with CoC.

Modified Motor-tricycles made statistically significant contributions to skilled assisted deliveries in the target communities from a baseline of 23% to 78% at endline.

The EPPICS project was funded by the *US Agency for International Development* through the Child Survival and Health Grants Program, 2011-2015.

Evaluation, Purpose, And Evaluation Questions

The final evaluation assessed the performance of the EPPICS maternal and child survival project. The evaluation assessed:

- To what extent did the project accomplish and/or contribute to the goals and objectives stated in the Detailed Implementation Plan?

- What were the key strategies and factors, including management and partnership issues that contributed to what worked or did not work?

- Which elements of the project have been or are likely to be sustained or expanded (for example, through institutionalization or policies)?

- What are stakeholder perspectives on the implementation of operations research, and how did the operations research study affect capacity, practices, and policy?

Project Background

EPPICS was designed to improve maternal and newborn health in the East Mamprusi district of northern Ghana through the components of Maternal and Newborn Care (60%), Nutrition (30%), and Malaria in Pregnancy (10%). EPPICS was launched in 2011, with a target of 51,000 direct beneficiaries including women of reproductive age and children 0-59 months.

The project combined health facility and community based strategies to: improve geographic access to health services through provision of modified motor-tricycles as rural ambulances; reposition traditional birth attendants as "link providers" to health facilities for skilled assisted childbirth; and modify practices, rituals and beliefs (PRABs) to remove barriers to health seeking behaviors. In Sakogu sub-district, EPPICS created Councils of Champions (CoCs) in each community comprised of the chief, and women and religious leaders. CRS worked in close partnership with Ghana Health Services (GHS) to implement EPPICS.

In September 2015, a four-person evaluation team conducted the final evaluation (see Annex XIII for a list of members). The team visited project sites in EMD (sub-districts: Gambaga, Nalerigu, Sakogu, Jawani and Tamboku) and also talked with staff and partners in Gambaga, Tamale, and Accra districts. The team first reviewed findings from the knowledge, practice, and coverage (KPC) surveys and other studies commissioned by the project to determine what further questions it wanted to answer during the field evaluation. The team then used qualitative methods to assess the project and answer these questions through interviews, group discussions, and observations. One of the limitations of this report is that the FE evaluator who conducted the qualitative field review with CRS staff and project stakeholders was unable to complete the report; a second evaluator finished the report using data and information collected by the previous consultant.

Findings and Conclusions:

Key Findings: A review of the KPC findings shows that EPPICS improved on most of its performance indicators (see Annex V for complete report): (1) Pregnant women who registered for and use antenatal care at the health facilities within the first trimester increased from a baseline of 50% to 74% at endline; (2) four plus antenatal visits among pregnant women showed statistically significant increase from 63.9% to 82%.; (3) birth preparedness (setting aside money to pay for emergency transport, getting clean clothes to wrap baby etc) increased from 16% at baseline to 41% at endline; (4) skilled assisted deliveries showed statistically significant rise from 43% to 76% at baseline and endline respectively; (5) knowledge of danger signs in pregnancy increased from 81% at baseline to 86% endline while knowledge of delivery danger signs increased from 69% to 72% at baseline and endline respectively; (6) knowledge of post-partum danger signs increased from 77% baseline to 87% endline while knowledge of neonatal dangers increased from 72% baseline to 80% endline; (7) the use of health facilities for postnatal care within the first two days of delivery showed statistically significant improvement from 32% baseline to 84% endline; (8) uptake of two or more dozes of tetanus toxoid increased from 64% baseline to 71% endline; (9) the portion of mothers who slept under long lasting insecticide nets with their babies increased from 16% at baseline to 43% at endline; (10) early initiation (within the first 30 minutes after delivery) of breastfeeding increased from 50% at baseline to 75% at endline; (11) exclusive breastfeeding of infants within the first 6 months of age showed statistically significant increase from 47% at baseline to 70% at endline; (12) the proportion of children age 6-23 months fed according to a minimum of appropriate feeding practices showed statistically significant increase from 55% at baseline to 78% at endline; (13) severe stunting reduced from 17% at baseline to 5% at endline.

At the time of the final evaluation, many of the project activities were being scaled up or expanded. For example, with support from CRS and GHS, the community was able to offer Community Pregnancy Surveillance and targeted education (C-PreS) sessions. CRS and GHS have also worked to scale up repositioning TBAs as Link Providers as well as the Council of Champions strategies in six new districts in northern Ghana with an expected 100,000 beneficiaries with funds from a US based Foundation. Also, the Walls of Good Health methodology was shared at the ECOWAS meetings in 2012 and CRS Ghana has supported CRS Niger and Burkina Faso with integration in their child survival projects. The EPPICS project strategies contributed in making the East Mamprusi District transform from the worst to the best performing district in the Northern Region from 2011 to 2014.

To address the socio-cultural barriers to accessing health services, the project developed innovative operations research (OR). As part of the OR, EPPICS developed community-led approaches to target

challenging socio-cultural practices in 44 communities through creation of a Council of Champions in intervention communities. The CoCs are composed of the 5-7 most influential individuals in the community and are trained to engage with household decision makers, and work to modify challenging MNC PRABs. COC members had a strong influence on the improvement of early ANC attendance and increase in institutional births (See Annex XIV for details). The OR study provided insight into how SBCC through empowered community leaders can positively influence access to and utilization of quality MNC services, leading to improved health outcomes for families.

Conclusions: The EPPICS project as designed was implemented in full and has made positive contributions to improvements in all MCH indicators in EMD over the last four years. The deployment of combined health facility and community based strategies may have accounted for these improvements. The strategies found to be most promising include: the "Walls of Good Health", repositioning TBAs as Link Providers, the Council of Champions, and the Quality Improvement Methods in health facilities. These strategies have already been adopted by Ghana Health Service and are being scaled up in 6 other districts with technical support from CRS. The EPPICS design designated GHS staff as the lead implementers while CRS project staff provided technical support. This design not only contributed to the positive gains recorded by the project but also ensured that project interventions will be sustained beyond the life of the project.

Recommendations: The evaluation team proposes the following recommendations to CRS, GHS and USAID:

Ghana Health Services/Ministry of Health
- Facilitate the use EPPICS design as a reference model for future MCH interventions that target the health of women and children in similar context.
- To improve referrals between the CHPS compounds and next level of care, GHS should invest in scaling up the use of modified motor tricycles (MMTs) as a promising and cost effective strategy.
- EPPICS strategies should be integrated into the current MDG Accelerated Framework (MAF) strategy for Ghana and post MDG policies for MCH and should also support the scale up of Walls of Good Health, Council of Champions, Modified Motortricycles, Repositioning TBAs as Link Providers and Quality Improvement Methods.

Catholic Relief Services
- CRS should collaborate with other USAID funded MCH interventions in Ghana such as *Systems for Health* to scale-up EPPICS strategies that will benefit the other regions and should explore funding to document and share guidance on how to implement each strategy for adoption in similar settings.

United States Agency for International Development (USAID)
- CRS and GHS should be supported to document and share "How to Implement" these strategies including the Council of Champions strategy for adoption in other USAID funded projects.
- Future USAID maternal health projects should invest more of their resources in improving staffing and supplies at health facilities.

EVALUATION PURPOSE AND EVALUATION QUESTIONS

EVALUATION PURPOSE

The purpose of this final evaluation (FE) is to assess performance of the CRS-led Encouraging Positive Practices for Improving Child Survival (EPPICS) project and to make the findings/results available to various audiences including the Ghana Health Service and Ministry of Health (MOH) of other countries. The findings are expected contribute evidence relevant to global initiatives such as the Global Health Initiative and Feed the Future.[1]

Also, the FE provides an opportunity for all project stakeholders to take stock of accomplishments to date and to listen to the beneficiaries at all levels (Health Centers, CHPS compounds etc.), including mothers and caregivers, other community members and opinion leaders, health workers, health system administrators, local partners, other organizations, and donors. The FE Report will be used by the following audiences as a source of evidence to help inform decisions about future program designs and policies:

In-country partners at national, regional, and local levels (e.g., MOH and other relevant ministries, district health team, local organizations, communities in project areas).

- USAID (CSHGP, Global Health Bureau, USAID Missions), and other CSHGP grantees.

- The international global health community. The FE report will be posted for public use at http://www.mchipngo.net and the USAID Development Experience Clearinghouse at https://dec.usaid.gov.

The CSHGP grant included funding for hiring of the FE evaluator. In order to assure independence of the evaluation, the evaluator was selected by CRS but approved by USAID. USAID also reviewed the Scope of Work and the final report is being submitted to USAID at the same time that it is sent to CRS.

EVALUATION QUESTIONS

The final evaluator and the evaluation team will use existing data collected or compiled during the life of the project, as well as additional data reviewed during the evaluation to answer the following questions:

1. To what extent did the project accomplish and/or contribute to the strategic objectives and Intermediate Results stated in the detailed implementation plan (DIP)?

   - Describe the extent to which the project was implemented as planned, any changes to the planned implementation, and why those changes were made.

   - How were results achieved? If the project improved coverage of high-impact interventions simultaneously, what types of integration enabled this? Specifically, refer to community based

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[1]For more information on these two initiatives, visit http://www.usaid.gov and http://www.feedthefuture.gov.

strategies and approaches and construct a logic model describing inputs, process/activities, outputs, and outcomes.

- Document high impact interventions and its potential for scalability

2. What were the key strategies and factors, including management and partnership issues that contributed to what worked or did not work:

- What were the contextual factors such as socioeconomic factors, gender, demographic factors, environmental characteristics, baseline health conditions, health services characteristics,[2] and so forth that affected implementation and outcomes?

- What capacities were built, and how?

- Were gender considerations incorporated into the project at the design phase or midway through the project? If so, how? Are there any specific gender-related outcomes? Are there any unintended consequences (positive and negative) related to gender?

3. Which elements of the project have been or are likely to be sustained or expanded? e.g., through institutionalization or policies

- Analyze the elements of scaling-up and types of scaling-up that have occurred or could likely occur (dissemination and advocacy, organizational process, costs and/resource mobilization, monitoring and evaluation using the Expand Net resource for reference).[3]

4. What are stakeholder perspectives on the OR implementation, and how did the OR study affect capacity, practices and policy?

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[2]   See Table 1 in the document here: http://heapol.oxfordjournals.org/content/20/suppl_1/i18.long

[3]   http://expandnet.net/PDFs/ExpandNet-WHO%20Nine%20Step%20Guide%20published.pdf

PROJECT BACKGROUND

Over the past decade, Ghana Health Service (GHS) and its Development Partners (USAID, UNICEF and WHO among others) have been implementing evidence-based interventions including the free maternal health policy, an expansion of the health infrastructure as well as investments in human resources for health. In spite of these efforts, set targets for Ghana's health related Millennium Development Goals (MDG) four (Reduce Child Mortality) and five (Improve Maternal Health) were all missed. Though the institutional maternal mortality ratio fell from 216 per 100,000 live births in 1990 to 144 per 100,000 live births in 2014, it fell short of the MDG target of 54 per 100,000 live births in 2015. Though under-5 mortality rate improved from 122 per 1,000 live births in 1990 to 60 per 1,000 live births in 2014, it still fell below the MDG target of 40 per 1,000 live births[4].

Table 1: Pre-EPPICS MNCH/N Indicators EM, NR and National			
Indicator	EM*	NR**	**Ghana****
Supervised delivery	48	35.5	48.2
Antenatal visits (1st trimester)	30	49	55
Antenatal visits(4+)	46	58	78
IPT2+	51	33	44
ITN use (pregnant women)		36	45
Height for age -2 SD	39	31	28
Weight for age -2 SD	30	29	14
WRA (any anemia)		59	59

* **EM GHS Annual Report 2010;**
****Ghana Statistical Service et al, Districts MICS Report, 2009**

Though there has been positive progress in MNCH indicators generally, these MNCH indicators in the Northern Region reflect significant challenges (See table 1 comparing indicators of the Northern Region, East Mamprusi District (EMD) and national level). Most of the GHS efforts have focused on improving health facility based services (supply side) using evidence based interventions, but gaps remained on the community/household level (demand side) in terms of improving service delivery as well as in overcoming harmful practices, rituals, attitudes and beliefs (PRABs) that prevent care seeking. Research shows that most of the neonatal deaths in high mortality regions are due to preventable and behavior modifiable causes. However, the extent to which prevention measures can reduce neonatal mortality is not clear.

A study in EMD, which explored women's knowledge of neonatal danger signs, revealed that even where the quality of antenatal care is consistent with World Health Organization (WHO) Guidelines, many women still have limited knowledge of neonatal danger signs. The study also shows that low utilization of services, such as supervised deliveries and post-natal care continue to persist even where financial and geographic access is adequate.[5] This low utilization of services in EMD was attributed to PRABs that jeopardize maternal and child health and result in delays in seeking prompt care at health facilities. CRS partnered with the Ghana Health Services (GHS), through the EPPICS project to improve local PRABs related to pregnancy and newborn care, and encourage strengthening of civil society structures in order to empower local communities to advocate for improved MNCH services in the district. The project population is presented in table 2 below.

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[4]Ghana Millennium Development Goal Report, 2015

[5]Exploring Women's Knowledge of Newborn Danger Signs: A Case of Mothers with under Five Children. Public Health Research. 2014

Table 2 Project population of East Mamprusi

Beneficiaries*	Total
Total Population	139,606
Total Neonates	2,887
Infants aged 0–11 Months	5,584
Children 12 -23 Months	5,747
Children 24 -59 Months	16,1485
Children aged <5 Years	27,921
Women of Reproductive Age (15–49 years)	30,713
Total Beneficiaries	58,634
Expected Pregnancies	5,584
Community Health Workers or Volunteers (CHWs), Disaggregated by Sex	Males=235 Females=275
Health Facilities (Hospital to Sub Health Post)	12
Community-Based Structures (e.g., Village Development Committees [VDCs])	175

*Source: District Health Information System II, Ghana

Project and OR Design. East Mamprusi District was selected as the project site out of 5 potential districts in the Northern Region (NR). This decision was reached from discussions with the GHS Regional Director for NR based on high rates of maternal, newborn and infant mortality, stunting rates and low utilization of MNC services. Another factor included the previous positive work relationship between the GHS and CRS in that district, a very supportive DHMT and the suitability of the district for implementing and testing the project innovation. The project design including the results framework (see figure 1 below) was developed jointly with the DHMT with input from GHS and partners including regional level staff at UNICEF and PMI. PMI and GHS see MIP as a priority that needs to be addressed at the community level due to low IPT uptake and low LLIN utilization.

The project goal and strategic objectives were to contribute to sustainable maternal/newborn morbidity/mortality reduction in East Mamprusi District by 2015. They entailed particularly:

- SO1: East Mamprusi District has improved maternal and neonatal health outcomes
- SO2: Families have increased access to quality maternal and neonatal services

The key project strategy has been to scale up community led strategies that enhance MNCH/N practices and service utilization. Technical interventions included: Maternal and newborn care (60%), Nutrition (30%) and Malaria in Pregnancy (10%). The social and BCC strategies at household and community level were key for achieving SO1 and its IRs. Community mobilization supports achievement of SO2 and IRs. To address the three delays that contribute to MNC morbidity and mortality,[6] the BCC strategy was employed including working with community members for effective response to MNC

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[6] 1) Recognizing harmful practices and danger signs, 2) decision making and seeking care, and 3) diagnosing and providing timely care.

complications. The third delay was addressed by strengthening GHS capacities and quality of care at the health facilities.

Operations Research (OR) Design: As noted above, the high maternal and neonatal death rates in East Mamprusi are attributed to household PRABs well as non-recognition of danger signs and lack of timely decisions to access services, which all increase risks of obstetric complications. Low institutional deliveries also have negative impacts on early initiation of BF and cord care[7]. The ability of the health system to provide timely interventions is mediated by challenging PRABs of mothers/ fathers, chiefs, religions leaders and others who control the birthing practices in rural Ghana. To address this, CRS, together with University for Development Studies (UDS) designed an OR to test an innovation that targeted challenging PRABs through creation of a council of champions (CoC) in each intervention community. The CoCs are composed of the 5-7 most influential community members who are trained and regularly supervised by the project. These individuals have a strong influence in the improvement of early antenatal attendance as well as institutional childbirths.

Partnership/ collaboration: From the conceptualization, design and field level implementation stages of EPPICS, GHS and the UDS have played strategic roles. As a lead implementer of field level activities, GHS has contributed in the training of community-based agents, monitoring and supervision of project activities as well as coordinated and led the overall provision of services and interventions being promoted by the EPPICS Project. Additionally, GHS has coordinated with other relevant organizations including Presby Health Services and the Baptist Medical Centre who run a number of health facilities which were all beneficiaries of the EPPICS interventions. SEND Foundation collaborates with GHS- East Mamprusi for the implementation of Family Planning activities at the community level. The UDS has been instrumental in the design, execution, documentation and dissemination of the OR component of the EPPICS Project.

EPPICS Project activities were designed to contribute to Ghana's MOH MNCH/N policies, and also, the USAID Health Program's Global Health Initiative (GHI) which is all focused on contributing to MDGs 4 and 5 and beyond. EPPICS has enjoyed great collaboration with USAID-Washington and USAID Ghana Mission. Over the life of the project USAID's Ghana Mission has supported EPPICS in various ways: USAID was part of the official launch of the EPPICS Project on site; the Director and MCH Advisor of the Health and Population Bureau conducted three separate monitoring and support visits to the field. Additionally, CRS Ghana has always participated in USAID Ghana's Implementing Partners Meetings where lessons learned and best practices are shared as part of project updates.

EPPICS' technical intervention areas (maternal and newborn care, nutrition and malaria) are in consonance with USAID Ghana's Health Sector Strategy (Strategic Objective 7- Health status of Ghanaians is improved)[8].The project was positioned to contribute towards achieving Intermediate Results 3 (improved nutritional status of women and children) of the USAID funded Feed the Future initiative in Ghana which commenced a few months before the closure of EPPICS.

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[7] Wuni A (2009) Determinants of use of MCH services among women of reproductive age in West and East Mamprusi. Northern Health Monitor
[8] USAID Ghana Strategic Plan for the Health Sector (2009 -2013) http://pdf.usaid.gov/pdf_docs/PDACP753.pdf

Figure 1.1 EPPICS Results Framework

Goal

To contribute to improved maternal and neonatal health outcomes in East Mamprusi district by 2015.

Strategic Objective (SO 1)

Improved knowledge and positive health practices among pregnant and lactating women

Strategic Objective (SO 2)

Increased access to maternal and neonatal services

| IR 1.1: Increased knowledge & skills on positive health behaviors among pregnant & lactating mothers | IR 1.2: Increased knowledge of seeking obstetric emergency & newborn care among pregnant & lactating women & household decision makers | IR 1.3: Improved nutritional practices among pregnant, lactating women & newborns | IR 2.1: Improved MNC & ENA skills among Community Health Volunteers & TBA | IR 2.2: Strengthened partnership between Community structures & health facilities | IR 2.3: Improved quality of MNC at public & private health facilities |

Strategies/Activities

IRs 1.1. 1.2 and 1.3
- Community Mobilization and capacity building:
1. Organize and train community health workers and provide skills for post-partum care for TBAs
2. Facilitate preparation of birth plans among pregnant women and their partners
3. Organize and equip Emergency Transport and establish a referral system
4. Engage community and the district assembly in the establishment of emergency transport plans
- Behavior Change Communication
1. Establish and facilitate the functioning of community pregnancy surveillance and targeted education session
2. Establish functional Council of Champions
3. Establish Healthy Mothers and Newborn Care Committees
4. Foster the provision of counseling during home visits
5. Print and distribute T-Shirts with targeted messages
6. Broadcast key messages using the community radio
7. Train GHS staff in the application of Positive Deviant strategy to maternal/newborn care (MNC) services
- Community Health Information System
1. Support community members to construct and manage Giant scoreboards
2. Train CHVs, TBAs in data recording, analysis and reporting.
- Operations Research and Quality Assurance
1. Develop and test innovative approaches for improving uptake of MNC services
2. Train TBAs in counseling skills
3. Monitor of community volunteers.
-Improve maternal and neonatal nutrition practices
1.Train health staff, CHVs and TBAs to promote ENAs
2. Form/revitalize Breastfeeding Mother-to-Mother support groups
3.Support/promote deworming activities for pregnant women
4.Train health staff and CHVs in nutrition counseling

Strategies/Activities

IRs 2.1., 2.2., and 2.3:
- Community Mobilization and sensitization:
1. Organize and reposition TBAs as Link Providers
2. Establish/strengthen linkages between CHVs, TBAs and Health Facilities,
- Quality Assurance:
a. Health facility level
1. Capacity building programs for health staff through trainings, coaching sessions and mentoring
2. Provide facilitative supervision
3. Establishment of QA teams in all the health facilities
4. Provisions of MNC guidelines and protocols
5. Re-activate management meetings of DHMTs and SDHMTs
b. Community level
1. Train TBAs and CHVs in EoMC, ENAs and identification of danger signs during pregnancy/delivery/postpartum period/newborns and maternal nutrition
2. Provisions of tools and working gears for TBAs
- Improve partnership
1. Conduct annual reflection forums for stakeholders- District Assembly members, Chiefs, Decentralized government agencies, etc.
- Strengthen Referrals
1. Establish functional two-way referral system
Facilitative supervision
2. Supervise project activities at the community and facility level

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EVALUATION METHODS AND LIMITATIONS

One of the limitations of this report is that the FE evaluator who conducted the qualitative field review with the CRS staff and project stakeholders was unable to complete the report, so another evaluator was asked to write it. This second evaluator did not participate in the field evaluations so has been dependent upon project documents, an incomplete draft from the first evaluator and communications with CRS staff and project stakeholders to complete the report.

Evaluation Methods: In the second half of September 2015, over a ten-day period, a four-person evaluation team conducted the final evaluation of the Child Survival project (see Annex XIII for a list of members). Members of the team visited project sites in East Mamprusi district (sub-districts: Gambaga, Nalerigu, Sakogu, Jawani and Tamboku) and held discussions with project staff and partners in Gambaga, Tamale, and Accra districts.

The team reviewed the findings of knowledge, practice, and coverage (KPC) surveys and other studies commissioned by project staff in the district (see Annex1 for a list of documents). In addition, the evaluation team used qualitative information – non-numeric and opinion-based – to assess the project. The evaluation team used a small number of interviews, group discussions, and observations to supplement existing information. Interviewers and discussion facilitators conducted a few unhurried sessions, probing for answers and meetings with other individuals and women's/community groups. In particular, the evaluators sought answers to an important question: "Why?" For example, when surveys showed that the prevalence of low weight-for- age (an indicator of malnutrition among children) had decreased in East Mamprusi, the team brought this positive finding up for discussion in meetings with project staff and partners in Tamale and Accra to explore possible reasons for the decline. The methods used by the evaluation team include:

- Discussions with project team members
- Review of project documents including the KPC survey and OR reports and community based data forms on the Walls of Health
- Group discussions with mothers
- Interviews with community members
- Interviews with project partners
- Observations of patient-provider interactions
- Exit interviews with patients
- Investigation of maternal death in Gambaga sub-district
- Review of referrals to hospital in Nalerigu

Group discussions were conducted by two experienced data collectors (Bachelor degree holders) who have facilitated such sessions for the project before. Working together, they facilitated the discussions (in Mampruli, the local language) and took notes (rotating the two roles in a series of discussions). Group discussion topics included antenatal care, delivery (transport, place, and birth attendant), infant feeding practices, use of bed nets, and opinion about project activities. Group discussion facilitators (Raymond Atariba and Sumaila Nambe) also conducted a participatory diagramming exercise to explore the roles played in deliveries by family members, community members, transportation providers, health care providers, and health facilities.

Interviews with health facility staff explored a number of topics related to the provision of services for antenatal, delivery, and post-partum care, including the following: number, qualifications, and responsibilities of staff; availability of equipment and medicines (and stock-outs of medicines); cost of consultation, procedures, and treatment; use of services (number of patients and waiting periods); thoughts about improving services; and opinions about project activities.

While an important theme of the evaluation was project performance as assessed through the KPC surveys, the team also examined other issues related to the project. These included project accomplishments, project strategies that worked (or did not) including the review of community based data forms from Healthy Mothers and Newborn Care Committees (HMNCCs) on their Walls of Health, results of the operations research study and, continuation or expansion of activities. (See annex XIV for the number, location and timing of interviews and group discussions.)

Data Quality and Use: In general, there were no significant problems with the KPC baseline and Final evaluations. The findings were used consistently by the project to focus the project training and BCC activities. An issue regarding the design of the OR project, which the project staff concedes, concerns the selection of case/intervention and comparison sub-districts. It turns out that the intervention/study district had only one health facility while the control district had 5. This may account for the discrepancy in findings in the final OR report where women in the intervention communities were 50 percent less likely to deliver in a facility than women in the comparison communities. According to project staff there was violence in the intervention district that caused the facility midwife to leave the district and as a result, women did not go there for deliveries. Unfortunately, there were no other facilities in this sub-district for women to seek delivery services. Another OR issue was with the council of Champions (CoC). Because the Council was composed of 5-7 high level leaders in each community, it was sometimes hard to keep their CoC activities separate from the comparison communities. This is because the leaders, especially the Chiefs were so excited about what they were doing that they shared the information with other communities who then began listening to the Chiefs. So there may have been contamination of the comparison communities as well.

Another data issue became apparent during the internal mid-term review conducted by the headquarters Senior Technical Advisor for Health. During her review the GHS reported a very high number of stillbirths and the rate had not decreased over time. She advised the GHS to review their data and determine where the women lived. The analysis found that most of the mothers of stillbirth babies were from neighboring districts and had not participated in the different SBCC interventions being implemented by GHS and CRS. Once this was done, they discovered that the actual number of stillbirths in East Mamprusi District was much lower than originally calculated.

One of the successes of the EPPICs project is how it assisted the GHS improve their HIS system. The project provided training and mini I-pads and cell phones to improve health information/data collection, analysis and timely transmission from the district facilities to the DHMT, who then pass it on to the national level. The project also shared their community-based HIS (CIS) using the walls of health to collect data and improve demand by communities for better data and follow-up. This community data was a useful comparison with the facility data regarding deliveries.

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

FINDINGS

The main finding of the evaluation team is that improvements have occurred in maternal and child health in East Mamprusi District over the last four years. This section will address the evaluation questions in the scope of work.

<u>1. To what extent did the project accomplish and/or contribute to the Strategic Objectives and Intermediate Results stated in the Detailed Implementation Plan?</u>

Table 3 presents the summary of inputs, activities and outputs related to the S.O.s and I.Rs is presented below.

Table 3: Summary Table of Inputs, Activities, and Outputs That Contributed to Key Outcomes			
Strategic Objective (SO 1): Improved knowledge and positive health behaviors among pregnant and lactating women			
Project Inputs	**Activities**	**Outputs**	**Outcomes**
Fuel, funds and Logistics	Conducted community Sensitization on project strategies	Sensitized project communities on EPPICS strategies	240 mobilized and sensitized on all EPPICS strategies communities in FY13
	Formed and trained Community Pregnancy Surveillance and Targeted MNC education sessions (C-PreS) sessions	C-PreS formed in 240 communities	C-PreS session contributed to improved MCNH knowledge awareness and service uptake among Pregnant women and lactating mothers
Behavior Change Communication (BCC) Materials Funds/Logistics for trainings and Workshops	480 Positive Deviant Mothers[9] trained in SBCC	Positive Deviant Mothers positioned to facilitate C-PreS session for pregnant and lactating mothers	Increase in percentage of births attended by skilled personnel (from 43% to 76%)
	480 Traditional Birth Attendants and Traditional Medical Practitioners repositioned as Link Providers	480 Link Providers facilitate referrals of women and point of labor and delivery as well as postnatal mothers to health facilities	Essential newborn care increased from 12% at baseline to 52% at endline Exclusive breastfeeding increased from 47% at baseline to 70% at endline
Modified Motor Tricycles (MMTs) as Rural Ambulances	Provided 4 MMTs to remote communities to facilitate access to health facilities for pregnant women and newborn emergencies	Increased access to skilled assisted care among women in remote communities. The 4 MMTs reached 40+ communities	Post-natal checkup for the newborn increased from 30% at baseline to 80% at endline

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[9] These are mothers who inspite of their locations and conditions have been able to uptake MNC services in line with the recommendations of GHS: Presented at antenatal clinic within first trimester, made four plus ANC visits, used skilled professionals for childbirth, exclusively breastfeed infant and ensured that the infant was fully vaccinated against vaccine preventable diseases. Has good communication skills to provide educational support to peers

Long lasting Insecticide Nets (LLINs)	Collaborated with GHS and Networks (USAID funded project) to continuously distribute and improve LLIN use among Pregnant and Lactating mothers	17,368 pregnant and lactating mothers communities benefited from the package	Increased use of LLINs by pregnant and lactating mother from 42% at baseline to 71% at endline

Strategic Objective 2 Families have increased access to quality and use of maternal and neonatal services by 2015

Funds/Logistics for trainings and Workshops	Trained Health staff (midwives and nurses) in Emergency Obstetric Care (EmOC, Essential Newborn Care (ENC) and Essential Nutrition Action(ENA)	Midwives/Nurses trained in EmOC, ENC and ENA and have been deployed to provide services in all 11 health facilities	Improved knowledge and skills health staff ENC and ENA, Improved MNC services are being provide in all the 11 health facilities and 240 outreach points

Increase in percentage of health facilities in which interviewed health worker reported receiving any training in maternal and neonatal care in the last twelve months (from 71% to 100%) |
MNC Guidelines and Protocols	Developed/Reproduced MNC related protocols/guidelines for distribution to all health facilities	All relevant MNC guidelines/protocols are available and used in all the health facilities	Increased percentage of health facilities with guidelines on delivery care (from 14% to 100%)
Cements, Paints and funds	Facilitate the construction of Alaafia Gooma- Walls of Good Health/ community giant scoreboard (CGS)	240 Alaafia Gooma – walls of Good Health/Community Giant scoreboards constructed	Community members actively participate in the monitoring of key MNC indicators
Training designs/Funds and logistics	Form and train quality assurance teams for health facilities	Five member quality assurance teams formed and trained for each of the 11 health facilities	10 health facilities provided with functional QA teams and are working to improve quality of MNC services

Cross cutting activities: Innovation – Operations Research

Funds and Logistics for Operations Research	Identified, trained and support the operations of 200 Council of Champions (CoC) in 44 communities in the intervention arm of the OR	CoCs in 44 communities deployed and supported to influence Household Decision Makers	The 200 CoCs visited and engaged 13,632 and 15,152 Household Decision Makers and Caregivers respectively to influence them and support prompt uptake of health services by pregnant and lactating mothers
	Developed CoCs manual and provided orientation for 200 CoCs members Documentation of OR Activities/Data collection		An average of 6 key Practices, Rituals, Attitudes and Beliefs challenging to the uptake of MNC were modified/eliminated
	Conduct baseline, midterm and final evaluation of the OR in both intervention and comparison arms	The three study reports were conducted and are available for use to replicate the strategy or to influence policy	The CoC strategy researched and documented to inform policy on community engagement for enhance uptake of maternal and child health services

The goal of the EPPICS project was to contribute to sustainable maternal/newborn morbidity/mortality reduction in East Mamprusi District by 2015. The objectives were to improve maternal and neonatal health outcomes and to increase access to quality MNC services for all families in EMD.

A review of the KPC results shows that EPPICS improved all of its indicators (see Annex IV and V for complete report). The endline (EL) KPC survey found a statistically significant increase in the proportion of mothers of children 0-23 months received 4 or more ANC visits (82%) against baseline (BL) value (63.9%). Also statistically significant is the increase in proportion of women who accessed ANC during their first trimester from 50% (BL) to 74% (EL). Ninety percent indicated they were satisfied with their treatment by health staff though 10% did say they were abused by HF staff, generally this meant they were exposed to yelling. Baseline focus group discussions with communities revealed that abuse by HF workers was one of the reasons women went to facilities for ANC but not for deliveries. Seventy-one percent of women at EL received tetanus toxoid compared with 64% at baseline. Skilled birth attendance showed a statistically significant increase to 76% at EL from 43% at baseline. Postnatal care for children within two days after birth had a statistically significant increase from 30 % (BL) to 83% (EL). Postpartum care for mothers also showed a statistically significant increase from 32% (BL) to 82% (EL). Overall 95% of mothers were checked by health provider at endline compared to 86% at BL.

There was an increase in children 0-5 months breastfed in the previous 24 hours (47% BL- 70% EL). Likewise exclusive breastfeeding (EBF) of children 0-5 months showed a statistically significant increase from 47% at BL to 70% at EL. At baseline only 50% of children were immediately breastfed after birth but this increased to 75% by the EL. The proportion of children's mothers who reported to have had clean cord care showed statistically significant increase from 22% (BL) to 73% at EL. The use of clean delivery kits during birth of youngest child by mothers with children 0-23 months also showed statistically significant increase from 65% at BL to 95% at EL. Knowledge of danger signs at BL also increased at EL (delivery danger signs 69-72%, pregnancy danger signs 81% - 86%, postpartum danger signs – 77% BL – 87% EL, neonatal danger signs 72% at BL- 80% at EL). Some of EPI indicators example immunization levels for measles, DPT1 either did not increase or stayed the same, but childhood immunization was not a focus of the project.

ORT use for children 0-23 months with diarrhea showed a statistically significant increase from 48% at BL to 65% at EL. Appropriate care seeking for pneumonia also showed a statistically significant increase from 45% at BL to 63%. The percentage of households that treat water effectively grew from 4% to 33% and appropriate hand-washing practices rose from 28% at BL to 46% at EL. Knowledge of PMTCT increased from 36% at BL to 65% at EL. ITN use of children 0-23 months showed a statistically significant increase from 42% at BL to 71% at EL. IPTp however, decreased by 59% at BL to 58% at EL. This was attributed to the shortage of Suphurdoxine Pyramithamine (SP) as a result of procurement challenges that was made worse by the fire that gutted the Central Medical stores of Ghana in 2013.

The proportion of children fed according to minimum appropriate infant feeding practices (WHO) increased at a statistically significant 55% at BL to 78% at EL. The percent of children who 0-23 months who ate vitamin and iron rich food, fortified food and dairy increased by 4% to 10% points. Those eating vitamin A rich foods dropped slightly (from 76% to 72%). Children eating animal source food also decreased from 72% to 54%. This drop was attributed to the seasonal difference during which the two surveys were conducted. The BL was conducted during the latter part of dry season where families had

access to animal source foods from bush-hunting, whereas the EL was conducted during the rainy season.

In general, the project was implemented as planned but there were a few nested interventions:

- Four Modified Motor Tricycles (MMTs) served twenty clusters of communities as rural ambulances to address challenge of limited geographic access to health facilities. From April, 2012 to September 2015, the MMTs had served 2,894 pregnant women, 3,022 mothers with newborns/children and 754 other emergency medical conditions. Each MMT averagely recorded 212 transport events with a cost per event at $5±.5 on the average. The fee was divided to cover fueling-$3.3±.2, maintenance-$1±.2 and driver/link provider motivation fee-$0.7±0.1. Total fuel and maintenance requirements of each MMT were approximately $22- $35/month. The MMT made a statistically significant contribution to skilled assisted deliveries in the target communities from a baseline of 23% to 78%.

- EPPICS staff investigated and established a key cause of the level of child under-nutrition and wasting (30%) to be a rapid repeat birth rate, with little spacing. As a result, the Lactational Amenorrhea Method (LAM) as well as birth control using cycle beads and calendars was promoted. EPPICS first piloted the cycle bead method in 4 large communities and then expanded it to all the communities along with its exclusive breast feeding strategy in the project district. There is now demand for cycle beads from neighboring districts.

- In EMD, CRS found that 24 different forms for data collection were filled manually on a monthly basis. On average, each health facility serves 30 communities. Manual completion and submission of these data forms to the district level took considerable time (2 days to deliver the forms), money and risks. CRS addressed these challenges by supplying the sub-districts with mini iPads and digitized forms along with training on how to use them. These iPads not only facilitated transmission of data to the district office improving timeliness and data completeness but also reduced absenteeism. Health providers no longer had to travel long distances and spend hours per day filling out forms while patients were waiting for services. An assessment by the District Health Information Officer indicated that timeliness of data reporting had improved greatly since the system was installed in year 2 of the project. The system has been adopted by the GHS that uses cell phones to capture data and ensure real time data collection for better management of health delivery issues in the district.

2. What were the key strategies and factors, including management and partnership issues that contributed to what worked and did not work?

At community and household levels, EPPICS combined tested strategies from earlier projects to link communities with GHS facilities by providing support networks to promoting the uptake of maternal and newborn care services. Key strategies included:

- *Community Pregnancy Surveillance and targeted Education Session (C-PrES): C-PrES* aimed at improving the knowledge of pregnant women and lactating mothers on MNC. In all, EPPICS engaged a total of 64,244 pregnant women and lactating mothers and supported them to increase the MNC health knowledge and practices. On the average, 25 women pregnant women or lactating mothers were constituted into groups and received for MNC education covering a wide range of themes including: important of antenatal care and uptake of related services,

healthy birthing practices with emphasis on institutional deliveries, essential newborn car, IPT intake, use of LLINs, danger signs, postpartum check, maternal and child nutrition. A total of 480 trained Positive Deviant Mothers[10] were engaged to facilitate C-PreS sessions in each community over the life of the project. This strategy contributed to SO1 for EPPICS: *Improved knowledge and positive health behaviors among pregnant and lactating women.* Examples of some status of some MNC knowledge indicators as at endline against baseline are: knowledge of danger signs at BL increased at EL (delivery danger signs 69-72%, pregnancy danger signs 81% - 86%, postpartum danger signs – 77% BL – 87% EL, neonatal danger signs 72% at BL- 80% at EL). Also knowledge about the risk associated with births to pregnancy intervals less than 24 increased from 35% baselines to 54% at endline.

- *Re-positioning traditional birth attendants as Link Providers as partners in skilled care:* To encourage early and frequent ANC, promote maternal nutrition in pregnancy, support skilled assisted deliveries and to discourage home deliveries, 480 TBAs were identified, trained and repositioned to play a new role as Link Providers in all the 240 communities. Link providers accompany pregnant/postpartum women to facilities and assist with the health facility deliveries. TBAs also doubled as providers and teachers on essential newborn care when babies are born at home, promoted uptake skilled post-partum and newborn care and accompany mothers and babies to a facility within 24 hours after a home birth for postnatal and newborn checkups. This strategy contributed in strengthening partnership between community structures and health facilities, Key outcomes that benefitted directly from this strategy is significant increase in skill assisted deliveries from 43% at baseline to 76% at endline while post-natal visit for newborn health increase significantly from 30% at baseline to 83% at endline. The strategy praised by the GHS during the evaluation concerns how TBAs have become key MNC stakeholders in rural communities. The Link Providers showed no resistance as the engagement process still guaranteed them their original incentives of fowls and soap even after linking a pregnant women to health facility for childbirth

- *Creation of Healthy Mothers and Newborn Committees (HMNCCs)* – HMNCCs were comprised of influential community members including men and women, TBAs, CHVs, THs, grandmothers, religious leaders etc. The HMNCC's tasks included mobilizing communities to develop birth plans including transport expenses, engaging fathers to support birth plans and supporting pregnant mothers in seeking early ANC and nutritional behaviors, influencing women's behaviors through women leaders. The also led communities to construct and managed the walls of good health. This strategy assisted in enhancing the operations of the community health planning and service (CHPS) compounds as the HMNCCs also doubled as the Community Health Committees and worked directly with the Community Health Officers in charge of the CHPS compounds.

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[10] These women 1) registered early for ANC, 2) used skilled delivery and 3) employ newborn care practices known to prevent MN deaths. Experience shows that these mothers have good access to households, and are good face-to-face peer counselors

- *Using CBIS for Community Motivation and Feedback with "Walls of Health"*: In public health it is often difficult to present health data to communities where literacy levels, especially among women, are low. The FE team found the *Alaafia Goomni* "Wall of Health" to be an ingenious solution for this. The walls are made of mud, plastered and painted and often stand on the roadside. They are a little taller than a man and as broad as a car. The wall displays data on 2 health indicators, chosen from a menu of indicators by community members. Ten holes at the top of the wall hold ten colored sticks, green and red. To use these, for example, the percentage of births attended by skilled providers out of the total is calculated; say 60% - in which case six green sticks and 4 red sticks are on the wall. There are walls in all 240 communities. The team found the Walls to be a great strategy for the community to monitor MNC indicators. The members become involved in collecting and analyzing community data and progress. The walls have been adapted as a Score Card for monitoring MNCH indicators at facilities. The FE team did raise concerns regarding upkeep of the walls. The team visited one community where the wall had collapsed and not been rebuilt and heard of other instances where this had occurred. However, the chiefs and community members in areas visited did say that that they did and would repair damaged walls. One of the FE team was also concerned about privacy for individuals in small communities who might fall in the "red" area, but the rest of the team believed because the communities were large enough and since individuals were not singled out, that privacy was protected.

- *Nutrition Interventions*: These were integrated into most MNCH and delivery activities. The project uses Essential Nutrition Actions (ENA) for health facility (HF) training and community SBCC activities. Specific behaviors include BF initiation in the first hour and colostrum, nutrition during pregnancy and lactation, anemia prevention, lactation management, and birth spacing. ENA is key for improving birth outcomes and decreasing low birth weight. As part of this strategy, *Mother to Mother Breastfeeding Support Groups were revitalized.* The groups support early initiation of EBF and introduction of complementary feeding at 6 months. Baseline assessments determine knowledge of these as well as the Lactational Amenorrhea method for birth spacing and then based on their knowledge; integrate them into the Community Pregnancy Newborn Surveillance and Education sessions. Key outcomes included a significant increase of exclusive breastfeeding from 47% at baseline to 70% at endline.

- *Health Service Quality Improvement at the CHPS and Health Facility level:* To ensure that service provision match's client's expectation, EPPICS formed and trained Quality Improvement Teams in all the 12 targeted health facilities including the CHPS compounds. The QITs provided a platform for reflection on the quality of services provided – analyze such issues and take decisive and prompt action to swiftly address challenges. Community members were part of the QITs and through these, EPPICS assisted communities to advocate for services from healthcare providers and held them accountable for quality services being provided. Additionally EPPICS focused on health manpower, health staff attitudes, and supply chain management challenges faced by NR and EMD. EPPICS filled the gaps by linking the formal health service to communities and by improving skills of CHVs and TBAs and building volunteer support to regularly visit households with pregnant/lactating mothers.

- *Council of Champions (CoC):* The ability of the formal health system to provide rapid MNC interventions is mediated by challenging *practices, rituals, attitudes and beliefs (PRABs)* of key household decision makers: husbands, mothers- and fathers-in-law. Chiefs, Magazias, Traditional Birth Attendants/Medical Practitioners and Religious Leaders are the custodians of these PRABs and also dominate the obstetric and gynecologic scene in much of the rural districts of Ghana. EPPICS regrouped a total of 200 (5 – 7 per community) most influential people to serve on the community CoC and to help address/promote PRABs related barriers/enforcers to health seeking behavior. A total number of 13,632 Household Decision Makers (HDM) were engaged by 200 CoCs in 42 communities. Also, a total of 15,152 mothers/caregivers were visited by the CoCs within the period of implementation. In all eight key challenging and four key positive PRABs were identified and work on with the support of the CoCs. The modification and reinforcement of such PRABs facilitated improvement of key MNC indicates.

Gender considerations were upheld in the design of EPPICS. The HMNCCs for managing and updating the Walls of Health required that the membership be gender balanced. The QA teams always solicited feedback from women as well as men as each viewed situations differently. The transport committees always included women as their opinions concerning transport to facilities were valued. This was important as traditions dictate that the husbands decide where the baby should be born. There is also a belief that if a mother has been faithful to her husband then she has a safe home delivery but if she delivers in an HF, it is because she has been unfaithful. Part of the committee's work was to make sure that pregnant mothers were given a choice/ voice once the dangers of home births were understood.

On partnership, project staff noted during the review that EPPICS facilitated great coordination between CRS and the GHS. Unlike other similar interventions by other GHS partners, CRS ensured that the GHS was heavily consulted and involved in the design of the project, taking ownership at all levels. CRS claims that much of the success of this partnership is due to the district director who took over just as the project was starting. Compared to other NGOs where project staff led the implementation, CRS ensured that GHS lead implementation of activities at all levels. GHS continues to commit staff (12 Quality Assurance Teams and 7 district and regional Focal Persons, 11 nurses), time and effort as part of the in-kind contribution to lead/support the six EPPICS field staff in the implementation of activities at all levels. This partnership, which is based on trust, often sees CRS and GHS jointly conducting activities including monitoring visits with facilitative support at the 12 health facilities and 240 communities.

One of the concerns mentioned by the FE external evaluator was the disparity in staffing levels between the sub-districts. One hospital at Nalerigu has three doctors plus 2-3 part-time doctors, 4/5ths of the districts nurses and half of the midwives. The 4 other facilities have one midwife and maybe a nurse. The FE team members that were there at the beginning of the project noted that over the past four years the facilities have improved in terms of cleanliness and water supply.

3. Which elements of the project have been or are likely to be sustained or expanded?

The evaluation team established from the GHS partners that the following strategies of EPPICS are being/already scaled up and or sustained: Community-managed C-PreS education strategy, Repositioning TBAs as Link Providers, Council of Champions, Modified Motor tricycles, Quality Improvement Teams, the Walls of Good Health. Other specific examples are as follows:

- With support from CRS and GHS the community managed C-Pres education strategy is being scaled up in six new districts in northern Ghana by the GHS and is expected to benefit over 100,000 beneficiaries.

- Due to the documented achievements of using TBAs as link providers for referrals of pregnant women/newborns to facilities, and the resulting increase in skilled deliveries, CRS has leveraged $2.6 million to scale up this strategy in 6 more districts, to reach an estimated 85,000 women and children. This strategy has now been adopted by the GHS and is being scaled-up in the rest of the 21 districts of the Northern Region of Ghana.

- The Walls of health have been recognized as a useful intervention outside Ghana. CRS Ghana shared the methodology at the ECOWAS meetings in 2012. Some countries showed interest in this strategy and asked CRS / Ghana to help them replicate it in their countries. CRS staff traveled to Niger and Burkina Faso to support this expansion of the MNC methodology.

- Interventions such as the use of iPad Minis to improve data collection and Natural Family Planning Methods using the Standard Days Method together with other EPPICS project strategies contributed in making the East Mamprusi District the best performing district in 2014. This is a dramatic improvement since it was recorded as the worst performing district in 2010.

The table 4 below presents EPPICS' most effective and promising community-based strategies in terms of impact. The table presents corresponding unit costs for scale up.

Table 4: Costs per Unit of EPPICS' Most Effective Strategies

Promising Strategy	Numbers involved	Total Cost incurred in USD	Cost per unit in USD	Additional information
Custodians PRABs repositioned Council of Champions for MNC	200	$6,914	$35	This includes 4 days of training CoCs including using SBCC materials
Modified Motor Tricycles (MMTs)	4	$9,000	$2,250	This includes a 1 day training of MMT drivers
Repositioning TBAs as Link Providers	480	$38,985	$81	This cost includes a 1 day training and provision of material incentives including raincoats, flashlights and wellington boots
Walls of Good Health for CBIS	240	$33,375	$139	This excludes community support in building the walls but includes cement for concrete reinforcement, paint and picture illustrations as well as training of management committees

4. What are stakeholder perspectives on the OR implementation, and how did the OR study affect capacity, practices and policy?

The OR project, like the EPPICS project, had the overall aim to contribute to sustainable reduction in maternal/newborn morbidity/mortality in East Mamprusi District by 2015. The operational research

(OR) sought to improve knowledge, modify PRABs to maternal and newborn health care through an innovative approach using the "Council of Champions" (CoCs) (see background for details). The final OR report[11] (see annex XIV) concluded through the difference-in-difference analysis, comparing the changes over time for intervention households and comparison households, an improvement in respect to all outcome measures was noted except health facility delivery due to constraints with skilled health providers.

The results showed that more pregnant women in the intervention communities received adequate prenatal care (defined as having initiated ANC in first trimester and made at least 4 visits) than the comparison communities. Women from the intervention communities were 2.9 times more likely to initiate first ANC visit early in pregnancy (AOR=2.95 (CI: 2.01-4.34) than the comparison communities. Women from the intervention communities were 1.7 times more likely to utilize postnatal care services at least twice in the first week of delivery compared to women from the comparison communities (AOR=1.74, CI: 1.28-2.37). Women who received more ANC services were 1.9 times more likely to seek postnatal services in the first week of delivery compared to those who received less than seven visits. The intervention improved essential newborn care practices (breastfeeding, safe cord care, optimum thermal care, and improved neonatal feeding). These findings demonstrated the power of council of champions to effect change in behaviors around maternal and newborn care.

The prevalence of at least one wrong MNCH belief was lower in the intervention than the comparison communities (33.9% versus 50%). Generally, mothers in the intervention communities were more knowledgeable about danger signs during pregnancy, delivery, postpartum and neonatal periods than their counterparts in the comparison communities.

Women in the intervention communities were 50% less likely to deliver in a health facility, compared to their counterparts in comparison communities. The intervention was unable to effect positive changes in health facility delivery because of external influences that prevented the availability of the midwife to render services (see background section for discussion). Unfortunately, there was only one facility in the intervention sub-district, so the mothers had no other place to go. This site selection was a weakness in the design of the OR strategy as the control sub-district had several facilities.

The District Health Directorate of GHS with support from OR Investigators and CRS was able to share the OR results at the GHS/ Northern Region Annual Performance Review meeting and at the National level at the USAID System for Health meeting. The MoH/GHS in northern region has adopted the Council of Champions as a novel strategy to be implemented in 20 additional districts as part of the Millennium Accelerated Framework for Maternal Health. Additionally, GHS/MoH is working with USAID/Systems for Health for implementation of the CoC strategy in five of Ghana's 10 regions. Also, MoH/GHS's Northern Regional Health Directorate is working with CRS to develop a policy brief for revision of the MNC implementation policy at the sub-district and community levels.

As part of the FE, the MoH/GHS District Director of Health Services and the GHS Regional Focal Person for the EPPICS saw the CoC strategy as very promising in addressing current bottlenecks for uptake of MNC services. To them, it's a shortcut for addressing suboptimal MNC indicators and its

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[11]   M.Saaka, P.A.Aryee, M. Ali, R. Kuganab-Lem. "Engaging Community Leaders as "Council of Champions" to improve uptake of maternal and newborn health services in East Mamprusi District, Northern Ghana. Endline Survey Report. August 2015

consequent effect on maternal and child survival in the region. Additionally, the Local Government representatives and the Chiefs interviewed as part of the FE were very complementary regarding GHS's role in using the CoCs to address the low utilization of MNC services. The head Chief noted that the CoC strategy has taken the engagement of community leaders in health service delivery to the next level and his subjects (sub-chiefs) now see health delivery especially at the community and health facility levels as collective responsibilities.

In conclusion, the OR established that engaging custodians of PRABs and repositioning them to influence household decision makers assisted to modify challenging MNCH/N related PRABs and enforced the positive PRABs which subsequently contributed to improved uptake of MNCH/N services in the intervention sub-district.

