Tested Changes to Improve Maternal and Newborn Care

A synthesis of high-impact, evidence-based changes that resulted in facility-level improvements in the processes and systems of providing maternal and newborn care services in Uganda

JULY 2015

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For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or send an e-mail to assist-info@urc-chs.com.

Recommended citation

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Acronyms

AMTSL Active management of the third stage of labor
ASSIST USAID Applying Science to Strengthen and Improve Systems Project
BCG Bacillus Calmette–Guérin
CCT Controlled cord traction

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Glossary of Terms

Active management of the third stage of labor (AMTSL): An evidence-based, low-cost intervention used to prevent postpartum hemorrhage involving three main components: 1) Administration of a uterotonic agent (oxytocin is the drug of choice) within one minute after birth of the baby; 2) Controlled cord traction with counter-traction to support the uterus; and 3) Uterine massage after delivery of the placenta.

Change concept: A category of change ideas or interventions that are similar and have a common underlying thought pattern.

Change idea: A specific intervention that a health facility quality improvement team has tested.

Change package: An organized summary of strategies and interventions that have been tested and proven to improve care in a given context. In this case, the interventions being outlined have been proven to result in improvements in maternal and neonatal care thereby reducing respective morbidity and mortality rates.

Essential newborn care (ENC): A comprehensive strategy to improve the health of newborns through interventions at and soon after birth and in the postnatal period. The ENC package on which facility teams focused during the SMGL improvement activity included basic preventive newborn care such as clean delivery, thermal control, eye and umbilical cord care, early and exclusive breastfeeding, administration of Vitamin K, and BCG and polio immunization.

Improvement collaborative: A strategy for linking the efforts of many quality improvement teams that work independently to address a common challenge, but are periodically brought together to share and learn from one another, so that emerging best practices are easily and rapidly spread at scale.

Plan-do-study-act (PDSA) cycle – An iterative and efficient trial-and-learning methodology used to test specific change ideas and learn from them. It begins with a plan and ends with action according to the learning gained from the Plan, Do and Study phases of the cycle. In most cases, multiple PDSAs are needed to make successful changes.
Background and Context

Providing high quality medical care for mothers and their newborns requires a well-functioning health system with competent health workers, appropriate equipment, and adequate amounts of supplies and medicines required to conduct normal deliveries, manage complications, and/or refer to higher level health facilities if need arises. In countries where existing processes and systems for providing health services are inefficient, preventable deaths especially of mother and their newborns have been observed.

The Saving Mothers, Giving Life (SMGL) initiative was launched in 2012 to accelerate the reduction of maternal and newborn deaths in sub-Saharan African countries, with initial focus on Uganda and Zambia. It was designed to address the three major gaps in health service delivery that are often associated with maternal and newborn deaths: a) delays in seeking appropriate care, b) inability to access the most appropriate care in a timely manner, and c) inconsistencies in the quality of care provided at health facilities.

In Uganda, the Ministry of Health partnered with the United States Agency for International Development (USAID) and the Centers for Disease Control and Prevention (CDC) to support the implementation of evidence-based high impact interventions that had the potential to reduce maternal and newborn mortality. Four districts of Kyenjojo, Kamwenge, Kibaale, and Kabarole in western Uganda were identified as the priority districts for the SMGL initiative as they had higher maternal mortality rates compared to other parts of the country. Implementation of the SMGL initiative in Uganda was through various implementing partners (IPs) supported by both USAID and CDC.

The USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project was one of the implementing partners providing technical assistance to 20 health facilities across continuum of health service delivery system (HCIIIs, HClVs General Hospitals and Referral hospital) in the four priority districts under the SMGL initiative. Results of a baseline assessment conducted at the start of the collaborative identified five major gaps in the process of providing maternal and newborn care that were on the pathway to high mortality rates in the districts. The identified gaps were: i) prolonged and often obstructed labor, ii) postpartum hemorrhage, iii) pregnancy induced hypertension, iv) neonatal sepsis, and v) birth asphyxia. These gaps were consistent with previous studies on the main causes of maternal and newborn mortality in Uganda, shown in Figure 1.

Figure 1: Causes of maternal and newborn mortality in Uganda

<table>
<thead>
<tr>
<th>Indirect causes</th>
<th>Direct causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hemorrhage (43%)</td>
<td>1. Malaria (70%)</td>
</tr>
<tr>
<td>2. Prolonged labour (21%)</td>
<td>2. Anemia (20%)</td>
</tr>
<tr>
<td>3. Ruptured uterus (10%)</td>
<td>3. HIV/AIDS (9%)</td>
</tr>
<tr>
<td>4. Post-partum sepsis (8%)</td>
<td>4. Sickle cell disease (1%)</td>
</tr>
<tr>
<td>5. Hypertensive disorders (6%)</td>
<td></td>
</tr>
<tr>
<td>6. Complications of unsafe abortion (10%)</td>
<td></td>
</tr>
<tr>
<td>7. Ectopic pregnancy (2%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Causes of newborn deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complications of preterm (30%)</td>
</tr>
<tr>
<td>Birth asphyxia (28%)</td>
</tr>
<tr>
<td>Infections (27%)</td>
</tr>
<tr>
<td>Congenital abnormalities (7%)</td>
</tr>
<tr>
<td>Others (5%)</td>
</tr>
<tr>
<td>Diarrhea (2%)</td>
</tr>
<tr>
<td>Tetanus (1%)</td>
</tr>
</tbody>
</table>


