USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

COMPENDIUM

Reproductive, Maternal, Newborn, and Child Health Case Studies from the USAID Applying Science to Strengthen and Improve Systems Project, 2014-2017

APRIL 2020

This compendium of previously published case studies related to improving reproductive, maternal, newborn, and child health services was prepared by University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID) 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.

COMPENDIUM

Reproductive, Maternal, Newborn, and Child Health Case Studies from the USAID Applying Science to Strengthen and Improve Systems Project, 2014-2017

APRIL 2020

USAID Applying Science to Strengthen and Improve Systems Project

Acknowledgements

This compendium of 30 case studies previously published by University Research Co., LLC (URC) under the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project is made possible by the generous support of the American people through USAID's Bureau for Global Health, Office of Health Systems. The USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST included: American Academy of Pediatrics; EnCompass LLC; FHI 360; Harvard T. H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC.

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

Recommended citation

USAID Applying Science to Strengthen and Improve Systems Project. 2020. Reproductive, Maternal, Newborn, and Child Health Case Studies from the USAID Applying Science to Strengthen and Improve Systems Project, 2014-2017. *Compendium*. Published by the USAID ASSIST Project. Chevy Chase, MD: University Research Co., LLC (URC).

CONTENTS

Kenya: Improving screening and management of malaria in pregnancy during first Antenatal Clinic Visit at Rongo Sub-County Hospital, Migori, Kenya (May 2017)

Mali: Gender integration in quality improvement: Increasing access to health services for women in rural Mali (August 2016)

Mali: Reducing the gender-related immunization gap in two districts of Mopti Region in Mali (November 2017)

Niger: Strengthening integrated family planning/maternal and neonatal health postpartum services and associated health system functions in Niger (September 2016)

Uganda: Organizing for obstetric emergencies: How Kabarole Hospital in Western Uganda is saving mothers' lives. (January 2014)

Uganda: Successfully Providing Essential Newborn Care for Term and Premature Babies: A Midwife's Perspective (January 2014)

Uganda: Addressing Myths and Misconceptions to Increase the Uptake of Contraceptives: The experience of Bukuuku Health Center IV (April 2015)

Uganda: Increasing the Enrollment of Malnourished Clients on Ready-to-use Therapeutic Foods at Kitgum General Hospital, Northern Uganda (June 2016)

Uganda: Functionalizing a Hospital Maternal and Perinatal Death Review (MPDR) Committee: An Experience of Anaka Hospital in Nwoya District, Northern Uganda (July 2017)

Uganda: Improving Newborn Resuscitation Outcomes through the Establishment of Helping Babies Breathe (HBB) Skills Labs at Pope John Paul's Hospital Aber (PJPHA) in Oyam District, Mid-Northern Uganda (July 2017)

CASE STUDY

Using a scientific approach to improve early identification of complicated labour cases

Summary

In May 2016, the head of the department of obstetrics and gynaecology at Shaheed Suhrawardy Medical College Hospital (SSMCH) in Dhaka, Bangladesh initiated an effort to use improvement methods to increase the early identification of labour complications by increasing complete and correct use of partograph among the women who are at active labour. A partograph is a tool to record progress during labour of critical statistics—such as cervical dilation, fetal heart rate, duration of labour, and vital signs—to quickly detect and manage high-risk deliveries. A baseline assessment showed that the partograph was being used in only 30% of the cases. The hospital quality improvement (QI) team set a goal of increasing partograph use to 50% of deliveries in 8 weeks. Through the application of quality improvement methods, the team was able to meet—and exceed—their initial goal; increasing the use of partograph during delivery from 30% to 80% within 8 weeks.

Background

Shaheed Suhrawardy Medical College Hospital (SSMCH) is a 600-bed government tertiary referral hospital in Sher-e-Bangla Nagor, Dhaka, Bangladesh. The hospital is a state-of-the-art facility in the country and caters to the health care needs of the population in the region, especially the poor population in and around Dhaka and patients referred from smaller public facilities. The hospital is well-equipped with all essential clinical and support services and is a centre of learning and education for associated medical college students. The department of obstetrics and gynaecology has multiple units functioning within the department.

In May 2016, the head of this department – along with the director of the facility, a surgeon, and a senior staff nurse – attended a workshop on quality improvement (QI) organized by WHO SEARO and USAID and led by staff from All India institute of Medical Sciences (AIIMS) and the USAID ASSIST Project. The workshop introduced them to the quality improvement (QI) approaches developed by the USAID ASSIST Project.

Motivated by this experience, the head of the department and the director of the facility decided to improve the quality of care in the obstetrics and gynaecology department at SSMCH using QI approaches. When these members started brainstorming potential problems in their department that could be addressed with QI approaches, they realized that the partograph is not always used or is not always completed appropriately. Facilitated by the ASSIST team, they were able to define an outcome-based aim and approach to resolve this problem scientifically. They decided to increase the early identification of labour complications by increasing complete and correct use of partograph among the women who are at active labour from 25% to 50% in 8 weeks.

MAY 2017

This case study was authored by Ankur Sooden of University Research Co., LLC (URC) and produced by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, funded by 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. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T. H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

Improvement approach and measurement indicators

The head of the department, with other members, went back to SSMCH and held an initial team meeting on 19 May 2016; five days after the workshop. This meeting was done to involve the team members and start working on the improvement process. The improvement project then started on 21 May 2016 with the four units in the department. The head of the department, a medical professor from SSMCH, led this QI project. Team members consisted of an assistant professor, a medical officer, and a senior staff nurse. In addition, the QI team appointed one person from each of the four units in the department of obstetrics and gynaecology as a point person.

The QI team, with consensus from their other colleagues in the department, decided to start the project with the QI aim which was selected during the workshop. With an aim of increasing the efficient use of a partograph, the team started looking for possible reasons for why the partograph is not used and completed correctly. The QI team leader used a fishbone diagram with four categories (process, people, place, and policy) to gather inputs from other QI team members and list all possible reasons. The QI team leader took this idea of using a fishbone diagram from the USAID ASSIST case studies shared during the workshop.

The QI team postulated that the unavailability of forms and a lack of knowledge, skills and accountability were the major reasons resulting in staff not using partograph appropriately. To resolve these issues, the team prepared a tentative action plan which involved:

- streamlining regular supply of forms,
- on-the-job training for doctors,
- protocol to fill the partograph, and
- incentivizing the best performer.

The team started the improvement project by conducting a baseline survey on usage of the partograph using retrospective data for the previous month and found that it was being used in only 30% of the cases.[1] To analyse progress for this improvement intervention, three measurement indicators were identified (two process indictors and one outcome indicator):

1. Proportion of deliveries with partially or completely filled-in partograph (*process*)
2. Proportion of deliveries with partograph completely and appropriately filled (*process*)
3. Number of complicated labour cases identified by partograph and appropriately managed (*outcome*)

One of the QI team members, the assistant professor, took the responsibility of data collection and analysis to track the progress against these three indicators at the end of every week. The data sources were mainly the delivery register and case files.

Intervening in the current process and testing changes

The first change that the QI team decided to test was to provide a training to orient staff on the use of the partograph and reinforce the importance of its use in the department. The team predicted that this change would result in 80% of deliveries with a partially or completely filled-in partograph and 60% of deliveries with partograph completely and appropriately filled within one week.

Training on use and importance of the partograph was done in all four units of the department and results of the intervention were reviewed at the end of the week. Results were encouraging – but well below the predicted success rate – with 45% of admitted labour cases being monitored by using a partograph and more than half of these partographs being correct. Two cases of labour complications were identified using these partographs and appropriately managed.

[1] Indicator 1. No baseline data was collected for Indicator 2 or 3.

The team decided that to achieve better results, the director of the facility should issue instructions to the department mandating that the partograph must be filled in all labour cases. Also, they hung a large example partograph in the ward, which had instructions on how to fill it. The team predicted that, by the end of the week, partographs will be filled for all cases and 80% of them would be correct. Simultaneously, the team also started supervision to monitor their progress and study what additionally could be done to further improve the process.

The director's instructions and the posted job aid resulted in a slight improvement of cases with partographs filled, but the correctness of these partographs didn't improve much. Some of the staff members indicated discomfort in being supervised while filling the partograph.

Considering the discomfort that supervision caused, and the lack of sustainability of any results achieved from this change, the team realized that they should see what happens when there is no supervision. They predicted that without supervision, the percentage of cases with partographs filled might be lower than current rates. The team again reviewed the results and found that even without direct supervision, a similar proportion of cases were monitored using a partograph, but all the partographs were correctly filled.

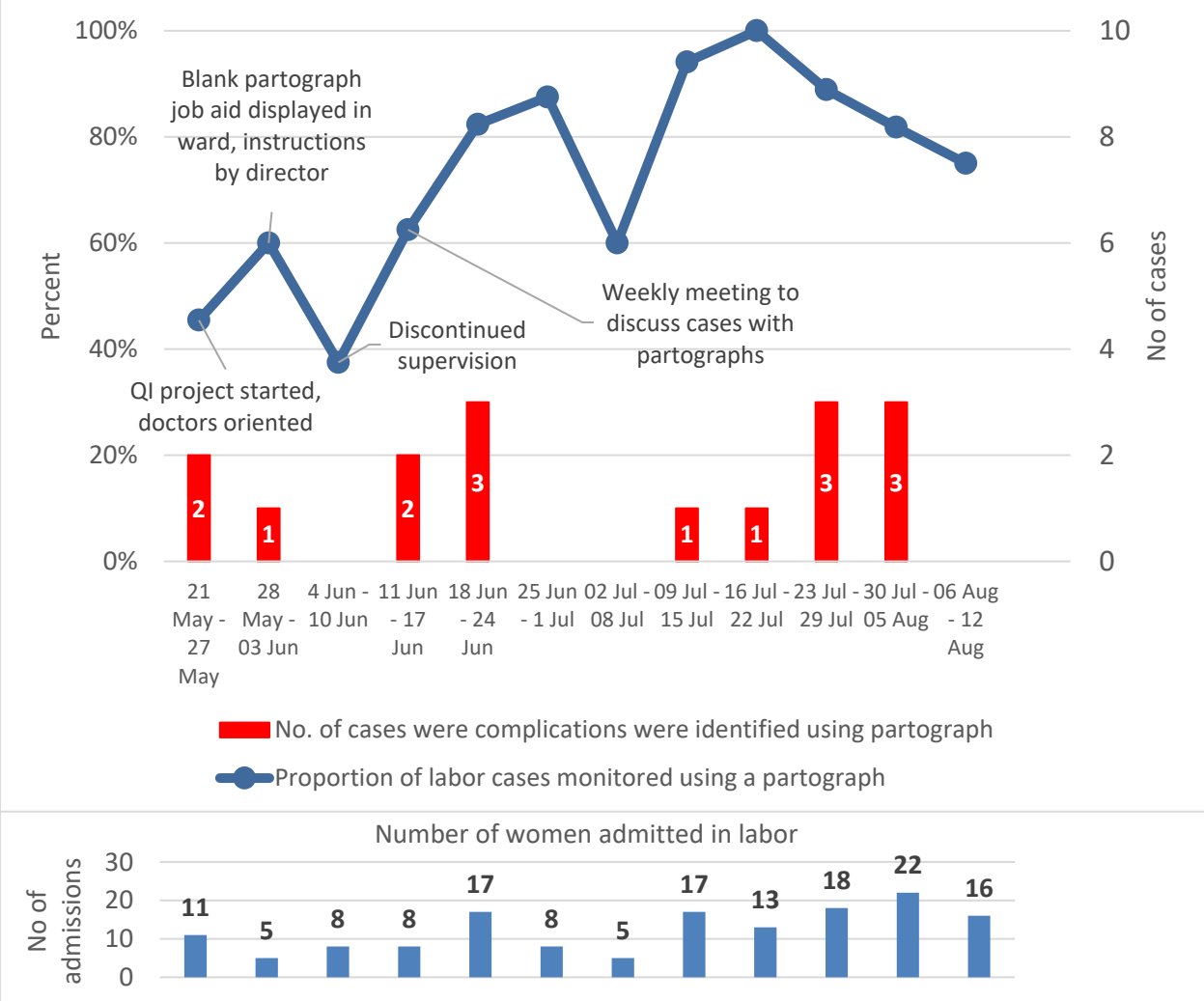
Realizing that partographs filled without supervision were always correct, but all cases were not monitored using a partograph, the team thought it was necessary to provide a feedback. They initiated a weekly meeting to discuss cases from the previous week every Saturday. The intention of this meeting was to provide on-the-job training on filling partographs correctly using the ones from the previously week as an example, and, also, to provide accountability. Monitoring using partograph increased to 63% and correctness remained at 100%. Two cases of prolonged labour were identified and managed, which motivated the team by allowing them to see the usefulness of filling partographs correctly.

Buoyed by successful changes, the team worked on strengthening availability and provision of partographs by estimating the weekly requirement and ordering accordingly. They also initiated a unit-wide review of partograph filling performance by the head of the department and shared the results of the review in a monthly meeting and developed a system for the unit heads to appreciate and reward the doctors who filled partographs for all cases they attended. Over the next 8 weeks, 85% (99/116) of the cases admitted to the hospital were monitored using a partograph and three-quarters of the partographs were correctly and completely filled out. Because of this, eight high-risk cases were identified and managed appropriately.

Results

The improvement team in the obstetrics department achieved their aim of improving partograph use from 30% to 80% in eight weeks and continue to sustain this momentum. Over 12 weeks between 21 May to 12 Aug 2016, they were able to identify 16 complicated cases among 148 admissions and manage them appropriately. The improvement intervention helped the department use objective, scientific, evidence-based decision-making to identify complicated labour cases.

Figure 1: Proportion of eligible women admitted in labour monitored using a partograph and number of complications identified and managed, obstetrics department, Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh, 21 May – 12 Aug 2016



Way forward

Motivated by the results, the team decided to integrate an improvement approach into their routine. They continue to meet every Saturday to discuss problems and use a scientific approach to address them.

The head of the obstetrics and gynaecology department was very happy in sharing the success with USAID ASSIST for facilitating them in using a scientific approach for improving quality of care. She is leading efforts to build the capacity of health providers in the country to use QI methods to improve quality of health services.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or the United States Government.

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project
University Research Co., LLC • 7200 Wisconsin Avenue, Suite 600 • Bethesda, MD 20814 • USA
LMR House, 2nd Floor • Green park Ext. • New Delhi 110016 • India

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

The first 3 months experience in improving labour and delivery care at Godda District Hospital, Jharkhand, India

By picking specific improvement goals and testing different interventions to improve care, Godda Hospital was able to make dramatic improvements in labour and delivery in three months. The hospital focused on reducing postpartum hemorrhage by ensuring that all women receive oxytocin immediately after delivery. Within three months, there has been substantial decrease in postpartum hemorrhage and increase in neonates receiving elements of essential newborn care.

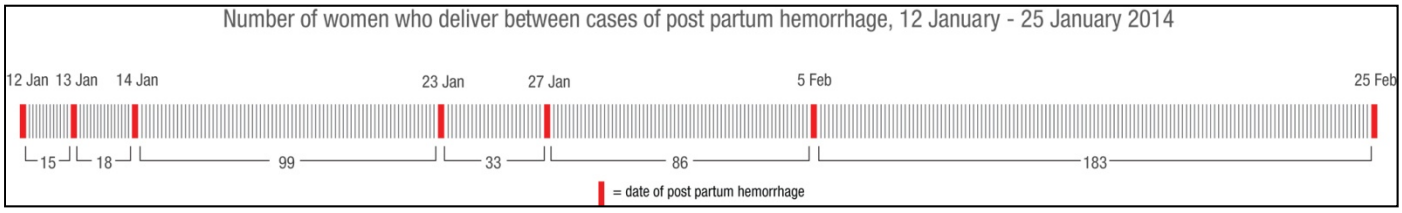
Introduction:

Godda District Hospital is a 46 bed hospital serving a population of 1.3 million. It is staffed by 8 medical officers, 10 staff nurses and 11 auxiliary nurse midwives. The labour and delivery room is staffed by 8 staff nurses and delivers approximately 12 women per day. As part of the government's RMNCH+A initiative the hospital is striving to improve maternal and newborn care. The recently conducted gap analysis showed that there were some issues with labour and delivery. The hospital's initial focus was to reduce postpartum hemorrhage (PPH) by ensuring that all women receive oxytocin immediately after they deliver their babies and to ensure that all babies receive essential newborn care (ENC). Within three months they have seen a substantial decrease in PPH (Figure 1) and an increase in the number of neonates receiving the elements of ENC (Figure 2).

Godda Quality Improvement Team

1. Dr. Bandevi Jha – Medical Officer
2. Dr. Ram Prasad – DRCHO
3. Smt. Nirmala Devi – Labor Room Incharge, Grade A Staff Nurse
4. Smt. Anju Rani – Grade A Staff Nurse
5. Mr. Mukesh Kumar – Hospital Manager
6. Mr. Pradeep Kumar – District Program Manager

Figure 1: Number of women who deliver between cases of post-partum hemorrhage



MARCH 2014

This case study was authored by Bijaya Nayak, Mirwais Rahimzai, Dharm Pal Taneja of University Research Co., LLC (URC), Bandevi Jha of Godda District Hospital, and Nigel Livesley (URC) for the United States Agency for International Development (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. This case study is not official U.S. Government information and does not represent the views or positions of USAID or the U.S. Government. The USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Institute for Healthcare Improvement; Initiatives Inc.; Johns Hopkins University Center for Communication Programs; and Women Influencing Health Education and Rule of Law, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

Improving labour and delivery services

December 4th:

Six staff from Godda attended a 1.5 day introduction to the science of improvement facilitated by USAID ASSIST project. During this meeting they learned about six steps to improve care (see box 1) and were supported to develop an improvement plan that they would enact when they returned to the clinic to ensure that women received oxytocin immediately after delivery and babies received ENC.

Six Steps for Improving Care

- *Define an improvement aim*
- *Form an improvement team*
- *Understand the current situation*
- *Develop a measurement system*
- *Develop change ideas*
- *Test the changes and implement the successful ones*

December 9th:

The team who had attended the workshop met with their colleagues from the labour and delivery suite for two hours to review what they had learned about improvement science.

