Kambia - Gloucestershire
International Health Links Funding Scheme Grant
Baseline Evaluation Report 2010

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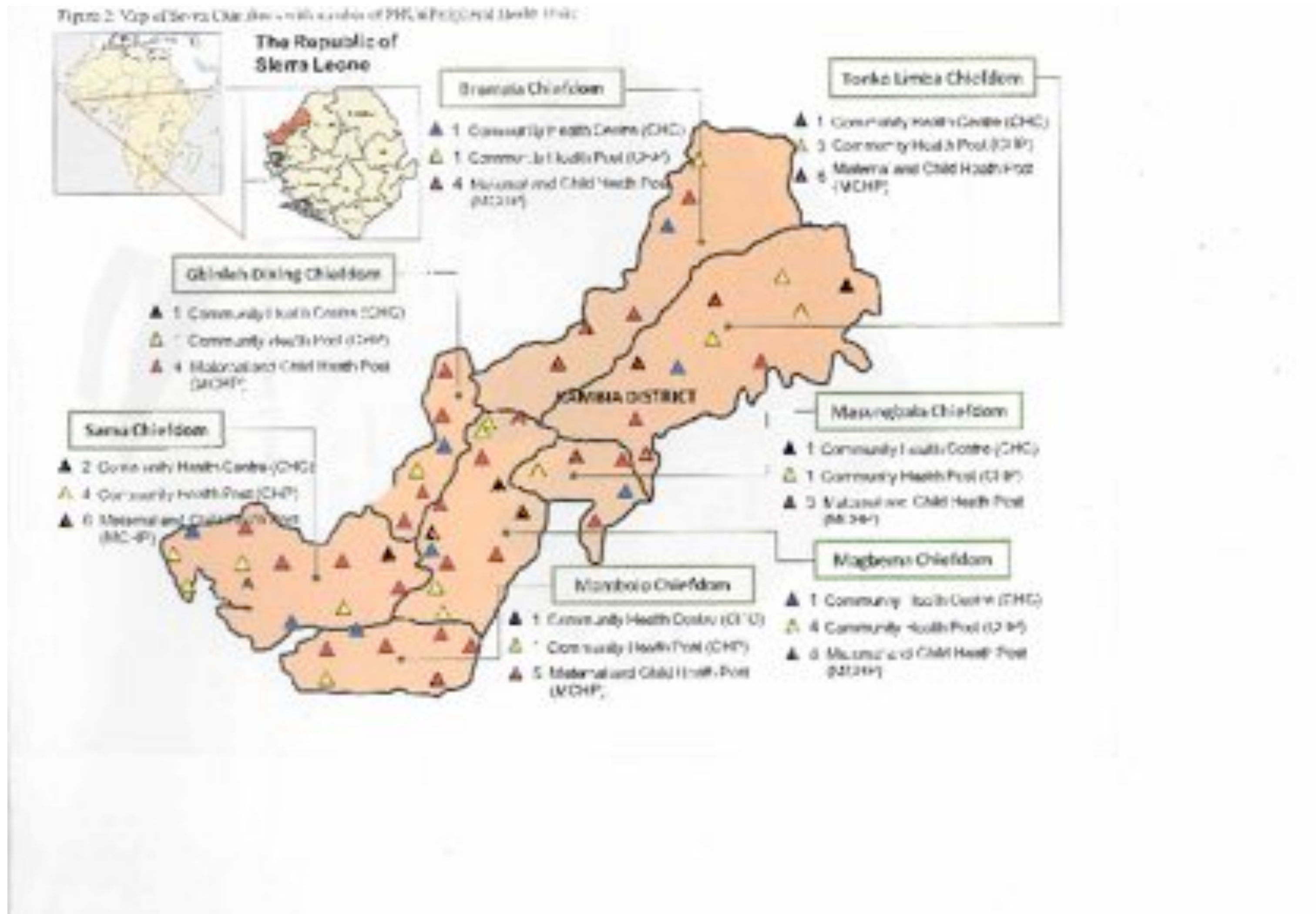
Map of Sierra Leone Chiefdom with Peripheral Health Units (Source: Kambia District Health Directory 2010)