The interventions to prevent and address these gaps became the focus of ASSIST’s quality improvement efforts in the four SMGL districts. Guided by results of the baseline assessment, the USAID ASSIST Project focused on improving three major areas in maternal and newborn care in 20 facilities of the four SMGL districts during the demonstration phase. The improvement aims related to the three areas are depicted in Figure 2.
Results from Applying an Improvement Approach in the SMGL Districts

The USAID ASSIST Project’s approach to quality improvement (QI) is guided by the Model for Improvement that uses the Plan-Do-Study-Act (PDSA) cycle and that is depicted in Figure 3. Beginning in January 2012 in 10 facilities in Kyenjojo and Kamwenge districts and adding another 10 facilities in May 2013 in Kabarole and Kibaale districts, the project supported the formation of multidisciplinary improvement teams at 20 high-volume delivery facilities in the four SMGL districts, through which quality improvement activities have been implemented. After initial training led by ASSIST on quality improvement methods, the improvement teams at the health facilities received monthly coaching and mentorship from ASSIST’s improvement coaches on how to identify gaps in care, how to prioritize areas for improvement, and how to develop, test and eventually implement change ideas that had the potential to bring about improvement. Following such coaching and mentorship sessions, members of improvement teams would brought together every three months to share their experiences and insights in peer-to-peer learning sessions, which served as a primary mechanism for spreading good practices amongst all teams.

This improvement collaborative approach, where teams working to address similar challenges receive regular coaching and are periodically brought together to learn from each other, is consistent with guidance provided by the Ministry of Health’s Quality Improvement Framework and Strategic Plan.

From January 2012 through May 2014, these 20 teams achieved large gains in compliance with quality standards for key maternal and newborn services. Figure 4 shows results achieved across the 20 sites in terms of average compliance with the practice of active management of the third stage of labor, use of the partograph, and provision of the essential newborn care (ENC) package before discharge.
Figure 4: Improvement in maternal and newborn care services in the 20 demonstration health facilities in the four SMGL districts of Western Uganda (January 2012-May 2014)

Intended Use of this Document

This document represents a synthesis of the most robust and effective changes in improving maternal and newborn care that were tested through an improvement collaborative involving a total of 20 health facilities in Uganda. The change ideas recommended here are backed by data collected over time, which shows improvements in the quality of care provided to mothers and their newborn babies.

Frontline health workers taking care of mothers and their newborn babies are the primary intended users of this change package. Others like NGOs and projects involved in maternal and newborn care, district health officers supervising health facilities and Ministry of Health officials working on strategies for improving maternal and newborn health will find the evidence-based high impact changes described in the following pages very useful and can adapt them for their work.

The change package aims to convey a synthesis of learning from ASSIST’s experience in implementing quality improvement approaches to reduce maternal and newborn mortality in Uganda, under the SMGL initiative.

The next sections provide a detailed description of what changes led to improvement for each of the three improvement aims. Each section outlines the problem being addressed, the change ideas tested, steps followed in introducing each change idea, and the evidence that it led to improvement.
Improvement Aim I: Improving Partograph Utilization during Labor

**Rationale:** The majority of maternal deaths and complications attributable to obstructed and prolonged labor could be prevented by the use of partographs. These are simple charts used by midwives, nurses and doctors for recording information about the progress of labor and the condition of a woman and her baby during labor. They generate a pictorial overview of labor progress, and maternal and fetal condition, allowing for early detection of prolonged and obstructed labor in order to devise appropriate interventions.

**Improvement objective:** To increase from 4% to 80% of mothers monitored using partographs during labor to detect and appropriately manage complications in 20 demonstration health facilities of the four SMGL districts of Uganda in 2012-2014.

**Indicator:** Percentage of mothers (eligible for partograph use\(^1\)) monitored using a partograph during labor at each of the 20 demonstration health facilities in the four SMGL districts of western Uganda.

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**Key change idea: Attach a copy of the partograph to each mother’s admission form.**

**Gap being addressed:** Partographs and client charts were often kept separately in health facilities. In most maternity wards, a patient chart would always be obtained and used to capture the patient’s details on admission. Such mothers would go through labor with their progression documented in the patient chart, but without a partograph being used. In some cases, such mothers developed labor complications but these were never detected early enough.

