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## RESEARCH AND EVALUATION REPORT

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# Evaluation of a Results-based Financing Intervention in South West Uganda

**MAY 2018**

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This research report evaluating an intervention to improve health provider performance through support and incentives in South West Uganda was prepared by University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID) and authored by John Øvretveit of the Karolinska Institute; Aurora O. Amoah of the Data Analytics Research and Evaluation Group; and Kenneth Kasule and Mirwais Rahimzai of URC through the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project. The USAID ASSIST Project is made possible by the generous support of the American people through USAID.



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For more information on the work of the USAID ASSIST Project, please visit [www.usaidassist.org](http://www.usaidassist.org) or write [assist-info@urc-chs.com](mailto:assist-info@urc-chs.com).

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## Acronyms

AMTSL	Active management of the third stage of labor
ANC	Antenatal care
ASSIST	USAID Applying Science to Strengthen and Improve Systems Project
CHW	Community health worker
CRVS	Civil Registration and Vital Statistics
DHIS	District Health Information System
DHO	District Health Office
DHT	District Health Team
EGPAF	Elizabeth Glaser Pediatric AIDS Foundation
EMHS	Essential medicines and health supplies
FP	Family planning
HC	Health center
HMIS	Health management information system
IPT	Intermittent presumptive treatment of malaria
LMICs	Low- and middle-income countries
M&E	Monitoring and evaluation
MNCH	Maternal, newborn, and child health
MoH	Ministry of Health
OHS	Office of Health Systems
PBF	Performance-based financing
PNC	Postnatal care
PPH	Postpartum hemorrhage
RBF	Results-based financing
URC	University Research Company
USAID RHITES-SW	Regional Health Integration to Enhance Services in South West Region of Uganda Project
VHT	Village Health Team
WHO	World Health Organization

# EXECUTIVE SUMMARY

## Background

A child's risk of dying is highest during the first 28 days of life, when about 40% of under-five deaths take place (UN 2011). Up to one half of all newborn deaths occur within the first 24 hours of life and 75% occur in the first week. The main causes are preterm birth, severe infections, and asphyxia. Research has shown that most newborn deaths can be prevented with already available interventions targeting preconception, antenatal, intrapartum, and postnatal care. Skilled care during labor is estimated to reduce neonatal deaths by 25%, and a combination of clean birth and postnatal care practices can reduce neonatal deaths due to sepsis and tetanus by 40% (Bhutta et al. 2014). Community-based care that includes community mobilization, home visits, and improved linkage to health care services has also been estimated to reduce neonatal mortality by 40% (Bhutta et al. 2014).

Several countries in sub-Saharan Africa halved their maternal mortality between 1990 and 2016 (WHO 2016). However, Uganda's death rates in 2013 are the same as 1980, with a maternal mortality ratio of 430/100,000, despite considerable efforts to improve maternal care. Most maternal deaths are during or immediately after childbirth. There is a widespread view, supported by some evidence, that delivery at a health facility with fast access to hospital care in emergencies is effective in reducing maternal mortality. However, it is challenging to encourage women from remote rural areas to attend antenatal care and to deliver in a health facility. Women may have to walk hours to reach a facility, and many facilities do not have the supplies to help these women when they get there, as is the case in some parts of Uganda.

As one strategy to improve maternal and newborn outcomes, the Uganda Ministry of Health (MoH) developed a national results-based financing (RBF) framework with the goal of promoting efficient delivery of and access to quality, cost-effective services. The main objectives of the national RBF framework are to:

- Enhance utilization, efficiency, and quality of health services delivered to the population of Uganda while improving equitable access to these services.
- Increase the Government of Uganda's strategic purchasing of cost-effective services to reduce morbidity and mortality.

RBF usually refers to a form of funding that provides financial payment incentives to staff or service units for achieving specified levels of performance. To learn how RBF might improve care in Uganda, an intervention was developed by the USAID Regional Health Integration to Enhance Services in South West Uganda (RHITES-SW) Project supported by Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) which combined the following three interventions at eight health centers:

1. Providing supplies
2. Supporting staff through monthly supervisory visits and coaching to improve quality
3. Offering incentives to achieve measured indicators of quality of care.

## Methods

In June 2016, the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project was asked by USAID and EGPAF to evaluate the interventions. Due to its interest in developing evidence for interventions to assure both access and quality of essential health services, the USAID Office of Health Systems funded the evaluation with Cross-Bureau funds.

The objectives of the evaluation were to:

- Inform the Ugandan Ministry of Health's RBF roll-out strategy
- Increase knowledge on effectively implementing RBF activities to improve quality of care in a USAID priority country for preventing child and maternal deaths. This includes identifying

appropriate incentivized indicators that can be incorporated into an RBF mechanism and lead providers to undertake quality improvement strategies.

- Build on the Global Financing Facility's work to inform the global learning agenda for RBF and quality of care.

The interventions were planned to be implemented by RHITES-SW between January and July 2017. ASSIST independently evaluated the intervention over the same period. The evaluation combined both qualitative and quantitative methods to assess the intervention's effect. This was a repeated measures study with comparison sites where services at the four intervention sites were to be compared to the four comparison health centers that did not receive the RBF intervention. Five providers were interviewed per facility, first in August-September 2016 and again in May 2017.

For the quantitative component, measurements on delivery, ANC, and PNC were to occur three times, before, during, and after the RBF intervention. ASSIST evaluators observed 10 deliveries in each of the eight sites. Delivery processes were observed and compared to the minimum standards of the MoH and WHO (WHO 2007). Using questionnaires, exit interviews were conducted by trained personnel with women as they completed ANC and PNC.

Independent of the ASSIST evaluation and as part of the programmatic component of RHITES-SW, EGPAF chose 12 quality indicators related to maternal, newborn, and child health (MNCH) services to determine health center performance that would result in provision of material rewards. While the original plan was to use monthly summary data reported to the national District Health Information System (DHIS), discrepancies identified by supervisors in January 2017 between health center registers and DHIS reports led to a decision to rely on health center register data collected by EGPAF RHITES-SW staff for assessment of health center performance.

## **Findings**

The intervention scheme deviated from the original planned roll-out to allow EGPAF to determine data that could be used to verify improvements in service quality, to build health center minimum capacity to be able to perform a fair test of an incentives intervention, and to incorporate health center staff preferences in the choice of rewards (e.g., uniforms, tea, lunch, umbrellas, and rain coats). The first two interventions (supplies and monthly supervision) were provided to all eight health centers beginning in January 2017. The third intervention, incentives based on performance, was delayed until July 2017 because EGPAF found that health centers needed supplies or supervision support first to be able to improve performance.

Due to the scheduled closure of ASSIST in September 2017, end-line data collection could not be postponed and proceeded in August 2017. This evaluation is thus only able to report evidence of the effect on health service quality of the supplies and supervision interventions introduced by EGPAF in all eight health centers, but no evidence on the effects of performance-based incentives. The evaluation drew on health center performance data, observations, and provider and patient interviews. The evaluation does provide important insights into implementation challenges with RBF schemes.

### **Supplies intervention**

- Some equipment and supplies requested by health center staff were received at all eight health centers from EGPAF between February and May 2017.
- District staff participating in monthly supervision visits took note of stock-outs and missing supplies that the MoH drugs and equipment stores has not provided, sought to redistribute these from other over-stocked health centers, and checked that the supplies were properly ordered by health center staff.

### **Effects on staff**

- District staff participating in the supervision visits reported learning more about:



- Quality indicators for MNCH services
- How monthly summaries provided to the district were often late or did not correspond to the data in the health center MNCH registers
- How to conduct general quality assessments of facilities and individual staff performance assessments and provide feedback.
- Staff expectations were raised when supervisors asked questions related to missing equipment and supplies and about which items were wanted as rewards for improvements.
- Midwives in the four intervention health centers were uncertain or confused about which supplies and delivered items were for basic requirements necessary to achieve standards, which were for rewards for individual performance, based on assessments made by health center in-charges following the guidance given by EGPAF in the supervision visits), and which were rewards for improved performance on the 12 MNCH indicators. As of May 2017, midwives interviewed did not know they would get rewards for improved performance on the 12 MNCH indicators.
- Midwives at all eight health centers reported forming a quality improvement (QI) team to improve MNCH services, but some of these were established before the EGPAF intervention. Many teams were not meeting regularly or active with QI work, often because of staff changes or shortages.
- Midwives reported that the tea and tea-making supplies received by all eight health centers in February 2017 improved morale and increased their belief that EGPAF could deliver tangible help and would keep to their promises.
- Midwives also reported that other supplies received by health centers further improved morale. These also led to staff giving more attention to the data presented by the visiting supervisors at the monthly visits about performance and to the suggestions by supervisors about how to improve performance.

#### **Findings from qualitative and quantitative data on the effects on clinical practice and quality of care**

- Some staff reported in May 2017 interviews that the supplies had helped to meet some standards of care. Midwives at all but one health center reported stock-out of several items that prevented them from achieving standards for ANC, delivery, and PNC. As of May 2017, evidence from interviews suggested that the intervention had a limited impact on staff clinical practices or organization of care.
- Data from all eight health centers at baseline, midline, and end-line were compared. Results from the chi-square tests showed that there was improvement on some antenatal care clinical management questions and patient interactions but worsened performance on others. There was a significant increase ( $p < 0.001$ ) in the proportion of ANC clients who reported that their blood pressure was measured, from 43.9% to 89.8%, and in the proportion receiving nutrition counseling (from 35.4% to 62.1%). Overall, antenatal care patients' interactions with nurses did not improve consistently. The chi-square tests showed that the percentage of pregnant women who understood the nurse's explanation increased significantly ( $p < 0.001$ ) from midline (46%) to end-line (67%). There was a small improvement over time in women reporting that they spent adequate time with the nurse but this was not statistically significant.
- Observations of delivery care did not show consistent improvement. Over time there was a significant increase in the proportion of mothers who were satisfied with the privacy of birthing area. However, cleanliness of surfaces and washing of hands by health workers declined significantly. Across all periods, the indicators for newborn care were higher those for maternal care, and changes over time were not significant, other than for the decrease in breastfeeding at delivery.

- Overall, the proportion of women receiving appropriate elements of postnatal care remained the same or decreased from baseline to midline but improved by end-line. Changes across the three periods were all significant, with the largest improvement seen in the proportion of postnatal women receiving nutrition counseling, from 37.8% at baseline to 62.2% at end-line. There was significant improvement in all three variables measuring satisfaction of the patient interaction with the nurse during postnatal care. There was a significant increase ( $p < 0.001$ ) in the proportion of women who reported that the nurse was polite and respectful (from 37.8% at baseline to 72.2% at end-line), those who understood the nurse's explanation (from 29.3% to 63.3%), and those who felt they had adequate time with the nurse (from 15.9% to 51.1%).

## **Key Observations and Conclusions**

The ASSIST evaluators observed several areas of key lessons for future quality improvement interventions:

- The immediate requirement for saving lives and improving quality of care is to provide essential drugs, supplies, and equipment that are necessary to achieving basic standards set by the MoH for MNCH services. During the study, the MoH has not been able to achieve this in all health centers.
- Paying staff regularly, and on time, and providing them with supplies and equipment necessary to meet standards is likely to improve quality. This is necessary but not always sufficient for quality services. Also required are leadership by in-charges and district staff who are engaged in reviewing performance data, giving feedback, and promoting morale and motivation.
- Evidence from elsewhere suggests that providing skilled birth attendance and education in villages could be cost-effective in reducing maternal and child mortality and morbidity in this remote part of remote, where women sometimes need to walk for two or three hours to the health center. However, health system managers need to ensure facility have adequate equipment to provide services of sufficient quality, a factor that was not always present in these facilities.
- Providing midwives with tea and tea-making utensils had an impact disproportionate to the costs, helping them during long nights delivering babies. It also allowed them to give a cup of tea to women after birth, which in turn was reported to increase women's motivation to give birth at the health center.
- RBF may be effective if basic supplies are available to service providers and valid data are available to assess improvements that can be attributed to service provider performance, even though evidence from this study does not support this conclusion. Neither of these two conditions were present in this intervention.
- An important requirement is that midwives and other staff members possess the time and skills to meet the high demand. Nearly all health centers were two or more midwives short because of sickness or leave due to maternity or professional development.

## I. INTRODUCTION

In Uganda, the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) was contracted by USAID to implement a results-based financing (RBF) intervention to improve the quality of antenatal, delivery, and postnatal care in the South West Region of Uganda through its Regional Health Integration to Enhance Services in South West Region (RHITES-SW) project. During June-August 2016, key features of the intervention were agreed between the Ugandan Ministry of Health (MoH), EGPAF, and USAID. The MoH had developed a national framework for RBF schemes which would guide the intervention (MoH undated) and, at the time of EGPAF's proposal, was developing a larger national RBF intervention with World Bank funding. The EGPAF intervention occurred prior to the later World Bank-supported RBF intervention in Uganda, which proposed to provide monetary incentives to facilities to buy medicines, improve structures, and top up salary as a staff motivator.

The intervention proposed by EGPAF for implementation in eight health centers in South West Uganda was different from most RBF interventions in two ways. First, the RBF scheme was combined with two other interventions expected to improve maternal, newborn, and child health (MNCH) care quality: 1) delivery of supplies and equipment, and 2) monthly supervision support with a quality improvement orientation. Secondly, an RBF scheme using non-monetary rather than monetary incentives was proposed, with the incentives to be provided as soon as EGPAF and district staff verifiers decided that improvements had been achieved, rather than providing them at the end of the year or at six-month intervals, as is common in such schemes. Additionally, the types of incentives to be provided were chosen by the health center staff. The proposed intervention was to furnish missing supplies and equipment and monthly quality improvement-focused supervision to all eight health centers, but in addition, offer material rewards to four of the health centers, with the four centers not receiving additional performance incentives to serve as a comparison group.