Introduction

In 2010 the 'Kambia Health Link' was awarded a three-year International Health Link Funding Scheme (IHLFS) grant to provide small-scale medical equipment and medical training in emergency obstetric care to health care workers in Kambia District[1]. The aim of the grant is to address the lack of adequate provision of skilled care that contributes to women dying in pregnancy and childbirth. The main objectives of the programme are to strengthen local capacity to identify, treat and appropriately refer obstetric complications, thus reducing maternal mortality and still birth ratios across Kambia District. This project is aligned with the United Nations Millennium Development Goals to reduce childhood mortality and improve maternal health by 2015.

To help ensure programme success, a comprehensive evaluation plan has been developed to monitor annual progress towards achieving three goals and to identify barriers to success. The evaluation plan is a flexible document intended to be adapted in response to programmatic needs. This first evaluation report establishes the position of maternal health and provision of care in Kambia at the start of the programme (Year 1) and provides baseline measures for all indicators against which programme success will be evaluated at the end of Year 3.

[1] International Health Links Funding Scheme (IHLFS) is a three year scheme that supports Health Links between health institutions in developing countries and the UK. Funded by the UK Department for International Development and the Department of Health, it is jointly managed by The Tropical Health and Education Trust (THET) and the British Council. The scheme aims to strengthen the capacity of health services in developing countries.

Methods

To establish baseline measures, a public health specialist (AQ) visited Kambia over a 10 day period between August and September 2010. The purpose of the trip was to not only retrieve data, but to verify the reliability of the data, establish routine data collection methods and assess barriers to data transfer within Kambia and between the UK and Sierra Leone. It was planned to collect at least three months worth of data from around the time of programme implementation, marked by the first training in February 2010.

To adequately measure progress over time and ultimately programme success, a set of robust indicators has been designed using a logic model approach (Appendix A- Logic Model). This indicator set not only measures long-term health outcomes, but also monitors programme outputs (e.g. number of procedures of performed) and completion of the key steps (or processes) necessary to achieve programme success (e.g. training attendance records, equipment delivery receipts). Please Appendix B for the full Indicator Set.

Quantitative Data Collection

Routine healthcare data from the hospital and individual PHUs is collated monthly from patient registers and sent to the District Monitoring & Evaluation Officers located at the hospital. These aggregated monthly summary sheets are then used to collate a District summary sheet that is forwarded to the national Ministry of Health and Sanitation, Sierra Leone. Baseline and future measurements for most of the established indicators come from the data provided on these monthly summary sheets. A review of the non-aggregated patient level data compared against the monthly summary sheets was planned to assess the level of disparity between the two information sources. This was important because it was reported by staff members that there is inconsistency in data entry practices between healthcare workers and a disparity between actual and reported health outcomes and workload, especially in the PHUs.

In addition to readily available routine data, healthcare workers were asked to begin recording specific procedures and subsequent health outcomes (Table 1) specifically for the purpose of evaluation. At the time of baseline evaluation, these log books had not yet been established.

Table 1: Log Books designed for Evaluation Purposes (Routine data not already available)

Indicator	**Named Data Source**	**Status as of December 2010**
P5a. Increased proportion of women admitted to hospital who receive an ultrasound	Ultrasound records	Not yet available
P6b. Increased rate of complications identified using ultrasound	Ultrasound records	Not yet available
P6c. Increased rate of deliveries using ventouse (vacuum) extraction in PHUs and hospital	Community Health Officer (CHO) Log Book	Not yet available
P6d. Increased rate of Misoprostol use among women presenting to PHUs with complications in late pregnancy	Community Health Officer (CHO) Log Book	Recording began in October 2010- baseline established
P6e. Decreased rate of caesarean sections for ruptured uteruses and still births	Updated Hospital Theatre Log	Not yet available