**How to implement the change idea:** Attaching a copy of the partograph to each mother’s admission form prompted nurses and midwives to have it filled-in for each mother admitted, and to use it to monitor her progress through labor. Even when a different midwife had to leave at the end of her shift, she would hand over a complete patient’s file including the partograph. For this change to work, health facilities ensured that all midwives had the technical competency to use the partograph and that adequate stocks of the tool were available.

**Evidence:** A total of eight health facilities tried this change, and they all registered highly substantial improvements in partograph use. At a regional referral hospital for example, partograph use increased by 32 percentage points from 16% to 48% within one month.

Box 1 describes the experience of one hospital (Virika Hospital in Kabarole District) with increasing use of the partograph.

A complete list of changes tested by the ASSIST-supported SMGL teams in the four districts to increase the consistent use of the partograph is presented in Appendix I.

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\(^1\) Eligibility for partograph use includes all mothers committed to a vaginal delivery excluding those arriving in 2\(^{nd}\) stage of labor or those with clear indications for Caesarean section (Partograph guide, MoH Uganda).
Box 1: Increasing partograph use at Virika Hospital, Kabarole District

Holy Family Virika Hospital is a private, non-profit, community hospital owned by the Roman Catholic Diocese of Fort Portal. USAID ASSIST project supported Virika hospital to improve the quality of maternal and newborn care services using a quality improvement (QI) approach. The QI approach focused on supporting the team to implement evidence-based high impact interventions to address major causes of maternal and newborn mortality. Among these was correct and consistent partograph utilization during labor to detect and manage prolonged/obstructed labor. The maternity improvement team was formed in June 2013 after being trained in QI in May 2013. The team used to meet on a daily but did not measure improvement in any of the focus areas for improvement.

The team reviewed their partograph utilization in June 2013 and found it at 74% in May 2013 with varying quality of partographs filled. The team decided to improve this to 100% in a period of six months, a target they achieved by December 2013, through daily review of client charts during the morning ward meetings where each midwife and doctor presented each delivery they conducted during the meeting with emphasis on partograph use. However, despite the high partograph utilization, maternal and newborn complications such as fresh stillbirths and birth asphyxia had not significantly changed. The team reviewed used partographs for December 2013 and found inconsistencies in the filling of partographs and actions taken at the various stages of partograph use with appropriate partograph use at 53%. In January 2014, the team identified staffs skilled in partograph use and these supported other staff during same shifts as they filled out the partographs. The supported staff presented their used partographs during the morning ward meetings and were further supported to address the gaps. Partographs were incorporated and became part of the maternity admission charts. This facilitated the utilization of the partographs during reviews of mothers in labor as plotting was now preferred to writing in the client charts. During review meetings, Client charts were sampled out and could easily assess performance and appropriate use of partographs. History of Labor monitoring was easily identified during maternal and perinatal death reviews (MPDRs) as the partographs were part of the admission charts. The improvement team in Virika Hospital, through testing small frequent changes over time, improved correct and consistent partograph use to 100% by December 2014.

Percentage of mothers monitored by a partograph during labor in Virika Hospital, Kabarole District (May 2013-February 2015)

Source: Patient charts and improvement team documentation journals
Box 1, continued

As a result of the improved monitoring of labor, the early neonatal death rate in Virika Hospital declined dramatically, from 7.3% in May to 0% in December 2014.

Perinatal death rate in Virika Hospital, Kabarole District (May-Dec 2014)

- Fresh stillbirth rate
- Early neonatal death rate

Total number of births in the month
Total number of live births in the month

<table>
<thead>
<tr>
<th>Month</th>
<th>Fresh stillbirth rate</th>
<th>Early neonatal death rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>May-14</td>
<td>7.4%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Jun-14</td>
<td>7.4%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Jul-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aug-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sep-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oct-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dec-14</td>
<td>1.4%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

100  50  0

May-14 Jun-14 Jul-14 Aug-14 Sep-14 Oct-14 Nov-14 Dec-14
Improvement Aim II: Improving Compliance with Active Management of the Third Stage of Labor

Rationale: Postpartum hemorrhage (PPH) is responsible for about 43% of maternal deaths in Uganda (Figure 1), and those who survive are likely to develop life-threatening anemia. Morbidity and mortality due to PPH are largely preventable through skilled care during childbirth. Active management of the third stage of labor (AMTSL) has been proven to reduce PPH. However, delays in identifying hemorrhage, delays in transportation to the appropriate care point, and delays in receiving recommended treatment all contribute to high rates of maternal morbidity and mortality associated with PPH.

Improvement objective: To increase from 5% to 100% of mothers where active management of third stage of labor is applied to prevent postpartum hemorrhage in 20 demonstration facilities from the four SMGL districts of western Uganda in 2012-2014.

Indicator: Percentage of mothers offered all the three components of AMTSL according to guidelines at each of the 20 demonstration health facilities in the four SMGL districts of western Uganda.