In August 2016, USAID and the RHITES-SW project, implemented by EGPAF, invited the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project to evaluate the intervention. ASSIST designed a mixed methods study to assess the impact of the EGPAF interventions over a one-year period from August 2016 to August 2017. The study was designed to compare the effect of the RBF intervention between control and study sites over time by collecting both qualitative and quantitative data repeatedly (twice for the qualitative interviews and three times for the quantitative exit interviews and observations) over the one-year period.

This application of RBF, with its combination of incentives and quality facilitation through supportive supervision and delivery of supplies and equipment, also evolved over time rather than adhering to a fixed design and implementation schedule. In November 2016, EGPAF staff visited all eight health centers to explain the RBF concept and noted that the incentives were to be made to the midwife staff group, rather to the health center as a facility. During these visits, EGPAF staff discussed with the health center in-charges and maternal care providers the 12 indicators which would be used to verify improved performance and asked about midwife preferences for material incentives to reward performance improvement. Beginning in January 2017, EGPAF began to deliver additional supplies to the eight health centers and to perform monthly supervision visits with district MoH staff. The introduction of the incentive scheme was postponed to allow EGPAF to gain experience with collecting data needed for verification of performance. Incentives were offered in July 2017, just a month before the end-line data collection. For this reason, this evaluation was only able to draw conclusions about the effects of the supplies/equipment and quality-oriented supervision interventions across all eight health centers without any attempt to show differences between the four health centers where incentives were discussed and the other four health centers where no incentives were mentioned. The qualitative data collected also shed light on considerations for future RBF interventions in Uganda or other low-income countries.

The report first provides background on the rationale for results-based financing and the assumptions underlying its application. It also reviews some of the available evidence about the effectiveness of RBF

schemes and summarizes lessons from applying RBF in Uganda as well as other low-income countries. Following a description of the evaluation methodology and results, it provides recommendations for stakeholders for developing incentives and quality interventions in the most effective way to have the largest impact in reducing avoidable mortality and morbidity for mothers and for children under five years.

## **II. BACKGROUND ON RESULTS-BASED FINANCING**

### **A. Interest of the MoH to incentivize high-impact, evidence-based care**

Several countries in sub-Saharan Africa halved their maternal mortality between 1990 and 2016 (WHO 2016). However, Uganda's death ratios in 2013 were the same as 1980, with a maternal mortality ratio (MMR) of 430/100,000, despite considerable efforts to improve maternal care. Most maternal deaths occur during or immediately after childbirth. There is a widespread view, supported by evidence, that delivery at a health facility with fast access to hospital care in emergencies is effective in reducing maternal mortality. However, it is challenging to encourage women from remote rural areas to attend antenatal care (ANC) and deliver in a health facility. Women may have to walk hours to reach a facility, and many facilities do not have the supplies to help these women when they get there, as is the case in parts of Uganda.

In Uganda, there are large variations across regions and facilities in the quantity and quality of MNCH services and a variety of interventions being used to improve MNCH. The Uganda "sharpened plan" of 2013 for reproductive health and MNCH identified a group of "high-impact interventions" for each level of health facility selected by modeling, using the Lives Saved Tool and expert opinion (MoH 2013). The plan estimated that four of the top-rated interventions would save up to 95% of maternal deaths by mothers: 1) skilled birth attendance with quality labor and delivery, 2) post-abortion case management, 3) use of magnesium sulfate for preeclampsia/eclampsia and 4) maternal sepsis case management. These were expected to translate into the reduction of the MMR from 360 in 2015 to 219 in 2020.

Research has shown that most newborn deaths can be prevented with already available interventions targeting preconception, antenatal, intrapartum, and postnatal care (PNC). Skilled care during labor is estimated to reduce neonatal deaths by 25%, and a combination of clean birth and postnatal care practices can reduce neonatal deaths due to sepsis and tetanus by 40% (Bhutta et al. 2014). Community-based care that includes community mobilization, home visits, and improved linkage to health care services has also been estimated to reduce neonatal mortality by 40% (Bhutta et al. 2014).

Interventions expected to prevent 90% of newborn deaths include labor and delivery management, kangaroo mother care, neonatal resuscitation, clean postnatal practices, use of chlorhexidine, intermittent preventive treatment of malaria, and antenatal corticosteroids for prematurity. Applying these interventions consistently across health facilities in Uganda would be expected to reduce the neonatal mortality ratio from 23 to 15 per 1000 live births by 2020.

With these interventions in mind, EGPAF selected 12 indicators of evidence-based MNCH care to incentivize through the RBF intervention. The indicators selected were:

- 1) Proportion of first ANC visits made before 14 weeks gestation
- 2) Proportion of ANC clients who completed four ANC visits
- 3) Proportion of pregnant women receiving the recommended package of services at ANC
- 4) Proportion of mothers admitted in the labor suite and with active labor monitored using a partograph
- 5) Proportion of women with danger signs as per partograph with appropriate and timely action taken
- 6) Proportion of delivering women who received active management of third stage of labor (AMTSL)

- 7) Proportion of newborns given the basic newborn care package before discharge from the health facility
- 8) Proportion of asphyxiated newborns successfully resuscitated
- 9) Proportion of mother-baby pairs attending postnatal care at six hours, six days, and six weeks
- 10) Proportion of mother-baby pairs receiving a comprehensive package of postnatal care services at six weeks
- 11) Proportion of HIV-exposed infants tested for HIV within two months of birth
- 12) Proportion of mothers or newborns who develop complications in the first six weeks and are appropriately managed at the health facility

## **B. What is results-based financing?**

Results-based financing, also referred to as performance-based financing, gives financial incentives for achieving pre-defined results. Supply-side RBF rewards service providers (“providers” at different levels of the health system: staff, health facilities, and districts). Demand-side RBF rewards people needing healthcare or others for meeting specific requirements, such as taking their children for vaccination. It is thought that this method of financing is more effective for achieving specific results than other financing methods, such as historical budget funding.

There are many different types of schemes which have been termed “results-based financing” with different objectives, methods, and for different services or whole health systems. Although the EGPAF intervention was called results-based financing, it was not a typical RBF intervention based on financial incentives; instead, the incentives to be offered to midwives who exceeded quality standards were “in kind”: supplies such as umbrellas or uniforms, which were suggested by staff as items they would value.

## **C. What are the assumptions underlying an RBF intervention?**

A general assumption in incentivizing performance is that improvements in health outcomes would automatically follow the provision of more and better inputs and improvement in processes (Grittner 2013). This assumption is reliant on several factors in the service delivery environment including: a) providers have the training and supplies to practice more effective care, b) the main reason they do not is that there are limited extrinsic financial rewards for high performance, c) demotivating factors such as such as unfair pay or delays in salary pay or poor working conditions have already been addressed, d) performance data can be collected and any improved performance due to staff efforts can be discerned so that incentives can fairly be given as a reward of effort, and e) the performance to be assessed is not performance that is part of basic work expectations, for which staff are paid a salary (Steenland et al., 2017; Zeng et al., 2018).

The RBF intervention introduced by EGPAF in Uganda assumed that midwives were not following evidence-based practices as specified in MoH standards. The objective of using RBF was to encourage staff and facilities to apply these practices appropriately, as measured by MoH MNCH quality of care indicators. Another assumption was that providers had the skills to make changes to improve their practice. It was reported by EGPAF that staff at all eight targeted facilities had been trained in quality improvement, mostly through HIV/AIDS program training activities. Capacity to improve, however requires that staff have time to work on improvement, have experience making changes, and have support from heads of facilities and district staff.

## **D. What is the evidence on Cost effectiveness of RBF interventions?**

There is limited evidence on the cost effectiveness of RBF alone for improving care or health outcomes and about the details of implementation and the information systems needed to apply the methods (Ergo & Paina 2012, Grittner 2013, Renaud & Semasaka 2014; Paul et al. 2018). In a review of PBF in low- and middle-income countries (LMICs), Turcotte-Tremblay et al. 2016, noted that “*it is unclear whether PBF*

*provides good value for money compared to status quo or other interventions aimed at strengthening the healthcare system in LMICs*". They concluded from their review of seven studies in five LMICs that the overall strength of the evidence was weak and the studies did not include economic evaluations. Hence the connections between the costs and effect of PBF was not clear. Few studies considered important alternative interventions, costs of implementing RBF, and its long-term consequence. Also, *"Few LMICs are represented in the literature, despite wide implementation."* They noted that most articles had at least one author employed by an organization involved in the implementation of PBF, with potential conflicts of interest.

The 2017 review by Paul & Renmans of performance-based financing in LMICs also comments on the lack of evidence and notes that, *"...not all costs or benefits are easily quantified or translated into financial gains or losses (e.g., increased or decreased trust levels, teamwork, perception of fairness, and equity). Therefore, it is essential that any cost-benefit analysis is accompanied by a qualitative assessment."* They also conclude that, before considering launching or scaling up a RBF scheme, it would be important to assess whether it is the most relevant response for the performance issues faced. *"Performance-based financing is very time-consuming and costly, largely because of the necessity of verifying data collected by health facilities. Financial premiums may be a good instrument to incentivize increased workload and boost quantitative indicators; yet, if the most important problems to tackle are, say, absenteeism, staff shortage in disadvantaged area, or poor health care quality, there may be more cost-effective instruments than PBF—for instance, community controls, area premiums, or accreditation. Thus, the entire motivational system must be taken into account, bearing in mind that the effectiveness of each type of motivator is almost certainly subject to diminishing returns"* (Paul & Renmans 2017).

Research from elsewhere may be of limited use for informing whether or how best to use RBF in Uganda. There are many types of RBF schemes and evidence from one type may not be transferrable to the same type or to another type in other settings. Recent implementation and improvement research suggests that interventions described as RBF may encompass many different interventions (heterogeneity of type), and intended to stimulate many different improvement changes (heterogeneity in types of change targeted). Their effectiveness may be specific to: a) type of RBF, b) type of change targeted and c) the context of the intervention.

One RBF intervention implemented in Uganda and reported by the implementers was an experiment with 21 non-governmental health centers in Northern Uganda (NU Health 2015). Eleven health centers received RBF using a complex formula for deciding financial incentives. Ten comparison health centers received "input-based financing" (IBF), which was financial resources to use at their discretion. Sixteen general indicators were used, but most related to MNCH services. The study reported that a child in the RBF region was three times more likely to be treated correctly for malaria, seven times more likely to be treated correctly for pneumonia; and eight times more likely to be treated correctly for diarrhea compared to a child in the IBF region. The report concludes *"RBF may contribute to improving quality of care, but other factors are very likely to influence this as well"* (p25). The study could not with certainty attribute the improvements to the RBF intervention alone. Other benefits were the strengthened capacity of MoH District Health Teams and improved data reporting. This report also notes the *"significant capacity development support to the District Health Teams (DHTs) to enable them to fulfill their regulator/verifier function in the study. This included recruitment of secondees to fill human resources gaps, various trainings to improve RBF-related skills, and support for providing appropriate supervision to the health facilities"*. It also notes that: *If Uganda adopts plans to take RBF to scale, the cost of verification will need to be considered very seriously."*

The study concluded *"The demands of the study served to highlight capacity constraints at both the systems and individual levels. There were challenges in working with HMIS and transferring data to DHIS2. These included a lack of familiarity with the programme, lack of regular electrical supply, and unreliable internet connectivity. Although the DHTs were mindful of the time-bound nature of the study, many noted the critical gaps in staffing as well as finance for transport which would adversely affect the DHTs' ability to verify quality indicators in the future. It was also noted that in some districts there were*

relatively low levels of motivation of DHT members to supervise the facilities, let alone review their data. In general, DHTs will need significant capacity strengthening if they are to support a roll out of RBF to public as well as [private not-for-profit] facilities” (NU Health 2015).

Behavioral science studies have also provided evidence relevant to RBF interventions, although most is from high-income settings and may not be generalizable to staff working in public health centers and rural district offices in Uganda. The conclusions from behavioral theory and research are that incentives:

- have a limited effect if certain working conditions that cause dissatisfaction are not addressed, such as unfair or delayed pay or over-long hours (“hygiene conditions”) (Hertzberg 1966).
- have a declining effect the longer the delay: generally financial and non-financial incentives can promote higher performance if incentives are provided close in time to the behavior. The longer after improvements are achieved that incentives are delivered, the smaller effect they have. Fast feedback and fast delivery of incentives is needed to influence behavior (Mehrotra et al. 2010).
- have a decaying effect over time: incentives have less effect with time, and begin to be considered as basic salary (Paul & Robinson 2007).
- that progress as a series of incentives are more effective than a single large one (Mehrotra et al. 2010).
- of greater complexity are less effective (Mehrotra et al. 2010).
- structured as with-holds of finance have more effect than bonuses but result in a negative psychological response on the part of providers (Mehrotra et al. 2010).
- must be linked to a sense of achievement, recognition for that achievement, the work itself, responsibility, and the opportunity for growth or advancement (Bowditch et al. 2008).

### III. DESCRIPTION OF THE RHITES-SW RBF INTERVENTION

#### A. Target facilities

Implementation of the supplies, supervision, and incentives interventions was targeted to eight health centers in five South West districts: Ibanda, Rukungiri, Kangungu, Sheema, and Bushenyi. EGPAF planned to introduce supplies/equipment and monthly supervision in all eight health centers. Four intervention sites (those in Ibanda and Kangungu districts) were to receive the add-on RBF intervention, while the other four health centers, which were matched on key criteria to the intervention facilities, were designated as control sites. **Table 1** shows the characteristics of the eight facilities.