December 16th:

The team met again and decided to focus on making it easier to give oxytocin by prefilling a syringe when the head crowns so that the syringe was kept ready and could be administered within one minute. Prior to this, the nurses were going to fill the syringe after the baby was born and there was a delay in giving oxytocin. The team decided to try this change idea for a week. They were worried that the change may take too much time still and wanted to see if this idea worked before making it a permanent way of work.

They also determined that they needed additional materials in the labor and delivery suite to improve ENC including: sterile cord clamp, ambubag, towels, weighing scale. They also needed the sterilizer and radiant warmer to be fixed. The team took this information to the civil surgeon the same day. An autoclave was put in place that day and all other materials were supplied within 2 weeks.

December 23rd:

The team met and discussed how the work had gone the previous week. They found that the change had led to more women getting oxytocin on time but that it was too time consuming and the nurses had too much work when the baby was born – providing essential newborn care, giving oxytocin, delivering the placenta etc. They decided that they would approach the civil surgeon about assigning extra staff to the clinic.

The selected team member met with the civil surgeon to discuss the issue and request for an additional staff. They shared their findings that they were better able to provide care to mothers and babies but needed an extra staff person to ensure that care was more reliably provided. The civil surgeon agreed with their assessment and identified a staff nurse who was currently working on the male ward but who had been recently trained to provide skilled labour and delivery care. He moved this nurse and then back-filled this position with an ANM who had previously been assigned to work on immunization campaigns two days a week.

December 24th:

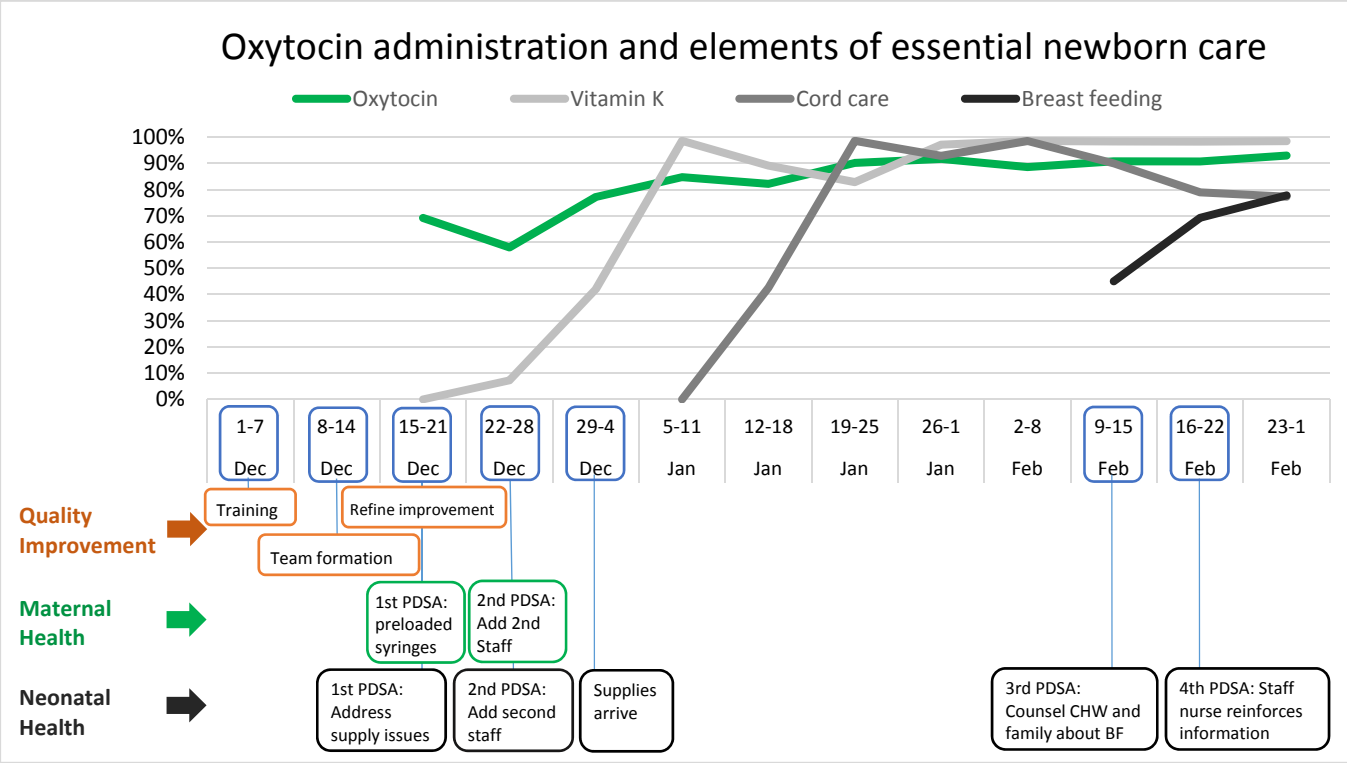
The clinic made the change to always have two nurses in the labour and delivery room.

February 14th:

The team was pleased with how well they were doing with giving oxytocin and ENC and decided to start working on ensuring that all babies start breast feeding within one hour of delivery. The team decided that the staff nurse will counsel Sahiya (community health workers) and relatives to remind mothers to breast feed just after shifting from labor table to bed. The change was tested for two days. This resulted in an

improvement from 45% before testing to 69% in the testing period. The team decided to continue with the change idea and added one more step in the process that the Staff Nurse will visit to the mother after 45 minutes of delivery to reinforce the message and ensure breastfeeding if not done earlier. This has further improved to 78% babies' breastfed within one hour of delivery (based on interview with mothers at labor ward). The team has decided to continue with the change idea.

Figure 2: % of neonates receiving essential newborn care, Godda Hospital



Conclusion:

Within two months, the hospital was able to ensure that over 90% of women delivering in their facility were receiving oxytocin in the first minute of life and over 90% of babies were receiving sterile cord care and Vitamin K injection. The clinic was not recording all cases of PPH before starting this work but there were 3 cases the first week they started collecting data, and no more than 1 since then. The staff also reported a subjective decrease in the amount of bleeding in all women. The team has also been active in adding new improvement aims and is currently working to ensure that all infants are breast fed within the first hour of life. As they solve these problems the team will address other issues along the RMNCH+A continuum of care.

After the meeting on December 4th, the QI team has been meeting weekly. Initial meetings took over an hour but now a day it took 30-45 minutes. According to Anju Rani, a staff nurse on the improvement team, this is the first time she had an opportunity to work in a team to improve services in the labor room. She likes the QI team because the team discusses real problems in providing good care and identifies solutions. Godda Hospital now plans on addressing other priority issues along the RMNCH+A continuum using this approach.

CASE STUDY

Improving the process of antenatal care to increase detection of women with high-risk conditions in Zonal Hospital of Mandi, Himachal Pradesh, India

Zonal Hospital, Mandi identified that they were not identifying women with high risk conditions during their antenatal care (ANC) clinic. By re-organizing the clinic, the hospital was able to increase the proportion of pregnant women identified as being at high-risk from 1.6% to 12.3% in a matter of weeks. They used four interventions to improve care: on-the-job training about the essential elements of ANC, defining clear roles for staff, using standard government documentation tools, and counseling clients to return from the laboratory after their hemoglobin was tested.

Background

Mandi Quality Improvement Team

1. Dr. Anita Thakur—Medical Officer
2. Smt. Bhawna Sharma—Female Health Supervisor
3. Smt. Bimla Parmar—Female Health Worker
4. Smt. Teja Thakur—Female Health Worker
5. Smt. Harsha Sharma—Female Health Worker

Zonal Hospital, Mandi is a district level 300 bed hospital which provides secondary level care in various medical disciplines. With the roll-out of the Reproductive, Maternal, Neonatal, Child and Health and Adolescent Health strategy (RMNCH+A), the hospital is focused on improving care for women, children and adolescents. One area of weakness at the hospital is antenatal care services. The ANC clinic is held every Thursday and provides services to around 50 women per day. Clinic records from July to December 2013 showed that 1023 women attended the clinic but only 18 high-risk patients were identified (1.6%). The USAID ASSIST project started work in Mandi as part of the RMNCH+A strategy in December 2013. The district improvement coordinator (DIC) for ASSIST worked with the team in the clinic to form a quality improvement (QI) team. The team decided that they needed to do a better job identifying and managing high-risk women and started improvement efforts in January 2014.

Improving the organization of the ANC clinic

After looking at their data, the QI team realized that their clinic was not doing a good job of identifying high-risk clients. When they analysed their current system of providing care they found that staff were not clear about what service to provide to patients or who should do what. Because of this, the clinic was chaotic and not reliably providing standard care. For example, the percentage of women receiving a blood pressure measurement or haemogloblin (Hb) test varied from 0% to almost 100% depending on the day, and most weeks no high-risk women were identified (Figure 1).

APRIL 2014

This case study was authored by Devinder Sharma, Praveen Sharma, and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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. This case study is not official U.S. Government information and does not represent the views or positions of USAID or the U.S. Government. The USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Institute for Healthcare Improvement; Initiatives Inc.; Johns Hopkins University Center for Communication Programs; and Women Influencing Health Education and Rule of Law, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

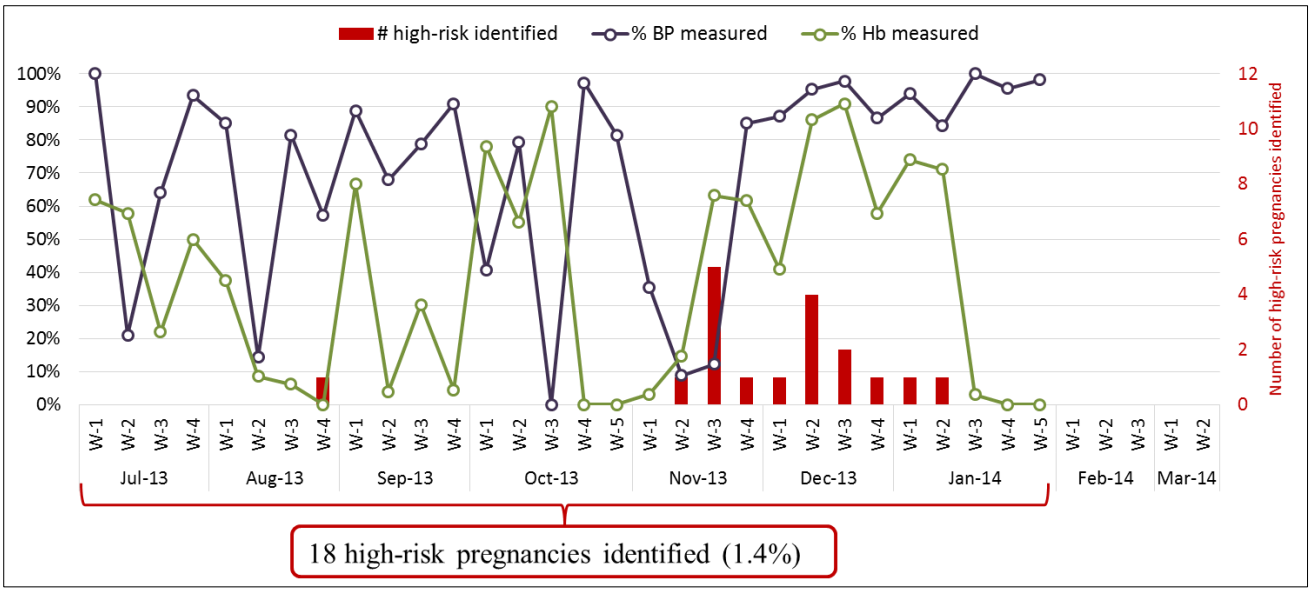


Figure 1: Number of high-risk pregnancies identified and percentage of ANCs during which blood pressure (BP) and haemoglobin (Hb) were measured before improvement activities

Based on their analysis of the problem, the QI team supported by the DIC tested four changes:

- **On the job training about essential elements of ANC.** The DIC reviewed with the staff the government guidelines for ANC and helped make sure that all essential elements were included in their new system of care.
- **Defining clear roles for staff.** After clarifying the elements of care that needed to be provided, the team assigned roles to staff describing who should perform which tasks and also clarified how patients should move between stations. The team started using the new system in the first week of February 2014.
- **Using standard government documentation tools.** The DIC shared with the team the Government of India ANC register which they had not previously been using. The team started using this in December 2013.
- **Counsel clients to return from lab.** A major issue in the clinic was that patients had their haemoglobin and urine checked in the laboratory but did not bring the results back to the ANC clinic so laboratory tests were of no clinical use. To address this, the ANC recording staff started asking the women to return to the clinic with their lab test reports so that any additional actions could be taken.

> *"These changes will lead to improvement definitely. More women will be detected for high-risks and timely referred to the doctors for proper care. The results of these changes will be appreciated in one month or so."*
>
> -Bimla Parmar, QI Team Member

Results

Based on these changes, the clinic has started identifying greater numbers of high-risk clients. In the first 5 weeks of using the new clarified system of care, 39 high-risk cases were identified as compared to 18 in the preceding 7 months combined. These clients comprised 20 with bad obstetrical histories, 3 with hypertensive disorders, 1 with severe anemia, 1 elderly primiparous mother, 1 with short stature and 13 with previous C-sections. The women identified as being at high-

> *"ANC is now reorganized and we are doing detailed history taking and recording it in the new format. The BP and Hb% is checked in most of the beneficiaries and recorded against her name. It will be easier to track a high-risk case and make an appropriate referral."*
>
> -Teja Thakur, QI Team Member

risk were then accompanied by one of the health workers to an obstetrician for further advice and management. Figure 2 below shows improvement in percentage of haemoglobin and blood pressure measured and high-risk case detection.

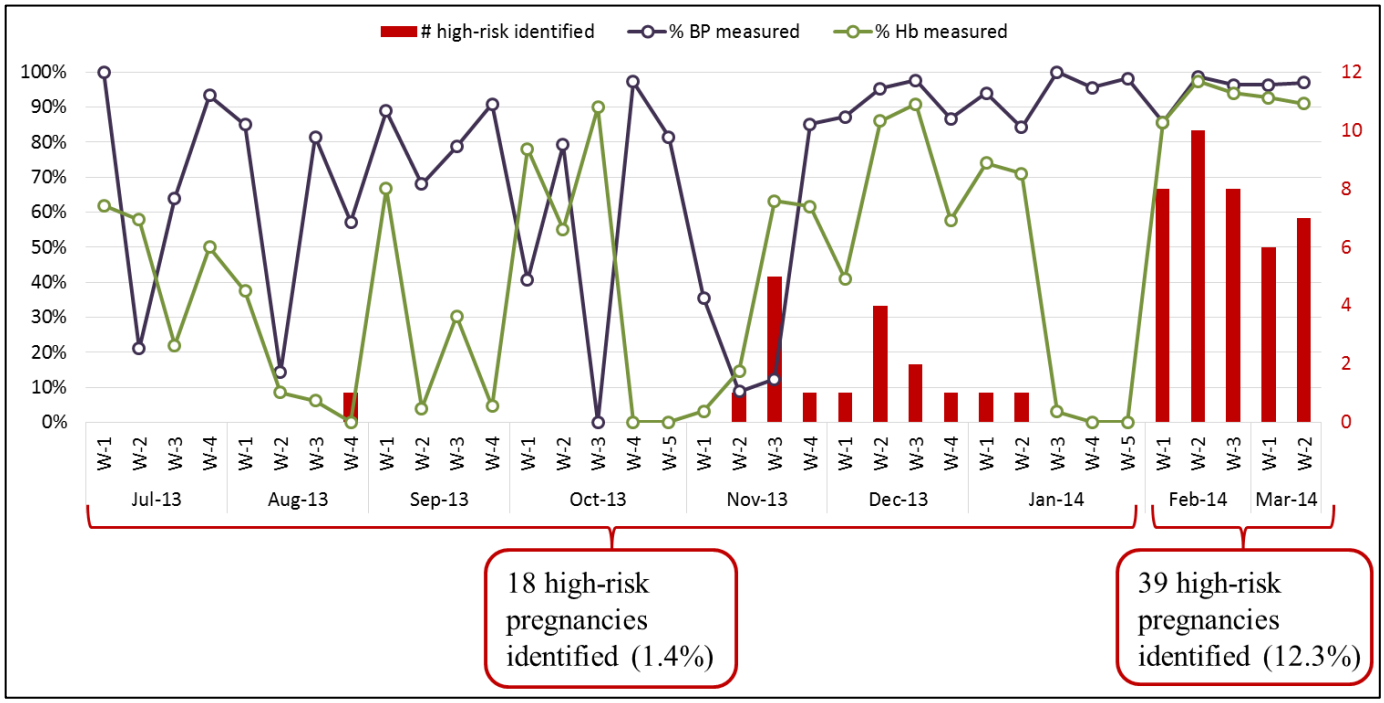


Figure 2: Number of high-risk pregnancies identified and percentage of ANCs during which blood pressure (BP) and haemoglobin (Hb) were measured after improvement activities started (area shaded in blue)

Next Steps

The team will continue working to improve their system for providing ANC. Now that they have a system that is working to identify high-risk clients they will work on making sure it becomes more efficient and reliable. They will also start working on other improvement aims along the RMNCH+A continuum of care.

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Improving essential newborn care through quality improvement interventions in Regional Hospital Chamba, Himachal Pradesh, India

Summary

The USAID ASSIST Project started working in Chamba District, Himachal Pradesh in December 2013, supporting five facilities including Regional Hospital Chamba to address maternal and neonatal mortality and morbidity. By picking specific aims to improve essential newborn care and newborn resuscitation, the quality improvement team at Regional Hospital Chamba was able to provide essential newborn care to all neonates in the facility and is doing a better job of identifying and resuscitating newborns with respiratory problems.

Introduction:

Chamba is one of the high priority districts identified in the Government of India's RMNCH+A initiative. It has a population of 538,000 and aproximately 7,000 women deliver each year. Chamba is a mountainous district with numerous snow-bound areas which are cut off from the rest of the district for nearly three months a year. In addition to the challenges presented by the terrain and weather, Chamba is also home to nomadic tribes that are difficult to track for providing health services like antenatal care and child immunization. Chamba has one regional hospital and three civil hospitals which are mainly providing obstetrical and neonatal care. Regional Hospital Chamba has 200 beds and provides primary, specialist and emergency services. It provides delivery care to approximately 150 women a month (45 percent of all institutional deliveries and 22 percent of total deliveries in the district). It is the only facility in the district which conducts caesarian deliveries.