Box 2 describes how a health center in Kyenjojo District increased compliance with AMTSL. A complete list of changes tested by the ASSIST-supported SMGL teams in the four districts to promote the consistent practice of AMTSL is found in Appendix II.

The photo at left shows the emergency tray created by a health facility in Western Uganda to have assembled and ready for use key medications for managing obstetric complications. The improvement team converted a tray initially used to keep instruments by partitioning it with card boards and labeling each section. This tray is used in the labor suite for managing emergencies. Photo by Paul Isabirye, URC.
Box 2: Achieving consistent compliance with AMTSL in Butiiti Health Center III, Kyenjojo District

Butiiti HCIII is located in Mukunyu Sub County, Kyenjojo District. The USAID ASSIST Project has supported Butiiti HCIII in Kyenjojo District in improving the quality of maternal and newborn care using a quality improvement approach since January 2012. The maternity improvement team identified improvement projects on which they wanted to work, including reduction of mothers developing postpartum hemorrhage at delivery. The team had oxytocin stored outside the maternity department in a room which was not open all the time. Thus, access to oxytocin was limited, especially at night, predisposing mothers to postpartum hemorrhage. The few oxytocin ampoules stored in the labor suite were kept in the drug cupboard. Before the quality improvement training in February 2012, the team used to give oxytocin after several minutes from delivery of the baby. During the quality improvement training, provision of the three components of AMTSL was emphasized as per Ministry of Health guidelines, i.e. giving a utero-tonic drug within one minute of birth, controlled cord traction (CCT), and uterine massage.

After the training, the team reviewed their processes of care and decided to start preparing oxytocin in a syringe for each mother approaching second stage of labor. This was prepared and included as part of the delivery kit. The team also realized that not all personnel conducted CCT and uterine massage uniformly. They agreed to conduct one-on-one on-the-job training and displayed reminders on how to apply each element of AMTSL. As a result of the consistent application of AMTSL at delivery, PPH was reduced from 5% in February 2012 to 0% since June 2014, with no case fatalities resulting from postpartum hemorrhage.

![Percentage of mothers where the 3 components of AMTSL were applied to prevent postpartum hemorrhage in Butiiti HCIII, Kyenjojo District (January 2012-February 2015)](image)

![Number of mothers who had vaginal deliveries in a month.](image)

![Number of mothers who delivered in the facility in a month](image)
Improvement Aim III: Improving Provision of Essential Newborn Care at Birth

Rationale: Birth, the first 24 hours and the first six days are the most critical periods for newborn survival. The most common causes of neonatal deaths include birth asphyxia, infections and complications of prematurity and their underlying causes are related to poor access to and utilization of health services. The essential newborn care package has been in existence, and includes a cluster of evidence-based practices that can significantly reduce newborn deaths.

Improvement objective: To increase from 1% to 90% of newborns receiving a complete package of essential newborn care before discharge in 20 demonstration health facilities of the four SMGL districts of western Uganda in 2012-2014.

Indicator: Percentage of newborn babies given a complete package of essential newborn care (ENC) before discharge in 20 demonstration facilities of the 4 SMGL districts of western Uganda.

Key change idea: Provision of the elements of ENC as a package, rather than as separate components

Gap being addressed: Health workers would often offer the different elements of newborn care separately within the first hour of birth. Before discharge, many babies would receive a varying combination of eye care, injectable vitamin K, and initiation of breastfeeding within one hour of birth, cord care, warmth and BCG /polio 0 vaccine. Rarely would a baby receive the complete essential newborn care package, partly because many of them would frequently be stocked-out.

How to implement the change idea: Teams of health workers then decided that essential newborn care services would be provided in combination as a full package and monitored accordingly. They identified root causes of the frequent stock-outs and addressed them. They then ensured that all their colleagues had the capacity to administer each of the elements and assess that a baby has received a complete ENC package before being discharged.

Box 3 describes how a hospital in Kibaale District put in place a standard ENC package and ensured that every newborn received it. A complete list of changes tested by the ASSIST-supported SMGL teams in the four districts to apply the standard essential newborn care package for every newborn is presented in Appendix III.

The photo at left shows the reminder notice developed by an improvement team at one of the ASSIST-supported health facilities in Western Uganda. It was displayed in the labor suite and reminds midwives to use the partograph, practice active management of the third stage of labor, and provide the essential newborn care package. Photo by Paul Isabirye, URC.
Box 3: Assuring provision of the complete ENC package in Kagadi Hospital, Kibaale District

Kagadi Hospital is a general hospital that serves as a referral facility for Kibaale District and is one of the SMGL collaborative improvement sites supported by the USAID ASSIST Project since May 2013. Health workers in the maternity department initially focused on assuring administration of TEO 1%, cord care, and immunization for a newborn before discharge from the facility. The facility had frequent stock-outs of injectable vitamin K, BCG vaccine, and TEO 1%, which used to be mainly supplied to the outpatient department (OPD) and less frequently in maternity. Neonate thermal protection was not keenly paid attention to, especially the type of clothes used for the baby.