**Table 1: Characteristics of the eight facilities**

District	Facility Name	Type of facility	ANC1 visits/month for the month used to select comparisons	ANC4 visits/month	Deliveries/month
Ibanda	Ruhoko	Health Center IV	104	568	1091
Ibanda	Ishongororo	Health Center IV	111	502	897
Rukungiri	Bugangari	Health Center IV	85	403	487
Rukungiri	Nyakisheny	Health Center III	7	97	189
Kangungu	Mpungu	Health Center III	2	166	265
Kangungu	Kihiihi	Health Center IV	150	585	634
Sheema	Kabwohe	Health Center IV	96	646	1213
Bushenyi	Kyabugimbi	Health Center IV	54	794	989

 RBF facility  Non-RBF facility

## B. RBF design and incentive criteria

In January 2017, the interventions started with provision of supplies to some of the health centers and monthly supervision visits to all eight health centers. This was meant to reduce the differences in supplies and improvement capability among health centers before offering incentives for MNCH improvements to providers in four health centers. EGPAF staff initially visited the four RBF health centers in October and November 2016 to describe the incentives scheme and help health center staff to form quality improvement projects. The EGPAF plan was to inform staff in the four health centers about the incentives they would receive if they improved performance on one or more of the 12 MNCH indicators. EGPAF and district staff then would verify performance on MNCH indicators before delivering the incentives. However as of May 2017, incentives had yet to be introduced to any of the health centers.

Based on a meeting between ASSIST and EGPAF in May 2017, the criteria for deciding on provide incentives to staff in four of the eight health centers would be based on the changes in the 12 MNCH indicators that EGPAF were collecting monthly. EGPAF proposed to provide material incentives to individuals, MNCH teams, and facilities where there was above a 10% increment in the average for three indicators for pregnancy care (ANC), three indicators for delivery care, and six indicators for postnatal care. Based on the verification and evaluation results, the individual, MCH team, and facility incentives were provided when the MNCH quality scores were above 50%. Good performance would reward all MCH providers and auxiliary staff from the Medical Stores, Theatre, and Laboratory and those who ensure hygiene in the facility. The facility incentive benefited the overall facility after they had qualified to meet the stipulated quality scores. **Table 2** shows criteria used for assessing and providing incentives.

**Table 2: Criteria stated by EGPAF for assessing and providing incentives (EGPAF 2017)**

Quality Scores	Individual Performance Incentives	MCH Unit Team Incentives	Facility Incentives
=>50 and < 65: Basic Quality	Complete set of Day Time and Night Uniforms, Nurses Watch, Capacity building in the weaker areas of performance	Operation Plan Development, Office Stationeries, Branded pens and Air time Vouchers (50,000)	Strengthen governance structures, Safe working environment, Tent for Mothers Facility Team Building Events, Support the HUMC functionality
>=65 and <80: Intermediate Quality	Uniforms, Shoes, Nurses Watch, Recognition and Reward	Computer for the MCH Unit, Capacity building, Air time Vouchers, Nurses Watch, Shoes, Cap, Night Uniform for Duty (Trousers), and Unit Phone	Improve on Management Information Systems, Pay the Facility Yaka Bill for 3 Months, Power Backup, TV Screen and DVD Player for ANC, Back up Generator, Curtains of the MCH Unit
>=80 and <90: Advanced Quality	Smart phone, Internal Recognitions for the good work by EGPAF and the District Officials.	Internal Recognitions for the good, Staff Party, Branded Pens, Benchmarking Visits	Standby Generator, Facility recognition and certification, Facility Phone at Administration
>90: Gold Star	Short Course, Laptop, Trip to another center of excellence out of the region, Public Recognition and Rewards by MoH, USAID, EGPAF, DLG	Unit Computer, TV for Health Education, Public Recognition and rewards MoH, USAID, EGPAF, DLG	Photocopying Machine, Computer, Modem with Data and a Printer, Water Tank for MCH Unit, Party for all the Staff Members, Mowers, Furniture, Certificate of Recognition and Rewards, Prizes for center for excellence

6/6/2017



## **C. Timeline of the intervention**

The following timeline summarizes key events in the design and implementation of the EGPAF multiple-component intervention:

### **August 2016**

- Key features of the RBF intervention were agreed upon between the Ugandan MoH, EGPAF, and USAID, based on the MoH's national framework for RBF schemes

### **September 2016**

- Presentation of the RBF scheme and consultation with district heads and some health center representatives at a one-day meeting
- Final selection of four health centers targeted to receive MNCH performance incentives and four health centers to serve as controls for the RBF incentives

### **November 2016**

- EGPAF staff visited all four RBF health centers to present RBF idea and indicators to be used for verification and to consult about supplies needed and preferred incentives for performance improvement

### **December 2016**

- New EGPAF project officer appointed, visits all eight health centers for familiarization visit, and develops additional interventions to use with district staff on future monthly visits to health centers

### **January 2017**

- EGPAF gave some supplies to the health centers starting January 2017. The supplies were to be used to address performance gaps across the selected facilities and included surgical gloves, delivery kits, cesarean section kits, blood pressure cuffs, and tea and tea-making utensils and kettle.
- The first of the one-day monthly supervision visits made to all eight health centers by EGPAF and one or more district officers (typically biostatistician and district focal person for MNCH). Visits included the supervising team collecting data and meeting with all staff and then MNCH staff in the afternoon. The supervising team: 1) carried out a general facility assessment using EGPAF's "Quality of Services" tool, 2) provided guidance to the health center in-charge and MNCH staff to carry out assessments using the EGPAF "Individual Performance Evaluation for Health Staff" tool, 3) collected data on the 12 MNCH indicators from MNCH registers using the "RBF Pilot Performance Process Outcome Verification" tool, and 4) provided guidance for developing a team action plan, using the "MoH Documentation Journal for QI Teams".
- The supervising team consulted with health center staff about which supplies were needed to meet MNCH standards and indicators and checked which had been received, as well as consulted with staff on which incentives would be preferred for individual performance assessments and for MNCH incentives improvements, if achieved.

### **February 2017**

- Limited supplies were received by some health centers, e.g., surgical gloves, delivery kits, cesarean section kits, blood pressure cuffs, and tea and tea-making utensils and kettle
- One-day monthly supervision visits to all eight health centers by EGPAF and one or more district officers

### **March 2017**

- Some supplies received by most health centers
- One-day monthly supervision visits to all eight health centers by EGPAF and one or more district officers

### **April 2017**

- Some supplies received by most health centers
- One-day monthly supervision visits to all eight health centers by EGPAF and one or more district officers

### **May 2017**

- Some supplies received by most health centers
- One-day monthly supervision visits to all eight health centers by EGPAF and one or more district officers

### **June 2017**

- Some supplies received by most health centers
- One-day monthly supervision visits to all eight health centers by EGPAF and one or more district officers

### **July 2017**

- Some supplies received by most health centers
- One-day monthly supervision visits to all eight health centers by EGPAF and one or more district officers
- Incentives for MNCH performance improvement provided to MNCH teams in the four RBF facilities (e.g., uniforms, stationary)

## **IV. EVALUATION METHODOLOGY**

The evaluation was designed to assess the effects of the incentives intervention by comparing the four intervention sites that received the RBF intervention with the four comparison sites that did not. ASSIST set forth to answer the following questions:

1. How does RBF, as implemented, change the quality of MNCH care, compared to usual financing methods?
2. What changes in the program would increase the effectiveness of RBF for improving the quality of MNCH care and outcomes?
3. What recommendations from this evaluation (and elsewhere) about RBF can be made to Uganda's Ministry of Health roll-out for improving its RBF implementation strategy?

### **A. Study design and data collection**

The evaluation combined both qualitative and quantitative methods to assess the intervention's effect. This was a repeated measures study with comparison sites where services at the four intervention sites were to be compared to the four comparison health centers that did not receive the RBF intervention. Within the facilities, health workers and patients were purposively sampled primarily because of the short study duration and low patient volume. For the qualitative component, in-depth interviews were conducted with health care providers. Five providers were interviewed per facility, first in August-September 2016 and again in May 2017.

For the quantitative component, measurements on delivery, ANC, and PNC were to occur three times, before, during, and after the RBF intervention. ASSIST evaluators observed 10 deliveries in each of the eight sites. Delivery processes were observed and compared to the minimum standards of the MoH and WHO (WHO 2007).

Exit interviews were conducted with women as they completed ANC and PNC. For both PNC and ANC, interviews were conducted with 257 pregnant women in antenatal care: 127 at the RBF sites and 130

from the control sites. EGPAF collected monthly data on the 12 MNCH quality indicators from facility registers and provided these to the evaluators.

Data collection forms for ANC exit interviews, observation of deliveries, and PNC exit interviews are found in **Appendices 1, 2, and 3**, respectively. **Table 3** shows the timeline of data collection.

**Table 3: Data collection timeline**

Aug – Sept 2016	Oct - Nov 2016	Feb 2017	May 2017	August 2017
Staff interviews; document collection and analysis (HCs district offices, EGPAF)	Baseline data collection: Data from registers; mother exit interviews; delivery observations	Data from registers; mother exit interviews; delivery observations	Staff interviews; Data from stores receipts (health centers, district offices, EGPAF)	Data from registers; mother exit interviews; delivery observations

Implementation of the RBF program commenced in June 2017 but provision of the rewards to the health workers did not occur until July of 2017, just one month before end-line data collection commenced. This is why the original intention to compare changes in the quality of care between RBF and non-RBF facilities was not done. The evaluators believe there was not enough time to allow a measurable difference in performance between the two groups to be detected. Because of the scheduled closure of ASSIST in September 2017, end-line data collection planned for August 2017 proceeded as planned, regardless of implementation of the RBF component at intervention sites.

## B. Analysis

Information from the qualitative in-depth staff interviews were summarized. The 12 MNCH quality indicators selected and collected by EGPAF were charted over time and compared between the intervention and comparison from September to April 2017, before any incentives were given. For the data collected using the ANC, PNC, and the observation of delivery questionnaires, we used chi-squared tests to assess statistically significant changes in key variables over the three time-periods, before during and after the intervention. Given the repeated measures comparison group design, we intended to employ a “difference-in-difference” analysis (Abadie 2005) to assess possible changes in service delivery resulting from the RBF incentives between the intervention and control sites over time. However, since the RBF incentives were not introduced in any substantial way at intervention sites before final data collection, findings from that analysis would not be a valid indication of the effects attributable to the RBF intervention.

## C. Ethics

Ethics approval was sought from and issued by a recognized institutional review board in Uganda and the Uganda National Council for Science and Technology (UNCST). Due to low literacy among some staff, consent to participate was obtained from participants orally. Before starting the interview, the purpose of the study was explained to participants and they were assured their answers would remain anonymous. They were also made aware that they could refuse to be interviewed, refuse to answer any questions, and stop the interview at any point without providing an explanation.

Quantitative data were recorded on mobile phones and in text notes. Digital and written paper records were stored securely, and no individuals’ names were recorded.

## D. Risks and precautions

Outlined below are potential risks to the evaluation identified in the planning stages (August 2017) that could negatively impact ability to interpret findings from the RBF study.

## **1. Delays during the evaluation and insufficient change**

The primary risk at the outset of the evaluation was being unable to answer the question: Does RBF improve quality? The risk anticipated at the design of this study was the RBF intervention may not be fully implemented by the date of the planned end-line data collection. This turned out to be the case. As a result, the data analyzed for this evaluation does not show the effect of the RBF component of the intervention. The evaluation was only able to detect what changes occurred in delivery care quality and in mothers' knowledge and experience of care as a result of the improvement in supplies and the quality-oriented supervision interventions.

## **2. Invalid, unreliable, non-comparable or non-attributable quality indicator data**

The first field study to establish baseline data in August/September 2016 found that national HMIS 105 monthly summary data sheets (July 2016) corresponded well to data in the ANC and maternity registers in the health centers. However, more detailed auditing of registers in the eight study health centers by EGPAF staff during supervision visits beginning in January 2017 found poor correspondence between the health center registers and the HMIS monthly summaries when a series of months was considered. The discrepancies may have been due to any number of factors, including staff turnover, lack of understanding of the indicators, and data entry errors. Other ASSIST-sponsored research using MNCH registers in Northern Uganda also reported a similar issue to the lead evaluator in November 2016. This evaluation was not able to use the HMIS summaries as planned and reverted to using the 12 MNCH indicator data collected by EGPAF from health center registers, covering the period September 2016 to April 2017, and supplied by EGPAF to this evaluation.

# **V. QUALITATIVE FINDINGS**

By June 2017, the incentives intervention had not been provided to the four health centers, so the evaluation reported in this document is only able to report evidence of the outcomes of the two supplies and supervision interventions by EGPAF on the eight health centers, and evidence from interviews and documents collected in May 2017.

## **A. Impact of the supplies and supervision visits, reported by staff in interviews in May 2017**

### **1. Supplies**

- District staff taking part in monthly supervision visits took note of stock-outs and missing supplies that the MoH drugs and equipment stores had not provided and sought to redistribute these from over-stocked health centers, and also checked that the supplies were properly ordered by health center staff.
- MNCH supplies delivered by EGPAF (e.g., surgical gloves, delivery kits) further increased staff morale at all health centers and increased the credibility of EGPAF to health center staff.
- Other supplies received by health centers from February to May 2017 further improved morale. These also led to staff giving more attention to the data presented.
- Staff reported being listened to by EGPAF and provided what was identified as important. For staff at the four intervention health centers, this raised their expectations that EGPAF would provide incentives if they improved performance.
- Tea, tea-making utensils, and kettles received by all eight health centers greatly increased morale and motivation.

