

Innovations to address prematurity and general maternal and newborn care in Uganda

Progress Report
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Background

Globally, complications of prematurity and low birth weight (LBW) are the leading cause of newborn deaths and contribute highly to infant morbidity including brain impairment of survivors (Black, Cousens et al. 2010) (Li Liu 2012). Although there are several evidence based, high impact interventions like Kangaroo Mother Care (KMC), Helping Babies Breathe (HBB), Antenatal Cortical Steroids and Continuous Positive Airway Pressure (CPAP) techniques to support improved care of preterms particularly for low resource countries, the coverage and quality of implementation in Uganda is still limited.

Against this backdrop, the Makerere University Centre of Excellence for Maternal and Newborn Health Research at the School of Public Health (MakSPH) has teamed up with district health teams in the Busoga sub-region to implement a number of projects aimed at prevention, early identification and

improved care of preterm and low birth weight babies.

This has been made possible with technical support from the Ministry of Health and funding from the Einhorn Family Foundation and Social Initiative Sweden, Bill Gates Foundation through the University of California San Francisco, WHO, and Grand Challenges Canada. Our projects include:

A. Improved quality of care at Birth in six hospitals within the Jinja Regional Referral net work

Key strategies

- Integrated maternal, newborn and child health continuum of care-covering key concepts in antenatal care, labour management, immediate newborn care, and postnatal and postpartum care
- Strengthening all the six WHO health system building blocks.

Makerere University Scalable Innovations

1. Foot size card to identify low birth weight and preterm babies at home for referral care
2. Integrated registers to follow up clinical care for sick and high risk newborn babies
3. Community system for early dating of pregnancy- with linkage to care
4. Regional system for care of mothers and newborns in hospitals
5. Training guide for advanced newborn care (including use of CPAP, phototherapy, oxygen etc)
6. Integrated system for identification, referral, care and follow up of high risk newborns
7. Kangaroo Mother Care scale up models
8. Community based care for preterm, other newborn and maternal care
9. Assessment tools
10. Costing tools for preterm care - costs to system and to families

Set-up activities

- Creation and re-organization of functional specialized care units. By December 2014, all 6 hospitals



Equipment handover at Jinja hospital



Training session

had a basic functional special care unit though still need more equipment like warmers, phototherapy machines etc. This included creation of resuscitation corners and KMC rooms.

- We built capacity for 135 health workers through training in basic and comprehensive emergency and neonatal obstetric care. We adapted the ALARM curriculum and HBB plus

designed to address the main causes of neonatal and maternal morbidity and mortality in Uganda.

- Varied mentorship sessions were carried out by a team of mentors in each hospital according to individual facility set-up and identified gaps respectively.
- With support from DFCU Bank, we procured and distributed essential maternal and newborn supplies and equipment.

B. Strengthening health systems for high risk newborn care

Also known as the High Risk Babies study, we are exploring an integrated hospital-community GIS system for sustainable delivery of quality care during early child brain development.

High risk newborn babies including the preterm and low birth weight are the most vulnerable to brain damage if they are not identified early, do not receive adequate treatment or do not obtain ongoing care. However, poverty, ignorance, long distances to health facilities, and lack of skilled personnel particularly in rural areas hinder access to quality newborn care services in Uganda.

- Funded by Saving Brains of Grand Challenges Canada we are testing the feasibility and effect of an integrated model for early identification, quality care and follow up of high risk babies in facilitating early childhood brain development in order to inform policy and scale up in rural eastern Uganda.
- Baseline data revealed that 24% of the high risk babies had some form of brain impairment compared to about 5.7% among low risk babies (who had no complications during the neonatal period).
- A total of 150 VHTs have been trained to identify and facilitate referral for High risk babies using a foot length card and danger sign card at community level.

Preterm Case study from Iganga Hospital

Nabirye of Bulubandi (not real name and address), a 27 year old in Iganga District gave birth to 800gm baby girl at 6 months of gestation from Iganga Hospital. She had attended ANC four times. During early pregnancy she had vaginal bleeding on and off which later stopped after receiving care from a health facility. She suddenly had rupture of membranes, and was admitted for five days and delivered a preterm baby on 29/09/2015. The baby was put in an incubator for one week, given medication and had a nasal gastric tube inserted for feeding expressed breast milk. The baby was later put in Kangaroo Mother Care (KMC) position for another week. The baby started gaining weight and mother requested for discharge when baby was 950 gm. She continued with intermittent KMC at home and was coming to the neonatal clinic weekly for review. The baby is currently 1.2kg (1200gm) (12/11/2015) with no complications detected so far. The mother never expected the baby to survive and is so appreciative of the services rendered by the staff of Iganga Hospital.

- We have conducted trainings and mentorship of frontline health workers in kangaroo mother care, general care of the preterm/low birth weight babies, resuscitation, care of asphyxiated babies and severely jaundiced babies, and management of neonatal infections.