The team realized that at any one time, one of the elements of the essential newborn care (ENC) package was out of stock or was not provided. The team was supported to identify all the elements of the ENC package and ensure they are available either in the main stores or in maternity, orient all the departmental staff on how to provide each element of ENC, and display job aids on ENC. On a monthly basis, the team assessed the hospital’s performance based on provision of a complete package of ENC.
Recommendations

To get the most benefit from the change ideas described in this document, health facilities should establish and cultivate an environment that embraces change in order to nurture improvements. The following ideas can help the team in getting started:

1. Improve Documentation

*Existing national data monitoring tools need to be accurately and consistently used.* It is through these tools that teams will be able to determine whether their performance is stagnating or improving, both before and after introducing these changes.

2. Establish Team Work

For any improvement work to yield positive results, *health workers have to collaborate and view themselves as members of a team* responsible for the different steps in the processes of providing health services.

3. Analyze the Process of Care and Prioritize the Gaps to Be Addressed

After analyzing and identifying existing gaps, *health workers should prioritize which challenges need to be and can be tackled first and which ones can wait.* Addressing one challenge at a time (while introducing a few changes at a time) will enable health workers to systematically monitor the effectiveness of each change in addressing a particular challenge and improving overall service delivery.

4. Communicate with Patients

Improvements are designed to primarily benefit patients. Health workers should *constantly seek feedback* of their patients on the quality of service they are provided and whether the changes being implemented are benefitting them as well.

5. Additional Change Ideas

Additional change ideas that contributed to general improvements in maternal and newborn care focused on the following thematic areas:

- **Capacity building:** These are changes that build the skills of health workers to perform their different roles in maternal and newborn care. Capacity building could take the form of on-job trainings, peer-to-peer on-site knowledge exchanges, and availing of protocols and guidelines on maternal and newborn care.

- **Adequate stocks of necessary supplies and equipment:** Health facilities should ensure that not only drugs but other supplies like partographs and elements of the essential newborn care package are available and in adequate amounts.
## Appendix I: Changes Introduced to Improve Partograph Use

<table>
<thead>
<tr>
<th>Change concept</th>
<th>Specific problem being addressed</th>
<th>Change ideas tested</th>
<th>Steps in introducing the change ideas</th>
<th>Evidence that the changes led to improvement</th>
<th>Scale of implementation</th>
</tr>
</thead>
</table>
| Build capacity of health workers | Health workers in the four districts had inadequate knowledge and skills on when and how to use a partograph | Practical demonstration to all health workers on how to use a partograph              | - Identify a knowledgeable and skilled staff in how to use a partograph and have that staff member mentor others in the use of the partograph  
- During a coaching session, randomly pick any of the already completed partographs and review it systematically to identify and correct any mistakes  
- Conduct follow-on exercises with the same team on how to complete the partograph  
- During subsequent support supervision sessions, focus on addressing challenges observed during partograph use | In the 10 health facilities that tested this change, the use of a partograph during labor increased by 50 percentage points within a period of three months | Change was tested at 10 health facilities |
| Peer-to-peer on-job training on how to use a partograph | In case of stock-out of partographs received from the MoH, the hospital administration would provide funds for photocopying or printing additional partographs that could be used until the next supply arrives | In case of stock-out of partographs received from the MoH, the hospital administration would provide funds for photocopying or printing additional partographs that could be used until the next supply arrives | Across all 11 health facilities that tried this change, there was an average increase in partograph use of 22 percentage points within two months of introducing this change | Change was implemented this change |
| Avail adequate stocks of partographs | Frequent stock-outs of partographs often meant that health workers couldn’t use them even if they wanted to and knew how to | Frequent stock-outs of partographs often meant that health workers couldn’t use them even if they wanted to and knew how to | After observing that the stocks are running low, the midwives would inform the hospital administration they needed a booster supply of partographs  
- In some cases, the midwives would go ahead to make copies and reclaim a refund from the hospital administration  
- Funds for meeting the photocopy/printing costs would be obtained from the hospital budget for the maternity department | 11 health facilities implemented this change | Change was tested at 9 health facilities |
<table>
<thead>
<tr>
<th>Change concept</th>
<th>Specific problem being addressed</th>
<th>Change ideas tested</th>
<th>Steps in introducing the change ideas</th>
<th>Evidence that the changes led to improvement</th>
<th>Scale of implementation</th>
</tr>
</thead>
</table>
| Improve storage and access to partographs | In some health facilities, partographs would be misplaced and couldn’t be located at the point when the health worker would want to access them | Identify a document file and clearly label it, for keeping both the used and unused partographs | • Acquire a hard-cover box file, and clearly label it as a partograph file  
• Let all staff involved in the maternity ward know where the file is stored and how to access it  
• To ensure consistency in storage and retrieval of partographs, train all maternity staff on how to file and how to retrieve used and unused partographs | At Rukunyu HC IV, the proportion of pregnancies where a partograph was used increased from 56% to 85% after introducing this change | Change was tested at 10 health facilities |
| Keeping all the patient’s clinical notes together, including the patient chart and a partograph | In some health facilities, health workers would start off using the partographs but would not continue using them until the end of labor when the baby is born | If a mother develops complications and has to be referred, she had to go with the partially completed partograph | • After the decision to refer a mother has been reached, the partially completed partograph would be inserted into their file  
• The mother’s care takers would be requested to ensure the accompanying partograph is shared with the staff at the receiving health facility | At Butiiti HC III, there was improvement from 81% to 94%, while at Padre Pio HC III performance increased from 90% to 100% after this change was introduced. | This change was tested at 10 health facilities |
## Appendix II: Changes Introduced to Improve Application of AMTSL Components