### **2. Supervision visits**

- Interview evidence suggests that the monthly supervision visits had two effects on health center staff. One was on morale and motivation: midwives viewed expert visitors to their remote health centers as a sign of respect for the importance of the work they did. The visitors also inquired

about what supplies they needed to provide health services and what challenges they experienced in their work. No one had previously taken such an interest in their work or tried to provide tangible assistance. A second effect was the technical help and skill development provided by the visitors. They provided clinical advice, guidance and tools for data collection and planning improvements. There was evidence that documentation in the registers at health centers and reporting of monthly summary data to districts was improved as a result.

- District MoH staff involved in the supervision visits also increased their capability to improve MNCH documentation and reporting, and their understanding and use of indicator data. District staff taking part in the supervision visits reported learning more about: a) quality indicators for MNCH services and how monthly summaries provided to the district were often late or discordant with data in the health center MNCH registers, and b) how to conduct quality assessments and individual staff performance evaluations and provide feedback.
- Other supplies received by health centers from February to May 2017 led staff to more attention to the data presented by the visiting supervisors, and how to improve performance, during monthly visits. This was because the provision of supplies made it possible for them to improve performance on the indicators measured.
- The visits from supervisors raised facility staff expectations that more supplies and needed equipment would be provided as rewards for the improvements they had achieved.
- There was confusion in the midwives in the four RBF health centers about which supplies and equipment were for: a) the basic requirements necessary to achieve standards, b) rewards for individual performance assessments made by heads (following the guidance given by EGPAF in the supervision visits), or c) rewards for improved performance on the 12 MNCH indicators. In May 2017, the midwives interviewed did not know they would receive rewards for improved performance on the 12 MNCH indicators.
- Midwives at each of the eight health centers reported forming a quality team to improve MNCH services, some even before the EGPAF intervention. Many QI teams did not meet regularly to participate in QI work, often because of staff changes or shortages. However, the supervision visits, with the attendant knowledge that the QI team's progress would be checked at the next visit did motivate those teams into action.

### **3. Effects on clinical practice and quality of care**

- Some staff reported in interviews in May 2017 that the supplies had helped to meet some standards of care. However, midwives at all but one health center reported several out-of-stock items that prevented them achieving the MoH standards for ANC, delivery, and PNC. For most health centers, stock-outs of iron tablets, Fansidar (antimalarial), antibiotics, IV items, testing kits for pregnancy, syphilis, and hemoglobin prevented staff from providing the complete standard package of ANC care. Even after some supplies were provided by EGPAF in May 2017, many health centers still did not have all the equipment and supplies necessary to meet standards. Missing items included sterile delivery and surgical kits, and functioning blood pressure monitors. Referral by ambulance was hindered because there was no money for petrol, even though a functional ambulance was available at the health center.
- As of May 2017, evidence from interviews suggested that the intervention had a limited impact on staff clinical practice or organization of care.

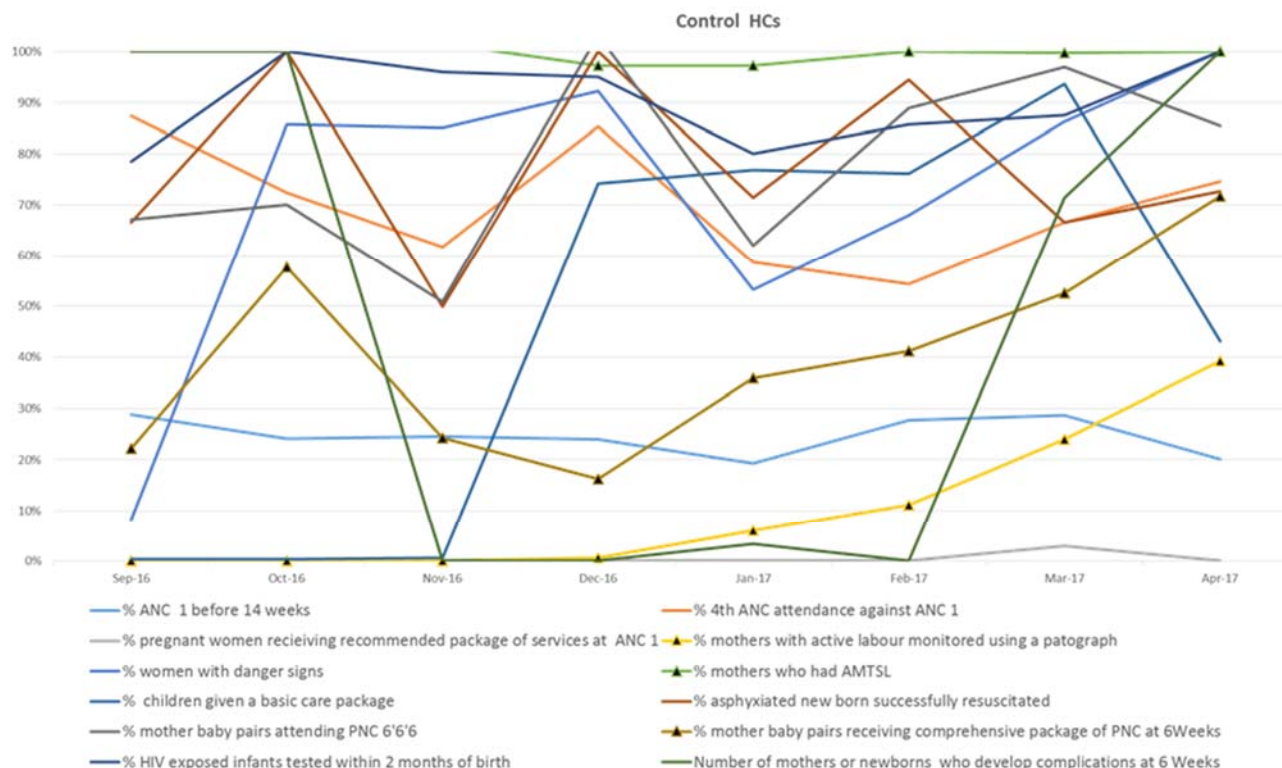
## **VI. QUANTITATIVE FINDINGS**

### **A. Performance on the MNCH indicators**

Review of time series data for the 12 MNCH quality indicators targeted by the RBF intervention from September 2016 to April 2017 (prior to delivery of any incentives for improved performance) showed extreme variation in performance from month to month at both intervention and comparison health centers, with some indicators improving while others declining or were unchanged. **Figure 1** shows

average performance in the four non-RBF health centers, and **Figure 2** shows average performance in the four RBF-targeted health centers.

**Figure 1: Average monthly performance on the 12 targeted MNCH indicators, four non-RBF health centers in South West Uganda**



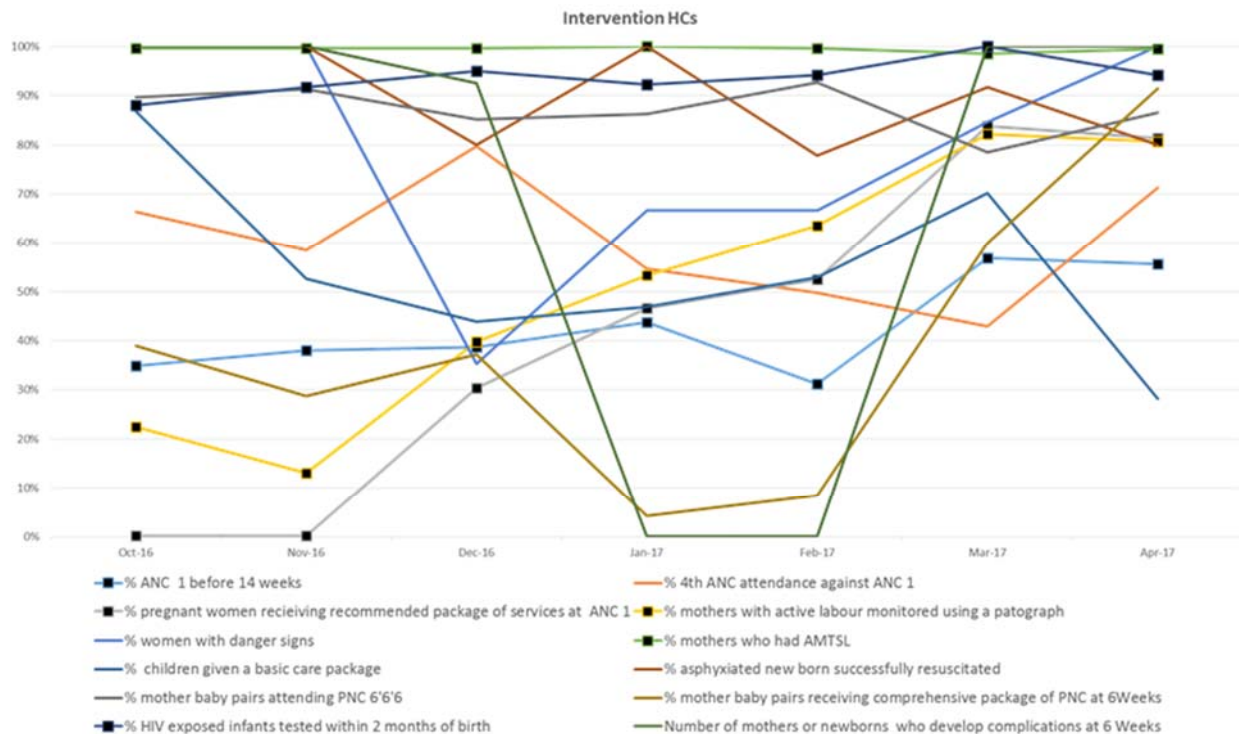
We observed that for most of the 12 MNCH indicators, variation appeared random and could not be attributed with certainty to EGPAF provision of supplies and supervision visits. Exceptions were:

- A significant improvement in the completed partographs occurring in all but one health center from January to April 2017 (probably due to EGPAF supplies and supervision, and training). A higher average improvement was seen in the RBF health centers (12% in November 2016 rising to 80% in April 2017) compared to control health centers (0% in November 2016 rising to 40% in April 2017).
- A significant improvement was seen in mother-baby pairs receiving the comprehensive package of PNC at 6 weeks (probably due to EGPAF supplies and supervision). A higher average improvement was seen in the RBF health centers (40% in December 2016 rising to 90% in April 2017) compared to control health centers (17% in November 2016 rising to 70% in April 2017).
- A slight improvement was seen in HIV-exposed infants being tested within two months of birth. A higher and more consistent average improvement was seen in the non-RBF health centers (92% in January 2017 rising to 94% in April 2017) compared to control health centers (80% in January 2017 rising to 100% in April 2017).

These differences were observed prior to results-based incentives being provided to staff in the four RBF health centers, indicating that any improvement was not related to the RBF intervention.

As expected with the very brief RBF intervention period, no difference between the intervention and control groups was seen (data not shown). Therefore, the remaining quantitative results aggregate data for all eight health centers to examine changes over time.

**Figure 2: Average monthly performance on the 12 targeted MNCH indicators, four RBF health centers in South West Uganda**



## B. Antenatal care exit interviews

### 1. ANC patient characteristics

The sample consisted of 257 women across the eight health facilities. 82 women were interviewed at baseline, 87 at the second period/midline and 88 women at end-line. More than half were 20 to 30 years of age (54%). About a third (28%) reported that it was their first pregnancy. More women gave birth at the health center/hospital than at home or other places (78%). Most had visited the ANC clinic previously (78%). Patient characteristics did not change over time (**Table 4**).

About 48 percent of women took the initiative or were prompted by another woman to attend ANC. Most walked to the clinic (45%) or took a motorbike (47%). Very few came by bicycle or by car. Around 87% reported that it took two hours or less to travel to the facility; the majority (44%) took between 20 to 60 minutes to travel to the facility, and 2% walked more than four hours to the health center.

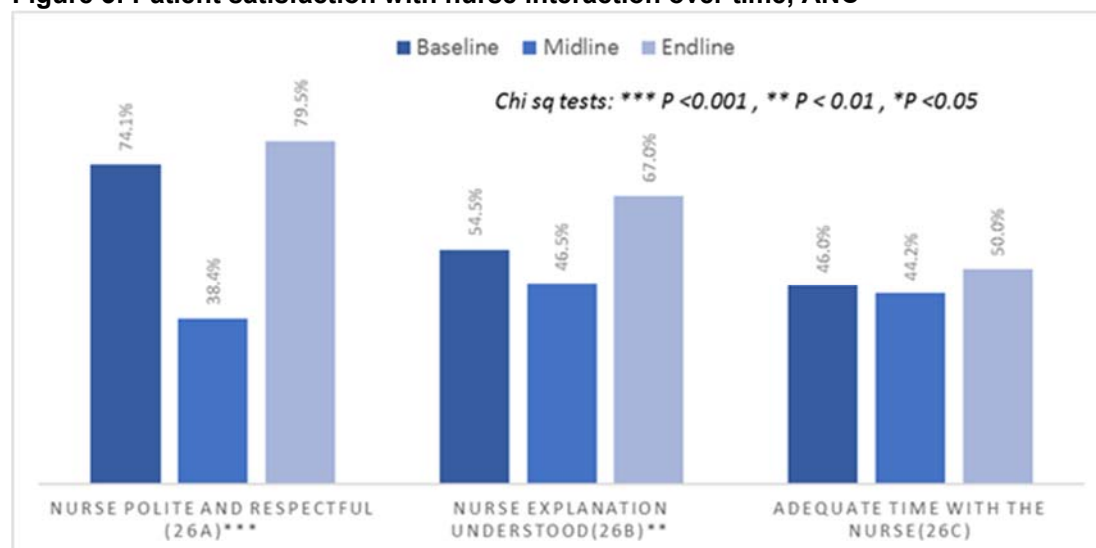
### 2. Change in patient satisfaction over time

Overall, patients' interactions with nurses did not improve consistently (**Figure 3**). The chi-square tests showed that women who reported that the nurse was polite and respectful decreased significantly ( $p < 0.01$ ) from baseline (74%) to midline (38%), then increased to 80% at end-line ( $p < 0.01$ ). The women who understood the nurse's explanation increased significantly ( $p < 0.001$ ) from midline (46%) to end-line (67%). There was a small improvement over time in women reporting that they spent adequate time with the nurse, but this was not statistically significant.