Intervention:

The USAID ASSIST Project started working in Regional Hospital Chamba in December 2013 and is supporting staff to address the causes of maternal and neonatal mortality and morbidity. The hospital team works to ensure that neonates receive essential new-born care (ENC) and to improve resuscitation of new-borns. The hospital had been trying to improve in these areas for several years but had not made much progress. After the team agreed upon their goals, they then discussed the barriers they faced using analysis tools they had learned about in the initial USAID ASSIST Project classroom training.

They agreed that the main issues that were preventing them from providing ENC to all babies were:

1. Not all staff knew what care to provide to neonates;
2. The essential elements were not provided routinely, e.g. vitamin K was only given if the paediatrician prescribed it;

JULY 2014

This case study was authored by Neeraj Jham, Praveen Sharma and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

3. The right equipment was not always available in the labour room (e.g. cord clamps were not always there, vitamin K was being ordered in the facility as ten mg vials so there was a lot of wastage and it was not always in the labour room); and
4. There was no data on the quality of care for new-borns so no one knew what was or was not happening.

> *"I have seen lot of improvement in the ENC services provided at the Regional Hospital. We are trying the same for the last two to three years but could not be able to improve. But the quality improvement team interventions really brought many improvements. Please continue with the same efforts."*
>
> –Medical Officer, Regional Hospital Chamba.

The main issues with resuscitating new-borns were:

1. Paediatricians were on another floor so there was a considerable delay in getting asphyxiated new-borns to a clinician who could provide the needed care;
2. Nurses did not know how to resuscitate new-borns; and
3. Equipment was not checked regularly and was sometimes not working when needed.

Based on this analysis, the team developed a series of solutions they put into place in February of 2014. To improve ENC, the team implemented five changes:

1. The medical officer trained the nurses on ENC during the QI team meeting and for the next week, the staff nurses discussed the elements of ENC with the nurses from the next shift;
2. They developed a register to record whether the elements of ENC were provided or not and the matron reviewed these records regularly;
3. They worked with the hospital management to ensure that cord clamps and one mg vitamin K vials were ordered;
4. The nurses checked that the essential drugs and supplies were in the labour room at the start of each shift and when each woman came into the room for delivery; and
5. To improve breast feeding, the team decided to give vitamin K after the baby started feeding. Women want the vitamin K injection for their babies so are keen to breast feed.

> *"Earlier there was no documentation of the ENC services provided. But now since we have to document the ENC services provided makes us more responsible. We have now identified areas wherein we will be requiring training to enhance our skills"*
>
> –Staff Nurse, CHC Sahoo, Chamba.

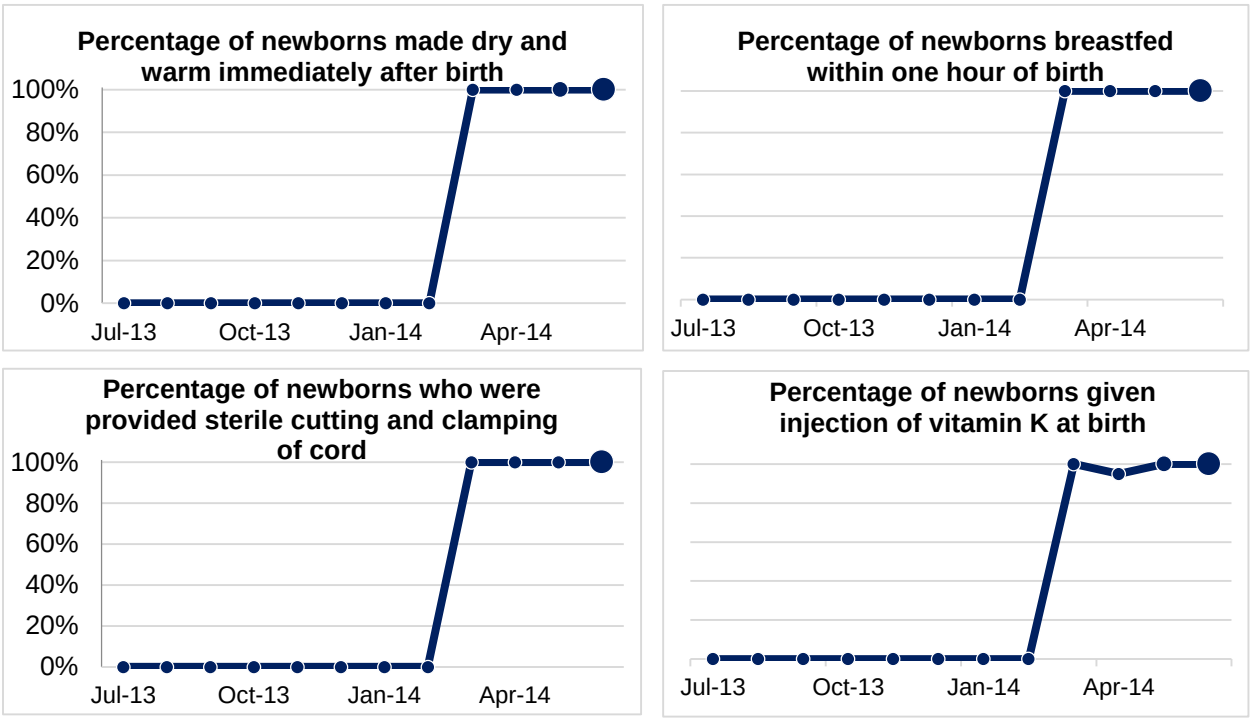
To improve resuscitation of neonates the team made three changes:

1. The nurses received training in June first week and the medical officer and matron assessed the skills of the nurses to make sure they were resuscitating correctly;
2. The nurses checked that the supplies were in the labour room and functional at the start of each shift, and
3. They changed the hospital policy so that neonates were resuscitated in the labour and delivery room by the nurse before contacting the paediatrician.

Results:

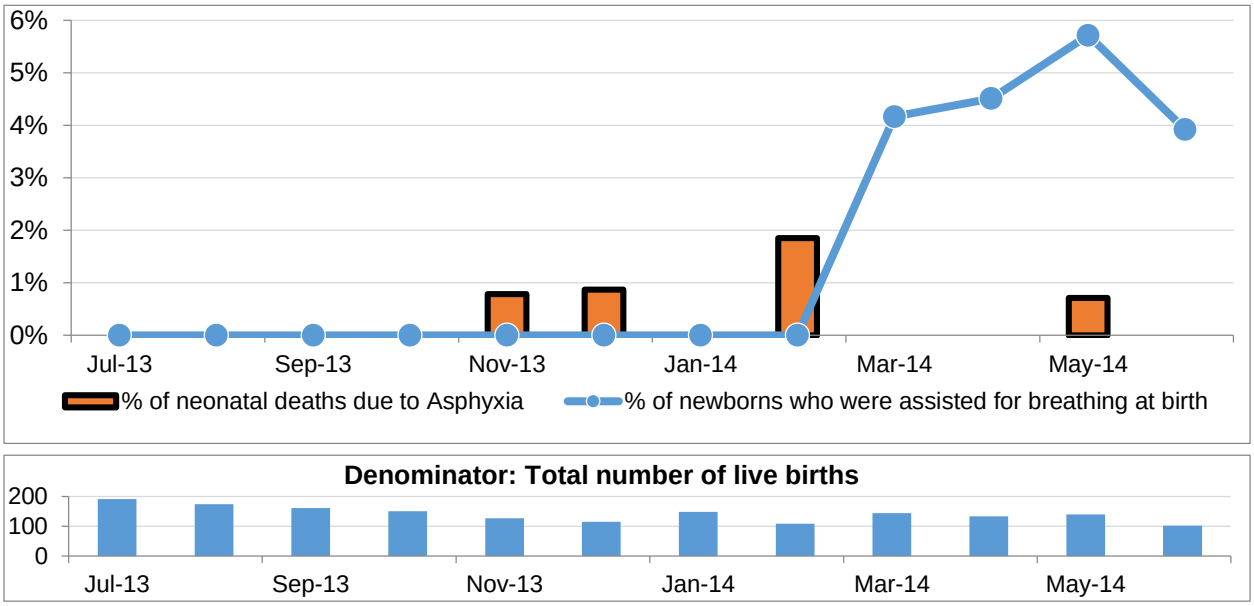
Prior to the start of improvement efforts, there was no data on ENC coverage, but since starting work in early February, 100 percent of babies delivered by vaginal delivery have received a breathing assessment and assistance if required, sterile cord clamping, drying and warming, vitamin K and breast feeding in the first hour.

Figure 1: Aim - To provide ENC services for all the live vaginal births from zero percent to 100 percent by May 2014



The change in the hospital's approach to reducing asphyxiation has led to 24 neonates being resuscitated in the labor room between March and June of 2014. One neonate died of asphyxiation in the three month period (0.2 percent of all live births) compared to four in the previous eigh months (0.4 percent of all live births).

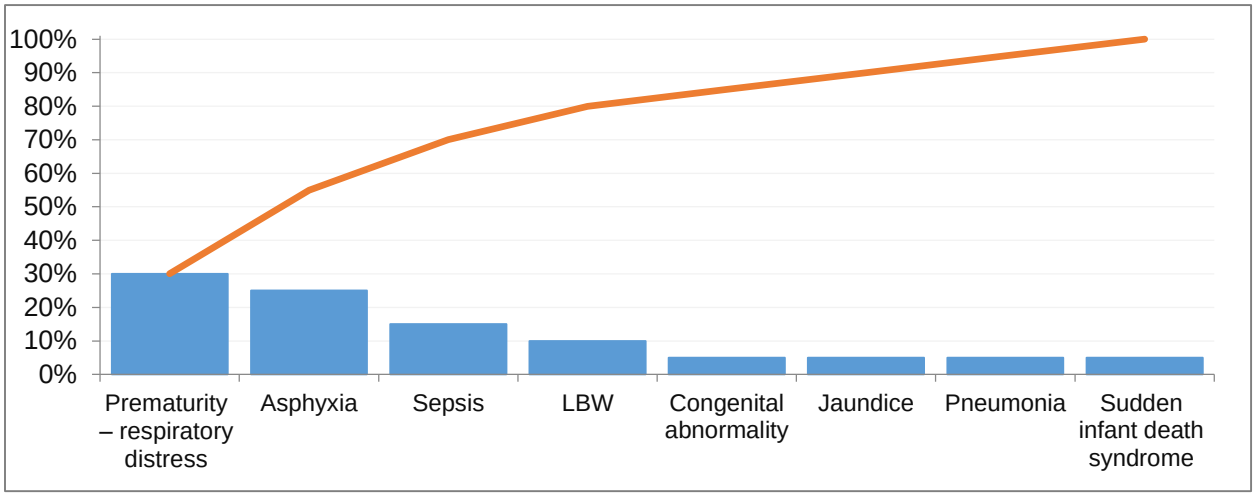
Figure 2: New-borns assisted with breathing in the labour and delivery room and neonatal deaths due to asphyxia in the facility



Next Steps:

The quality improvement team has made significant improvements in providing ENC and resuscitating neonates at birth. Since the start of their improvement interventions, they have seen a decrease in deaths from asphyxia. To identify future priorities, the team has reviewed all neonatal deaths in the hospital since July of 2013. Asphyxia and respiratory distress syndrome related to prematurity have been the leading causes of death. Based on the review of deaths, it will be important for the RHC team to start work on improving management of premature deliveries.

Figure 5: Pareto Chart- Causes of neonatal deaths in Chamba regional hospital, July 2013- June 2014 (n=20)



Conclusion:

Regional Hospital Chamba has been trying to improve neonatal care unsuccessfully for the past two years. Within three months of forming an improvement team and starting to use quality improvement approaches, they are now providing ENC to all neonates in the facility and are doing a better job of identifying and managing new-borns with asphyxia. The team is also planning interventions to address other causes of death in the neonatal period.

USAID FROM THE AMERICAN PEOPLE

USAID ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Improving antenatal services with limited human resources in selected facilities of Kinnaur District, Himachal Pradesh, India

Summary

In December 2013, the USAID ASSIST Project started work in Kinnaur District with staff in six facilities to improve care along the Reproductive, Maternal, Newborn, and Child Health and Adolescent (RMNCH+A) continuum. Identifying numerous challenges to providing good antenatal care (ANC), staff in Kinnaur proposed changes in the functioning of ANC services in their respective facilities. Through June 2014, the staff has improved ANC services at six facilities and identified 48 women with high risk pregnancies (13%) within five months of starting improvement activities.

Introduction:

Kinnaur is a high priority district under the Government of India's RMNCH+A initiative. The district has a population of 84,000 and has many challenges including geography, scattered population, snow-bound areas, poor road network (most facilities are not connected to roads) and logistics. In addition, there is a shortage of all key cadre including doctors, staff nurses and paramedical staff (table 1).

Table 1: Staff Position in Kinnaur District

Category	Sanctioned	In-Position	% Filled
Gynecologist	1	1	100%
Pediatrician	1	0	0%
Medical Officers	60	48	80%
Senior Lab Technician	31	6	19%
Pharmacist	30	7	33%
Male Health Worker	35	26	74%
Female Health Worker/ANM	54	32	59%
Female Health Supervisor	10	6	60%
Ward Sister	7	0	0%
Staff Nurse	45	20	34%

The USAID ASSIST Project started work in December 2013 helping Kinnaur staff to use quality improvement approaches to provide better care along the RMNCH+A continuum. The services were started in six facilities, which accounted for 30% of all deliveries in the district and 43% of institutional deliveries (31% occurred at home).

Table 2: ANC Load of Six Facilities in Kinnaur District

Facility	ANC Load/month
RH, Reckongpeo	50-60
CHC Sangla	15-20
PHC Kalpa	5-8
PHC Kilba	2-5
S/C Shong	2-5
S/C Pangi	5-8

ASSIST staff worked with staff to form quality improvement teams in these facilities to work on addressing key issues related to maternal and child survival. In the previous year, two maternal deaths had occurred in Kinnaur where deliveries happened at home. They were both due to post partum hemorrhage and anemia. Both had received antenatal care (ANC) but had not been managed appropriately. Based on

SEPTEMBER 2014

This case study was authored by Gaurav Sethi, Praveen Sharma, and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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. This case study is not official U.S. Government information and does not represent the views or positions of USAID or the U.S. Government. The USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Institute for Healthcare Improvement; Initiatives Inc.; Johns Hopkins University Center for Communication Programs; and WI-HER LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

these findings, the health workers decided that their first improvement project would be to improve ANC to detect high risk pregnancies so the timely management and referral can be done.

Improving the detection of high risk pregnancies

The District Improvement Coordinator of the USAID ASSIST Project trained the members of the improvement teams in six basic steps of quality improvement and helped them review the barriers they faced in identifying and managing women with high risk conditions. The teams identified the problems they were having with ANC and developed possible solutions to those problems. They started work to improve ANC in February 2014. Table 3 shows the challenges and proposed solutions for each facility.

Facility	Challenge	Proposed Solution
RH Reckongpeo	• Different components of ANC visit were done in different buildings and women did not always know where to go so they did not get complete care • ANM's provided most care in ANC visits after visit 1 but did not have access to haemoglobinometer or blood pressure (BP) equipment • ANM did not know what care to provide	• Move staff so that all steps of ANC care happened in the same location • Purchase equipment for ANM • Train ANM on the specifics of good ANC care
CHC Sangla	• ANC visits were not on fixed days • Lack of knowledge of good ANC care • Lack of haemoglobinometer and BP equipment	• Fix ANC day and advertise this to clients • Training of health workers regarding ANC, BP and hemoglobin (Hb%) check-up. • Provision of checklist regarding history taking, counseling and detection of high risk pregnancies. • Provision of ANC format. • Procurement of BP apparatus for MCH centre.
PHC Kalpa, PHC Kilba, S/C Shong, S/C Pangi	• Lack of knowledge of good ANC care • Lack of haemoglobinometer and BP equipment	• Training of health workers regarding ANC, BP and Hb% check-up. • Provision of checklist regarding history taking, counseling and detection of high risk pregnancies. • Provision of ANC format. • Procurement of BP apparatus for MCH centre.

Changing patient flow at Reckongpeo:

The previous system of ANC in Reckongpeo was confusing. Women went to the outpatient department where a doctor measured their blood pressure and ordered laboratory tests. They were then supposed to go to the maternal and child health (MCH) clinic for the rest of the ANC visit but most women did not go. This system led to the majority of women not receiving full ANC and was also a burden on the medical officers. The team changed the system so that all ANC services were provided in the MCH clinic. They also purchased new equipment to facilitate care in MCH, and the health workers are now expected to categorize women as high risk or not before discharge and develop a plan to bring the high risk women to the obstetrician.