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<thead>
<tr>
<th>Change concept</th>
<th>Specific problem being addressed</th>
<th>Change ideas tested</th>
<th>Steps in introducing the change ideas</th>
<th>Evidence that the changes led to improvement</th>
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| Build capacity of health workers                    | Health workers had inadequate knowledge and skills in AMTSL use                                  | Developed and shared job aids                                                      | • Developed job aids (in form of charts) outlining the different components of AMTSL  
  • Had these charts displayed in the labor suites  
  • Positioned reminder notices in the labor suites to remind health workers on AMTSL | One hospital improved from 80% to 100% within a month, and another moved from a zero score to 75% in just a month | 20 health facilities implemented this change |
| Peer-to-peer learning amongst health workers        |                                                                                                  | • During deliveries, highly skilled staff would invite their less skilled and less experienced colleagues to observe what they were doing  
  • The more skilled staff would explain to his/her colleagues what they were doing, and why they were doing it  
  • Subsequently, the less skilled staff would be asked to perform those same tasks under guidance and supervision |                                                                                         | The six health facilities that tried this change increased the percentage of mothers who were offered the three components of AMTSL by 40 percentage points within seven months | Six health facilities tried this change |
| Periodic reflections and reviewing of national protocols and guidelines on AMTSL use |                                                                                                  | • During periodic knowledge sharing sessions, have one midwife take the team through a review of the Ministry of Health guidelines on AMTSL  
  • On a weekly basis, review the data collection tools to assess performance and identify areas for improvement |                                                                                         | One health facility only started AMTSL use in August 2012 but was at 100% within three months | Five health facilities |
| Pairing of skilled staffs with the less skilled     |                                                                                                  | • Identify the highly skilled midwives in AMTSL and those less skilled (could be new members of staff)  
  • Pair up the two midwives to work alongside each other during a particular shift in the labor suite |                                                                                         | After implementing this change, PPH cases were reduced from 5.6% in Aug. 2013 to 1.9% in Oct. 2013 in one health facility | Ten health facilities tried this change |
| Avail adequate stocks of oxytocin                   | Regular stock-outs of oxytocin in many health facilities                                         | Redistribution of oxytocin from overstocked to understocked facilities              | • Have a member of the team assigned the task of specifically monitoring oxytocin stock levels.  
  • During team meetings, the oxytocin focal person would provide feedback on the available stock levels and recommend next steps. | Two of the health facilities that tested this change improved by an average of 6 percentage | Three health facilities tried this change |
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| Improve access to oxytocin | In some health facilities, oxytocin was not always accessible by the midwives even when it was in the labor suite. As a result, it wasn't always administered in the 1st minute | Identify a focal person to routinely check the contents of the emergency tray, verifying inclusion of all necessary items | - If oxytocin stocks are running low, the team would coordinate the redistribution from over stocked facilities through the facility in charge.  
- During the change of shifts amongst midwives, the incoming midwife would check that the emergency tray contains utero tonic drugs  
- Among the midwives at the facility, identify one to be responsible for always checking for the contents of the emergency tray and ensure that it's always complete | points in one month | Three health facilities tested this change |
### Appendix III: Changes Introduced to Improve Provision of ENC Package