**Table 4: Patient characteristics and access to care of women interviewed after ANC across the three time periods (n=257)**

Variable	Oct-Nov 2016	Feb 2017	Aug 2017	ANC (all)	P value
<b>Age (yrs.)</b>					
<15			0.0	<b>0.0</b>	
15 -19	8.5	17.2	14.8	<b>13.6</b>	p<0.01
20 -30	36.6	59.8	64.8	<b>54.1</b>	
31 -40	6.1	21.8	19.3	<b>16.0</b>	
>40	48.8	1.2	1.1	<b>16.3</b>	
<b>First Pregnancy</b>					
Yes	27.2	26.4	31.8	<b>28.5</b>	ns
<b>Site of delivery</b>					
health center	84.2	78.1	72.4	<b>78.2</b>	ns
Home and other	15.8	21.9	27.6	<b>21.8</b>	
<b>Tended by HW</b>					
Yes	93.8	98.9	100.0	<b>98.2</b>	p<0.05
<b>Prior Visit</b>					
Yes	79.3	81.6	72.4	<b>77.7</b>	ns
<b>Prompt to access care</b>					
Health worker	28.1	43.7	39.8	<b>37.4</b>	ns
Community health worker/volunteer/other	14.6	12.6	18.2	<b>15.2</b>	
Self or another woman	57.3	43.7	42.1	<b>47.5</b>	
<b>Transportation</b>					
Walk	54.9	41.4	40.9	<b>45.5</b>	ns
Bicycle	2.4	1.2	6.8	<b>3.5</b>	
Motorbike	41.5	54.0	45.5	<b>47.1</b>	
Car	1.2	3.5	6.8	<b>3.9</b>	

**Figure 3: Patient satisfaction with nurse interaction over time, ANC**

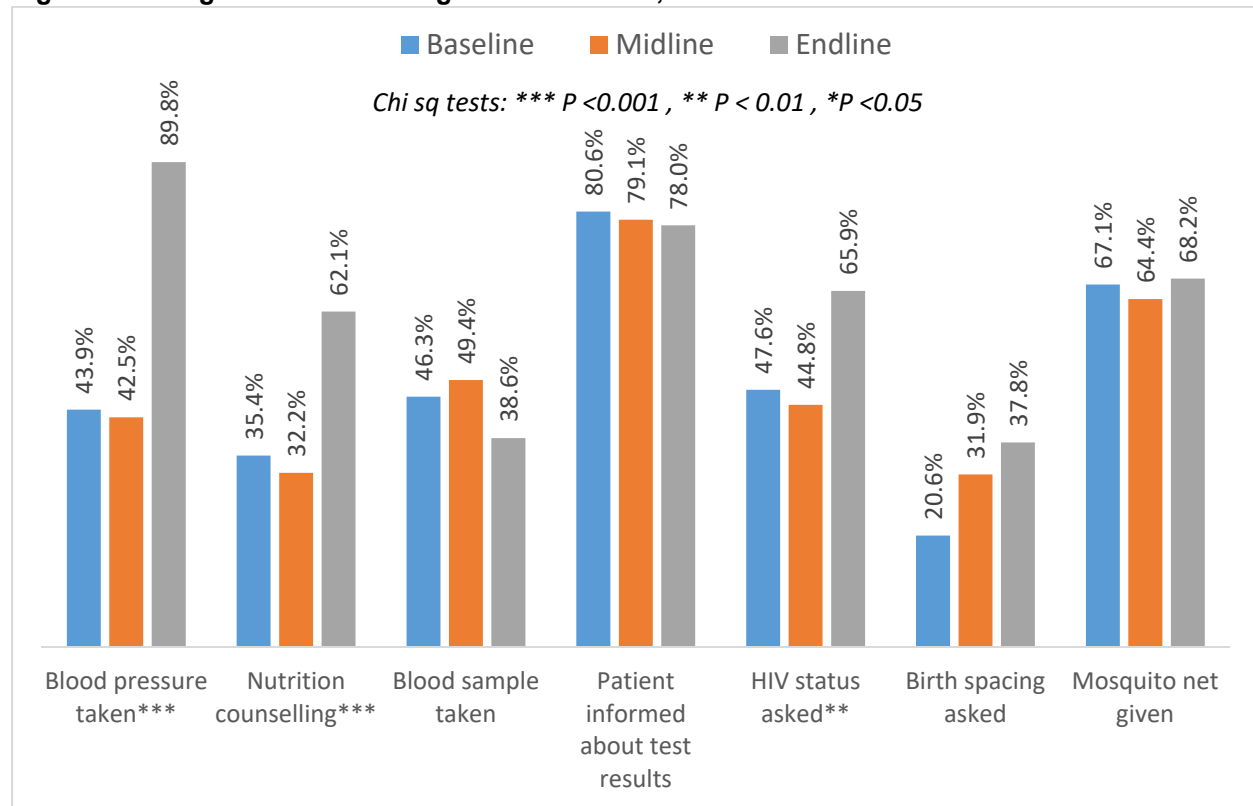




### 3. Change in clinical management over time

Results from the chi-square tests showed that there was no consistent improvement on clinical management questions over time (**Figure 4**). There was significant change across all periods in the proportion of women reporting their blood pressure was measured. For nutrition counselling and HIV status, significant increases occurred from midline to end-line but not from baseline to midline.

**Figure 4: Change in clinical management over time, ANC**



### C. Postnatal care exit interviews

#### 1. PNC patient characteristics

The sample consisted of 257 women interviewed from the eight facilities: 82 at baseline, 85 at midline, and 90 at end-line. More than half were between 20 and 30 years of age. About a quarter (27%) reported that it was their first pregnancy. More women gave birth at the health center/hospital than at home or other places (92%). All women were attended by a health worker. Of the 219 women who responded to having a prior PNC visit, 53% had attended PNC before. Patient characteristics remained unchanged over time (**Table 5**).

Overall, about 66% of the women were prompted to attend the PNC by a health worker, only 5% were prompted by a volunteer, and the rest (32%) were prompted by another woman or took the initiative to attend the PNC. There was a significant increase in the number who were prompted by community workers and volunteers. Most walked to the clinic (61%) or took a motorbike (36%). Very few came by bicycle or by car, and many (238 women, 80%) took two hours or less to travel to the facility. Overall, 93% were given a return date. Out of those given a return date, 16 women (7%) were unable to return on the given date.

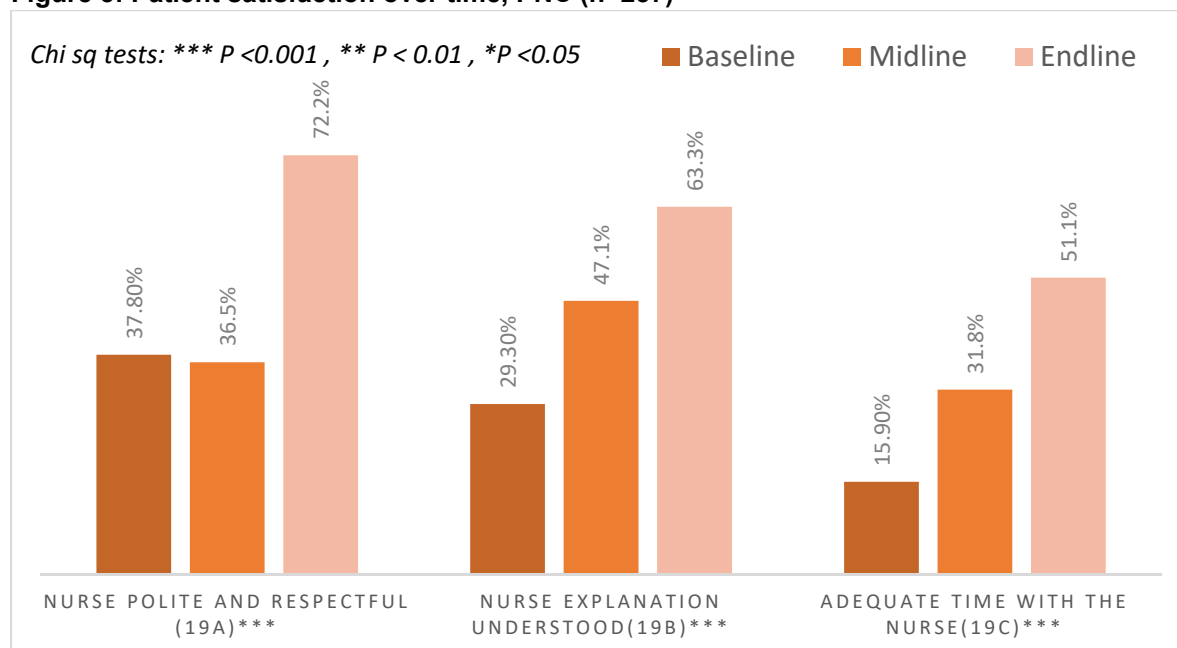
**Table 5: Patient characteristics and access to care of women interviewed after PNC across the three periods (n=257)**

Variable	Baseline	Midline	Endline	PNC (all)	P value
<b>Age (yrs.)</b>					
<15	1.2	0.0	0.0	<b>0.4</b>	ns
15 -19	18.3	8.2	13.3	<b>13.2</b>	
20 -30	58.5	72.9	61.1	<b>64.2</b>	
31 -40	22.0	18.8	25.6	<b>22.2</b>	
>40				<b>0.0</b>	
<b>First Pregnancy</b>					
Yes	29.3	30.6	33.3	<b>31.1</b>	ns
<b>Site of delivery</b>					
health center	85.4	95.3	94.4	<b>91.8</b>	ns
Home and other	14.6	4.7	5.6	<b>8.2</b>	
<b>Tended by HW</b>					
Yes	100.0	100.0	100.0	<b>100.0</b>	ns
<b>Prior Visit</b>					
Yes	52.4	48.2	60.0	<b>53.7</b>	ns
<b>Prompt to access care</b>					
Health worker	64.2	62.4	71.1	<b>66.0</b>	p<0.01
Community health worker/volunteer/other	3.7	5.9	14.4	<b>8.2</b>	
Self or another woman	32.1	31.8	14.4	<b>25.8</b>	
<b>Transportation</b>					
Walk	70.7	58.8	53.3	<b>60.7</b>	ns
Bicycle	1.2	2.4	3.3	<b>2.3</b>	
Motorbike	26.8	36.5	43.3	<b>35.8</b>	
Car	1.2	2.4	0.0	<b>1.2</b>	

## 2. Change in patient satisfaction over time

Overall, there was significant improvement, especially between periods 2 (midline) and 3 (end-line) for all three variables measuring satisfaction with interaction with the nurse (**Figure 5**). There was a significant increase in the proportion of women who reported that the nurse was polite and respectful, and those who understood the nurse's explanation at each period. While those reporting that they spent adequate time with the nurse decreased from baseline to midline, it increased significantly from midline to end-line.

**Figure 5: Patient satisfaction over time, PNC (n=257)**



### 3. Change in clinical management over time

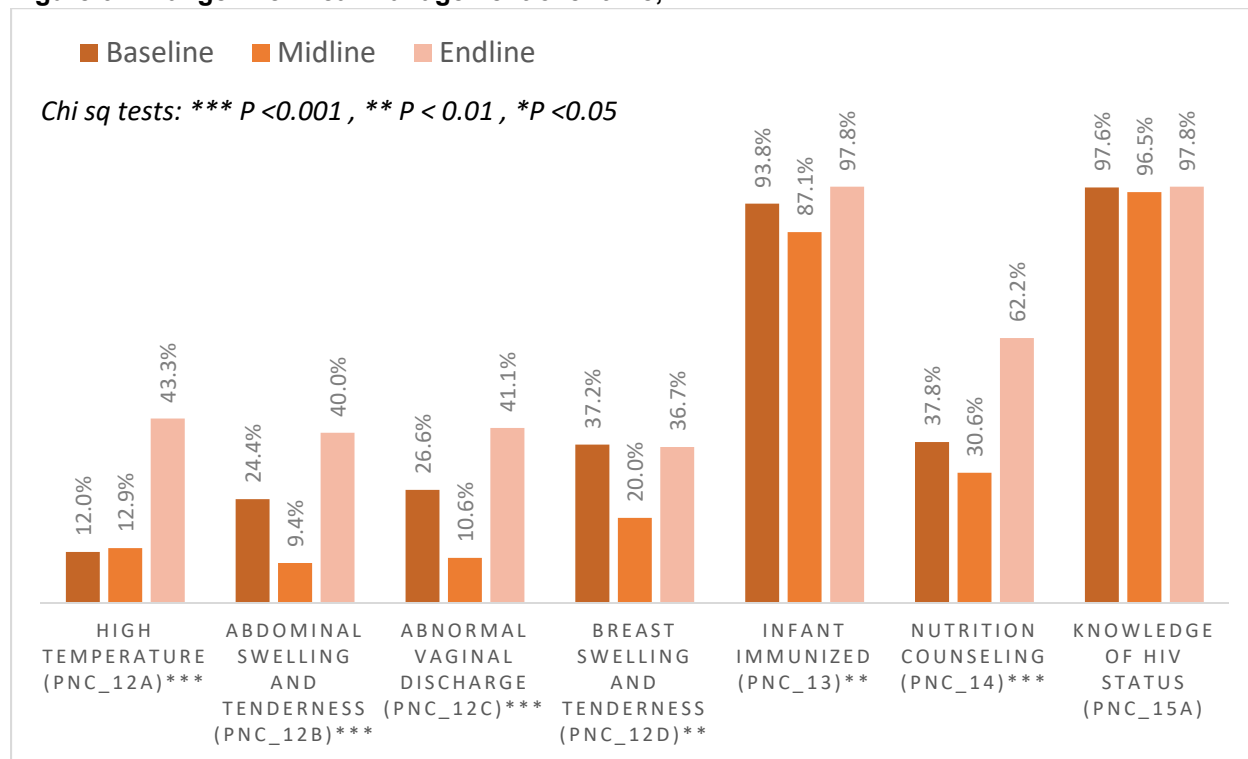
Overall, the proportion of women responding positively to clinical management questions from baseline to midline remained the same or decreased but improved by end-line. Changes across the three periods were all significant except for knowledge of HIV status. For those asked about breast swelling, the decrease from baseline to midline ( $p=0.015$ ) and subsequent increase from midline to end-line ( $p=0.015$ ) were both significant. For those asked about infant immunization, only the increase from midline to end-line was significant ( $p=0.007$ ), while for nutrition counselling, the change from baseline to end-line was highly significant but the decrease from baseline to midline was not significant. The proportion who reported that they had knowledge of their HIV status remained high from baseline through midline to end-line; the improvements over time were minimal and not significant. Out of the 257 women asked, 250 (97%) knew their HIV status (PNC 15a); 47 women said they were HIV-positive (PNC 15b). Of those positive, 76% (36) said the health worker took a blood sample. Two women did not know whether a blood sample had been taken, and nine women said they did not have their blood sample taken (**Figure 6**).