Results:

Improvement in processes of care was achieved between December 2013 and June 2014. History taking of pregnant women increased from 0% to 100%, hemoglobin and BP measurement has increased from 27% to 100% and 17% to 100%, respectively. History taking and counseling were also dramatically improved in a short span of time. These improvements in processes of care also led to improved

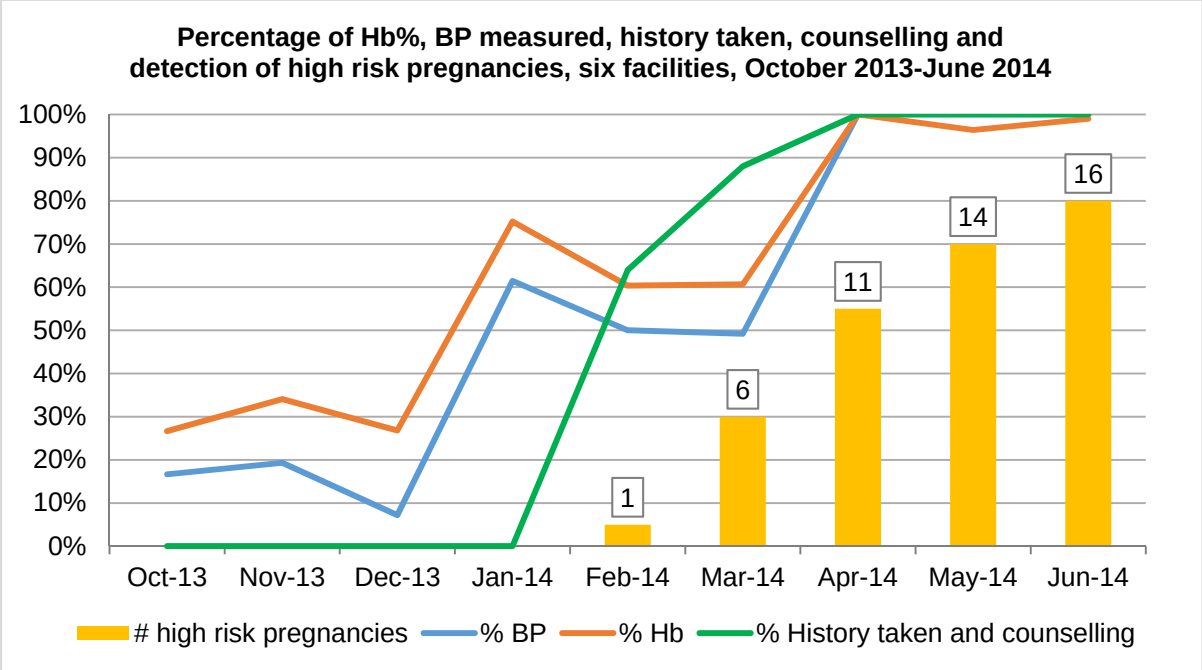
detection of high risk pregnancies. No women with high risk conditions were identified in the 4 months preceding the start of this work, while 48 women with high risk pregnancies were identified in the first five months. These women were then referred to the gynecologist in RH Reckongpeo for further management. Forty-four of the women were managed at RH Reckongpeo while four were referred to another district because Kinnaur did not have the facilities to manage these cases. Two women with severe anemia and one with antepartum hemorrhage were referred for transfusion (Kinnaur has no blood storage unit), and another woman was referred because no fetal movements were felt (Kinnaur has no ultrasound machine).

Table 4: High risk pregnancies of six facilities in Kinnaur District

High risk condition	No. of high risk cases
Bad obstetric history	27
Short stature	7
Hypertension	3
Previous C- section	3
Elderly primi	2
Multigravida	2
Severe Anaemia	2
Ante partum haemorrhage	1
No fetal movements	1

Sixteen women with anemia were identified in the ANC clinics between February and June. Eleven of these women have had follow up visits and have seen a mean increase in Hb of 1.3 g/dL. Two of the 11 now have hemoglobin above 11 g/dL.

Figure 1: Improving ANC services and identifying women with high risk conditions



Conclusion

By using six steps to identify and solve problems, six facilities in Kinnaur District were able to rapidly improve identification and management of women with high risk pregnancies. The teams are now moving on to address new aims along the RMNCH+A continuum. An important next step will be to improve anemia management.

CASE STUDY

Improving post-partum care in a large hospital in New Delhi, India

Summary

Bhagwan Mahavir Hospital in New Delhi delivers around 6,000 babies a year. In 2013, five women died after delivery and they decided that they wanted to do a better job of identifying and managing women with complications after delivery. After using an iterative approach to improving their system, they are now providing better post-partum care to mothers and babies and no women have died in the post-partum ward in the first eight months of 2014. This case study provides lessons that can be used in other hospitals to improve post-partum care and for others learning to use quality improvement methods.

Introduction

Bhagwan Mahavir Hospital (BMH) is a secondary level hospital in North West Delhi, one of the high priority districts identified under the Government of India's RMNCH+A initiative. BMH provides care to a largely low-income population including slum and resettlement colony dwellers, unskilled labourers and migrants. The hospital has 124 doctors, 125 nurses and 46 paramedics. The 50-bed obstetrics and gynaecology department has a bed occupancy rate of over 100 percent. Sixteen doctors, 30 staff nurses and four auxiliary nurse midwives provides around the clock services and deliver about 6,000 babies every year. In 2013, five women died in the post-partum ward of BMH including two who died in December. When the USAID ASSIST Project team met them in January 2014, the BMH staff wanted to improve their system for providing good post-partum care. They formed a quality improvement team (Table 1).

~~Table 1: Members of the BMH Quality Improvement Team~~

Sunita Rani	Medical Officer, Obstetrics and Gynecology
Nidhi Chopra	Medical Officer, Pediatrics
Rajkumari Sood	Deputy Nursing Superintendent
Kamlesh Chandna	Sister In- Charge, Labor Room

Intervening to improve post-partum care

As there was no readily available information on women were to be managed after delivery, the first thing the improvement team did was to collect data on how often they were assessing women in the first six hours after delivery. The government of India's guidelines suggest that women should be seen eleven times but they found that women were only assessed twice.

SEPTEMBER 2014

This case study was authored by Mona Chopra, Neerja Arora, and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

To increase the frequency of assessments, the improvement team asked the deputy medical superintendent to issue a letter to the labour room and post-partum ward instructing nurses to assess women six times in the first six hours after delivery. One week later, the improvement team met again. They found that women were now being assessed more than six times. However, the labour room nurses had interpreted the letter to mean that they should keep women in the labour room for six hours after delivery. This led to a lot of overcrowding. The team congratulated the nurses on increasing the number of assessments and clarified that women could be discharged to the post-partum care ward where the nurses there would take over the assessment.

Between February and June, the number of assessments stayed at six to seven in the first six hours. However, the team was not collecting data on how many women with complications were identified and managed. Because of this it was not clear if they were improving care or not. When they reviewed their records they found that two women (0.1 percent) were identified with post-partum danger signs during the last five months. One woman had eclampsia and the other was in shock due to blood loss. Both were managed appropriately and discharged from the hospital.

The infrequent identification of women with complications and the fact that both were diagnosed so late likely means that many more women were being discharged home with early but unidentified complications. So, while the number of assessments had increased it was unlikely that women were receiving better care.

The QI team met again to discuss how to improve care. Since they were now more experienced in improvement methods they did three things differently: spending time to identify root causes, using small scale testing to learn what works, and focusing on the patient. The team spent about 30 minutes discussing the root causes that were making it hard for them to identify women with early complications. They agreed that the nurses were not assessing carefully because of time constraints. Rather than simply stopping there and complaining about how they needed more staff, the team looked for reasons why the assessment was taking so much time.

The main problem was that they were spending a lot of time walking around to find the assessment equipment and to find the patient. So, they decided to eliminate the walking. They thought that one way to do that was to reorganize the ward to make an observation room for women newly discharged from the labour room. Instead of immediately reorganizing the ward, the team did a small scale test to learn if this was a good idea. They timed how long it took to do the assessment when women were in the planned observation room (five minutes) compared to when they were elsewhere on the ward (20 minutes). This small bit of testing gave the team the confidence to move ahead and reorganize the ward so that women would arrive in the observation room after delivering.

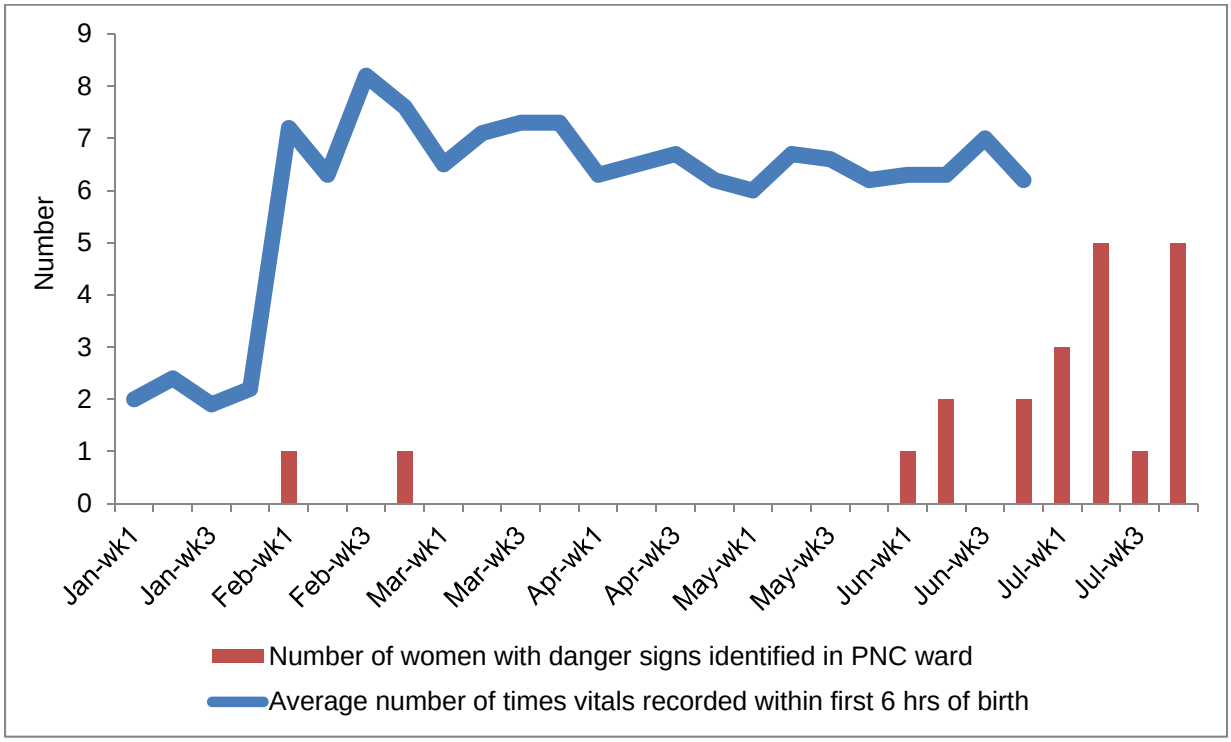
They then set up the observation room and tested it for two days. It worked well and the team made a second change: partnering with patients. The nurses in the observation room educated women and their relatives about common danger signs and told them to call the nurse if needed. This improved the efficiency as patients and their families were thus brought in as a resource to identify the complications.

Results

After the reorganization of the ward, five women (1.6 percent) were identified with danger signs in this four week period, two of which were picked up by relatives. All were identified early, managed appropriately and discharged within a week.

The team was happy with their progress and they decided to keep measuring how many women were being identified with complications and to stop measuring the number of assessments. In the following four weeks 14 women (2.7 percent) were identified with complications, treated appropriately and discharged home. There have been no deaths on the post-partum ward in 2014 compared to five deaths in 2013.

Figure 1: Postnatal monitoring and identification of women with complications



Lessons for hospitals trying to improve post-partum care

1. Look for ways of making routine assessment as efficient as possible:

One of the barriers to identifying women with complications is finding enough staff time to do frequent assessments. In most cases you will not be able to get new staff so instead you should look for ways of making assessment easier and more efficient. In this hospital that meant eliminating time wasted looking for equipment and the patient.

2. Partner with women and their families:

Another change that worked for this hospital was to involve patients and their families. This is a good way of improving care without adding work for busy nurses.

3. Measure how many women are being identified and when they are identified:

Trying to improve post-partum care is a challenge since you cannot measure how many women with complications you were not able to identify. You can, however, there are two ways to measure if you are identifying as many women as you need to.

a. Roughly two to six percent of women will have complications early after delivery. If the number you are identifying is less than this you are probably missing women.

b. A good system for identifying women with complications will identify them early on. If you are only finding women who are severely ill then you are probably missing women.

Lessons for people learning to use quality improvement methodology

As with any new skill, learning how to use quality improvement methods takes practice. There are a number of lessons that new people learning quality improvement can learn from this team.

1. Be thoughtful when coming up with ideas to change systems:

People learning quality improvement often focus on training or issuing management directives to solve problems. These can solve some problems, but not all. In this hospital, it was necessary to address efficiency issues to improve care. If your team is only using management directives and training, you are missing other tools that you can use to improve care.

2. Use small scale tests to learn if change ideas work:

New improvement teams like to come up with ideas and then implement them in the entire clinic or ward. If you are 100 percent sure that these changes will work and will not cause harm, then this is the right approach. In most cases though, it is not clear what changes will work and you need to do some testing. In this story, the first change was a directive from management to do more assessments.

If a draft of the letter had been tested by showing it to a labour room nurse, she would have been able to explain that this would lead to overcrowding. So the lack of five minutes of testing led to a week of worse care and more work. If you find that your team is always implementing changes or trying them for days or weeks at a time you are likely causing more work for yourselves and also missing opportunities to test more creative solutions to learn what works. Consider trying more changes on a smaller number of patients or shorter time period to avoid mistakes and to learn.

3. Keep focused on your aim – to help other human beings:

New improvement teams can sometimes lose track of their goal which is to provide better care to other human beings. They can get caught up in the process of improvement. To prevent this it is always good to ask yourself ‘so what?’ If you cannot prove to yourself that someone is benefiting from your work you should re-evaluate what you are doing and how you are measuring benefit.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or United States Government.

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project
University Research Co., LLC • 7200 Wisconsin Avenue, Suite 600 • Bethesda, MD 20814 • USA
Alps Building, 1st Floor • 56 Janpath • New Delhi 110001 • India

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Improving labour and postpartum care at Budhlada Sub-divisional Hospital in Mansa District, Punjab, India

Summary

Mansa is a district in Punjab State, where around 7,500 women deliver every year; of these, around 18 percent experience delivery complications. The USAID ASSIST Project started working with Mansa's Budhlada Sub-Divisional Hospital to set up an improvement team in March 2014. This hospital wanted to focus on reducing postpartum haemorrhage through active management of third stage of labour and monitoring women in the postpartum period to identify danger signs in time for proper management of complications. In a six-week period, the hospital's improvement team introduced changes, such as posting visual reminders in the labour room, advance preparation for oxytocin administration, and engaging nursing interns in vitals monitoring, which resulted in all women delivering at Budhlada receiving oxytocin immediately to reduce bleeding and having their vital signs monitored at least four times after delivery by staff. The increased postpartum contact between each patient and staff nurses has also enabled better counselling on breastfeeding.

Introduction

Mansa is a high priority district in Punjab under the Government of India's Reproductive, Maternal, Neonatal, Child and Adolescent Health initiative (RMNCH+A). It is home to about 900,000 people, and around 7,500 women deliver every year. According to the District Level Household Survey 2013-14 (DLHS-4), there are many opportunities for improving labour and postpartum care in the district: only 18 percent of women received full antenatal care (ANC), consisting of at least three visits for ANC check-up, tetanus toxoid, and iron and folic acid supplementation; 71 percent of the pregnant women were anaemic; 20 percent delivered at home; around 34 percent of women faced pregnancy complications; 18 percent had delivery complications; and nine percent had postpartum complications.

Table 1: Members of the Budhlada Sub-divisional Hospital Quality Improvement Team

Jaswinder Kaur	Block Senior Medical Officer
Asha Jain	Gynaecologist
Satwinder Kaur	Staff Nurse Supervisor
Virpal Kaur	Staff Nurse
Sadiya	Staff Nurse
Shinder Pal Kaur	Staff Nurse
Krishan Kumar	Block Extension Educator

The USAID ASSIST Project started working on improving care for women and babies in Mansa District in March 2014, supporting teams at the District Hospital, Sub-District Hospital, and all the delivery points in one identified block to improve care. The sub-divisional hospital at Budhlada block is a 50-bed hospital that conducts 150-200 deliveries per month (25-30 percent of total deliveries conducted in health facilities in the district and 15 percent of all deliveries). The hospital staff consists of four medical officers,

OCTOBER 2014

This case study was authored by Parika Pahwa, Vikrant Prabhakar, and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

ten staff nurses, one gynaecologist, one paediatrician, and one surgeon. Generally, the labour room and female ward are looked after by a single staff nurse.

This hospital wanted to focus on reducing postpartum haemorrhage (PPH) as there is no blood transfusion unit in the block, and almost 90 percent of women delivering at the hospital are moderately or severely anaemic. The facility decided to address this issue by preventing PPH through active management of the third stage of labour (AMTSL) and by monitoring women in the postpartum period to identify danger signs in time for proper management of complications.

Interventions for improving maternal care services

March 5th -6th: Two staff members from the sub-divisional hospital received training on quality improvement from the USAID ASSIST Project. They were told about the six steps of quality improvement and were asked to develop an improvement plan to ensure AMTSL and the postpartum vitals are monitored in all women who have delivered at their facility so that postpartum complications can be identified early. They formed a quality improvement (QI) team (see Table 1).

Table 2: Six Steps of Quality Improvement

1. Define an improvement aim
2. Form an improvement team
3. Understand the current system
4. Develop a measurement system
5. Develop change ideas
6. Test the change ideas and implement the successful ones

March 19th: After attending the learning session, the QI team met to discuss how to administer 10 units of oxytocin within one minute of delivery to all women and how to monitor postpartum vitals four times in the first six hours post-delivery to identify danger signs in time.

Prior to the intervention, the hospital was using oxytocin to augment labour and methergine to prevent bleeding and was not monitoring the postnatal vitals very frequently (averaging less than once in the first six hours). The team came up with a number of changes to test to learn if they have improved oxytocin administration and postpartum monitoring.

Changes tested to improve oxytocin administration:

- Posting visual reminders in the labour room
- Drawing a new column in the labour register to record oxytocin administration
- Pre-filling syringes with oxytocin to improve ease of administration

Changes tested to improve postpartum monitoring:

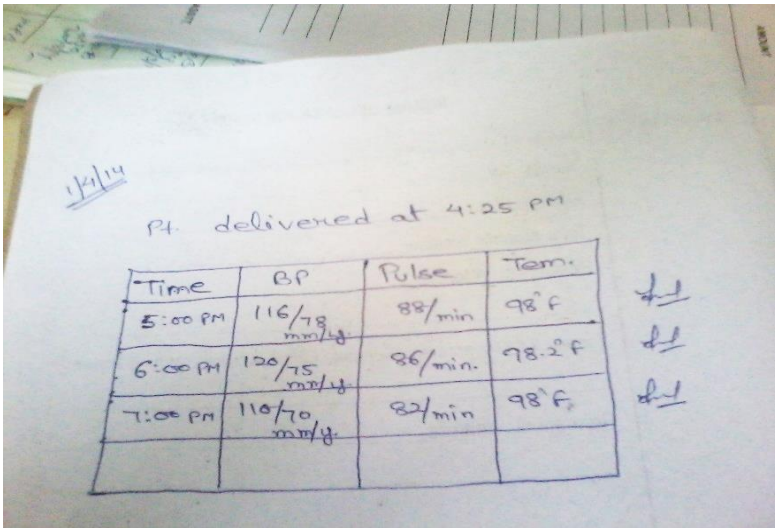
- Posting visual reminders in the labour room
- Engaging nursing interns in vitals monitoring
- Developing a new recording system with predefined times

March 31st: The QI team met again to analyse the results and saw that administration of oxytocin intramuscular (IM) had increased from zero percent to 58 percent since they started the improvement work. However, it was found that newly posted staff nurses were not using oxytocin IM because they were not adequately trained and were not very confident that IM oxytocin will be sufficient to prevent PPH. The QI team asked the staff nurses who had experienced administering oxytocin IM to train other staff nurses.