CONCLUSIONS

Catholic Relief Services, Ghana Health Service, and numerous committed community volunteers have implemented a great project in East Mamprusi. In the short span of four years, population-based indicators – most notably, skilled attendance at childbirth – have improved substantially in the district. The key EPPICS strategies which contributed to this success include: The Walls of Health, Repositioning TBAs as Link Providers, C-PreS, Modified Motor Tricycles (MMTs), Council of Champions and Quality Improvement Methods. The Walls of Health, an innovative strategy used by the project to display health data and to engage communities in setting health priorities, is being expanded to other Northern districts and to other West African countries. The C-Pres education strategy is also being expanded to other Northern Region districts by the GHS, as is using TBAs as Link Providers. C-PreS, MMTs, Council of Champions and the OIMs have been scaled up by GHS and CRS into six additional districts. In addition the use of iPad minis to improve data collection and reporting and the introduction of natural family planning methods along with these other EPPICS strategies are making huge improvements in the quality of health care in the region.

Another improvement encouraged by the project's quality of care objectives is that local health officials investigate maternal deaths thoroughly and offer clear recommendations to prevent such deaths in the future. Members of the evaluation team were impressed with the dedication displayed by dozens of individuals in the district to the cause of maternal and child health, their willingness to discuss systemic and specific problems, and their ability to find creative solutions to resource constraints.

Catholic Relief Services is now implementing a successor project in East Mamprusi and neighboring districts, serving a larger population and replicating elements of the Child Survival project such as those above and the three-wheeled motorcycle ambulance.

The use of health services by women and children in the project area has improved in recent years and East Mamprusi was recognized as the best-performing district in the Northern Region in 2014. Sincere efforts to improve service quality are continuing and this part of Ghana is poised for further, and rapid, gains in health service use and in health status.

RECOMMENDATIONS

Table 5: Recommendations Consistent with Major Findings and Conclusions

Findings	Conclusion	Recommendation	Action	Who Is Responsible
Improvements in MNC indicators: Both rapid and non-Rapid CATCH indicators improved considerably.	Deployment of combined health facility and community based strategies is key to effecting desired impact on MNC	The design of the EPPICS experience should be a reference for future MCH interventions that targets the health of women and children	CRS should document and share how to guide on the replication of EPPICS with other stakeholders	CRS, GHS, Christian Health Association of Ghana (CHAG) and other actors
Promising scalable strategies: A number of the strategies including the repositioning TBAs as Link Providers, Constituting Community leaders into Council of Champions, *Alaafia Goomni* –"Walls of Good Health", Modified Motor-tricycles and Quality Improvement Methods in health facilities made significant contributions to the success of the EPPICS Project	EPPICS innovative strategies have proven to be effective in addressing MNC challenges in East Mamprusi District and in similar contexts	Ghana Health Service and the Ministry of Health should coordinate with Catholic Relief Services to scale up such strategies in all districts of Ghana USAID should support CRS to document and share "How to Implement" these strategies for adoption in other USAID funded projects	CRS should take the lead in organization and dissemination meeting to introduce these innovative strategies to all the major actors in MNCH programming	CRS, GHS, CHAG and other actors USAID, CRS
Adoption of the Council of Champions strategy is useful for addressing challenging *practices, rituals, attitudes and beliefs (PRABs)* related to MNC service uptake.	The CoC strategy has proved useful in facilitating the modification of challenging PRABs that hinder acceptance and utilization of MNC services and also served as a constructive strategy for facilitating healthy engagement of community leaders with household decision makers	USAID should support CRS to document and share "How to Implement" the CoC strategy for adoption and use on other USAID funded MCH projects	CRS should make frantic efforts in reaching out to USAID and other USAID funded MNCH projects to advocate for inclusion of CoCs in areas where PRABs appears as key barriers to MNC service utilization	CRS, USAID

Findings	Conclusion	Recommendation	Action	Who Is Responsible
Management and Partnership with GHS: The EPPICS Project Model has been very successful in promoting partnership between health service providers and users. This design not only contributed to the positive health gains recorded but also promotes sustainability	EPPICS Model supports sustainability of MNCH interventions	GHS should be encouraged to adopt and expand the EPPICS Project Model in partnership with other MCH programming actors for improved success	CRS should develop basic marketing materials to showcase this model for adoption	GHS, MoH and Partners
The EPPICS Project created a great demand for formal MNC services. However there are limited human resources especially midwives, to optimally meet the demand for MCH services in some sub-districts	Human Resource for Health (HRH) is key to health system strengthening	Additional Human Resources for Health are required to enhance the human resources based within the rural districts	Future maternal health projects should consider investing more of their resources towards improving staffing and supplies at health facilities.	GHS and MoH
The Modified Motor tricycles (MMTs) piloted by EPPICS seemed to have proven cost effective and capable of improving referrals for MNC emergencies in rural settings	MMTs is a cost effective approach to bridging geographic access related gaps for rural communities	GHS should invest in scaling up the use of MMTs in rural areas to improve referrals within rural districts	GHS and CRS should work on a business model that will encourage private persons/organizati on to invest in this area	Ghana Health Service CRS

ANNEXES

I.   List of Publications and Presentations Related to the Project

II.   Project Management Evaluation (Optional)

III.   Work Plan Table

IV.   Rapid CATCH Table

V.   Final KPC Report

VI.   Community Health Worker Training Matrix

VII.   Evaluation Scope of Work

VIII.   Evaluation Methods and Limitations

IX.   Data Collection Instruments

X.   Information Sources

XI.   Disclosure of Any Conflicts of Interest

XII.   Statement of Differences (If applicable)

XIII.   Evaluation Team Members, Roles, and Their Titles

XIV.   Final Operations Research Report

XV.   Stakeholder Debrief PowerPoint Presentation

XVI.   Project Data Form

XVII.   Other Optional Annexes

ANNEXES

ANNEX I. LIST OF PUBLICATIONS AND PRESENTATIONS RELATED TO THE PROJECT

1. Ali M (2015), "Medical transport for women and children in rural settings: modified motor-tricycle as a promising option," Ending Preventable Child and Maternal Deaths in Ghana, National Health Research Dissemination Symposium 2015, Accra, Ghana, 27-28 May 2015.

2. Ali M (2015), "Repositioning traditional birth attendants as link providers improves uptake of maternal and child health services in rural Ghana," Ending Preventable Child and Maternal Deaths in Ghana, National Health Research Dissemination Symposium 2015, Accra, Ghana, 27-28 May 2015.

3. Adondiwo A (2014), Integration of Community Emergency Transport System with repositioning Traditional Birth Attendants as Link Providers improves skilled assisted childbirth in northern Ghana, Presentation at the Core Group Meeting, Double Tree Hotel, Washington DC

4. Ali M and Adondiwo A (2014) Application of Positive Deviance Concept in a Rural District of Ghana Improves Feeding Practices for Newborns and Infants. Poster Presentation at the Africa Nutrition Epidemiology Conference, Ghana Institute of Management and Public Administration, Ghana

5. Bliss K and Streifel C, (2014)   Improving Maternal, Neonatal, and Child Health in Ghana. http://csis.org/files/publication/141118_Bliss_ImprovingHealthGhana_Web.pdf

6. Ali M and Zakaria I (2013) Community Giant Scoreboards: Rallying communities and measuring maternal and child health outcomes in Ghana. A presentation made at the GHS Annual Health Performance Review Meeting, Bolgatanga, Ghana

7. Ali M (2012), Community involvement in nutrition data collection, analysis and use for decision making –A paper presented at the 13th ECOWAS Nutrition Forum in Ouagadougou, Burkina Faso

ANNEX II. PROJECT MANAGEMENT EVALUATION

With a small team of around half a dozen staff members, the project implemented a large number of interventions to reduce maternal and newborn mortality in East Mamprusi. Working with Ghana Health Service, University for Development Studies, the USAID Ghana Mission and the Baptist Medical Center as well as Community-based Agents, the team was able to amplify the human resource base available for project activities through the use of hundreds of community members who volunteered their time and energy. The table below presents project partners and their roles

Partners	Roles/Level of Involvement
Community Members/Community-Based Agents	Volunteered their time, support and services in the capacities of Link Providers, Management of Community Emergency Health Systems, the Community Giant scoreboards/Walls of Good Health among others
Ghana Health Service	Revitalized District Health Management Team (DHMTs and SDHMT management meetings. Advocated for funds to support training and supervision of CHWs and TBAs. Garnered support and leadership from District and Regional officials for activities targeting MNC services. Engaged communities, Council of Chiefs and religious leaders to champion and improved the use of MNC services Trained Cadre of Health Professionals in key project strategies Monitored and supervised project activities
Catholic Relief Services	Provided Technical support on key project strategies Coordinated transfer of funds and logistics for timely activity implementation Stationed field officers at the sub-district to augment HR capacity of GHS to monitor and supervise project activities and the health facility and community levels
University for Development Studies	Designed, implemented and document the Operations Research component of the EPPICS Support in the baseline and final Health Facility Assessments
USAID Ghana Mission	Support with the joint monitoring and supervision of project activities Provided platforms and opportunity to CRS to showcase best practices and lessons learned implementing project activities

The evaluation team was impressed with the dedication of staff members to public health work. As one member of the staff put it, "it is a joy to work on maternal and child health. "The team met with volunteers who have worked for years on a range of preventive health interventions, including vaccination drives, the guinea worm eradication campaign, the filariasis control program, and programs to improve the health of mothers and children.

The design of EPPICS which facilitate posting of field officers with qualifications at the levels of Bachelors with experience in community mobilization activities worked to enhance the achievement of project objectives. In the midst of HR shortage, the officers complemented the monitoring supervisory roles of GHS so well so that no project activity was delayed. Equally the officers worked with GHS to provide quality support to community based agents working on different strategies of the EPPICS project. This provided a healthy synergy that support in improving MNC indicators in East Mamprusi as established in the final KPC report

ANNEX III: WORK PLAN

ATTACHMENT H : WORK PLAN & TRAINING PLAN																				
Topic/ objectives	Location	Number of participants	Duration of training/ activity	Facilitators	Year 1				Year 2				Year 3				Year 4			
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q 4
PRE - IMPLEMENTATION																				
Hiring EPPICS staff	Tamale	N/A	**2 months**	CRS staff	▓															
Purchasing equipment	Tamale/Accra	N/A	**Over 1 quarter**	CRS staff	▓															
DIP development (writing & workshop)	Tamale	35 people	**4 days**	CRS STA & 1 RTA-health & 1 EPPICS	▓	▓														
Respond to DIP Review	Gambaga	20 people	**1 month**	RTA-Health & EPPICS PM & CRS HPM			▓													
Inauguration of the Project	Gambaga	Invited Guests/Community Members	**1 day**	CRS-GHS			▓													
Project overview for DHMT members & EPPICS project staff	Gambaga	1 batch, 27 (13+14) people	**1 day**	EPPICS Project Manager & CRS Program Manager		▓														
ASSESSMENTS (FOR BASELINE, MIDTERM, FINAL EVALUATION)																				
KPC (including MIP) - Training, survey & data collection	EM district	30 communities *20 respondents	**2 months**	EPPICS staff & external consultant & GHS	▓	▓													▓	
Qualitative studies (PDI, Formative research)	EM district	30 communities	**1 month**	EPPICS staff & GHS	▓	▓	▓													

Activity	Location	Participants	Duration	Responsible
Nutrition Program Design Assistant tool	EM district	27 people	**1 week**	CRS STA/RTA
Rapid Health Facility Assessment & PDQ assessment (Training CRS staff & Roll-out of assessment)	HF & communities	7 HFA + 14 communities for PDQ	**3 weeks**	EPPICS staff & STA
Evaluations (mid-term & Final)	EM/Tamale	30 communities *20 respondents	**2 months**	External consultant
MONITORING & EVALUATION				
Training EPPICS staff & UDS on data quality and collection	Gambaga	15 people	**3days**	CRS STA
Partner Annual Reflection meetings with representatives from EPPICS groups	Gambaga	31 people	**1 day**	EPPICS Project Manager & CRS Program Manager
EPPICS M&E system established in partnership with GHS/DHMT members	Gambaga	1 batch, 6 staff	**4 days**	CRS RTA-M&E, EPPICS M&E staff, and GHS staff
Develop/revise monitoring tools for the project	Gambaga	5 staff	**3 weeks**	EPPICS M&E staff
LQAS - Training (of EPPICS & GHS staff) and roll-out	EM	20 groups	**7 weeks**	CRS RTA-M&E

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Activity					Timeline
Ensuring EPPICS data for objectives/indicators are integrated in the community and district HIS	EM	N/A	**Ongoing over 1 year**	EPPICS & GHS staff	
Construction of Giant Scoreboards	EM	Community & EPPICS staff	**3 months**	EPPICS staff	
Ongoing data collection	EM	EPPICS staff & GHS	**Ongoing**	EPPICS staff	
Ongoing EPPICS joint monitoring & facilitatitive support visits (with GHS)	EM	EPPICS staff & GHS	**Ongoing**	EPPICS staff	
Support visits from region & headquarters	EM	EPPICS staff & CRS staff	**Ongoing**	CRS Staff & EPPICS staff	
Sending annual reports to USAID		EPPICS program manager	**Once a year**	EPPICS staff & CRS Staff	
OPERATIONS RESEARCH (OR)					
Planning OR with UDS	Tamale		**1 month**	University of Development Studies	
OR plan submitted to USAID	N/A		**N/A**	UDS & EPPICS/CRS staff	
OR plan revised	Tamale		**1 month**	UDS & EPPICS/CRS staff	
OR plan approved by USAID	N/A		**N/A**	USAID	
OR data collection	EM		**Over 2 years**	UDS & EPPICS staff	
OR activities target and	EM		**Over 2 years**	UDS & EPPICS staff	

Activity	Location	Quantity	Duration	Responsible
control communities				
Data analysis	Tamale		**Over 6 quarters**	UDS & EPPICS staff
OR status update for annual & MTE reports	Tamale		**1 month**	UDS & EPPICS staff
Results shared with GHS, USAID partners	National & international		**Over 2 years**	UDS & EPPICS/CRS staff
Develop OR report	Tamale		**1 month**	UDS & EPPICS/CRS staff
Reporting on lessons learned from the OR and recommendation for scale-up	Tamale/Accra		**1 month**	UDS & EPPICS/CRS staff
WORKSHOPS / ACTIVITIES FOR PROJECT IMPLEMENTATION / COMMUNITY MOBILZATION				
Community entry and mobilization/ sensitization training (includes setting up groups)	EM	1 batch, 24 people	**3 days**	EPPICS Project Manager & District Community Mobilization Officer
Develop SBCC strategy and package (messages)	Tamale	22 people	**Over 1 month**	EPPICS staff & GHS
Develop community work plans	Tamale	22 people	**Over 1 month**	EPPICS staff & GHS
Develop training materials	Tamale	22 people	**Over 1 month**	EPPICS staff & GHS

Activity	Location	Participants	Duration	Responsible
Action Plan response to MTE recommendations	Tamale	22 people	**3 days**	EPPICS staff & GHS
Sustainability planning, assessment & action plan	Tamale	N/A	**Ongoing**	EPPICS Staff & GHS
Organize stakeholders meeting with donors, selected ministries, INGOs, etc. (mini-summit) - results sharing, lessons learned and sustainability	Tamale	30 people	**Annual**	EPPICS staff
Share nutrition lessons learned with FtF in Northern Region	TBD	TBD	**Annual**	EPPICS staff
Exchange visits with CIMACS operational district	CIMACS districts	5 people	**1 week**	EPPICS staff & GHS
Dissemination of results at CORE group & in CRS HQ	Baltimore, USA	1 person	**2 weeks**	EPPICS program manager
Midwives are trained in: EmOC First Aid & ENC	Baptist Medical Centre	22	**5 days**	Local consultants (2 from Teaching Hospital in Tamale)

Activity	Location	Target	Duration	Facilitators
Midwives train TBAs in EmOC First Aid & ENC	Clustered at HF	480 TBAs	**3 days**	Midwives & EPPICS Staff
Engagements/Meeting with Council of Champions	EM-Innovation Communities	Council of Champions	**Ongoing**	
Training/orientation for HMNC	EM	1680 community members	**10 days per field agent**	EPICCS staff
ToT for EPPICS field staff (incl HF staff) on ENA & LAM for the PD mothers	Gambaga	2 batches, 20 people	**3 days**	EPICCS staff
EPPICS staff train CHVs/TBAs, GHS for PD mothers training (this includes ENA & LAM)	Sub-district level	480 CHVs/TBAs	**3 days**	EPPICS staff & GHS Staff
CHVs/GHS training TBAs & PD mothers	Communities	5 sub-districts	**2 days**	EPPICS staff & GHS Staff
PD mothers implement SBCC strategies	EM	240 groups	**1 day**	PD mothers
HMNCs training/Orientation	EM	1680 HMNC members	**1 day**	EPPICS Staff & GHS

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ANNEX IV. RAPID CATCH TABLE

Indicator	Baseline Estimate (%)	Final Estimate (%)
Percentage of mothers of children age 0-23 months who had four or more antenatal visits when they were pregnant with the youngest child	63.9	82*
Percentage of mothers with children age 0-23 months who received at least two tetanus toxoid vaccinations before the birth of the youngest child	64	71
Percentage of children age 0-23 months whose births were attended by skilled personnel	43	76*
Percentage of children age 0-23 months who received a post-natal visit from an appropriately trained health worker within two days after birth	30	83*
Percentage of mothers of children age 0-23 months who are using a modern contraceptive method	22	35
Percentage of children age 0-5 months who were exclusively given breast milk the day prior to the interview	47	70
Percent of children age 6-23 months fed according to a minimum of appropriate feeding practices	55	78*
Percentage of children age 6-23 months who received a dose of Vitamin A in the last 6 months: card verified or mother's recall	74	78
Percent of children aged 12-23 months who received measles vaccine according to the vaccination card or mother's recall by the time of the survey	95	89
Percent of children aged 12-23 months who received the first dose of diphtheria, tetanus, and pertussis vaccine (DTP1) according to the vaccination card or mother's recall by the time of the survey	96	95
Percent of children age 12-23 months who received the third dose of diphtheria, tetanus, and pertussis vaccine (DTP3) according to the vaccination card or mother's recall by the time of the survey	95	94
Percentage of children age 0-23 months with a febrile episode during the last two weeks who were treated with an effective anti-malarial drug within 24 hours after the fever began	10	17

Indicator	Baseline Estimate (%)	Final Estimate (%)
Percentage of children age 0-23 months who slept under an insecticide-treated bed net the previous night	42	71*
Percentage of children age 0-23 months with diarrhea in the last two weeks who received oral rehydration solution (ORS) and/or recommended home fluids	48	70.7*
Percentage of children age 0-23 months with chest-related cough and fast and/or difficult breathing in the last two weeks who were taken to an appropriate health provider	48	63
Percentage of households of children age 0-23 months that treat water effectively	4	33
Percentage of mothers of children age 0-23 months who live in a household with soap at the place for hand washing	28	46*
Percentage of children age 0-23 months who are underweight (-2 standard deviations for the median weight for age, according to World Health Organization/National Center for Health Statistics reference population)	43	11.2*

Notes: * Denotes that final estimates are statistically significantly different from the Corresponding baseline estimates

ANNEX V. FINAL KPC REPORT

FINAL REPORT

Knowledge, Practice and Coverage Survey

Encouraging Positive Practices for Improving Child Survival (EPPICS)
Project, Ghana

October 2015

East Mamprusi District, Northern Ghana
Funded by the United States Agency for International Development
Bureau for Global Health
Office of Health, Infectious Disease, and Nutrition
Grant No. AID-OAA-A-11-00042

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List of Abbreviations

ANC	Antenatal Care
BMC	Baptist Medical Center
CCM	Community Case Management
CHAG	Christian Health Association of Ghana
CHN	Community Health Nurses
CHN	Community Health Nurse
CHV	Community Health Volunteer
CHV	Community Health Volunteer
CIS	Community Information System
CMAM	Community Management of Acute Malnutrition
CoC	Committees of Champions
CRS	Catholic Relief Services
CSHGP	Child Survival and Health Grants Program
DPT	Diphtheria, Pertussis, and Tetanus
EM	East Mamprusi
EmOC	Emergency Obstetric Care
EmOC	Emergency Obstetric Care
ENA	Essential Nutrition Actions
ENC	Essential Newborn Care
EPPICS	Encouraging Positive Practices for Improving Child Survival
FGD	Focus Group Discussion
GHS	Ghana Health Service
HIV	Human Immunodeficiency Virus
HMNC	Healthy Mother and Newborn Committees
HQ	Headquarters
IDI	In-depth Interview
IPTp	Intermittent Presumptive Treatment
ITN	Insecticide-Treated Net
IYCF	Infant and Young Child Feeding
KPC	Knowledge, Practice, and Coverage
LB	Live Birth
M & E	Monitoring and Evaluation
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
MNC	Maternal and Newborn Care
MNCH	Maternal, Neonatal and Child Health
MNCH/N	Maternal Newborn Child Health and Nutrition
MOH	Ministry of Health
MTCT	Mother-to-Child-Transmission
MAMAN	Minimum Activities for Mothers and Newborns
NGO	Non-governmental Organization

NHRC	Navrongo Health Research Centre
NR	Northern Region
NRC	Non-Rapid CATCH Indicator
ORT	Oral Rehydration Therapy
PMP	Project Monitoring Plan
PMP	Project Monitoring Plan
PMTCT	Prevention of Mother-to-Child-Transmission
PNC	Postnatal Care
RC	Rapid CATCH Indicator
RCH	Reproductive and Child Health
RING	Resiliency in Northern Ghana
SP	Sulfadoxine-Pyrimethamine
TBA	Traditional Birth Attendant
TT	Tetanus Toxoid
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WRA	Women of Reproductive Age

Knowledge, Practices and Coverage Study Executive Summary

INTRODUCTION TO THE KPC

The 2015 Knowledge, Practices and Coverage (KPC) study is the second conducted for the Encouraging Positive Practices for Improving Child Survival (EPPICS) project. This KPC is intended to measure changes since the 2011 baseline. The 2015 KPC survey was conducted by the Navrongo Health Research Centre (NHRC) in conjunction with CRS staff.

This report highlights key findings of an endline survey on knowledge, practices and coverage of maternal, neonatal and child health conducted in the Mamprusi East District of the Northern Region of Ghana. The survey provides endline indicators to establish a district level progress on access and utilization of maternal, neonatal and child health (MNCH) services in the district. The progress report aims to provide insights into project outcomes and subsequently the final project evaluation.

BACKGROUND

The East Mamprusi District (EMD) is one of the poorest districts in the Northern Region. The population of the district is 139,000, representing 5% of the region's total population, 68% of whom are rural. The district has a total of 13,895 households and average household size is 8.6 persons per household. The total fertility rate in EMD is 3.6, slightly higher than the regional average of 3.5.

Thirty-three percent of the population 11 years and above are literate and 67 % are non-literate. However, the proportion of literate males is higher (39 %) than that of females (27.5%). About 86% of households in the district do not have toilet facilities. Islam is the most dominant religion (59.2%) while Christian and traditional African religion constitute (37.9%) of the population.

The goal of the EPPICS project was to contribute to sustainable maternal/newborn morbidity/mortality reduction in EMD by 2015. The objectives were to improve maternal and neonatal health outcomes and to increase access to quality maternal and neonatal services for all families in the district.

METHODS USED

Key Findings:

- Marked improvement of deliveries that were supervised by trained health personnel (doctor, midwife, nurse etc.) (76% compared to 43% at baseline)

- Significant increase in clean cord care of children at birth (73% compared with 22% at baseline)

- Demonstrated improvement in post-natal care for children aged 0-23 (from 30% at baseline to 83% at the endline)

- Postpartum care for mothers saw a significant rise (32% at baseline compared to 82% at the endline)

The assessment was carried out using the standard KPC questions, which are specifically designed for community-based NGO programming. The questionnaire was drafted by CRS HQ staff with inputs from the NHRC. Questions were drawn from the Rapid CATCH, the Malaria, the Nutrition (breastfeeding and IYCF), the Maternal and Newborn Care, and the Anthropometry Modules. The 30 cluster sampling protocol was followed and yielded a total of 328 interviews with women with children less than two years.

Average age of the survey respondents was 28 years (SD 6.3). The majority of the survey respondents (71%) had never been to school. Most of those who had been to school had an average of 6.6 years of schooling. Almost all the respondents (98.8%) were married at the time of the survey. In terms of religious practices, the majority of respondents were Muslims (53.4%) and Christians (44.2%). On many demographic indicators the characteristics of the 2015 survey respondents are similar to those of the baseline survey. In both cases, majority of respondents have never attended school. Mampruli is the most common language, and male headship of households is predominant. In majority of the households the father of the index child was living in the same household as the child on the day of interview.

FINDINGS

The endline (EL) KPC survey found a significant increase in the proportion of mothers of children 0-23 months who received 4 or more ANC visits (82%) against the baseline (BL) value (63.9%). The proportion of pregnant women who accessed ANC services in the first trimester increased significantly from 50% at baseline to 74% at endline. As to whether mothers were satisfied with the conduct of the health workers when they went for ANC services, the majority (90%) indicated satisfaction of the conduct of health staff. However, a few (10%) reported that they were abused either by being ignored, yelled at or insulted. On perceptions of abuse of mothers during delivery, only 7% reported that they were abused and out of those who said that they were being abused the major form of abuse they reported was that they were being yelled at (67%). Concerning maternal and newborn care, the proportion of deliveries with clean cord cutting increased marginally from 80% at baseline to 82% after project implementation.

The results also indicate that 71% of women reported receiving tetanus injection at endline compared to 64% at baseline. Skilled attendance at childbirth significantly increased at endline (76%) compared to baseline (43%). There was also a significant improvement in post-natal care for children aged 0-23 at endline (83%) compared to baseline (30%). Also, postpartum care for mothers increased significantly from baseline (32%) to endline (82%). Overall, 95% of mothers were checked at the endline by either a health care provider or a trained traditional birth attendant compared to 86% at baseline. The proportion of children age 0-5 months exclusively breastfed had a significant increase at endline (70%) compared to baseline (47%). On the other hand, the proportion of children fed according to a minimum of appropriate feeding practices increased from 55% [95%CI (45%-65%)] at baseline to 78% [95%CI (70%-86%)] at the endline, and this is statistically significant at 95% confidence level.

When mothers were asked whether or not they received quality ANC, the results showed an increase from 37% at baseline to about 51% at the endline. Only half of the children sampled (50%) were reported to have been immediately breastfed at baseline, this has improved at the endline with about three quarters (75%) of children being put to the breast immediately after birth. Also the proportion of children who were fed colostrum after birth increased slightly from 96% at baseline to 98% at endline.

The percentage of children that had clean cord cutting at birth increased from 80% at baseline to 82% at the endline, the proportion who reported to have had clean cord care increased significantly from baseline (22%) to endline (73%). Also thermal care non-Rapid CATCH indicators all had significant coverage at baseline, and therefore, did not show any improvement at the endline. For instance, the proportion of children who were dried immediately after birth increased marginally from 96% at baseline to 97% at the endline. Similarly, there was no difference in the coverage of children who were wrapped immediately after birth (96% vs 96%) and those who were dried and wrapped immediately after birth (95% vs 95%) between the baseline and at endline.

There was an improvement on deliveries that were supervised by trained health personnel (doctor, midwife, nurse etc.) from 43% at baseline to 76% at the endline. All three Immunization Rapid CATCH indicators at the endline did not show any improvement over the indicators recorded at baseline. Measles vaccination coverage reduced from 95% at baseline to 89% at the endline. Coverage for DTP1 also showed some marginal decrease of 1% from the proportions recorded at baseline.

RECOMMENDATIONS

Antenatal Care

GHS: The package of services provided for pregnant women during ANC determines the quality of ANC services. The increase in coverage of ANC attendance especially in the first trimester of pregnancy should provide opportunity to health care providers to improve on the package of ANC service provided to pregnant women in the district. There is also the need to encourage women to continue attending ANC to improve on their health and pregnancy outcomes.

EPPICS: The gain by the project is commendable. Any opportunity for GHS to continue roll-out of social behavior change communication activities to sustain the gains made is encouraged.

ANC in First Trimester

GHS: The community liaison with the CHV should be encouraged towards the identification of potential mothers during the early months of pregnancy and encouraging them to go for ANC services.

EPPICS: Performance in ANC attendance in the first trimester of pregnancy has been encouraging.

Perception of abuse during ANC and delivery

GHS: Even though there is a high level of satisfaction about the conduct of health staff, more still needs to be done since GHS seeks to maintain high levels of professional conduct and customer satisfaction.

EPPICS: Results in this indicator has been encouraging.

Newborn Care

GHS: Continue with the practice of supporting and guiding mothers and caregivers to immediately wrap and dry the newborn, and to ensure that babies are not bathed within 24 hours according to service protocols. Also, mothers should be encouraged to put their babies to breast immediately after birth. Providers should counsel and educate mothers during ANC, delivery and post-partum care visits about the importance of thermal care and early initiation of breast milk.

EPPICS: Overall, there were improvements in essential newborn care practices at the end of project intervention. While systems and structures are in place to sustain the gains of EPPICS in East Mamprusi,

CRS and other actors should continue to search for opportunities that will facilitate the scale-up of the EPPICS strategies to other districts in Ghana However, there is need for sustainability or scale-up of community mobilization programs to sustain and further improve on these gains.

Delivery Care/Skilled Birth Attendants

GHS: Skilled delivery indicators can further be improved by continued collaboration with community health volunteers and TBAs and all stakeholders.

EPPICS: There have been appreciable levels of improvements in these indicators, an indication that intervention packages for these indicators were well executed.

Clean cord cutting

GHS: Health workers should continue with the practice of clean cord cutting as it is an important method of preventing mother and child from infection and enhancing their health.

EPPICS: Achievement has been very remarkable.

Post Natal Care-Child for mother and child

GHS: Though there was improvement in home visits, postpartum and postnatal visits by community health officers, this should be encouraged to further improve the health of newborns in the district.

EPPICS: The improvements in post-natal care is another plus in the efforts of the EPPICS project towards improving maternal and child health in the East Mamprusi district and a very remarkable achievement of post-natal care for mothers with the efforts of project staff.

Nutrition

GHS: Even though a lot of progress has been made on exclusive breastfeeding and infant and young child feeding practices, more work needs to be done to further improve on the nutritional status of children in the district. Educating women on the importance of exclusive breastfeeding and proper child feeding practices during ANC, post-partum/post-natal care, immunization and growth monitoring outreach activities should continue. Health care providers should document Vitamin A supplementation on health cards of children. The promotion of the use of iodine fortified salt or supplementation of iodine should continue.

EPPICS: Very good achievement for improving on exclusive breastfeeding and infant and young child feeding practices in the district. There was some improvement in the availability of iodized salt in households compared to baseline indicators, but this is still low.

Background and Introduction

Over the past 15 years, Ghana's maternal mortality rate decreased from 570 deaths per 100,000 live births in 2000 to 380 deaths per 100,000 live births in 2013. The under-five mortality rate decreased from 103 deaths per 1,000 live births in 2000 to 72 deaths per 1,000 live births in 2012. In contrast, neonatal mortality has risen from 30 deaths per 1,000 live births in 2008 to 32 deaths per 1,000 in 2013. Newborn deaths account for 40 percent of under-five mortality in Ghana[1]. Despite the progress Ghana has made in terms of MNCH indicators, the country's indicators are still worse than other countries with similar socioeconomic profiles and health care spending levels.

While Ghana has made considerable strides toward meeting MDGs 4 and 5 in the southern regions of the country, health indicators in northern Ghana, particularly the Northern Region reflect significant challenges. Research has shown that most of the neonatal deaths in high-mortality regions are due to preventable and behavioral modifiable causes. However, the extent to which preventive measures could reduce neonatal mortality is not widely explored. A study in the East Mamprusi District, which sought to explore women's knowledge of neonatal danger signs, revealed that even where the quality of antenatal care is standard as recommended by the World Health Organization (WHO), many women still have limited knowledge regarding neonatal danger signs. The study, therefore, recommends that as part of health education and sensitization, women should be taken through danger signs prior to their discharge from hospital so that they can easily detect danger signs and seek early health care. It is further shown that low utilization of available health services, such as supervised deliveries and post-natal care continue to persist even where financial and geographic access is deemed adequate.[2]

Against this backdrop, the United States is working in partnership with the government of Ghana, with other bilateral donors, and with multilateral and nongovernmental organizations to implement a range of interventions aimed at improving MNCH outcomes, with a new emphasis on the northern regions. One of such programs is the Encouraging Positive Practices for Improving Child Survival (EPPICS) project being implemented in the East Mamprusi District of the Northern Region by CRS. The EPPICS project seeks to address social and cultural barriers to access and utilization of MNCH services. Another intervention is the Resiliency in Northern Ghana (RING) project. The RING project seeks to provide direct funding to Northern Region district assemblies to support families, particularly women of reproductive age and children under-five who face food insecurity, to improve their health and nutritional status. RING promotes access to education about nutrition, water quality and hygiene; provides women with access to livestock and other domestic animals to enhance their economic prospects; and promotes active men's involvement in family care activities.[3]

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[1] Improving Maternal, Neonatal, and Child Health in Ghana, Centre for Strategic and International Studies Report, 2014

[2] Exploring Women Knowledge of Newborn Danger Signs: A Case of Mothers with under Five Children. Public Health Research 2014

[3] Improving Maternal, Neonatal, and Child Health in Ghana, Centre for Strategic and International Studies Report, 2014

Purpose of the Assessment

The main purpose of the endline study is to establish a district level progress status on access and utilization of MNCH services in the East Mamprusi district of Northern Ghana. The survey will contribute to providing insight to the project outcomes. Results of this study will be provided to the external independent evaluator for EPPICS to be used to finalize the methodology for the final project evaluation. Results will also help determine to what extent each specific objective, as per the indicators set out in the original Project Monitoring Plan (PMP) have been achieved and validate if the activities within the project design were sufficient in scale and scope in order to achieve the desired outcome/results. Finally, the results will highlight opportunities from EPPICS that CRS and GHS could leverage to respond to additional funding opportunities.

Specifically, the study seeks to:

- Establish to what extent the prevailing health and contributing social conditions, and health and nutritional problems including diseases affecting women of reproductive age, newborns and children under the age of five years have improved over the past four years.

- Determine whether there have been any marked changes regarding the levels of knowledge, attitudes and practice towards maternal, newborn and child health and access as well as utilization of MNCH services in the targeted communities over the project period.

- Determine whether there have been any marked changes in the levels of knowledge, attitudes and practice towards issues and access to child health services in the targeted communities over the project period.

- Assess the current capacity of communities and community structures and GHS partners to continue to address and participate in issues related to MNCH services in the targeted communities and if so, highlight if there is any major attribution to the EPPICS project.

- Assess the extent to which EPPICS interventions have supported in building the capacity of communities to link with frontline health providers/services in the detection and management of childhood illnesses including appropriate infant feeding practices.

- Determine the capacity of Ghana Health Service staff and stakeholders to sustain or institutionalize EPPICS Project best practices in the target communities.

- Identify and document key learning points for sharing with stakeholders in health and government beyond the project close out.

Background - Brief Description of the EPPICS Project

Governments and stakeholders in developing nations strive to reduce maternal mortality by 75% by 2015 in accordance with the MDGs.[4] In spite of national strides to change health policies and strengthen health services to meet MDGs 4 and 5 in Ghana, maternal and infant mortality and morbidity remain much higher in the Northern Region (NR) than in the rest of the country. Ghana Health Services (GHS) and their partners are implementing high-impact, evidence-based interventions to improve the situation. Most of their efforts have focused on health services only at the facility level. However, high level of maternal and neonatal deaths in East Mamprusi (EM) district have been attributed to: household beliefs and rituals that jeopardize the health of pregnant women and their unborn children and result in delays in seeking ANC, recognition of danger signs (in both the mother and newborn) to make timely decisions to seek care at health facilities, and a low percentage of institutional deliveries. The Catholic Relief Services (CRS) is partnering with the Ministry of Health (MOH) and the Ghana Health Services (GHS), through the EPPICS project to improve local socio-cultural beliefs and practices related to pregnancy and newborn care, and encourage the strengthening of civil society structures in order to empower local communities to advocate for improved MNCH services in the district.

The EPPICS project targets 51,000 women of reproductive age and children under-five years in the East Mamprusi district. By addressing social and cultural barriers to access and utilization of MNCH services, EPPICS engages and repositions traditional birth attendants and family members to help ensure pregnant women seek prenatal care and are prepared to go to a clinic for delivery with a skilled attendant. Some of the activities of EPPICS include collaboration with community leaders to oversee the operation of motorcycle ambulance that can be used to transport pregnant women to the site for delivery if they present signs of complications once they go into labor. Apart from that, EPPICS collaborates with community volunteers who oversee monthly reporting on the percentage of deliveries attended by skilled health care workers through the use of the Community Giant scoreboards, a tool that displays MNCH indicators in colorful signs at the community[5]

Generally, the NR lags behind in maternal, neonatal and child health in many respects. The region recorded the second highest institutional maternal mortality ratio (174/100,000LBs) and neonatal deaths (8.1/1000LBs), according to the 2013 annual reproductive and child health review report.[6] Supervised delivery is a key indicator for the health sector in Ghana as well as for achieving the MDGs 4 and 5. However, the Northern Region recorded the lowest skilled delivery (46.8%) only ahead of the Volta region (43.4%) in the year under review. Also it is expected that pregnant women attend at least four antenatal care visits for women with uncomplicated pregnancies. This is in line with national policy which also recommends a minimum of four visits per client, with the first visit in the first trimester. Thus while

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[4]Kuganab Lem R and Yidana A (2014) Exploring Women Knowledge of Newborn Danger Signs: A Case of Mothers with under Five Children. Public Health Research 2014

[5] Bliss K and Streifel C (2014) Improving Maternal, Neonatal, and Child Health in Ghana, Centre for Strategic and International Studies Report, 2014

[6] Ghana Health Service, Annual Reproductive and Child Health Report, Ghana Health Service, 2013.

the national average visit was 4.0% the Northern Region recorded the least of 3.3%. In contrast, the northern Region recorded the highest postnatal care (89.7%) in the 2013 review year of Reproductive and Child Health[7]

In the East Mamprusi district, neonatal deaths are attributed to asphyxia, low birth weight/prematurity and infections; and reported stillbirths are increasing. Pregnant women, especially first-time mothers, do not have the power to make decisions themselves whether or not to use skilled health services. A UNICEF study found that 68% of mothers trusted skilled health professionals, and identified key decision makers in the use of MCH services as mothers-in-law/fathers-in-law, especially at the time of delivery and complications. The study also found that health workers' negative attitudes contributed to choosing TBA-assisted delivery instead of skilled services.[8] The Catholic Relief Services investigated several factors related to access and use of MCH services in a NR district and found that even when geographic and financial access were adequate, socio-cultural and traditional practices were still significant barriers to receiving key evidence-based MNCH/N services.

GHS and the Christian Health Association of Ghana (CHAG) administer formal health services in 7 health facilities, 6 with 24/7 capacity for deliveries and 4 that have vehicles for transport, but there are still many times when transport is not available. Regional GHS also reports that attempts to address emergency transport problems have "been a miserable failure." CHAG facilities include the Baptist Medical Center (BMC), a referral hospital and the only facility with capacity for EmOC and ability to care for sick or premature newborns. There are plans for the construction of a fully-equipped hospital in the district capital.

District health staff shortages, particularly staff capable of performing skilled deliveries, are severe; each facility averages only 50% of staff they need according to GHS standards[9]. Many GHS doctors assigned to work in the NR never report for duty. GHS has begun to train Community Health Nurses (CHNs) to become midwives but the effort has been slow. Community Health Volunteers (CHVs), usually two per community, serve as the outreach and surveillance arm of GHS, linked to the Sub district level. Many have been in place for decades and they are respected members of the community. GHS, supported by UNICEF, has extended their role to include Community Case Management (CCM) of Childhood Illness that was expanded from Home Base Management of Malaria to include zinc for diarrhea and antibiotics for pneumonia in children over 6 months of age. CHV have also begun to provide Community Management of Acute Malnutrition (CMAM) with support of UNICEF.

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[7] GHS Annual RCH, 2013
[8] UNICEF C4D Five Key Health and Hygiene Final Report, 2010
[9] CRS Ghana CSHGP Technical Application

Goal and Objectives of EPPICS

To contribute to sustainable maternal/newborn morbidity/mortality reduction in East Mamprusi District of Northern Region of Ghana by 2015.

SO1: East Mamprusi District has improved maternal and neonatal health outcomes

SO2: Families have increased access to quality maternal and neonatal services

The key project strategy was to scale up a promising approach to community-led improvements in MNCH/N practices and service. Technical interventions included: Maternal and Newborn Care (60%), Nutrition (30%) and Malaria in Pregnancy (10%); an integrated minimum package of interventions at communities, households and facilities by applying MNCH and Nutrition services that are included in the MAMAN Framework; Essential Newborn Care (ENC); and Essential Nutrition Actions (ENA). At the Community Level, the project intended to scale-up a motivational community mobilization strategy using Healthy Mother and Newborn Committees (HMNC), Positive Deviant Inquiry and, as part of the community information system (CIS), the Giant Community Scoreboards for communities to track progress on process indicators and provide feedback to community members. At the Health Facility, CRS and GHS carried out activities to improve health staff counseling skills to improve quality in health worker-client communication in response to gaps identified in the project Five Alive, such as inconsistent messages and disrespect toward pregnant women.

The Innovation was intended to test new approaches to overcome barriers and influence household and community practices using the overall project strategy as the foundation. Committees of Champions (CoCs) for mothers and babies were formed and trained. The CoCs consisted of Chiefs, "Queen Mothers" and Imams/Pastors. All formative research questions were related to the overriding question: "How can the most influential community members change the advice given to pregnant women and new mothers within households that result in positive MNCH/N behaviors and health care-seeking?" Improved MNCH services, including achieving progress in MDGs 4 and 5, are priorities of the MOH and GHS national policies, and they have identified overcoming negative cultural practices as essential in achieving these goals.

The project targeted 26,881 Women of Reproductive Age (WRA) and 24,431 Children under 5 years of age living in East Mamprusi (EM) District, Northern Region (NR) of Ghana.

Methods

Study Site

The study was conducted in the East Mamprusi District of Northern Region. The district is divided into five sub-districts that cover approximately 300 rural sparsely-located settlements with 200-500 inhabitants.[10] East Mamprusi District is one of the poorest districts in the Northern Region. The

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[10] Exploring Women Knowledge of Newborn Danger Signs: A Case of Mothers with under Five Children. Public Health Research 2014

population of East Mamprusi District is 139,603 representing 4.9 percent of the region's total population. The district has a rural population of 81,850, representing 67.6 percent.[11] Total Fertility Rate is 3.6 which is slightly higher than the Regional average of 3.5. The General Fertility Rate is 102.6 births per 1000 women aged 15-49 years and a Crude Birth Rate (CBR) of 23.0 per 1000 population. The district has a household population of 119,596 with a total number of 13,895 households. Average household size in the district is 8.6 persons per household. A little above half (57.4%) of the population aged 12 years and older are married. In terms of age stratification, four out of five females 25-29 years (84.8%) are married compared to a little above half of males (59.1%). Thirty-three percent of the population 11 years and above are literate and 67.0 percent are non-literate. However, the proportion of literate males is higher (39.0 %) than that of females (27.5%). About 86% of households in the district do not have toilet facilities. Islam is the most dominant religion (59.2%) while Christian and traditional African religion constitute (37.9%) of the population

KPC Indicators

All Rapid CATCH indicators were included in the survey. The standard questions were asked and the standard tabulation plan was followed. The Rapid CATCH indicators are listed in Annex 2.

As mentioned above, the survey also included questions from the Maternal and Newborn Care, and the Nutrition KPC modules. These questions were used to calculate the indicators listed in Annex 3. The definition of these indicators, the tabulation plan and the STATA commands or formulas used to calculate the values are listed in Annex 4.

Questionnaire development

The assessment was carried out using the standard KPC questions, which are specifically designed for community-based NGO programming. The questionnaire was prepared to report on the set of Rapid CATCH indicators plus other indicators relevant to the project priorities. The questions were in English and all data collectors were required to be fluent in both the local language and English. The questionnaire was drafted by CRS HQ backstopping staff and further refined by project staff and the NHRC acting as the consultant. Questions drawn were from the Rapid CATCH, the Malaria, the Nutrition (breastfeeding and IYCF), the Maternal and Newborn Care, and the Anthropometry Modules. Also, the indicators of the EPPICS Monitoring and Evaluation Plan were reviewed, and additional questions were added to the KPC questionnaire to match the set of indicators of the EPPICS M&E plan and to ensure that the key interventions (Maternal and Newborn Care (60 %), Nutrition (30 %) and Malaria (10 %.) was reflected. The final survey questionnaire had 109 questions and took about one hour to administer (see Annex 1).

Sampling design

To achieve the objectives of the endline assessment, we employed quantitative methods for data collection. Quantitative data are critical in establishing current levels of knowledge, practices and coverage related to maternal, neonatal and child health care and the socio-demographic factors associated with maternal and newborn health practices. However, they do not provide explanations for the observed behavior.

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[11] GSS PHC District Analytical Report-East Mamprusi District, 2014

The thirty cluster sampling design was used. This design provides for listing of all communities in the East Mamprusi district with their respective populations (see Annex 6). From this list the clusters were selected using probability proportional to size (PPS). Thus, larger communities had a greater chance of having more clusters than smaller ones, and since communities were listed by their sub-district, larger sub-districts had more clusters. This strategy allowed for the distribution of interviewees (mothers/caregivers and young children) in the sample which also mirrored the distribution of mothers in the general population.

To have for most indicators a precision of +/- 10%, at least 10 mother/child units in each cluster were sampled. But taking into consideration errors in the interviewing and data entry process, 11 interviews were conducted in each cluster.

Training of Data Collectors

The data collectors were recruited locally from the study district while staff of CRS supervised the data collection process. The selection of the field staff was based on a combination of the following: qualification, previous experience with KPC and other health related data collection, ability to speak the local language, familiarity with or residence in the intervention district. Recruitment of the data collectors was done by CRS while a team from NHRC trained field staff for data collection. A three-day training workshop was organized for the field staff; the content of the training covered the aims and objectives of the study, role and responsibilities of interviewers and supervisors, techniques of interviewing, ethics of data collection, community entry strategies and informed consent procedures. Data collectors were also given comprehensive training on the data collection instruments and how to do the household listing. As part of the training, field practice (pre-test) was conducted to assess the skills and competencies of trainees before commencement of data collection. The survey teams were deployed and assigned to clusters depending on their language skills. Field staff included data collectors, supervisors who were selected from CRS staff and field coordinators from NHRC who monitored the data collection process.

Data Collection

After the training of the interviewers and field-testing of the data collection instruments, the interviews were carried out from August 22-August 26, 2015. Data collection took place in 30 clusters covering the five sub-divisions of the district. At least five clusters were selected in each sub-district but more clusters were covered in sub-districts that had more communities. For purposes of conducting interviews in an orderly manner to representativeness of data across the study area, the field staff were put into six teams made up of 3 members (2 data collectors and 1 supervisor) to collect data across the 30 clusters selected for the study. (See list of communities and sub-districts in Annex 5). There was also a team of three members from the consulting firm (NHRC) who monitored field activities to ensure that high quality data was collected.

The supervisors assisted the data collectors to locate sampled interview locations and starting households for interviewing. They also reviewed the questionnaires to identify possible inconsistencies or missing data. Where inconsistencies or missing data were identified, they immediately took steps to ensure that such inconsistencies were corrected and/or the missing data obtained. On a daily basis the

supervisors met with their teams and reviewed the completeness of questionnaires as well as discussed issues related to the survey and gave feedback to ensure data accuracy. They also observed interviewers during the administration of questionnaires to ensure that they were asking the right questions and recording data correctly.

Data Analysis

The data was double entered and validated using EPI Data 6.1. Data was then transferred into STATA version 11 (STATA Corporation, College Station, Texas) for cleaning and analysis by Monitoring and Evaluation Specialist of the Navrongo Health Research Center. He was also the lead trainer, supervised the data entry process and facilitated data control and management issues. Indicators were calculated using the standard tabulation plans which were provided in the KPC modules and differences in indicators at baseline and endline were established. To account for cluster sampling, a Design effect (D) of 2 was assigned to calculate standard deviations and confidence levels of each indicator. Some baseline and endline indicators are presented graphically for easy comparison.

Results

A total of 328 interviews were conducted in the 30 clusters sampled. Table 1 shows the distribution of the interviews conducted in each cluster:

Table 1: Sample Cluster Communities

Cluster	Community	Frequency
1	GAMBARANA A	11
2	LIMAN FONG	11
3	TINSUGU	11
4	TAMBOKU A	11
5	GBANGU C	11
6	NANYERI	11
7	PORINGONE	11
8	NALERIGU-A2	11
9	NALERIGU-B2	11
10	NORLOBI/BUYA/BARINYA	11
11	KOLINVAI A	11
12	GBANGU	11
13	ZIIKAYA 2	11
14	LANGBENSI C	11
15	KASAPE	11
16	BUMBOAZIO	11
17	BURUGU	11
18	SAMINI B	11
19	WUNDUA A	11
20	BOAYINI	11
21	SAKOGU C	11
22	NAMEBOKU	11
23	DINDANI A	11
24	ZAMBULUGU	11
25	TINTARIGA	11
26	GUNGONG	11
27	JAGOO	11
28	GBINTIRI EAST	11
29	NAKURUGU	10[12]
30	NAMANGBAI	10[13]
TOTAL		**328**

[12] Some pages could not be found in one questionnaire hence the interview was incomplete and was dropped out of the 11 sampled during data entry from NAKURUGU

[13] One incomplete interview was also dropped during data entry from NAMANGBAI

The average age of the survey respondents is 28 years (SD6.3). Majority of the women interviewed in this survey (71%) had never been to school. Most of those who had been to school had basic level education, with an average of 6.6 years of schooling. Almost all the respondents (98.8%) were married at the time of the survey. In terms of religious practices, the respondents were largely Moslems (53.4%) and Christians 44.2%.

Although over eighty percent (83.2%) of the respondents speak Mampruli, only 65.2% reported Mampruli as the language they felt most comfortable communicating in. Other languages that respondents felt comfortable communicating in include Likpakpa (20.4%), Moar (4.3%) and others (9.1%).

The number of reported surviving births at the time of the survey ranged from 1 to 9, with an average of 3.2 (SD 1.9). About 79% of the women did not report any child death at the time of the survey.

Slightly more than half (53.1%) of the births under 24 months reported in the survey were males. In majority of the cases (83%) the biological father of the index child lived in the same household as the child. About 90% of the households of the respondents were headed by males, with the husband/partner being the household head for 55% of the respondents, while male relatives headed 34.8% of households. Female headship is low, with only 6.5% of respondents' households being headed by females.

Overall, many of the demographic characteristics of the 2015 survey were comparable to those recorded at baseline. In both cases, majority of respondents have never attended school. Mampruli is the most common language, and male headship of households is predominant. In majority of the households the father of the index child was living in the same household with the child on the day of interview.

Core Indicators

In this section we present the core indictors for the EPPICS intervention. These indicators are categorized into two groups, the Rapid CATCH Indicators and non-Rapid CATCH Indicators for maternal and newborn health.