Qualitative Data Collection

The original grant application stated that as part of the evaluation a Knowledge, Attitudes and Practice (KAP) Survey would be conducted at programme start and upon completion at the end of year 3. As such, two focus groups were conducted to assess community opinion of the current maternity services provided in Kambia, public attitude towards seeking care at a healthcare facility during childbirth, personal knowledge of pregnancy related complications and anecdotal evidence of patient's experiences of receiving care at either Kambia Hospital or the Peripheral Healthcare Units (PHUs). The focus groups followed an iterative process but attempts were made to reflect the three following lines of questioning: Access to trained healthcare professionals, personal experience with care received and identification of signs and symptoms requiring emergency care (e.g. obstructed labour, haemorrhaging).

In addition, informal interviews were conducted with several staff members and healthcare workers across the hospital and PHUs to gain a better understanding of how they perceive the training programme and to learn of any foreseeable barriers to the programme.

Results (Appendix B for full list baseline results)

Aggregated monthly summary sheets from the Hospital (HF2- Hospital Monthly In-Patient Morbidity and Mortality) and combined PHUs (PHUF3- PHU Monthly Summary of Reproductive Health Services) were readily available for January- June 2010. As seasonal variation in health needs is an issue when determining baseline rates, we decided to use the full seven months of data, instead of three months, to increase the sample size and provide more accurate rates of morbidity and mortality.

Upon questioning staff it was revealed that death certificates are generated using the submitted monthly summary sheets; therefore it was not helpful to cross reference the summary sheets against the death register to confirm reported mortality rates.

Peripheral Healthcare Unit (PHU) Data

The PHU summary sheets obtained for each month, January-July 2010, contained combined data from 56 of the 61 (91.8%) PHUs. To assess the reliability of these summary sheets, an audit of the individual PHU summary sheets was conducted for the month of July. No discrepancies were found between the individual PHU reports and the combined monthly reports produced by the District M&E Officers.

The restrictions imposed by time and travel conditions made it impossible on this trip to conduct a random audit of the individual PHU monthly summary sheets against the patient registers. However, simple review of the individual PHU monthly summary sheets submitted to the District M&E Officers for July highlight significant problems in data collection at the PHU level. Firstly, the majority of sheets do not have any referrals, complications or deaths recorded which is not consistent with the high level of maternal morbidity and mortality in Sierra Leone. Indeed some PHUs do report much higher levels of recorded disease and complications requiring treatment and referral. Secondly, the lack of monthly returns from 5 PHUs highlights the lack of timely reporting within some of the PHUs, although the reasons for this are not fully understood yet.

Hospital Data

To test the assumption that the hospital monthly summary sheets are an accurate source of information on morbidity and mortality, an audit of the maternity ward register was conducted for the month of July. During this audit some discrepancies between the July summary sheet and the register were found. Specifically, one maternal death listed in the register was not recorded on the summary sheet and the register recorded 13 still-births, but the summary sheet lists only two. In addition, the lack of consistency in terminology and multiple fields left blank in the maternity ward register, indicate that other actual figures may be higher than reported. Evaluators tried to cross-reference the reported number of caesarean sections performed in July with the theatre log, but found these numbers to be inconsistent with both the ward register and summary sheet. District Monitoring and Evaluation Officers were notified of these differences. They reported that similar issues are present in the PHU data as well.

Bespoke Log Books

Figure 1 below shows the submitted records for Misoprostol use by CHO's to control post-partum or ante-partum haemorrhaging between October –December 2010. Further data was requested on the use of ventouse extraction during delivery with Misoprostol use, but no information was provided to evaluators. As this data was not obtained during the original baseline period of January-July 2010, we do not have routine data to calculate usage rates among women presenting with complications in late pregnancy (Indicator P6d). The baseline rate will be calculated when data is made available and included in the next evaluation report.

Figure 1. Administration of Misoprostol by Community Health Officers (October- December 2010)

The use of misoprostol
PHUs & Maternity ward.