### D. Observation of deliveries

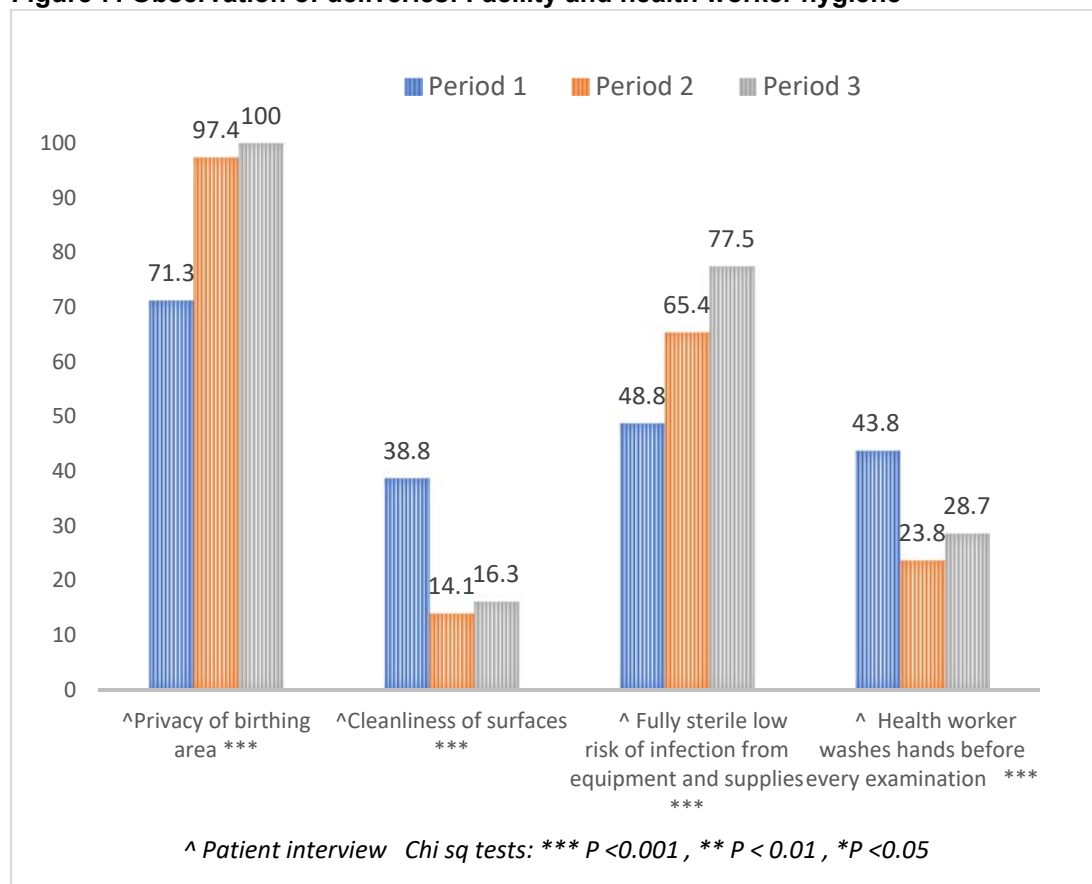
There were 240 deliveries observed; 80 deliveries were observed in each of the three-time periods, 10 in each health facility. Unless otherwise noted, data were collected from patient charts and indicate adherence of the health workers to routine practices during specific stages of labor. Overall changes over the three periods were inconsistent.

As shown in **Figure 7**, over time there was a significant increase in the proportion of mothers who were satisfied with the privacy of birthing area and with sterility of the equipment used. However, cleanliness of surfaces and hand-washing by the health worker declined significantly. There were significant increases, especially at end-line, for most indicators of quality care of mothers. Administration of oxytocin to limit blood loss was relatively high across all periods. Monitoring of blood loss and blood pressure occurred with higher frequency within the first 30 minutes in comparison to the first hour (**Figure 8**).

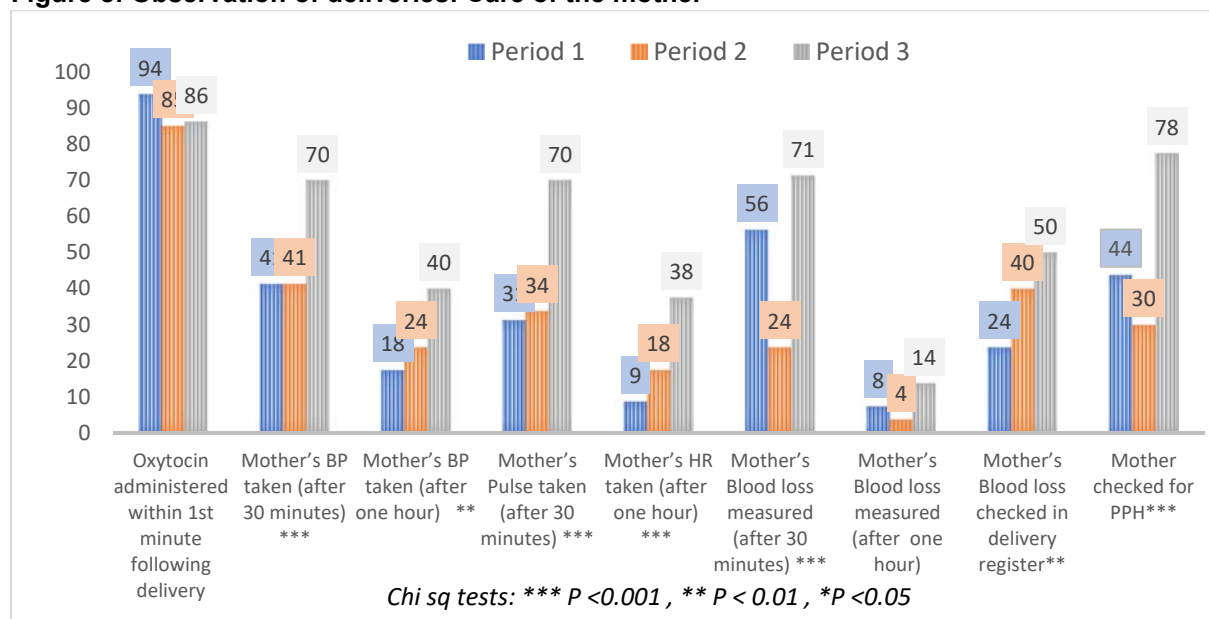
**Figure 6: Change in clinical management over time, PNC**



**Figure 7: Observation of deliveries: Facility and health worker hygiene**

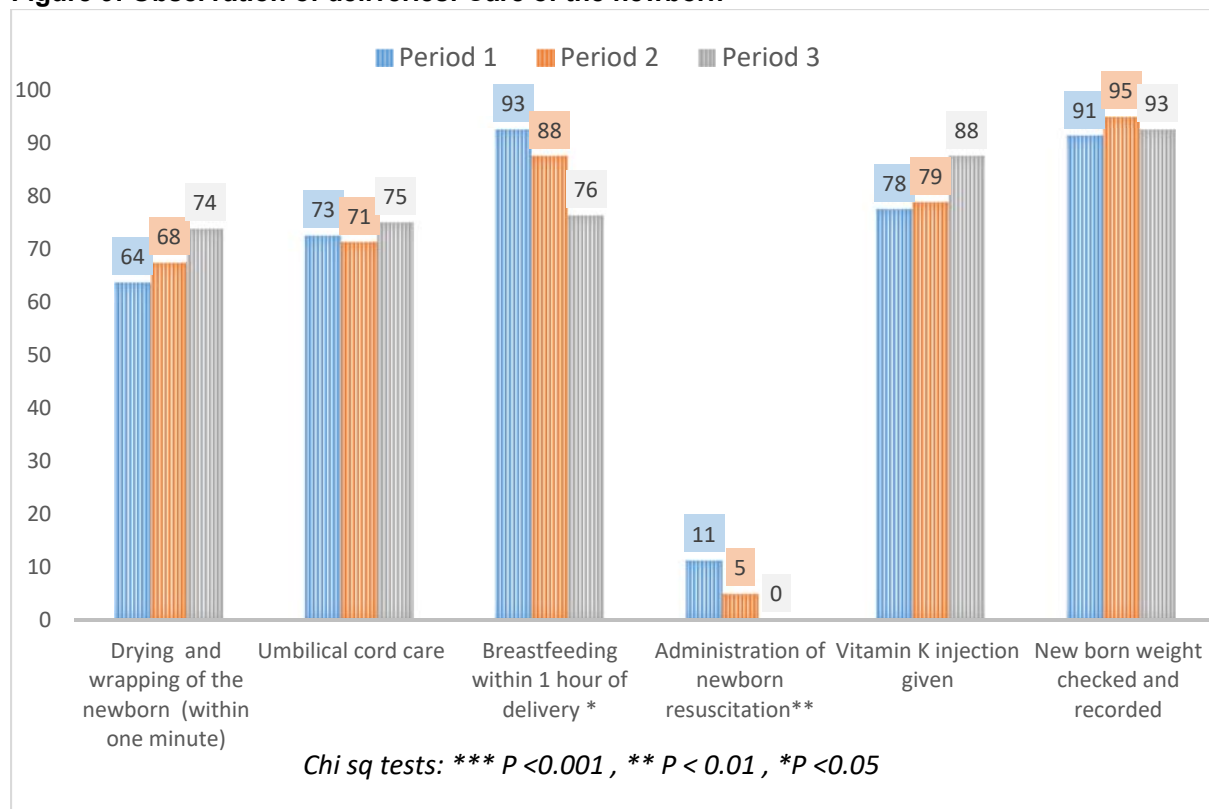


**Figure 8: Observation of deliveries: Care of the mother**



Across all periods, adherence to newborn care standards was higher than adherence for maternal care standards, and changes over time were not significant other than for the decrease in breastfeeding at delivery. The need for resuscitation also decreased significantly over time, as no newborns needed resuscitation at end-line (**Figure 9**). There were 18 stillbirths reported, 15 of which occurred at midline, and the majority (10 stillbirths) of which were reported by one facility. Three stillbirths were reported at HCIII, where the only two neonatal deaths and one maternal death occurred.

**Figure 9: Observation of deliveries: Care of the newborn**



## VII. DISCUSSION

Results obtained from this modified evaluation are mixed. There were improvements seen in most indicators of quality of ANC and PNC services delivered at the facilities. Other indicators improved marginally or not at all, while breastfeeding within the first hour of delivery, neonatal resuscitation, and the cleanliness of surfaces in treatment areas decreased over time. Some recognized prerequisites for an RBF program to produce positive results were missing in participating facilities, such as regular salaries to workers and a reliable supply of medical equipment to deliver appropriate services (Steenland et al., 2017; Zeng et al., 2018). The planned test of the effectiveness of RBF in this setting was not possible. Given this and the mixed results, no cost-effectiveness analysis was conducted as was initially planned.

Among the patients interviewed, more mothers had a prior visit to the PNC clinic, and more of those PNC visits were prompted by a health worker in comparison to the ANC visits. Interaction with the nurses improved significantly, especially between the midline and end-line, for both ANC and PNC. Patient perception of adequate time spent with the nurse did not improve significantly for the ANC clinic. The mothers' perspective on clinical management improved significantly for the PNC indicators compared with ANC indicators, especially by the final period. Indicators for newborn care from the observation of deliveries were relatively high with no significant changes, while those for maternal care mostly improved by the third period. It was as expected that prior interaction with the health facility during ANC and/or delivery prompted mothers to attend PNC. Also perceived quality of care or satisfaction during prior ANC and delivery services could have supported the decision to continue attending the PNC at the same facility. Familiarization with the facility and health workers could have also influenced perception of quality over time. Ultimately PNC services were rated better by mothers than ANC services.