The team found no increase in the number of postpartum assessments after posting the reminders. The staff nurses were not able to do postpartum vitals checking as they were overloaded with the work of the labour room and female ward. They decided to utilize the services of nursing interns under the supervision of the staff nurse for checking postnatal vitals, and interns were provided training for the same. This idea was tested for one day and was successful. Hence, it was decided to continue the testing of this idea for another week.

April 7th: Administration of oxytocin increased further to 88 percent, and the average number of times vitals were recorded also increased from 0.6 to two. The team decided to continue with the change idea of prefilled syringes and checking of vitals by nursing interns for one more week.

April 14th: The QI team met again to analyze the results and found that administration of oxytocin had decreased. It was because more C-sections happened in the preceding week, and the gynaecologist found oxytocin administration in the thigh difficult as the female was draped for operation.



Postpartum vitals done by nursing intern under supervision of staff nurse. *Photo courtesy of Satwinder Kaur, Budhlada Sub-divisional Hospital*.

The QI team came up with the idea of administration of oxytocin in the shoulder, and the operation theatre staff nurse was asked to record administration of oxytocin in the labour room register.

The team also found that the recording of vitals was not systematic and that most of the assessments were being done beyond six hours of delivery. The QI team decided that the staff nurse delivering the baby will make a table of four columns having time, blood pressure, temperature, and pulse on the delivery file. Nursing interns will note the vitals in the table under the supervision of the staff nurse who will also check for bleeding from time to time. For systematic recording, the staff nurse will write down the timings beforehand which will guide the interns to check vitals at specified times.

Initially, the new recording system was tested for one day. The test showed that the system worked well, and they decided to test for a week to make sure that all staff understood the new system. This was also successful, and the new system became the accepted way of working at the facility.

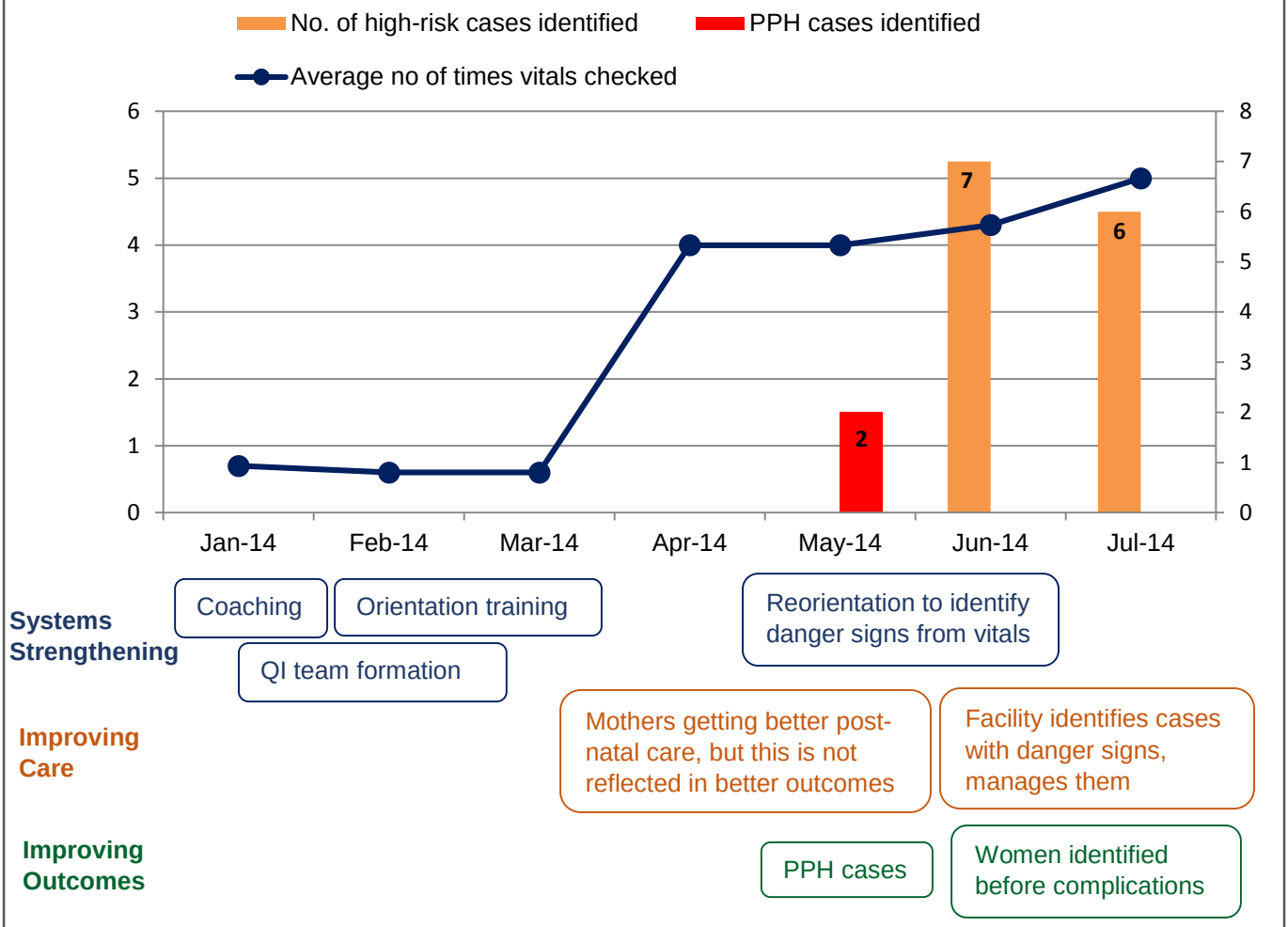
April 21st: Oxytocin was being administered to all the women delivering in the facility within one minute of delivery, and vitals were being recorded four times in six hours postpartum.

April 30th: The QI team analysed the results and found that the results were sustained. (100 percent of women were receiving oxytocin, and postnatal vitals were being monitored on average four times within the first six hours of delivery). It was decided that further data collection will be at monthly interval, rather than weekly data collection.

Results

Women delivering at Budhlada are now receiving oxytocin immediately after delivery to reduce bleeding and are also being monitored more closely after delivery. This has helped the facility staff to identify and manage women with early signs of complications. A review of 40 charts randomly selected in June and July showed that facility staff were able to identify 13 cases with danger signs (six with hypotension, three with hypertension, and three with tachycardia) (see Figure 1). All were managed appropriately and discharged with no serious complications.

Figure 1: Postpartum monitoring and identification of women with complications



Conclusions

The Budhlada Sub-divisional Hospital was able to ensure that all women were receiving oxytocin immediately after delivery. In addition, the hospital has been able to set up a system to provide better care to women in the postpartum period. The improvement in monitoring means that roughly a third of women are identified with some abnormality in vital signs which has led to a change in patient management. The increased contact has also helped in building strong relations of trust between patients and staff nurses in addition to better counselling on breastfeeding, as health staff repeatedly visit women. From August 2014 onwards, the hospital has now decided to collect the data on identification of danger signs and the outcome in all delivery cases so that they can identify additional areas that they need to improve.

The facility in charge is very happy with the results achieved so far and are ready to move to other priority areas of RMNCH+A. Currently they are working on identifying and managing women with severe anaemia.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or United States Government.

CASE STUDY

Reducing post-partum haemorrhage in Ghuman Community Health Centre, Punjab, India

Summary

The Ghuman Community Health Centre in Gurdaspur District caters to a population of about 40,000. On average, the centre attends 15 deliveries each month. In the absence of an attending physician, deliveries are conducted by the staff nurses. In this scenario, post-partum haemorrhage could not be managed within the facility. While the nurses routinely administered prophylaxis to women immediately after delivery, many women still had bleeding and were then referred to higher-level facilities. An improvement team was formed and tested the idea of keeping pre-loaded syringes of oxytocin near the delivery table for immediate administration after delivery. This approach worked well, and the team decided to make it a routine practice for all deliveries done at the facility.

Introduction

Due to its poor health indicators, Gurdaspur, located in the northern part of Punjab, was identified as one of the five high-priority districts of the state as a part of the Government of India's reproductive, maternal, newborn, child and adolescent health (RMNCH+A) initiative.

The Community Health Centre (CHC) at Ghuman in Gurdaspur caters to a population of about 40,000. On an average, 15 deliveries take place every month at this facility. In the absence of an obstetrician or surgeon, deliveries are typically conducted by the staff nurses, sometimes with assistance from the medical officer (MO), a general physician. While there were two MOs at the Ghuman CHC, the facility head position was vacant so the administrative work was distributed between these two MOs, affording them very limited time for clinical tasks. In this scenario, post-partum haemorrhage (PPH) could not be managed within the facility. Staff nurses routinely administered methylergometrine intramuscularly to women immediately after delivery as prophylaxis against PPH. Despite this, many women still had bleeding and needed to be referred to higher-level facilities.

Table 1: Members of the Ghuman Quality Improvement Team

Name	Designation
Sewa Singh	Senior Medical Officer
Gurpreet	Medical Officer
Ritupuneet Kaur	Medical Officer
Baljinder Kaur	Staff Nurse
Krishna	Staff Nurse
Harjinder Kaur	Staff Nurse
Rajwinder Kaur	Staff Nurse
Varinder Kaur	Staff Nurse
Kuljit Kaur	Staff Nurse
Satinder Kaur	Staff Nurse
Sukhjit Kaur	Staff Nurse

Intervening to reduce post-partum haemorrhage

In March 2014, the male MO from this CHC received classroom training on quality improvement (QI) by the USAID ASSIST Project. Motivated by this experience, he committed to initiate quality improvement work in his facility. With facilitation from ASSIST, he formed a QI team in his facility that was composed of

NOVEMBER 2014

This case study was authored by Ankur Sooden, Vikrant Prabhakar, and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

nursing staff and the two medical officers. The QI team selected reduction of PPH using oxytocin for the active management of the third stage of labour (AMTSL) as their immediate QI aim.

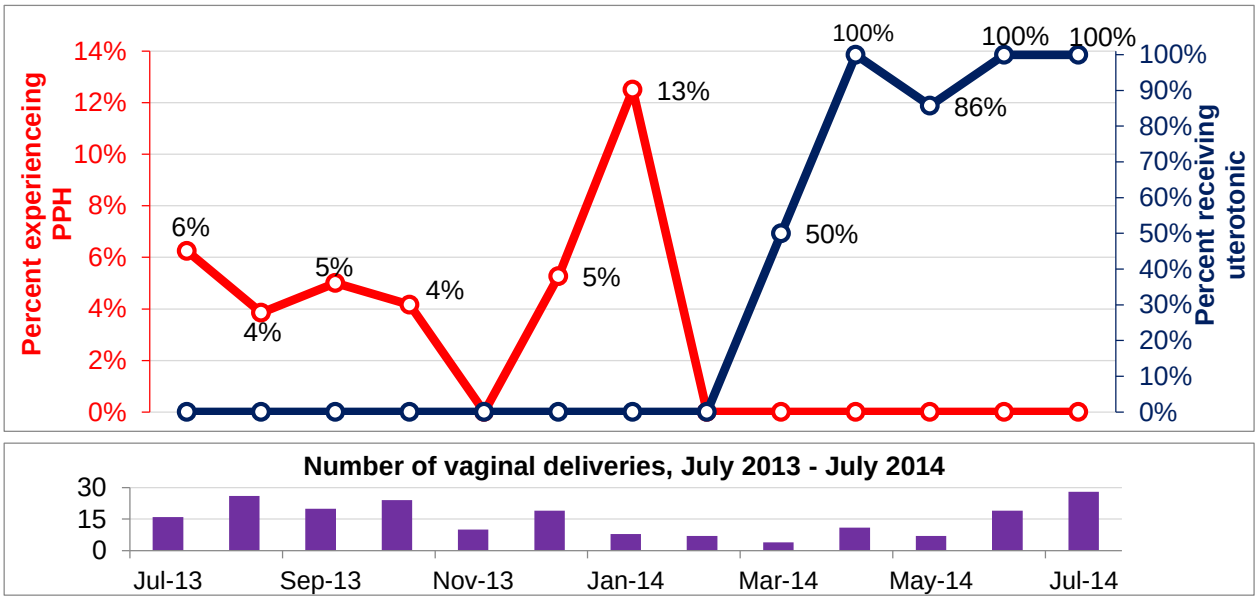
As a first step towards achieving their aim, the team tested the idea of keeping pre-loaded syringes of oxytocin near the delivery table for immediate administration after delivery. This approach worked well, and the team decided to make it a routine practice for all deliveries done at the facility. With a 100 percent response in the first two months, their performance dropped to 86 percent in the following month. During their QI meeting, they discovered that there was a missing record in the case sheet of one of the seven women who had delivered that month. On further examination, the concerned nursing staff confessed having missed recording the administration of injection, which she did give to the woman, as the recording of such information was not a routine practice in the facility.

Based on inputs received from ASSIST staff, the team decided to review the drug supplies on a monthly basis to ensure adequate availability of essential drugs at all times. Furthermore, to ensure that documentation of oxytocin is complete and not missed for any woman, the team stamped each medical with a box in which to record the information, which served as a reminder for all staff for administering and recording oxytocin and vitamin K for all women and babies at the facility.

Results

In July 2014, while reviewing case sheets of women, the team discovered that all women had received oxytocin. Much to the team's delight, there was no case of PPH at the facility since February 2014 (Figure 1), while it had previously been common to have at least one such case every month.

Figure 1: Proportion of women receiving oxytocin within one minute of delivery and proportion of postpartum haemorrhage in Ghuman CHC, July 2013 – July 2014



The team members were delighted. Satinder Kaur, nursing staff at the CHC says, "PPH following delivery was a big challenge for us, especially with the absence of a gynaecologist and blood bank facility at our CHC. We never thought that one simple measure of routine administration of injectable oxytocin could make such a difference." The team also appreciated that using oxytocin shortened the third stage of labour for most women. The members are motivated and more confident as a team now as they look forward to take up more challenges for improvement work at their facility.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or United States Government.

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Improving assessment and monitoring of women in labour at District Women's Hospital, Pauri, Uttarakhand, India

Summary

The District Women's Hospital in Pauri Garhwal district in Uttarakhand State is a 33-bed facility and provides delivery care to 40 women a month, approximately six percent of all institutional deliveries in the district. The hospital has faced challenges in managing complications associated with deliveries. They do not have the ability to conduct Caesarian sections (C-sections), so often refer women to a nearby medical college. Unfortunately, many women are referred late and end up delivering in the ambulance. To address this, the improvement team set up a system to ensure that women are referred appropriately. This involved improving the initial assessment when women came into the facility in labour and using partograms to improve assessment of women in labour to pick up delayed progression of labour early, while it was still safe to transport women. After implementation, women are no longer delivering in ambulances, management of labour has improved, and referrals have decreased from 36 to 21 percent.

Introduction

Pauri Garhwal is one of the high priority districts in Uttrakhand under the Government of India's RMNCH+A initiative. The district has separate male and women hospitals. The District Women's Hospital (DWH) is a 33-bed hospital. The staff responsible for labour and delivery care consists of two gynaecologists, three sisters in charge, five staff nurses, two auxiliary nurse midwives, and two ward attendants. This hospital, along with its male counterpart, provides health services to a population of 687,271. DWH attends about 40 deliveries per month (about six percent of all the institutional deliveries in the district) and provides antenatal care services to about 65 pregnant women per month. There is no provision for C-section deliveries.

Table 1: Members of the DWH Pauri Quality Improvement Team

Name	Designation
Kanak Banautha	Lady Medical Officer
P.B. Bisht	Assistant Nursing Superintendent
Roshni Gosain	Staff Nurse
Anuradha	Staff Nurse
Kalpana Kandari	Staff Nurse
Sharon Mathews	Staff Nurse
Menka Negi	Staff Nurse
Vijaylaxmi Panwar	Staff Nurse

Challenges to the health system in Pauri

The major challenge faced in ensuring health services in Pauri is accessibility. Pauri is located on the northern Himalayas and includes 15 blocks which are hard to reach—some are located at an altitude of 2600 metres or more. The roads within Pauri are narrow enough to be compared to snake trails, and most of them get washed away each year with heavy monsoon rains. There are still many areas where villages are not connected by roads and thus, no ambulance can reach these areas in case of emergency. In June 2014, a mother lost her life in Thalisain block of Pauri. The maternal death review

DECEMBER 2014

This case study was authored by Anisha Singh, Mahtab Singh, and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

showed the cause of death as post-partum haemorrhage (PPH) but there were other factors related to her death. The village where the maternal death happened is not connected by any road, and the nearest point to which an ambulance can reach is 14 kilometres away. The woman delivered at home and had PPH. She then had to walk 14 kilometres through the forest to get any medical assistance. Unfortunately, she succumbed to blood loss while on her way. This is an example where PPH was the proximal cause of maternal death but inaccessibility to skilled birth attendants was the root cause of death. While this maternal death was not related to the quality of care at DWH, the issue of delays in accessing delivery care underscores the importance of timely management of complications such as a bleeding upon the woman's arrival at the facility.