Date	Name	Address	Indication	Amount	Outcome
4/10/10	Mariatu Bangura	Tambaya	IUD	9.	Delivered
5/10/10	Kadiatu Koroma	Kambia I	PPH	10	Controlled
6/10/10	Aminata Yarawale	Rokupr	PPH	4	✓
10/10/10	Kadiatu Yillah	[illegible]	PPH	4	✓
10/10/10	Isatu S. Kamara	Kambia	PPH	8	✓
10/10/10	Makalay Kamara	Kambia II	[illegible] PPH	4	✓
14/10/10	Sai'o Sesay	Kakola	PPH/[illegible]	4	✓
16/10/10	Fatu Bangura	Mambolo	PPH	4	✓
[illegible]	Yeabie Kargbo	Madina	IUD	16	✓
18/10/10	Mariama [illegible]	Kambia I	PPH	8	✓
19/10/10	Mabinty Kamara	[illegible]	molar pregnancy	16	✓
24/10/10	Adama Kallay	Kassiri	IUD	12	Delivery
31/10/10	[illegible] Kargbo	[illegible]	PPH	10	Controlled
	Maternity	WD.			
19/10/10	Regba Bangura	Madina	PPH	10	Controlled
19/10/10	Nana Sumah	[illegible]	PPH	18	✓
23/10/10	Yabom Koroma	Check-point	PPH	14	✓
22/10/10	Haja Yillah	Mabonka	R:placenta	13	✓
25/10/10	Aminata Bangura	Robart	PPH	8	✓
30/10/10	Mabinty Sesay	[illegible]	PPH	8	✓
1/12/10	Fatmata Kamara	Makati	PPH	8	✓
10/12/10	Alie Kamara	Maseni	PPH	4	✓
11/12/10	Kadiatu Bangura	Thalan	R. placenta	10	✓
				210	

At present no data on ultrasounds (Indicators P5a & P5b) or the reasons for caesarian sections (P6e) have been fed back to establish baseline measurements.

Focus Groups and Informal Interviews

Kakuna Peripheral Health Unit

The first focus group was held with 19 women attending an under-5's clinic at Kakuna PHU. There were 23 children in total present at the check-up. All of the women had attended at least one pre-natal visit at the PHU prior to delivery. Eight of the women had delivered at the health post with positive health outcomes. All of the women presented stated they would always try to deliver at the PHU in the future. The mothers reported two modes of travel to reach the clinic, walking or on the back of a motorbike belonging to a family member or friend. There was often a taxi fee charged for use of the motorbike.

Kakuna PHU serves over 33 villages, plus an influx of patients from Guinea. Local residents can travel up to 10 miles to reach the clinic. At present Kakuna PHU is assisted by one CHO and there are no motor bike ambulances in the area. Kakuna is reported to have over 30 Traditional Birth Attendants (TBA) working in the villages. The TBA receive no financial incentives from the PHU to bring patients to the clinic. However, the PHU staff reported an increase in women delivering and attending pre-natal clinics since the introduction of national free health care. The CHO in Kakuna reports a positive relationship with most of the TBA and stated that maternal deaths in the community have decreased because the TBA are referring more frequently.

Village Focus Group

The village of Kuna lies approximately one mile from Madina PHU in Tonko Limba Chiefdom. A brief stop-over in the village led to a discussion with village leaders and approximately 25 mothers to assess healthcare seeking practices among pregnant women. The original focus group was intended to gather evidence from four women ranging in age from adolescence to elderly. These original plans had to be adapted with the arrival of more women, male partners, village elders and the village TBA. In total over 40 people were present for a brief question and answer session with the village elders and TBA. Information extracted from the discussion indicated that women from this particular village never sought care at a healthcare facility during childbirth. When asked about complications during pregnancy (e.g. prolonged labour, bleeding), village leaders emphasized their belief that the TBA could handle any emergency situation. The TBA confirmed that she never refers women and that she prefers to treat with herbs and traditional remedies. The TBA did present a certificate of 1-day training. All women present during the discussion agreed that they themselves had been delivered and delivered their own children in the community. One maternal death in the last year was reported by her sister who was present at the initial focus group.