From the observations, mothers' perception of cleanliness of surfaces and hand washing by the workers declined significantly over time. Services targeted to the mother increased primarily from midline to end-line. Administration of oxytocin to the mother and services targeted to the newborn remained consistently high from baseline to end-line without significant changes. The ability to provide consistent quality services also depends on availability of equipment and supplies to maintain cleanliness and hygiene. As noted from field visits and health worker interviews, supplies were not always readily available. As part of the implementation, supplies were to be maintained by the MoH to all eight facilities to bring them up to MoH standards. However, the supplies were reportedly intermittent throughout the intervention period.

The goal of the EGPAF intervention in eight health centers in rural South West Uganda was to decrease morbidity and mortality for mothers and newborns by improving health care quality for MNCH services through monthly supervision, delivery of supplies and equipment, and provision of non-monetary incentives. The biggest motivator from the interventions appears to have been the monthly visits and the supervisor's interest in the service the staff were providing, and some supplies which made it possible to complete tasks to the national standards that midwives were trained in and expected to achieve. Supply of refreshments and tea also played a role as short-term motivators. The biggest demotivators were the frequent missed or delayed salary payment for health facility staff (as of May 18, 2017, many staff had not been paid for April), overwork due to staffing shortages, and no money for petrol to fuel a functioning ambulance for emergency referrals.

More deliberate quality improvement strategies implemented prior to the RBF scheme in these facilities may have led to stronger results. QI provides a proven process for attaining compliance to standards of care. Midwives at the facilities reported forming QI teams to improve MNCH services before the RBF intervention. However, the teams were not meeting regularly or conducting improvement activities consistently because of staff changes or shortages of supplies.

While the study was not designed to collect qualitative data from health workers, it became apparent to data collectors in all eight facilities that equipment and supplies needed to provide maternal and newborn care services to national standards were intermittently unavailable. This was corroborated by several health workers at all facilities. It was generally stated that the cause was disruption of the supply chain

from the national level to district facilities. It was also noted through discussion with health workers that there was substantive staff turn-over and shortages of trained staff and that this caused disruption to service delivery in all facilities.

Implementation of the RBF intervention did not occur as planned at the start of the activity. There were delays in providing resources to the health facilities so they had adequate equipment and supplies to provide quality care. There were also delays in issuing non-monetary rewards to health workers with the expectation that the provision of non-monetary rewards was to occur only a month before the end-line data collection. The delays resulted in changes to the design of the assessment to the point where it cannot be read as a definitive evaluation of the program against a valid comparison. For this reason, the analysis was done as a longitudinal study of the eight facilities together rather than a comparison of the four RBF facilities versus the four control facilities. We did this because all eight facilities essentially received the same intervention (supplies + monthly supervision with a quality improvement approach). The RBF incentives were introduced in the four facilities just before the end-line data collection, not allowing enough time to elapse for the intervention to have a chance to impact the quality indicators.

## VIII. CONCLUSIONS AND RECOMMENDATIONS

While the proposed incentives scheme was not fully implemented during the time assigned for the evaluation, based on the data collected in this study, a minimum requirement for incentives to be effective for improving MNCH services in health centers are:

- Health center staff have essential medicines and equipment necessary to meet MoH standards of care,
- Data are available to district officers to make valid assessments that improvements have been made that are due in part to the efforts of staff,
- Health center and district staff must have the training and information to improve quality, and
- Staffing levels are adequate to allow staff to devote time to improving care quality.

These requirements were not met during the period of the EGPAF RBF intervention evaluation. Midwives cannot achieve standards of care if there are stock-outs of essential medicines and supplies. Ensuring these are available is necessary for safe deliveries and for providing women attending ANC and PNC with standards of care set by the MoH. Offering incentives to improve performance on these standards when supplies are not available despite health centers having done everything to order and get them, damages morale and motivation and is viewed as unfair punishment by providers.

An evolving and substantial intervention was provided by EGPAF to remote health center MNCH services by providing supplies required by Uganda MoH standards but which were missing from health centers and by assuring monthly supervision visits with indicator feedback and help to formulate steps to take to improve performance on selected indicators. The main effects of these interventions on all eight HCs have been improved morale and motivation for MNCH midwives and improvements to their clinical work, as reported by them, and evidenced by changes in some indicators.

Providing midwives with tea and tea-making utensils had an impact disproportionate to the costs, giving them help with long nights delivering babies and long days with crowded clinics. It also allowed them to give a cup of tea to women after birth, which in turn was reported to increase women's motivation to give birth at the health center.

The RBF scheme proposed by EGPAF took considerable time to develop, refine, and establish along with the systems to support it – the indicators and supplies procurement and delivery. Previous research shows that it takes time for health facility and district staff to become familiar with performance-based incentives and respond to them (NU Health 2015).

Any future RBF intervention should operate for at least six months before evaluation to clarify staff confusions about which incentives are provided and for what, and to ensure district and health facility staff have fully understood the RBF system and have a chance to respond to it. A cost-effectiveness

component is essential for such evaluation to take into account the considerable investments required to set up and maintain a monitoring system for RBF.

RBF may be effective if basic supplies are available to service providers and valid data is available to assess improvements that can be attributed to service providers performance. Neither of these two conditions was met in this intervention. In the absence of regular supplies and valid data, offering incentives is likely to be ineffective and may damage morale. It is therefore essential that the health system assure these essential elements in any future implementation or evaluation of RBF.

Paying staff regularly, and on time, and providing them with supplies and equipment necessary to meet standards is likely to improve quality. This is necessary but not always sufficient for quality services (a “hygiene” not “motivating” factor). Also required are:

- Leadership by in-charges and district staff which is engaged and skilled in collecting indicators and giving feedback, supportive supervision and promoting morale and motivation is also required.
- Overcoming the understaffing of health centers to allow midwives to meet patient demands and work on improvements (most health centers were continually at least two midwives short to meet the rising demand from patients)
- Overcoming stock-outs to ensure essential medical supplies are available to practice safety and also avoid mothers’ dissatisfaction after a long journey to be told they will have to pay for required items.

It is hoped that a thorough evaluation of the RBF program to improve MNCH quality of care will be possible in this setting in the future before decisions are made regarding allocation of resources to results-based financing interventions to address poor maternal and neonatal care.

Implementation of an MNCH improvement RBF program had begun at the time of publication of this analysis. It is crucial that Uganda MoH leadership at the central and district level and donor organizations understand that providing medical supplies and adequate salaries is a key prerequisite for RBF’s success.



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# APPENDICES

## Appendix 1: ANC exit interview data collection form

For data entry use only Tool ID#

### USAID ASSIST MNCH EXIT INTERVIEW FOR ANC MOTHERS

District Name _____	Facility number _____
Facility Name _____	Facility type <input type="checkbox"/> HC III <input type="checkbox"/> HC IV
Today's date (DD/MM/YY)	_D_ _M_ _Y_ _Y_
Name of Data Assessor _____	

Facility health worker running clinic, years of experience since qualification _____	Cadre _____
Assessor Guide:	Ask every 3 <sup>rd</sup> client, after their consultation with the health worker, Please find a quiet private place for the interview
-We have questions about the clinic. This will take less than 30 minutes. Your answers will not be shared with staff here, but will be used to make these services better for you and other mothers. We will not give your name to anyone. Please tell us the truthfully what you think. If you do not understand a question it is because I have not explained it well - please ask me to explain and about anything, you do not understand.	

**QUESTIONNAIRE 1: Antenatal Visits**

	Code
<b>1: How old are you?</b>	_ _
<b>2a: Did the health worker tend to you on this visit?</b>	
Yes	1
No	0
<b>2b: Is this your first pregnancy?</b>	
Yes	1
No	0
<i>If No, please ask.</i>	
<b>2c: How many times have you given birth?</b>	
Once	1
Twice	2
Thrice	3
Fourth	4
More than four	5
<b>2d: How many are alive?</b>	_
<b>2e: Of those alive, how many are;</b>	
Males	_
Females	_
<b>2f: Where did your last delivery happen?</b>	
At home	1
At this health center	2
At another health center	3
At a Hospital	4
Other (Specify)	<i>Specify</i>
<b>3a: Have you visited this ANC clinic in the past</b>	
Yes	1
No	0
<b>3b: If Yes, what happened during the ANC visit?</b>	
Saw nurse every time	1
Came one time and could not see a nurse	2
Nurse not available	3
Other reason	99
	<i>(please note any other reason here)</i>
<b>4: Who informed you to come to this antenatal clinic today?</b>	
Nurse/midwife/doctor at this health center	1
Nurse/midwife/doctor NOT at this health center	2

	Community health worker/voluntary health worker	3	
	Another woman	4	
	Self	5	
	Other.	99	<i>If other specify</i>
<b>5: How did you get here today?</b>			
	Walk	1	
	Bicycle	2	
	Motorbike	3	
	Car	4	
	Other transport	99	<i>If other specify</i>
<b>6: How long does it take you to arrive at the facility from your home?</b>			
	Less than 20 Minutes	1	
	20 - 60 Minutes	2	
	1-2 hours	3	
	2-3hrs	4	
	3-4 hrs	5	
	More than 4 hrs	6	
<b>7: How long did you wait before seeing the health worker? (<i>Probe when she arrived at the facility before being assessed by health workers</i>)</b>			
	Less than 30mins	1	
	Between 30min-1hr	2	
	Between 1-2hrs	3	
	Between 2-3hrs	4	
	Between 3-4hrs	5	
	Between 4-5hrs	6	
	Over 5hrs	7	
<b>8: How much time did you spend with the health worker today? (<i>This includes history taking and examination</i>)</b>			
	15 minutes	1	
	Between 15 – 30min	2	
	Between 30min – 1hr	3	
	Between 1 - 2hrs	4	
	Over 2 hours	5	
<b>9: Were you given a return date to the clinic? (<i>ask date as follow up to check</i>)</b>			
	Yes	1	
	No	0	
<b>10a: Would you be able to come back to this clinic on the return date assigned?</b>			
	Yes	1	
	No	0	

<p><b>10b: What might make it difficult for you to come back?</b></p> <p style="text-align: right;">No transport Cost of transport I cannot spend the time walking The nurses did not treat me well I am needed for other things Other reason</p>	<p style="text-align: center;">1 2 3 4 5 99</p> <p style="text-align: right;"><i>(please note reason here)</i></p>
<p><b>Section 2: CLINICAL AND KNOWLEDGE QUESTIONS</b></p>	<p style="text-align: center;">Code</p>
<p><b>11. For this current pregnancy, have you attended an ANC visit before?</b></p> <p style="text-align: right;">No Yes</p> <p><b>12: For this pregnancy, how many antenatal care visits have you attended and been assessed by a health worker</b></p> <p style="text-align: right;">Don't Know One Two Three Four Other (Specify)</p> <p><b>13: How old is your pregnancy? (Report in months the box)</b></p> <p><b>14: When you met with the health worker today, did s/he check your blood pressure (explain BP cuff around arm and ascertain that it's not MUAC measurement)</b></p> <p style="text-align: right;">No Yes</p> <p><b>15: When you met with the health worker today, did she ask you any questions about what you eat?</b></p> <p style="text-align: right;">No Yes</p> <p><b>16: When you met with the health worker today, did she take blood samples or Urine from you? Routine examinations (MOH guidelines for ANC visits)</b></p> <p style="text-align: right;">No Yes</p> <p><b>17: Were you informed of the results for these tests?</b></p> <p style="text-align: right;">No Yes</p>	<p style="text-align: center;">0 1</p> <p style="text-align: center;">1 2 3 4 5</p> <p style="text-align: center;"><i>Specify here</i></p> <p style="text-align: center;"><input type="text"/></p> <p style="text-align: right;"><b>Please check and record from ANC CARD/book <input type="text"/></b></p> <p style="text-align: center;">0 1</p> <p style="text-align: center;">0 1</p> <p style="text-align: right;"><b>Please check and record from ANC CARD/book <input type="text"/></b></p> <p style="text-align: center;">0 1</p> <p style="text-align: center;">0 1</p>

<p>18: When you met with the health worker today, did s/he ask about your HIVAIDS status?</p> <p style="text-align: right;">No            0 Yes            1</p> <p>19: When you met with the health worker today, did s/he ask you how long it's been since your last baby?</p> <p style="text-align: right;">No            0 Yes            1</p> <p>20: How many births have you had? (<i>ask again</i>)</p> <p style="text-align: right;"> _ </p>																																											
<p>21: During this pregnancy have you received a mosquito net</p> <p style="text-align: right;">No            0 Yes            1</p> <p>22: At this visit were you given any tablets</p> <p style="text-align: right;">Yes            1            <b>Go To No→24</b> No            0</p> <p>23. Do you know what the tablets are for? (<i>Choose as many as stated</i>)</p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">Yes (1) (0)</th> <th style="width: 10%; text-align: center;">No (0)</th> <th style="width: 20%;"></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">I don't know</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td></td> </tr> <tr> <td style="text-align: center;">for malaria IPT malaria (Fansidar)</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td></td> </tr> <tr> <td style="text-align: center;">Iron (folic acid/iron (Fefol)</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td></td> </tr> <tr> <td style="text-align: center;">Mebendazole (deworming)</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td></td> </tr> <tr> <td style="text-align: center;">Other (Specify)</td> <td colspan="2" style="text-align: center;"><i>If other specify</i></td> <td style="text-align: center;"><b>Please check and record from ANC CARD/book  _ </b></td> </tr> </tbody> </table> <p>24: Were there some questions you wanted to ask, but you did not ask?</p> <table style="width: 100%; border: none;"> <tbody> <tr> <td style="text-align: center;">There were some things I wanted to ask but did not</td> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td style="text-align: center;">She answered all my questions</td> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td style="text-align: center;">She did not answer one/some of my question</td> <td style="text-align: center;">3</td> <td></td> </tr> <tr> <td style="text-align: center;">She did not answer my question about...(specify)</td> <td style="text-align: center;">4</td> <td style="text-align: center;"><i>Specify</i></td> </tr> </tbody> </table> <p>25: Were there some things the health worker said to you that you did not understand?</p> <table style="width: 100%; border: none;"> <tbody> <tr> <td style="text-align: center;">No, I understood everything</td> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td style="text-align: center;">Yes, some things I did not understand</td> <td style="text-align: center;">2</td> <td style="text-align: center;"><i>Specify</i></td> </tr> </tbody> </table>		Yes (1) (0)	No (0)		I don't know	1	0		for malaria IPT malaria (Fansidar)	1	0		Iron (folic acid/iron (Fefol)	1	0		Mebendazole (deworming)	1	0		Other (Specify)	<i>If other specify</i>		<b>Please check and record from ANC CARD/book  _ </b>	There were some things I wanted to ask but did not	1		She answered all my questions	2		She did not answer one/some of my question	3		She did not answer my question about...(specify)	4	<i>Specify</i>	No, I understood everything	1		Yes, some things I did not understand	2	<i>Specify</i>	
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She did not answer my question about...(specify)	4	<i>Specify</i>																																									
No, I understood everything	1																																										
Yes, some things I did not understand	2	<i>Specify</i>																																									