Rapid CATCH Indicators

Table 2 Rapid Catch Indicators at Baseline and Endline

Indicator	Baseline indicators				Endline indicators				
Indicator	Numerator	Denominator	%	95%CI	Numerator	Denominator	%	95%CI	p-values
Percentage of mothers of children age 0-23 months who had four or more antenatal visits when they were pregnant with the youngest child	200	313	63.9%	±6	268	328	82%	±6	**0.001**
Percentage of mothers with children age 0-23 months who received at least 2 tetanus toxoid vaccinations before the birth of their youngest child	200	313	64%	±8	233	328	71%	±7	0,0519
Percentage of children age 0-23 months whose births were attended by skilled personnel	135	313	43%	±8	250	328	76%	±7	0.005
Percentage of children age 0-23 months who received a post-natal visit from an appropriately trained health worker within two days after birth	95	313	30%	±7	273	328	83%	±6	<0.001
Percentage of mothers of children age 0-23 months who are using a modern contraceptive	69	313	22%	±6	115	328	35%	±7	<0.001

method									
Percentage of children age 0-5 months who were exclusively breastfed during the last 24 hours	49	105	47%	±13	72	103	70%	±12	0.001
Percent of children age 6-23 months fed according to a minimum of appropriate feeding practices	112	205	**55%**	±10	174	223	**78%**	±8	<0.001
Percentage of children age 6-23 months who received a dose of Vitamin A in the last 6 months: card verified or mother's recall	152	205	74%	±8	173	223	78%	±8	0.332
Percentage of mothers of children age 6-23 months who received a dose of Vitamin A in the first 2 months after delivery – reported	119	205	58%	±10	232	328	71%	±7	0.005
Percentage of children aged 12-23 months who received measles vaccine according to the vaccination card or mother's recall by the time of the survey	107	113	95%	±6	107	120	89%	±8	0.093
Percentage of children aged 12-23 months who received DTP1	109	113	96%	±5	114	120	95%	±6	0.713

according to the vaccination card or mother's recall by the time of the survey								
Percentage of children aged 12-23 months who received DTP3 according to the vaccination card or mother's recall by the time of the survey	107	113	95%	±6	113	120	94%	±6	0.738
Percentage of children age 0-23 months with a febrile episode during the last two weeks who were treated with an effective anti-malarial drug within 24 hours	15	156	10%	±7	27	156	17%	±8	0.070
Percentage of children age 0-23 months with diarrhea in the last two weeks who received oral rehydration solution and/or recommended home fluids	60	126	48%	±12	97	149	65%	±11	0,005
Percentage of children age 0-23 months with chest-related cough and fast and/or difficult breathing in the last two weeks who were taken to an appropriate health provider	35	73	48%	±16	40	64	63%	±17	0.078
Percentage of households of	12	313	4%	±3	1	3	33%	±75	0.013

children age 0-23 months that treat water effectively								
Percentage of mothers of children age 0-23 months who live in households with soap at the place for hand washing	89	313	28%	±7	151	328	46%	±8	**<0.001**
Percent of children age 6-23 months fed according to a minimum of appropriate feeding practices	112	205	55%	±10	174	223	78%	±8	**<0.001**
Percentage of children age 0-23 months who are underweight (-2 SD for the median weight for age, according to WHO/NCHS reference population)	135	313	43%	±8	36	322	11%	±5	**<0.001**

Maternal and Newborn Care Indicators

The provision of quality health care during pregnancy, delivery, and immediately after delivery is important for the survival and health of the mother and newborn. For instance, ANC visits to skilled provider, skilled assisted delivery, tetanus immunization, exclusive breastfeeding practices and post-natal visit by health workers to check on the health of mothers and newborns are critical interventions to improve maternal and newborn health outcomes. Accordingly, the antenatal period thus provides an opportunity to health workers to provide services that are vital to quality maternal and newborn health. In this section we present results on indicators related to maternal and newborn health (antenatal care, tetanus injection, skill birth attendance, exclusive breastfeeding, post-natal care and contraceptive use). The results of the Rapid Catch indicators (presented in Table 2 above) are important in assessing the impact of the EPPICS intervention to improve maternal and newborn health care services in the intervention district.

Antenatal Care (ANC) Coverage

The World Health Organization (WHO) recommends that pregnant women should have a minimum of four antenatal visits. In the EPPICS endline survey we obtained antenatal care information such as the timing and number of ANC visits, the services received during antenatal care (such as weight

measurement, blood pressure check, urine and blood test, iron and folic acid supplementation, etc.). Table 2 presents the percentage distribution of ANC services, skilled delivery and postnatal care indicators during the last pregnancy for mothers interviewed in the survey. Eighty-two percent (82%) of mothers of children 0-23 months received four or more ANC services when they were pregnant with their youngest child. This shows a two percent increase over the baseline prevalence of 80% (see Figure 2).

First ANC in the first trimester of pregnancy

Antenatal care especially in the first trimester of pregnancy is an important indicator for healthy gestation and for the health of the mother and the unborn child. About 74% of mothers attended their first ANC in the first trimester of their pregnancy. This is a marked improvement compared to a little over half of women attending their first ANC at baseline. The figure below describes the percentage and cumulative percentage distribution of the timing of the first ANC visits by mothers.

Figure 1: First ANC Visit by Month of Pregnancy
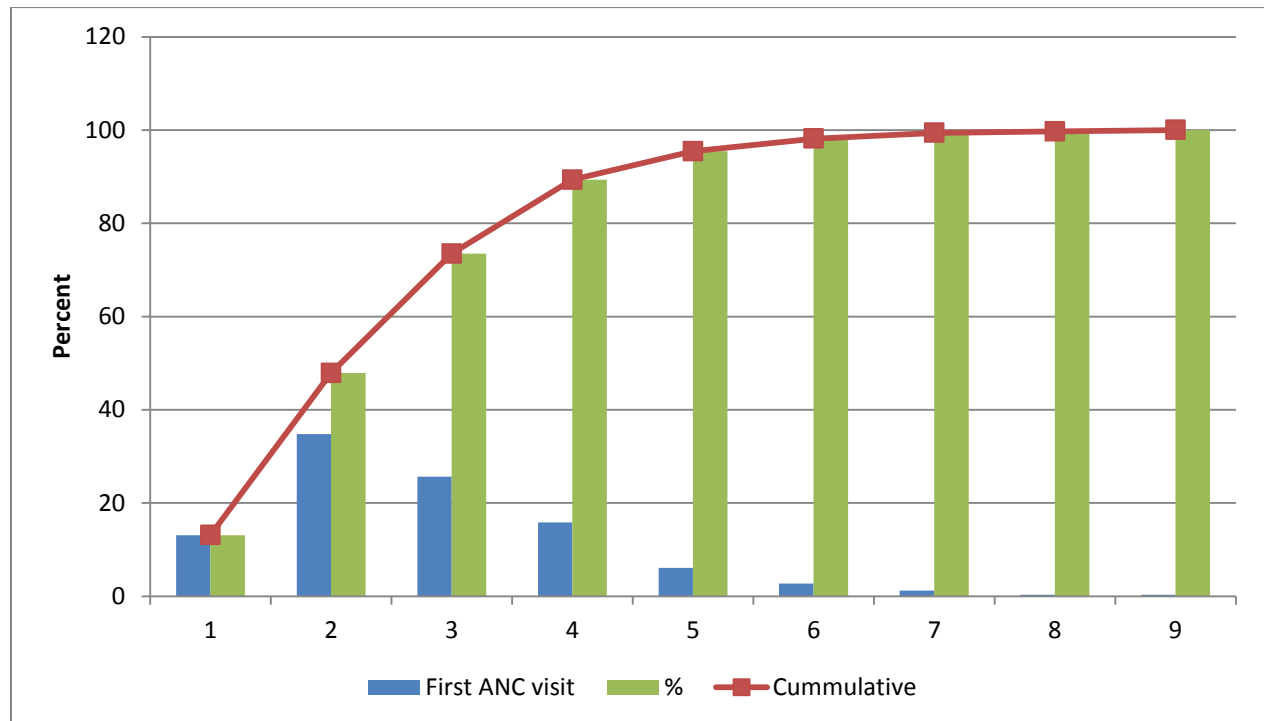
Mothers satisfaction and abuse during ANC

About 90% of mothers said they were very satisfied and 8% said they were somewhat satisfied with the services they received from health staff during ANC visits. Just 1.5% said they were not satisfied. Despite the high level of level of satisfaction, some also said they were abused during ANC visits. Almost 6% of mothers said they felt abused during ANC visit. Among those who reported of being abused by health staff during ANC, about 26% reported health staff ignored them, 47% said they were yelled at, 26% said health staff insulted them and 21% reported of other form of abuse.

Perception of abuse during delivery

About 7% (18) of the mothers who delivered at the health facility said they felt abused during delivery. Among those abused during delivery, 11% said health staff ignored them, 67% complained that they were yelled at, 11% indicated staff made fun of them, 17% reported that health staff insulted them and 17% said staff slapped or hit them.

Tetanus Toxoid Immunization

This indicator measures the proportion of women who received at least two doses of tetanus-toxoid (TT2+) vaccine in their last pregnancy. The findings showed an increased in the uptake of Tetanus injection for pregnant women in the area. For instance, the proportion of women who received at least two tetanus toxoid injections (TT2+) increased from 64% at baseline to 71% at the endline. Over 89% of the mothers interviewed reported receiving at least one tetanus injection compared to 82% at baseline. About 35% of the women reported receiving tetanus injection on two occasions during the pregnancy, but more than half of them had already received at least one dose of tetanus injection before becoming pregnant. At baseline 33% received tetanus injection on two occasions and almost 50% received it before becoming pregnant. This is an indication that majority of the pregnant women were immunized against tetanus and therefore protecting their children.

Skilled Birth Attendance

Most maternal and neonatal deaths occur during delivery and within 48 hours after delivery. Therefore, one essential safe motherhood intervention is to ensure that every pregnant woman is attended to by a competent health provider with midwifery skills (medical doctor, midwife or nurse) during birth, as well as ensuring the availability of transport to facilitate referral in case of obstetric emergency. The endline result shows that 76% of deliveries were supervised by skilled personnel compared to 43% at baseline. Skilled birth attendance in this survey includes births that were assisted by a medical doctor, a midwife or a nurse. The rest of the deliveries (24%) were performed by trained TBAs, untrained TBAs, community health volunteers, relatives and friends as reported by the respondents. Compared to the baseline (43%) there has been a substantial increase in the prevalence of skilled attendance at delivery during the intervention period. It is important to indicate that about 77% of the mothers delivered in a health facility. Majority delivered in a health center (42%), followed by hospital (32%) and health post (2.4%).

Post-Natal Visit to Check on Newborn Health

This indicator assesses the percent of infants aged 0-23 months who received a visit by a health care provider immediately after birth (critical period) to provide essential newborn care services. More babies die in the first week of life than at any other time in childhood, and the condition of those who become ill shortly after birth may deteriorate and they may die very rapidly if immediate care is not provided. As part of the EPPICs project trained health workers made home visits to check on the health of newborns and their mothers and to provide newborn care services such as check body temperature, thermal care, hygienic cord care and early and exclusive breastfeeding practices. The results indicate a significant improvement from 30% prevalence during the baseline survey to 83% at the end of project implementation in the proportion of newborns who received a home visit by a trained health care provider. In addition, the findings indicate that 96% of children were checked on by either a health care provider or a traditional birth attendant after delivery. This is a marked improvement over 79%

recorded at baseline. Similarly, 88% of the children were checked in less than one day, 11% in less than 1 week and 1% after one week.

Post-Natal Visit to Check on Mother Health

The proportion of mothers to children age 0-23 months who received a post-natal visit from an appropriate trained health worker within two days after birth of child increased from 32% at baseline to 82% at the endline. This increase is statistically significant at 95% confidence level (see Annex 7). Overall, 95% compared to 86% at baseline of mothers were checked by either a health care provider or a traditional birth attendant either at a health facility, home or any other location. About 88% of the mothers were checked in less than one day, 10% in less than 1 week and 0.7% after one week. About 87% of them were checked by trained health personnel with 39% being midwives, 34% nurses and 14% doctors.

Breastfeeding and Infant and Young Child feeding

Breastfeeding is an established evidence-based life-saving intervention for newborns and infants. Routine antenatal care, facility-deliveries and community-based home visits are opportunity to counsel expectant mothers on the importance of immediate and exclusive breastfeeding and to influence and change knowledge, attitudes, and behaviors towards exclusive breastfeeding. We assessed the proportion of children aged 0-5 months who were exclusively breastfed during the last 24 hours. The results show a significant improvement in the levels of exclusive breastfeeding after the EPPICS project intervention – from 47% at baseline to 70% at endline. Also infant and young child feeding practices among children aged 6-23 months has improved over the period. The proportion of children fed according to a minimum of appropriate feeding practices increased from 55% [95%CI (45%-65%)] at baseline to 78% [95%CI (70%-86%)] at the end of the project implementation, and this is statistically significant at 95% confidence level.

Current Contraceptive Use among Mothers of Young Children

The uptake of appropriate family planning services is important to the health of mothers as well as their children as this will prevent unwanted and unintended pregnancies. In Ghana use of family planning services has been increasing steadily since the 1990s. However, progress has been slow and uneven across regions particularly, in the northern region where fertility level remains relatively high (DHS 2008). Thus one of the non-Rapid CATCH Indicators of the EPPICS project was to increase update of contraceptive use by women of reproductive age and their partners. Therefore, the EPPICS survey asked mothers of children age 0-23 months if they and their partners were currently using a modern contraception method to delay or avoid getting pregnant. In Figure 2, it can be observed that contraceptive use is generally low. With regards to the current use of any method, about 65% of women of reproductive age (who were not currently pregnant) were not using any contraceptive methods. In other words, 35% of women were currently using a modern contraceptive method to delay or prevent pregnancy compared to 22% at baseline.

Non-Rapid CATCH Indicators

Maternal and Newborn Care Indicators
Table 3 Non-Rapid CATCH Indicators for Maternal and Newborn Care

	Indicator	Baseline				Endline				
		Numerator	Denominator	%	95% CI	Numerator	Denominator	%	95% CI	p-value
Quality Antenatal Care	Percentage of mothers of children age 0-23 months who had four or more antenatal visits with a skilled provider and were adequately counseled when they were pregnant with the youngest child.	116	313	37%	±8	168	328	51%	±8	**<0.001**
IPT during Pregnancy	Percentage of mothers of children age 0-23 months who received Intermittent Preventive Treatment (IPT) for malaria during the pregnancy with the youngest child	185	313	59%	±8	189	328	58%	±8	0.797
Iron Tablets for Pregnant Women	Percentage of mothers of children age 0-23 months who took iron tablets before the birth of their youngest child.	254	313	81%	±6	239	328	73%	±7	0.016
Feeding Colostrum	Percentage of children age 0-23 months, who were fed colostrum after birth.	300	313	96%	±3	321	328	98%	±2	0.0136
Pre-lacteal Feeds	Percentage of children age 0-23 months who did not receive pre-lacteal feeds.	287	313	92%	±4	317	328	97%	±3	0.005
HIV Testing During Pregnancy	Percentage of mothers of children 0-23 months who were counseled about HIV during the pregnancy, accepted an offer of testing, and received their test results when they were pregnant with their youngest child.	79	313	25%	±7	119	328	36%	±7	0.003

Indicator	Description									
Immediate Drying	Percent of children age 0-23 months who were dried immediately after birth.	302	313	96%	±3	317	328	97%	±3	1.000
Immediate Wrapping	Percentage of children age 0-23 months, who were wrapped with a cloth or blanket immediately after birth.	299	313	96%	±3	316	328	96%	±3	0.048
Thermal Care (Immediate drying and wrapping)	Percentage of children age 0-23 months who were dried and wrapped with a cloth or blanket immediately after birth	296	313	95%	±4	311	328	95%	±3	1.000
Clean Cord Care	Percent children age 0-23 months that had clean cord care at the time of birth	68	313	22%	±6	240	328	73%	±7	**<0.001**
Clean Cord Cutting	Percent children age 0-23 months that had clean cord cutting at the time of birth	251	313	80%	±6	269	328	82%	±6	0.519
Clean Birth Kit	Percentage of women of children age 0-23 months who used a clean delivery kit during the birth of their youngest child.	205	313	65%	±7	313	328	95%	±3	**<0.001**
Birth Preparedness	Percentage of mothers of children 0-23 months who made preparations before the birth of the their youngest child	49	313	16%	±6	133	328	41%	±8	**<0.001**
Trained Delivery Attendant	Percent of children age 0-23 months whose births were attended by a trained provider including a trained TBA.	248	313	79%	±6	307	328	94%	±4	<0.001
Knowledge of MTCT of HIV	Percentage of mothers of children age 0-23 months who know that HIV can be transmitted from an HIV-positive mother to her unborn child during pregnancy, during delivery, and	189	313	60%	±8	175	328	53%	±8	<0.001

	through breastfeeding.								
Knowledge of PMTCT of HIV	Percentage mothers of children age 0-23 months who know that there are special medications that can be given to a pregnant woman infected with HIV to reduce the risk of mother-to-child transmission.	114	313	36%	±8	213	328	65%	±7	<0.001
Knowledge of Post-partum Danger Signs	Percentage of mothers of children age 0-23 months who knew at least two post-partum danger signs.	241	313	77%	±7	284	328	87%	±5	**<0.001**
Knowledge of Neonatal Danger Signs	Percentage of mothers of children age 0-23 who know at least two neonatal danger signs.	225	313	72%	±7	263	328	80%	±6	0.018

Quality Antenatal Care for Pregnant Women

The package of services provided to pregnant women determines the quality of ANC. To achieve the full benefits that ANC promises it is recommended that pregnant women make antennal visits to skilled providers at least four or more times to enable pregnant women receive the full essential ANC servicers. These essential services include the monitoring of vital signs to help in the early detection and management of complications, nutrient supplementation, tetanus immunization, malaria and anemia prevention and provision of education on danger signs during pregnancy, delivery and birth preparedness. Therefore, mothers were asked whether they received "quality ANC" service (defined as the proportion of mothers of children aged 0-23 months who had four or more ANC visit to a skilled provider and were adequately counseled when they were pregnant with the youngest child) during their last pregnancy. The results show a significant increase from 37% at baseline to about 51% after the EPPICS intervention.

Intermittent Preventative Treatment of Malaria in Pregnancy (IPTp)

In areas of high malaria transmission, IPTp with two to three doses of the recommended antimalarial medicine during pregnancy has been shown to significantly reduce the risk of severe maternal anemia, placental parasitemia and low birth weight. In Ghana, the recommended drug for IPTp is sulfadoxine–pyramithamine (SP) (also known as Fansidar®) and is delivered as a single dose under observation by a health worker. In the current survey we assessed IPTp coverage among mothers of children aged 0-23 months who received IPTp for malaria during the pregnancy with the youngest child. The IPTP uptake was 58% at the end of the intervention compared to 59% at baseline.

Iron Tablets for Pregnant Women

The World Health Organization recommends a daily dose of 60 mg of essential iron along with 400 μg of folic acid for a period of six months during pregnancy and, in areas of high anemia (> 40% prevalence) for an additional three months' post-partum supplementation after delivery. In the current survey we assessed the percent of mothers of children aged 0-23 months who took iron tablets before the birth of their youngest child. The results indicate a decreasing trend in the uptake of iron tablets among pregnant women from 81% at baseline to 73% at endline.

Immediate Breastfeeding of Newborns, feeding colostrum and pre-lacteal feeds

This indicator assesses the practice of placing the newborn at the mother's breast within one hour after birth (immediately following birth). Immediately placing the infant at the mother's breast have several beneficial effects. For instance, the colostrum that is produced in the first few days after birth is nutritious and helps to protect the infant against common infections. In this survey, women were asked to indicate how long after birth it took them to first put their last born babies to the breast. The results showed some remarkable improvement after the project intervention. At baseline, only half of the children sampled (50%) were reported to have been immediately breastfed. This has improved at the end of the intervention with about three quarters (75%) of children being put to the breast immediately after birth. Also the proportion of children who were fed colostrum after birth increased from 96% at baseline to 98% at end of project intervention. On pre-lacteal feeds, similar improvements were recorded in the proportion of children who did not receive pre-lacteal feeds from 92% baseline to 97% at endline Figure 2.

Figure 2: Comparison of Endline and Baseline Non-Rapid CATCH Infant Breastfeeding Indicators
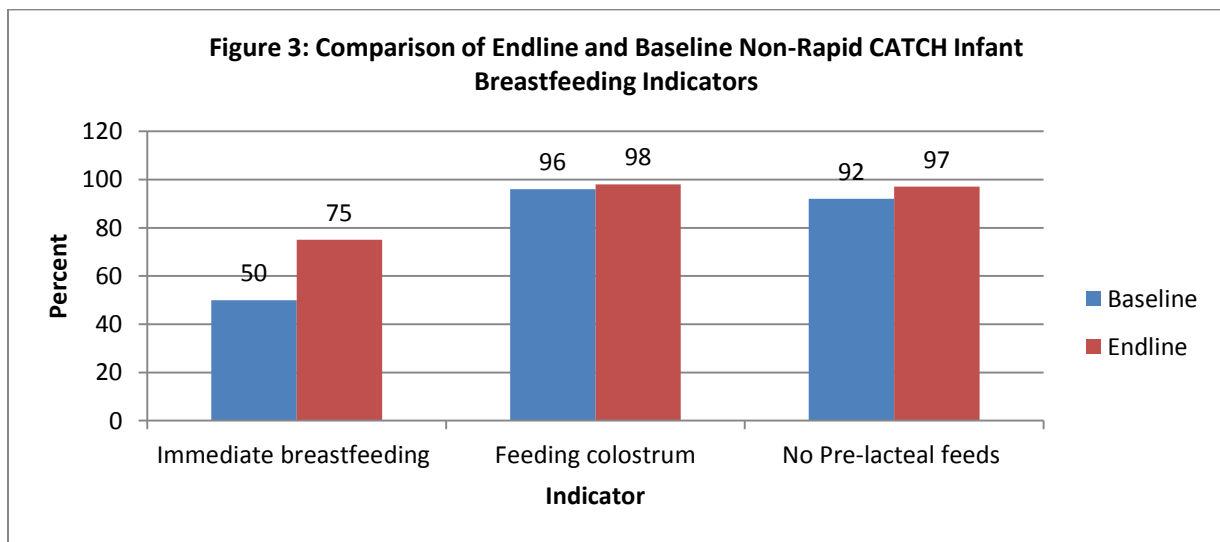
HIV testing during pregnancy

We assessed the percentage of mothers of children 0-23 months who were counseled about HIV during the pregnancy, accepted an offer to be tested, and received their test results when they were pregnant

with their youngest child. The endline results shows a remarkable improvement of 36% of women counseled and tested for HIV compared to 25% before the EPICS project implementation.

Thermal care (immediate drying and wrapping)

All thermal care non-Rapid CATCH indicators had significant coverage at baseline, and therefore, did not show any improvement over the baseline indicators at the end of project implementation. For instance, the proportion of children aged 0-23 months who were dried immediately after birth increased marginally from 96% at baseline to 97% at the end of EPPICS intervention. Similarly, there was no improvement in the coverage of children who were wrapped immediately after birth (96% vs 96%) and those who were dried and wrapped immediately after birth (95% vs 95%) at end of EPPICS intervention (see Figure 3).

Clean cord care and clean cord cutting

The use of clean home delivery kits (new or sterile blade or instrument) for cutting the umbilical cord have been shown to reduce the incidence of simple cord infection against tetanus and sepsis. The results show some remarkable improvement after the project intervention. At baseline, only two out of ten children (22%) had clean cord care at the time of birth compared to seven out of ten (73%) at end of project implementation. The proportion of deliveries with clean cord cutting increased marginally from 80% at baseline to 82% after project implementation. Typically, in computing the proportion of mothers who used clean cord cutting, the use of new scissors is usually not considered as a clean cord cutting method. However, in this instance, mothers who delivered in a health facility and mentioned that a new scissor was used to cut the cord, this was considered as using a clean cord cutting method. On the clean cord cutting methods, about 31% of mothers said a new blade was used, 26.6% mentioned new scissors, 5.5% used new and boiled scissors, and 20.8% said a used and boiled scissors was used in cutting the cord.

Birth preparedness and clean birth kit

Birth preparedness by expectant mothers and the use of clean-delivery kit is a simple and effective approach to reducing risk of infections during birth. Mothers were asked about the use of clean delivery kits and birth preparedness. The results show some improvement in the proportion of mothers of children aged 0-23 months who use clean delivery kit during the birth of their youngest child. At baseline, only 65% of mothers reported using clean delivery kits. However, this improved significantly at the end of the EPPICS project intervention to 95%. On the other hand, the proportion of mothers who made preparations towards the birth of their youngest child increased from 16% at baseline to 41% at end of project intervention. This implies that over half of mothers are not making adequate preparations towards delivery. This might be due to several factors including lack of education during ANC services. There is the need for health care providers to intensify education during ANC visit on the importance of birth preparedness.

Trained delivery attendants

Trained delivery attendance at birth (defined as the proportion of children aged 0-23 months whose births were attended by a trained provider including a trained traditional birth attendant (TBA) was one of the non-Rapid CATCH interventions implemented by the EPPICS project to address the low levels of

skill attendance at birth and improve on maternal and newborn survival. The endline result clearly shows an improvement in the proportion of trained deliveries (94%) as compared to baseline results of 79%.

Care during delivery
Immediately after the placenta was out, about 80% of mothers had their uterus massaged to make them contract strongly and to prevent them from prolong and continuous bleeding. The proportion at baseline was also 80% indicating no change. Also the proportion of mothers who indicated that the health care provider or a Traditional Birth Attendant held their stomachs and pulled the cord to help the placenta come out declined to 74% compared to 82% at baseline.

Care of child when mother is away
On who usually takes care of a child when the mother is away from home, most of the mothers said older children (36%) and other relatives (36%) usually take of them. About 13% of the mothers of the children reported that their mothers take care and nearly 10% indicated their children are taken care of by the husband.

Knowledge of MTCT of HIV and PMTCT of HIV
UNAIDS, UNICEF, WHO and UNFPA have partnered with individual countries to continue rapid scale up of quality, comprehensive prevention of maternal-to-child transmission of HIV (PMTCT) services with the goal of eliminating mother-to-child transmission (MTCT) of HIV by 2015. In the EPPICS intervention, efforts were made to educate women about PMTCT and MTCT of HIV. The endline survey recorded improvement in the proportion of mothers who knew that there were special medications that can be given to HIV positive pregnant women to reduce the risk of MTCT of HIV (Table 3). However, there was a decline from 60% at baseline to 53% at endline in the proportion of mothers who knew that HIV can be transmitted from an HIV positive mother to her child during pregnancy, delivery and through breastfeeding.

The knowledge that transmission from mother to child can be prevented is likely to shape women's care-seeking and breastfeeding behavior and needs further improvement.

Knowledge of Post-Partum Danger Sings and Neonatal Danger Signs
Mothers' knowledge and awareness of the danger signs of post-partum and newborn complications are critical for seeking immediate care and improving newborn survival. The results indicated clear improvements in the proportion of mothers who knew at least two post-partum danger signs - from 77% before the intervention to about 87% after the project intervention. Similarly, the proportion of mothers who knew at least two neonatal danger signs increased from 72% to 80% (Figure 3).

Figure 3: Other Non-Rapid CATCH indicators on knowledge of mothers on MTCT HIV, Danger signs of pregnancy, delivery, post-partum and neonatal danger signs
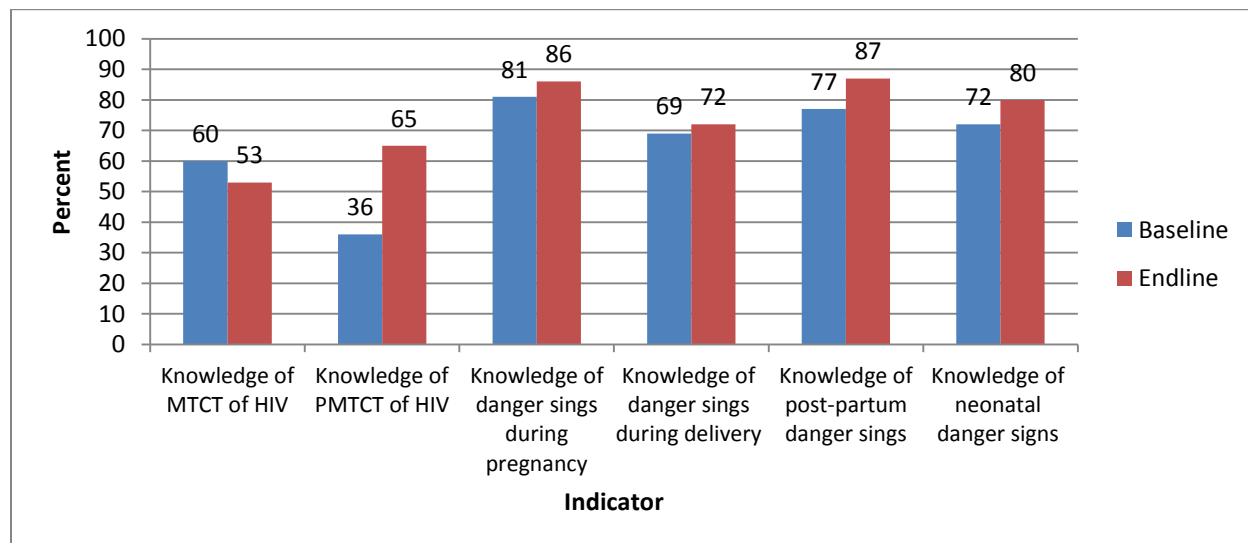
Prevention and control of major childhood diseases

Malaria

About 50% of children below 24 months were reported to have had fever in the last two weeks prior to the survey. Among those with fever 17% were treated for malaria. Although this is low it represents an increase over the baseline figure of 10%.

More than two-thirds of the households reported ownership of ITN. Reported use of ITN is equally high among children less than 24 months as 71% of children 0-23 months slept under ITN the night before the survey. This represents a substantial increase over the baseline prevalence of 42%.

Control of diarrhea

Forty percent of children below 24 months had diarrhea two weeks before the survey. Among those who had diarrhea, 65% received proper preventive or curative rehydration therapy. This is an improvement over the baseline situation where less than half (48%) of children with diarrhea received proper preventive or curative rehydration therapy.

Table 4: Indicators on prevention, control and Treatment of major childhood diseases, and good Hygiene practices

Indicator	Baseline prevalence (%)	Endline prevalence (%)	Percentage difference
EPPICS RAPID CATCH INDICATORS			
Malaria			
ITN use RC	42	71	29

Treatment of fever in Malaria zones RC	10	17	7
Control of diarrhea			
ORT Use RC	48	65	17
Acute respiratory infections			
Appropriate Care Seeking for Pneumonia RC	48	63	15
Water and Sanitation			
Point of Use (POU) Water Treatment RC	4	33	29
Appropriate Hand Washing Practices RC	28	46	18
NON RAPID CATCH INDICATOR			
ITN Ownership NRC	45	71	26

Acute Respiratory Infections

From the mothers' reports, 68% of children less than 24 months who had symptoms of pneumonia in the two weeks prior to the survey received appropriate care. This represents an increase over the baseline situation where 48% of children with pneumonia reportedly received appropriate treatment.

Water and Sanitation

The survey obtained information on basic hygiene and sanitation practices that affect the health of infants. A third of the households of children below two years reported treating water effectively. Compared to the baseline situation there has been an improvement in the POU. However, the actual number of cases involved is small and should be viewed cautiously.

Appropriate hand washing practices as reported by mothers also appears to have improved. In 2015 46% of respondents reported appropriate hand washing practices compared to 28% at baseline.

Anthropometrics

The height and weight of all the children were taken during the survey. Below are the weight-for-age, height-for-age and weight-for-height anthropometric indicators for both the baseline and end of intervention surveys.

Table 5: Baseline and endline anthropometric indicators

Indicator	Baseline		Endline	
Weight for age z-score	Frequency	%	Frequency	%
Severely underweight	61	19	16	5
Moderately underweight	74	24	36	11
Mildly underweight	80	26	63	20
Normal	98	31	207	64
Total	313	100	322	100

Height for age z-score	Frequency	%	Frequency	%
Severe stunting	52	17	10	3
Moderate stunting	39	12	24	8
Mild stunting	73	23	65	21
Normal	149	48	213	68
Total	313	100	312	100
Weight for height z-score	Frequency	%	Frequency	%
Severe wasting	66	21	24	8
Moderate wasting	92	29	30	10
Mild wasting	81	26	75	24
Normal	74	24	184	59
Total	313	100	313	100

The results clearly show some remarkable improvement in the anthropometric indicators over the period of the intervention. At baseline, less than half of the children sampled were within "normal" measurements with a relatively high percentage of them being severely underweight. This has improved at the end of the intervention with 68% of children less than 2 years having normal weight for age z-scores compared to 31% at baseline. The proportion of children who were severely underweight also dropped from 19% at baseline to 5% at the end of the intervention. Similar improvements in the anthropometric indicators for height for age and weight for height were also recorded (see table 5).

Birth weight

In all, 243 children had information on their birth weight recorded on their child health cards. The mean birth weight was approximately 2.9kg (s.d=0.6). The proportion of children with low birth weight (birth weight <2.5kg) was 21% (51/243).

Vitamin A supplementation

Table 7 shows the percentage distribution of the baseline and end of intervention indicators on immunization and Vitamin A supplementation to children at six months and mothers who received Vitamin A in the first two months after delivery. Vitamin A supplementation at six months was verified by card and by recall. The proportion of children at six months who received Vitamin A supplementation has improved marginally from 84% at endline from the baseline proportion of 74%. Vitamin A supplementation to mothers in the first two months after delivery also increased from a baseline percentage of 58% to 71% at the end of the intervention.

Table 6: Immunization status and Vitamin A supplementation

Indicator	Baseline (%)	Endline (%)	Percentage difference	Comment
Vitamin A Supplementation	74	78	4	Positive
Vitamin A supplementation Mother	58	71	13	Positive

Measles Vaccination	95	89	6	Negative
DTP1	96	95	1	Not much change
DTP3	95	94	1	Not much change

Immunization

All three Immunization Rapid CATCH indicators at the end of the intervention did not show any improvement over the indicators recorded at baseline. Measles vaccination coverage reduced from 95% at baseline to 89% at the end of the intervention (see figure 5). The coverage for DTP1 which is an indication of access to immunization and DTP3 which is a measure of the performance of health Systems regarding immunization services also showed some marginal decreases of 1% from the proportions recorded at baseline (figure 5). These indicators reflect the performance of child health prevention services in the intervention area and can be improved upon. Emphasizing or educating women on the importance of timely vaccination would help.

Figure 4: Comparison of Endline and Baseline indicators on Immunization status and Vitamin A supplementation
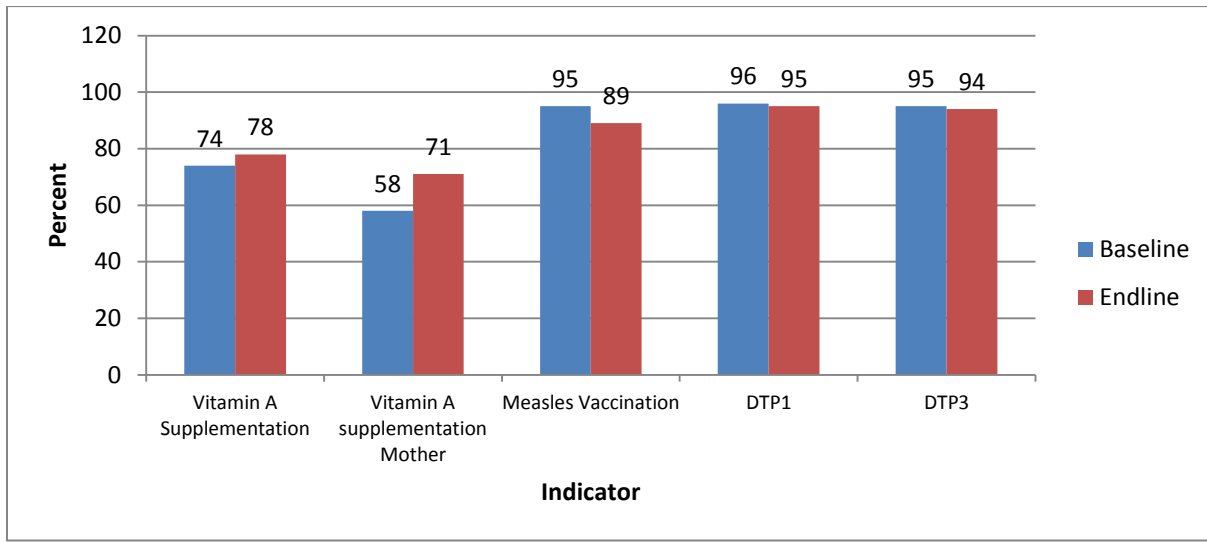
Figure 5: General KPC EPPICS project Baseline and Endline Rapid CATCH indicators
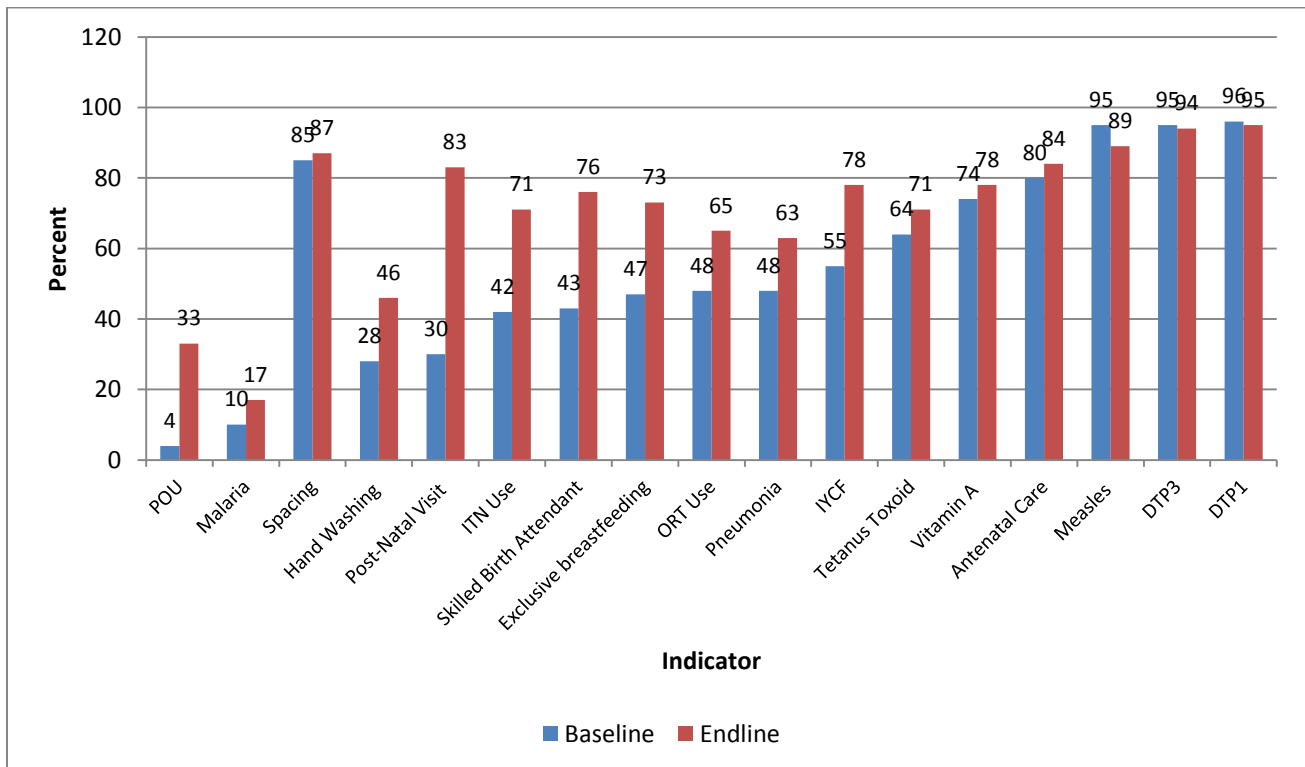
Discussion

Immunizations

The results show that the three Immunization Rapid CATCH indicators at the end of the intervention did not show any improvement over the indicators recorded at baseline. Measles vaccination coverage reduced from 95% at baseline to 89% at the end of the intervention. The other indicators (penta1 and penta3) experienced marginal reductions in coverage.

Recommendation on immunization:

These indicators can be improved upon by emphasizing or educating women on the importance of timely vaccination.

Maternal and newborn care:

Antenatal Care (ANC)

The study found a significant increase in the proportion of mothers of children 0-23 months received 4 or more ANC visits (82%) against baseline (BL) value (63.9%). Overall eight out of ten pregnant women had four or more ANC visits.

The results showed significant improvement in the proportion of pregnant women who received Tetanus Toxoid during ANC visits. Therefore, efforts should be made to maintain and improve coverage to ensure that all pregnant women attending ANC are fully protected against infections.

However, the results showed declining coverage on the proportion of pregnant women who received intermittent preventive treatment for malaria during pregnancy and Iron supplementation. Thus, there was a marginal decline by 1% of mothers who received IPT during pregnancy with their youngest child at the end of project intervention. Similarly, there was a reduction in the coverage of Iron supplementation (taking iron supplements for 90 days or more) which was 81% at baseline but declined to 73% at endline.

Recommendations:

GHS: The package of services provided for pregnant women during ANC determines the quality of ANC services. The increase in coverage of ANC attendance especially in the first trimester of pregnancy should provide opportunity to health care providers to improve on the package of ANC service provided to pregnant women in the district. There is also the need to encourage women to continue attending ANC in order to receive full ANC service and improve on their health and pregnancy outcome.

EPPICS: The gain by the project is commendable. Any opportunity that will see additional support for GHS to continue to roll-out social behavior change communication activities to help sustain or improve the gains made is encouraged.

First ANC in the First Trimester of Pregnancy

Gestation especially in the first trimester is a very critical period in the life of the unborn child and mother. Accessing health care services within this period is very important in promoting the health of

the child and mother and an avenue for safe delivery in future. The endline data, therefore, showed remarkable improvement in ANC attendance at first trimester (74%) over baseline performance which was just a little over half of the women covered at baseline.

Recommendation

GHS: The community liaison with the CHV should be encouraged towards the identification of potential mothers during the early months of pregnancy and encouraging them to go for ANC services in the early months of the pregnancy.

EPPICS: Performance in ANC attendance in the first trimester of pregnancy has been encouraging.

Newborn Care

Thermal care: Drying the newborn immediately after birth, wrapping the infant with a dry cloth or towel, clean cord care and cord cutting and prophylactic eye care are essential newborn care practices for keeping the newborn warm and healthy. These indicators are used to assess core components of recommended newborn care at delivery and to measure the quality and adherence to service protocols, performance of birth attendants, and adoption of newborn care messages at the community. Overall, these indicators have recorded very good coverage after the project intervention. About 97% of mothers reported immediate drying and wrapping of their youngest child after project implementation. Similarly, the results showed some level of improvement in the proportion of mothers with a clean birth kit which increased from 65% at baseline to 95%, clean cord care from 22% to 73% and clean cord cutting increased marginally from 80% to 82% after project implementation. There were major increases in skilled birth and trained delivery attendants.

Recommendation

GHS: Continue with the practice of supporting and guiding mothers and caregivers to immediately wrap, and dry the newborn, and to ensure that babies are not bath within 24 hours according to service protocols. Also, mothers should be encouraged to put their babies to breast immediately after birth. Providers should counsel and educate mothers during ANC, delivery and post-partum care visits about the importance of thermal care and early initiation of breast milk.

EPPICS: Overall, there were improvements in essential newborn care practices at the end of project intervention. While systems and structures are in place to sustain the gains of EPPICS in East Mamprusi, CRS and other actors should continue to search for opportunities that will facilitate the scale-up of the EPPICS strategies to other districts in Ghana However, there is need for sustainability or scale-up of community mobilization programs to sustain and further improve on these gains.

Skilled Birth Attendance

Most maternal and neonatal deaths occur during delivery and within 48 hours after delivery. Therefore, one essential safe motherhood intervention is to ensure that every pregnant woman is attended to by a competent health provider with midwifery skills (medical doctor, midwife or nurse) during delivery. Interventions implemented by the EPPICS project to address the low levels of skill attendance at birth and improve on maternal and newborn survival were successful. The endline results showed that 76% of all deliveries were attended by skilled personnel compared to 43% at baseline. Similarly, there has also been a substantial increase in the prevalence of trained delivery attendants from 79% to 94% at the end

of project intervention. It is important to indicate that about 77% of the mothers delivered in a health facility. Majority delivered in a health center (42%), followed by hospital (32%) and health post (2.4%).

Recommendation

GHS: Skilled delivery indicators can further be improved by continued collaboration with community health volunteers and TBAs and all stakeholders.

EPPICS: There have been appreciable levels of improvements in these indicators, an indication that intervention packages for these indicators were well executed

Clean cord cutting
Clean cord cutting is another important method of maternal and newborn care. The survey we therefore assessed the instruments used for cutting the cord after delivery. Typically, in computing the proportion of mothers who used clean cord cutting, the use of new scissors is usually not considered as a clean cord cutting method. However, in this instance, mothers who delivered in a health facility and mentioned that a new scissor was used to cut the cord were considered as using a clean cord cutting method. The proportion of deliveries with clean cord cutting, therefore, increased marginally from 80% at baseline to 82% after project implementation. About 31% of mothers said a new blade was used, 26.6% mentioned new scissors, 5.5% used new and boiled scissors, and 20.8% said a used and boiled scissors was used in cutting the cord.

Recommendation

GHS: Health workers should continue with the practice of clean cord cutting as it is an important method of preventing mother and child from infection and enhancing their health.

EPPICS: Achievement has been very remarkable.

GHS: These indicators can further be improved by continued collaboration with community health volunteers and TBAs and all stakeholders.

EPPICS: There have been appreciable levels of improvements in these indicators - an indication that intervention packages for these indicators were well executed.

Post-natal visit to check on newborn health:
Baseline report showed that visits by trained health care providers to check on health of newborn child and mother were very rare in the intervention district as only 30% of newborns received post-natal visit from health providers. However, at the end of the project intervention, the results showed clear improvements in the proportion (76%) of newborns who were visited during the post-natal period. There is growing evidence that more babies die in the first week of life than at any other time in childhood, and post-natal visit of check on newborn health during those critical moments are important intervention for their survival and reduction in neonatal mortality.

Recommendations:

GHS: Though there was improvement in home visits, postpartum and postnatal visits by community health officers, this should be encouraged to further improve the health of newborns in the district.

EPPICS: The improvements in post-natal care is another plus in the efforts of the EPPICS project towards improving maternal and child health in the East Mamprusi district.

Post-Natal Visit to Check on Mother

On the other hand, the proportion of mothers to children age 0-23 months who received a post-natal visit from an appropriate trained health worker within two days after birth of child increased from 32% at baseline to 82% at the end of the project implementation. This increase is statistically significant at 95% confidence level. Overall, 95% of mothers were checked by either a health care provider or a traditional birth attendant either at a health facility, home or any other location compared to 86% at baseline. About 88% of the mothers were checked in less than one day, 10% in less than 1 week and 0.7% after one week. About 87% of them were checked on by trained health personnel: 39% being midwives, 34% nurses and 14% doctors.

Recommendation:

GHS: A good feat chalked and efforts by health workers has to be sustained

EPPICS: Very remarkable achievement with the efforts of project staff

Mothers satisfaction and abuse during ANC

In recent times the attitude of health workers has been reported in several platforms to play in a major part in the deteriorating health care delivery especially in many deprived communities in developing countries. The KPC sought to assess whether or not mothers were satisfied with the treatment they received from health workers when they visited the facilities for ANC services. It was revealed that about 90% of mothers were very satisfied while 8% said they were somewhat satisfied with the services and just 1.5% reported that they were not satisfied. Despite the high level of level of satisfaction, some also said they were abused during ANC visits. Almost 6% of mothers said they felt abused during ANC visit. Among those who reported of being abused by health staff during ANC, about 26% reported health staff ignored them, 47% said they were yelled at, 26% said health staff insulted them and 21% reported of other form of abuse.

Perception of abuse during delivery

On perception of abuse during delivery it was found that about 7% (18) of the mothers who delivered at the health facility said they felt abused during delivery. This also means that 93% of mothers were not abused when they went to deliver at a health facility. Among those abused during delivery, 11% said health staff ignored them, 67% complained that they were yelled at, 11% indicated staff made fun of them, 17% reported that health staff insulted them and 17% said staff slapped or hit them.

GHS: The majority of women did not complain of any abuses when they went to deliver at the health facility and this is a positive indicator on the health worker attitude towards clients.

EPPICS: A very good feat chalked.

Recommendation:

GHS: Even though there is a high level of satisfaction about the conduct of health staff, more still needs to be done since GHS seeks to maintain high levels of professional conduct and customer satisfaction remains key towards meeting this goal.

EPPICS: Results in this indicator has been encouraging.

Contraceptive use

Demand for modern contraceptive services improved at the end of project intervention from 22% to 35%. Use of modern contraceptives enhances the health of mothers and children. However, current use of modern contraceptives in the intervention district remains relatively low, with only about a third of women in the survey district currently using a modern method of contraception at the end of project intervention. Culture, religion and cost of FP services which are currently not covered by the National Health Insurance Scheme may have contributed to the slow progress on project implementation.

Recommendations:

GHS: Enabling couples to demand for FP services, including proper spacing of their children and deciding when, and how often to have children is vital to achieving the safe motherhood program. There is the need to improve the supply of family planning service to women and their partners in the district. Health care providers should use ANC visit, delivery and postnatal care visits to provide information on family services and to encourage couples to take up FP.

EPPICS: Good progress in increasing modern contraceptive use among women in the district.

Nutrition

Breastfeeding and Infant and Young Child feeding

One of the life-saving interventions for newborns and infants is breastfeeding. Routine antenatal care, facility-deliveries and community-based home visits are opportunity to counsel expectant mothers on the importance of immediate and exclusive breastfeeding and to influence and change knowledge, attitudes, and behaviors towards exclusive breastfeeding. We assessed the proportion of children aged 0-5 months who were exclusively breastfed during the last 24 months. The results show a significant improvement in the levels of exclusive breastfeeding after the EPPICS project intervention – from 47% at baseline to 70% at endline. Infant and young child feeding practices among children age 6-23 months has improved over the period. The proportion of children fed according to a minimum of appropriate feeding practices increased from 55% [95%CI (45%-65%)] at baseline to 78% [95%CI (70%-86%)] at the end of the project implementation, and this is statistically significant at 95% confidence level.

Recommendations:

GHS: Even though a lot of progress has been made on exclusive breastfeeding and infant and young child feeding practices, more work needs to be done to further improve on the nutritional status of children in the district. Educating women on the importance of exclusive breastfeeding and proper child feeding practices during ANC, post-partum/post-natal care, immunization and growth monitoring outreach activities should continue.

EPPICS: Very good achievement for improving on exclusive breastfeeding and infant and young child feeding practices in the district.

Micronutrients

Iodine deficiency: Just 16% of households had iodized salt in their kitchens on the day of the survey. This is an improvement over the 4% recorded at baseline. This is very low and needs to be improved.

Vitamin A: There was a 4% improvement in the proportion of children over 6 months who received Vitamin A supplementation at the endline survey (78%) compared to baseline (74%). The East Mamprusi District is performing reasonably well by assuring that children have access to vitamin A. A little more than two-thirds of the children less than 6 months were protected through supplementation of their mothers; a 13% increase over the baseline indicator. Records of Vitamin A supplementation are often not documented in the health cards.

Recommendations:

GHS: Document Vitamin A supplementation on health cards of children. The promotion of the use of iodine fortified salt or supplementation of iodine should continue.

EPPICS: There was some improvement in the availability of iodized salt in households compared to baseline indicators. But any activity that can improve on this is welcomed.

Malaria

At the end of the EPPICS intervention, ownership of ITN and use of same for the prevention of malaria in households with children less than two years had increased markedly. Less than half (45%) of households with children (0-23 months) in the study district owned a treated mosquito net at baseline and more than two-thirds (71%) owned ITN at the end of the EPPICS interventions. The baseline ITN ownership of 45% was less than the national ITN ownership of 49% of as reported by the 2011 multiple indicator cluster survey (MICS) report.