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<th>Change concept</th>
<th>Specific problem being addressed</th>
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| Build capacity of health workers        | From the baseline assessment, it was observed that many health workers had inadequate knowledge and skills in providing components of the essential newborn care (ENC) package | Develop job aids to illustrate components of the ENC package                                                                                         | • During quality improvement mentorship meetings, work with the midwives to understand which components of essential newborn care are challenging to staff  
  • Develop guidance notes (which then act as job aids) on how to give BCG vaccine, how to dilute injectable vitamin K, and how to apply tetracycline  
  • Laminate these guidance notes and present them in a pictorial format and have these displayed as job aids at different work stations in the labor suites | The regional referral hospital tried this change and improved bundle of ENC practices from 27% in September 2013 to 43% in October 2013 | One health facility tried this change |
| Display reminder notices on following all components of the ENC package |                                                                                                      | • Quality improvement teams developed notices to remind midwives to execute all components of the ENC package  
  • These were then displayed at strategic points in the labor suite  
  • An example of a reminder notice is “Have you administered BCG to this baby?” |                                                                                                                             | Three health facilities that tried this change improved by an average of 23 percentage points in just one month | Seven health facilities tried this change |
| Periodical orientation of staff on the components of the ENC package |                                                                                                      | • The ENC focal person develops refresher notes for staff, based on Ministry of Health guidance on the newborn care package  
  • The maternity in-charge also uses these notes to orient new staff on the components of the essential newborn care package |                                                                                                                             | One facility tried this change and improved their performance by 33 percentage points within three months | Three health facilities tried this change |
| Peer-to-peer skill-building on how to dilute vitamin K and how to administer TEO 1% | In most health facilities, only a few staff were skilled in diluting injectable vitamin K and administering TEO 1%. In the absence of this staff, it wouldn’t be given. | Peer-to-peer skill-building on how to dilute vitamin K and how to administer TEO 1% | • Identified the highly skilled people and assigned them to conduct peer-to-peer on-job training in diluting vitamin K and administering TEO 1%  
  • Let them document these instructions and have them displayed in the labor suite | One facility that tried this change and improved by 60 percentage points within a period of three months | Seven health facilities tested this change |
<p>| Avail adequate stocks of necessary supplies | Frequent stock-outs of ENC supplies, especially injectable | Work with the district health office to redistribute supplies found to be | • The stores assistant at the affected facility makes an inquiry to the store keeper at the district health office, to determine if there are any health facilities overstocked with ENC supplies | One health facility improved from 38% to 85% between August 2013 (when this change was tried across three health facilities) | Change was tried across three health facilities |</p>
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| vitamin K and BCG vaccine, at health facilities. This would often occur at relatively large health facilities that register larger numbers of births | overstocked in some facilities, to those experiencing shortages | • Since the district store keeper is familiar with the stock levels of medical supplies at different health facilities, he then provides accurate information regarding which health facilities might be overstocked with injectable vitamin K and BCG vaccine  
• The two stores staffs can seek approval from the district health office to move the required supplies from one health facility to another | change was introduced (and November 2014) | Three health facilities that tried this change improved their performance by 14 percentage points over a period of six months | Three health facilities tried this change |
| Identifying and assigning a focal person to monitor stock levels of ENC supplies on a weekly basis | • On a weekly basis, the assigned focal person checks the maternity fridge and the maternity mini-store, and informs midwives of the available stock levels.  
• If the stock levels are low, he then prepares a requisition order to replenish the stock from the main store  
• This timely requisition of supplies from the main store to the maternity store ensures that total stock-outs are avoided | Three health facilities that tried this change | Both facilities improved their routine delivery of the ENC package by 31% percentage points in one month | Two health facilities tried this change |
<p>| Move ENC supplies closer to the labor suite | In some health facilities, drugs for essential newborn care were not kept in the labor suite, and mothers had to pick up TEO 1% from a separate dispensation point | Prepare an ENC tray in advance, containing the different supplies, and place it near the resuscitation area | Both facilities improved their routine delivery of the ENC package by 31% percentage points in one month | Two health facilities tried this change |
| Offer immunization services any time of day | Often times babies discharged outside the &quot;normal&quot; working hours would not receive immunization services including babies born | Identified a set of competent persons to provide immunization services during off-work hours. This could be a midwife working | One health facility tried this change and improved their BCG immunization coverage by 20 percentage points in just a month, and another facility improved from | Changes were tested in five health facilities |</p>
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| on weekends and public holidays. | during the evening shift or over the weekend, supported by a volunteer. Developed an immunization schedule that also covered weekends and public holidays, complete with responsible persons assigned | and that the infant is issued an immunization card  
• The midwife handles the vaccination while the volunteer documents the baby’s details  
• At the resumption of “normal” working hours, a summary of which babies have been immunized and which ones haven’t is passed on to the immunization in-charge and midwives in the incoming shift.  
• Before discharging the mother and her baby, the midwife on duty would be responsible for checking and ensuring that the baby has been immunized  
• The vaccines’ fridge is also be kept in the maternity ward so that BCG at birth is provided to all babies born at the facility on a daily basis  
• To control access to the vaccines’ fridge, the security officer keeps the key and only releases it to the midwife on duty  
• Develop an immunization schedule that covers weekends, in consultation with midwives  
• Work with the district cold chain officer and ensure that the available vaccine stock can cover weekends  
• Inform pregnant women during antenatal visits and on the maternity ward that immunization services would be available any day of the week | 40% to 100% in six months | The three facilities that tested this change improved by an average of 40 percentage points between July 2013 and March 2014  
Five health facilities that tried this change improved their BCG immunization coverage by 42 percentage points over a period of six months | Seven health facilities tried this change |
CASE STUDY