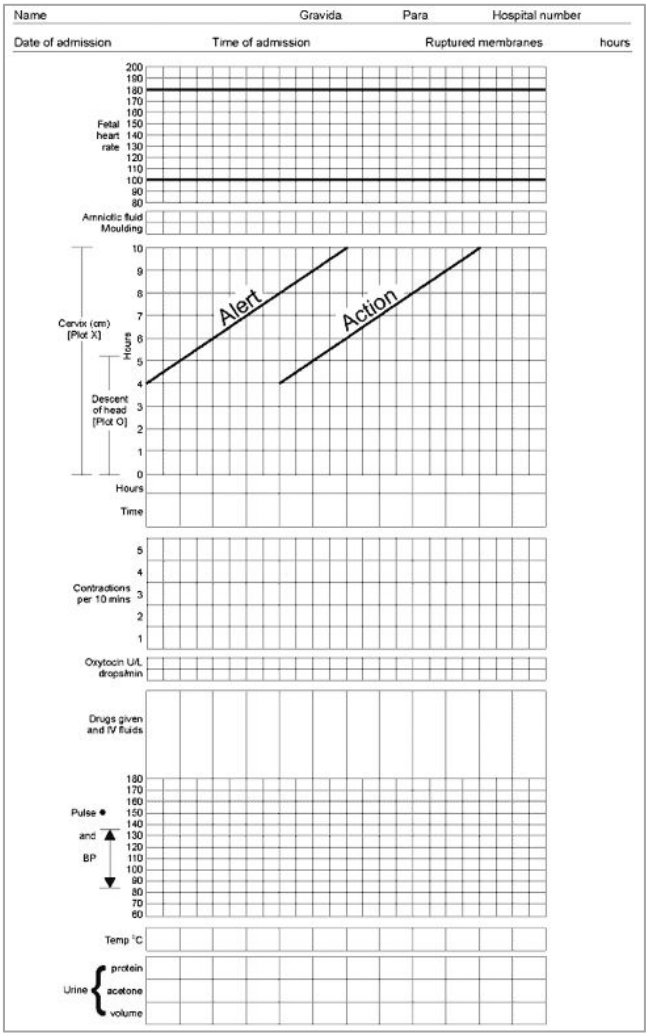
Changes to maternal assessment and partogram use to manage deliveries

In the first week of July, the improvement team at DWH started work to ensure that women with complications were identified early and managed correctly. The goals was to 1) only refer women who were safe to be referred and who were unlikely to deliver in the ambulance, 2) to identify complications early and to either refer them to higher facilities or to manage them early at their facility.

Previously, women were being referred to higher facilities if they came into the facility in labour and the nurses were concerned about them. Complete assessments were not done and women were referred without an assessment of whether they were safe to be referred. To address this, the gynaecologist trained the nurses to check cervical dilatation and measure contraction strength, frequency and duration and only refer women with less than four cm dilatation and weak contractions.

In addition, the gynaecologist trained the staff nurses on the benefits of partograms, how to use them to monitor progress of labour, and how to react to abnormal findings. The improvement team also started working on improving partogram use. The team found that they were using an old version of the partogram that was complicated to fill out. The USAID ASSIST Project staff provided the team with the World Health Organisation (WHO) simplified format to make its use simpler. Staff nurses also introduced a register to record the time when each partogram was completed. After trying this for a week, the QI team members discarded the register since it was time-consuming and instead attached the partogram to the patient's record. In addition to the initial training and development of the recording system, the team used the following changes to support partogram use:

- Staff nurses maintained a stock of multiple copies of the partogram form in the labour room and attached a blank partogram to each clinical record when a woman was admitted.



WHO-modified partogram.
Source: World Health Organisation

- At the time of shifting of duties, staff nurses ensured proper handover of partogram charts along with other clinical records to the new shift.
- Staff nurses did a weekly review of completed partograms to ensure appropriate completion of the partogram and clarified any discrepancies with the gynaecologist.

Results

From July through September 2014, 184 women were admitted in labour at DWH; 35 women (19 percent) were immediately referred to a higher facility at the time of presentation for various reasons: history of C-section (six cases), post-term pregnancy (seven cases), per vaginal bleeding (eight cases), severe anaemia (three cases), cord prolapse (four cases), intra-uterine growth retardation (two cases), intra-uterine death (one case), pregnancy-induced hypertension (one case), obstructed labour (one case) and no foetal movement (two cases). All of these women had been assessed prior to referral and were less than four centimetres dilated. Thus, women admitted in labour are now assessed appropriately and not referred just based on the history alone as was done prior to partogram use.

The other 149 were all managed using partograms, and 24 of these women (16 percent) had a change in management based on the partogram (see Table 2). Problems identified by partogram use included: maternal hypertension (six cases), meconium stained liquor (five cases), abnormal foetal heart (four cases), delayed progress of labour rate with no signs of foetal distress (four cases), delayed progress of labour rate with signs of foetal distress (four cases) and maternal hypotension (one case).

Table 2: Management practices for maternal complications as identified by partogram

Condition	Management
Maternal hypertension	Methyldopa
Abnormal foetal heart rate	Intravenous infusion of the following: • Five percent dextrose • Sodium bicarbonate • Ceftriaxone
Meconium stained liquor	Suctioning of oropharynx and nasopharynx and i.m antibiotic combination of sulbactam and ceftriaxone.
Delayed progress of labour with no sign of fetal distress	Misoprostol tablets 250mg per vaginally – four to five doses at four hour interval In case of primigravida when cervical dilatation is three to four cm then further augmented by five IU of oxytocin through intravenous infusion.
Delayed progress of labour with signs of fetal distress	Women referred to Srinagar Medical College
Maternal hypotension	Intravenous infusion of polygeline polypeptide (haemaccel)

Early interventions conducted at DWH

The partogram record of six women showed that high blood pressure was reported during the progress of labour. In these cases, methyldopa was administered, and blood pressure was recorded frequently. Blood pressure was reported to be within the normal range during further progress of labour. The partogram records had five reported cases of meconium stained amniotic fluid just before full dilatation. This helped alert the staff about the condition of the new-born. These five babies were closely monitored for vital signs and successfully managed following the protocol of meconium aspiration.

Furthermore, there were four reported cases where foetal heart rate (FHR) was found to be either higher than 160 beats/min or lower than 120 beats/min. In all four cases, drug interventions were done to manage FHR within normal range and for which it was recorded very frequently for the subsequent 10 minutes. Close monitoring and timely intervention helped in prompt management of foetal heart rate abnormality and normal delivery was conducted for 100% of these mothers at DWH. One case of low blood pressure was also identified by using the partogram during the progress of labour. The mother was treated with polygeline polypeptide infusions. All of these mothers delivered healthy babies at DWH and were discharged after 48 hours of

stay at the hospital. Since starting to assess women in labour correctly and to use partograms regularly, the proportion requiring referral to another facility has decreased from 36 percent in the three months before the improvement project started to 21 percent in the subsequent three months.

Conclusion

DWH Pauri applied improvement methods to ensure that women are assessed and monitored in labour and that partograms are used for all deliveries. Referrals have decreased, deliveries in the ambulance have been prevented and sixteen percent of women had a change in management based on partogram since its implementation in July 2014. The efforts of the labour room staff have been successful in establishing a system to monitor progress of labour and provide need-based delivery care.

The staff aspires to further improve the quality of delivery care and step towards other spheres of continuum of care under RMNCH+A.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or United States Government.

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project
University Research Co., LLC • 7200 Wisconsin Avenue, Suite 600 • Bethesda, MD 20814 • USA
Alps Building, 1st Floor • 56 Janpath • New Delhi 110001 • India

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Improving communication between nursing shifts to improve care in Hisar District Hospital, Haryana, India

Summary

The Hisar District Hospital delivers 250 to 300 babies a month, approximately ten percent of all deliveries in the district. A quality improvement team was formed in the hospital to improve the administration of oxytocin to reduce post-partum haemorrhage. Because of workload issues, the team were not giving oxytocin to all women immediately after delivery. To resolve these issues, the team decided to try keeping prefilled syringes with oxytocin and to improve the communication about the new changes to all nurses working on different shifts. The team found that a printed notice with the message to use prefilled syringes along with staff reorientation improved knowledge of these new changes and following this, all women have received oxytocin in the first minute after delivery. These changes can be tried in other facilities also struggling with communication issues between shifts.

Introduction

Hisar is a high priority district in Haryana State under the Government of India's RMNCH+A initiative. The USAID ASSIST Project has been providing support to improve care in key areas of maternal and child health in Hisar's facilities since December 2013. One of the support areas was to reduce post-partum haemorrhage (PPH) in women delivering at the District Hospital. The hospital delivers 250 to 300 babies a month (approximately ten percent of all deliveries in the district). There are 24 beds in the obstetrics and gynaecology ward, which includes eight beds for antenatal care, eight beds in the post-partum ward, and eight beds for post-operative caesarean cases. Staff include two gynaecologists and 17 staff nurses working three shifts per day. With the help of the USAID ASSIST Project district coach, the labour room staff formed a quality improvement team (see Table 1). The team decided that they wanted to do a better job of giving oxytocin to all women to reduce bleeding.

Table 1: Members of the Hisar Quality Improvement Team

Name	Designation
Anita	Gynaecologist
Manju	Nursing Sister
Munni	Staff Nurse
Kiran	Staff Nurse
Vina Kalra	Staff Nurse

The team knew that they were supposed to give oxytocin to all women, but because of workload issues, they were not giving it immediately after delivery. To resolve these issues, the team decided to try keeping pre-filled syringes with oxytocin in the tray so that they can administer it within one minute. The nursing sister oriented all the staff nurses present in that duty shift, and the team decided to test this change for one week. At the end of the week the team met again. They found that using pre-filled syringes worked for the nurses who were on that duty shift but that not all nurses were using the new method since the ward did not have a good system to communicate information about new changes to all nurses working on different shifts.

DECEMBER 2014

This case study was authored by Lokesh Sharma, Pankaj Dhingra, and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

Introducing changes to communication between staff nurses

The team discussed new ways of communicating messages so that all the staff nurses would be aware of the new practice. Staff nurses who attended the team meeting decided they would first handover the message verbally to evening and night duty staff nurses. To ensure that the message was properly conveyed to the incoming shift, the nursing sister agreed to repeat the message to each shift.

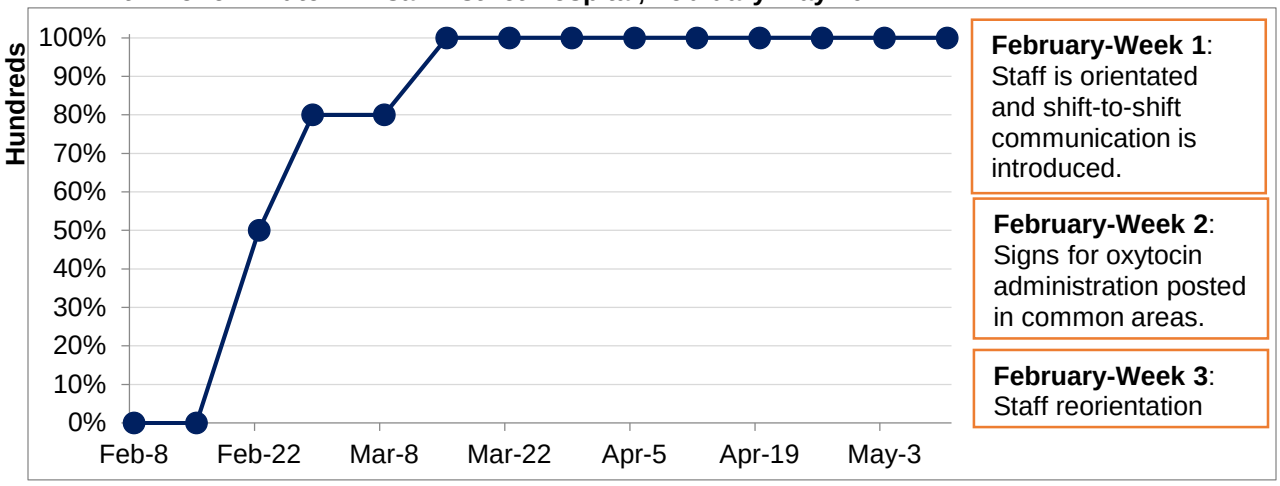
Three days later, the team met again. They found the system of communicating between shifts worked but nurses who were coming back from time off and needed more information about the new processes to reduce PPH. The team decided to print information about giving oxytocin in the first minute after delivery and to paste it on the maternity wing's notice board where the duty roster is kept and on the labour room wall near the delivery table as a reminder.

Print information about oxytocin administration on notice board. *Photo courtesy of Hisar staff.*

Results

After one week, the team again sat down to discuss the progress. They found the last change idea of printing and pasting the notice with message for use of prefilled syringe improved the communication within the team and that 80 percent of women were now getting oxytocin in the first minute. The remaining women were being cared for by nurses who had just completed leave. The team reoriented these nurses and following this, 100 percent of women have received oxytocin in the first minute after delivery (see Figure 1).

Figure 1: Percentage of bed head tickets having record of oxytocin injection given within one minute in Hisar District Hospital, February-May 2014



Conclusion

Communicating across multiple shifts can be challenging in large facilities. In this facility, poor communication was a barrier to providing best-practice care to prevent PPH. They managed to improve communication using four main changes. This enabled them to improve oxytocin administration no matter when a patient delivered and ensure standard care. These changes can be tried in other facilities also struggling with communication issues between shifts.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or United States Government.

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project
University Research Co., LLC • 7200 Wisconsin Avenue, Suite 600 • Bethesda, MD 20814 • USA
Alps Building, 1st Floor • 56 Janpath • New Delhi 110001 • India

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Scaling up quality improvement to reduce maternal and child mortality in Lohardaga District, Jharkhand, India

Summary

Lohardaga District in Jharkhand State has high rates of infant mortality, and State authorities recognized that the district needed additional support to reduce mortality. The USAID ASSIST Project initially started supporting four facilities to improve routine care of mothers and new-born babies. The facilities' success in ensuring that nearly all mothers and newborns were receiving quality routine care prompted the district health authorities to scale up quality improvement initiatives to five other health centres and 29 sub-centres. The project supported district health authorities to develop a strategy to scale up quality improvement work in these sites through the government system, using government resources. Quality of care has also improved in the five scale-up facilities, and district officials have taken steps to scale up their quality improvement strategy to the rest of Lohardaga's facilities.

Lohardaga District is located in the south western part of Jharkhand State in the tribal belt of Chotanagpur plateau. It was identified by the State government as requiring additional support to reduce maternal and child mortality. Lohardaga has an infant mortality rate of 53, which is the worst of all districts in Jharkhand and well above the state-wide rate of 36 deaths per 1000 live births.

The USAID ASSIST Project started work in Lohardaga in January 2014 and initially supported four facilities to establish quality improvement teams. The facilities were chosen based on delivery load and account for 42.3 percent of institutional deliveries in the district. ASSIST staff first trained the teams in the basics of quality improvement in a classroom and helped them plan their first improvement projects. The teams decided to work on improving routine care of mothers and new-borns and focused on improving: 1) the administration of oxytocin within one minute of delivery to prevent post-partum bleeding, 2) that babies get all elements of essential new-born care, and 3) the identification of post-partum complications by checking vital signs and clinical status.

To achieve these aims, the facility staff started to use what they had learned about quality improvement after they returned to their facilities. Many of their efforts involved cleaning and organizing their respective facilities so that it was easy to provide routine care to mothers and babies and improving their data systems so that they could track their progress and make decisions about what to do next. ASSIST staff visited these facilities each month to provide additional support on quality improvement. By April 2014, all four facilities in the district were performing better, and almost 100 percent of mothers and new-borns were receiving quality routine care.

During a monitoring visit, the District Reproductive & Child Health Officer (DRCHO) and Additional Chief Medical Officer visited some of the ASSIST-supported sites and saw that they were was visibly different from other facilities in the district. In particular, they were impressed by: 1) the organization and

JUNE 2015

This case study was authored by Rashmi Singh, Rakesh Kumar, Dharm Pal Taneja, and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

cleanliness of the labour room, 2) the strong infection control practices in place, 3) the data about quality of care issues, and 4) the evidence showing improvements in quality of care.

Supporting government systems to incorporate quality improvement in their existing systems

Based on what he saw on the ground, the DRCHO requested ASSIST support to scale up their activities to strengthen intrapartum care in other facilities in the district. ASSIST staff replied that they would not be able to move to new facilities but that ASSIST would help the district health authorities develop a strategy to scale up quality improvement work to new facilities through the government system, using government resources.

The plan had three main elements:

1. *Build the quality improvement skills of frontline workers*: ASSIST supported the district to provide initial classroom training on quality improvement methods and to pick the first improvement projects for a facility.

2. *Set up a management system to support quality improvement work in the facilities*: No one completely learns quality improvement in a classroom. It requires on-site mentoring as people learn these new skills by real work. District systems currently do not have a specific system to provide that mentoring but they do have many staff who have supportive roles on paper but who are often underutilized. The district felt that the management system should be formed by training lady health visitors to act as improvement coaches at the sub-centre level and block medical officers and block program managers to act as coaches at the facility level. These coaches have three roles: 1) to provide on-site support to people learning quality improvement, 2) to communicate up the chain of command when a problem was identified that cannot be solved at the local level, and 3) to share learning between different improvement teams. ASSIST staff provided classroom training to these coaches and is also accompanying them on coaching visits to build their skills providing quality improvement coaching. As these coaches build their skills, they will take over from ASSIST staff as quality improvement trainers and resource staff for the district.

3. *Increase the ability of leaders to engage in quality improvement activities*: For quality improvement initiatives to be sustained and to spread further, high-level leaders need to be involved. To ensure that district leaders are involved in using quality improvement to address their priority problems, the district decided to use the monthly review meeting platform to review and share the progress of the quality improvement work of the facilities.