<b>26: What did you like about this antenatal clinic today or any other day? (Tick all that apply)</b>		<b>Yes (1)</b>	<b>No</b>
		<b>(0)</b>	
	The health worker is polite and respectful	1	0
	The health worker explains things so I can understand	1	0
	I had enough time with the health worker	1	0
	Other (Specify)	<i>Specify</i>	
<b>27: What didn't you like about this antenatal clinic today or any other days(Tick all that apply)</b>		<b>Yes (1)</b>	<b>No</b>
		<b>(0)</b>	
	The long time to get here and/or go home	1	0
	The cost of transport to get here and/or go home	1	0
	Sometimes there is no nurse/clinic when I get here	1	0
	The long time to wait to see the health worker	1	0
	The nurse did not explain things properly	1	0
	Other (Specify)	<i>Specify</i>	
<b>28: Have you or would you recommend this antenatal clinic to another woman?</b>			
	No	0	
	Yes	1	

"1) Assessors Observations

*Please use this section to report any observations or information from the mothers, especially actions or comments that are /may be harmful to the mothers. Be PRECISE, so that we do not misunderstand you.*

"2) Suggestions for important improvements

*Please use this section to report any important suggestions. Be PRECISE so that we do not misunderstand you.*

## Appendix 2: Birth observation data collection tool

N o.	indicator	IPD # (from maternity register)											
		Facility health worker running clinic											
		years of experience since qualification											
		Date of delivery											
		Deliv	Del 1	Del2	Del3	Del4	Del5	Del6	Del7	Del8	Del9	Del10	
		Time observed											
		Time reported											
<b>FROM OBSERVATION OF SERVICE DELIVERY</b>													
		<i>Write "1" if yes, and "2" if no where applicable</i>											
1	Privacy of birthing area	1,2, 3											
		time											
2	Cleanliness of surfaces	1,2, 3											
		time											
3	Availability and sterility of equipment and supplies	1, 2, 3, 4											
		time											
4	health worker washed hands during service delivery	1, 2, 3, 4											
		time											
5	Oxytocin administered within 1st minute following delivery	1/2											
		time											



6		Drying and wrapping of the newborn (within one minute)	1/2																
			time																
7		Umbilical cord care	1/2																
			time																
8		Breastfeeding within 1 hour of delivery	1/2																
			time																
9		Mother's BP taken (after 30 minutes)	1/2																
			time																
10		Mother's BP taken (after one hour)	1/2																
			time																
11		Mother's HR taken (after 30 minutes)	1/2																
			time																
12		Mother's HR taken (after one hour)	1/2																
			time																
13		Mother's Blood loss measured (after 30 minutes)	1/2																
			time																
14		Mother's Blood loss measured (after one hour)	1/2																
			time																
15		Stillbirth	1/2																
			time																
16		Neonatal death within 1 hour	1/2																
			time																
17		Maternal death within 1 hour	1/2																
			time																
18		Is the baby asphyxiated? Note:(if yes go to the next question, if no, skip the next question)	1/2																
			time																
19		Newborn resuscitation equipment used when indicated <ul style="list-style-type: none"> <li>• Penguin/mucus extractor</li> <li>• Mask and ambo bag</li> </ul>	1/2																

			time											
20		Vitamin K injection given to newborn	1/2											
21		New born weight checked	1/2											
			time											
22		PPH occurred?	1/2											
			time											
FROM PATIENT CHART & REGISTER														
1		Oxytocin administered within 1 <sup>st</sup> minute following delivery Source: partograph/patient file	1/2 Time											
2		Drying and wrapping of the newborn (within one minute) Source: patient file/partograph	1/2 Time											
3		Umbilical cord care Source: patient file/ partograph	1/2 Time											
4		Breastfeeding within 1 hour of delivery Source: patient file/partograph	1/2 Time											
5		Mother's BP taken (after 30 minutes) Source: patient file/ partograph	1/2 Time											



16	Vitamin K injection given Source: patient file/ delivery register	1/2 Time											
17	New born weight checked and recorded	1/2 Time											
18	Mother checked for PPH Source: client notes, Partograph or maternity register	1/2 Time											

"1) Assessors Observations  
Please use this section to report any observations or information from the mothers, especially actions or comments that are /may be harmful to the mothers. Be PRECISE, so that we do not misunderstand you.

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"2) Suggestions for important improvements  
Please use this section to report any important suggestions. Be PRECISE so that we do not misunderstand you.

OBSERVATION: LABOUR AND DELIVERY		
Preparation and birth area	Code	Guide
<b>1: In the birthing areas, is there privacy for the delivering mother?</b>		
Observe	Yes	1
	No	2
	Only partial privacy	3
<b>2: Cleanliness of surfaces – floor (no cracks), wall, preparation areas, clean delivery bed, and area within 1 meter of mother giving birth</b>		
	No, unclean	1
	Yes, fully clean	2
	Only partial cleanliness	3
<b><u>Availability and sterility of equipment and supplies</u></b>		
<b>3: Make a judgment and please score the sterile preparations, and cleanliness of all areas of regarding the chances of the mother or new born contracting an infection that could have been avoided if the area or equipment was cleaner</b>		
	Fully sterile low risk of infection from equipment and supplies	1
	Not perfectly sterile – some risk of infection from equipment and supplies	2
	Not sterile – a risk of infection from equipment and supplies and only partial cleanliness	3
	Not sterile – a high risk of infection from equipment and supplies	4
<b>4: Make a judgment and please score whether the health worker washed hands during service delivery</b>		
	Washes hands before every examination	1
	Once the nurse/doctor did not wash hands before examination	2
	A number of times did not wash hands before examination	3
	Never washed hands before examination.	4

### Appendix 3: PNC exit interview data collection tool

For data entry use only Tool ID#

#### USAID ASSIST MNCH EXIT INTERVIEW FOR POST NATAL MOTHERS

District Name _____	Facility number _____
Facility Name _____	Facility type <input type="checkbox"/> HC III <input type="checkbox"/> HC IV
Today's date (DD/MM/YY)	_D_ _D_ _M_ _M_ _Y_ _Y_
Name of Data Assessor _____	

Facility health worker running clinic, years of experience since qualification _____	Cadre _____
Assessor Guide:	Ask every 3 <sup>rd</sup> client, after their consultation with the nurse, Please find a quiet private place for the interview
<p>We have questions about the clinic. This will take less than 30 minutes. Your answers will not be shared with staff here, but will be used to make these services better for you and other mothers. We will not give your name to anyone. Please tell us the truthfully what you think. If you do not understand a question it is because I have not explained it well - please ask me to explain and about anything, you do not understand.</p>	

**6 WEEK POSTNATAL VISIT**

	Code
<b>1: How old are you?</b>	_ _
<b>2a: Did the health worker tend to you on this visit?</b>	
Yes	1
No	0
<b>2b: Is this your first baby?</b>	
Yes	1
No	0
<b>2c: How many babies have you given birth to?</b>	
One	1
Two	2
Three	3
Four	4
More than four	5
<b>2e: How many are alive?</b>	_
<b>2f: Of the alive ones, how many are;</b>	
Males	_
Females	_
<b>3: Before this baby was born, how many antenatal visits did you attend were assessed by a health worker?</b>	
Once	1
Twice	2
Thrice	3
Four	4
I don't remember	5
Other (Specify)	99
	Specify
<b>4: Where did you give birth to this baby/babies?</b>	
At home	1
At this health center	2
At another health center	3
At a Hospital	4

Other (Specify)	99 (Specify)	
5a: Have you in the past come to this Post natal clinic	1	
Yes	0	Go To No→6
No		
5b: If Yes, what happened during the PNC visit?		
Saw nurse every time	1	
Came one time and could not see a nurse	2	
Nurse not available	3	
Other reason	99	<i>(please note any other reason here)</i>
Someone else.	5	
6: Who informed you to come to this postnatal clinic today?		
Nurse/midwife/doctor at this health center	1	
Nurse/midwife/doctor NOT at this health center	2	
Community health worker/voluntary health worker	3	
Another woman	4	
Self	5	
Other.	99	<i>If other specify</i>
7: How did you get here today?		
Walk	1	
Bicycle	2	
Motorbike	3	
Car	4	
Other transport	99	<i>If other specify</i>
8: How long did you wait before seeing the health worker? ( <i>Probe when she arrived at the facility before being assessed by health workers</i> )		
Less than 30mins	1	
Between 30min - 1 hr	2	
Between 1-2hrs	3	
Between 2-3hrs	4	
Between 3-4hrs	5	
Between 4-5hrs	6	
Over 5 Hours	7	
9: How long did you spend meeting the health worker ( <i>Mother baby point, FP, Immunization, lab</i> )		
15 minutes	1	
Between 15 – 30min	2	
Between 30min – 1hr	3	
Between 1 - 2hrs	4	
Over 2 hours	5	



<p><b>10: Were you given a return date to the clinic? (ask date as follow up and check immunization card and mother's passport)</b></p>		Yes	1
		No	0
<p><b>11a: Would you be able to come back to this clinic on the return date assigned?</b></p>		Yes	1
		No	0
<p><b>11b: What might make it difficult for you to come back?</b></p>		No transport	1
		Cost of transport	2
		I cannot spend the time walking	3
		The nurses did not treat me well	4
		I am needed for other things	5
		Other reason	6
<i>(please note reason here)</i>			
<b>Comprehensive package of 6week PNC services/supplies and skill/knowledge exploration During this visit what services were offered to you?</b>			
<p><b>12: When you met with the health worker did she/he ask you about the following danger signs and treatment?</b></p>		Yes (1) (0)	No
		about high temperature	1 0
		abdominal swelling and tenderness	1 0
		abnormal vaginal discharge	1 0
		Breast swelling tenderness	1 0
<p><b>13: Immunize your baby (give an injection)</b></p>		Yes	1
		No	0
<p><b>14: What did the health worker say about breast feeding?</b></p>		I should do exclusively for 6 months	1
		Nothing	2
		I forgot	3
<p><b>15a: Do you know your HIV status?</b></p>		Yes	1
		No	0
<b>Go To No→17</b>			

<b>15b: If yes, what is your HIV status?</b>			
	Positive	1	
	Negative	2	<b>Go To No→17</b>
<b>16: If positive, did the health worker take a blood sample to find out your babies HIV status?</b>			
	Yes	1	
	No	0	
<b>17: Were there some questions you wanted to ask, but you did not ask?</b>			
	There were some things I wanted to ask but did not	1	
	She answered all my questions	2	
	She did not answer one/some of my question	3	
	She did not answer my question about...(specify)	4	<i>Specify</i>
<b>18: Were there some things the health worker said to you that you did not understand?</b>			
	No, I understood everything	1	
	Yes, some things I did not understand	2	<i>Specify</i>
<b>19: What did you like about this postnatal clinic today? (Tick all that apply)</b>			
		<b>Yes (1)</b>	<b>No</b>
		<b>(0)</b>	
	The nurse(s) is polite and respectful	1	0
	The nurse explains things so I can understand	1	0
	I had enough time with the health worker	1	0
	Other (Specify)	<i>Specify</i>	
<b>20: What didn't you like about this postnatal visit today? (Tick all that apply)</b>			
		<b>Yes (1)</b>	<b>No</b>
		<b>(0)</b>	
	The long time to get here and/or go home	1	0
	The cost of transport to get here and/or go home	1	0
	Sometimes there is no nurse/clinic when I get here	1	0
	The long time to wait to see the health worker	1	0
	Did not have enough time with the health worker	1	0
	The nurse was not polite or respectful	1	0
	The nurse did not explain things properly	1	0
	Other (Specify)	<i>Specify</i>	

<p><b>21: Which changes do you suggest to improve post natal service at this facility?</b></p>	
<p><b>22: Have you or would you recommend this postnatal clinic to another woman?</b></p>	
<p style="text-align: right;">No</p>	<p style="text-align: center;">0</p>
<p style="text-align: right;">Yes</p>	<p style="text-align: center;">1</p>

"1) Assessors Observations  
Please use this section to report any observations or information from the mothers, especially actions or comments that are /may be harmful to the mothers. Be **PRECISE**, so that we do not misunderstand you.

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