Similarly, there was a significant increase in reported use of ITN among children less than 24 months as 53% of children slept under ITN the night preceding survey compared to 42% at baseline. The baseline ITN use of 42% is slightly higher than the (40%) coverage for children under-five in all households who slept under LLIN the night prior to survey as reported by the 2011 multiple indicator survey report. Comparison of the end of intervention study indicators with national figures can adequately be made with the next MICS report.

On febrile episodes among children below 24 months who had fever two weeks to the survey, the endline survey revealed about 50% of children had fever. Among those with fever, 17% were treated with an effective anti-malarial drug within 24 hours. Although this is low it represents an increase over the baseline figure of 10%.

Though there was a significant improvement in ownership of ITN at the end of EPPICS intervention compared to the situation at baseline, only half of the children slept under the treated nets. However, only a small percentage of those who had fever were treated.

Recommendation:

GHS: There is the need to encourage community-directed intervention where CHV can be trained to distribute treated nets, monitor use of nets and administer medications to uncomplicated ailments. Also

mothers can be encouraged to take their children to the health facilities as soon as they detect that their children are not well including minor ailments.

EPPICS: Recommend during dissemination of findings the need for communities to continue to support the community efforts to sustain the Giant scoreboard initiative which will keep community members informed about community performance on key health indicators including ITN use.

Health Facilities

The end of intervention survey results shows some level of improvement in sick child care needs over the baseline indicators, but these have to be improved. Almost 2 out of 3 children with diarrhea in the last two weeks to the survey received ORS or a home based fluid compared. This is an improvement over the 48% recorded at baseline. There was also some improvement in appropriate care seeking for pneumonia with over 60% of children with signs of pneumonia taken to an appropriate health care provider compared to less than half at baseline. Almost two in ten (17%) compared to one in 10 (10%) of children with fever were treated with an effective anti-malarial drug within 24 hours.

GHS: Steps should be taken to improve the situation by educating mothers on good health seeking practices for their children. They should also ensure that facilities have the necessary drugs and trained staff.

EPPICS: Some progress has been made but the indicators are still undesirable and need to improve.

Annex 1: KPC Endline Survey Questionnaire

IDENTIFICATION				
CLUSTER NUMBER				
HOUSEHOLD NUMBER				
RECORD NUMBER				
Community				
Name of Mother				

	1	2	3	Final Visit		
Interview date	___/___/___ day/mnt/year	___/___/___ day/mnt/year	___/___/___ day/mnt/year	For Supervisor		
				Day		
Name of Interviewer				Month		
				Year		
Result Code*				Result Code		

*Result Codes:

1. Completed
2. Respondent not at home
5. Other (Specify) _____

3. Postponed
4. Refused

Form checked by	Supervisor:	Signature
Data Entered by	1. 2.	Date: ___/___/____ Date: ___/___/____

INFORMED CONSENT

Hello. My name is _____, and I am working with Ghana Health Services and CRS. We are conducting a survey and would appreciate your participation. I would like to ask you about your health and the health of your youngest child under the age of two. This information will help CRS and Ghana Health Services to plan health services and assess whether it is meeting its goals to improve children's health. The survey usually takes 60 minutes to complete. ***Whatever information you provide will be kept strictly confidential.***

Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions. You can stop the survey at any time. However, we hope that you will participate in this survey since your views are important.

Will you participate in this survey?   YES   NO At this time, do you want to ask me anything about the survey?

SIGNATURE OF INTERVIEWER: _____ Date: ____/_____/_____

RESPONDENT AGREES TO BE INTERVIEWED *1* *RESPONDENT DOES NOT AGREE TO BE INTERVIEWED* *2*	➔ *END*

RESPONDENT BACKGROUND CHARACTERISTICS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1	For how many years have you attended school?[1] IF NEVER, RECORD '00'.	Years In School [ ][ ]	
2	What is your level of formal education?	Basic School……………………........1 Senior High School………………...2 Tertiary (College/University…....3 Never been to school……….….…4 Other (specify)…………………….....5	
3	What is your age in complete years?	AGE…………. [ ][ ]	
4	What is your marital status	Single…………………………………...1 Married…………………………………2 Divorced………………………………..3 Widowed………………………………..4	
5	What religion do you practice?	Christianity………………….............1 Islam……………………………………….2 African Traditional Religion…….3 None…………………………………………4 Other (Specify):…………….. ………5	

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NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
6	What languages do you speak? (Multiple options allowed)	Mampruli……………………….………A Moar…………………………….. ….B Kusal…………………………………C Likpapka…………………………..D Others (Specify)………………..E	
7	In what language do you feel most comfortable communicating?	Mampruli…………………….…I Moar……………………….…..2 Kusal……………………………3 Likpapka………………………4 Others (Specify)……………5	
8a	What is the total number of births you have had that are still alive		
8b	What is the total number of all the births you have had that have died		
9	What is the name, sex, date of birth of your youngest child that you gave birth to and that is still alive?	*YOUNGEST CHILD* NAME _____ <u>SEX</u> MALE………………………………………………… I FEMALE……………………………………………2 <u>DATE OF BIRTH</u> DAY **(Use 15 for unknown days)** MONTH	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES						SKIP
		YEAR						
10	What are the dates of birth of your two youngest children?"	Youngest __ __ / __ __ / __ __ DD MM YY __ __ / __ __ / __ __ DD MM YY Older						
11	Does (NAME'S) biological father live in this household?	Yes .... 1 No .... 2 Don't Know.. 8						
12	Who is the head of this household?	Mother (Respondent) .... 1 Husband/ Partner .... 2 Female Relative_____ ....3 (Specify) Male Relative_____...........................4 (Specify) Other _____ ....7 (Specify)						

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
13	Do you work outside of the home to earn money? IF NO, CIRCLE "A" (NO OUTSIDE WORK) IF YES, What kind of work do you do?	No Outside Work ....A Handicrafts ....B Harvesting ....C Selling Foods ....D Shop Keeper/Street Vendor..................E Servant/Household Worker.................. F Salaried Worker...G Farming……………………………………...H Other_____........................X *(Specify)*	
14	Who **usually** takes care of (NAME) when you are away from home? (Select only one response)	Mother (Respondent) ....A Husband/Partner.......................................B Older Children..C Other Relatives _____ ....D *(Specify)* Neighbors/Friends....................................E Maid... F Nursery School...G Other………._____.........X *(Specify)*	
Child Immunizations			
15	Do you have a card or child health booklet where (Name's) vaccinations and Vitamin A (capsules) are written down? IF YES: May I see it please?	YES .... 1 NO.. 2 DON'T KNOW... 9	 → 17 → 17

NO.	QUESTIONS AND FILTERS		CODING CATEGORIES			SKIP
16	COPY VACCINATION DATES and VITAMIN A, FROM THE CARD OR BOOKLET. IF VACCINES ARE NOT RECORDED IN CHILD HEALTH CARD OR BOOKLET, FILL IN 99/99/9999.					
		DAY	MONTH	YEAR		
A	BCG BCG					
B	POLIO 0 (GIVEN AT BIRTH - BEFORE 6 WkS)					
C	POLIO 1 OPV1					
D	POLIO 2 OPV2					
E	POLIO 3 OPV3					
F	Diph/PERT/TET/HEP B/HAEMO INF B 1					
G	Diph/PERT/TET/HEP B/HAEMO INF B 2					
H	Diph/PERT/TET/HEP B/HAEMO INF B 3					
I	VITAMIN A (6 months)					
J	MEASLES (9 months)					
K	MEASLES 2 (18 months)					
L	PNEUMONIA 1					
M	PNEUMONIA 2					
N	ROTARIX 1					
O	ROTARIX 2					
P	PNEUMONIA 3					
Q	YELLOW FEVER (9 months)					

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
17	Has (NAME) received any vaccinations that are not recorded on this card, including vaccinations given during immunization campaigns?	YES .... 1 NO .... 2 DON'T KNOW 9	→ 21 → 21
18	Has (NAME) received a DTP/PENTA vaccination, that is, an injection given in the left thigh, sometimes at the same time as polio drops?	YES .... 1 NO .... 2 DON'T KNOW 9	→ 21 → 21
19	How many times?	NUMBER OF TIMES................................ ☐	
20	Did (Name) ever receive an injection in the arm to prevent Measles?	YES .... 1 NO .... 2 DON'T KNOW ....…….....9	
Malaria - Treatment of Fever of Child			
21	Has (Name) been ill with fever at any time in the last 2 weeks?	YES .... 1 NO .... 2 DON'T KNOW ....…….....9	→ 26 → 26
22	Did you seek advice or treatment for the fever?	YES .... 1 NO 2	→ 26
23	How many days after the fever began did you first seek treatment for (Name)?	SAME DAY .... 0 NEXT DAY .... 1 TWO OR MORE DAYS 2	
24	At any time during the illness did (Name) take any drugs for the fever?	YES .... 1 NO .... 2 DON'T KNOW ....…….....9	→ 26 → 26

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
25	What drugs did (Name) take? Any other drugs? RECORD ALL MENTIONED. ASK TO SEE DRUG(S) IF TYPE OF DRUG IS NOT KNOWN. IF TYPE OF DRUG IS STILL NOT DETERMINED, SHOW TYPICAL ANTIMALARIAL DRUGS TO RESPONDENT COUNTRY SPECIFIC BASED ON NATIONAL MALARIAL PROTOCOL. FOR EACH ANTIMALARIAL MEDICINE ASK: How long after the fever started did (NAME) start taking the medicine? CIRCLE THE APPROPRIATE CODES: SAME DAY = 0 NEXT DAY AFTER THE FEVER = 1 TWO OR MORE DAYS AFTER THE FEVER=2 DON'T KNOW = 9	*ANTI-MALARIAL* A SP/Fansidar .... 0 1 2 9 B Chloroquine .... 0 1 2 9 C Amodiaquine .... 0 1 2 9 D Quinine .... 0 1 2 9 E ACT .... 0 1 2 9 *OTHER DRUGS* F ASPRIN .... 0 1 2 9 G PARACETAMOL ...... 0 1 2 9 X. Other 0 1 2 9	
	Control of Diarrhea		
26	Has (Name) had diarrhea in the last two weeks?	YES .... 1 NO .... 2 DON'T KNOW ....……...9	➔ 28 ➔ 28

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
27	Was s/he given any of the following to drink at any time since s/he started having diarrhea: READ CHOICES ALOUD: a) A fluid made from a special packet called ORS or kpaazaa? b) A government-recommended homemade fluid? (rice water, coconut juice, mashed kenkey… SHOW LOCALLY AVAILABLE ORS PACKAGE OR PICTURE.	YES NO DK A. FLUID FROM ORS PACKET….I 2 9 B. HOMEMADE FLUID…………......I 2 9	
ARI/Pneumonia			
28	Has (Name) had an illness with a cough that comes from the chest at any time in the last two weeks?	YES..I NO..2 DON'T KNOW...…....…9	 ➜ 32 ➜ 32
29	When (Name) had an illness with a cough, did he/she have trouble breathing or breathe faster than usual with short, fast breaths?	YES..I NO..2 DON'T KNOW...…....…9	 ➜ 32 ➜ 32
30	Did you seek advice or treatment for the cough/fast breathing?	YES..I NO..2 DON'T KNOW...…....…9	 ➜ 32 ➜ 32
31	Who gave you advice or treatment? Anyone else? RECORD ALL MENTIONED.	DOCTOR...A NURSE...B AUXILIARY NURSE (ENROLE NURSE)...................C TRAINED COMMUNITY HEALTH WORKER.......D OTHER X	
Water and Sanitation			

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
32	Where do you usually get water for drinking purposes? (Select only 1 response)	*Borehole…………………………………1* *Well………………………………………2* *Dam………………………………………3* *Rain harvest…………………..........4* *Others(Specify)…..................5*	→ 35 → 35
33	Do you treat your water in any way to make it safe for drinking?	*YES... 1* *NO.. 2* *DON'T KNOW ....……....9*	 → 35 → 35
34	If yes, what do you usually do to the water to make it safer to drink? ONLY CHECK MORE THAN ONE RESPONSE IF SEVERAL METHODS ARE USUALLY USED TOGETHER, FOR EXAMPLE, CLOTH FILTRATION AND CHLORINE.	LET IT STAND AND SETTLE/SEDIMENTATION.................................. A STRAIN IT THROUGH CLOTH........................B BOIL.. C ADD BLEACH/CHLORINE ....D WATER FILTER (CERAMIC, SAND, COMPOSITE) .... E SOLAR DISINFECTION .... F OTHER ....X DON'T KNOW ....Z	
35	Can you show me where you usually wash your hands and what you use to wash hands? ASK TO SEE AND OBSERVE	*INSIDE/NEAR TOILET FACILITY.. ....…1* *INSIDE/NEAR KITCHEN/COOKING PLACE ....2* *ELSEWHERE IN YARD...3* *OUTSIDE YARD..4* *NO SPECIFIC PLACE...5* *NO PERMISSION TO SEE..8*	 → 37 → 37

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
36	OBSERVATION ONLY: IS THERE SOAP OR DETERGENT OR LOCALLY USED CLEANSING AGENT? THIS ITEM SHOULD BE EITHER IN PLACE OR BROUGHT BY THE INTERVIEWEE WITHIN ONE MINUTE. IF THE ITEM IS NOT PRESENT WITHIN ONE MINUTE CHECK NONE, EVEN IF BROUGHT OUT LATER.	*SOAP...1* *DETERGENT ....2* *ASH...3* *MUD/SAND..4* *NONE..5* *OTHER 6*	
Malaria – ITN use			
37	Does your household have any mosquito nets that can be used while sleeping?	*YES..1* *NO..2*	➜ 42
38	Who slept under a bed net last night? If ANYONE OTHER THAN THE CHILD IS MENTIONED, RECORD OTHER.	NO ONE...……....0 CHILD (NAME) ....……....1 OTHER ....……....2	➜ 42 ➜ 42
39	*Which brand of bed net did (Name) sleep under last night?* *SHOW PICTURES OF TYPICAL NET TYPES AND BRANDS.*	*PERMANENT NET* *Permanet...……....1* *Oliset..……....2* *Long lasted treated net ....……....3* *OTHER NET* *OTHER NET ....……....5* *DON'T KNOW..……....9*	➜ 42 ➜ 42 ➜ 42
40	Was the bed net that (Name) slept under last night ever soaked or dipped in a liquid treated to repel mosquitoes or bugs?	*YES..1* *NO..2* *DON'T KNOW..……....9*	➜ 42 ➜ 42

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
41	*How long ago was the net last soaked or dipped in a liquid treated to repel mosquitoes or bugs?* *IF LESS THAN 1 MONTH AGO, RECORD 00 MONTHS. IF LESS THAN 2 YEARS AGO, RECORD MONTHS AGO. IF 12 MONTHS AGO OR 1 YEAR AGO, PROBE FOR EXACT NUMBER OF MONTHS.*	*MONTHS* ☐☐ *MORE THAN 2 YEARS AGO .... 95* *DON'T KNOW.. 98*	
Maternal Newborn Care			
42	How long should you wait after the birth of your child before you try to become pregnant again?	*LESS THAN 2 YEARS .... 1* *2 TO 5 YEARS.. 2* *MORE THAN 5 YEARS.. 3* *DON'T KNOW 9*	
43	What are the risks of getting pregnant too soon after the birth of a child? *DO NOT READ RESPONSES. RECORD ALL THAT ARE MENTIONED.*	NO RISK ……………………………………………A BABY BORN TOO SMALL………………..B BABY BORN TOO EARLY………………….C MOTHER CAN DIE…………………………..D MOTHER CAN HAVE MISCARRIAGE…E MOTHER CAN SUFFER ANEMIA………F DON'T KNOW…………………………………G OTHER _____. ……………X (SPECIFY)	
44	Are you currently pregnant?	YES………………………………..1 NO…………………………………2	
45	*Are you currently doing something or using any method to delay or avoid getting pregnant?*	*YES.. 1* *NO.. 2* *DON'T KNOW 9*	➔ 47 ➔ 47

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
46	Which method are you (or your husband/ partner) using? DO NOT READ RESPONSES. CODE ONLY ONE RESPONSE. IF MORE THAN ONE METHOD IS MENTIONED, ASK, What is your MAIN method that you (or your husband/ partner) use to delay or avoid getting pregnant?" IF REPONDENT MENTIONS BOTH CONDOMS AND STANDARD DAYS METHOD, CODE "12" FOR STANDARD DAYS METHOD IF RESPONDENT MENTIONS ABSTINENCE OR ISOLATION, CODE "15" FOR OTHER AND RECORD RESPONSE IN SPACE PROVIDED.	FEMALE STERILIZATION...1 MALE STERILIZATION..2 PILL...3 IUD..4 INJECTABLES...5 IMPLANTS ....6 CONDOM...7 FEMALE CONDOM..8 DIAPHRAGM…………………………………………9 FOAM/JELLY..10 LACTATIONAL AMEN. METHOD........................11 (EXCLUSIVE BRESTFEEDING) STANDARD DAYS METHOD/ CYCLEBEADS...12 RHYTHM METHOD (OTHER THAN STANDARD DAYS) ....13 WITHDRAWAL..14 OTHER………_____..................15 (SPECIFY)	

47	Can the virus that causes AIDS be transmitted from a mother to a child:
	
	        a. During pregnancy?
	        b. During delivery?
	        c. By breastfeeding?
		YES NO
		DK
		A. DURING PREG .... I 2 9
		B. DURING DELIVERY ... I 2 9
		C. BREASTFEEDING .... I 2 9	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
48	Are there special drugs that a doctor or a nurse can give a woman infected by the virus that causes AIDS to reduce the risk of transmission to her baby?	*YES.. 1* *NO... 2* *DON'T KNOW 9*	
49	During your pregnancy with (Name), did you see anyone for antenatal care? IF YES: Whom did you see? Anyone else? PROBE FOR THE TYPE OF PERSON AND RECORD ALL PERSONS SEEN.	DOCTOR/MEDICAL ASSISTANT .... A NURSE... B MIDWIFE... C TRADITIONAL BIRTH ATTENDANT............ D *OTHER* _____.......................... *X* (SPECIFY) NO ONE .... Y	**➜**59
50	During your pregnancy with (Name), where did you receive antenatal care? CIRCLE ALL MENTIONED. IF SOURCE IS HOSPITAL, HEALTH CENTER, OR CLINIC, WRITE THE NAME OF THE PLACE. PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. _____ (NAME OF PLACE)	<u>HOME</u> YOUR HOME... A MIDWIFE/TBA HOME...........................B OTHER HOME .... C <u>PUBLIC SECTOR</u> HOSPITAL...D HEALTH CENTER .... E HEALTH POST .... F OUTREACH...G OTHER PUBLIC_____.....H (SPECIFY) <u>PRIVATE SECTOR</u> PRIVATE HOSPITAL............................... I PRIVATE CLINIC ....J OTHER PRIVATE_____ .. K (SPECIFY) *OTHER* _____.......................... *X* (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
51	During your pregnancy with (Name), how many months pregnant were you when you first received antenatal care?	MONTHS……………………… DON'T KNOW…………………9	
52	During your pregnancy with (Name), how many times did you receive antenatal care?	TIMES… DON'T KNOW………99	
53a	As part of your antenatal care during this pregnancy, were any of the following done at least once? A. Was your height taken? B. Was your blood pressure measured? C. Did you give a urine sample? D. Did you give a blood sample?	YES NO A. HEIGHT……………………… I …………………… 2 B. BP……………………… I ………………… 2 C. URINE………………………… I …………………… 2 D. BLOOD……………………… I …………………… 2	
53b	At any of your antenatal care visits during your pregnancy with (NAME), did you feel abused and mistreated by the health staff at the facility?	YES…………………………………………....….I NO………………………………………………..2 DON'T KNOW………………………………99	→ 53d → 53d

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
53c	In what ways did the health staff abuse or mistreat you during these antenatal care visits for this pregnancy? DO NOT READ RESPONSES **MULTIPLE RESPONSES APPLY**	*STAFF IGNORED HER…………....A* *STAFF YELLED AT HER………….. B* *STAFF MADE FUN OF HER………C* *STAFF INSULTED HER…………….D* *STAFF TOUCHED HER INAPPROPRIATELY……………...E* *STAFF SLAPPED OR HIT HER………F* OTHER (SPECIFY) …………………G _____	
53d	How satisfied were you with the service you received from the health staff during the antenatal care visits?	*VERY SATISFIED…………………….……………. I* *SOMEWHAT SATISFIED……………………………………. .2* *NOT SATISFIED……………………….……………. .3*	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
54	During (any of) your antenatal care visits, were you told about the signs of pregnancy complications?	YES..1 NO..2 DON'T KNOW 9	➔ 56 ➔ 56
55	Were you told where to go if you had any of these complications?	YES..1 NO..2 DON'T KNOW 9	
56	During any of the antenatal visits for your pregnancy with (Name), did anyone talk to you about getting tested for the virus that causes AIDS?	YES..1 NO..2 DON'T KNOW 9	
57	I don't want to know the results, but were you tested for the virus that causes AIDS as part of your antenatal care?	YES..1 NO..2 DON'T KNOW 9	➔ 59 ➔ 59
58	As a reminder, I don't want to know the results, but did you get the results of the test?	YES..1 NO..2 DON'T KNOW 9	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
59	*During pregnancy, woman may encounter severe problems or illnesses and should go or be taken immediately to a health facility.* *What types of symptoms would cause you to seek immediate care at a health facility (right away)?* *ASK: Anything else?* *DO NOT READ RESPONSES. RECORD ALL THAT ARE MENTIONED.*	VAGINAL BLEEDING..A FAST/DIFFICULT BREATHING.............................B FEVER ....C SEVERE ABDOMINAL PAIN...................................D HEADACHE/BLURRED VISION...........................E CONVULSIONS..F FOUL SMELLING DISCHARGE/FLUID FROM VAGINA..G BABY STOPS MOVING ....H LEAKING BROWNISH/GREENISH FLUID FROM THE VAGINA...I *OTHER……._____* ....X (SPECIFY)	
60	During your pregnancy with (Name) did you receive an injection in the arm to prevent the baby from getting tetanus that is convulsions after birth?	*YES*..*1* *NO*..2 *DON'T KNOW* 9	➔ 62 ➔ 62
61	While pregnant with (name), how many times did you receive such an injection?	ONE.. 1 TWO .... 2 THREE OR MORE .... 3 DON'T KNOW 9	
62	Did you receive any tetanus toxoid injection at any time **before** that pregnancy, including during a previous pregnancy or between pregnancies?	*YES*..*1* *NO*..2 *DON'T KNOW* 9	➔ 64 ➔ 64
63	Before the pregnancy with (Name), how many times did you receive a tetanus injection?	ONE.. 1 TWO .... 2 THREE OR MORE .... 3 DON'T KNOW 9	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
64	During your pregnancy with (Name), were you given or did you buy any iron tablets/syrup? SHOW TABLETS	YES..*I* NO...2 DON'T KNOW 9	➔66 ➔ 66
65	During the whole pregnancy, for how many days did you take the tablets/syrup? IF THE ANSWER IS NOT NUMERIC, PROBE FOR APPROXIMATE NUMBER OF DAYS.	DAYS…………… DON'T KNOW………..999	
66	When you were pregnant with (NAME), did you take any drugs in order to prevent you from getting malaria?	YES..*I* NO...2 DON'T KNOW 9	➔ 69 ➔ 69
67	Which drugs did you take to prevent malaria? RECORD ALL METNIONED. IF TYPE OF DRUG IS NOT DETERMINED, SHOW TYPICAL ANTIMALARIAL DRUGS TO RESPONDENT.	SP/FANSIDAR .... A CHLOROQUINE ....B OTHER_____ __...X DON'T KNOW Z	 ➔ 69 ➔ 69 ➔ 69
68	How many times did you take SP/Fansidar during this pregnancy?	TIMES DON'T KNOW…..98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
69	Who assisted with the delivery of (Name)? Anyone else? PROBE FOR THE TYPE(S) OF PERSON(S) AND RECORD ALL MENTIONED. IF RESPONDENT SAYS NO ONE ASSISTED, PROBE TO DETERMINE WHETHER ANY ADULTS WERE PRESENT AT THE DELIVERY.	DOCTOR...A NURSE...B MIDWIFE...C AUXILIARY MIDWIFE (ENROLE NURSE).........D OTHER HEALTH STAFF WITH MIDWIFERY SKILLS. ....E TRAINED TRADITIONAL BIRTH ATTENDANT ....F TRAINED COMMUNITY HEALTH NURSE ......G TRADITIONAL BIRTH ATTENDANT................H COMMUNITY HEALTH WORKER ....I RELATIVE/FRIEND ....J NO ONE..Y	
70a	Where did you give birth to (Name)? IF BIRTH WAS IN A HOSPITAL, HEALTH CENTER, OR CLINIC, WRITE THE NAME OF THE PLACE. PROBE TO IDENTIFY THE PLACE AND CIRCLE **ONLY ONE** _____ (NAME OF PLACE)	HOME YOUR HOME.. A MIDWIFE/TBA HOME...B OTHER HOME .... C PUBLIC SECTOR HOSPITAL...D HEALTH CENTER... E HEALTH POST .... F OTHER PUBLIC_____.....H (SPECIFY) PRIVATE SECTOR PRIVATE HOSPITAL.. I PRIVATE CLINIC ....J OTHER PRIVATE_____ .. K (SPECIFY) OTHER _____........................X (SPECIFY)	 → 71 → 71 → 71

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
70b	During the delivery of (Name) did you feel abused and mistreated by the health staff?	YES……………………………………....…1 NO……………………………………………..2 DON'T KNOW……………………………..…9	➔ 70d ➔ 70d
70c	In what ways did the health staff abuse or mistreat you during the delivery of (NAME)? DO NOT READ RESPONSES **MULTIPLE RESPONSES APPLY**	STAFF IGNORED HER…………. A STAFF YELLED AT HER………… B STAFF MADE FUN OF HER…… C STAFF INSULTED HER …………….D STAFF TOUCHED HER INAPPROPRIATELY………..………….E STAFF SLAPPED OR HIT HER……………………………………….. F OTHER (SPECIFY) ……………………G _____	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
70d	During the delivery of (Name) how satisfied were you with the service you received from the health staff?	VERY SATISFIED…………………………………….. 1 SOMEWHAT SATISFIED…………………………………… .2 NOT SATISFIED…………………………………… .3	
71	Was a Clean Delivery Kit used during delivery? (SHOW DELIVERY KITS LOCALLY PROMOTED)	YES..1 NO...2 DON'T KNOW 9	
72	What instrument was used to cut the cord?	NEW RAZOR BLADE ....1 NEW AND BOILED RAZOR BLADE ....2 USED RAZOR BLADE..3 USED AND BOILED RAZOR BLADE..........................4 NEW SCISSORS ....5 NEW AND BOILED SCISSORS ....6 USED SCISSORS...7 USED AND BOILED SCISSORS ....8 KNIFE..9 REED ....10 OTHER _____.........................97 (SPECIFY) DON'T KNOW 98	
73	Was anything placed on the umbilical cord either before or after it was cut?	YES..1 NO...2 DON'T KNOW 9	➔ 75 ➔ 75

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
74	What was placed on the cut cord?	COW DUNG.. 1 ANY TYPE OF OIL... 2 ANTISEPTIC.. 3 ASH .... 4 CHALK... 5 CHARCOAL POWDER....................................... 6 OTHER _____....97 (SPECIFY)	
75	Was (NAME) dried (wiped) immediately after birth before the placenta was delivered?	YES..1 NO..2 DON'T KNOW 9	
76	Was (NAME) wrapped in a warm cloth or blanket immediately after birth before the placenta was delivered?	YES..1 NO..2 DON'T KNOW 9	
77	Immediately after (NAME) was born, before the placenta was delivered, did you receive an injection to prevent you from bleeding too much?	YES..1 NO..2 DON'T KNOW 9	
78	Did the care provider or a traditional birth attendant hold your stomach and pull on the cord to help the placenta come out?	YES..1 NO..2 DON'T KNOW 9	
79	Immediately after the placenta was delivered, did someone massage your uterus to make it contract strongly and to prevent you from bleeding too much?	YES..1 NO..2 DON'T KNOW 9	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
80	When labor sets in, once contractions start, a woman may encounter severe problems or illnesses and should go or be taken immediately to a health facility. While having contractions during the time that labor sets in, what types of symptoms would cause you to seek immediate care at a health facility (right away)? ASK: Anything else? DO NOT READ RESPONSES. RECORD ALL THAT ARE MENTIONED.	CONVULSIONS..A HIGH FEVER..B HEAVY BLEEDING.......................................C FAST/DIFFICULT BREATHING............................D RETAINED PLACENTA.............................E HEADACHE/BLURRED VISION............................F PROLONGED LABOUR...G OTHER...X _____ (SPECIFY)	
81	In the first hour after delivery, was (NAME) given eye ointment or drops in his/her eyes?	YES...1 NO...2 DON'T KNOW 9	
82a	Was (NAME) weighed at birth?	YES...1 NO...2 DON'T KNOW 9	 ➔ 83 ➔ 83
82b	How much did (NAME) weigh? RECORD WEIGHT IN KILOGRAMS FROM HEALTH CARD, IF AVAILABLE.	KG FROM CARD ☐☐.☐☐☐ KG FROM RECALL ☐☐.☐☐☐ ☐☐☐☐☐ DON'T KNOW 99.998 .	
The following questions refer to the mother after the delivery of her youngest child		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
83	Did a health care provider or a traditional birth attendant check on your health after the delivery of your youngest child, either at a health facility, home or other location?	YES...1 NO...2 DON'T KNOW 9	➔ 85a ➔ 85a
84	How long after the delivery did the first check take place? IF LESS THAN ONE DAY, CIRCLE 0 AND RECORD HOURS; IF LESS THAN ONE WEEK CIRCLE 1 AND RECORD DAYS; IF MORE THAN 6 DAYS CIRCLE 2 AND RECORD WEEKS.	HOURS 0 ☐☐ LESS THAN 1 HOUR = 00 DAYS 1 ☐☐ WEEKS 2 ☐☐ DON'T KNOW……………...…99	
85a	Who checked your health at that time? Anyone else? PROBE FOR THE MOST QUALIFIED PERSON AND RECORD **ONLY ONE**	DOCTOR...A NURSE...B MIDWIFE..C AUXILIARY MIDWIFE (ENROLE NURSE).........D OTHER HEALTH STAFF WITH MIDWIFERY SKILLS. ....E TRAINED TRADITIONAL BIRTH ATTENDANT ....F TRAINED COMMUNITY HEALTH NURSE ......G TRADITIONAL BIRTH ATTENDANT...............H COMMUNITY HEALTH WORKER ....I RELATIVE/FRIEND ....J NO ONE ....Y	
85b	Did you feel abused or mistreated by the health staff who checked on you after the birth of (NAME)?	YES…………………………………….....1 NO………………………………………..2 DON'T KNOW………………………….9	➔85d ➔85d

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
85c	In what ways did the health staff abuse or mistreat when they checked on you after the birth of (NAME)? DO NOT READ RESPONSES **MULTIPLE RESPONSES APPLY**	STAFF IGNORED HER……………. A STAFF YELLED AT HER………… B STAFF MADE FUN OF HER……… C STAFF INSULTED HER ……………..D STAFF TOUCHED HER INAPPROPRIATELY……………. E STAFF SLAPPED HER……………………………. F OTHER………………………………..G _____	
85d	How satisfied were you with the service you received from the health staff when they visited you after the birth of (NAME)?	VERY SATISFIED……………………………………. 1 SOMEWHAT SATISFIED……………………………………. .2 NOT SATISFIED……………………………………. .3	
85e	In the first two months after delivery of (Name), did you receive a vitamin A dose (like this/any of these)? SHOW COMMON TYPES OF AMPULES/CAPSULES/SYRUPS.	YES……………………………………………………………………………. 1 NO…………………………………………………………………………………2 DON'T KNOW …………………………………………………………9	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
86	Sometimes mothers after delivery have severe illnesses and should be taken immediately to a health facility. What types of symptoms would cause you to go to a health facility right away? *ASK: Anything else?* *DO NOT READ RESPONSES. RECORD ALL THAT ARE MENTIONED.*	EXCESSIVE VAGINAL BLEEDING ....A FAST/DIFFICULT BREATHING ....B HIGH FEVER..C SEVERE ABDOMINAL PAIN....................................D SEVERE HEADACHE/BLURRED VISION............E CONVULSIONS/LOSS OF CONSCIOUSNESS...F FOUL-SMELLING DISCHARGE FROM THE VAGINA..G PAIN IN CALF ....H VERBALIZATION/BEHAVIOR THAT INDICATES SHE MAY HURT HERSELF OR THE BABY..I OTHER _____ ....X (SPECIFY)	
	The following questions refer to the youngest child shortly after birth		
87	After (Name) was born, did any health care provider or traditional birth attendant check on (Name's) health?	*YES.. 1* *NO.. 2* *DON'T KNOW 9*	➜ 90 ➜ 90
88	How many hours, days or weeks after the birth of (Name) did the first check take place? IF LESS THAN ONE DAY, CIRCLE 0 AND RECORD HOURS; IF ONE TO SIX DAYS CIRCLE 1 AND RECORD DAYS; IF MORE THAN 6 DAYS CIRCLE 2 AND RECORD WEEKS.	HOURS 0 [ ][ ] DAYS 1 [ ][ ] WEEKS 2 [ ][ ] DON'T KNOW……………...…99	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
89	Who checked on (Name's) health at that time? Anyone else? PROBE FOR THE MOST QUALIFIED PERSON AND RECORD ALL MENTIONED.	DOCTOR..A NURSE..B MIDWIFE..C AUXILIARY MIDWIFE (ENROLE NURSE).........D OTHER HEALTH STAFF WITH MIDWIFERY SKILLS. ....E TRAINED TRADITIONAL BIRTH ATTENDANT ....F TRAINED COMMUNITY HEALTH NURSE ......G TRADITIONAL BIRTH ATTENDANT................H COMMUNITY HEALTH WORKER ....I RELATIVE/FRIEND ....J NO ONE...Y	
90	*Sometimes newborns, within the first month of life, have severe illnesses and should be taken immediately to a health facility.* *What types of symptoms would cause you to take your newborn to a health facility right away?* *ASK: Anything else?* *DO NOT READ RESPONSES. RECORD ALL THAT ARE MENTIONED.*	CONVULSIONS ....A FEVER ....B POOR SUCKLING OR FEEDING ....C FAST/DIFFICULT BREATHING ....D BABY FEELS COLD ....E BABY TOO SMALL/TOO EARLY ....F YELLOW PALMS/SOLES/EYES ....G SWOLLEN ABDOMEN ....H UNCONSCIOUS .... I *PUS OR REDNESS OF THE UMBILICAL STUMP, EYES OR SKIN ....J* *OTHER _____ ....X* (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
91	What kind of preparations did you make before the birth of (NAME)? Anything else? *RECORD ALL MENTIONED*	SAVED MONEY ....A BOUGHT CLEAN DELIVERY KIT ....B FOUND BLOOD DONOR ....C ARRANGED OF TRANSPORT ....D CONTACTED HEALTH WORKER TO HELP WITH DELIVERY...E *OTHER* _____.............................X (SPECIFY) NO PREPARATION...Y	
	NUTRITION *Breastfeeding/ Infant and Young Child Feeding*		
92	*Did you ever breastfeed (NAME)?*	*YES*... *1* *NO*... *2* *DON'T KNOW* *9*	➔ 99 ➔ 99
93	*How long after birth did you first put (NAME) to the breast?* *IF LESS THAN 1 HOUR, RECORD '00' HOURS. IF LESS THAN 24 HOURS, RECORD HOURS. OTHERWISE, RECORD DAYS.*	*IMMEDIATE* ....*00* *HOURS*......................... ☐☐ *DAYS*............................... ☐☐ *DON'T REMEMBER* *99*	
94	*During the first three days after delivery, did you give (NAME) the liquid (Colostrum) that came from your breasts?*	*YES* .... *1* *NO* .... *2* *DON'T KNOW* *9*	
95	*In the first three days after delivery, was (NAME) given anything to drink other than breast milk?*	*YES* .... *1* *NO* .... *2* *DON'T KNOW* *9*	➔ *97* ➔ *97*
96	*What was (NAME) given to drink?* *Anything else?* *DO NOT READ THE LIST* *RECORD ALL MENTIONED BY CIRCLING LETTER FOR EACH ONE MENTIONED*	*MILK (OTHER THAN BREASTMILK)* ....*A* *PLAIN WATER* ....*B* *SUGAR OR GLUCOSE WATER*.........................*C* *GRIPE WATER* ....*D* *SUGAR-SALT-WATER SOLUTION* ....*E* *FRUIT JUICE* ....*F* *INFANT FORUMULA* ....*G* *TEA / INFUSIONS* ....*H* *HONEY* ....*I* *OTHER (SPECIFY)* _____ ....*X*	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
97	Are you still breastfeeding (NAME)?	YES...I NO...2 DON'T KNOW 9	→ 99
98	For how many months did you breastfeed (NAME)? IF LESS THAN ONE MONTH, RECORD "00" MONTHS.	MONTHS ☐☐	
99	Did (NAME) drink anything from a bottle with a nipple yesterday or last night?	YES...I NO...2 DON'T KNOW 9	
100	Now I would like to ask you about liquids or foods (NAME) had yesterday during the day or at night. Did (NAME) drink/eat:	READ THE LIST OF LIQUIDS (A THROUGH E, STARTING WITH "BREAST MILK"). YES NO DK	
	A. Breast milk?	……….........I 2 9	
	B. Plain water?	……….........I 2 9	
	C. Commercially produced infant formula?	……….........I 2 9	
	D. Any fortified, commercially available infant and young child food" [e.g. Cerelac]?	……….........I 2 9	
	E. Any (other) porridge or gruel?	……….........I 2 9	
101	Now I would like to ask you about (other) liquids or foods that (NAME) may have had yesterday during the day or at night. I am interested in whether your child had the item even if it was combined with other foods. Did (NAME) drink/eat:	PLEASE FILL OUT THE FOLLOWING TABLE WITH THE ANSWERS TO THE QUESTIONS BELOW:	
	GROUP 1:DAIRY	YES NO DK	
	A. CHECK Q.100C – IF YES, CIRCLE YES HERE Commercially produced infant formula?	........................I 2 9	
	B. Milk such as tinned, powdered, or fresh animal milk?	........................I 2 9	
	C. Cheese, yogurt, or other milk products?	........................I 2 9	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			SKIP
		YES	NO	DK	
	GROUP 2: GRAIN				
	D. CHECK Q.100D – IF YES, CIRCLE YES HERE Any fortified, commercially available infant and young Child food (e.g. Cerelac)?	……………………1	2	9	
	E. CHECK Q.100E – IF YES, CIRCLE YES HERE Any (other) porridge or gruel?	……………………1	2	9	
	F. Bread, rice, noodles, or other foods made from grains?	……………………1	2	9	
	G. White potatoes, white yams, manioc, cassava, or any other foods made from roots?	……………………1	2	9	
	GROUP 3: VITAMIN A RICH VEGETABLES	YES	NO	DK	
	H. Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside?	……………………1	2	9	
	I. Any dark green leafy vegetables?	……………………1	2	9	
	J. Ripe mangoes, papayas or (INSERT ANY OTHER LOCALLY AVAILABLE VITAMIN A-RICH FRUITS)?	……………………1	2	9	
	K. Foods made with red palm oil, palm nut, palm nut pulp sauce?	……………………1	2	9	
	GROUP 4: OTHER FRUITS/VEGETABLES	YES	NO	DK	
	L. Any other fruits or vegetables like oranges, grapefruit or pineapple?	……………………1	2	9	
	GROUP 5: EGGS	YES	NO	DK	
	M. Eggs?	……………………1	2	9	
	GROUP 6: MEAT, POULTRY, FISH	YES	NO	DK	
	N. Liver, kidney, heart or other organ meats?	……………………1	2	9	
	O. Any meat, such as beef, pork, lamb, goat, chicken, or duck?	……………………1	2	9	
	P. Fresh or dried fish or shellfish?	……………………1	2	9	
	Q. Grubs, snails, insects, other small protein food?	……………………1	2	9	
	GROUP 7: LEGUMES/NUTS	YES	NO	DK	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			SKIP
	R. Any foods made from beans, peas, lentils, or nuts?	……………………1	2	9	
	GROUP 8: OILS/FATS	*YES*	*NO*	*DK*	
	S. Any oils, fats, or butter, or foods made with any of these?	……………………1	2	9	
	T. *CHECK 101A – 101S: HOW MANY FOOD GROUPS (GROUPS 1-8 IN ABOVE TABLE) HAVE AT LEAST 1 'YES' CIRCLED?*	Number of Group			
	GROUP 9: OTHER FOODS	*YES*	*NO*	*DK*	
	U. *Tea or coffee?*	……………………1	2	9	
	V. *Any other liquids?*	……………………1	2	9	
	W. *Any sugary foods, such as chocolates, candy, sweets, pastries, cakes, or biscuits?*	……………………1	2	9	
	X. *Any other solid or soft food?*	……………………1	2	9	
102	*How many times did (NAME) eat solid, semi-solid, or soft foods other than liquids yesterday during the day or at night?* *IF CAREGIVER ANSWERS SEVEN OR MORE TIMES, RECORD "7"* *WE WANT TO FIND OUT HOW MANY TIMES THE CHILD ATE ENOUGH TO BE FULL. SMALL SNACKS AND SMALL FEEDS SUCH AS ONE OR TWO BITES OF MOTHER'S OR SISTER'S FOOD SHOULD NOT BE COUNTED.* *LIQUIDS DO NOT COUNT FOR THIS QUESTION.* *DO NOT INCLUDE THIN SOUPS OR BROTH, WATERY GRUELS, OR ANY OTHER LIQUID.* *USE PROBING QUESTIONS TO HELP THE RESPONDENT REMEMBER ALL THE TIMES THE CHILD ATE YESTERDAY*	*NUMBER OF TIMES* *DON'T KNOW………9*			
Vitamin A Supplementation					
103	Has (Name) ever received a Vitamin A dose (like this/any of these)? SHOW COMMON TYPES OF AMPULES/CAPSULES/SYRUPS	*YES*...1 *NO*...2 *DON'T KNOW* 9			➔ 105 ➔ 105

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
104	Did (Name) receive a Vitamin A dose within the last 6 months?	YES...1 NO..2 DON'T KNOW 9	
105	*We would like to check whether the salt used in your household is iodized. May I take a sample of the salt used to cook the main meal eaten by members of your household last night?* *ONCE YOU HAVE EXAMINED THE SALT, CIRCLE NUMBER THAT CORRESPONDS TO THE TEST OUTCOME*	NOT IODIZED (0 PPM)..1 LESS THAN 15 PPM..2 15 PPM OR MORE...3 NO SALT IN HOME..4 SALT NOT TESTED...5	
Anthropometrics			
106	*Apart from (Name), how many children that are under the age of five years live in this household?*	NONE ....0 MORE THAN 0 WRITE □□ DOWN NUMBER	➔ 108
107	*How many of those children did you give birth to?*	NONE ....0 □ WRITE DOWN THE NUMBER	➔ 108
108	Now I would like to weigh and measure (Name) and your other children younger than five years old. May I weigh and measure (Name) and the other children?	YES...1 NO..2	➔ **END**

BELOW, WRITE DOWN (NAME)'S NAME, SEX AND DATE OF BIRTH. THEN ASK FOR (AND WRITE DOWN) THE NAMES, AGE AND SEXS FOR ALL OF THE MOTHER'S OTHER BIOLOGICAL CHILDREN UNDER 5 YEARS OF AGE THAT LIVE WITH HER AND ARE PRESENT TODAY:
ASK: Can you give me the name, sex and birth date of the child that was born just before (NAME)?
WRITE DOWN BELOW AND ASK: Can you give me the name, sex and birth date of the child that was born just before this child?
ASK THE SAME QUESTION TILL THE NEXT CHILD IS 5 YEARS OR OLDER

109	NAME	SEX M/F	Date of Birth DD/MM/YYYY	WEIGHT IN KILOGRAMS	HEIGHT (CM) ##.#	How Measured 1 = Lying Down 2 = Standing Up
1			___/___/_____	☐☐ ☐		
2			___/___/_____	☐☐ ☐		
3			___/___/_____	☐☐ ☐		
4			___/___/_____	☐☐ ☐		

*FROM THE FIRST PAGE OF THE QUESTIONNAIRE COPY THE IDENTIFICATION INFORMATION TO THE FIELDS BELOW AND SEND **THIS PAGE ONLY** WITH THE MOTHER AND CHILDREN TO THE CENTRAL ANTROPOMETRY SITE.*

IDENTIFICATION	
CLUSTER NUMBER	☐☐
HOUSEHOLD NUMBER	☐☐
RECORD NUMBER	☐☐

Annex 2: Rapid CATCH Indicators

Maternal and Newborn Care

1. Percentage of mothers of children age 0-23 months who had four or more antenatal visits when they were pregnant with the youngest child

2. Percentage of mothers with children age 0-23 months who received at least two Tetanus toxoid before the birth of the youngest child

3. Percentage of children age 0-23 months whose births were attended by skilled personnel

4. Percentage of children age 0-23 months who received a post-natal visit from an appropriately trained health worker within two days after birth

5. Percentage of mothers of children age 0-23 months who are using a modern contraceptive method

Breastfeeding and Infant and Young Child Feeding

6. Percentage of children age 0-5 months who were exclusively given breast milk the day prior to the interview

7. Percent of children age 6-23 months fed according to a minimum of appropriate feeding practices

Vitamin A Supplementation

8. Percentage of children age 6-23 months who received a dose of Vitamin A in the last 6 months: card verified or mother's recall

Immunization

9. Percent of children aged 12-23 months who received measles vaccine according to the vaccination card or mother's recall by the time of the survey

10. Percent of children aged 12-23 months who received DTP1 according to the vaccination card or mother's recall by the time of the survey

11. Percent of children age 12-23 months who received DTP3 according to the vaccination card or mother's recall by the time of the survey

Malaria

12. Percentage of children age 0-23 months with a febrile episode during the last two weeks who were treated with an effective anti-malarial drug within 24 hours after the fever began

13. Percentage of children age 0-23 months who slept under an insecticide-treated bed net the previous night

Control of Diarrhea

14. Percentage of children age 0-23 months with diarrhea in the last two weeks who received oral rehydration solution (ORS) and/or recommended home fluids

Acute Respiratory Infections

15. Percentage of children age 0-23 months with chest-related cough and fast and/or difficult breathing in the last two weeks who were taken to an appropriate health provider

Water and Sanitation

16. Percentage of households of children age 0-23 months that treat water effectively

17. Percentage of mothers of children age 0-23 months who live in a household with soap at the place for hand washing

Anthropometrics

18. Percentage of children age 0-23 months who are underweight (-2SD for the median weight for age, according to WHO/NCHS reference population)

Annex 3: Complete Indicator list

Maternal Newborn Care	
Antenatal Care *(Rapid-CATCH indicator)*	*Percentage of mothers of children age 0-23 months who had four or more antenatal visits when they were pregnant with the youngest child*
Tetanus Toxoid *(Rapid-CATCH indicator)*	*Percentage of mothers with children age 0-23 months who received at least 2 tetanus toxoid vaccinations before the birth of their youngest child*
Skilled Birth Attendant *(Rapid-CATCH indicator)*	*Percentage of children age 0-23 months whose births were attended by skilled personnel*
Post-Natal Visit to Check on the Newborn *(Rapid-CATCH indicator)*	*Percentage of children age 0-23 months who received a post-natal visit from an appropriate trained health worker within two days after birth*
Current Contraceptive Use Among Mothers of Young Children *(Rapid-CATCH indicator)*	*Percentage of mothers of children age 0-23 months who are using a modern contraceptive method*
IPT during Pregnancy *(MNC key indicator)*	*Percentage of mothers of children age 0-23 months who received Intermittent Preventive Treatment (IPT) for malaria during the pregnancy with the youngest child*
Clean Cord Cutting *(MNC key indicator)*	*Percent children age 0-23 months that had clean cord cutting at the time of birth*
Active Management of the third stage of labor (AMTSL) *(MNC key indicator)*	*Percent of mothers of children age 0-23 months who received AMTSL after the birth of her youngest child*
Post-Partum visit for the mother *(MNC key indicator)*	*Percentage of mothers of children age 0-23 who received a post-partum visit from an appropriate trained health worker within two days after the birth of the youngest child*
Thermal Care (Immediate drying and wrapping) *(MNC key indicator)*	*Percentage of children age 0-23 months who were dried and wrapped with a cloth or blanket immediately after birth*
Immediate breastfeeding of newborns *(MNC key indicator)*	*Percentage of children age 0-23 months who were put to the breast within one hour of delivery*
Knowledge of Healthy Timing and Spacing of Pregnancies	*Percentage of mothers of children age 0-23 months who know that a woman should wait 24 months after the live birth of her child before trying to get pregnant again.*
Knowledge of Risk Associated with Birth to Pregnancy Intervals Less than 24 Months	*Percentage of mothers of children age 0-23 months who know at least two risks of having a birth to pregnancy interval of less than 24 months.*
Quality Antenatal Care	*Percentage of mothers of children age 0-23 months who had four or more antenatal visits with a skilled provider and were adequately counseled when they were pregnant with the youngest child.*
Iron Tablets for Pregnant Women	*Percentage of mothers of children age 0-23 months who took iron tablets before the birth of their youngest child.*
Knowledge of MTCT of HIV	*Percentage of mothers of children age 0-23 months who know that HIV can be transmitted from an HIV-positive mother to her unborn child during pregnancy,*

	during delivery, and through breastfeeding.
Knowledge of PMTCT of HIV	*Percentage mothers of children age 0-23 months who know that there are special medications that can be given to a pregnant woman infected with HIV to reduce the risk of mother-to-child transmission.*
HIV Testing During Pregnancy	*Percentage of mothers of children 0-23 months who were counseled about HIV during the pregnancy, accepted an offer of testing, and received their test results when they were pregnant with their youngest child.*
Knowledge of Danger Signs during Pregnancy	*Percentage of mothers of children 0-23 months who knew at least two danger signs during pregnancy.*
Knowledge of Maternal Danger Signs During Delivery	*Percentage of mothers of children 0-23 months who know at least two danger signs during delivery.*
Knowledge of Post-partum Danger Signs	*Percentage of mothers of children age 0-23 months who knew at least two post-partum danger signs.*
Knowledge of Neonatal Danger Signs	*Percentage of mothers of children age 0-23 who know at least two neonatal danger signs.*
Trained Delivery Attendant	*Percent of children age 0-23 months whose births were attended by a trained provider including a trained TBA.*
Clean Birth Kit	*Percentage of women of children age 0-23 months who used a clean delivery kit during the birth of their youngest child.*
Immediate Drying	*Percent of children age 0-23 months who were dried immediately after birth.*
Immediate Wrapping	*Percentage of children age 0-23 months, who were wrapped with a cloth or blanket immediately after birth.*
Essential Newborn Care	*Percentage of children age 0-23 who received all three elements of essential newborn care: thermal protection immediately after birth, clean cord care, and immediate and exclusive breastfeeding.*
Clean Cord Care	*Percent children age 0-23 months that had clean cord care at the time of birth.*
Feeding Colostrum	*Percentage of children age 0-23 months, who were fed colostrum after birth.*
Pre-lacteal Feeds	*Percentage of children age 0-23 months who did not receive pre-lacteal feeds.*
Prophylactic Eye Care	*Percentage of children age 0-23 months who received appropriate preventive eye care within the first hour after birth.*
Birth Preparedness	*Percentage of mothers of children 0-23 months who made preparations before the birth of the their youngest child*
Nutrition	
Underweight *(Rapid-CATCH indicator)*	*Percentage of children age 0-23 months who are underweight (-SD for the median weight for age, according to WHO/NCHS reference population)*
Exclusive Breastfeeding *(Rapid-CATCH indicator)*	*Percentage of children age 0-5 months who were exclusively breastfed during the last 24 hours*
Infant and Young Child Feeding *(Rapid-CATCH indicator)*	*Percent of children age 6-23 months fed according to a minimum of appropriate feeding practices*
Vitamin A Supplementation *(Rapid-CATCH indicator)*	*Percentage of children age 6-23 months who received a dose of Vitamin A in the last 6 months: card verified or mother's recall*
Ever breastfed	*Percent of children aged 0-23 months ever breastfed*
Continued breastfeeding 6-11 months	*Percent of children aged 6-11 months who are still breastfeeding*
Continued breastfeeding 12-17 months	*Percent of children aged 12-17 months who are still breastfeeding*