Informal Interviews

In total, three PHU-based CHO, 1 hospital-based CHO, 1 community-based MCHA, 2 District Nurses and one hospital-based midwife were interviewed for the purpose of understanding community practices and beliefs around accessing formal healthcare. The overall theme emerging from the interviews was that money was the biggest barrier preventing women coming forward for routine and emergency obstetric care. Therefore, the introduction of universal healthcare is perceived as a real opportunity to improve maternal health in Kambia. Other major themes present in all interviews are the idea of tradition and ignorance of the benefits of medical care. All staff interviewed felt that despite universal health care there will always remain a segment of the

population that will not adopt healthcare seeking behaviours and will continue to rely on traditional methods because they are familiar and culturally acceptable.

There was wide variation across PHUs in their level of engagement with TBA to encourage referrals for emergency situations and routine deliveries. Some PHU staff provided financial incentives from their budget to pay TBA for brining women to the clinics. Other did not incentivize but allowed the TBA to earn her fee by delivering within the clinic, sometimes with supervision but not always. Staff reported that this variation in cooperation between formal healthcare workers and TBA is a result of personalities, whether there is a midwife, CHO or MCHA present at a PHU, and tribal customs.

Discussion

Limitations

This document presents the findings from the baseline assessment conducted in August-September 2010 as part of a three-year evaluation plan. Although routine health information is readily available in Kambia several limitations in the quality and reliability of the data exist. However, it is expected that the discrepancies between primary data sources and summary sheets discussed above will continue over the course of the programme. Therefore, in the absence of data of sufficient quality, the baseline measurements reported here will be used to estimate changes in health outcomes over the course of the programme. If interventions are introduced to improve data collection in Kambia, baseline data collection may need to be repeated. It is important to note that although some inconsistencies were found between primary data and aggregate summary sheets, the summary sheets are in fact used by the Sierra Leone government to establish official maternal health figures.

Future Recommendations

To adequately monitor and evaluate this programme, there is a need to strengthen the data sharing partnership between the Kambia District Health Management Team and the Kambia Appeal. It would be beneficial to ensure there is a mutual understanding of the data requirements needed to complete this project and the barriers to obtaining this data. Specifically, Kambia Appeal is still awaiting data on ultrasound procedures, caesarean section, ventouse extraction and comparator data from Port Loko District.

As mentioned in the text above, discrepancies exist between primary data sources (e.g. ward and PHU registers) and monthly summary sheets that are not fully understood yet. One possible explanation offered by those interviewed for the differences is that healthcare workers do not want to report negative health outcomes (e.g. maternal deaths). In addition, TBA are believed to under-report maternal deaths in the community. Guidance from the World Health organization suggests adoption of a '*No Shame Environment' to* minimize misreporting or falsification of data. (http://www.who.int/making_pregnancy_safer/publications/MonitoringandEvaluationofMaternalandNewborn.pdf).

Although not part of the original programme plan, stakeholders have identified through this evaluation process an opportunity to improve data collection within Kambia District. The Gloucestershire-Kambia Health Link hopes to work with partners in Sierra Leone, such as the Ministry of Health and Sanitation, local M&E Officers, hospital administrators and community health workers, to strengthen health information systems in Kambia. This strengthening may help provide options for decision makers and inform policy and programme development, hopefully resulting in improved health outcomes.