Successfully Providing Essential Newborn Care for Term and Premature Babies: A Midwife’s Perspective

With support from the United States Agency for International Development (USAID) and the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR), Kyenjojo Hospital in Western Uganda is saving newborn lives by implementing evidence-based practices for the care of term and pre-term babies. Using quality improvement methods to change processes of care delivery, health care providers at Kyenjojo Hospital have introduced life-saving interventions that can be sustained by the hospital without external resources. In a period of three months, five premature babies have been saved using the kangaroo mother care method. Newborn deaths at the hospital have reduced from five in July 2013 to two deaths in September 2013 and only one death in October 2013. The number of newborns getting infections has also been reduced from about five newborn infections per month, to none since September 2013.

Kyenjojo Hospital in Western Uganda has registered great improvement in saving term and pre-term babies through providing a comprehensive essential newborn care package that includes immediate skin-to-skin contact, immediate and exclusive breastfeeding, cord care, eye care with tetracycline ointment, injection of vitamin K 1 mg IM (0.5 mg for preterm babies), polio and BCG immunization, thermal protection (drying baby, cap and socks, blanket, monitoring room temperature, delaying bathing baby until after 24 hours) and the use of kangaroo care method by both mothers and fathers for premature babies.

With support from the Ministry of Health (MOH) and the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, health workers at Kyenjojo formed a quality improvement team that looked at existing care practices and introduced an evidence-based package in line with MOH guidelines.

When the QI team had a meeting to discuss which changes they should implement, they decided to try providing immunization within the maternity ward. They accomplished this by arranging with the outpatient department, where

Mother using kangaroo care method. Photo by Dr. Paul Isabirye, URC.

JANUARY 2014

This case study was authored by Paul Isabirye of University Research Co., LLC (URC) in collaboration with Mrs. Naluweta Cate, Enrolled Midwife at Kyenjojo Hospital, one of the sites implementing the Saving Mothers Giving Life Initiative in Uganda with support from the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR). It was produced by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, made possible by the generous support of the American people through USAID’s Bureau for Global Health, Office of Health Systems. The project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.
immunizations are normally provided, to provide vaccines in an insulated vaccine carrier to the maternity ward daily for immunization.

The QI team agreed to sensitize the mothers about this change during antenatal clinic days, when mothers were informed of how they would receive comprehensive newborn services at delivery on the maternity ward. Emphasis was also placed on explaining the benefits of the kangaroo care method.

In a period of three months, five premature babies have been saved using the kangaroo mother care method. Newborn deaths at the hospital have reduced from five in July 2013 to two deaths in September 2013 and one death recorded in October 2013. The number of newborns getting infections has been reduced due to the practice of giving tetracycline eye ointment and cord care immediately after birth. The unit used to see about five newborn infections per month, but since September 2013, no newborn infection has been seen at the unit.

Mothers delivering at the hospital used to believe that premature babies could not survive if they were not put in an incubator. The health workers in the maternity ward have been successful in showing parents that premature babies can survive using the kangaroo care method, which emphasizes continuous skin-to-skin contact between the newborn and the parent and exclusive breastfeeding.

This method has been well received by the community because they have seen cases of babies who have survived and are putting on weight normally. Some of the mothers who come to the facility are not well off and lack warm clothing for their babies; they have appreciated this method of keeping their babies warm. Even with asphyxiated babies, after providing resuscitation and skin-to-skin contact, the midwives have found that the babies survive.

The provision of immunization at the maternity ward has made many mothers happy about the services they are receiving at the facility. Previously, the hospital was only providing immunization in the outpatient department, and as a result, many newborn babies would miss out on getting immunized.

The hospital improvement team is very happy with the successful results and feels these are practices that it can sustain, especially since there are no cost implications to implementing these changes. One enrolled midwife from Kyenjojo Hospital, Mrs. Naluweta Cate, described her experience and success with providing this package to her clients this way: “We have a case where a mother with pre-eclampsia delivered a premature baby at 1.3kg, through a caesarian section. She was shown how to provide warmth to her baby through the kangaroo method, which saved her baby. Currently, her baby weighs 4.2kg at two months of age.”

The changes made in delivery and newborn care appear to have increased the number of mothers who come to deliver at the hospital: deliveries in the hospital have increased from 102 in February 2013 to 160 in September 2013.

Savings Mothers, Giving Life is an initiative of the Ministry of Health, with support from USAID and PEPFAR implementing partners, to reduce maternal and newborn mortality in four priority districts in mid-western Uganda: Kyenjojo, Kamwenge, Kibaale, and Kabarole districts. The role of USAID ASSIST is to supplement the efforts of other implementing partners to address gaps in processes and systems of care through quality improvement methods.
USAID APPLYING SCIENCE TO STRENGTHEN AND IMPROVE SYSTEMS PROJECT

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