Continued breastfeeding 18-23 months	*Percent of children aged 18-23 months who are still breastfeeding*
Bottle use	*Percent of children aged 0-23 months who had anything by bottle in the 24 hours preceding survey*
Iodized Salt	*Percentage of households with Iodized salt (tested as 15 ppm or more) the day of the study*
Vitamin A Supplementation Mother	*Percentage of mothers of children age 6-23 months who received a dose of Vitamin A in the first 2 months after delivery - reported*
Vitamin A-rich food 6-23 months	*Percent of children aged 6-23 months who ate vitamin A-rich foods in 24 hours preceding survey*
Iron-rich food 6-23 months	*Percent of children aged 6-23 months who ate iron-rich foods in 24 hours preceding survey*
Fortified food 6-23 months	*Percent of children aged 6-23 months who ate fortified food in 24 hours preceding survey*
Animal source flesh food 6-23 months	*Percent of children aged 6-23 months who ate beef, game, poultry, fish, shellfish, or organ meat in 24 hours preceding survey*
Egg 6-23 months	*Percent of children aged 6-23 months who ate eggs in 24 hours preceding survey*
Dairy 6-23 months	*Percent of children aged 6-23 months who had dairy in 24 hours preceding survey*
Malaria	
ITN Use (Rapid-CATCH indicator)	*Percentage of children age 0-23 months who slept under an insecticide-treated bed net the previous night*
Treatment of Fever in Malarious Zones (Rapid-CATCH indicator)	*Percentage of children age 0-23 months with a febrile episode during the last two weeks who were treated with an effective anti-malarial drug within 24 hours*
ITN Ownership (Malaria key indicator)	*Percentage of households of children age 0-23 months that own at least one insecticide-treated bed net*
IPT during pregnancy (Key indicator)	*Percentage of mothers of children age 0-23 months who received Intermittent Preventive Treatment (IPT) for malaria during the pregnancy with the youngest child*

Annex 4: Indicator Tabulation Plan

Rapid CATCH Tabulation Plan		
Indicator	***How to Calculate the Indicator***	
Antenatal Care *Percentage of mothers of children age 0-23 months who had four or more antenatal visits when they were pregnant with the youngest child*	*Number of mothers of children age 0-23 months who had at least four antenatal visits while pregnant with their youngest child* *(Q49= A, B, or C) AND* *(Q52 ≥ 4 AND Q52 < 98)* _____ *Total number of mothers of children age 0-23 months in the survey*	*x 100*
use crsfinal, clear *gen anc=1 if (q52>=4 & q52<98) & (q49a==1|q49b==1|q49c==1)* *replace anc=2 if mi(anc)* *lab val anc yesno* *lab var anc "Antenatal Care"* *ta anc*		
Tetanus Toxoid *Percentage of mothers with children age 0-23 months who received at least 2 tetanus toxoid vaccinations before the birth of their youngest child*	*Number of mothers with children age 0-23 months who received at least 2 tetanus toxoid vaccinations before the birth of their youngest child* *(Q61 + Q63 >=2) AND (Q61<> 9 AND Q63 <> 9)* _____ *Total number of mothers of children age 0-23 months in the survey*	*x 100*
use crsfinal, clear *replace q61=0 if q61==9* *replace q61=0 if q61==.* *replace q63=0 if q63==9* *replace q63=0 if q63==.* *gen tetanus=1 if (q61+q63)>=2* *replace tetanus=2 if mi(tetanus)* *lab val tetanus yesno* *lab var tetanus "Tetanus injection"* *ta tetanus*		
Skilled Birth Attendant *Percentage of children age 0-23 months whose births were attended by skilled personnel*	*Number of children age 0-23 months whose birth was attended by a doctor, nurse, midwife or auxiliary midwife (Q69 = A, B , C or D,E)* _____ *Total number of mothers of children age 0-23 months in the survey*	*x 100*
use crsfinal, clear *gen skillbir=1 if q69a==1	q69b==1	q69c==1	q69d==1	q69e==1* *replace skillbir=2 if mi(skillbir)* *lab val skillbir yesno* *lab var skillbir "Skilled Birth Attendant"* *ta skillbir*		

Post-Natal Visit to Check on the Newborn *Percentage of children age 0-23 months who received a post-natal visit from an appropriate trained health worker within two days after birth*	*Number of children age 0-23 months who received a post-natal visit (Q87=1)* *AND* *within two days after birth* *(Q88a = 0) or (Q88a= 1 and (Q88b <= 2))* *AND* *by an appropriate health worker (Q89= A, B , C, D,E,F,G)* *_____* *Total number of children age 0-23 months in the survey* *U refers to the units of time (hours, days, weeks) and N refers to the corresponding number (Q80U=0 and Q80N=12 means 12 hours)*	*x 100*

```
use crsfinal, clear
gen check24=1 if q88a==0 & q88b!=.
replace check24=1 if q88a==1 & q88b<=2
gen postncheck=1 if q87==1 & check24==1 & (q89a==1 | q89b==1 | q89c==1 | q89d==1 | q89e==1 | q89f==1 | q89g==1)
replace postncheck=2 if mi(postncheck)
lab val postncheck yesno
lab var postncheck "Post-Natal Visit to Check on the Newborn"
ta postncheck
```

Current Contraceptive Use Among Mothers of Young Children *Percentage of mothers of children age 0-23 months who are using a modern contraceptive method* *Note: This indicator is not comparable to the DHS or Flex Fund's contraceptive use indicator*	*Number of mothers of children age 0-23 months who are using a modern method of contraception* *(Q45 = 1) AND (Q46 = 1 - 12)* *_____* *Total number of mothers of children age 0-23 months in the survey*	*x 100*

```
use crsfinal, clear
gen contraceptive=1 if q45==1 & q46>=1 & q46<=12
replace contraceptive=2 if mi(contraceptive)
lab val contraceptive yesno
lab var contraceptive "Current Contraceptive Use Among Mothers of Young Children"
ta contraceptive
```

Exclusive Breastfeeding *Percentage of children age 0-5 months who were exclusively breastfed during the last 24 hours* **NOTE: If any answers to Q14 or Q15 are coded as Don't Know (9) or Missing (Blank) then the entire case should not be included in the numerator and denominator**	*Number of children age 0-5 months who drank breast milk in the previous 24 hours (Q100A= 1)* *AND* *Did not drink any other liquids in the previous 24 hours (Q100B<> 2 and Q100C<> 2 and Q100D<>2, and Q100E<> 2)* *AND* *Was not given any other foods or liquids in the previous 24 hours (Q101T=0 AND Q101U=2 and Q101V=2 and Q101W=2 and Q101X=2)* _____ *Total number of children age 0-5 months in the survey*	*x 100*

use crsfinal, clear
gen agem=int((dint-q10young)/30)
keep if agem<6
gen excbf=1 if q100milk==1 & q100wat==2 & q100form==2 & q100food==2 & q100por==2 & q101t==0 & q101u==2 & q101v==2 & q101w==2 & q101x==2
replace excbf=2 if mi(excbf)
lab val excbf yesno
lab var excbf "Exclusive breastfeeding"
ta excbf

Infant and Young Child Feeding *Percent of children age 6-23 months fed according to a minimum of appropriate feeding practices* *use crsfinal, clear* *keep if int((dint-q10young)/30)>5.99 & int((dint-q10young)/30)<24* *gen iycf=1 if q100milk==1 & (q100form==1 | q100food==1 | q100por==1 | q101w==1 | q101x==1)* *replace iycf=2 if mi(iycf)* *ta iycf*		

Vitamin A Supplementation *Percentage of children age 6 -23 months who receive a dose of vitamin A in the last 6 months: card verified or mother's recall*	*months who received a dose of Vitamin A in the last 6 months [(Q101=1) AND (Q104=1)] OR [(Q15=1)* *AND (Q11Vitamin A Month <> 99 AND Q11Vitamin A Year <> 9999)* *AND (Date of Interview - Date of VitaminA<=6 months)]* _____ *Total number of children age 6-23 months in the survey*	*x 100*

use crsfinal, clear
keep if int((dint-q10young)/30)>=6 & int((dint-q10young)/30)<24
gen vita=1 if (q103==1 & q104==1) \| ((q15==1 & !mi(vitama)) & (dint-vitama)/30.4<=6)
replace vita=2 if mi(vita)
lab val vita yesno
lab var vita "Vitamin A Supplementation"
ta vita

Measles Vaccination *Percentage of children aged 12-23 months who received measles vaccine according to the vaccination card or mother's recall by the time of the survey*	*Number of children age 12-23 months who received a measles vaccination by the time of the interview as seen on the card (Q15=1) AND (Q16MM <> 99 AND Q16MY <> 9999)* *OR* *recalled by the mother (Q15 = 1)* _____ *Total number of children age 12-23 months in the survey*	*x 100*

use crsfinal, clear
keep if int((dint-q10young)/30)>=12 & int((dint-q10young)/30)<24
gen mv=1 if (q15==1 & !mi(meas9))
replace mv=1 if q20==1
replace mv=2 if mi(mv)
lab val mv yesno
lab var mv "Measles Vaccination"
ta mv

Access to Immunization Services *Percentage of children aged 12-23 months who received DTP1 according to the vaccination card or mother's recall by the time of the survey*	*Number of children who received DTP1 at the time of the survey according to the vaccination card/child health booklet [(Q15=1) AND (Q16DTP1M <> 99 AND Q16DTP1Y <> 9999)]* *OR* *mother's recall [(Q18=1) AND (Q19>=1)]* _____ *Total number of children age 12-23 months in the survey*	*x 100*

use crsfinal, clear
keep if int((dint-q10young)/30)>11.99 & int((dint-q10young)/30)<24
gen dpt1=1 if (q15==1 & !mi(penta1))
replace dpt1=1 if q18==1 & q19>=1
replace dpt1=2 if mi(dpt1)
lab val dpt1 yesno
lab var dpt1 "Access to Immunization Services"
ta dpt1

Health Systems Performance Regarding Immunization Services *Percentage of children aged 12-23 months who received DTP3 according to the vaccination card or mother's recall by the time of the survey*	*Number of children who received DTP3 at the time of the survey as verified by vaccination card or child health booklet (Q15=1) AND (Q16DTP3M <> 99 AND Q16DTP3Y <> 9999)* *OR* *Recalled by the mother [(Q18=1) AND (Q19>=3)]* _____ *Total number of children age 12-23 months in the survey*	*x 100*

use crsfinal, clear
keep if int((dint-q10young)/30)>11.99 & int((dint-q10young)/30)<24
gen dpt3=1 if (q15==1 & !mi(penta3))
replace dpt3=1 if q18==1 & q19>=3
replace dpt3=2 if mi(dpt3)
lab val dpt3 yesno
lab var dpt3 "Health Systems Performance Regarding Immunization Services"
ta dpt3

Treatment of Fever in Malarious Zones	Number of children age 0-23 months with a febrile episode during the last two weeks (Q21 = 1) AND who sought treatment within 24 hours (Q22=1) AND (Q23 = 0 OR Q23=1) AND Was treated with an appropriate anti-malarial drug (Q24 = 1) AND ((Q25A <= 1or Q25B <= 1 or Q25C <= 1 or Q25D <=1 or Q25E <=1)) _____ Total number of children age 0-23 months with a febrile episode in the last two weeks (Q16 = 1)	x 100
Percentage of children age 0-23 months with a febrile episode during the last two weeks who were treated with an effective anti-malarial drug within 24 hours after the fever began		

use crsfinal, clear
gen fever=1 if q21==1 & q22==1 & (q23==0 | q23==1) & q24==1 & (q25a==1 | q25b==1 | q25c==1 | q25d==1 | q25e==1)
replace fever=2 if mi(fever) & q21==1
lab val fever yesno
lab var fever "Treatment of Fever in Malarious Zones"
ta fever

ORT Use	Number of children age 0-23 months with diarrhea in the last two weeks (Q26 = 1) AND who received oral rehydration solution (ORS) and/or recommended home fluids (Q27A = 1 or Q27B = 1 _____ Total number of children age 0-23 months who had diarrhea in the last two weeks (Q26=1)	x 100
Percentage of children age 0-23 months with diarrhea in the last two weeks who received oral rehydration solution and/or recommended home fluids		

use crsfinal, clear
gen ort=1 if q26==1 & (q27a==1 | q27b==1)
replace ort=2 if mi(ort) & q26==1
lab val ort yesno
lab var ort "ORT Use"
ta ort

Appropriate Care Seeking for Pneumonia Percentage of children age 0-23 months with chest-related cough and fast and/or difficult breathing in the last two weeks who were taken to an appropriate health provider	Number of children age 0-23 months with chest-related cough and difficult breathing in the last two weeks (Q28=1) AND (Q30= 1) AND who were taken to an appropriate health provider (Q30=1) AND (Q31 = A,B,C, or D) _____ Total number of children age 0-23 months with chest-related cough in the last two weeks (Q23=1) AND (Q24= 1)	x 100

```
use crsfinal, clear
gen pnemo=1 if q28==1 & q29==1 & q30==1 & (q31a==1 | q31b==1 | q31c==1 | q31d==1)
replace pnemo=2 if mi(pnemo) & q28==1 & q29==1
lab val pnemo yesno
lab var pnemo "Appropriate Care Seeking for Pneumonia"
ta pnemo
```

Point of Use Water Treatment Percentage of households of children age 0-23 months that treat water effectively	Number of households of mothers of children age 0-23 months that treat water effectively (Q33=1) AND (Q34= C, D, E or F) _____ Total number of mothers of children age 0-23 months in the survey	x 100

```
use crsfinal, clear
gen treatwat=1 if q33==1 & q34=="C"
replace treatwat=2 if mi(treatwat) & q33==1
lab val treatwat yesno
lab var treatwat "Point of Use Water Treatment"
ta treatwat
```

Appropriate Hand Washing Practices Percentage of mothers of children age 0-23 months who live in households with soap at the place for hand washing	Number of mothers of children age 0-23 months who live in households with soap at the place for hand washing (Q35 <=4) AND (Q36<=2)) _____ Total number of mothers of children age 0-23 months in the survey	x 100

```
use crsfinal, clear
gen handwash=1 if q35<=4 & q36<=2
replace handwash=2 if mi(handwash)
lab val handwash yesno
lab var handwash "Appropriate Hand Washing Practices"
ta handwash
```

ITN Use	Number of children age 0-23 months who slept under an insecticide-treated bed net the previous night ((Q37 =1) AND (Q38 =1))	
Percentage of children age 0-23 months who slept under an insecticide-treated bed net the previous night	*AND* *(Q39 <= 3)* *OR* *((Q39 > 3 and Q39 <> 9) AND (Q40=1) AND (Q31 <=6))* ———————————————————— *Total number of children age 0-23 months in the survey*	*x 100*

```
use crsfinal, clear
gen netuse=1 if q37==1 & q38==1 & q39<=3
replace netuse=1 if q38==1 & q39==5 & q40==1 & q41<=6
replace netuse=2 if mi(netuse)
lab val netuse yesno
lab var netuse "ITN Use"
ta netuse
```

Underweight	Number of children age 0-23 months with weight/age -2 SD for median weight for age, according to WHO/NCHS reference population	
Percentage of children age 0-23 months who are underweight (-SD for the median weight for age, according to WHO/NCHS reference population)	*(Q45= 1) AND (Kilograms ≤ -2 SD for median weight for age)* ——————————————————————— *Total number of children age 0-23 months in the survey*	*x 100*

```
use crsfinal, clear
gen underw=1 if waz<-2
replace underw=2 if waz>=-2 & waz!=.
lab val underw yesno
lab var underw "Underweight"
ta underw
```

ITN Ownership: Percentage of households of children age 0-23 months that own at least one insecticide-treated bed net	Number of households of children age 0-23 months that own at least one insecticide-treated bed net	
	(Q37=>1) AND **(Q38=1 or 2 or 3)** **OR** **(Q39=5 AND Q41<7)** ————————————————————— **Number of households with children age 0-23 months in the survey**	*X 100*

```
use crsfinal, clear
use crsfinal, clear
gen itnown=1 if q37==1 & (q39<=3)
replace itnown=1 if (q39==5 & q41<7)
replace itnown=2 if mi(itnown)
lab val itnown yesno
lab var itnown "ITN Ownership"
ta itnown
```

Maternal Newborn Care Tabulation Plan	
Indicator	**How to Calculate the Indicator**
Knowledge of Healthy Timing and Spacing of Pregnancies *Percentage of mothers of children age 0-23 months who know that a woman should wait 24 months after the live birth of her child before trying to get pregnant again.*	*Number mothers of children age 0-23 months who know a woman should wait at least 2 years and less than 5 years before trying to become pregnant again* *(Q42=2)* _____ $\times$ *100* *Number of mothers of children age 0-23 months in the survey*
use crsfinal, clear *gen binterval=1 if q42==2* *replace binterval=2 if mi(binterval)* *lab val binterval yesno* *lab var binterval "Knowledge of Healthy Timing and Spacing of Pregnancies"* *ta binterval*	
Knowledge of Risk Associated with Birth to Pregnancy Intervals Less than 24 Months *Percentage of mothers of children age 0-23 months who know at least two risks of having a birth to pregnancy interval of less than 24 months.*	*Number of mothers of children age 0-23 months who know at least two risks associated with having a birth to pregnancy interval of less than 24 months* *(Q43= any <u>two</u> responses A-E)* _____ $\times$ *100* *Number of mothers of children age 0-23 months in the survey*
use crsfinal, clear *foreach var of varlist q43b q43c q43d q43d q43e q43f{* *replace `var'=0 if `var'==2* *}* *gen totalrisk=q43b+q43c+q43d+q43e+q43f* *gen intervalrisk=1 if totalrisk>=2* *replace intervalrisk=2 if mi(intervalrisk)* *lab val intervalrisk yesno* *lab var intervalrisk "Knowledge of Risk Associated with Birth to Pregnancy Intervals Less than 24 Months"* *ta intervalrisk*	
Current Contraceptive Use Among Mothers of Young Children *Percentage of mothers of children age 0-23 months who are using a modern contraceptive method* *This indicator is not comparable to the DHS or Flex Fund's contraceptive use indicator*	*Number of mothers of children age 0-23 months who are using a modern method of contraception* *(Q45 = 1) AND (Q46 = 1 - 12)* _____ $\times$ *100* *Total number of mothers of children age 0-23 months in the survey*

use crsfinal, clear *gen contraceptive=1 if q45==1 & q46>0 & q46<=12* *replace contraceptive=2 if mi(contraceptive)* *lab val contraceptive yesno* *lab var contraceptive "Current Contraceptive Use Among Mothers of Young Children"* *ta contraceptive*	
Knowledge of MTCT of HIV *Percentage of mothers of children age 0-23 months who know that HIV can be transmitted from an HIV-positive mother to her unborn child during pregnancy, during delivery, and through breastfeeding.*	*Number of mothers of children age 0-23 months who know that HIV can be transmitted from an HIV-positive mother to her unborn child during pregnancy* *AND* *During delivery* *AND* *Through breastfeeding* *(Q47A = 1 AND Q47B =1 AND Q47C = 1)* ————————————————————————— *Total number of mothers of children age 0-23 months in the survey* *x 100*
use crsfinal, clear *gen mtct=1 if q47a==1 & q47b==1 & q47c==1* *replace mtct=2 if mi(mtct)* *lab val mtct yesno* *lab var mtct "Knowledge of MTCT of HIV"* *ta mtct*	
Knowledge of PMTCT of HIV *Percentage mothers of children age 0-23 months who know that there are special medications that can be given to a pregnant woman infected with HIV to reduce the risk of mother-to-child transmission.*	*Number of mothers of children age 0-23 months who know that there is a special medication that can be given to a pregnant women infected with HIV to reduce the risk of mother-to-child transmission* *(Q48 = 1)* ————————————————————————— *x 100* *Total number of mothers of children age 0-23 months in the survey*
use crsfinal, clear *gen pmct=1 if q48==1* *replace pmct=2 if mi(pmct)* *lab val pmct yesno* *lab var pmct "Knowledge of PMTCT of HIV"* *ta pmct*	
Antenatal Care *Percentage of mothers of children age 0-23 months who had four or more antenatal visits when they were pregnant with the youngest child.*	*Number of mothers of children age 0-23 months who had at least four antenatal visits while pregnant with their youngest child* *(Q49= A, B, or C) AND* *(Q52 ≥ 4 AND Q52 < 98)* ————————————————————————— *x 100* *Total number of mothers of children age 0-23 months in the survey*
See CATCH	

Quality Antenatal Care *Percentage of mothers of children age 0-23 months who had four or more antenatal visits with a skilled provider and were adequately counseled when they were pregnant with the youngest child.*	*Number of mothers of children age 0-23 months who had "quality " ANC with a "skilled provider" AND at least four antenatal visits AND adequate counseling while pregnant with their youngest child* *(ANC1 = A, B or C) AND (ANC4 ≥ 4) AND (ANC5 = A1, B1, C1, AND D1) AND (ANC6 = 1) AND (ANC7 = 1)* _____ *x 100* *Total number of mothers of children age 0-23 months in the survey*
use crsfinal, clear *gen anccatch=1 if (q49a==1 | q49b==1 | q49c==1) & (q52>=4 & q52<98)* *gen quality=1 if anccatch==1 & q53aa==1 & q53ab==1 & q53ac==1 & q53ad==1 & q54==1 & q55==1* *replace quality=2 if mi(quality)* *lab val quality yesno* *lab var quality "Quality Antenatal Care"* *ta quality*	
HIV Testing During Pregnancy *Percentage of mothers of children 0-23 months who were counseled about HIV during the pregnancy, accepted an offer of testing, and received their test results when they were pregnant with their youngest child.*	*Number of mothers of children age 0-23 months who were counseled about HIV during the pregnancy* *AND* *Were offered an HIV test* *AND* *Accepted the HIV test* *AND* *Received the results of their test during when they were pregnant with their youngest child* *(HIV1 = 1 AND HIV2 = 1 AND HIV3 = 1 AND HIV4 = 1)* _____ *x 100* *Total number of mothers of children age 0-23 months in the survey*
use crsfinal, clear *gen tested=1 if q56==1 & q57==1 & q58==1* *replace tested=2 if mi(tested)* *lab val tested yesno* *lab var tested "HIV Testing During Pregnancy"* *ta tested*	
Knowledge of Danger Signs during Pregnancy *Percentage of mothers of children 0-23 months who knew at least two danger signs during pregnancy.*	*Number of mothers of children 0-23 months who know at least two danger signs during pregnancy* *(DSP1= any two responses A-I)* _____ *x 100* *Total number of mothers of children age 0-23 months in the survey*

```
use crsfinal, clear
foreach var of varlist q59a q59b q59c q59d q59e q59f q59g q59h q59i {
replace `var'=0 if `var'==2
}
gen totsigns=q59a+q59b+q59c+q59d+q59e+q59f+q59g+q59h+q59i
gen dangerpreg=1 if totsigns>=2
replace dangerpreg=2 if mi(dangerpreg)
lab val dangerpreg yesno
lab var dangerpreg "Knowledge of Danger Signs during Pregnancy"
ta dangerpreg
```

Tetanus Toxoid *Percentage of mothers with children age 0-23 months who received at least 2 tetanus toxoid vaccinations before the birth of their youngest child.*	*Number of mothers with children age 0-23 months who received at least 2 tetanus toxoid vaccinations before the birth of their youngest child* *(TT2 + TT4 ≥2) AND (TT2 ≠ 9 AND TT4 ≠ 9)* _____ *Total number of mothers of children age 0-23 months in the survey* *x 100*

```
use crsfinal, clear
replace q61=0 if q61==9
replace q61=0 if q61==.
replace q63=0 if q63==9
replace q63=0 if q63==.
gen tetanus=1 if (q61+q63)>=2
replace tetanus=2 if mi(tetanus)
lab val tetanus yesno
lab var tetanus "Tetanus injection"
ta tetanus
```

Iron Tablets for Pregnant Women *Percentage of mothers of children age 0-23 months who took iron tablets before the birth of their youngest child.*	*Number of mothers of children age 0-23 months who received iron tablets and consumed them for at least 90 number of days* *(IT1 = 1 AND IT2 ≥ 90)* _____ *x 100* *Total number of mothers of children age 0-23 months in the survey*

```
use crsfinal, clear
gen irontab=1 if q64==1 & q65>89 & q65<999
replace irontab=2 if mi(irontab)
lab val irontab yesno
lab var irontab "Iron Tablets for Pregnant Women"
ta irontab
```

IPT during Pregnancy Percentage of mothers of children age 0-23 months who received Intermittent Preventive Treatment (IPT) for malaria during the pregnancy with the youngest child. NOTE: The term "effective antimalarial" should be based on national protocol, which includes two doses. Modify the tabulation according to national protocol.	Number of mothers of children age 0-23 months who received 2 or more doses of an effective antimalarial drug treatment to prevent malaria during their pregnancy with their youngest child (IPT1 = 1 AND IPT2 = A AND IPT3 ≥ 2) _____ x 100 Total number of mothers of children age 0-23 months in the survey

```
use crsfinal, clear
gen iptp=1 if q66==1 & q67a==1 & q68>=2
replace iptp=2 if mi(iptp)
lab val iptp yesno
lab var iptp "IPT during Pregnancy"
ta iptp
```

Skilled Birth Attendant Percentage of children age 0-23 months whose births were attended by skilled personnel.	Number of children age 0-23 month whose birth was attended by a doctor, nurse, midwife, auxiliary midwife or other health staff with midwifery skills (BA1 = A, B , C or D,E) _____ x 100 Total number of mothers of children age 0-23 months in the survey

CATCH

Trained Delivery Attendant Percent of children age 0-23 months whose births were attended by a trained provider including a trained TBA.	Number of children age 0-23 months whose birth was attended by a doctor, nurse, midwife, auxiliary midwife, other health staff with midwifery skills, trained TBA or trained community health worker, (BA1 = A, B , C, D, E, F, or G) _____ x 100 Total number of mothers of children age 0-23 months in the survey

```
use crsfinal, clear
gen delattend=1 if q69a==1 | q69b==1 | q69c==1 | q69d==1 | q69e==1 | q69f==1 | q69g==1
replace delattend=2 if mi(delattend)
lab val delattend yesno
lab var delattend "Trained Delivery Attendant"
ta delattend
```

Clean Birth Kit Percentage of women of children age 0-23 months who used a clean delivery kit during the birth of their youngest child.	Number of mothers of children age 0-23 months who used a clean birth kit during the delivery of their youngest child (CD1 = 1) _____ x 100 Total number of mothers of children age 0-23 months in the survey

use crsfinal, clear *gen birthkit=1 if q71==1* *replace birthkit=2 if mi(birthkit)* *lab val birthkit yesno* *lab var birthkit "Clean Birth Kit"* *ta birthkit*	
Clean Cord Cutting *Percent children age 0-23 months that had clean cord cutting at the time of birth.*	*Number of children age 0-23 months who's cord was cut with a clean birth instrument* *(CC1 = 1 or 2 or 4 or 6 or 8)* _____ *x 100* *Total number of children age 0-23 months in the survey*
use crsfinal, clear *gen cordcut=1 if q72==1 | q72==2 | q72==4 | q72==6 | q72==8* *replace cordcut=2 if mi(cordcut)* *lab val cordcut yesno* *lab var cordcut "Clean Cord Cutting"* *ta cordcut*	
Clean Cord Care *Percent children age 0-23 months that had clean cord care at the time of birth.*	*Number of children age 0-23 months who had nothing or only antiseptic put on the stump of the cord after birth* *(CC2 = 2) OR (CC2=1 AND CC3=3)* _____ *x 100* *Total number of children age 0-23 months in the survey*
use crsfinal, clear *gen cord=1 if q73==2* *replace cord=1 if q73==1 & q74==3* *replace cord=2 if mi(cord)* *lab val cord yesno* *lab var cord "Clean Cord Care"* *ta cord*	
Thermal Care (Immediate drying and wrapping) *Percentage of children age 0-23 months who were dried and wrapped with a warm cloth or blanket immediately after birth.*	*Number of children age 0-23 months who were dried before the placenta was delivered* *AND* *wrapped in a warm cloth or blanket* *(TC1 = 1 AND TC2 = 1)* _____ *x 100* *Total number of children age 0-23 months in the survey*
use crsfinal, clear *gen thermal=1 if q75==1 & q76==1* *replace thermal=2 if mi(thermal)* *lab val thermal yesno* *lab var thermal "Thermal Care (Immediate drying and wrapping)"* *ta thermal*	

Immediate Drying *Percent of children age 0-23 months who were dried immediately after birth.*	*Number of children age 0-23 months who were dried before the placenta was delivered* *(TC1 = 1)* _____ *Total number of children age 0-23 months in the survey* *x 100*
use crsfinal, clear *gen drying=1 if q75==1* *replace drying=2 if mi(drying)* *lab val drying yesno* *lab var drying "Immediate Drying"* *ta drying*	
Immediate Wrapping *Percentage of children age 0-23 months, who were wrapped with a cloth or blanket immediately after birth.*	*Number of children age 0-23 months who were wrapped in a cloth or blanket* *(TC2 = 1)* _____ *Total number of children age 0-23 months in the survey* *x 100*
use crsfinal, clear *gen wrap=1 if q76==1* *replace wrap=2 if mi(wrap)* *lab val wrap yesno* *lab var wrap "Immediate Wrapping"* *ta wrap*	
Active Management of the third stage of labor (AMTSL) *Percent of mothers of children age 0-23 months who received AMTSL after the birth of her youngest child.*	*Number of mothers of children age 0-23 months who immediately after the birth of their youngest child received an injection of uterotonic drug* *AND* *Controlled cord traction was performed* *AND* *Received uterine massage after the delivery of the placenta* *(MTS1 = 1 AND MTS2 = 1 AND MTS3 = 1)* _____ *x 100* *Total number of mothers of children age 0-23 months in the survey*
use crsfinal, clear *gen amtsl=1 if q77==1 & q78==1 & q79==1* *replace amtsl=2 if mi(amtsl)* *lab val amtsl yesno* *lab var amtsl "Active Management of the third stage of labor (AMTSL)"* *ta amtsl*	
Knowledge of Maternal Danger Signs During Delivery *Percentage of mothers of children 0-23 months who know at least two danger signs during delivery.*	

use crsfinal, clear *foreach var of varlist q80a q80b q80c q80d q80e q80f q80g {* *replace `var'=0 if `var'==2* *}* *gen totdangers=q80a+q80b+q80c+q80d+q80e+q80f+q80g* *gen mdanger=1 if totdangers>=2* *replace mdanger=2 if mi(mdanger)* *lab val mdanger yesno* *lab var mdanger "Knowledge of Maternal Danger Signs During Delivery"* *ta mdanger*	
Immediate breastfeeding of newborns *Percentage of children age 0-23 months who were put to the breast within one hour of delivery.*	*Number of children age 0-23 months who were breastfed* *AND* *Put to the breast within 1 hour of delivery* *(BF1 = 1 AND BF2 = 00)* _____ *Total number of children age 0-23 months in the survey* *x 100*
use crsfinal, clear *gen bf=1 if q92==1 & q93hour==0 & mi(q93days)* *replace bf=1 if q92==1 & q93hour==0 & q93days==0* *replace bf=1 if q92==1 & q93hour==. & q93days==0* *replace bf=2 if mi(bf)* *lab val bf yesno* *lab var bf "Immediate breastfeeding of newborns"* *ta bf*	
Feeding Colostrum *Percentage of children age 0-23 months, who were fed colostrum after birth.*	*Number of children age 0-23 months who were breastfeed* *AND* *Were fed colostrum* *(BF1 = 1 AND BF3 = 1)* _____ *Total number of children age 0-23 months in the survey* *x 100*
use crsfinal, clear *gen colostrum=1 if q92==1 & q94==1* *replace colostrum=2 if mi(colostrum)* *lab val colostrum yesno* *lab var colostrum "Feeding Colostrum"* *ta colostrum*	
Pre-lacteal Feeds *Percentage of children age 0-23 months who did not receive pre-lacteal feeds.*	*Number of children age 0-23 months who were breastfeed* *AND* *Did not receive any pre-lacteal feeds* *(BF1 = 1 AND BF4 = 2)* _____ *Total number of children age 0-23 months in the survey* *x 100*

use crsfinal, clear *gen lacteal=1 if q92==1 & q95==2* *replace lacteal=2 if mi(lacteal)* *lab val lacteal yesno* *lab var lacteal "Pre-lacteal Feeds"* *ta lacteal*	
Essential Newborn Care *Percentage of children age 0-23 who received all three elements of essential newborn care: thermal protection immediately after birth, clean cord care, and immediate and exclusive breastfeeding.*	*Number of children age 0-23 months who had clean cord care at birth* *AND* *Were immediately dried and wrapped* *AND* *Were immediately breastfed* *(CC1 = 1 or 2 or 4 or 6 or 8) AND (TC1 = 1 and TC2 = 1) AND (BF1 = 1 AND BF2 = 00)* _____ x 100 *Total number of children age 0-23 months in the survey*
use crsfinal, clear *gen enbcare=1 if (q73==2 | (q73==1 & q74==3)) & q75==1 & q76==1 & q92==1 & q93hour==0* *replace enbcare=2 if mi(enbcare)* *lab val enbcare yesno* *lab var enbcare "Essential Newborn Care"* *ta enbcare*	
Prophylactic Eye Care *Percentage of children age 0-23 months who received appropriate preventive eye care within the first hour after birth.*	*Number of children 0-23 months who received eye ointment or eye drops within the first hour after birth* *(EC1 = 1)* _____ x 100 *Total number of children age 0-23 months in the survey*
use crsfinal, clear *gen eye=1 if q81==1* *replace eye=2 if mi(eye)* *lab val eye yesno* *lab var eye "Prophylactic Eye Care"* *ta eye*	
Post-Partum Visit for the Mother *Percentage of mothers of children age 0-23 who received a post-partum visit from an appropriate trained health worker within two days after the birth of the youngest child.*	*Number of mothers of children age 0-23 months who received a post-partum visit* *AND* *within two days after birth* *AND* *by an appropriate health worker* *(PP1=1) AND [(PP2U = 0) or (PP2U= 1 and (PP2N ≤ 2))] AND (PP3= A, B , C, D,E,F,G)* _____ x 100 *Total number of mothers of children age 0-23 months in the survey* *U refers to the units of time (hours, days, weeks) and N refers to the corresponding number (PP2U=0 and PP2N=12 means 12 hours)*

use crsfinal, clear *gen povisit=1 if q83==1 & q84==0 & q84b<48 & q85aa>=1 & q85aa<=7* *replace povisit=1 if q83==1 & q84==1 & q84b<=2 & q85aa>=1 & q85aa<=7* *replace povisit=2 if mi(povisit)* *lab val povisit yesno* *lab var povisit "Post-Partum visit for the mother"* *ta povisit*	
Knowledge of Post-partum Danger Signs *Percentage of mothers of children age 0-23 months who knew at least two post-partum danger signs.*	*Number of mothers of children 0-23 months who know at least two post-partum danger signs* *(DSM1= any <u>two</u> responses A-I)* _____ *x 100* *Total number of children age 0-23 months in the survey*
use crsfinal, clear *foreach var of varlist q86a q86b q86c q86d q86e q86f q86g q86h q86i{* *replace `var'=0 if `var'==2* *}* *gen totposdan=q86a+q86b+q86c+q86d+q86e+q86f+q86g+q86h+q86h* *gen postdanger=1 if totposdan>=2* *replace postdanger=2 if mi(postdanger)* *lab val postdanger yesno* *lab var postdanger "Knowledge of Post-partum Danger Signs"* *ta postdanger*	
Post-Natal Visit to Check on the Newborn *Percentage of children age 0-23 months who received a post-natal visit from an appropriate trained health worker within two days after birth.*	*Number of children age 0-23 months who received a post-natal visit* *AND* *within two days after birth* *AND* *by an appropriate health worker* *(PC1=1) AND [(PC2U = 0) or (PC2U= 1 and (PC2N <= 2))] AND* *(PC3= A, B , C, D,E,F,G)* _____ *x 100* *Total number of children age 0-23 months in the survey* *U refers to the units of time (hours, days, weeks) and N refers to the corresponding number (PC2U=0 and PC2N=12 means 12 hours)*
use crsfinal, clear *gen check24=1 if q88a==0 & q88b!=.* *replace check24=1 if q88a==1 & q88b<=2* *gen postncheck=1 if q87==1 & check24==1 & (q89a==1 | q89b==1 | q89c==1 | q89d==1 | q89e==1 | q89f==1 | q89g==1)* *replace postncheck=2 if mi(postncheck)* *lab val postncheck yesno* *lab var postncheck "Post-Natal Visit to Check on the Newborn"* *ta postncheck*	

Knowledge of Neonatal Danger Signs	Number of mothers of children 0-23 months who know at least two neonatal danger signs
Percentage of mothers of children age 0-23 who know at least two neonatal danger signs.	*(DSN1= any <u>two</u> responses A-J)* _____ *x 100* *Total number of mothers of children age 0-23 months in the survey*

```
use crsfinal, clear
foreach var of varlist  q90a q90b q90c q90d q90e q90f q90g q90h q90i q90j {
replace `var'=0 if `var'==2
}
gen totneosigns=q90a+q90b+q90c+q90d+q90e+q90f+q90g+q90h+q90i+q90j
gen neodanger=1 if totneosigns>=2
replace neodanger=2 if mi(neodanger)
lab val neodanger yesno
lab var neodanger "Knowledge of Neonatal Danger Signs"
ta neodanger
```

Annex 5: List of Communities

GHANA HEALTH SERVICE
EAST MAMPRUSI HEALTH DIRECTORATE

SAKOGU SUB-DISTRICT

NO	NAME OF COMMUNITIES	ESTIMATED POPULATION
1	SAKOGU	4896
2	GBELINZERI	877
3	LEBZINGA	888
4	WUNZUTINGA	481
5	KPATIRITINGA	592
6	DABARE	399
7	BOGNI	122
8	BANGU	322
9	BONBILA	223
10	NAMEBOKU	986
11	SOANSOBGI	896
12	BANAWA	233
13	TAMBONA	109
14	YAPALA	512
15	BARILONG	624
16	KONDI	219
17	ZOGELGU	613
18	DINDANI A	690
19	DINDANI B	997
21	SUMNIBOMA	974
22	NAMASIM	864
23	KPIKPARIGBINI	516
24	ZARANTINGA	1114
25	BADURI	249
26	ZAMBULUGU	710
27	YUNYOORANYIRI	87
30	TICHIRIGITABA	1035
31	JERIGITINGA	379
32	ZAMBULKURA	542

GAMBAGA SUB-DISTRICT

NO.	NAME OF COMMUNITIES	ESTIMATED POPULATION
1	GAMBARAN -1	901
2	GAMBARAN -2	1040
3	YAPALA	787
4	NAKOSUGU	1017
5	GAAGBINNI	983
6	NAKOSUGU	638
7	GBALLA	121
8	LIMAN FONG	1121
9	SIBIA	946
10	ZIMASA	137
11	NYINGARI	425
12	DINTIGE	228
13	ZAARI	863
14	LA-ATARI	609
15	ZIGUM	86
16	NANORI	413
17	TINSUGU	465
18	LA-ATARIGU	507
19	DAGBIRIBO-ARI -1	879
20	DAGBIRIBO-ARI -2	2709
21	TAMBOKU -1	910
22	TAMBOKU -2	412
23	GBANGU A	4129
24	BANTAMBARE	300
25	BONGBINI-1	1201
26	BONGBINI-2	634
27	NAYORKU	221
28	NAMIYALA	223

33	GADANTINGA	653
34	GAZERETINGA	202
35	TAKORATINGA	569
36	LAFORUM	415
37	TINTARIGA	389
38	YANKAZIA	124
39	NAKPANBON	587
40	TUUGBINI	225
41	GURUGU	454
42	NANYUNG	654
43	MAASUTINGA	456
44	MAAGIMBIENTINGA	642
45	SUMANIFONG	198
46	WAKURITINGA	333
47	BUMURITINGA	183
48	JASINFAFONG	228

NALERIGU SUB-DISTRICT

NO	NAME OF COMMUNITIES	ESTIMATED POPULATION	NO	NAME OF COMMUNITIES	ESTIMATED POPULATION
1	KULGONA-1	538	41	KPIKPARIBOGU	201
2	KULGONA-2	452	42	BARINYA	302
3	JABLAJO A	102	43	NAGBO-1	2053
4	JABLAJO B	423	44	NAGBO-2	1289
5	BANJAM	117	45	KOLINVAI A	630
6	BOLGATINGA	432	46	KOLINVAI B	750
7	NANYIRI	217	47	KOLINVAI C	152
8	MANYA	115	48	SUMNIBOMA 2A	126
9	GBANPAA/ GBANKPIK	565	49	SUMNIBOMA 2B	221
10	GBANDARI	171	50	BADURI	223
11	TINTARIGA-1	109	51	ZINIAYA	221
12	BRAIMAHTINGA	342	52	LANGBINA	288
13	ZIKAYA 1	297	53	ADARIBE	225
14	TANGBINI	423	54	BINDURI	147
15	TOAK	342	55	KWALIK	449
16	NACHIAN	296	56	LAAPLIT	117
19	ZORIZUGU	218	57	JIMBALI	247
20	KPASOKU	530	58	GBANKUKUA	171
21	NAKPAZONG A	225	59	GBANDABILA	214
22	NAKPAZONG B	181	60	TINDANTUA	215
23	MOZIO	314	61	GBANGU	320
24	PORINGONE	246	62	JAWANIM A	1059
25	NAKPANYARIGA	219	63	JAWANIM B	734
26	LUMU	295	64	TEANOBA A	224
27	NAANI	194	65	TEANOBA B	151
28	KANCHINA	222	66	DA-AZIO	254
29	KAMBONAATINGA	127	67	KPALIVAKA	194
30	BILALOGRI	160	68	ZANDUA A	340
31	NABOTARI	106	69	ZANDUA B	252
32	WAGAI	241	70	NANGUA	184
33	YANKAZIA 2	312	71	DUUNI 1	307
34	ALAFIAFONGU	112	72	DUUNI 2	276
35	NALERIGU-1	4038	73	TINTARIGA-2	197
36	NALERIGU-2	4780	74	DIMUGI/TIMONG	98
37	NORLOBI	139	75	ZIIKAYA 2	784

38	BUYA	342
39	KUKUGBINI	323
40	TUBZIA	225

76	TUNDI A	308
77	TUNDI B	278
78	KALBOYIRI	421

GBINTIRI SUB-DISTRICT

LANGBINSI SUB-DISTRICT

NO	NAME OF COMMUNITIES	ESTIMATED POPULATION
1	KUFORI	648
2	WAGAI	241
3	JANGANDERI	180
4	GUNGONG	414
5	NAWUNA	552
6	KUTONG	224
7	DIBONI	513
8	MEIMBENA	386
9	TUGBINI	144
10	LAKPIRI 1	168
11	LAKPIRI 2	822
12	NAJONG	305
13	KPALSOK	410
14	JAGOO	189
15	GBINTIRI WEST	2153
16	GBINTIRI SOUTH	873
17	GBINTIRI EAST	2616
18	KPATINGA	183
19	WABURI	205
20	KPALGU	300
21	NAGBAI 1	423
22	NAGBAI 2	264
23	NAKURUGU	327
24	SAKURUKPONG	237
25	NAJIL	209
26	MANIA	220

NO	NAME OF COMMUNITIES	ESTIMATED POPULATION
1	LANGBENSI A	2888
2	LANGBENSI B	1648
3	YARO YIRI	351
4	KASAPE	1741
5	BUZULUNGU	642
6	TIMPELLA	734
7	SOMNIBOMA	423
8	BOWKU	1607
9	BUMBOAZIO	1082
10	NAMANGO A	1221
15	NAMANGO B	1032
16	GBINGBIRIGA	765
17	BURUGU	845
18	DIMEA	440
19	GUBIU	949
20	SAMINI A	1818
21	SAMINI B	2042
22	TANGBINI A	1338
23	TANGBINI B	1019
24	WUNDUA A	1003
25	WUNDUA B	2097
26	CHIRIFOYIRI	404
27	POANAYIRI	235
28	BOAYINI	223

27	KPAGNAL	203
28	KWALICK	436
29	BANJAM	381
30	NAKPAYILI	306
31	GBEDURI	419
32	DAMAKO	625
33	NAGANI	242
34	NAMANGBAI	332
35	NYARIGBINI	341
36	DOBIYANTO	361
37	MONTANA A	286
38	MONTANA B	305
39	BLAGAN	382
40	TATAIN	429
41	LANGBENBONG	357
42	TANDIUK	381

Annex 6: Percentage Distribution of Variables

RESULTS FOR CRS EPPICS

CHILD SURVIVAL ENDLINE STUDY

FINAL TABLES

Variables	Frequency (N)	Percentage (%)
Consent Given		
Agreed	328	100
Not agreed	0	0
1. Years in school		
Number (mean) SD	96 (6.6) 3.7	
2. What is your level of formal education		
Basic school	79	24.1
Senior high school	14	4.3
Tertiary (college/university	2	0.6
Never been to school	232	70.7
Other	1	0.3
3. What is your marital status		
Single	2	0.6
Married	323	98.8
Widowed	2	0.6
4. Age of respondents in years		
Number (mean) SD	328 (27.74) 6.26	

5. What religion do you practice?		
Christianity	144	44.2
Islam	174	53.4
African traditional religion	4	1.2
None	4	1.2
6. Speak Mampruli?		
Yes	273	83.2
No	55	16.8
Speak Moar?		
Yes	23	7
No	305	93
Speak Kusal?		
Yes	18	5.5
No	310	94.5
Speak Likpapka?		
Yes	102	31.1
No	226	68.9
Speak other language		
Yes	118	36
No	210	64
7. In what language do you feel most comfortable communicating?		
Mampruli	214	65.2
Moar	14	4.3
Kusal	3	0.9
Likpapka	67	20.4

Others	30	9.1
8a. Total births alive		
1	81	24.7
2	54	16.5
3	55	16.8
4	57	17.4
5	36	11.0
6	24	7.3
7	15	4.6
8	4	1.2
9	2	0.6
8b. Children dead		
0	258	78.9
1	47	14.4
2	15	4.6
3	5	1.5
4	1	0.3
5	1	0.3
9. Sex		
Male	173	53.1
Female	153	46.9
11. Does (name's) biological father live in this household?		
Yes	272	82.9
No	56	17.1
12. Who is the head of this household?		
Mother	1	0.3

Husband/partner	180	54.9
Female relative	21	6.4
Male relative	114	34.8
Other	12	3.7
13. No outside work		
Yes	273	83.2
No	55	16.8
Handicrafts		
Yes	23	7
No	305	93
Harvesting		
Yes	18	5.5
No	310	94.5
Selling foods		
Yes	102	31.1
No	226	68.9
Shop keeper/street vendor		
Yes	118	36
No	210	64
Servant/household worker		
Yes	2	0.6
No	326	99.4
Salaried worker		
Yes	0	0

No	328	100
Farming		
Yes	0	0
No	328	100
Other		
Yes	1	0.3
No	327	99.7
14. Who usually takes care of (name) when you are away from home?		
Mother	42	12.8
Husband/partner	31	9.5
Older children	116	35.5
Other relatives	116	35.5
Neighbors/friends	1	0.3
Maid	3	0.9
Other	18	5.5
15. Do you have a card or child health booklet?		
Yes	314	96
No	13	4
17. Has (name) received any vaccinations that are not recorded on this card?		
Yes	57	17.4
No	261	79.6
Don't know	10	3
18. Has (name) received a DTP/Penta vaccination?		
Yes	283	86.3

No	45	13.7
19. How many times		
0	45	13.7
1	24	7.3
2	21	6.4
3	238	72.6
20. Did (name) ever receive an injection in the arm to prevent measles?		
Yes	161	49.1
No	167	50.9
21. ill with fever at any time in the last 2 weeks?		
Yes	156	47.6
No	171	52.1
Don't know	1	0.3
22. Did you seek advice or treatment for the fever?		
Yes	140	89.7
No	16	10.3
23. First treatment?		
Same day	36	25.7
Next day	65	46.4
Two or more days	39	27.9
24. Took drugs for fever?		
Yes	137	97.9
No	3	2.1

25a. Sp/fansidar		
Same day	6	4.4
Next day	1	0.7
Two or more days	1	0.7
25b. Chloroquine		
Same day	1	0.7
Next day	1	0.7
25c. Amodiaquine		
Same day	7	2.1
Next day	1	0.7
Two or more days	1	0.7
25d. Quinine		
Same day	7	5.1
Next day	2	1.5
Don't know	1	0.7
25e. ACT		
Same day	6	4.4
Next day	24	17.5
Two or more days	16	11.7
25f. Asprin		
Same day	2	1.5
25g. Paracetamol		
Same day	43	31.4
Next day	56	40.9

Two or more days	24	17.5
Don't know	1	0.7
25x. Other		
Same day	2	1.5
Next day	11	8
Two or more days	6	4.4
26. Any diarrhea in the last two weeks?		
Yes	149	45.4
No	179	54.6
27a. Given fluid from ORS packet to drink		
Yes	86	57.7
No	54	36.2
27b. Homemade fluid		
Yes	15	10.1
No	95	63.8
28. llness with cough		
Yes	99	30.2
No	229	69.8
29. Trouble breathing?		
Yes	64	64.5
No	35	35.5
30. Seek advice /treatment for the cough/fast breathing?		
Yes	55	85.9
No	9	14.1

31a. Doctor/medical assistant gave advice		
Yes	6	10.9
No	49	89.1
31b. Nurse advice		
Yes	32	58.2
No	23	41.8
31c. Auxiliary nurse (enrolled nurse) advice		
Yes	0	0
No	55	100
31d. Trained community health worker advice		
Yes	4	7.3
No	51	92.7
32x. Other		
Yes	16	29.1
No	39	70.9
32. Where do you usually get water for drinking purposes?		
Borehole	189	57.6
Well	97	29.6
Dam	3	0.9
Rain harvest	1	0.3
Others	38	11.6
33. Do you treat your water in any way to make it safe for drinking?		
Yes	3	7.14
No	39	92.9

34. Water treatment		
Strain it through cloth	2	66.7
Boil	1	33.3
35. Washing hands		
Inside/near toilet facility	29	8.9
Inside/near kitchen/cooking place	25	7.7
Elsewhere in yard	152	46.6
Outside yard	17	5.2
No specific place	103	31.6
36. Cleaning agent?		
Soap	150	45.7
Detergent	3	0.9
Mud/sand	1	0.3
None	53	16.2
Not Applicable	121	36.9
37. Mosquito net		
Yes	246	75
No	82	25
38. Who slept under a bed net last night?		
No one	6	2.5
Child	233	95.1
Other	6	2.5
39. Brand of Bed net		
Permanent	59	24.0
Long lasted treated net	174	70.7