APPENDIX A

Programme Logic Model

Inputs (resources and staff needed)	**Activities (key tasks)**	**Outputs (improved staff capabilities & equipment)**	**Outcomes**	**Impact (three- year goal)**
-IHLFS Funding -Kambia Staff: CHO Officers (both qualified and in-training) MCHAs Volunteer Nursing Aides -Clinicians from Cheltenham General Hospital -Visas for UK based professionals -Training equipment and materials (e.g. dummies, power point projector, syllabus and slides) -Government guidelines (agreed curriculum) for training in specialist areas -5 Surgical (caesarean) kits	-Clinicians from Cheltenham travel to Kambia to deliver training 2x per year (20 days total) -15 CHOs trained in EmOC, and vacuum extraction AND provided with vacuum extraction kits -5 CHOs are trained in EmOC surgical skills AND provided with surgical (caesarean) kits -57 MCHAs trained to provide basic antenatal, intra-partum, postnatal and neonatal care, adult and neonatal resuscitation AND provided with delivery kits -40 VNAs in Kambia attend training in basic nursing and adult resuscitation	- PHU based CHOs are equipped and better skilled to identify, treat and refer patients with specific obstetric complications to hospital -Hospital based CHOs are equipped and better skilled to identify and respond to obstetric emergencies -MCHAs are better skilled to identify and refer patients with obstetric complications and to resuscitate women in the event of an emergency -Volunteer nursing aides are trained to deliver effective adult resuscitation -Staff at Kambia Hospital are able to use the ultrasound scanner to identify and diagnosis complications -A greater proportion of staff at Kambia hospital are trained to lead and assist in	-More women with obstetric complications are identified and treated successfully at PHUs -More women with specific obstetric complications (e.g. obstructed labour and eclampsia) presenting at PHUs are referred to hospital and successfully treated ⇩ -Greater chance of survival for patients receiving EmOC at PHU and hospital (Improved maternal case fatality rate* and still birth ratio**)	-Decreased maternal mortality ratio *** for Kambia District compared to surrounding areas -Decreased still-birth ratio for Kambia District compared to surrounding areas ⇩ Improved maternal and perinatal health in Kambia District Sierra, Leone

-15 vacuum extraction kits -72 Delivery kits (15 for CHOs and 57 for MCHAs) -Ultrasound machine -Training rooms with electricity -Support from Kambia District Health Management Team (DHMT) -Support from GHNHSFT	-10 hospital staff trained to use ultrasound scanner AND hospital provided with scanner -8 theatre staff are trained in operating theatre skills and management -2 anaesthetic nurses trained in anaesthetic skills	obstetric-related surgery, including theatre preparation and anaesthetics		

Assumptions built into the above logic model:

- Continues IHLFS funding for three years
- Continued national political stability and local civil unity
- Continued Sierra Leone government commitment to improving health status of population
- The Kambia community continue to seek maternal and newborn health care from government services in Kambia District
- Suitable UK Trainers are available from UK
- Entry Visas to Sierra Leone continue to be available for UK trainers
- Continued commitment of Link Partners
- Medical equipment is available to purchase and is maintained
- Trained staff remain working in Kambia District (will be monitored)
- Trained staff maintain motivation (will be assessed at 6 month intervals using post-training questionnaires)
- Trained staff receive supportive monitoring and supervision from DHMT
- Kambia based staff are available to attend training
- Appropriate quality of training is provided
- Ultra Sound Scanner in working order during and after training
- Operating theatre equipment is maintained and functioning during and after training
- Anaesthetic equipment is maintained and functioning during and after training

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APPENDIX B

Kambia – Gloucestershire Health Link
IHLFS Indicator Set with Baseline Measurements
2010

Kambia – Gloucestershire Health Link **IHLFS Indicator Set with Baseline Measurements** **2010**	
Process Indicators	**Baseline (if applicable)**
P1a. 58 PHUs individually confirm receipt of a delivery kit and annually confirm it is in working order	**Not yet delivered**
P1b. 6 PHUs with specialist BEmOC status confirm receipt of an infant resuscitation kit and annually confirm it is in working order	**Not yet delivered**
P1c. 15 CHOs confirm receipt of a delivery set, a vacuum extraction kit and an adult resuscitation kit; and annually confirm they are in working order	**Not yet delivered**
P1d. Staff at Kambia District Hospital confirm receipt of 2 vacuum extraction kits, 1 ultrasound scanner, 1 infant resuscitation kit, 2 EmOC surgical (caesarean) sets and 1 normal delivery set; and annually confirm they are in working order	**Not yet delivered**
P2a. 90% of all CHOs and MCHAs based in Kambia attend at least one training session	**P2a. 92% of CHOs and CHOs in-training (n=23/25) attended October 2010 session;** **Awaiting MCHA attendance list**
P2b. Proportion of CHOs and MCHAs with 100% daily attendance at each training session attended	**P2b. 82.6% of CHOs attended full six day session in October 2010**
P2c. Proportion of staff who attended first year training and went on to attend training sessions in subsequent two years (includes 15 CHOs, 57 MCHAs, 40 VNAs, 10 ultrasound staff, 8 theatre staff and 2 anaesthetic nurses)	**N/A**
P3a. Proportion of CHOs and MCHAs who score 60% or above (pass mark) on post-training test	**P4a. 95.6% (21/22) of CHOs who took post-training test in October 2010 scored 60% or above**