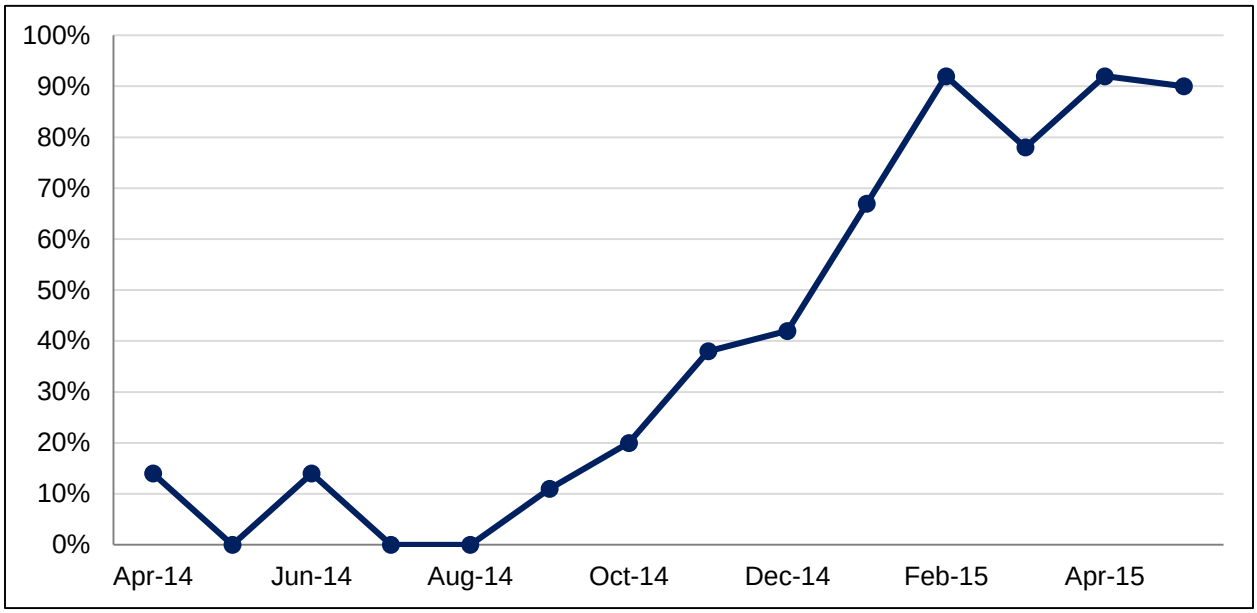
Initial results of scale-up

New quality improvement teams were formed in five health centres and started improvement projects in December 2014; the 29 additional sub-centres started quality improvement work in April 2015. After initial classroom training by ASSIST, these teams are being supported to improve quality of care using district resources. For example, district funds finance on-site support in applying quality improvement approaches, and regular district meetings now have time allotted to review quality improvement progress. The teams are already making progress on improving routine care. For example, before December 2014, there was no Vitamin K, towels for new-borns, or sterile cord clamps at any of the five health centres. This has been addressed, and now almost 100 percent of babies are receiving these elements of essential new-born care.

In addition to fixing facility-level problems, building QI teams at multiple levels and a cadre of QI coaches to support these teams allows the district to address more complex issues that are caused by problems at multiple levels of the health system. For example, the Jowang Primary Health Centre, one of the five facilities that started quality improvement work in December, had very few deliveries. Most women in the catchment area choose to deliver at home because they saw limited value in getting health services. This was partially due to the fact that the care they were receiving at the facilities was poor. Specifically, the

sub-centres feeding into Jowang did not have any way of measuring haemoglobin or blood pressure, and women did not receive good care during antenatal care (ANC) visits. This led to low confidence in the health centre and low care-seeking behaviour. The Jowang quality improvement team worked with the block program officer and sub-centre staff to provide the right equipment and clarify what should happen at ANC visits in the sub-centres feeding into Jowang. They also involved the Sahiyaas (community health workers) in identifying eligible couples, telling them about the improvements at the sub-centres, and explaining the value of seeking care early. This has led to a substantial increase in the percentage of women accessing antenatal care in the first trimester (Figure 1). The teams are currently working on efforts to improve institutional delivery.

Figure 1: Percentage of pregnant women registered in the first trimester (within 12 weeks) out of total new ANC registered in the month, Jowang Public Health Centre, April 2014-May 2015



Conclusion

After seeing the progress in four health centres, the district officials want to scale up the quality improvement approach to all facilities in Lohardaga. ASSIST is now helping them build a system to do so. The district is currently using their own staff and resources to support an additional 34 facilities to scale up quality improvement activities. This means that three of the five blocks (sub-district administrative structures) in the district have set up management structures to support quality improvement activities in their facilities. These facilities account for 54% of all facilities in the district and provide care to roughly 85% of all institutional deliveries or 40% of all deliveries (institutional delivery rate in Lohardaga was 48% in 2011). Initial results show that the system is working and that care in the sites supported by the government is improving. ASSIST will continue to support the district to scale up to the remaining blocks and facilities and to support improvement teams to solve more complex issues.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or the United States Government.

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Increasing facility efficiency by improving triage of antenatal care of pregnant women in FRU Charkhi Dadri, Bhiwani District, Haryana, India

Summary

Charkhi Dadri is a First Referral Unit (FRU) in Bhiwani District in Haryana State and one of four facilities in Bhiwani that is being supported by the USAID ASSIST Project. On an average, about 350 to 400 antenatal care (ANC) cases are seen in Charkhi Dadri per month. The facility's staff found that the waiting time for pregnant women to receive ANC services was extremely long due to inefficiencies in their triaging. The facility formed team which used quality improvement methods to streamline ANC services. This led to: 1) women spending less time in the clinic, 2) medical officers having more time to attend to women individually; 3) higher compliance with obstetric history taking, fundal height examination and counselling; and 4) increase in identification of women with high-risk conditions.

Background

Charkhi Dadri is a First Referral Unit (FRU) in Bhiwani District in Haryana State. It is one of the four facilities in which the USAID ASSIST Project is providing support through a district quality improvement (QI) coach to improve care under the Government of India's RMNCH+A strategy. Charkhi Dadri caters to approximately 125 deliveries a month or eight percent of all deliveries in public health care facilities in the district. On an average, about 350 to 400 antenatal care (ANC) cases are seen in the facility per month. There are two Medical Officers (MOs) and two Auxiliary Nurse Midwives (ANMs) available for providing ANC services six days a week.

Problem identification in ANC triage

Pregnant women have to interact with various staff at Charkhi Dadri to receive different elements of antenatal care. This includes the registration clerk, Medical Officer, staff nurse, ANMs, ultrasonography (USG), laboratory technician and pharmacist. It was long felt by the facility in-charge and staff that the ANC process was cumbersome, with both staff and pregnant women wasting much time which ultimately affected the quality of ANC services and decreased patient satisfaction. The team decided to use the quality improvement skills that they had learned from the USAID ASSIST project to address this problem.

The team found that a woman's waiting time was unnecessarily increased because of several superfluous and repetitive steps:

1. Inefficient registration- There was only one queue available for both general patients attending outpatient department and for pregnant women. The pregnant women had to register first at the general registration desk and then go to a separate room for ANC registration. This led to time lost in queuing for general registration.

2. Repetition: After general registration, women were required to go to the post-partum care (PPC) room for ANC registration. Following this, they were required to visit the MO's room to obtain handwritten orders for laboratory investigations on an outpatient department (OPD) slip. After the

JULY 2015

This case study was authored by Kapil Singh Jadaun, Enisha Sarin, and Pankaj Dhingra of University Research Co., LLC (URC) for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

laboratory examination of hemoglobin and albumin, they were required to come back to the PPC room for height and weight measurement as well as blood pressure check, along with the update of their ANC records by an ANM. After this, they had to visit the MO's room for checking their lab records and for medical examination. Thus, there were numerous steps which made ANC very lengthy.

3. No time-saving methods: Lab instructions were written by hand, which was time-consuming.

ANC flow process measurement

The team decided to improve this process. The aim was set as "Improvement in the ANC triage in order to reduce waiting time and improve quality of antenatal care in the facility." Although it was well known that ANC was lengthy, what was not known was how much time a pregnant woman spent at each step of the ANC process and how much time could be saved by improving the process. As a first step, the team decided to measure the time taken by pregnant women to complete the ANC cycle. This was expected to provide concrete results used to measure improvement and also to advocate for changes in the ANC triage. The QI team randomly chose three pregnant women on three separate days and monitored them for the total time they spent from entry to exit in addition to time measured at each step. In order to measure time for each ANC step, the staff used a stop watch and were instructed to write down the exit time on the OPD slips of the selected pregnant women, which were marked with a coloured pen for identification. By doing this, the team was able to obtain the individual time spent for different ANC services. Overall, a pregnant woman took between 115 and 153 minutes to receive ANC services at Chakri Dadri.

Testing of change idea

On analysing the results from the time measurement, the team found that a pregnant woman's time receiving ANC services could be reduced and the process streamlined by introducing the following changes:

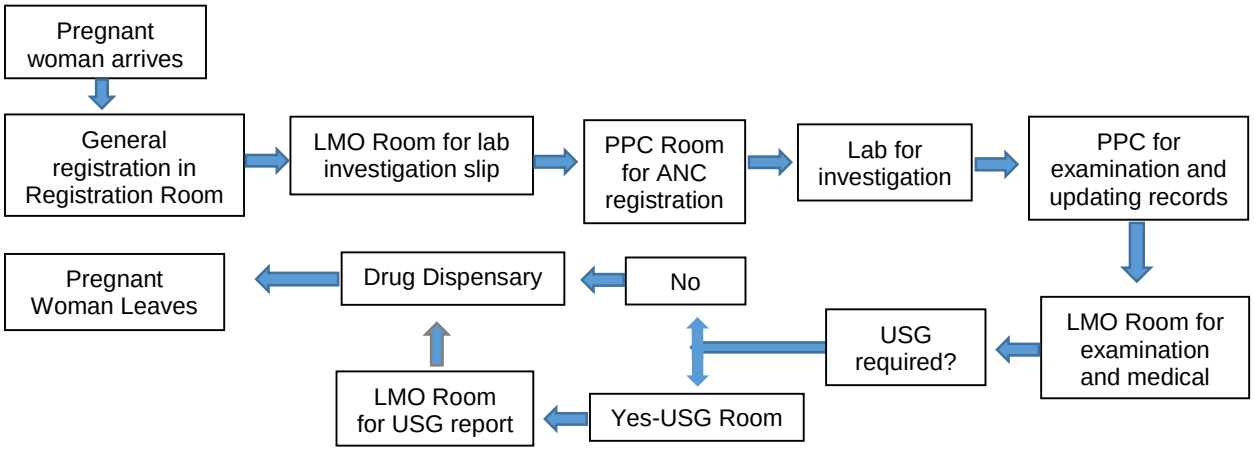
1. Remove general registration for pregnant women and have them register only for ANC.

2. During the first ANC visit, waiting time in the MO room and then in the PPC room were potential steps to remove. Pregnant women could be provided with OPD slips with lab requirements in the ANC registration room itself, so that they no longer would have to visit the PPC room and LMO room. They could go directly to the lab for investigation.

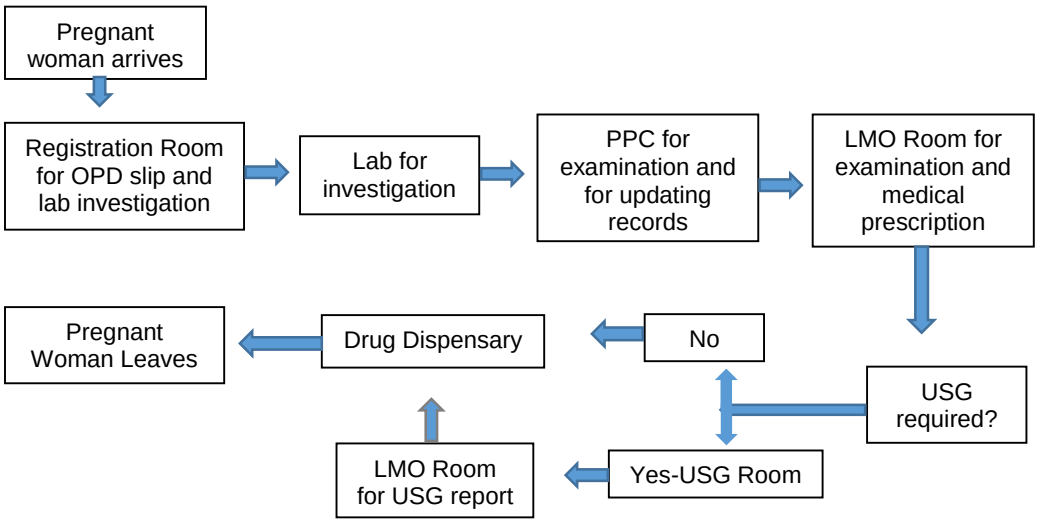
3. Lab investigation slips could be stamped rather than being hand-written as the latter is a more time-consuming process.

These changes reduced the steps of ANC triage as shown in the before and after flow charts below.

ANC triage before intervention



ANC triage after intervention



After testing of change idea

These changes were incorporated and the time again measured for three chosen pregnant women at separate times. It was found that between 29 and 31 minutes were saved for every ANC visit with the new triage, and the time for different services was reduced as shown in Table 1.

Table 1. Average time taken by pregnant women at each ANC service before and after change idea

ANC steps	Time taken (before intervention)	Time taken (after intervention)
General registration	11-17 min	3-4 min
LMO room for lab investigation slip	12-15 min	0
PPC room for ANC registration	7-10 min	0
Lab investigation	22-28 min	20-25 min
PPC for examination & record updating	7-9 min	11-13 min
LMO room for examination	24-30 min	21-25 min
Ultrasonography	20-31 min	21-31 min
LMO room for USG report	5-4 min	4-5 min
Drug dispensary	7-9 min	6-10 min
Total time required	115-153	86-113 min

What were the outcomes of these changes?

On subsequent days after implementing these changes, it was observed that the MO had more time to spend with pregnant women. Previously the MO had to see one pregnant woman twice, the first time unnecessarily when she had to write and hand out lab investigation slips that doubled the patient attending time. There was overcrowding, noise, and difficulty in patient management in the MO room. After the changes, the following outcomes were reported:

> *Undue rush of beneficiaries is no more in the examination room. It has become easier and more comfortable to examine pregnant women when there is no unnecessary movement of patients in the room. Abdominal examination is an important part of examination, and we are doing it more efficiently*.
>
> -Medical Officer, Charkhi Dadri FRU

1. Number of steps that required each pregnant woman to interact the MO with was reduced by half, leaving the MO more time to attend to women individually.

2. There was a reported increase in performance of other key tasks, such as obstetric history taking, fundal height examination and counselling regarding nutrition, consumption of medicine, and identification of danger signs of pregnancy.

3. There was increase in identification of high-risk cases after three to four months since implementation of the change idea (Table 2). Immediate changes in identification were not seen as it takes time for a new process to be established in an existing system and become a regular practice.

Table 2. Number of high-risk pregnancy cases detected in ANC

Cases	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15
Total ANC	307	285	314	297	227	215
High-risk pregnancy	0	2	1	2	36	19

How was the change institutionalized?

After successfully testing the change idea, the team met with the Senior Medical Officer (SMO) and informed him about the results. This change was appreciated by the SMO because it was not forcibly imposed on the facility but implemented with the support of internal facility staff. With consensus it was decided to incorporate these changes in the ANC triage in the facility. A meeting was organized in which all staff members were informed of the new process of ANC examination.

It's a win-win situation for beneficiaries and facility workers. We are surprised to see how small changes can improve system efficiency.

-Facility Gynaecologist, Chakri Dadri FRU

Conclusion

Application of quality improvement principles in improving triage can increase efficiency without adding any extra human and material resources.

Replication of this intervention in other facilities can save time of pregnant women and make the health system more efficient. Improved patient flow, greater patient and provider satisfaction and reduced waiting times would allow for service delivery to more patients using the same staff following the implementation of triage.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or United States Government.

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Increasing institutional deliveries through improving community-facility linkages in Mewat, Haryana State, India

Summary
Empowering communities and frontline health workers to use quality improvement (QI) methods to achieve better antenatal and intrapartum care, the USAID ASSIST Project supported a community QI team in Mewat, Haryana. The team observed that fewer than 20 percent of pregnant women in Salaheri village had institutional deliveries due to rumours that male doctors delivered babies and staff did not treat patients well. The QI team addressed these issues during regular home visits by frontline workers, leading to some improvement. To further improve the relationship between pregnant women in the community and the facility, the team arranged an exposure visit to a Community Health Centre. The exposure visits were important in reducing the community's negative impressions of the quality of care in facilities and also helped health workers identify other gaps in their own performance.

Background
The USAID ASSIST Project started providing support in Mewat, Haryana by helping the community form a QI team at the sub-centre in May 2014. The team was composed of the auxiliary nurse midwife (ANM) from the health sub-centre, community health workers knows as accredited social health activists (ASHAs), community social workers known as *anganwadi* workers (AWWs), and members from a women's group.

The team decided to try to increase the number of women choosing institutional delivery. The first change that they made was to prepare a list of pregnant women known to be in their third trimester. Based on this list, ASHAs then visited these women's homes to talk about the importance of institutional delivery (the second change). This led to an improvement from about ten percent women delivering in facilities to 40 percent. In October 2014, the ANM was transferred to another sub-centre, which led to poor counselling at the sub-centre and a reduction in of home visits by the ASHAs. The team was worried that this would lead to a decrease in institutional deliveries. The team also discussed that despite the home visits, there were still many rumours in the community that male doctors delivered babies and that staff did not treat patients well. To solve this problem, the team came up with a third change idea: Organize an exposure visit of pregnant women to a facility. Twenty-nine women came to the first exposure visit at the Community Health Centre in Nuh.

The exposure visits were important in reducing the community's negative impressions of the quality of care in facilities. They also served as a forum to identify other issues which were hindering women coming for institutional deliveries. For example, the community women complained that one reason for low institutional delivery was that ambulances often did not come on time. The team then collected data on ambulance use by the community women. The improvement team is now working with the three ambulance drivers in the area to provide timely pick-up of women who are about to deliver.

Exposure visits also helped health workers identify other gaps in their own performance. Previously, the ASHAs and the ANM provided ANC services without consideration of whether the women she served were benefitting or not. However, by the end of the exposure visit, health workers were interested in the type of delivery the 29 women had. Because of their interest, they set up systems to improve follow-up

SEPTEMBER 2015

This case study was authored by Ruchi Jha and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

and tracking of women receiving ANC and have been proactive about reminding pregnant women of their next visit, following up their anaemia and other management issues. Based on this initial success, the exposure visit idea is being scaled up in Mewat and the neighbouring district, Palwal.

Akbari's Story

Photo: Rakesh Kumar

I married at the age of 18 years and gave birth to my first child after two and half years of marriage. Since marriage, conceiving and delivering children has been part and parcel of my life. I never discuss childbirth or problems related to it with anybody, not even with my husband.

But last year when an ASHA visited my home and learned that I missed my period, she advised me to go for a pregnancy test. After the pregnancy test, my sixth pregnancy was confirmed. She took me to the ANM *Bahenjee* (Sister) for registration. After a few months and some more tests, I found out that I was pregnant with twins. For the first time in my life, I was afraid of pregnancy. I was nervous and restless. I had pain and cramps in my legs since the first month of the pregnancy. Lack of blood in my body led to me feeling extremely weak, and the doctor prescribed injections four times to increase blood.