Other net	1	0.4
40. Was the bed net ever treated		
No records		
42. Waiting period before getting pregnant again?		
Less than 2 years	3	0.9
2 to 5 years	286	87.5
More than 5 years	26	8
Don't know	12	3.7
43a. No risk		
Yes	20	6.1
No	308	93.9
43b. Baby born too small		
Yes	87	26.5
No	241	73.5
43c. Baby born too early		
Yes	50	15.2
No	278	84.8
43d. Mother can die		
Yes	83	25.3
No	245	74.7
44e. Mother can have miscarriage		
Yes	133	40.5
No	195	59.5

44f. Mother can suffer anemia		
Yes	123	37.5
No	205	62.5
44g. Don't know		
Yes	22	6.7
No	306	93.3
44x. Other		
Yes	130	39.6
No	198	60.4
44. Are you currently pregnant?		
Yes	7	2.2
No	318	97.8
45. Method to delay or avoid getting pregnant?		
Yes	143	43.6
No	181	55.2
Don't know	1	0.3
	3	0.9
46. Which method are you (or your husband/ partner) using?		
Female sterilization	2	0.6
Pill	11	3.4
Injectable	69	21
Implants	1	0.3
Lactational amen method/exclusive breast feeding	26	7.9
Standard days method/cycle beads	9	2.7
Other	26	7.9
Not Applicable	184	56.1

47a. Can HIV be transmitted during pregnancy		
Yes	212	64.6
No	53	16.2
Don't know	63	19.2
47b. Can HIV be transmitted during delivery		
Yes	208	63.4
No	53	16.2
Don't know	67	20.4
47c. Can HIV be transmitted during breastfeeding		
Yes	205	62.5
No	55	16.8
Don't know	68	20.7
48. Drugs to reduce HIV risk transmission from mother to child?		
Yes	213	64.9
No	31	9.5
Don't know	84	25.6
49a. Doctor/medical assistant for ANC		
Yes	17	5.2
No	311	94.8
49b. Nurse for ANC		
Yes	229	69.8
No	99	30.2
49c. Midwife for ANC		
Yes	168	51.2

No	160	48.8
49d. Traditional birth attendant for ANC		
Yes	20	6.1
No	308	93.9
49y. Other for ANC		
Yes	10	3
No	318	97
49y. ANC from No one		
No	328	100
Yes	0	0
50a. Your home		
No	325	99.1
Yes	3	0.9
50b. Midwife/TBA home		
No	319	97.3
Yes	9	2.7
50c. Other home		
No	328	100
Yes	0	0
50d. Hospital		
No	289	88.1
Yes	39	11.9
50e. Health Centre		

No	128	39
Yes	200	61
50f. Health post		
No	294	89.6
Yes	34	10.4
50g. Outreach		
No	274	83.5
Yes	54	16.5
50h. Other public		
No	323	98.5
Yes	5	1.5
50i. Private hospital		
No	328	100
Yes	0	0
50j. Private clinic		
No	328	100
Yes	0	0
50k. Other private		
No	328	100
Yes	0	0
50x. Other		
No	328	100
51a. Months pregnant before first ANC care		

Number (mean) SD	327 (2.82) 1.33	
51b. Received first ANC in the first trimester of pregnancy		
Yes	241	73.5
No	87	26.5
52. ANC visits		
Number (mean) SD	328 (5.30) 1.75	
53a. Was your height taken?		
Yes	289	88.1
No	38	11.6
	1	0.3
Was your blood pressure measured?		
Yes	304	92.7
No	24	7.3
Did you give a urine sample?		
Yes	261	79.6
No	67	20.4
Did you give a blood sample?		
Yes	275	83.8
No	53	16.2
53b. During ANC visits, did you feel abused by the health staff?		
Yes	19	5.8
No	308	94.2
53c. Staff ignored her		

Yes	5	1.5
No	14	4.3
Staff yelled at her		
Yes	9	2.7
No	10	3.1
Staff made fun of her		
Yes	0	0
No	19	5.8
Staff insulted her		
Yes	5	1.5
No	14	4.3
Staff touched her inappropriately		
Yes	0	0
No	19	5.8
Staff slapped or hit her		
Yes	0	0
No	19	5.8
Other		
Yes	4	1.2
No	15	4.6
53d. How satisfied were you with the service you received from the health staff?		
Very satisfied	296	90.2
Somewhat satisfied	27	8.2

Not satisfied	5	1.5
54. During ANC visits, were you told about the signs of pregnancy		
Yes	274	83.5
No	53	16.2
Don't know	1	0.3
55. Were you told where to go if you had any complications?		
Yes	266	81.1
No	6	1.8
Don't know	1	0.3
	55	16.8
56. During ANC visits, did anyone talk to you about getting tested for HIV?		
Yes	212	64.6
No	106	32.3
Don't know	8	2.4
	2	0.6
57. Tested for HIV during ANC?		
Yes	184	56.1
No	99	30.2
Don't know	45	13.7
58. Did you get the results of the test?		
Yes	124	67.4
No	55	29.9
Don't know	5	2.7
59a. Vaginal bleeding		

Yes	149	45.4
No	179	54.6
59b. Fast/difficult breathing		
Yes	73	22.3
No	255	77.7
59c. Fever		
Yes	156	47.6
No	172	52.4
59d. Severe abdominal pain		
Yes	225	68.6
No	103	31.4
59e. Headache/blurred vision		
Yes	135	41.2
No	193	58.8
59f. Convulsions		
Yes	21	6.4
No	307	93.6
59g. Foul smelling discharge/fluid from vagina		
Yes	26	7.9
No	302	92.1
59h. Baby stops moving		
Yes	74	22.6
No	254	77.4

59i. Leaking brownish/greenish fluid from the vagina		
Yes	4	1.2
No	324	98.8
59x. Other		
Yes	68	20.7
No	260	79.3
60. Tetanus injection?		
Yes	292	89
No	34	10.4
Don't know	2	0.6
61. How many times did you receive such an injection?		
One	161	55.1
Two	101	34.6
Three or more	26	8.9
Don't know	4	1.4
62. Tetanus toxoid injection at any time before that pregnancy?		
Yes	192	58.5
No	109	33.2
Don't know	27	8.2
63. Before pregnancy how many times did you receive tetanus injection		
One	102	31.1
Two	52	15.9
Three or more	31	9.5
Don't know	7	2.1
Not Applicable	136	41.5

64. Were you given or did you buy any iron tablets/syrup?		
Yes	317	96.6
No	3	0.9
Missing	8	2.4
65. How many did you take tablets?	322 (137) 54.24	
Number (mean) SD		
66. Take drugs to prevent you from malaria?		
Yes	246	75
No	80	24.4
Don't know	2	0.6
67a. Sp/fansider		
Yes	250	76.2
Not Applicable	78	23.8
67b. Chloroquine		
No	245	74.7
Yes	1	0.3
Not Applicable	82	25
67c. Other		
No	245	74.7
Yes	1	0.3
Not Applicable	82	25
68. How many times did you take SP/Fansidar during this pregnancy?		
Number (mean) SD	249 (2.39) 1.03	
69a. Doctor		

Yes	16	4.9
No	312	95.1
69b. Nurse		
Yes	127	38.7
No	201	61.3
69c. Midwife		
Yes	208	63.4
No	120	36.6
69d. Auxiliary midwife		
Yes	12	3.7
No	316	96.3
69e. Other health staff with midwifery skills		
Yes	7	2.1
No	321	97.9
69f. Trained traditional birth attendant		
Yes	59	18
No	269	82
69g. Trained community health nurse		
Yes	7	2.1
No	321	97.9
69h. Traditional birth attendant		
Yes	13	4
No	315	96

69i. Community health worker		
Yes	1	0.3
No	327	99.7
69j. Relative/friend		
Yes	13	4
No	315	96
69y. No one		
Yes	2	0.6
No	326	99.4
70a. Where did you give birth to (name)?		
Your home	61	18.6
Midwife/tba home	8	2.4
Other home	4	1.2
Hospital	106	32.3
Health center	138	42.1
Health post	8	2.4
Other public	1	0.3
Other	2	0.6
70b. During delivery, did you feel abused by the health staff?		
Yes	18	7.1
No	238	92.9
70c. Staff ignored her		
Yes	3	1.2
No	16	6.3
Staff yelled at her		

Yes	12	4.7
No	6	2.4
Staff made fun of her		
Yes	2	0.8
No	16	6.3
Staff insulted her		
Yes	3	1.2
No	15	5.9
Staff touched her inappropriately		
Yes	0	0
No	18	7.1
Staff slapped or hit her		
Yes	3	1.2
No	15	5.9
Other		
Yes	0	0
No	18	7.1
70d. During delivery, how satisfied were you with the service you received from health staff?		
Very satisfied	230	90.9
Somewhat satisfied	20	7.9
Not satisfied	3	1.2
71. Was a clean delivery kit used during delivery?		
Yes	313	96.6

No	9	2.8
Don't know	2	0.6
72. Instrument used to cut the cord?		
New razor blade	102	31.2
Used razor blade	1	0.3
New scissors	87	26.6
New and boiled scissors	18	5.5
Used and boiled scissors	68	20.8
Don't know	51	15.6
73. Anything placed on the umbilical cord before or after it was cut?		
Yes	212	65
No	71	21.8
Don't know	43	13.2
74. What was placed on the cut cord?		
Cow dung	1	0.3
Any type of oil	25	7.6
Antiseptic	170	51.8
Charcoal powder	4	1.2
Other	12	3.7
	116	35.4
75. Was child dried immediately after birth		
Yes	317	96.6
No	8	2.4
Don't know	2	0.6
76. Was child wrapped in a warm cloth or blanket ?		
Yes	316	96.3

No	10	3
Don't know	1	0.3
Not Applicable	1	0.3
77. Received an injection to prevent you from bleeding too much?		
Yes	211	64.3
No	108	32.9
Don't know	8	2.4
	1	0.3
78. Did the care provider or TBA hold your stomach to placenta out?		
Yes	241	73.5
No	63	19.2
Don't know	23	7
79. Did someone massage uterus to prevent too much bleeding?		
Yes	263	80.2
No	41	12.5
Don't know	23	7
80a. Convulsions		
Yes	52	15.9
No	276	84.1
80b. High fever		
Yes	76	23.2
No	252	76.8
80c. Heavy bleeding		
Yes	155	47.3
No	173	52.7

80d. Fast/difficult breathing		
Yes	97	29.6
No	231	70.4
80e. Retained placenta		
Yes	33	10.1
No	295	89.9
80f. Headache/blurred vision		
Yes	141	43
No	187	57
80g. Prolonged labor		
Yes	113	34.5
No	215	65.5
80x. Other		
Yes	63	19.2
No	265	80.8
81. In the first hour after delivery, was (name) given eye ointment or drops in the eye?		
Yes	83	25.4
No	200	61.2
Don't know	44	13.5
82a. Child weighed at birth?		
Yes	244	76.3
No	74	23.1
Don't know	2	0.6

82b1. Weight from card		
Number (mean) SD	243 (2.88) 0.55	
82b2. Weight from recall		
Number (mean) SD	26 (3.78) 2.59	
83. Where you checked by a health care provider or a TBA?		
Yes	311	94.8
No	14	4.3
Don't know	3	0.9
84. How long after delivery was mother first check take place?		
Hours	260	88.1
Days	30	10.2
Weeks	2	0.7
Don't know	3	1
85a. Who checked your health at that time?		
Doctor	46	14
Nurse	110	33.5
Midwife	128	39
Trained traditional birth attendant	28	8.5
Trained community health nurse	6	1.8
Traditional birth attendant	4	1.2
Community health worker	2	0.6
Relative/friend	4	1.2
85b. Did you feel abused or mistreated by the health staff who checked on you?		
Yes	10	3.1

No	314	96.3
Don't know	2	0.6
85c. Staff ignored her		
Yes	2	20
No	8	80
Staff yelled at her		
Yes	4	40
No	6	60
Staff insulted her		
Yes	4	40
No	6	60
85d. How satisfied were you with the service you received from the health staff?		
Very satisfied	299	92
Somewhat satisfied	23	7.1
Not satisfied	3	0.9
85e. In the first two months after delivery of (name), did you receive a vitamin A dose?		
Yes	232	70.7
No	87	26.5
Don't know	9	2.7
86a. Excessive vaginal bleeding		
Yes	180	54.9
No	148	45.1
86b. Fast/difficult breathing		

Yes	83	25.3
No	245	74.7
86c. High fever		
Yes	62	18.9
No	266	81.1
86d. Severe abdominal pain		
Yes	255	77.7
No	73	22.3
86e. Severe headache/blurred vision		
Yes	123	37.5
No	205	62.5
86f. Convulsions/loss of consciousness		
Yes	52	15.9
No	276	84.1
86g. Foul-smelling discharge from the vagina		
Yes	34	10.4
No	294	89.6
86h. Pain in calf		
Yes	35	10.7
No	293	89.3
86i. Verbalization/behavior that indicates she may hurt herself or the baby		
Yes	5	1.5
No	323	98.5

86x. Other		
Yes	39	11.9
No	289	88.1
87. After (name) was born, did any health care provider or TBA check on health?		
Yes	314	95.7
No	10	3
Don't know	4	1.2
88. How many hours, days or weeks after the birth of (name) did the first check take place?		
Hours	260	87.8
Days	33	11.1
Weeks	3	1
89a. Doctor		
Yes	45	13.7
No	283	86.3
89b. Nurse		
Yes	138	42.1
No	190	57.9
89c. Midwife		
Yes	180	54.9
No	148	45.1
89d. Auxiliary midwife		
Yes	9	2.7
No	319	97.3

89e. Other health staff with midwifery skills		
Yes	3	0.9
No	325	99.1
89f. Trained traditional birth attendant		
Yes	28	8.5
No	300	91.5
89g. Trained community health nurse		
Yes	6	1.8
No	322	98.2
89h. Traditional birth attendant		
Yes	4	1.2
No	324	98.8
89i. Community health worker		
Yes	3	0.9
No	325	99.1
89j. Relative/friend		
Yes	1	0.3
No	327	99.7
89y. No one		
Yes	0	0
No	328	100
90a. Convulsions		
Yes	82	25

No	246	75
90b. Fever		
Yes	248	75.6
No	80	24.4
90c. Poor suckling or feeding		
Yes	156	47.6
No	172	52.4
90d. Fast/difficult breathing		
Yes	99	30.2
No	229	69.8
90e. Baby feels cold		
Yes	57	17.4
No	271	82.6
90f. Baby too small/too early		
Yes	17	5.2
No	311	94.8
90g. Yellow palms/soles/eyes		
Yes	18	5.5
No	310	94.5
90h. Swollen abdomen		
Yes	52	15.9
No	276	84.1
90i. Unconscious		

Yes	40	12.2
No	288	87.8
90j. Pus or redness of the umbilical stump, eyes or skin		
Yes	17	5.2
No	311	94.8
90x. Other		
Yes	76	23.2
No	252	76.8
91a. Saved money		
Yes	107	32.6
No	221	67.4
91b. Bought clean delivery kit		
Yes	310	94.5
No	18	5.5
91c. Found blood donor		
Yes	1	0.3
No	327	99.7
91d. Arranged of transport		
Yes	22	6.7
No	306	93.3
91e. Contacted health worker to help with delivery		
Yes	20	6.1
No	308	93.9

91x. Other		
Yes	82	25
No	246	75
91y. No preparation		
Yes	8	2.4
No	320	97.6
92. Did you ever breastfeed (name)?		
Yes	328	100
93. How long (in hours) did you first put child to the breast after birth?		
Immediately	245	87.2
1	15	5.3
2	9	3.2
3	2	0.7
4	1	0.4
5	1	0.4
6	1	0.4
10	2	0.7
13	2	0.7
20	1	0.4
Don't remember	2	0.7
94. During the first three days after delivery, did you give (name) the liquid		
Yes	321	97.9
No	6	1.8
Don't know	1	0.3
95. First three days after delivery, was child given anything to drink		

Yes	10	3.1
No	317	96.6
Don't know	1	0.3
96. What was child given to drink?		
Milk (other than breast milk)	2	25
Plain water	3	37.5
Gripe water	2	25
Other	1	12.5
97. Are you still breastfeeding (name)?		
Yes	318	96.9
No	10	3.1
98. For how many months did you breastfeed (name)?		
3	1	9.1
12	1	9.1
15	1	9.1
16	1	9.1
19	2	18.2
20	2	18.2
21	1	9.1
22	1	9.1
23	1	9.1
99. Did child drink anything from a bottle yesterday or last night?		
Yes	57	17.5
No	268	82.5
100a. Breast milk?		
Yes	318	97

No	10	3
100b.Plain water?		
Yes	229	69.8
No	98	29.9
Don't know	1	0.3
100c. Commercially produced infant formula?		
Yes	42	12.8
No	285	87.2
100d. Any fortified, commercially available infant and young child food		
Yes	28	8.5
No	300	91.5
100e. Any (other) porridge or gruel?		
Yes	155	47.3
No	173	52.7
101a. Commercially produced infant formula?		
Yes	43	13.1
No	285	86.9
101b. Milk such as tinned, powdered, or fresh animal milk?		
Yes	51	15.5
No	277	84.5
101c. Cheese, yogurt, or other milk products?		
Yes	13	4
No	315	96

101d. Any fortified, commercially available infant food		
Yes	32	9.8
No	296	90.2
101e. Any (other) porridge or gruel?		
Yes	173	52.7
No	155	47.3
101f. Bread, rice, noodles, or other foods made from grains?		
Yes	154	47
No	174	53
101g. White potatoes, yam, cassava etc.		
Yes	32	9.8
No	289	90.2
101h. Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside?		
Yes	38	11.6
No	289	88.4
101i. Any dark green leafy vegetables?		
Yes	124	37.9
No	203	62.1
101j. Ripe mangoes, papayas etc		
Yes	55	16.9
No	271	83.1
101k. Foods made with red palm oil, palm nut, palm nut pulp sauce?		
Yes	56	17.2

No	270	82.8
101l. Any other fruits or vegetables like oranges, grapefruit or pineapple?		
Yes	63	19.3
No	264	80.7
101m. Eggs?		
Yes	60	18.4
No	266	81.6
101n. Liver, kidney, heart or other organ meat		
Yes	39	11.9
No	288	88.1
101o. Any meat, such as beef, pork, lamb, goat, chicken, or duck?		
Yes	61	18.7
No	265	81.3
101p Fresh or dried fish or shellfish?		
Yes	65	19.9
No	262	80.1
101q. Grubs, snails, insects, other small protein food		
Yes	7	2.2
No	318	97.8
101r. Any foods made from beans, peas, lentils, or nuts?		
Yes	116	35.5
No	211	64.5

101s. Any oils, fats, or butter		
Yes	87	26.6
No	240	73.4
101t. Number of groups ticked		
0	110	33.8
1	34	10.5
2	47	14.5
3	20	6.2
4	28	8.6
5	25	7.7
6	20	6.2
7	22	6.8
8	19	5.8
101u. Tea or coffee?		
Yes	61	18.8
No	264	81.2
101v. Any other liquids?		
Yes	102	31.4
No	223	68.6
101w. Any sugary foods, such as chocolates, candy, sweets, pastries, cakes,		
Yes	59	18.3
No	264	81.7
101x. Any other solid or soft food?		
Yes	115	37.1
No	194	62.6

Don't know	1	0.3
102. How many times did (name) eat solid, semi-solid, or soft foods other than liquids yesterday?		
0	121	36.9
1	13	4
2	23	7
3	70	21.3
4	28	8.5
5	17	5.2
6	6	1.8
7	13	4
Don't know	37	11.3
103. Has (name) ever received a Vitamin A dose?		
Yes	228	69.5
No	96	29.3
Don't know	4	1.2
104. Did (name) receive a vitamin a dose within the last 6 months?		
Yes	178	77.4
No	50	21.7
Don't know	2	0.9
105. Is salt in household iodized?		
Not iodized (0 ppm)	193	59.8
Less than 15 ppm	68	21.1
15 ppm or more	54	16.7
No salt in home	8	2.5
106. Children under five apart from name		

Number (mean) SD		
	325 (2.04) 1.98	
107. Number given birth to		
Number (mean) SD	322 (1.01) 0.96	
108. May I weigh and measure (name) and the other children?		
Yes	319	99.1
No	3	0.9
109. Sex of child		
Female	158	48.5
Male	168	51.5
Weight in kg		
Number (mean) SD	325 (7.84) 2.19	
Height in cm		
Number (mean) SD	321 (70.0) 11.97	
How measured		
Lying down	310	98.1
Standing up	6	1.9

Annex 7: Summary of Baseline and Endline Indicators

Indicator		Baseline indicators				Endline indicators				P-value
		Num	Deno	%	±(95%CI)	Num	Deno	%	±(95%CI)	
Antenatal Care	Percentage of mothers of children age 0-23 months who had four or more antenatal visits when they were pregnant with the youngest child	249	313	80%	6	268	328	82%	6	0.001
Tetanus injection	Percentage of mothers with children age 0-23 months who received at least 2 tetanus toxoid vaccinations before the birth of their youngest child	200	313	64%	8	233	328	71%	7	0.519
Skilled Birth Attendant	Percentage of children age 0-23 months whose births were attended by skilled personnel	135	313	43%	8	250	328	76%	7	0.058
Post-Natal Visit to Check on the Newborn	Percentage of children age 0-23 months who received a post-natal visit from an appropriately trained health worker within two days after birth	95	313	30%	7	273	328	83%	6	<0.001
Current Contraceptive Use Among Mothers of Young Children	Percentage of mothers of children age 0-23 months who are using a modern contraceptive method	69	313	22%	6	115	328	35%	7	<0.001
Ever breastfed	Percent of children aged 0-23 months ever breastfed	313	313	100%	0	328	328	100%	0	-
Exclusive breastfeeding	Percentage of children age 0-5 months who	49	105	47%		72	103	70%	12	

	were exclusively breastfed during the last 24 hours				13					**0.001**
Bottle use	Percent of children aged 0-23 months who had anything by bottle in the 24 hours preceding survey	47	313	**15%**	6	57	328	**17%**	6	0.490
Contnued Breastfeeding 6-11 months	Percent of children aged 6-11 months who are still breastfeedin	88	92	**96%**	6	123	124	**99%**	2	0.144
Contnued Breastfeeding 12-17 months	Percent of children aged 12-17 months who are still breastfeeding	65	67	**97%**	6	89	90	**99%**	3	0.358
Contnued Breastfeeding 18-23 months	Percent of children aged 18-23 months who are still breastfeeding	38	46	**83%**	15	58	65	**89%**	11	0.362
Vitamin A Supplementation	Percentage of children age 6-23 months who received a dose of Vitamin A in the last 6 months: card verified or mother's recall	152	205	**74%**	8	173	223	**78%**	8	0.332
Vitamin A supplementation Mother	Percentage of mothers of children age 6-23 months who received a dose of Vitamin A in the first 2 months after delivery – reported	119	205	**58%**	10	159	223	**71%**	7	**0.005**
Measles Vaccination	Percentage of children aged 12-23 months who received measles vaccine according to the vaccination card or mother's recall by the time of the survey	107	113	**95%**	6	107	120	**89%**	8	**0.093**
Access to Immunization	Percentage of children aged 12-23 months	109	113	**96%**		114	120	**95%**	6	

Services	who received DTP1 according to the vaccination card or mother's recall by the time of the survey				5					0.713
Health Systems Performance Regarding Immunization Services	Percentage of children aged 12-23 months who received DTP3 according to the vaccination card or mother's recall by the time of the survey	107	113	**95%**	6	113	120	**94%**	6	0.738
Treatment of Fever in Malarious Zones	Percentage of children age 0-23 months with a febrile episode during the last two weeks who were treated with an effective anti-malarial drug within 24 hours	15	156	**10%**	7	27	156	**17%**	8	0.070
ORT Use	Percentage of children age 0-23 months with diarrhea in the last two weeks who received oral rehydration solution and/or recommended home fluids	60	126	**48%**	12	97	149	**65%**	11	**0.005**
Appropriate Care Seeking for Pneumonia	Percentage of children age 0-23 months with chest-related cough and fast and/or difficult breathing in the last two weeks who were taken to an appropriate health provider	35	73	**48%**	16	40	64	**63%**	17	0.078
Point of Use Water Treatment	Percentage of households of children age 0-23 months that treat water effectively	12	313	**4%**	3	1	3	**33%**	75	**0.013**
Appropriate Hand Washing Practices	Percentage of mothers of children age 0-23 months who live in households with soap at the place for hand	89	313	**28**		151	328	**46%**	8	

	washing				7					**<0.001**
Infant and Young Child Feeding	Percent of children age 6-23 months fed according to a minimum of appropriate feeding practices	112	205	**55%**	10	174	223	**78%**	8	**<0.001**
ITN Ownership	ITN Ownership: Percentage of households of children age 0-23 months that own at least one insecticide-treated bed net	141	313	**45%**	8	233	328	**71%**	7	**<0.001**
ITN Use	Percentage of children age 0-23 months who slept under an insecticide-treated bed net the previous night	132	313	**42%**	8	232	328	**71%**	7	**<0.001**
Underweight	Percentage of children age 0-23 months who are underweight (-2 SD for the median weight for age, according to WHO/NCHS reference population)	135	313	**43%**	8	52	322	**16%**	6	**<0.001**
Iodized Salt	Percentage of households with Iodized salt (tested as 15 ppm or more) the day of the study	13	313	**4%**	3	54	328	**16%**	6	**<0.001**
IPT during Pregnancy	Percentage of mothers of children age 0-23 months who received Intermittent Preventive Treatment (IPT) for malaria during the pregnancy with the youngest child	185	313	**59%**	8%	189	328	**58%**	8%	0.797
Clean Cord Care	Percent children age 0-23 months that had clean cord care at the time of birth	68	313	**22%**	6%	240	328	**73%**	7%	**<0.001**
Clean Cord Cutting	Percent children age 0-23 months that had clean cord cutting at	251	313	**80%**	6%	269	328	**82%**	6%	

Indicator	Description	n	N	%		n	N	%		p-value
	the time of birth									0.519
Active Management of the third stage of labor (AMTSL)	Percent of mothers of children age 0-23 months who received AMTSL after the birth of her youngest child	103	313	**33%**	7%	164	328	**50%**	8%	**<0.001**
Post-Partum visit for the mother	Percentage of mothers of children age 0-23 who received a post-partum visit from an appropriate trained health worker within two days after the birth of the youngest child	101	313	**32%**	7%	269	328	**82%**	6%	**<0.001**
Immediate Drying	Percent of children age 0-23 months who were dried immediately after birth.	302	313	**96%**	3%	317	328	**97%**	3%	0.490
Immediate Wrapping	Percentage of children age 0-23 months, who were wrapped with a cloth or blanket immediately after birth.	299	313	**96%**	3%	316	328	**96%**	3%	1.000
Thermal Care (Immediate drying and wrapping)	Percentage of children age 0-23 months who were dried and wrapped with a cloth or blanket immediately after birth	296	313	**95%**	4%	311	328	**95%**	3%	1.000
Immediate breastfeeding of newborns	Percentage of children age 0-23 months who were put to the breast within one hour of delivery	155	313	**50%**	8%	247	328	**75%**	7%	**<0.001**
Birth Preparedness	Percentage of mothers of children 0-23 months who made preparations before the birth of the their youngest child	49	313	**16%**	6%	133	328	**41%**	8%	**<0.001**
Knowledge of Healthy Timing and Spacing of	Percentage of mothers of children age 0-23 months who know that	267	313	**85%**		286	328	**87%**	5%	

Pregnancies	a woman should wait 24 months after the live birth of her child before trying to get pregnant again.				6					0.465
Knowledge of Risk Associated with Birth to Pregnancy Intervals Less than 24 Mont	Percentage of mothers of children age 0-23 months who know at least two risks of having a birth to pregnancy interval of less than 24 months.	110	313	**35%**	7	177	328	**54%**	8	**<0.001**
Knowledge of MTCT of HIV	Percentage of mothers of children age 0-23 months who know that HIV can be transmitted from an HIV-positive mother to her unborn child during pregnancy, during delivery, and through breastfeeding.	189	313	**60%**	8	175	328	**53%**	8	0.074
Knowledge of PMTCT of HIV	Percentage mothers of children age 0-23 months who know that there are special medications that can be given to a pregnant woman infected with HIV to reduce the risk of mother-to-child transmission.	114	313	**36%**	8	213	328	**65%**	7	**<0.001**
Quality Antenatal Care	Percentage of mothers of children age 0-23 months who had four or more antenatal visits with a skilled provider and were adequately counseled when they were pregnant with the youngest child.	116	313	**37%**	8	168	328	**51%**	8	**<0.001**
HIV Testing During Pregnancy	Percentage of mothers of children 0-23 months who were counseled about HIV during the pregnancy,	79	313	**25%**		119	328	**36%**	7	

	accepted an offer of testing, and received their test results when they were pregnant with their youngest child.				7					**0.003**
Knowledge of Danger Signs during Pregnancy	Percentage of mothers of children 0-23 months who knew at least two danger signs during pregnancy.	254	313	**81%**	6	283	328	**86%**	5	0.088
Iron Tablets for Pregnant Women	Percentage of mothers of children age 0-23 months who took iron tablets before the birth of their youngest child.	254	313	**81%**	6	239	328	**73%**	7	**0.016**
Trained Delivery Attendant	Percent of children age 0-23 months whose births were attended by a trained provider including a trained TBA.	248	313	**79%**	6	307	328	**94%**	4	**<0.001**
Clean Birth Kit	Percentage of women of children age 0-23 months who used a clean delivery kit during the birth of their youngest child.	205	313	**65%**	7	313	328	**95%**	3	**<0.001**
Knowledge of Maternal Danger Signs During Delivery	Percentage of mothers of children 0-23 months who know at least two danger signs during delivery.	215	313	**69%**	7	236	328	**72%**	7	0.405
Feeding Colostrum	Percentage of children age 0-23 months, who were fed colostrum after birth.	300	313	**96%**	3	321	328	**98%**	2	0.136
Pre-lacteal Feeds	Percentage of children age 0-23 months who did not receive pre-lacteal feeds.	287	313	**92%**	4	317	328	**97%**	3	**0.005**
Essential Newborn Care	Percentage of children age 0-23 who received all three elements of	36	313	**12%**		171	328	**52%**	8	

	essential newborn care: thermal protection immediately after birth, clean cord care, and immediate and exclusive breastfeeding.				5					**<0.001**
Prophylactic Eye Care	Percentage of children age 0-23 months who received appropriate preventive eye care within the first hour after birth.	58	313	**19%**	6	83	328	**25%**	7	0.067
Knowledge of Post-partum Danger Signs	Percentage of mothers of children age 0-23 months who knew at least two post-partum danger signs.	241	313	**77%**	7	284	328	**87%**	5	**0.001**
Knowledge of Neonatal Danger Signs	Percentage of mothers of children age 0-23 who know at least two neonatal danger signs.	225	313	**72%**	7	263	328	**80%**	6	**0.018**
Vitamin A-rich food 6-23 months	Percent of children aged 6-23 months who ate vitamin A-rich foods in 24 hours preceding survey	155	205	**76%**	8	161	223	**72%**	8	0.346
Iron-rich food 6-23 months	Percent of children aged 6-23 months who ate iron-rich foods in 24 hours preceding survey	152	205	**74%**	8	173	223	**78%**	8	0.332
Fortified food 6-23 months	Percent of children aged 6-23 months who ate fortified food in 24 hours preceding survey	18	205	**9%**	5	30	223	**13%**	6	0.188
Animal source flesh food 6-23 months	Percent of children aged 6-23 months who ate beef, game, poultry, fish, shellfish, or organ meat in 24 hours preceding	148	205	**72%**	9	120	223	**54%**	9	**<0.001**

	survey									
Egg 6-23 months	Percent of children aged 6-23 months who ate eggs in 24 hours preceding survey	44	205	**21%**	8	58	223	**26%**	8	
Dairy 6-23 months	Percent of children aged 6-23 months who had dairy in 24 hours preceding survey	21	205	**11%**	6	74	223	**33%**	9	**<0.001**

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ANNEX VI. COMMUNITY HEALTH WORKER TRAINING MATRIX

Project Area (Name of District Or Community)	Type of CHW	Official Government CHW or Grantee-Developed Cadre	Paid or Volunteer	Number Trained Over Life of Project		Focus of Training
				Male	Female	
East Mamprusi	Community Health Officers and Community Health Nurses	Official Government CHW	Paid	15	20	- Emergency Obstetric Care - Essential Newborn Care
East Mamprusi	Healthy Mothers and Newborn Care	Grantee Developed Cadre	Volunteer	960	720	- Community Mobilization for MNC - Operations and Management of Walls of Good Health
East Mamprusi	Community Health Officers and Community Health Nurses	Official Government CHW	Paid	15	20	- Malaria in Pregnancy - Strategies - Essential Nutrition Action - Lactation Management and Infant and Young Child Counselling Skills
East Mamprusi	Traditional birth attendants/Traditional Medical Practitioners	Government	Volunteer	512	352	- Dangers in pregnancy - Importance of skill assisted deliveries - Danger signs in newborns - Referrals and its importance - Home visiting Techniques - Essential Newborn Care
Sakogu Sub District	Council of Champions	Grantee Developed Cadre	Volunteer	112	88	- MNC and related PRABs - Home Visiting Techniques - Communication Techniques - Roles and Responsibilities
East Mamprusi	Positive Deviant Mothers	Grantee Developed Cadre	Volunteer	0	480	- Delivery of SBCC messages on MNC - Nutrition Behaviour Change Communication - Maternal and Child Nutrition
East Mamprusi/Zonal	Community Health Volunteers	Government	Volunteer	300	284	- Community-based MNC data collection and reporting - Mobilization and sensitization of EPPICS Strategies - Malaria Prevention Strategies

ANNEX VII. EVALUATION SCOPE OF WORK

Terms of Reference for

Final Evaluator External Consultant for the
Encouraging Positive Practices for Improving Child Survival Project
in East Mamprusi District of Northern Ghana

Revised December 2015

I. Introduction

Catholic Relief Services – USCCB Ghana Program will hire an independent consultant to complete the final performance evaluation (FE) report for the "Encouraging Positive Practices for Improving Child Survival" (EPPICS) project funded by USAID's Child Survival and Health Grants Program (CSHGP) **AID-OAA-A-11-00042, October 1, 2011 – September 29, 2015.** The initial report has already been provided by the consultant who was hired previously, however a decision was made to cancel that contract and identify a new consultant who would be able to finalize the evaluation report in line with guidance provided by CSHGP and on time. As part of this consultancy contract, the materials created thus far (draft evaluation report, project data etc.) will be made available to the successful candidate with the view of finalizing the draft evaluation report under this consultancy.

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In East Mamprusi District of the Northern Region of Ghana, USAID's CSHGP supports community-oriented projects implemented by U.S. private voluntary organizations (PVOs) and nongovernmental organizations (NGOs) and their local partners. The purpose of this program is to contribute to sustained improvements in child survival and health outcomes by supporting the innovations of PVOs/NGOs and their in-country partners in reaching vulnerable populations.

This document describes the Final Evaluator's Scope of Work (SOW) for the EPPICS Final Evaluation.

In spite of national strides to strengthen health services to meet MDGs 4 and 5 in Ghana, maternal and infant mortality and morbidity remain much higher in the Northern Region (NR) than in the rest of the country. Ghana Health Services (GHS) and their partners are implementing the high-impact, evidence-based interventions to improve the situation. Most of their efforts have focused on health services only at the facility level. Gaps remain at the community/household levels, both in improving service delivery and in overcoming harmful cultural practices which pose barriers to seeking skilled health care for Maternal, Newborn and Child Health and Nutrition services. The EPPICS project was therefore designed to couple facility based health services with innovative community strategies to close those gaps.

The goal and strategic objectives of the EPPICS project:

EPPICS targets an estimated 27,000 women of reproductive age and 24,000 children (< 5 years) and has the following goal and strategic objectives: To contribute to sustainable maternal/newborn morbidity/mortality reduction in East Mamprusi District of Northern Region of Ghana by 2015:

•   SO1: East Mamprusi District has improved maternal and neonatal health outcomes
•   SO2: Families have increased access to quality maternal and neonatal services

The key project strategy will be to scale up community-led strategies that enhance positive Maternal, Newborn and Child Health/Nutritional practices and service utilization. Technical interventions include: Maternal and Newborn Care (60%), Nutrition (30%) and Malaria in Pregnancy (10%). CRS and GHS will scale-up a motivational community mobilization strategy using Healthy Mother and Newborn Committees (HMNC), Positive Deviant Inquiry and, as part of the community information system (CIS), the Giant Community Scoreboards for communities to track progress on process indicators and provide feedback to community members. At the Health Facility, CRS and GHS will improve health staff counseling skills to improve quality in health worker-client communication in response to identified gaps.

II. Background

Ghana ranks 138 on the UN Human Development Index and is considered to be a medium development country[15]. The three northern regions of Ghana have significantly poorer MNCH/N

Indicators than the rest of the country.[16] (See Table 1) East Mamprusi (EM) District is one of the poorest districts in the Northern Region (NR).[17] It is divided into 5 sub districts with 240 settlements of about 200-500 inhabitants each.[18] Average family size is 7 and 48% of married women are in polygamous unions.[19] A high percentage of men and women migrate to other regions looking for work, sometimes leaving young children behind in the care of relatives.[20] Mamprusi are the dominant ethnic group (84%); the population is 70% Muslim and 30% Christian or traditional African religions. 78% of women are illiterate, and 1 in 6 pregnancies occurs in girls 15-19 years old.[21]

Table 1: Mortality and Fertility Statistics, Northern Region and Ghana (National)[14]		
Indicator	NR	National
U5 Mortality Rate	137	80
IMR	70	50
NNMR	35	30
MMR	n/a	187
TFR	6.8	4.0

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[14] http://hdr.undp.org/en/statistics/.

[15] http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/GHA.pdf

[16] Ghana Demographic and Health Survey (GDHS) (2010)

[17] EM GHS Annual Report 2010.

[18] EM District Assembly Website and EM GHS Annual Report 2010

[19] EM District Website.

[20] EM District Assembly Annual Report, 2010
[21] Ghana Statistical Service et al, Districts MICS Report, 2009

Over 60% of IMR in Ghana is in the newborn period.[22] Ghana's MMR (2007) was estimated at 451, but it is considered to be much higher in NR.[23] Causes of maternal death listed were anemia, obstructed labor, sepsis, and hemorrhage. Neonatal deaths in EM are attributed to asphyxia, low birth weight/prematurity and infections; reported stillbirths are increasing.[24] Poor uptake of Malaria in Pregnancy (MIP) services such as LLIN utilization and Intermittent Presumptive Therapy (IPT) for Malaria completion also impacts on maternal anemia, low birthweight and perinatal mortality, including stillbirths.

Table 2: MNCH/N Indicators EM, NR and National			
Indicator	**EM[12]**	**NR[8]**	**Ghana[8]**
Supervised delivery	48	35.5	48.2
Antenatal visits (1st trimester)	30	49	55
Antenatal visits(4+)	46	58	78
IPT2+	51	33	44
ITN use (pregnant women)		36	45
H/A -2 SD	39	31	28
W/A -2 SD	30	29	14
WRA (any anemia)		59	59

Additional factors contributing to poor maternal and newborn outcomes include delays in recognition of danger signs (in both mother and newborn) and low institutional deliveries as illustrated in Table 2. Malaria and anemia are the leading causes of Out Patient Department visits and hospital admissions. Over 95% of pregnant women have at least one ANC visit, but only 46% complete 4 or more visits. The majority (70%) do not report for their first ANC visit until the third trimester.[25]

Pregnant women, especially first-time mothers, do not have the power to make decisions themselves whether or not to use skilled health services.[26] A UNICEF study found that 68% of mothers trusted skilled health professionals, but only 21% of first time mothers would use them. The study also identified Key Decision Makers (KDM) in the use of MCH services as mothers-in-law/fathers-in-law, especially at the time of delivery and complications. They also found that health workers' negative attitudes contributed to choosing TBA-assisted delivery instead of skilled services.[27] Only 15% of women with home births receive a post-natal check-up during the first week after delivery and early initiation of breastfeeding rates (within the first hour) were closely tied to skilled delivery rates.[28] CRS investigated several factors related to access and use of MCH services in an NR district and found that even when geographic and financial access were adequate, socio-cultural and traditional practices were still significant barriers to receiving key evidence-based MNCH/N services.[29] Because this is such an important factor influencing key maternal behaviors nation-wide, CRS and GHS focused the project Innovation in this area.

Child under-nutrition contributes to 53% of U5 deaths in Ghana[30] and 34% of U5 children are stunted in EM, much higher than the national average of 14%.[31] Only 6.3% of newborns in the district are weighed

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[22] Ghana Demographic and Health Survey, 2008

[23] Ghana Statistical Service et al (2009). Ghana Maternal Health Survey Report for 2007

[24] EM GHS Annual Report 2010.

[25] EM GHS Annual Report 2010

[26] EM DHMT stakeholder's meeting March 2011.

[27] UNICEF C4D Five Key Health and Hygiene Final Report, 2010

[28] UNICEF HIRD Report, 2007

[29] CRS CIMACS Formative Research Report, 2008

[30] GHS Policy document on malnutrition, 2008, HIRD report 2007

at birth, so it is difficult to estimate birth weight figures. The High Impact Rapid Delivery (HIRD) project found that factors in child under-nutrition include: anemia during pregnancy (often related to malaria); late initiation and low exclusive breastfeeding (16.1%); early introduction of sub-optimal complementary foods; micro-nutrient deficiency (especially vitamin A and iron); and the high prevalence of diarrhea.[32] GHS promotes EBF for the first six months and continued breastfeeding for at least two years, with introduction of complementary foods starting at 6 months. In 2006, AED/GSCP conducted research to investigate the influence of cultural/traditional beliefs and perceptions on Infant and Young Child Feeding Practice in the EM area that uncovered myths about feeding colostrum to newborns. Many women believe that colostrum is dirty and "not healthy" for newborns and it is therefore commonly discarded.

In NR, including EM, 34% of pregnant women were undernourished (BMI <18.5), almost double the national average of 17%. Health workers familiar with EM cultural practices said that pregnant women are given no additional or special foods during the pregnancy and energy expenditure is high from heavy workloads. After delivery, however, she is given abundant high quality food while she is lactating (for a strong baby). EM DHMT midwives said that when they try to counsel women about what foods to eat during pregnancy, women respond that the midwife "wants them to steal." Only 35% ANC attendees are screened for Hb. 2010 facility-based data in EM on anemia showed that 19% and 10% of pregnant women were anemic at registration and at 36 weeks respectively[33] but this underestimates the true situation. Data specific to EM on the uptake of Iron/Folic tablets in pregnancy is not available, but health workers report high levels of non-compliance with taking Iron/Folic tablets due to side effects and beliefs that they will lead to a large baby and difficult labor.[34] Although GHS policy requires deworming pregnant women as an anemia control strategy, compliance by health facilities is low: only 26% of women who attend ANC receive an anti-parasitic drug.[35] Iodized salt is not widely available, only 21% of pregnant women in the district and 28% at the regional level consumed iodized salt when it was last measured by HIRD in 2006.[36] UNICEF confirms periodic reports of goiter in WRA and some cases of mental retardation related to iodine deficiency have been found in some infants in rural areas. UNICEF and partners are advocating at the national level for enforcement of the existing national salt iodization laws.[37]

EM GHS tracks maternal deaths that occur in facilities only.[38] GHS and the Christian Health Association of Ghana (CHAG) administer formal health services in 7 health facilities, 6 with 24/7 capacity for deliveries and 4 that have vehicles for transport, but there are still many times when transport is not available.[39] Regional GHS also reports that attempts to address emergency transport problems have "been a miserable failure." CHAG facilities include the Baptist Medical Center (BMC), a referral hospital and the only facility with capacity for EmOC and ability to care for sick or premature newborns. HS intended constructing a fully-equipped hospital in the district capital since 2011.[40] District health staff shortages, particularly staff capable of performing skilled deliveries, are severe; each facility averages only

[31] GDHS,2008

[32] HIRD MICS, 2007

[33] EM GHS Annual Report 2010

[34] Proposal Development Workshop in EM, March 2011

[35]GDHS, 2008.

[36] UNICEF HIRD/MICS Report, 2007

[37] Personal conversation with UNICEF MCH consultant March 2011

[38] EM and MR Annual Reports 2009, 2010

[39] EM DHMT Stakeholder's meeting

[40] GDHS 2008 and Personal Communication, RDHS NR, March 2011

50% of staff they need according to GHS standards. Many doctors assigned to work in the NR never report for duty and there are only two doctors currently working in the entire district. NR GHS has begun the training of Community Health Nurses (CHNs) to become midwives but these efforts have been slow. Community Health Volunteers (CHVs), usually two per community, serve as the outreach and surveillance arm of GHS, linked to the Sub district level. Many have been in place for decades and they are respected members of the community. GHS, supported by UNICEF, has extended their role to include Community Case Management (CCM) of Childhood Illness that was recently expanded from Home Base Management of Malaria to include zinc for diarrhea and antibiotics for pneumonia in children over 6 months of age. CHV will soon also provide Community Management of Acute Malnutrition (CMAM) with support of UNICEF.

Improved MNCH services, including achieving progress in MDGs 4 and 5, are priorities of the MOH and GHS. GHS, with assistance from UNICEF, UNFPA and the Gates-Foundation supported Fives Alive! (5A) Project, has been working to improve quality of maternal and newborn care at the facility level, and increase coverage to IMCI at the facility and community level, including home-based management of childhood illnesses and CCM of childhood illness; improving Essential Obstetrical Care (EOC) and access to Emergency Obstetric and Newborn Care (EmOC), promoting birth plans and preparing for transport in case of complication in the mother or baby. World Food Program (WFP) provides supplementary food to pregnant women and children through GHS ANC services.

United States Government (USG) health programs in Northern Region of Ghana include the President's Malaria Initiative (PMI). PMI partners in NR include Research Triangle Institute (RTI) for IRS and ProMPT Ghana (University Research Corporation) for promoting ITNs, clinical case management, MIP and surveillance. PMI partners said that MIP is a particular challenge for them because increasing MIP indicators are linked with ANC and very dependent on demand-creation at household and community level. PMI sponsored a massive "hanging LLIN exercise" in May 2010 in NR and RTI began supporting Indoor Residual Spraying (IRS) in 2010. EM was included in USAID's LINKAGES maternal and child nutrition and LAM project from 1997-2004 and Ghana was the country where impact evaluations were undertaken; CRS was an implementing partner in EM. USAID supports the CMAM strategy and EM is one of the beneficiary districts in NR. PEPFAR support for HIV/AIDS programs is present in Ghana, but EM and NR are low prevalence areas and therefore not priority areas for PEPFAR programs. Ghana is now both a Global Health Initiative (GHI) and Feed the Future (FtF) focus country.

CRS MNCH programs in the northern regions included the promising Community-led Initiative for Maternal and Child Survival (CIMACS) pilot project funded by CRS in two districts in the adjoining Upper East Region. Lessons learned and best practices from CIMACS are the basis for the proposed CRS CSP strategy. CIMACS has had success in increasing early ANC registration, skilled delivery and Exclusive Breastfeeding (EBF), all challenges identified by GHS and international organizations. CIMACS approach has been enthusiastically received by communities, local government, UNICEF, and GHS and CRS has received requests from other districts to introduce the program. Although the LINKAGES and Title II-supported Food Assisted Child Survival (FACS) have both ended, there is evidence that both had a sustainable, positive effect on community-level MNCH/N activities in partnership with GHS. The CRS CSP interventions complemented several targeted activities implemented by other actors without duplication of effort, as described further in the Project Strategy and Innovation sections.

East Mamprusi District was selected as the project site from five potential districts recommended by the Northern Region Director of GHS after choosing the Northern Region based on discussions at the

Table 3: Estimated Beneficiary Population (WRA+U5 Children)[41]		
	Percent	Number
WRA 15-49	22	26,881
Children 0-59 months	20	24,437
Beneficiaries (WRA + children 0-59 months)	42	51,318
Total EM District Population	100	123,626

national level. The final choice was based on high rates of maternal, newborn and infant mortality, chronic malnutrition, and low utilization of MNC services. Other factors included a previous positive partnership experience between GHS and CRS in the same district (with different MCH/N activities); a supportive DHMT with corresponding MNCH/N goals and objectives and suitability of the district as a setting to effectively implement and test the project Innovation. The project design, including RF was developed jointly with EM DHMT with input from GHS and their health partners, including UNICEF and PMI implementing organizations at the Regional Level. MIP was specifically mentioned as a "gap" by GHS and PMI partners that must be addressed using community level interventions. This is based on low IPT3 uptake and maternal LLIN utilization.

III. Project Population

Beneficiaries*	Total
Total Population	**139,606**
Total Neonates	**5,584**
Infants aged 0–11 Months	**5,584**
Children aged <5 Years	**27,921**
Women of Reproductive Age (15–49 years)	**30,713**
Total Beneficiaries	**58,634**
Expected Pregnancies	**5,584**
Community Health Workers or Volunteers (CHWs), Disaggregated by Sex	**Males=255 Females=255**
Health Facilities (Hospital to Sub Health Post)	**12**
Community-Based Structures (e.g., Village Development Committees [VDCs])	**175**

*Source: District Health Information System II, Ghana

IV. Partners

Project activities are designed to contribute to Ghana MOH and GHS MNCH/N policies, USAID's Health Program, Global Health Initiative (GHI) and NMCP/PMI objectives, all focus on contributing progress toward progress in MDGs 4 and 5. Within the District, project implementation is done by GHS, with TA and support from CRS at every level: DHMT, Sub district, Health Center CHPS and outreach points. All activities are jointly planned, implemented, supervised and evaluated in partnership with GHS. The HMNC will advocate for change through civil society structures, primarily with the

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[41] EM GHS Annual Report, 2010 calculated to 2012 with 3% Annual Growth Rate (per EM District Assembly)

District Assembly whose representatives in the community sit on the HMNCs. The District Community Development Officer (CDO), a local expert on overall community mobilization is included in planning activities and District and Sub district Activity Planning and Supervision.

V. Key Activities

Technical interventions for the project is integrated based on the **Minimum Activities for Mothers and Newborns (MAMAN)**[42] **Framework** for **Maternal and Newborn Care**[43] technical intervention activities at all levels of the project. The project provides several specific preventative and health services interventions in all communities in the project area including those specifically identified to test the project Innovation.

The nutrition component works through ongoing improvement of the quality of prenatal care, focusing on improvement in the capacities of health care personnel to provide counseling to pregnant women regarding diet and counseling mothers in breastfeeding and complementary feeding during ANC and postnatal care. At the community level TBAs and CHWs counsel mothers regarding quantity and quality of food during pregnancy, lactation, BF and complementary feeding as well. MIP component is included in both MNC and Nutrition.

The social and BCC strategy at the household and community level is essential in achieving SO1 and its IRs. Community organization and mobilization supports the achievement of SO2 and its IRs. Activities at the District Level include information sharing and advocacy with the District Assemblies. The MNC component have an impact on the **three delays** that contribute to maternal and neonatal morbidity and mortality, the delays of 1) recognizing harmful practices and danger signs, 2) decision making in seeking appropriate care, and 3) diagnosing and providing timely care. The first and second delays are addressed through the behavioral changes strategy and by improving community response to maternal and neonatal complications via the Innovation's Community-led responses to **Maternal and Newborn Care.** The third delay is addressed by strengthening GHS capacities and quality of care.