P3b. 20% increase in mean score between pre and post training test scores	**P4c. Mean increase between pre-post training test scores was 19.32% for October 2010**
P4a. 75% of trained staff state they feel competent or very competent in each key area of training	**October 2010: 75% of trained CHOs felt competent or very competent in 6/12 key areas (see appendix)**
P5a. Increased rate of women admitted to hospital who receive an ultrasound (number of ultrasounds/number of women admitted to maternity ward)	**Need to establish baseline**
P5b. Increased rate of complications identified using ultrasound (number of ultrasound identified complications/number of ultrasounds)	**Need to establish baseline**
P6a. Increased rate of complications identified by PHUs (number of complications/total number of PHU births and antenatal visits)	**19.70% (5,327 complications/27,036 PHU antenatal visits and births)**
P6b. Increased referral ratio from PHUs to hospital for obstructed labour, eclampsia and malpresentation (number of cause specific referrals to hospital/total live births in Kambia per 1,000 live births)	**65 referrals/6116 live births= 0.0106= 11 referrals per 1,000 live births**
P6c. Increased rate of deliveries using ventouse (vacuum) extraction in PHUs and hospital (Number of Vx births/number of total births)	**0.30%* *No equipment in PHUs prior to October 2010- baseline from hospital only Requires CHO log book**

P6d. Increased rate of Misoprostol use among women presenting to PHUs with complications in late pregnancy	**Baseline 0%*** ***Drug not available prior to October 2010** **Requires CHO log book**
P6e. Decreased rate of caesarean sections for ruptured uteruses and still births (in-hospital)	**Need to establish baseline with updated Theatre Log**
Outcome Indicator	
O1. Reduction in maternal case fatality rate (CFR) among women delivering or seeking care in the PHUs	**PHU Maternal case fatality rate* (excluding hospital)= 0.56%** **PHU Maternal case fatality rate in early pregnancy (includes malaria)= 0.51%** **PHU Maternal case fatality rate in late pregnancy= 1.25%**
O1. Reduction in still-birth ratio in PHUs	**0.0151=** **15 still births per 1,000 live births**
O2. Reduction in maternal case fatality (CFR) among women admitted to the hospital with obstetric complications	**4.11%**
O2. Reduction in still-birth ratio at the hospital	**0.1638=** **164 still births per 1,000 live births**
O3. 20% relative difference (decrease) in maternal mortality ratio (MMR) between Kambia district and comparator district (Port Loko District Sierra Leone) at the end of the three year period	**Kambia baseline MMR for January to July 2010=** **0.00981=** **981 maternal deaths per 100,000 live births** **Awaiting Port Loko baseline data**

Secondary Outcome Indicators	
S1. Increase in the proportion of births assisted by a skilled attendant (Doctor, Midwife, CHO, SECHN or MCHA) at either PHUs or the hospital (not in the community) = (total number of births assisted by skilled attendant in PHU or hospital/number of total births in PHUs, hospitals and community)	**PHU and Hospital births assisted by skilled attendant (does not include TBA deliveries in PHUs)= 2,991 (47.9% of all deliveries [n=6,245] in Kambia between January-July 2010** **Community births= 37.6% of all births (still & live births in Kambia) between January-July 2010**
S2. Increase in the proportion of all staff who received training that are still in post in Kambia at the end of year three	**N/A**