Preterm baby in KMC



High risk baby under CPAP

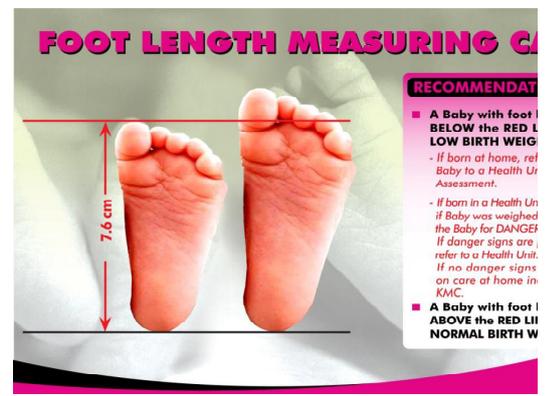
- In addition, an integrated GIS system with geocoded locations of homes of these babies facilitates follow up of every high risk newborn/infant at community level.

C. Community based early identification of Preterm/LBWs using a foot length card

Foot length of a newborn baby in the first five days after birth can predict the birth weight. According to a facility based study we conducted in eastern Uganda, the newborn foot size of 7.6 cm is the cut off for LBW with over 80% sensitivity and specificity (Nabiwemba et al, 2012). A total of 150 VHTs have been trained to use this low cost technology of foot cards within Iganga/Mayuge DSS to identify and facilitate timely referral of LBW/preterm babies to health facility for care.



A VHT Using the foot length card



Foot length card

D. Use of Ultra Sound Scan for early identification of complications

With funding from Grand Challenges Canada and in partnership with the Uganda Development and Health Associates, we are carrying out the Ultra sound scan study in Bukooma Sub-County of Luuka District. The study aims at testing feasibility of second and third trimester ultrasound scanning to identify high risk pregnancies for pre-labour referral to Emergency Obstetric and Newborn Care centers with a focus on maternal and neonatal death reduction.

The study so far has yielded tremendous outcomes registered as follows:

- A training of 37 VHTs was done in conducting home visits, register women of child bearing age and identify women who have missed their menstrual periods.
- A total of 1117 (86%) women tested with urine HCG test for pregnancy were confirmed positive and were recruited by field assistants.
- 910 pregnant mothers utilised the ultra sound scan services which is done between 18-



Community based Ultra Sound Scanning

22 and 32-38 weeks of gestation, as an outreach activity at three designated health centres: Naigobya H/C III, Bukoova H/C III, and Bulalu H/C II.

- 65 (7%) of the mothers scanned were identified with pregnancy related complications and referred to higher level management facilities.
- 261 delivered mothers were followed up by research assistants for outcome data and three neonatal deaths were identified.

In the words of a beneficiary:

“The scan results shocked me because I had prepared for only one baby, the midwife talked to me for two hours and the research team members gave me hope and they guided me till the day I reached Iganga hospital. It is unfortunate that one of these triplets passed on, but nevertheless I am now a successful father with my two girls who are in good health.”- Father of triplets.

E. Strengthening health district referral networks to improve quality of maternal and early neonatal care in rural eastern Uganda

Hospitals have the highest numbers of births and unfortunately deaths too. High numbers of maternal and newborn late referrals to hospitals from lower level facilities coupled with unnecessary referrals increase the burden placed on hospitals resulting in reduced quality of care.

- With funds from the WHO we are exploring the effectiveness of quality improvement (QI) and health worker capacity building approaches in reducing unnecessary referrals to the hospital and improving quality of care within the lower level health units.
- The study is being implemented in six sites: Iganga Hospital being the referral site, Namungalwe H/C III, Bugono H/C IV, and Busesa H/C IV in Iganga District; Nsinze H/C IV in Namutumba District and Kiyunga H/C IV in Luuka District
- A stakeholders’ meeting has been held with the respective district leaders, health facility in charges and departmental heads and feedback was provided on the findings from the baseline study.
- Training for frontline health workers was done, and the first round of onsite mentorship sessions have been done at all the study sites, gaps identified and targets set for improvement.
- Quality improvement teams have been formed at each of the selected sites with team leaders.
- Indicators for monitoring have also been selected by the different sites based on the available data that reflected the areas that need improvement.
- Change ideas have been devised by each of the sites that are seen as possibilities for improvement. Documentation journals have been opened to track the improvement trends for the selected indicators per health facility.
- Next steps: Engage district heads in a dialogue meeting to functionalize the operation of theatres for Caesarian sections at health center IVs; hold a learning session with all the referral network sites; as well as continue with mentorship.

Challenges

- Routine stock out of key commodities in most of the hospitals
- Irregular availability blood is a major challenge in the region
- Referral challenges to higher level of care affecting access to quality services

F. Preterm Birth Initiative (PTBi) East Africa

Funded by the Bill and Melinda Gates Foundation through the University of California San Francisco (UCSF), this upcoming study aims to decrease prematurity-related morbidity and mortality in selected districts in Kenya, Uganda, and Rwanda, by strengthening antenatal and intrapartum/immediate postnatal care.

In Uganda, we shall work with six hospitals in the Busoga sub-region for the next four years to strengthen the quality of care around the intrapartum/immediate postnatal periods.

The Preterm Initiative will also conduct embedded discovery research, capacity building, and link to policy in order to inform rapid learning for scale up

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