THE FOLLOWING ARE SOCIAL AND BCC ACTIVITIES THAT WILL CONTRIBUTE TO SO1:

At the **Community and Household Levels**, EPPICS combines tested methodologies developed in earlier projects including the recent CIMACS project to link communities with GHS by providing networks of support and encouragement to use existing and improved MNCH/N health services. Key components of the EPPICS strategy include a package of technical interventions and strategies at multiple levels (individual/household and community).

1. **Creation of Healthy Mothers and Newborn Committees (HMNCs).** The HMNCs comprises of influential members of the community, both men and women, who are able to influence the male and female household decision-makers with regard to mothers and newborns. HMNCs include one or two grandmothers, two CHVs; one active TBA; one or two religious leaders, compound heads (male head of a large extended family all living in one compound), traditional healers, and the community's District Assembly Representative. Members of the HMNC will each have different roles and responsibilities. The 3 or 4 most influential people will not be in the HMNC but instead will be in the Council of Champions (CoC) described in the Innovation section below. The HMNC implement a standardized SBCC and capacity building approach using "action messages" to mobilize communities to

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[42] USAID Global Health Bureau, Child Survival and Grants Program, 2007

[43] *Thermal care, cord, care, and immediate and exclusive breastfeeding; and sick newborn care including identification and treatment of neonatal infection and complications, resuscitation, and special care of preterm and low birth weight infants.*

1) develop community birth plans, especially providing for transport and expenses that currently pose barriers; 2) engage newborns' fathers and fathers-in-law to support household birth plans and promote and encourage pregnant women and new mothers to practice preventive and curative MNC and nutrition behaviors; and 3) organize and influence women through community women leaders. Specific MNCH/N messages for religious leaders,[44] both Muslim and Christian that were developed by IMA as partners in USAID's former ACCESS project, will be adapted for use by religious leader members of the HMNCs, depending on the community's religious orientation(s).

2.   PD Inquiry as an approach applied to HMNC.[45] This strategy is based on an approach that has been successfully applied to increase key MNCH/N indicators in the CIMACS project to identify women in the community who were able to overcome factors that have led to low MNCH/N utilization. PD mothers are selected because they 1) registered early for ANC, 2) used skilled delivery and 3) employ newborn care practices that are known to prevent mother and baby deaths. The PD mothers penetrate (false) beliefs and cultural barriers in spite of facing the same obstacles as other women in the same community.[46] Well-trained CHVs identify the PD mothers and study what they have done and the project uses that information as the basis for the SBCC strategy in that particular community. It also contributes to developing and targeting effective BCC face-to-face messages. This approach also raises the perception of women's capabilities to contribute to the household and their communities. Experience shows these mothers have good access to households to conduct visits and are very effective face-to-face peer counselors.[47]

3.   Community Pregnancy and Newborn Surveillance and Education Sessions with Home Visits: PD leader mothers trained and assisted by CHVs, TBAs and GHS focal points (with Capacity Building from CRS) implement the SBCC strategies during bi-weekly group meetings. PD group mothers follow up these meetings with face-to-face counseling home visits. The ratio of PD mothers to pregnant/lactating women are 1:10-15 depending on the configuration of the community. Growth monitoring and mother-to-mother BF support group volunteers are invited to become involved with these groups as appropriate. These groups have specific SBCC activities promoting maternal nutrition and preparation for early initiation of breastfeeding. They collect data for the project and GHS HIS.

4.   Mother-to-Mother Breastfeeding Support Groups revitalized: The groups support early initiation and exclusive breastfeeding and introduces complementary feeding at 6 months. Baseline assessments determine groups' knowledge and activities related to maternal nutrition, Complementary Feeding and the Lactational Amenorrhea Method for birth spacing, and integrate them into the Community Pregnancy and Newborn Surveillance and Education Sessions based on their capacity.

5.   Using CBIS for Community Motivation and Feedback with "Community Giant Scoreboard" (CGS): HMNCs use data to display publicly the numbers of home or facility-based deliveries and other project indicators. This allowed for spirited discussion at the local level where the information would normally only be reported in one direction, to the national GHS Health Information System. Experience in CSPs implemented by other PVOs such as World Relief, Plan International, Salvation Army World Service Organization, Medical Teams International and Food for the Hungry showed that collecting data through Community Based Information Systems allows for analysis at the

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[44] IMA and JHPIEGO, ACCESS Project.

[45] This is an approach for pregnant/lactating women and not PD/Hearth for rehabilitating malnourished children.

[46]This is complementary to, but not synonymous with, Doer-Nondoer SBCC formative research.

[47]Capps, J. et al World Relief Rwanda FE 2006, Plan International Kenya 2009, Medical Teams International Liberia, 2010 CSHGP Evaluation Reports.

level where it is collected.[35] Community Giant Scoreboards,[48] developed by CRS, is an easily implemented and understood method of feedback that demonstrates to the whole community to what degree their contributions have been successful. They have been shown to generate enthusiasm and motivate communities in their role as advocates for mothers and babies. The high visibility keeps the MNCH/N efforts in the forefront of the communities' attention and becomes a form of visible, friendly competition among communities. UNICEF representatives that have seen CGS in communities have recommended scale up to all NR communities and CRS has received several requests to start them in other districts.

Maternal and Newborn Care: The project focuses on minimum activities for mothers and newborns using the Community Birth Plans (CBP) strategy. GHS staff members received an orientation to the CBP strategy. The limiting factors in complete roll-out were lack of time and lack of skills in community organizations. The project works alongside GHS staff to implement the strategy in all communities, transferring the skills and attitudes needed for community organization through modeling and discussion.

Key components of CBP include organizing community emergency transport systems and emergency medical funds, and training CHVs and TBAs to enable them to transmit messages. Part of CBP is training TBAs, CHVs, and staff who provide pre-natal care to assist families in filling out a format which guides them through planning for the birth of their child and any eventual emergency. Key messages include; ANC check up in the first trimester, at least four ANC check-ups from health facilities, advantages to an institutional deliver, IPT intake, use of LLIN, danger signs, immediate medical care at the first sign of complication, postpartum check-up within 24-48 hours after delivery and the importance of a family birth plan to be ready for delivery and any complications.

CBP includes a Community Information System (CIS) to track pregnant women, births, and deaths. This data is reported to the Health Facilities. CRS and GHS work with CHVs to interpret the data. It is lack of understanding how to derive meaning from the data that most often impedes utilization of data for planning and evaluation. The innovation in this project contributes to the success of CBP.

In addition, TBAs are trained in essential newborn care: cord care, thermal care, immediate and exclusive breastfeeding, infection recognition and referral to health facilities. A limitation to TBAs promoting institutional births is that, in doing so, they are losing the remunerations they receive for attending births. On the other hand, the GHS health workers do not have the capacity (time nor transport) to visit every new mother to provide post-partum and neonatal check-ups. The project discussed with the GHS and community members the feasibility and potential of families being willing to pay TBAs for post-partum and newborn care visits when the woman delivers at the health center and returns home in less than 24 hours.

Nutrition Interventions are integrated into the majority of the MNCH activities and delivery mechanisms of the overall project. **Essential Nutrition Actions** is the package of activities and services the project uses for capacity building in health facilities and SBCC at the household/community level. Specific behaviors target initiation of BF in the first hour and feeding colostrum, nutrition during pregnancy and lactation, anemia prevention and treatment and Lactation Management for maternal/infant health and Birth Spacing. ENA is an essential ingredient for the other technical interventions to meet their objectives. This includes health facility QI.[49] Essential Nutrition Actions are also intentionally

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[48] Community-led M&E tool designed using available and affordable material with pictorial illustrations. The scores are kept with two sets of ten score sticks, either Green (desirable outcome) or Red (undesirable outcome). On the billboard and beneath the picture illustrations is a frame with 10 score holes for each of the 10 sticks that go into holes based on desirable or undesirable outcomes.

[49] UNICEF, C4D Report 2010.

integrated within the MNCH technical interventions to improve birth outcomes and decrease low birthweight, one of the major contributing factors to the district's high chronic malnutrition rates in children. It also gives intentional increased emphasis on maternal nutrition which can have a profound impact on outcomes of both mother and baby. EPPICS addresses the "medical" side of maternal nutrition – deworming pregnant women, routine ANC blood tests, Iron/Folate, Vitamin A and access to iodized salt -- that are already included in GHS policies and protocols.

The local nutrition situation is being assessed, including Household Food Consumption and Seasonal Patterns using **Nutrition Program Design Assistant Tool for Program Planners**[50] and formative research using PRA/PLA, PDI or other appropriate tools/approaches. CRS provides ENA refreshers to health workers and ENA included in training for all community groups. CRS nutrition specialist's reviews ANC maternal nutrition counseling content and job aids to determine if they correspond with ENA and assist GHS with any revisions. Joint analysis and problem solving with DHMT Nutrition and Safe Motherhood and Child Health Focal Persons will be used to adapt materials to meet the needs of EM MNCH/N clientele.

MI and GHS specifically recommend that CRS develop **MIP interventions to address gaps in nutrition and MIP at the household level**. The project addresses two specific maternal household behaviors: 1) use of available LLINs and IPT3. While all pregnant women are targeted, reaching first time mothers receive extra emphasis because of the epidemiologic evidence that they are most likely to experience poor birth outcomes due to MIP. As part of this strategy, 'DOTS' approach is used to ensure uptake of IPT at the facility level. Also PD mothers during their home visits inspect/facilitate hanging of LLINs and encourage pregnant women and lactating mothers to sleep under these nets with their newborns.

COMMUNITY ORGANIZING/MOBILIZING ACTIVITIES WILL CONTRIBUTE TO SO2 AS FOLLOWS:

1.   **Re-positioning TBAs as Link Providers as partners in skilled care:** To encourage early and frequent ANC, maternal nutrition, skilled delivery and discourage home deliveries, ToT to GHS Focal Persons, midwives, CHOs and CHVs, are carried out who will in turn train TBAs in their new roles as Link Providers to Skilled HWs such as accompanying pregnant/postpartum women to facilities and assist with the HF delivery. This is already part of the EM DHMT plan, but they need support to roll it out in all communities. TBAs will become providers and teachers of ENC when babies are born at home. (This is not a traditional role for TBAs; the HMNC members negotiates these new roles for them within the community) TBAs also promote skilled post-partum and newborn care and accompany mothers and babies to a facility within 24 hours after a home birth for postnatal and newborn checkups.

2.   **Health Service Quality Improvement at the CHPS and Health facility level:** EPPICS do not ignore the significant health manpower, health staff attitudes, and supply chain management challenges the NR and EMD face; these are being addressed by GHS with support of other partners.[51] EPPICS filled the gaps in a comprehensive approach to link the formal health sector to communities and improve the skills of CHVs and TBAs, building a wider base of sustainable volunteer support to regularly reach every household with a pregnant/lactating mother.

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[50] CORE Group, Nutrition Working Group, 2010.

[51]**UNICEF is** supporting GHS to implement **CIMCI, including CCM malaria CM, DD with zinc and antibiotics for children over 6 months**; b) PMI partners addressing **ITNs, IRS, CM and said IPTp supply chain** c) **Five Alive** QI

EPPICS provides training in health worker interpersonal communication and counseling skills to address wide-spread reports of health worker disrespectful attitudes toward women[52] and complaints about mixed messages that clients receive from health personnel.[53] Several facilities MNC QI issues, including neonatal resuscitation training and EmOC are already targeted for TA by 5A and UNFPA. There is consensus between 5A, GHS and CRS that need still include: birth plans, maternal and newborn nutrition, IPT3 and Skilled Delivery, early postpartum/newborn checkups, and emphasis on early and exclusive BF. CRS also included maternal LLIN use. HW interpersonal and counseling skills was assessed at the baseline RHFA and use existing strategies that PVOs[54] have successfully applied to improving health worker quality of care in other child survival programs. Partnership Defined Quality (PDQ) methodology is also used to gain insight into client perceptions of the quality of services, both from mothers who use services from those who do not.

INNOVATION: Community-led responses to maternal and newborn care

The problem: High maternal and neonatal deaths in East Mamprusi (EM) district have been attributed to two main factors: a) household beliefs and rituals that jeopardize the health of pregnant women and their unborn child and delays seeking ANC and b) recognition and danger signs (in both mother and newborn) to make timely decisions to seek care at health facilities. 70%[55] of pregnant women sought ANC first during the third trimester of pregnancy, and only 48% used skilled birth attendants at deliveries. During the proposal design, health staff from EM reported that women were coming late to ANC meant they could not benefit from life-saving services available at the health facilities, such as HIV/AIDS and syphilis and anemia testing and treatment, and IPT. Also, low utilization of skilled staff during child birth increases risk of obstetric complications, such as rupture of uterus, hemorrhage or sepsis frequently seen at the referral hospital in EM. Low institutional deliveries also has a negative impact on early initiation of breastfeeding, subsequently exclusive breastfeeding practices and cord care.[45]

While speedy interventions are essential in the management of obstetric and neonatal emergencies, the ability of the health system to provide rapid interventions is mediated by challenging socio-cultural practices of mothers/fathers-in-law. Chiefs, Magazias, and Religious Leaders are the custodians of these practices and also dominate the obstetric and gynecologic scene in much of the rural districts of Ghana[56].

GHS and partners under the HIRD approach are increasing coverage and improving the quality of maternal and newborn care in 7 health facilities. These approaches, however, fall short of addressing the socio-cultural and traditional practices within communities and households which influence attitudes and behaviors that impacts negatively on the utilization of the MCH services.[57,58,59] The innovation is

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[52] NR GHS Annual Report 2009 and EM GHS Annual Report 2010, and interview with Director Health Services, NR 2011

[53] EM GHS Annual Report, 2010 and UNICEF C4D report 2010.

[54] World Relief, Salvation Army World Service Organization (SAWSO), Food for the Hungry, ARC, and Medical Teams International.

[55] GHS statistic

[56] MoH (2008). National consultative meeting on the Reduction of maternal mortality in Ghana: *Partnership for action.* A synthesis report

[57] Poku-Boansi (2010) Combating maternal mortality in the Gushiegu district of Ghana: the role of rural transportation. *Journal of Sustainable Development in Africa*, Vol 12, No 5.

[58] Vaah E (2010) Reducing maternal and neonatal mortality in Ghana: the need for community focus approaches. *Health Platform Forum.*

[59] Senah K (2003).Maternal Mortality in Ghana: The Other Side. *Research Review* NS 19,1 (2003) 47-55

community-led and targets challenging socio-cultural practices. It is timely as Ghana repositions itself to roll-out HIRD approaches to enhance its chances of achieving health related MDG targets. Results of this intervention will contribute to influencing national and global approaches to address harmful practices, reinforcing new ones and the low use of MCH services.

Operational research has been conducted throughout the project period to advance learning on social cultural barriers to improved maternal and child health. The results of this research will be available to the final evaluation consultant.

VI. Purpose of the Final Evaluation

The purpose of USAID's CSHGP is to contribute to advancing the health system strengthening goals of Ministries of Health toward achieving sustained improvements in child survival and health outcomes, particularly among vulnerable populations, by supporting the innovative, integrated community-oriented programming of PVOs/NGOs and their in-country partners. CSHGP cooperative agreements offer unique opportunities to demonstrate the links between specific delivery strategies implemented within the CHPS zone and Health Centers as well as measured outcomes. The FE is intended as a performance evaluation but should be broadly accessible to various audiences including Ministries of Health (MOHs), and findings will contribute evidence relevant to global initiatives such as the Global Health Initiative and Feed the Future.[60] It is important that the final evaluator consider the audiences listed below, when conducting the evaluation and writing the report.

The FE provides an opportunity for all project stakeholders to take stock of accomplishments to date and to listen to the beneficiaries at all levels (Health Centers, CHPS compounds etc), including mothers and caregivers, other community members and opinion leaders, health workers, health system administrators, local partners, other organizations, and donors. The FE Report will be used by the following audiences as a source of evidence to help inform decisions about future program designs and policies:

- In-country partners at national, regional, and local levels (e.g., MOH and other relevant ministries, district health team, local organizations, communities in project areas).

- USAID (CSHGP, Global Health Bureau, USAID Missions), and other CSHGP grantees.

- The international global health community. The FE report will be posted for public use at http://www.mchipngo.net and the USAID Development Experience Clearinghouse at https://dec.usaid.gov.

VII. Methodology

The evaluation methodology consists of a mixed-methods approach using both quantitative and qualitative data. The approach comprises both a desk review of secondary data sources as well as the draft evaluation report provided by the previous consultant, which would need to be finalized. At present, due to short timeframe to complete the report, collection of additional qualitative data from stakeholders to complement existing data is not envisaged but the consultant will rely on data that has been collected. Catholic Relief Services – USCCB Ghana Program will facilitate this sharing and feedback.

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[60] For more information on these two initiatives, visit http://www.usaid.gov and http://www.feedthefuture.gov.

Secondary Data:

The final evaluator will review project reports (e.g. Detailed Implementation Plan; annual reports; Knowledge, practice, and coverage, Health Facility Assessment report, Operations Research final report and baseline; and final survey and any monitoring reports) to make assessments of project results in relation to the project design and targets set. The final evaluator should also review key U.S. Government/USAID strategic documents at the global and national levels relevant to the content of project. All relevant policy and strategy documents at the national level (e.g., MOH policies and strategies) are also crucial and should be used and referenced.

Qualitative Data:

Due to short time period available for completion of the draft evaluation report, no field visits are envisaged for this consultancy. Data collected by the previous consultant may be provided (if and as available) by CRS, or any other data that is available at CRS/Ghana level that may contribute to this consultancy.

Limitations:

The evaluation report must include a discussion of the methodological limitations of the evaluation.

Additional guidance on reporting format is provided in the CSHGP Guidelines for Final Evaluations, specifically in the Final Evaluation Report Template included therein.

VIII. Evaluation Questions

The final evaluator and the evaluation team will use existing data collected or compiled during the life of the project, as well as additional data reviewed during the evaluation to answer the following questions:

1. To what extent did the project accomplish and/or contribute to the strategic objectives and Intermediate Results stated in the DIP?

   - Describe the extent to which the project was implemented as planned, any changes to the planned implementation, and why those changes were made.

   - How were results achieved? If the project improved coverage of high-impact interventions simultaneously, what types of integration enabled this? Specifically, refer to community based strategies and approaches and construct a logic model describing inputs, process/activities, outputs, and outcomes.

   - Document high impact interventions and its potential for scalability

2. What were the key strategies and factors, including management and partnership issues that contributed to what worked or did not work:

   - What were the contextual factors such as socioeconomic factors, gender, demographic factors, environmental characteristics, baseline health conditions, health services characteristics,[61] and so forth that affected implementation and outcomes?

   - What capacities were built, and how?

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[61]See Table 1 in the document here: http://heapol.oxfordjournals.org/content/20/suppl_1/i18.long

- Were gender considerations incorporated into the project at the design phase or midway through the project? If so, how? Are there any specific gender-related outcomes? Are there any unintended consequences (positive and negative) related to gender?

3. Which elements of the project have been or are likely to be sustained or expanded? e.g., through institutionalization or policies

- Analyze the elements of scaling-up and types of scaling-up that have occurred or could likely occur (dissemination and advocacy, organizational process, costs and/resource mobilization, monitoring and evaluation using the Expand Net resource for reference).[62]

- Analyze the costs and resources associated with implementation relevant for replication or expansion, as well as estimated cost per beneficiary (using Marginal Budgeting for Bottlenecks, Lives Saved Tool, *and Cost Benefit Analysis: A Primer for Community Health Workers*,[63] or other tools).

4. What are stakeholder perspectives on the OR implementation, and how did the OR study affect capacity, practices, and policy?

IX. Final Evaluator Characteristics and Expected Timeline

The consultant will serve as the evaluation team. The consultant will coordinate closely with the Catholic Relief Services – USCCB Ghana Program team regarding tool finalization, evaluation methodology, timeline, and report finalization.

Requirements:

The consultant must be approved by USAID CSHGP and should meet the following minimum requirements:

- Proven expertise and leadership in integrated community-oriented reproductive, maternal, newborn, and child health projects
- conduct of evaluations (baseline, endline) using mixed methods
- Experience with design, collection, and analysis using applied research methods in a program implementation context
- Familiarity with public health system in Ghana
- Demonstrated ability to communicate with and lead a team of stakeholders, staff, and national experts in participatory evaluation
- Familiarity with USAID programming
- Skill or familiarity with cost analysis methods for program assessments
- Excellent analytical and writing skills (English)

- Signed statement explaining any conflict of interest[64]

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[62] http://expandnet.net/PDFs/ExpandNet-WHO%20Nine%20Step%20Guide%20published.pdf

[63] https://apps.publichealth.arizona.edu/CHWToolkit/PDFs/Framewor/costbene.pdf

[64] CSHGP grantees are required to hire an external evaluator for the final evaluation. That fiduciary relationship creates a conflict of interest that is minimized by the CSHGP requirement of submission of a draft evaluation report directly to the CSHGP.

Key Tasks of the Evaluator:

- Review project documents and resources to better understand the project

- Review and Refine the evaluation objectives and key questions based on the CSHGP guidelines in coordination with Catholic Relief Services – USCCB Ghana Program team and its partners
- Interpret both quantitative and qualitative results and draw conclusions, lessons learned, and recommendations regarding project outcomes
- Prepare draft report in line with the CSHGP guidelines and submit to Catholic Relief Services – USCCB Ghana Program on or before December 18, 2015
- Prepare and submit the final report using CSHGP guidance, which is due at the USAID CSHGP GH/HIDN/NUT office on or before 90 days after the close out of the project

X. Final Evaluation Report

The FE report should follow the outline in USAID CSHGP's Guidelines for Final Evaluations. A draft and final report, written by the final evaluator, must be submitted directly to CRS; CRS will submit the final report to CSHGP and copy the final evaluator. Draft and final reports should be submitted according to the submission instructions as indicated in the guidelines.

> *Kris Ozar*
> *Catholic Relief Services - U.S.C.C.B*
> *Country Representative - Ghana*
> *P.O Box 6333 Accra-North*
> *Accra, Ghana*
> *kris.ozar@crs.org*

XI. Budget

Include the allocated level of effort and budget, including what expenses will be covered (such as local travel). If expressions of interest are solicited, they should include a detailed budget listing the consultant's daily rate and any foreseen expenses that may be incurred during this evaluation. International and local travel and lodging should not be included.

XII. Deliverables

At the conclusion of the consultancy period, the consultant is expected to complete the following deliverables:

- Prepare a draft report in line with the CSHGP guidelines and submit to Catholic Relief Services – USCCB Ghana Program on or before December 18, 2015. Note that dates may be updated upon finalization of consultant contract.

- Finalize and submit a project brief using compelling results from project strategies

- Prepare and submit the final report by December 25, 2015 Note that dates may be updated upon finalization of consultant contract.

ANNEX VIII. EVALUATION METHODS AND LIMITATIONS

Methods used by the evaluation team (and limitations) are described in the Final Evaluation report. The table included here provides further details.

Method	Number and duration	Location
Group discussion with mothers	Two (around 15 mothers in each group); 2 hours per discussion	Communities; One in an area where project has done well (Jawani); the second where the project has not done well (Tamboku)
Group discussion with mothers (three sub-groups of mothers in each session: those with children less than 1 year old, those with children around 5 years old, and those with children around 20 years old)	Two (around 9 mothers in each group); 2 hours per discussion	Communities; One in an area near a major health facility (Nalerigu); the second far from a major health facility (Yunyoranyiri)
Interviews with health facility staff	Five; around 30 minutes per interview	Sakogu and Nalerigu
Discussions with project staff	Several; varying duration	East Mamprusi and Tamale
Discussions with project volunteers and other community members, representatives from project partners, and with coordinators of the household survey, operations research studies, and facility surveys	Several; varying duration	East Mamprusi and Tamale
Discussion with Catholic Relief Services-Accra staff	One hour-long discussion	Accra

ANNEX IX: DATA COLLECTION INSTRUMENTS

Guide for Discussion with Mothers

- Source, timing, and frequency of antenatal care
- Participatory diagramming (before discussion of delivery)
- Place where deliveries occur (and transportation used to reach the place)
- Birth attendant
- Breast feeding and introduction of other foods
- Use of bed nets
- Opinion about project activities

Guide for Interview with Head of Health Facility (facility that provides obstetric services)

- Schedule of services
- Types of services (especially types of obstetric services)
- Staff (number, qualifications, and responsibilities) [especially staff handling obstetric, anesthesia, and surgical services]
- Equipment (especially equipment for obstetric and neonatal services)
- Medicines (especially medicines used in obstetric services)
- Cost of consultation, procedures, and treatment (especially for obstetric services)
- Use of services (number of patients, waiting periods)
- Thoughts about improving services

Guide for Interview with Pharmacist at Health Facility (facility that provides obstetric services)
- Qualifications
- Responsibilities
- Stock-outs of medicines (especially those used in obstetric services)
- Thoughts about improving services

Guide for Interview with Health Worker at Sub-district Health Facility

- Qualifications
- Years of experience
- Responsibilities
- Problems faced in providing services
- Thoughts about improving services
- Opinion about project activities

ANNEX X. INFORMATION SOURCES

Documents and Reports reviewed
1. Detailed implementation plan
2. Reports on baseline and final knowledge, practice, and coverage surveys
3. Reports on baseline and final operations research studies
4. Annual reports

Places visited
1. Accra, Gambaga, Jawani, Nalerigu, Sakogu, Tamale, Tamboku, Tinsungu, and Yunyoranyiri

People contacted: To protect the privacy of the people contacted by the evaluation team, names are not provided here. They include:
- 48 mothers
- 3 traditional birth attendants
- 2 members of a family (contacted during investigation of maternal death)
- 2 Community Health Volunteers
- 2 drivers of three-wheeled motorcycle ambulance
- 1 leader of women
- 1 village chief
- 1 assemblyman
- 2 patients at health facilities
- 7 project staff members
- 1 sub-district public health official
- 2 district government health officials
- 1 regional government health official
- 2 university faculty members
- 2 health researchers
- 5 health facility staff members
- 7 Catholic Relief Services-Accra staff members
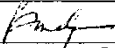
ANNEX XI. DISCLOSURE OF ANY CONFLICTS OF INTEREST

DISCLOSURE OF ANY CONFLICTS OF INTEREST

Name	PAUL ARMAH ARYEE
Title	DR. (SENIOR LECTURER)
Organization	UNIV FOR DEVELOPMENT STUDIES
Evaluation Position	☐ Team Leader ☒ Team Member
Evaluation Award Number (Contract or other instrument)	
USAID Project(s) Evaluated (Include project name(s), implementer name(s) and award number(s), if applicable)	EPICS PROJECT
I have real or potential conflicts of interest to disclose.	☒ Yes ☐ No
If yes answered above, I disclose the following facts: Real or potential conflicts of interest may include, but are not limited to the following: 1. Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated 2. Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation 3. Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project 4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated 5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated 6. Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation	WAS INVOLVED IN THE THE OPERATIONAL RESEARCH FOR THE EPICS PROJECT
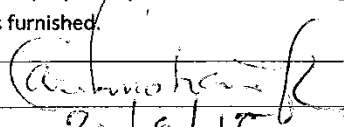
I certify (1) that I have completed this disclosure form fully and to the best of my ability and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished.

Signature	
Date	30th Sept. 2015

DISCLOSURE OF ANY CONFLICTS OF INTEREST

Name	MOHMMED ALI
Title	HEALTH PROG MANAGER
Organization	CATHOLIC RELIEF SERVICES
Evaluation Position	☐ Team Leader ☑ Team Member
Evaluation Award Number (Contract or other instrument)	
USAID Project(s) Evaluated (Include project name(s), implementer name(s) and award number(s), if applicable)	EPPICS PROJECT
I have real or potential conflicts of interest to disclose.	☑ Yes ☐ No
If yes answered above, I disclose the following facts: Real or potential conflicts of interest may include, but are not limited to the following: 1. Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated 2. Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation 3. Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project 4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated 5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated 6. Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation	CRS Employee

I certify (1) that I have completed this disclosure form fully and to the best of my ability and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished.

Signature	*(signature)*
Date	30 9 15

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DISCLOSURE OF ANY CONFLICTS OF INTEREST

Name PAULINA BAYIWASI	
Title DISTRICT DIRECTOR OF HEALTH SERVICES	
Organization GHANA HEALTH SERVICE	
Evaluation Position	☐ *Team Leader* ☑ Team Member
Evaluation Award Number (Contract or other instrument)	
USAID Project(s) Evaluated (Include project name(s), implementer name(s) and award number(s), if applicable)	EPPICS
I have real or potential conflicts of interest to disclose.	☐ Yes ☑ No
If yes answered above, I disclose the following facts: Real or potential conflicts of interest may include, but are not limited to the following: 1. Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated 2. Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation 3. Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project 4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated 5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated 6. Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation	

I certify (1) that I have completed this disclosure form fully and to the best of my ability and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished.

Signature	
Date	30th September 2015

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ANNEX XII. STATEMENT OF DIFFERENCES

Grantee's Comments	Evaluation Team's Response
Reformat report to conform with the guidelines for final evaluation reports	Reformatted
Reformat executive summary to conform with the guidelines	Reformatted
Present [Summary Table of Inputs, Activities, and Outputs That Contributed to Key Outcomes]	Included
Present [Table of Recommendations]	Included
Conceptual frameworks [not included in guidelines]	Guidelines suggest information should be "presented visually in easy-to-read charts, tables, graphs, and maps"
[Recent] literature should be employed	Literature from 1990s summarized in section that explains how some maternal care strategies have long been considered ineffective in reducing maternal mortality. Studies from 2013 also summarized.
Annexes [should be included]	Included
Quality of diagrams should be improved	Improved

ANNEX XIII. EVALUATION TEAM MEMBERS, ROLES, AND THEIR TITLES

- Karunesh Tuli and Sandra Wilcox- Final Evaluation Independent Consultants (Team Leader)
- Mohammed Ali, Catholic Relief Services (Team Member)
- Elena McEwan, , Catholic Relief Services (Remote support)
- Paul Armah Aryee, University for Development Studies (Team Member)
- Paulina Bayiwasi, District Director of Health Services (Team Member)

ANNEX XIV. OPERATIONS RESEARCH FINAL REPORT

ENGAGING COMMUNITY LEADERS AS "COUNCIL OF CHAMPIONS" TO IMPROVE UPTAKE OF MATERNAL AND NEWBORN CARE SERVICES IN EAST MAMPRUSI DISTRICT OF NORTHERN GHANA

OPERATIONS RESEARCH REPORT

REPORT PREPARED BY OPERATIONAL RESEARCH TEAM:

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August, 2015

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ACRONYMS

ANC	Antenatal Care
AR	Annual Report
BF/EBF	Breastfeeding/Exclusive Breastfeeding
BMC	Baptist Medical Center
CBA	Community-Based Agent
CBIS	Community-Based Information System
CETS	Community Emergency Transport System
CDO	Community Development Officer
CHPS	Community-Based Health Planning and Services
CHC	Community Health Committee
CHV	Community Health Volunteer
CHO	Community Health Officer
CIS	Community Information System
CoC	Council of Champions
C-PreS	Community Pregnancy Surveillance
CRS	Catholic Relief Services
DA	District Assembly
DDHS	Director District Health Services
DHMT	District Health Management Team
DIMS	District Information Management System
DOTS	Directly Observed Treatment Short course
EMD	East Mamprusi District
EmOC	Emergency Obstetrical Care
ENA	Essential Nutrition Actions
ENC	Essential Newborn Care
EPPICS	Encouraging Positive Practice for Improving Child Survival
FP	Focal Person
FGD	Focus Group Discussion
FtF	Feed the Future
GDHS	Ghana Demographic and Health Survey (2008)
GHI	Global Health Initiative
GHS	Ghana Health Services
HHs	Households
Hb	Hemoglobin
HDM	Household Decision Makers
HF	Health Facility
HIS/HMIS	Health Information System/Management Information System
HMNCCs	Healthy Mothers and Newborn Care Committee
IFA	Iron Folic Acid

IMR	Infant Mortality Rate
IPTp	Intermittent preventive therapy (Pregnancy)
IPT3	Intermittent preventive therapy (3 doses of SP)
KPC	Knowledge Practice and Coverage Survey
LAM	Lactation Amenorrhea Method
LAQS	Lot Quality Assurance Sampling
LOE	Level of Effort
MAMAN	Minimum Package for Mothers and Newborns
MD/MW	Medical Doctor/Midwife
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MMR	Maternal Mortality Ratio
MMT	Modified Motor Tricycle
MNC	Maternal and Newborn Care
MN/N	Maternal, Newborn and Nutrition
MOH	Ministry of Health
NNMR	Neonatal Mortality Rate
NR	Northern Region
OR	Operations Research
PRABs	Practices, Rituals, Attitudes and Beliefs
PD/PDI	Positive Deviance/Positive Deviance Inquiry
PDQ	Partnership Defined Quality
P/L M	Pregnant/Lactating Mothers
PP	Post-Partum Care
RF	Results Framework
RHFA	Rapid Health Facility Assessment
RTI	Research Triangle Institute
SBCC	Social Behavior Change Communication
SD	Sub-district
SO	Strategic Objective
TA	Technical Assistance
TBA/TTBA	Traditional Birth Attendant/Trained TBA
TMP	Traditional Medical Practitioner
TT	Tetanus Toxoid (Immunization)
UDS	University for Development Studies
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WFP	United Nations World Food Program
WRA	Women of Reproductive Age

EPPICS Operations Research Executive Summary

Council of Champions at Soabigi community - Photo CRS

Key Findings:

- Innovative Council of Champions strategy effectively addresses practices, rituals, attitudes and beliefs (PRABs) that act as barriers to uptake of maternal and newborn care services

- The prevalence of MNCH related PRABs in the intervention was significantly lower than in the comparison communities (33.9 % versus 50.0 %) (Chi = 27.1, p < 0.001).

- The CoC strategy significantly improved essential newborn care practices (safe cord care, optimal thermal care and good neonatal feeding)

Background and Setting

Encouraging Positive Practices for Improving Child Survival (EPPICS) was designed to improve maternal and newborn health in East Mamprusi district of northern Ghana. It included three interventions with varied level of efforts: maternal and newborn care (60%), Nutrition (30%), and Malaria in Pregnancy (10%). The project started in 2011, with a target of 51,000 direct beneficiaries (women of reproductive age and children 0-59 months).

EPPICS combined facility and community based strategies and addressed barriers that prevented people from using available services: it improved georgrahic access to health services through provision of modified motortricycles as ambulances and worked to reposition Traditional Birth Atteadants as link providers for skilled assisted childbirth. In addition to the main project activities, Catholic Relief Services (CRS) in collaboration with the University for Development Studies (UDS) and Ghana Health Services (GHS), developed, tested, and documented an innovative approach that modified practices, rituals and beliefs (PRABs) which had been delaying prompt care-seeking among the target beneficiaries. In Sakogu sub-district, EPPICS constituted councils of champions (CoC) in each community (comprising the chief, and women and religious leaders). The sub-district of Langbensi served as the control area.

Problem and Solution

High maternal and neonatal deaths in East Mamprusi District (EMD) have been attributed to a number of factors including community and household practices, rituals, attitudes and beliefs (PRABs) that delay care seeking during pregnancy labor, delivery and newborn emergencies. Previous strategies to reach households have focused on providing "action" messages without an in-depth analysis of household dynamics to understand factors perpetuating those PRABs. It is against this realization that CRS and UDS developed, tested and documented the Council of Champions strategy as an approach to addressing the problem of PRABs that reduce health seeking behavior.

Interventions

In most part of rural Ghana, the ability of the formal health system to provide rapid MNC interventions is mediated by challenging practices, rituals, attitudes and beliefs (PRABs) of key household decision makers: husbands, mothers- and fathers-in-law. Chiefs, Magazias, Traditional Birth Attendants/Medical Practitioners and Religious Leaders are the custodians of these PRABs and also dominate the obstetric and gynecologic scene in much of the rural districts of Ghana. CRS and partners regrouped a total of 200 (5 – 7 per community) most influential people to serve on the community Council of Champions. The intervention was therefore to develop, test and evaluate the effect of CoCs on addressing PRABs as barriers to the uptake of maternal and newborn care services in EM District, as a complement to a comprehensive package of maternal and newborn health services.

A total of 200 (5 – 7 per community) most influential people to serve on the community Council of Champions to address/promote PRABs related barriers/enforcers to health seeking behavior. The CoCs were selected and given 36 hours training on key knowledge areas such as an introduction to methods for reducing maternal neonatal and child (MNCH) morbidity and mortality using the triple A concept – assessing the problem, analyzing the causes and taking appropriate and timely action to address-including engaging of Household Decision Makers, identification and prioritization of PRABs to be modified and or eliminated, organizing CoCs meetings, team building strategies, home visits, interpersonal communication as well as their roles and responsibilities

Methods

Two sub-districts (Sakogu and Langbinsi) within the East Mamprusi District were purposefully selected as the intervention and comparison study areas respectively. The sub-districts were selected because preliminary data indicated that they had similar socio-economic, demographic and health-seeking behaviors. The main outcome of this study is to increase the proportion of institutional deliveries. This outcome indicator was used to calculate a sample size of 1,020 (510 per study arm). The sample was set to detect a 15% difference in the comparison (43%) and intervention areas (58%). Given the sampling method, a design effect of 2.0 was selected. Power (1-β) and statistical significance (α) were set at 90 % and 0.05 respectively. A non-response of 10% was also considered in the sample size calculation.

Thirty communities were selected in both the intervention and comparison areas. In each selected community, field supervisors met with community leaders and obtained permission to conduct the interviews. Next, a complete list of all households was compiled, and systematic random sampling was used to select households. Households with at least one woman who had delivered in the past 24 months were eligible for selection. Only one woman was selected from each household. If a household had more than one eligible mother, the names were listed and one woman was selected randomly for interview.

The Institutional Review Board (IRB) of the School of Medicine and Health Sciences, University for Development Studies reviewed and approved the study protocol (Reference no SMHSER0001**).** Verbal informed consent was sought from all study participants (mainly women of reproductive age) before the commencement of any interviews or study activity. Study participants were free to refuse or withdraw from the study at any time without any penalty.

Findings

The study established significant differences in the uptake of maternal, newborn care health services between the study groups. Coverage of timely initiation of first ANC attendance, frequency and adequacy of ANC attendance and uptake of post-natal care uptake was significantly higher in the intervention communities than in the comparison communities. However, there was a slight decline of early initiation of ANC and facility deliveries with time due to the absence of skilled health professionals at the only health facility in the intervention area. Additionally, the intervention significantly improved essential newborn care practices (safe cord care, optimal thermal care and good neonatal feeding). Also, the prevalence of at least one MNCH related PRABs in the intervention was significantly lower than in the comparison communities (33.9 % versus 50.0 %) (Chi = 27.1, p < 0.001).

Conclusions

This report tested and confirmed the hypothesis that repositioning and engaging key custodians of household and community-based practices, rituals, attitudes and beliefs (PRABs) as Council of Champions (CoCs) for maternal and child health has assisted in either modifying the challenging/harmful PRABs as well as reinforce positive PRABs. The CoC strategy supported the earlier assertion that engaging the custodians at the community-household level (demand side) and providing quality and adequate healthcare services at the facilities (supply side), barriers to the uptake and use of maternal and child health services is addressed.

Recommendations

In the light of the outcome of the study, the following suggestions/recommendations apply:

1. Social and behavior change communication should form part of the strategy to address household and community related PRABs as part of improving maternal and newborn health in Northern Ghana and in similar contexts.

2. Innovative education strategies are needed to increase knowledge of women of reproductive age and household decision makers on the importance and uptake of attending PNC after 2 days of delivery especially among women who deliver at home.

3. In view of the low maternal knowledge of danger signs, the national reproductive strategy on maternal and newborn health should empower families and communities to recognize pregnancy related risks, and to take responsibility for developing and implementing appropriate response to them

Use of Evidence

Based on the findings of this study, CRS and GHS should advocate with the Ministry of Health to adopt the Council of Champion strategy as part the strategies in the maternal and child health policies.

1.0 INTRODUCTION

1.1 Global Problem

Globally supply and demand-side barriers exist to the uptake of essential maternal and newborn health services (Montagu et al., 2011). Though several high impact interventions are being implemented, progress towards attainment of significant improvement in maternal and newborn health still remains a big challenge to most developing countries, including Ghana.

In sub-Saharan Africa, the region with the highest maternal mortality ratio (500 deaths per 100,000 live births) and perinatal mortality rate (56 per 1,000 births) and coverage of facility deliveries are particularly low (WHO, 2012). A recent estimate indicated that in sub-Saharan countries, less than half of the births take place in a health facility (Moyer and Mustafa, 2013). Additionally, suboptimal newborn care practices still persist and neonatal mortality rates seemed resistant to change, contributing to about 40 % of all under-five deaths world-wide (Lawn et al., 2005). Therefore, a continuum of care approach that includes prenatal, intrapartum, immediate newborn and postpartum care for mother and newborn is therefore considered essential for promotion of mother-infant health (Kerber et al., 2007).

1.2 The specific problem and research setting

The East Mamprusi (EM) district in the Northern Region (NR) of Ghana is burdened with a higher maternal mortality ratio (MMR) and infant mortality compared to the regional averages. In 2010, institutional MMR was estimated at 217/100,000 in EM compared to the regional average of 201/100,000 while infant deaths were slightly lower (34/1000) compared to 35/1000 for NR. Estimated neonatal deaths constitute 60% of all infant deaths in Ghana. High maternal and neonatal deaths in EM have been attributed to late registration (3rd trimester) for antenatal care (30%), low utilization of skilled care at birth (48.0%), high prevalence of low birth weight (9.8%), low rate of exclusive breastfeeding (16.1%), unhygienic and unsafe delivery practices and cord care, and delays in recognition of danger signs (in both mother and newborn) and making timely decisions at the household level to seek care at health facilities.

The high maternal and neonatal (MN) deaths in EM District have been largely attributed to low utilization of MNC services at crucial stages of pregnancy, delivery, post-partum and post-natal periods (EM –GHS, 2011).

To address the challenges enumerated above, the Ghana Health Service (GHS) and its partners have put in place interventions and policies aimed at increasing coverage and improving the quality of maternal and newborn care (MNC). These efforts include introduction of national health insurance and free antenatal and delivery policies to improve financial access to health services, the scale-up of the Community-Based Health Planning and Services (CHPS) to improve geographic access, and improvement of human resource for health and supply chain management to enhance quality of health service delivery (MOH, 2011).

Despite these policies and strategies in the health sector, MNC service quality, coverage and utilization remained major challenges, particularly in the EM district of Northern Ghana (Ghana Statistical Service

(GSS) et al., 2009).Apart from poor quality of health services, socio-cultural factors in the form of practices, rituals, attitudes and beliefs (PRABs) have been identified as key contributors to the poor health seeking behaviors and has engaged the attention of Ghana's Ministry of Health (MoH) over the past years (Ghana Statistical Service (GSS) et al., 2009, MOH, 2010, MOH, 2007). The negative contribution of challenging PRABs to poor maternal and neonatal health outcomes calls for innovative community based strategies to help address their effects (MOH, 2010, MOH, 2011, MOH, 2007, UNICEF, 2010). Existing traditional PRABs such as 'peligibu[65]', Kalogutiim[66], waligu[67], tidugukoom[68] and 'Nangbantuom[69]' are among the key barriers to the up-take of maternal and newborn health services (GCSP, 2006, Wuni, 2009, Yunus et al., 2007).

1.3 Research Justification

High maternal and neonatal deaths in EM district have been attributed to a number of factors including: a) community and household practices, rituals, attitudes and beliefs (PRABs) that delay care seeking during labor and delivery, and b) lack or inadequate recognition of danger signs (in both mother and newborn) by the mother and health worker to make timely decisions to seek care at health facilities during obstetric and newborn emergencies. Strategies or approaches to effectively reach households have focused on providing "action" messages without an in-depth analysis of the households' dynamics to understand factors perpetuating those behaviors.

PRABs are guided by key community leaders (KCLs) namely: Chiefs, Magazias ("Queen Mothers", the senior females in communities), traditional healers, Religious leaders/shrine owners. These KCLs are also the custodians of the norms and values of their people and exert significant influence on various Household Decision Makers (HDMs) whose actions influence the health of women and children within their communities (CRS Ghana, 2011, Senah, 2003). Yet no known community-based intervention existed in the EM District to adequately leverage the powers and influence of these respected community leaders in addressing obstacles that stand against improvements in the use of health facility-led MNC services at the household and community levels. It is against this realization that Catholic Relief Services (CRS) and its partners implemented a community-based intervention titled "**Encouraging Positive Practices for Improving Child Survival**" (EPPICS) project from October 2011 through September 2015 in the East Mamprusi District.

As part of the EPPICS Project design and in acknowledging the influence of HDMs on mothers and caregivers, CRS in collaboration with University for Development Studies nested this operations research (OR) to assess the effectiveness of the CoCs innovation in the context of the EPPICS project to improve uptake of essential MNCH services.

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[66] A local herbal preparation of an oxytocin derivative for pregnant women with obstructed labor. Kalogutiim enhances contractions without dilating the cervix and has also been responsible for many cases of ruptured uterus.
[67] A form of prelacteals select verses of the Quran are written on a piece of wood usually by Imams and given to newborn babies to drink in order to protect the newborns from the evil eye and to make them strong.
[68] Special Herbs usually contained in pots place in front of compounds given to the newborn baby as a welcome to the family.
[69] Special herbal preparation believed to offer spiritual protection to the newborn baby against evil eyes.

The research is expected to provide evidence-based outcomes that will contribute to influencing national and global policies and approaches regarding innovative community-led strategies in addressing harmful practices, reinforcing positive practices and improving the low uptake of maternal and newborn health services.

1.4 Research Questions/Hypothesis

The objective of the research study was to develop, test and evaluate the effect of CoCs on addressing PRABs as barriers to the uptake of maternal and newborn care services in EM District, as a complement to a comprehensive package of maternal and newborn health services.

The specific objectives were to:

i. Compare changes in the early initiation of ANC (within the first trimester) between intervention and comparison areas

ii. Compare changes in facility deliveries between intervention and comparison areas

iii. Compare the changes in uptake of post-natal care services between the intervention and comparison areas.

iv. Describe changes in attitudes towards traditional PRABS related to care seeking during pregnancy, intra-partum and postpartum stages between the intervention area and the comparison area.

v. Compare essential newborn care practices (safe cord care and optimal thermal care) and early recognition of danger signs during pregnancy, birth, postpartum and the neonatal periods between intervention and comparison areas.

vi. Compare infant and young child feeding practices (early initiation of breastfeeding, exclusive breastfeeding, neonatal feeding) in intervention and comparison areas.

Primary Hypothesis: The addition of the Council of Champions (CoCs) to a comprehensive package of maternal and newborn health services will improve uptake of institutional delivery.

2.0 METHODS

2.1 Study Design

The effectiveness of the intervention was evaluated through a "pretest-posttest non-equivalent groups design". Two cross-sectional surveys at baseline and end point were carried out in both the intervention and comparison areas. The baseline survey was carried out in February 2013 and the end line survey was conducted in July 2015.

Two sub-districts (Sakogu and Langbinsi) within the East Mamprusi District were purposefully selected as the intervention and comparison study areas. The sub-districts were selected because preliminary data indicated that they had similar socio-economic, demographic and health-seeking behaviors. The

main outcome of this study is to increase the proportion of institutional deliveries. This outcome indicator was used to calculate a sample size of 1,020 (510 per study arm). The sample was set to detect a 15% difference in the comparison (43%) and intervention areas (58%). Given the sampling method, a design effect of 2.0 was selected. Power (1-β) and statistical significance (α) were set at 90 % and 0.05 respectively. A non-response of 10% was also considered in the sample size calculation.

2.2 Participants

The primary respondents comprised women of reproductive age who delivered within the previous two years. A two-stage cluster sampling design, probability proportional to size (PPS) was used given the lack of a comprehensive sampling frame and the geographic distribution of the population. The sample was stratified by intervention and comparison areas. Communities within each sub-district served as primary sampling units (PSU). The sampling frame of the communities was constructed using population data projected by the Ghana Health Service (GHS) from the 2010 population census.

Thirty communities, or clusters, were selected in both the intervention and comparison areas. In each selected cluster, field supervisors met with community leaders and obtained permission to conduct the interviews. Next, a complete list of all households was compiled, and systematic random sampling was used to select households. Households with at least one woman who had delivered in the past 24 months were eligible for selection. Only one woman was selected from each household. If a household had more than one eligible mother, the names were listed and one woman was selected randomly for interview.

2.3 IRB Approval and Informed Consent

The Institutional Review Board (IRB) of the School of Medicine and Health Sciences, University for Development Studies reviewed and approved the study protocol (Reference no SMHSER0001**).** Verbal informed consent was sought from all study participants before the commencement of any interviews or study activity. Study participants were free to refuse or withdraw from the study at any time without any penalty. The study's purpose and objectives were explained to each participant prior to interview. No biological sample was obtained as a part of the data collection. Data were kept strictly confidential and no personal identifiers were captured.

2.4 Study Duration

The baseline survey was conducted in February 2013 and was immediately followed by the implementation of the intervention which lasted 28 months (March 2013 to June 2015). The endline survey was conducted during the month of July 2015.

2.5 Intervention Description

Council of Champions (CoC): In most part of rural Ghana, the ability of the formal health system to provide rapid MNC interventions is mediated by challenging practices, rituals, attitudes and beliefs (PRABs) of key household decision makers: husbands, mothers- and fathers-in-law. Chiefs, Magazias, Traditional Birth Attendants/Medical Practitioners and Religious Leaders are the custodians of these PRABs and also dominate the obstetric and gynecologic scene in much of the rural districts of Ghana. Thus, EPPICS regrouped a total of 200 (5 – 7 per community) most influential people to serve on the

community Council of Champions to address/promote PRABs related barriers/enforcers to health seeking behavior. Below points provide details in terms of:

- *Who was recruited and how were they recruited:* The CoCs were selected with the support of community members. Each CoC member needed to fulfill the following criteria prior to being recruited: (i) Permanent resident and commands respect and authority; (ii) Plays leadership role and is not involved in communal disputes; (iii) has interest in working as a CoC and committed in achieving the CoC objective. Once the CoCs were identified, they were met by the OR Coordinator and the EPPICS team to ascertain whether they satisfied the recruitment criteria.

- *What was the target number of recruits*: Our target was to train 210 CoCs in all the 42 communities. However, only 200 CoCs were trained due to the varied sizes of the communities and the distribution of active TBAs and TMPs in the target communities

- *Why they were trained:*They were trained so that they were familiar with maternal and newborn health issues and also positioned to be able to engage other Household Decision Makers on modifying challenging PRABs while enforcing the positive PRABs

- *What subjects were covered in the training and training duration* : The 36 hour training Orientation included an introduction to methods for reducing maternal neonatal and child (MNCH) morbidity and mortality using the triple A concept – assessing the problem, analyzing the causes and taking appropriate and timely action to address- including engaging of Household Decision Makers, identification and prioritization of PRABs to be modified and or eliminated, organizing CoCs meetings, team building strategies, home visits, interpersonal communication as well as their roles and responsibilities

After the training, the CoCs were supported by GHS Staff and CRS Field Officer to perform the under listed functions:

i. Engage influential family/household members through monthly community-wide meetings to discuss and agree on ways that community members especially HDMs could support pregnant women and nursing mothers to patronize MNC services (early and continuous antenatal care visits, delivery with a skilled midwife, etc.).

ii. Institute periodic meetings with health staff and heads of health facilities. These meetings will serve as channels not only to relay concerns that women and their families regards the quality of care at health facilities but will provide constructive feedback on the performance of health service providers thus helping to address the issues such as abuse and disrespect and their causes.

iii. Monitor and evaluate community performance/achievements, using the Community Giant Scoreboard (CGS)/ Wall of Health to track process in MNCH indicators of interest, and then score performance on the MNC indicators (monthly) and publicly displaying these on the CGS.

iv. Engage with the larger community members in establishing by-laws that will modify challenging PRABs while enforcing positive ones with the aim of contributing towards improved MNC outcomes.

v. Established and enforce MNC related bye-laws in their communities

vi. Work hand –in-hand with their respective local government representatives (assemblymen) and members of parliament to advocate of provision/ improvement in health infrastructure

The intervention area received Council of Champion innovation in addition to the other EPPICS program components. The comparison area received only the EPPICS components listed in Table 2.1 below. The CoC is defined as members of the community who have authority (be it traditional, spiritual or religious) and are custodians of PRABS. They play mediatory and community welfare roles which could be leveraged to improved community-health staff relationship to enhance uptake of MNC services. Table 2.1 shows components of the intervention that were implemented in study intervention and comparison areas

Table 2.1: Project components implemented in study intervention and comparison areas

Project Component	Intervention Area	Comparison Area
CoC innovation	Yes	No
Healthy Mothers and Newborn Care Committees (HMNCCs)	Yes	Yes
Community Giant Scoreboard (CGS)/Walls of Health	Yes	Yes
Positive Deviant Mothers as facilitators of Community Pregnancy and Newborn Surveillance and Education Sessions (C-PrES) with Home Visits	Yes	Yes
Repositioning TBAs as Link Providers	Yes	Yes

Healthy Mothers and Newborn Care Committees (HMNCCs): There was formation of Healthy Mothers and Newborn Care Committees (HMNCCS) which comprised influential members of the community, both men and women, who are able to influence the male and female household decision-makers with regard to mothers and newborns. The members of the HMNCCs were trained and they implemented a standardized Social and behavior change communication (SBCC) and capacity building approach using "action messages" to mobilize communities to 1) develop community birth plans; 2) engage newborns' fathers and fathers-in-law to support household birth plans and promote and encourage pregnant women and new mothers to practice preventive and curative MNC and nutrition behaviors; and 3) organize and influence women through community women leaders.

Community Giant Scoreboard (CGS): HMNCCs members used community-level data that they collected to display publicly and track the numbers of home or facility-based deliveries or other project indicators. The high visibility of the CGS kept the MNCH/N efforts in the forefront of the communities' attention, generated enthusiasm, and became a form of visible, friendly competition among communities.

Positive Deviant Inquiry and Positive Deviant (PD) Mothers: This strategy identified 240 women in the community who were able to overcome factors that have led to low MNCH/N utilization. PD mothers are selected because they 1) registered early for ANC, 2) used skilled delivery and 3)

employed newborn care practices that are known to prevent mother and baby deaths. The PD mothers facilitated Community Pregnancy and Newborn Surveillance and Education Sessions (C-PrES) and home visits. These educational sessions brought together pregnant women on bi-weekly basis and lactating women on a monthly basis to discuss MNCH as well as nutrition related issues in the community. PD mothers follow up these meetings with face-to-face counseling and home visits.

2.6 Intervention Monitoring

The CoCs in each of the 42 intervention communities were directly supported by Field Officers to generate monthly reports to help the project team monitor some of the key targets outlined for the intervention. Table 3.1 presents the monitoring data collected in the course of the intervention monitoring. Also, during the implementation period, a total number of 13,632 Household Decision Makers (HDM) were engaged by the CoCs. Additionally, a total of 15,152 mothers/caregivers were visited by the CoCs within the period of implementation.

On an average, 20 CoCs groups received monthly monitoring and facilitative support visits. The monitoring visits were conducted by the CRS field officer with support from GHS. The monitoring visits were guided by an OR customized checklist. A joint UDS/GHS/CRS team conducted quarterly monitoring visits to the OR intervention site. Cluster based reflection meetings were held semi-annually with CoCs committees to review performance, trouble shoot challenges and brainstorm on how to get these addressed. On monthly basis, the CoCs submit summary reports of their activities to the field officer to inform progress of the groups.

2.7 Outcome (Dependent) Variable

The primary outcome measures were:

- Proportion of mothers of CU2 who attended received antenatal care services from a trained health worker in the first trimester of the pregnancy of their youngest child.

- Proportion of mothers of children under two years (CU2) who delivered at a health facility (institutional delivery)

- Proportion of mothers of CU2 who sought a post-partum visit from an appropriate trained health worker within 7 days of delivery of the birth of the youngest child

The secondary outcome measures included:

- Proportion of mothers of CU2 who sought four or more antenatal visits when they were pregnant with the youngest child

- Percentage of CU2 that were put to the breast within one hour of delivery.

- Proportion of mothers of CU2 who know at least two risks of having a birth with pregnancy interval of less than 24 months

2.8 Data Collection Methods

A mixed-methods approach was used to meet the study goal and objectives. Data collection methods included structured questionnaires (applied pre and post intervention) and semi-structured interviews.

Data were collected on socio-economic conditions of household, nutritional status, maternal and newborn care practices, and health services utilization.

Additionally, two separate Focus Group Discussions (FGD's) were held with household decision makers and mothers with children under 24 months. In-depth interviews (IDIs) were also conducted with key community members who influence decision making at household and community levels (that is, chiefs, magazia, imams and pastors etc.) in each sub-district. A full report on the qualitative component is presented elsewhere and attached as an optional annex.

Table 2.2 Summary of Data Collection Methods

Data Collection Method	When Administered	Respondents	Sample Size
Household Survey	Baseline (Feb 2013)	Mothers of CU2	1020
Household Survey	Endline (June 2015)	Mothers of CU2	1020
Focus Groups Discussions	Baseline & Endline	Household Decision Makers and Mothers of CU2	8 FGDs (2 FGDs in 4 clusters;
In-depth interviews (IDIs)	Baseline & Endline	Community Members including chiefs, mother-in-law, Magazia, imams and pastors	A minimum of 2 members in each of 4 clusters.

Training of Data Collectors and testing of tools: In order to ensure reliability and validity of data collected, all field assistants with a minimum qualification of Senior High School were given training for three days. The content of the training included objectives and methodology, standard measurement procedures, data recording, recruitment, administration of questionnaires and supervision. The final stage in the training of data collectors was used to field-test the data collection tools. The main aim here was to refine the tools and to ensure the competence of the data collectors.

Data Processing and Analysis: The quantitative data collected were checked for completeness, appropriateness and inconsistencies in the field before data entry. Data cleaning and range and consistency checks were also done before the analyses were carried out using the Statistical Package for Social Sciences (SPSS) version21.Appropriate statistical techniques were used to compare changes within and between intervention and comparison communities. These included multivariable analyses and difference-in-difference (DID) analysis. Since the methods of data collection were identical in the baseline as the follow-up studies, the initial baseline results were taken into account in the impact analyses and the simplest approach to calculate the difference overtime is by simple subtraction, and this is usually satisfactory (Habicht et al., 2009). The difference over time in the comparison group is usually subtracted from the difference over time in the intervention group to obtain an estimated impact. This second difference is referred to as "the difference of the differences".

Key outcome variables were compared between intervention and comparison arms of the study. Categorical variables were compared in descriptive statistics using chi-square test to measure the significance of difference between proportions. For quantitative outcome variables, analysis of variance (ANOVA) was used to compare differences. Statistical significance of difference was considered at 5% significance level (p-value <0.05). Independent variables found to be significant at the 0.1 level based

upon the results of the bivariate tests, were entered as potential variables to be included in multivariable logistic regression analyses. In order to derive a correct overall estimate, sample weights were applied to each stratum to account for differences in population size.

3.0 RESULTS

3.1 Comparison of socio-demographic characteristics at baseline survey

At baseline, a total of 1003 respondents were interviewed; 510 from Sakogu District (Intervention District) and 493 from Langbinsi (Comparison District). There were significant differences between the two areas with respect to mean distance of health facility to home, the age distribution of the children and ethnicity of the mothers (Table 3.1).

Table 3.1: Comparison of socio-demographic characteristics of mothers having children less than 24 months in comparison versus intervention communities at baseline survey

Characteristic	Intervention (n=510)	Comparison (n=493)	p-value
	n (%)	n (%)	
Age of mother (years)			
17- 24	156 (30.6)	138 (28.0)	0.07
25-35	267 (52.4)	291 (59.0)	
35⁺	87 (17.0)	64 (13.0)	
Age of child (months)			
0-5	104 (20.4)	130 (26.4)	0.02
6-11	124 (24.3)	133 (27.0)	
12-23	282 (55.3)	230 (46.7)	
Educational level			
None	411 (80.6)	386 (78.3)	0.63
Basic (Primary or JHS)	91 (17.8)	97 (19.7)	
Senior high school or higher	8 (1.6)	10 (2.0)	
Ethnicity			
Mampruli	244 (47.8)	276 (56.)	< 0.001
Moar	96 (18.8)	51 (10.3)	
Kusal	30 (5.9)	1 (0.2)	
Likpakpa	89 (17.5)	2 (0.4)	
Other	51 (10.0)	163 (33.1)	
Parity			
Primiparous	84 (16.5)	92 (18.7)	0.06
Secundipara	92 (18.0)	113 (22.9)	
Multiparous	334 (65.5)	288 (58.4)	
Total No. Health Facilities	1	4	NA

Mean Distance of Health Facility to Home (Km)	5.6±5.7	4.6±4.6	0.004

3.2 Intervention Monitoring Results

As part of the intervention monitoring results, a number of key indicators were monitored and include: # of COCs formed, # of COCs trained, % of COCs receiving monthly supervision visits, # of and the Average number times that the COCs met each month. The details of the monitoring results are presented in Table 3.1 below

Table 3.2 Monitoring data collected during the intervention implementation period

S/N	INDICATORS	TARGET	ACHIEVED
1	Number of Council of Champions (CoCs) formed	42	42
2	Number of CoC members trained	210	200
3	% of CoCs visited and provided support	100	100
4	Average number of monthly community meetings held by CoCs per community	36	30

3.3 Exposure of respondents to Community Leaders Influence

At endline, women of CU2 were asked about their exposure to key community leaders (chiefs, religious leaders[70], Magazia[71] and traditional medical practitioners) who promoted select MNCH behaviors. Significantly more Magazia in the intervention area promoted early ANC, facility delivery and PNC in the intervention area (92%, 92% and 90% respectively) versus the comparison area (76%, 78% and 75% respectively) (Table 3.3 below). There was no significant difference in the exposure to the promotion of essential MNCH behaviors by the other community leaders.

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[70] These are Imams for the Muslim communities and Pastors for the Christian communities

[71] Magazia is a term for women leaders including queen mothers in northern communities of Ghana

Table 3.3: **Percentage of mothers having children less than 24 months exposed to the promotion of MNCH behaviors by community leaders in comparison vs. intervention communities at endline (2015)**

Exposure	Intervention (n=510)		Comparison (n=510)	
	%	95% CI	%	95% CI
Chief				
Early ANC (≤ 3 months)	86.5	76.2 – 92.7	69.6	59.0 – 78.5
Facility delivery	85.9	75.7 – 92.2	69.6	59.0 – 78.5
Post-natal care uptake	84.5	74.5 – 91.1	69.2	58.9 – 77.9
Religious Leader				
Early ANC (≤ 3 months)	85.7	74.7 -92.4	76.3	67.6 – 83.2
Facility delivery	86.9	75.9 - 93.3	76.7	67.8 – 83.7
Post-natal care uptake	84.1	73.6 – 91.0	75.3	67.0 – 82.1
Magazia				
Early ANC (≤ 3 months)*	91.8	86.0 -95.3	76.3	66.9 – 83.7
Facility delivery*	91.6	86.0 – 95.1	77.5	67.7 – 84.9
Post-natal care uptake*	89.8	84.3 – 93.5	75.1	66.2 – 82.3
Traditional Medical Practitioners				
Early ANC (≤ 3 months)	56.5	45.2 – 67.1	44.3	32.7 – 56.6
Facility delivery	57.8	46.7- 68.2	45.7	33.5 – 58.4
Post-natal care uptake	55.1	43.8 – 65.9	40.4	29.4 – 52.4

*p<0.05

3.4 Difference-in-difference analysis (DID)

Difference-in-difference analysis allows determination of whether the intervention households did better than comparison households while taking into account any initial differences between the groups at baseline. By doing so it controls for any changes that took place in the project area that are not related to project interventions or that are only indirectly related to them through spillover effects.

The difference-in-difference (DID) analysis comparing the changes over time for eligible intervention households and the comparison households indicates a significant improvement in respect of all the outcomes measures except facility delivery (Table 3.4).

Table 3.4: Difference-in-difference analysis: Changes in key project outcome measures from baseline to end-line

	Intervention Communities			Comparison Communities			
Outcome	Baseline (2013)	Endline (2015)	Difference	Baseline (2013)	Endline (2015)	Difference	DID
Timely initiation of ANC (≤ 3 months)	97.5 [CI:95.4 – 98.6]	85.3 [CI:80.9 – 88.8]	-39.2*	99.4 [CI:98.1 – 99.8]	38.8 [CI:29.4 – 49.1]	-60.6*	21.4
Frequency of ANC (≥ 4)	79.9 [CI:74.7 – 84.3]	93.7 [CI:91.5 – 95.4]	13.8*	76.2 [CI:68.0 – 82.8]	31.0 [CI:17.6 – 48.5]	-45.2*	59.0
Adequacy of ANC	82.9 [CI:77.6 – 87.1]	82.5 [CI:77.7 – 86.5]	-0.4	80.0 [CI:74.3 – 84.7]	22.4 [CI:12.8 – 36.1]	-57.6*	57.2
Facility delivery	54.1 [CI:43.4 – 64.5]	79.6 [CI:73.3 – 84.7]	25.5*	54.0 [CI:44.2 – 63.4]	93.4 [86.9 – 96.8]	39.4*	-13.9
Timely initiation of breastfeeding	38.2 [CI:27.3 – 50.6]	91.8 [CI:87.2 – 94.9]	53.6*	74.0 [CI:63.6 – 82.3]	91.5 [CI:87.2 – 94.4]	17.5*	36.1
Good neonatal feeding	33.7 [CI:23.7 – 45.5]	77.6 [CI:68.4 – 84.8]	43.9*	64.9 [CI:55.2 – 73.5]	31.0 [CI:18.1 – 47.6]	-33.9*	77.8
Optimal thermal care	72.7 [CI:62.3 – 81.1]	96.9 [CI:95.0 – 98.1]	24.2*	81.1 [CI:71.4 – 88.1]	98.6 [CI:96.3 – 99.5]	17.5*	6.7
Safe cord care	12.9 [CI:9.1 – 18.1]	44.1 [CI:33.3 – 55.5]	31.2*	9.0 [CI:6.1 – 13.1]	5.9 [CI:2.4 – 13.5]	-3.1	34.3

| Maternal knowledge in at least 3 danger signs during pregnancy | 15.3 [CI:12.2 – 19.1] | 60.0 [CI:49.1 – 70.0] | 44.7* | 21.9 [CI:18.1 – 26.3] | 42.2 [CI:30.3 – 54.9] | 20.3* | 24.4 |

* Represents statistical significance of the difference at p < 5%.CI: 95 % confidence interval

3.5 Factors that Influence Early Initiation of Prenatal Care

Results of the logistic regression analysis are presented in Table 3.5, which gives the adjusted odds ratios for the impact of intervention group on early initiation of ANC. Women from the intervention communities were 2.9 times more likely of having initiated first visit early in pregnancy (AOR = 2.95 (CI: 2.01 to 4.34). Women who attended ANC at least 4 times were 7.9 times more likely of having initiated first visit early in pregnancy [AOR = 7.88 (CI: 5.35 to 11.58)]. Factors including maternal education, age, parity, and occupation were tested but found not associated with early initiation of ANC.

Surprisingly, compared to women staying more than 10 km from a health facility, women closer to health facilities were less likely of initiating ANC early (that is protective against early attendance). Compared to women staying more than 10 km away from health facility, women who were 0-5 km away were 70 % less likely to attend ANC early (AOR = 0.30 CI: 0.17 to 0.53), and 62.0 % less likely if they were 6-10 km away (AOR = 0.38, CI: 0.19 to 0.74).

Factors including maternal education, age, parity, and occupation were tested but found to be not associated with early initiation of ANC.

Table 3.5: Logistic regressions predicting odds of Early ANC among women with children less than 24 months old in Sakogu and Langbinsi Subdistricts of East Mamprusi District, Ghana

	Unadjusted Odds Ratio		Adjusted Odds Ratio	
		95% CI		
Variable	OR	95% CI	OR	95% CI
Treatment Arm				
Intervention	9.04	6.65 – 12.30***	2.95	2.01 – 4.34***
Comparison	Ref	Ref	Ref	Ref
Mother's age (years)				
Under 25	Ref	Ref	Ref	Ref
25-34	0.86	0.64 - 1.18		
35+	0.93	0.63 – 1.39		
Ethnicity				

Mampruli	Ref	Ref	Ref	Ref
Moar	3.30	1.73 – 6.27***		
Kusal	1.63	0.67 – 3.95		
Likpakpa	4.52	2.35 – 8.72***		
Others	0.63	0.44 – 0.89**		
Household Head Employed				
No	Ref	Ref	Ref	Ref
Yes	1.21	0.80 – 1.84		
Material used in Sleeping Room Construction				
Mud	Ref	Ref	Ref	Ref
Cement	0.54	0.28 – 1.07		
Distance to health facility				
>10 Km	Ref	Ref	Ref	Ref
6-10	0.76	0.44 – 1.30	0.38	0.19 – 0.74**
0-5	0.42	0.27 – 0.67***	0.30	0.17 – 0.53***
Frequency of ANC attendance				
< 4 visits	Ref	Ref	Ref	Ref
≥ 4 visits	13.65	9.92 – 18.76***	7.88	5.35- 11.58***
Knowledge on newborn danger signs				
< 3 signs	Ref	Ref	Ref	Ref
≥ 3 signs	1.60	1.21- 2.10**		

*p<0.05; **p<0.01; ***p<0.001

The set of variables accounted for 42.5 % of the variance in early initiation of ANC (Nagelkerke R Square = 0.425).

3.6 Factors that Influence Institutional Delivery

The most consistent determinants of health facility delivery were residents in the comparison communities, frequency of ANC attendance, content of ANC services received and ethnicity (Table 3.6). Women from the intervention communities were 50 % less likely (AOR = 0.50 CI: 0.26 to 0.95) to deliver in a health facility, compared to their counterparts from the comparison communities. Though

women who attended ANC at least four times were most likely to attend ANC early, they were 68 % less likely to deliver in a health facility. Compared to the Mampruli ethnic group, the Mossi were 8.6 times more likely to deliver in the health facility (AOR = 8.66, CI: 1.15 to 64.99) whereas the Likpakpa ethnic group were 54 % less likely to deliver in a health facility. In terms of ANC content, women who received more ANC services (≥ 7) were more likely to deliver in a health facility, compared with women who received less than the seven ANC services rendered. At endline survey, factors such as maternal educational level, occupation of household head, distance from health facility, age of the mother and parity were not important determinants of health facility delivery in this study population.

Table 3.6: Logistic regressions predicting odds of health Facility Delivery among women with children less than 24 months old in Sakogu and Langbinsi Subdistricts of East Mamprusi District, Ghana

	Unadjusted Odds Ratio		Adjusted Odds Ratio	
		95% CI		
Variable	OR	95% CI	OR	95% CI
Treatment Arm				
Intervention	0.27	0.18 – 0.41***	0.50	0.26 – 0.95*
Comparison	Ref	Ref	Ref	Ref
Mother's age (years)				
Under 25	Ref	Ref	Ref	Ref
25-34	0.89	0.57 – 1.36		
35+	0.94	0.54 – 1.64		
Ethnicity				
Mampruli	Ref	Ref	Ref	Ref
Moar	0.58	0.31 – 1.08	0.86	0.45 - 1.63
Kusal	1.58	0.36 – 6.88	2.31	0.52- 10.20
Likpakpa	0.28	0.17 – 0.47***	0.46	0.27 - 0.78*
Mossi	10.45	1.43 – 76.55*	8.66	1.15 - 64.99*
Tampulima	0.86	0.40 – 1.82	0.43	0.17 - 1.04
Others	1.13	0.66 – 1.91	0.79	0.44 - 1.40
Household Head Employed				
No	Ref	Ref	Ref	Ref
Yes	0.35	1.30 – 0.75	2.266	
Material used in Sleeping Room Construction				

Mud	Ref	Ref	Ref	Ref
Cement	1.75	0.53 – 5.79		
ANC content				
Low	Ref	Ref	Ref	Ref
High	0.72	0.50 – 1.03	1.57	1.02 – 2.41*
Frequency of ANC attendance				
< 4 visits	Ref	Ref	Ref	Ref
≥ 4 visits	0.25	0.15 - 0.42	0.32	0.16 – 0.64**
Knowledge on newborn danger signs				
< 3 signs	Ref	Ref	Ref	Ref
≥ 3 signs	0.69	0.48 - 0.99*		

*p<0.05; **p<0.01; ***p<0.001*

The set of variables accounted for 13.7 % of the variance in health facility delivery (Nagelkerke R Square = 0.137).

3.7 Factors that Influence postnatal care services in the first week of delivery

In multivariable logistic regression analysis, only intervention communities and content of ANC services received were the only determinants of postnatal care services in the first week of delivery. Women from the intervention communities were 1.7 times more likely to utilize postnatal care services at least two times in the first week of delivery compared with women from the comparison communities (AOR = 1.74, CI: 1.28 to 2.37). Women who received more ANC services (≥ 7) were 1.9 times more likely AOR = 1.97 (CI: 1.44 to 2.70) to seek postnatal services in the first week of delivery, compared with women who received less than the seven ANC services rendered (Table 3.7).

Table 3.7: Logistic regressions predicting odds of post-natal care uptake in the first week of delivery among women with children less than 24 months old in Sakogu and Langbinsi Subdistricts of East Mamprusi District, Ghana

	Unadjusted Odds Ratio		Adjusted Odds Ratio	
		95% CI		
Variable	**OR**	**95% CI**	OR	**95% CI**
Treatment Arm				
Intervention	2.34	1.77 – 3.09***	1.74	1.28 - 2.37***

Comparison	Ref	Ref	Ref	Ref
Mother's age (years)				
Under 25	Ref	Ref	Ref	Ref
25-34	0.99	0.723 – 1.36		
35+	0.71	0.464 – 1.08		
Ethnicity				
Mampruli	Ref	Ref	Ref	Ref
Moar	1.38	0.82 – 2.31		
Kusal	2.02	0.91 – 4.46		
Likpakpa	1.06	0.66 – 1.71		
Mossi	0.62	0.35 – 1.08		
Tampulima	0.51	0.26 – 0.98*		
Others	0.72	0.49 – 1.06		
Household Head Employed	1.43	0.89 – 2.30		
No	Ref	Ref	Ref	Ref
Yes				
Material used in Sleeping Room Construction				
Mud	Ref	Ref	Ref	Ref
Cement	0.78	0.36 – 1.69		
ANC content				
Low	Ref	Ref	Ref	Ref
High	2.52	1.90 – 3.34***	1.97	1.44 - 2.70***
Early initiation of ANC				
>3 months	Ref	Ref	Ref	Ref
≤ 3 months	1.97	1.46 – 2.66***		
Frequency of ANC				
< 4 visits	Ref	Ref	Ref	Ref
≥ 4 visits	1.95	1.43 – 2.64***		

*p<0.05; **p<0.01; ***p<0.001

3.8 Prevalence of MNCH related PRABs

The prevalence of at least one MNCH challenging PRABs in the intervention was significantly lower than in the comparison communities (33.9 % versus 50.0 %) (Chi = 27.1, p < 0.001). Similarly, the mean score for MNCH challenging PRABs in the comparison communities was significantly higher than that of the intervention communities (0.90 versus 0.46), F (1, 1019) = 49.66, p < 0.001

3.9 Maternal Knowledge on danger signs and symptoms during pregnancy

The mothers were asked about risks associated with frequent pregnancies, signs and symptoms during pregnancy, delivery, postpartum and newborn danger signs which demanded seeking immediate care from the health facility or health workers. Generally, most of the respondents in the intervention communities were familiar with these signs. However, the proportion of respondents in comparison communities who had knowledge of dangers of frequent pregnancies was higher than in the intervention communities (Table 3.9).

Table 3.8: Maternal Knowledge on risks and danger signs associated with pregnancy, delivery and newborn

Danger Sign	N	Intervention Sub-district (%)	Comparison Sub-district (%)	Test statistic
Knowledge of at least three dangers of frequent pregnancies				
Yes	252	22.0	27.5	Chi-square
No	768	78.0	72.5	$(\chi^2) = 4.1$, $p = 0.04$
Knowledge of at least three danger signs of during pregnancy				
Yes	521	60.0	42.2	Chi-square
No	499	40.0	57.8	$(\chi^2) = 32.5$, $p < 0.001$
Knowledge of at least three danger signs of during postpartum				
Yes	353	53.3	15.9	Chi-square
No	667	46.7	84.1	$(\chi^2) = 158.0$, $p < 0.001$

Knowledge of at least three newborn danger signs				
Yes	383	47.1	28.0	$(\chi^2) = 39.3$,
No	637	52.9	72.0	$p < 0.001$

4.0 DISCUSSION AND RECOMMENDATIONS

Main conclusion: This community-based intervention study tested and confirmed the hypothesis that repositioning and engaging key custodians of household and community-based practices, rituals, attitudes and beliefs (PRABs) as Council of Champions (CoCs) for maternal and child health has assisted in either modifying the challenging/harmful PRABs as well as reinforce positive PRABs. The CoC strategy supported the earlier assertion that engaging the custodians at the community-household level (demand side) and providing quality and adequate healthcare services at the facilities (supply side), barriers to the uptake and use of maternal and child health services is addressed.

Summary of main findings and evidence

i.   Comparing the changes over time, significantly more pregnant women in the intervention communities received adequate prenatal care (defined as having initiated ANC in the first trimester and made at least four visits) than the comparison communities.

ii.   The difference-in-difference (DID) analysis comparing the changes over time for eligible intervention households and the comparison households indicates a significant improvement in respect of all the outcomes measures except health facility delivery.

iii. The find study established significant differences in the uptake of maternal, newborn care health services between the study groups. Coverage of timely initiation of first ANC attendance, frequency and adequacy of ANC attendance and uptake of post-natal care uptake was significantly higher in the intervention communities than in the comparison communities. However, there was a decline of early initiation of ANC and facility delivery with time due to the absence of skilled health professionals at the only health facility in the intervention area

iv.   Among the community leaders, the magazia was the most influential with regards to encouraging mothers to patronize early ANC, post-natal services and health facility delivery.

v.   Women from the intervention communities were 2.9 times more likely to initiate first visit early in pregnancy [AOR = 2.95 (CI: 2.01 to 4.34)]. Women who attended ANC at least 4 times were 7.9 times more likely to initiate first visit early in pregnancy [AOR = 7.88 (CI: 5.35 to 11.58)] but were less likely to deliver at the health facilities. [AOR = 0.50 (CI: 0.26 to 0.95)] to deliver in a health facility, compared to their counterparts from the comparison communities.

vi.   Women from the intervention communities were 1.7 times more likely to utilize postnatal care services at least two times in the first week of delivery compared with women from the comparison communities (AOR = 1.74, CI: 1.28 to 2.37). Women who received more ANC services (≥ 7) were 1.9 times more likely AOR = 1.97 (CI: 1.44 to 2.70) to seek postnatal services in the first week of delivery, compared with women who received less than the seven ANC services rendered.

vii.   The intervention significantly improved essential newborn care practices (safe cord care, optimal thermal care and good neonatal feeding).

viii.   The prevalence of at least one MNCH related PRABs in the intervention was significantly lower than in the comparison communities (33.9 % versus 50.0 %) (Chi = 27.1, p < 0.001).

ix.   The mothers were asked about risks associated with frequent pregnancies, signs and symptoms during pregnancy, delivery, postpartum and newborn danger signs which demanded seeking immediate care from the health facility or health workers. Generally, respondents in the intervention communities were more knowledgeable with danger signs during pregnancy, delivery, postpartum and neonatal periods

The Limitation of the study – The key limitation of the study was the difficulty in controlling extraneous factors that seemed to have a direct or indirect impact on the outcome indicators of interest. For instance, there was a serious ethnic conflict in the intervention area about 6 -8 months towards the endline. This affected the availability of health staff in the intervention area to provide MNC services. Also, the intervention area had only one health facility while there were four health facilities in the comparism area. In spite of these limitations, we conclude that the CoC strategy does have an impact on uptake of MNC services which could influence morbidity and mortality rates positively

Comparison with similar research efforts: Similar to studies conducted in other contexts, we found that direct engagement with community leaders were successful in improving uptake of essential MNCH services. Details of these are discussed below:

Factors predicting the initiation of prenatal care: The frequency and early initiation of ANC (≤ 3 months) were higher amongst women in the intervention than in the comparison communities. A similar finding was reported in an earlier study (Midhet and Becker, 2010). According to this finding the decision to access prenatal care during the first trimester depends on personal, cultural, and societal beliefs. Mothers from the intervention communities, compared to the comparison communities were 2.9 times more likely to initiate first visit early in pregnancy. Women who attended ANC at least 4 times were also more likely to initiate first visit early in pregnancy. Unexpectedly, compared to women staying more than 10 km from a health facility, women closer to health facilities were less likely to initiate ANC early (that is protective against early initiation). On average women in the intervention communities were further away from health facilities, compared to women staying in the comparison communities. The SBCC activities in the intervention communities could have influenced women to seek early ANC services in spite of the distance they had to travel.

Factors including maternal education, age, parity, and occupation were tested but found to be not associated with early initiation of ANC. In the literature various factors that influence early initiation and frequency of antenatal care visits have been reported. These include age of the mother (Braun, 1995, Moyer and Mustafa, 2013), maternal education (Braun, 1995, Grosse, 1998, Kerber et al., 2007), occupation (WHO, 2012) and distance to health facilities (Montagu et al., 2011). These were not however evident in this study

Utilization of Health Facilities for Delivery: Institutional deliveries increased overall but less in the intervention area towards the endline. The proportion of women who initiated ANC early (≤ 3 months)

decreased, with most of the decline amongst women in the comparison arm. Frequency of ANC visits was also reduced in the comparison communities. The 2015 mid-year routine monitoring data at the institutional level by the Ghana Health Service show similar figures for early ANC attendance of 41.0 % for the intervention area and 32.0 % in the control area. The study found that frequent antenatal check-ups of at least four times during pregnancy seem to be associated with several targeted behaviors, including institutional delivery, neonatal feeding and postnatal care within 7 days of delivery. Therefore, strategies that support early and subsequent ANC attendance should be promoted.

Factors that Influence postnatal care services in the first week of delivery: Exposure to intervention activities and content of ANC services received were the only determinants of postnatal care services in the first week of delivery. *Women who initiated PNC at an early stage were more likely to live in an intervention community.* Uptake for post-natal care services *refers to the proportion of mothers of infants 0-5 months who seek postnatal care (PNC) within 2 days of delivery.* Generally, uptake for post-natal care services of at least two visits in the first week after delivery was low in both the intervention and comparison communities (40.4% versus 22.4 %). It appears women are not aware of the importance of postnatal check-ups for the mother and newborn within 7 days of delivery and they also had poor knowledge of postnatal danger signs that signal the need for medical care among mothers and newborns. This finding is consistent with other studies (Sigman et al., 1991). *More education is needed to increase the importance and uptake of attending PNC after 2 days of delivery especially among women who deliver at home.*

Essential newborn care behaviors (neonatal feeding, thermal and cord care): Over the four years of implementation, the project achieved significant improvements in essential newborn care practices, including breastfeeding, hygienic cord care, and thermal protection practices associated with reduced neonatal mortality. All these recorded increases between baseline and end-line. These findings demonstrate the power of community leaders as council of champions and their ability to effect change in behaviors around maternal and newborn care, and are similar to those reported elsewhere (Kirkwood et al., 2013, Prost et al., 2013, Waiswa et al., 2015). Women in intervention communities reported following better thermal care practices, safe cord care than their counterparts in comparison areas. Similarly, good neonatal feeding practices were commonly reported in the intervention than in the comparison areas.

Maternal Knowledge on risks and danger signs associated with pregnancy, delivery and newborn: Maternal knowledge of the danger signs of obstetric complications is the essential first step in seeking and accepting timely referral to obstetric and newborn care. The mothers were asked about risks associated with frequent pregnancies, signs and symptoms during pregnancy, delivery, postpartum and newborn danger signs which demanded seeking immediate care from the health facility or health workers. In this study a woman was considered knowledgeable when she mention at least three recognized danger signs for each of the critical periods of pregnancy, delivery, postpartum and neonate. These results showed a general low level of knowledge of obstetric and newborn danger signs during pregnancy, child birth and postpartum period among women in the district. This indicates a significant number of pregnant women who do not have the knowledge are likely to delay in deciding to seek care. Every woman should be made aware of the likelihood of complications during pregnancy, childbirth/labor, the postpartum and neonatal periods.

The proportion of mothers who could mention at least three danger signs associated with frequent pregnancies, delivery, postpartum and newborn was higher in the intervention than in the comparison arm. This is corroborated by previous studies. For example, a community based cross-sectional study conducted in Tanzania showed that about half of the study subjects knew at least one obstetric danger sign (Pembe et al., 2009) and in Kenya, only 27.9 % of women attending ANC were not informed about danger signs in pregnancy (Mutiso et al., 2008). This finding is also consistent with the study conducted in Ethiopia in which 30.9% of respondents mentioned at least two danger signs of pregnancy (Hailu et al., 2010).

The most common danger signs during pregnancy include severe vaginal bleeding, swollen hands/face and blurred vision. Key danger signs during labor and childbirth include severe vaginal bleeding, prolonged labor, convulsions, and retained placenta. Danger signs during the postpartum period include severe bleeding following childbirth, loss of consciousness after childbirth, and fever. Raising awareness of pregnant women on the danger signs would improve early detection of problems and reduces the delay in deciding to seek obstetric care (JHPIEGO, 2004, Thaddeus and Maine, 1994). Recognizing these danger signs for pregnancy related complications and what to do if they arise would therefore significantly increase the capacities of women and newborns to remain healthy, to take appropriate steps to ensure a safe birth and to seek timely skilled care in emergencies in low income countries (HPIEGO, 2004, WHO, 2006) .

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Child Survival Project
East Mamprusi District, Ghana

Final Evaluation

Project Site
East Mamprusi District

Conceptual Framework
Maternal Mortality

Conceptual Framework
Malarial Morbidity and Mortality

Conceptual Framework Malnutrition

Source: Adapted from UNICEF (1990)

Evaluation Themes

- Project accomplishments
- Project strategies that worked (or did not)
- Operations research
- Continuation or expansion of activities

Evaluation Team

- Mohammed Ali, Catholic Relief Services
- Paul Armah Aryee, University for Development Studies
- Paulina Bayiwasi, District Director of Health Services
- Consultant

Project Team Members

- Mohammed Ali, Health Program Manager
- Abdul Razak Masahudu, District Field Supervisor
- Edward Agongo, Field Officer
- Gifty Awuni, Field Officer
- Iddrisu Azundow, Field Officer
- Abdul-Ganiu Konlan, Field Officer
- Abdul-Rashid Tanko, Field Officer

Evaluation Methods

- Discussions with project team members
- Review of documents
- Group discussions with mothers
- Interviews with community members
- Interviews with project partners
- Observations of patient-provider interactions
- Exit interviews with patients
- Investigation of maternal death
- Review of referrals to Baptist Medical Center

Baseline and Final Survey Findings

- Births attended by skilled personnel
  - 43% (baseline) 76% (final)
- Children slept under treated bed nets
  - 42% (baseline) 71% (final)
- Children 0-5 months exclusively breastfed
  - 47% (baseline) 70% (final)
- Children low weight for age
  - 43% (baseline) 16% (final)

Operations Research Finding

In intervention area, deliveries less likely to be conducted by skilled personnel (as compared to control area)

Assessment of Health Facilities

Health facilities have improved, especially in availability of water and in cleanliness

Group Discussion Topics

- Antenatal care
- Delivery (transport, place, birth attendant)
- Breast feeding and introduction of other foods
- Use of bed nets
- Opinion about project activities

Group Discussion Facilitators

- Raymond Atariba, Teacher
- Sumaila Nambe, Teacher

Group Discussion: Jawani

- "We have stopped delivering at home as a result of project education"
- "Delivering at home increases the number of red sticks on the score board...which we don't like"
- "When we deliver at the hospital we are privileged to get a bottle of malt"

Group Discussion: Nalerigu
Roles in Delivery, 20 Years Ago
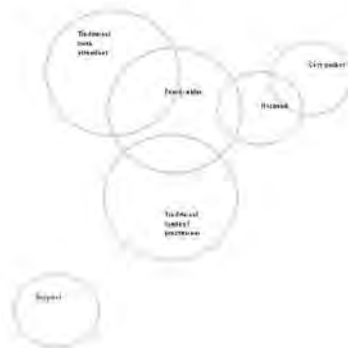
Group Discussion: Nalerigu
Roles in Delivery, 5 Years Ago
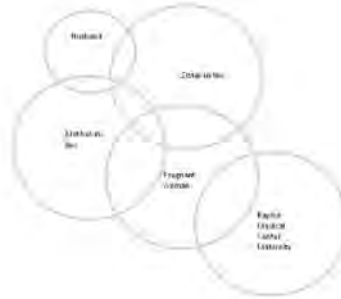
Group Discussion: Nalerigu
Roles in Delivery, 1 Year Ago
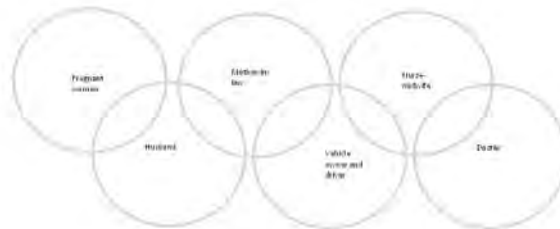
Evaluation Findings and Recommendations

- Improvement in community maternal and child health practices
- Scoreboards prominent part of district landscape
- Violence in Sakogu affected operations research intervention
- Successor project continuing and expanding activities
- Need to increase capacity at referral facility in Nalerigu for operative delivery and newborn care
- Need to improve referrals to facility in Nalerigu

ANNEX XVI. PROJECT DATA FORM

Child Survival and Health Grants Program Project Summary

Oct-29-2015

General Project Information
Cooperative Agreement Number: AID-OAA-A-11-00042
CRS Headquarters Technical Backstop: Elena McEwan
CRS Headquarters Technical Backstop Backup: Elena McEwan
Field Program Manager: Ane Adondiwo
Midterm Evaluator:
Final Evaluator:
Headquarter Financial Contact: Tia Simmons
Project Dates: 10/1/2011 - 9/30/2015 (FY2011)
Project Type: Innovation
USAID Mission Contact: Juliana Pwamang
Project Web Site:

Field Program Manager
Name: Ane Adondiwo (Project Manager)
Address:
Ghana
Phone: +233247031458
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Skype Name: Ane Adondiwo

Alternate Field Contact
Name: Melissa Kreek (Head of Programming)
Address: 16 Labone Crecent
Accra Ghana
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E-mail: melissa.kreek@crs.org
Skype Name:
Grant Funding Information

USAID Funding: $1,750,000 **PVO Match:** $438,649

General Project Description
Catholic Relief Services (CRS), a 2011 Innovation category grantee, is implementing the *Encouraging Positive Practice for Improving Child Survival Project* (EPPICS) in East Mamprusi District, Northern Region, Ghana. The project goal is to contribute to sustainable reduction of maternal and newborn morbidity and mortality. At the community level, the project will scale up a motivational community mobilization strategy using Healthy Mother and Newborn Committees, Positive Deviant Inquiry, and community scorecards for communities to track progress and provide feedback to their members. At the health facility level, the project will improve health staff counseling skills in response to gaps identified
in another CRS in nearby districts.

Project Location
Latitude: 7.95 **Longitude:** -2.02
Project Location Types: Rural
Levels of Intervention: Health Center
Health Post Level
Home
Community
Province(s): Northern Region
District(s): East Mamprusi District
Sub-District(s): --

Operations Research Information
OR Project Title: ENGAGING COMMUNITY LEADERS AS ''COUNCIL OF CHAMPIONS'' TO IMPROVE UPTAKE OF MATERNAL AND NEWBORN CARE SERVICES IN EAST MAMPRUSI, A RURAL DISTRICT OF NORTHERN GHANA
Cost of OR Activities: --
Research Partner(s): University for Development Studies,
OR Project Description: CRS, in collaboration with the University for Development Studies, a Ghanaian research institute, is conducting operations reserach that will address sociocultural and traditional practices at the household level. Committees of Champions for mothers and babies, composed of chiefs, "queen mothers," and imams/pastors, will be formed and trained . These committees will attempt to overcome barriers and change practices by directly influencing the most influential members of a family at critical times during pregnancy and the neonatal period.
Partners
Ghana Health Services (Collaborating Partner) $0

THE UNIVERSITY FOR DEVELOPMENT STUDIES (SUBGRANTEE) $0

Strategies

Social and Behavioral Change Strategies: Community Mobilization
Group interventions
Interpersonal Communication
Health Services Access Strategies: Emergency Transport Planning/Financing
Addressing social barriers (i.e. gender, socio-cultural, etc)
Implementation in a geographic area that the government has identified as poor and underserved

Health Systems Strengthening: Quality Assurance
Conducting capacity assessment of local partners
Supportive Supervision
Developing/Helping to develop job aids
Providing feedback on health worker performance
Monitoring CHW adherence with evidence-based guidelines
Referral-counterreferral system development for CHWs
Community role in supervision of CHWs
Community role in recruitment of CHWs
Coordinating existing HMIS with community level data
Community input on quality improvement

Strategies for Enabling Environment: Advocacy for revisions to national guidelines/protocols
Stakeholder engagement and policy dialogue (local/state or national)

Tools/Methodologies: BEHAVE Framework
Rapid Health Facility Assessment
Community-based Monitoring of Vital Events

Mobile Devices for Data Collection
MAMAN Framework

Capacity Building
Local Partners: Dist. Health System
Health Facility Staff
Non-government sanctioned CHWs
TBAs
Faith-Based Organizations (FBOs)

Interventions & Components
Infant & Young Child Feeding (30%)
- ENA
- Comp. Feed. from 6 mos.
- Cont. BF up to 24 mos.
- Maternal Nutrition
- Peer support
- Promote Excl. BF to 6 Months
- Intro. or promotion of LAM
CHW Training
HF Training
Malaria (10%)
- IPT
CHW Training
HF Training
Maternal & Newborn Care (60%)
- Emergency Obstetric Care
- Neonatal Tetanus
- Recognition of Danger signs
- Newborn Care
- Post partum Care
- Child Spacing
- Integation. with Iron & Folic Acid
- Normal Delivery Care
- Home Based LSS
- Control of post-partum bleeding
- Emergency Transport
- AMTSL

Number of People Trained in Maternal/Newborn Health

Gender	Year	Target	Actual
Female	2012	300	
Female	2012		20
Male	2012		15
Male	2012	60	
Female	2013	560	
Female	2013		560
Male	2013		308
Male	2013	300	
Female	2014	284	
Female	2014		0
Male	2014		0
Male	2014	196	
Female	2015	0	
Male	2015	0	

Number of People Trained in Child Health & Nutrition

Gender	Year	Target	Actual
Female	2012	400	
Female	2012		20
Male	2012		15
Male	2012	100	
Female	2013	560	
Female	2013		512
Male	2013		352
Male	2013	300	
Female	2014	284	
Female	2014		0
Male	2014		0
Male	2014	196	
Female	2015	0	
Male	2015	0	

Number of People Trained in Malaria Treatment or Prevention

Gender	Year	Target	Actual
Female	2012		20
Female	2012	300	
Male	2012		15
Male	2012	42	
Female	2013		510
Female	2013	560	
Male	2013		352
Male	2013	300	
Female	2014		0
Female	2014	284	
Male	2014		0
Male	2014	196	
Female	2015	0	

Locations & Sub-Areas
Total Population: 122,187

Target Beneficiaries
Ghana - CRS - FY2011
Children 0-59 months 24,431
Women 15-49 years 26,881

BENEFICIARIES TOTAL 51,312

RAPID CATCH INDICATORS: DIP SUBMISSION

Indicator	Numerator	Denominator	Percentage	Confidence Interval
				Sample Type: 30 Cluster
Percentage of mothers with children age 0-23 months who received at least two Tetanus toxoid vaccinations before the birth of their youngest child	200	313	63.9%	7.5
Percentage of children age 0-23 months whose births were attended by skilled personnel	135	313	43.1%	7.8
Percentage of children age 0-5 months who were exclusively breastfed during the last 24 hours	49	105	46.7%	13.5
Percentage of children age 6-23 months who received a dose of Vitamin A in the last 6 months: card verified or mother's recall	152	205	74.1%	8.5
Percentage of children age 12-23 months who received a measles vaccination	107	113	94.7%	5.8
Percentage of children age 12-23 months who received DTP1 according to the vaccination card or mother's recall by the time of the survey	109	113	96.5%	4.8
Percentage of children age 12-23 months who received DTP3 according to the vaccination card or mother's recall by the time of the survey	107	113	94.7%	5.8
Percentage of children age 0-23 months with a febrile episode during the last two weeks who were treated with an effective anti-malarial drug within 24 hours after the fever began	15	156	9.6%	6.5
Percentage of children age 0-23 months with diarrhea in the last two weeks who received oral rehydration solution (ORS) and/or recommended home fluids	60	126	47.6%	12.3
Percentage of children age 0-23 months with chest-related cough and fast and/or difficult breathing in the last two weeks who were taken to an appropriate health provider	35	73	47.9%	16.2
Percentage of households of children age 0-23 months that treat water effectively	12	313	3.8%	3.0
Percentage of mothers of children age 0-23 months who live in households with soap at the place for hand washing	89	313	28.4%	7.1
Percentage of children age 0-23 months who slept under an insecticide-treated bednet (in malaria risk areas, where bednet use is effective) the previous night	132	313	42.2%	7.7
Percentage of children 0-23 months who are underweight (-2 SD for the median weight for age, according to the WHO/NCHS reference population)	135	313	43.1%	7.8
Percentage of infants and young children age 6-23 months fed according to a minimum of appropriate feeding practices	112	205	54.6%	9.6
Percentage of mothers of children age 0-23 months who had four or more antenatal visits when they were pregnant with the youngest child	200	313	63.9%	7.5
Percentage of mothers of children age 0-23 months who are using a modern contraceptive method	69	313	22.0%	6.5
Percentage of children age 0-23 months who received a post-natal visit from an appropriately trained health worker within two days after birth	95	313	30.4%	7.2

ANNEX XVII. LEARNING BRIEF

Alaafia Goomni (the Wall of Good Health)

*An innovative tool for rallying communities
to demand and use data on Maternal and Newborn Care*

*Photograph of the Alaafia Goomni, the Wall
of Good Health Photo/CRS*

Key Findings on the Wall of Good Health:

- It's a tool for community engagement

- Complements the delivery of targeted BCC messages

- Enhances feedback and decision making process using MNC data

At the community level, there is often limited or no feedback on maternal and newborn care (MNC) indicators to community members by health care providers. This impacts negatively on the motivation of community members to participate and contribute resources (human and financial) in assisting to improve MNC. Additionally, there is limited responsiveness of the part of the healthcare providers since there is no demand for MNC related data and feedback by community members.

To address this challenge, Catholic Relief Services (CRS) through its USAID funded maternal and child survival project titled *Encouraging Positive Practices for improving Child Survival* (EPPICS) Project developed an innovative community-led monitoring tool to rally communities to demand and use MNC data.

Alaafia Goomni (Walls of Good Health) are Community Giant scoreboards to help improve data demand and use of MNC data by community members as well as improve the responsiveness of healthcare providers in 240 communities in the East Mamprusi District of Ghana.

Methodology

During the design of the **Wall of Good Health,** the following M&E questions used to inform the design of the project:

- How will EPPICS assist community members to use data collected monthly to monitor the performance of their MNC indicators?
- How will communities measure their contributions in improving MNC indicators?
- How will the project provide feedback on data collected from communities?
- How can communities visibly display their performance in a way that can be understood by all?

Alaafia Goomni is a giant wall that has pictorial illustrations of desirable and undesirable MNC outcomes—with a maximum of two outcomes—one on each side of the wall. For example, one face/front of the wall could display the photograph of an infantbeing

breastfed and the other, an infant being fed on other foods. The second face/back displays a woman at the point of childbirth with assistance from skilled personnel in a health facility and the other, a woman at child birth at home with the assistance of a Traditional Birth Attendant/Mother-in-law.

On the top side of each side are the Scoreboard with10 slots, each representing 10%. Two sets of ten colored sticks are used for scoring indicators: achieved or desirable indicators **=green** and not achieved or undesirable **=red** to illustrate outcomes. The sticks displayed on the frame indicates the progress for that specific indicator, the goal being for 100% (=10 green sticks to be achieved). Data for scoring is generated from community and clinic registers for all indicators; indicators are scored and updated monthly. In each community, the CGS committee updates the scores, share the findings and engage the larger community in assessing, analyzing and agreeing on key actions to take based on the outcomes. There are a number of steps required to operationalize the Wall of Good Health (WGH) in the community setting and these include:

1. *Community visits* – first visit for mobilization and sensitization process for community leadership, second first- community-wide meeting to provide detailed information to community members and guide them to elect the management committee of the WGH.
2. *Construction of Walls:* The management committee with the support of 10 other members is trained to lead the construction and day to day management of the wall.
3. *Baseline data collection:* To set the stage for updating the WGH. The management committee with support the project staff collects baseline data to determine in the first instance the portion of categories of score sticks to use (# of red or # green sticks). Right after the installation of the baseline scores, the management committee leads the community to assess the levels, analyze why such levels and take appropriate actions to improve

Findings

Through the implementation of EPPICS, Ghana Health Service reached more than 52,000 direct beneficiaries using the WGH IN 240 communities. The contribution of the WGH has led to improvement of MNC indicators: Early registration at antenatal increased from 51% to 82%. Exclusive breastfeeding improved from 47% to 70%, skilled assisted deliveries increased from 43% to 70% and uptake of postnatal care increased from 30% to 83%

Also, community members were able to visibly see the progress they made toward achieving positive MNC outcomes, and this fostered an enabling environment for communities to actively improve their health status. This tool also brought about friendly competition among communities and reinforced positive behaviors and practices regarding seeking timely healthcare services

Conclusions and Lessons Learned

Based on the use of the WGH over the years, the following conclusions and lessons are reached:

- **Tool for community empowerment:** The WGH presents as rallying tool for the community members to meet and access, analyze and take prompt and proactive actions that improve their health and well-being.

- **Complements delivery of targeted health messages:** The WGH is directly used as an advocacy tool to promote adoption of some key behavior change communication messages including working to reduce or eliminate child undernutrition, exclusive breastfeeding, consumption of iodized salt, use of health facilities by

pregnant women for childbirth and related services

-   ***Feedback and Decision-making processes enhanced:*** The WGH is a great tool in assisting to provide feedback on health and nutrition indicators and to communicate the outcomes of key efforts and interventions on the health and overall wellbeing of community members. Using the assessment, analysis and action as key process in the periodic WGH meetings with the entire community, exchanges and suggestions are made to enhance the community-based decision making processes

Recommendations

The Wall of Good Health has proven to be a great tool that visibly assists communities to appreciate how their contributions has assisted in improving their MNC indicators. Its recommended that this tool be used in health facilities to track the quality of health service delivery as a way of improving service uptake among users