I was at high risk of anaemia due to pregnancy with twins at the age of 35 and five previous pregnancies. I was confused as I did not understand the pregnancy risk and both ANM and ASHA advised that delivering twins at home could be fatal.

Despite knowing there were complications with my pregnancy, I was sceptical about delivering in a hospital as I opted for home delivery for all previous five pregnancies. I also never had visited the hospital. I heard that male doctors delivered babies and that they behaved badly with pregnant women and sometimes they even slapped patients.

One fine day, Sunita, an ASHA, invited me to participate in a group meeting for pregnant women organized by an ANM to discuss why delivering baby at home is dangerous and the benefits of institutional delivery under the Janani Suraksha Yojna programme. We talked about our fear of hospital and male doctors. After listening to us, the ANM and ASHA asked us to go with them to the Community Health Centre (CHC) at Nuh to see the labour room and the services that the doctors and nurses provide to pregnant women.

Photo: Rakesh Kumar

This visit to hospital gave a great sense of relief to me. Along with a group of other pregnant women, I went to the CHC and interacted with Lady Medical Officer and Staff Nurse. The Lady Medical Officer conducted my fourth ANC check-up on the same day and strongly advised me to deliver at hospital because of the high risk of my pregnancy.

I realized hospital is a good place for child birth because of the doctor's expertise, medicine and equipment. While coming back from hospital, I was thinking, if I opt to deliver at home and died during labour, my death would jeopardize the lives my new-born twins and my other children. The thought of death compelled me to talk to my husband and mother-in law, and I convinced them that this time I will deliver at hospital.

In ten days following my exposure visit, I went to the CHC again for delivery. Sister Babli, a Staff Nurse at Nuh CHC took good care of me during the delivery. She never shouted at me.

When my babies were finally delivered without any difficulty and handed over to me for breast feeding, I felt that all three of us survived with my single decision to go to the hospital for delivery. After this experience, whenever I meet a pregnant woman, I strongly recommend that hospital delivery should be the first choice, not the last.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or United States Government.

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Improving hand washing among parent attendants entering the new-born intensive care unit of Ram Manohar Lohia Hospital, New Delhi, India

Summary
In its new-born intensive care unit (NICU), Ram Manohar Lohia Hospital (a central government hospital) provides specialised care to sick new-borns. Running low on staff, the hospital staff encouraged parents and attendants of sick new-borns to be involved in care for their babies. This, however, also posed a high risk of infections being carried into the unit by caregiving attendants. Staff found that that handwashing behaviours were poor among parent attendants. With facilitation from USAID ASSIST, a quality improvement (QI) team of hospital staff was formed to improve hand hygiene practices among attendants. From a baseline estimate of around 20 percent of attendants complying with hand hygiene standards, the team planned to reach a target of 80 percent over eight weeks by introducing a series of changes. At the end of nine weeks, the QI team met their aim—80 percent of attendants were following standard hand hygiene practices.

Introduction

The new-born intensive care unit (NICU) in Ram Manohar Lohia Hospital at New Delhi provides special care to sick new-borns. Severely ill new-borns, who cannot be taken care of in other hospitals of the region, are referred to this unit. The unit provides highly specialised care to these new-borns. Running low on staff, they encouraged parents and attendants of sick new-borns to be intensively involved in provision of care for their babies. With this close involvement in care, these babies receive much-needed emotional support that is usually lacking in intensive care settings. This, however, also poses a high risk of infections being carried into the unit by caregiving attendants.

STEPS IN QUALITY IMPROVEMENT

- STEP 1: IDENTIFY A PROBLEM, FORM A TEAM AND WRITE AN AIM STATEMENT
- STEP 2: ANALYZE AND MEASURE QUALITY OF CARE
- STEP 3: DEVELOP AND TEST CHANGES
- STEP 4: SUSTAIN IMPROVEMENTS

Washing hands while entering the unit is a simple and effective way of preventing these infections. The unit staff conducted a daily orientation for the caregivers. This included a session on what hygiene practices to follow while entering. However, they still found that that handwashing behaviours were poor among attendants.

In May 2016, the head of the NICU attended a workshop on quality improvement (QI) organized by WHO's Southeast Asia Regional Office (SEARO) and USAID and led by staff from All India Institute of Medical Sciences (AIIMS) and the USAID ASSIST Project. Motivated by learning about the success of QI in the South Asian region, she committed to apply QI approaches to improve the safe engagement of parent-attendants of new-borns in the unit. With facilitation from ASSIST, she formed an improvement team consisting of three nurses and two unit coordinators. The QI team decided to improve hand hygiene practices among attendants entering the unit. From a baseline estimate of around 20 percent of attendants complying with hand hygiene standards while entering the unit, they planned to reach a target of 80 percent over eight weeks.

SEPTEMBER 2016

This case study was authored by Ankur Sooden of University Research Co., LLC (URC) for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T. H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

Measuring hand hygiene practices and reorganising the workplace

To understand the process of washing hands properly, team members mapped the process by washing their own hands and figured out the amount of time it takes to wash hands as prescribed. The team then started observing ten attendants daily (selected randomly), to measure compliance with handwashing while entering the unit. They also took notes while observing, to understand the steps being followed during entry. These observations pointed to challenges related to attendant flow, since the changing room, handwashing station, and entrance were not located in sequence. They decided to continue with ten observations a day over the next eight weeks to monitor progress towards their QI aim. They understood that attendants could be washing hands better while being observed. They decided to spread these ten observations equally over day, evening, and night shifts.

A planned shift to a new building provided the team an opportunity to fix workplace organisation and attendant flow issues. Learning from the observations, they organised this new unit in a manner that made it easy for attendants to comply with hand hygiene. Handwashing station, soap, towels, and gowns were kept in a linear sequence. The new unit also had plans to install surveillance cameras. Team used this opportunity to get these cameras installed in a way that made it easy to record and monitor hand hygiene compliance during entry. In due time, as surveillance cameras were installed in the new unit and recordings were available to observe later at a convenient time, the team started using surveillance videos for random sampling and observation. This facilitated the task of data collection related to their QI aim.

Understanding attendant behaviour and intervening to change it

Three weeks into their attempts to improve, the team found it difficult to find causes for poor compliance and to develop ideas of change for further improvement. Pressed with questions as to why attendants would not comply, they conducted individual and group interviews with some attendants to analyse the problem further. The findings of the interviews showed that attendants believed they were cleaning their hands properly. Understanding that it was attendants' skills rather than intent to wash hands that were responsible for non-compliance, new ideas were developed around building skills.

The team realized that they needed to make the existing training for caregivers more interactive. The team tried adding a step-by-step demonstration in training. They also tried to place different nurses and coordinators as trainers to see if that could bring improvement. Both these ideas worked, and there was an increase in compliance with hand hygiene. Encouraged by this success in improving the orientation training for attendants, the QI team made a further attempt at making it more interactive. This time they introduced a component of peer-to-peer demonstration of washing hands by attendants which further improved handwashing.

The team next tried using Glogerm™, a proprietary product that when applied on hands, glows in UV light. The unit head had seen the practice in a hospital in Russia, where providers apply Glogerm before washing hands and see for any unwashed areas glowing in ultra violet (UV) light after washing. Any areas not adequately cleaned by soap would glow in UV light. The team thought of asking attendants to apply Glogerm before washing hands and examining under UV light later to look for areas of hand not cleaned by soap. The idea didn't work out well because of inadequate and irregular Glogerm supplies and difficulty in using UV torch. Some members also thought that this would be expensive to sustain.

Introducing self-evaluation as a means to improve

The team thought of various ideas to give attendants some feedback on how well they washed their hands. The first idea they tried was asking attendants to observe each other and correct if any step of handwashing was wrong or inadequate. They tried this for two days but had to immediately stop with attendants feeling bad about being observed and not taking the feedback positively. To avoid unpleasant feedback among attendants, the team decided to show videos to attendants from the previous day, allowing the attendants to describe how they were not complying with good handwashing technique. This idea also failed as the team realised that some attendants were not comfortable being shown as an example. Still, the team members were keen on using videos of

correct and improper hand washing. They picked two videos every day during observation, one where the attendant is following all essential steps of handwashing for an adequate duration, and another where there was poor compliance, to show as a good and bad example, respectively. This worked really well, and a sudden increase was seen in the improvement indicator.

Table 1 summarises the change ideas that the team developed and tested to increase proper hand hygiene by parents and other family attendants. **Figure 1** shows the results of the NICU QI team's efforts to improve caregiver hand hygiene.

Table 1: Change ideas developed by QI team to improve parent-attendant handwashing behaviour

Change Ideas	Results
Ensured regular supplies of consumables and sequential arrangement of NICU workspace	Positive impact
Rescheduled attendants' training, developed a training roster, and changed the trainer periodically	Positive impact
Improved training methods by making caregiver orientation sessions more interactive and engaging mothers in peer learning where they demonstrate handwashing to each other	Positive impact
Asked attendants to use Glo Germ™ before handwashing and demonstrated unwashed areas using ultraviolet torch	Discontinuous / mixed impact
Asked attendants to supervise their peers while handwashing and provide feedback	Negative impact
Presented surveillance footage of handwashing by the attendants present in a training session to help them self-evaluate	Negative impact
Used surveillance footage of handwashing by two attendants who were not present in that training session as a good and a bad example of how to wash hands while entering NICU, and asked them for feedback	Positive impact

Success, sustaining the gains, and spread

At the end of nine weeks since they set out to improve hand hygiene among attendant caregivers, the team achieved their improvement aim. Eighty percent of attendants were following standard hand hygiene practices while entering the NICU.

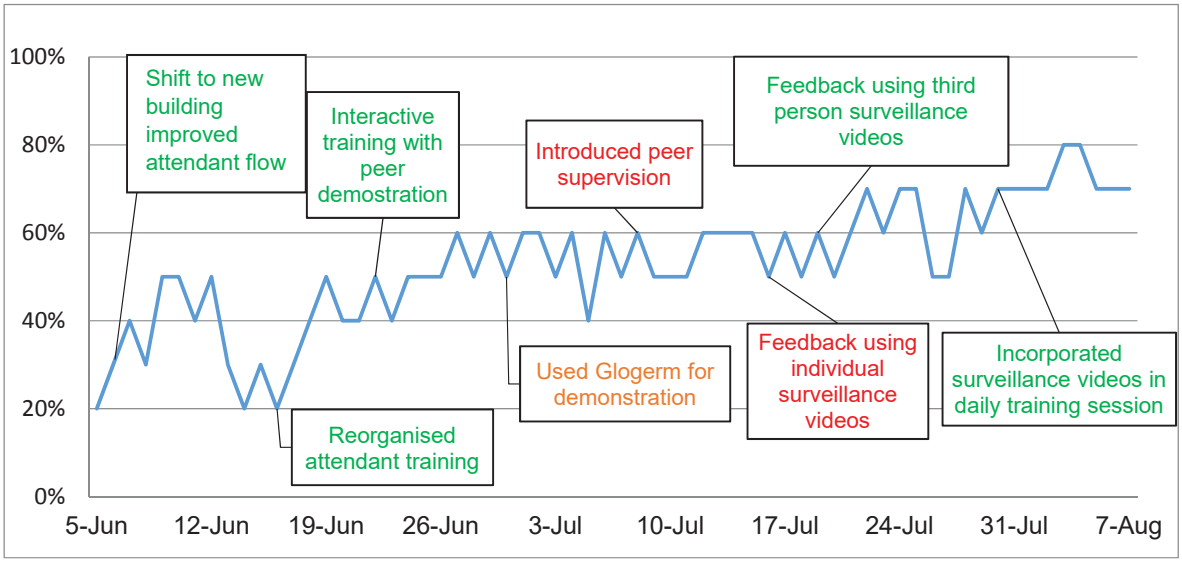
They are now implementing the changes they found successful to sustain the gains of their first improvement project. The training curriculum sessions are under revision to include more demonstrations and interactive sessions. A training calendar with rotating trainers is in place, and staff is developing a list of key messages for orientation of new staff who join this unit in future.

They are continuing with collecting data, less frequently now, for handwashing among attendants, to understand if the improvement in their care system sustains.

The QI team is enthusiastic about improving more components of care provided by the attendants of sick new-borns admitted to their unit. They have set new aims to improve use of expressed breast milk for admitted new-borns and increasing the duration of kangaroo mother care for new-borns. They have documented their efforts to showcase as an innovation in a national summit of good practices in healthcare. They have also developed a tool to measure quality of care provided by parent attendants, so that any weak areas maybe identified and efforts are made to improve them.

RML hospital NICU leads efforts in India on involving attendants in caregiving for sick new-borns. They plan to spread these learnings to other new-born care units in hospitals across India on similarly improving care provision by attendants of sick new-borns. The unit head believes they need to do more projects and develop their own capacities on improving care before mentoring other units. They are now running two new quality improvement projects that aim to improve use of breast milk among new-borns in the unit and increasing the duration of kangaroo mother care received by sick new-borns.

Figure 1: Proportion of parent-attendants following hand hygiene protocol before entering NICU in Ram Manohar Lohia Hospital, 5 June 2016 - 7 Aug 2016



This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or the United States Government.

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project
University Research Co., LLC • 7200 Wisconsin Avenue, Suite 600 • Bethesda, MD 20814 • USA
LMR House, 2nd Floor • Green park Ext. • New Delhi 110016 • India

CASE STUDY

Fathers helping babies survive: A case study from Ganesh Das Hospital, Shillong, Meghalaya

Summary

In December 2016, the USAID ASSIST Project started providing support to improve the quality of newborn care at Ganesh Das Hospital, one of the busiest hospitals in the state of Meghalaya. Of the 1,800 babies admitted to the Sick Newborn Care Unit (SNCU) of GDH each year, the majority are either preterm or low birth weight (LBW) babies. Kangaroo mother care (KMC), in which the mother or another caregiver provides the newborn with skin-to-skin contact, is a simple and cost-effective intervention to save the lives of premature or LBW newborns by regulating body temperature, promoting breastfeeding, enhancing brain growth and development, and reducing the risk of infection and other morbidities. When the intervention began, babies in the SNCU were receiving about an hour of KMC per day, well short of the recommended 9-12 hours per day for high-risk infants. By involving fathers and other caregivers in the provision of skin-to-skin care, GDH was able to increase KMC that premature and low birth weight babies received to an average of six hours per day.

Background

Ganesh Das Hospital (GDH), in Shillong, India, is a government health facility that serves a population of 3.5 lakh (350,000) and conducts approximately 12,000 deliveries annually – or 25% of total institutional deliveries in the state. This is one of the busiest hospitals in the district providing both maternal care and specialized care to sick newborns. The hospital admits an average of 1,800 babies in the Sick Newborn Care Unit (SNCU) annually. Shillong, the capital of Meghalaya, is a predominantly mountainous district with unfavorable weather conditions. This district is primarily inhabited by Khasis, a matrilineal community, in which women earn a livelihood for their families while also looking after the well-being of their children. This, coupled with challenging terrain and weather, makes it difficult for women to access and use the healthcare services. The infant mortality rate of Meghalaya is 42 per 1,000 live births[1]; the highest among all Northeastern states. At Ganesh Das Hospital, despite the provision of specialized care, an average of 180 newborns still die annually. A lack of proper hospital infrastructure, human resources, medical supplies and equipment as well as inefficient processes are some of the factors influencing quality of care, and consequently mortality, at GDH.

[1] Indian Government, Office of the Registrar General, Vital Statistics Division, Sample Registration System (SRS) Bulletin, ISSN 0971-3549 (New Delhi, India, December 2016), 50(2), http://www.censusindia.gov.in/vital_statistics/SRS_Bulletin_2015.pdf.

MARCH 2017

This case study was authored by Parika Pahwa of University Research Co., LLC (URC) and Dr. Hunsi Giri and Dr. Batrity Grace of Ganesh Das Hospital for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T. H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

Kangaroo Mother Care (KMC) in Ganesh Das Hospital

The USAID ASSIST Project started providing support to improve the quality of newborn care at GDH in December 2016. Of the newborns admitted to the SNCU, the majority are either preterm or low birth weight (LBW) babies requiring extra care to avoid illness and death from secondary preventable complications like hypothermia and infection. Kangaroo mother care (KMC), in which the mother or another caregiver provides the newborn with skin-to-skin contact, is a simple and cost-effective intervention to save the lives of premature or LBW newborns. This approach helps regulate body temperature, promote breastfeeding, enhance brain growth and development, and reduce the risk of infections and other morbidities.

The duration of KMC per baby in the SNCU of GDH was on average one hour per day per baby, which is very low in comparison to the present guidelines of 9-12 hours daily[2]. This, in turn, increases the length of stay of babies in the hospital and means that the beds of SNCU are occupied for a longer period of time, reducing the availability of beds for other high-need newborns. The hospital had been trying to improve in this area for several years but had not made much progress. So, the team identified this as the area of care that they wanted to address using quality improvement (QI) methods and set as their aim: "To increase the duration of KMC from an average 1 hour of KMC per day per baby to 5 hours of KMC per day in hemodynamically stable babies weighing less than 2 kg within 10 weeks".

A father and mother providing KMC to their premature newborn. *Photo credit: Dr. Hunsi Giri*

After the team agreed upon their goals, they then discussed the various reasons responsible for the limited duration of KMC. The factors identified were as follows:

- Mothers[3] lacked awareness of the benefits of KMC and the recommended duration of KMC per day to be provided to the babies.
- Mothers felt exhausted after delivery and were not comfortable sitting for long hours holding the baby.
- There was no separate KMC room, KMC gown, or reclining chair available.
- Staff nurses were very busy due to high admission load; therefore, they were not able to provide counseling to mothers effectively.

[2] Kangaroo Mother Care and optimal feeding of low birth weight infants: Operational guidelines for programme managers and service provider. New Delhi: Government of India, Ministry of Health and Family Welfare, Child Health Division; 2014. Available at: http://nrhm.gov.in/images/pdf/programmes/child-health/guidelines/Operational_Guidelines-KMC_&_Optimal_feeding_of_Low_Birth_Weight_Infants.pdf. Accessed March 25, 2017.

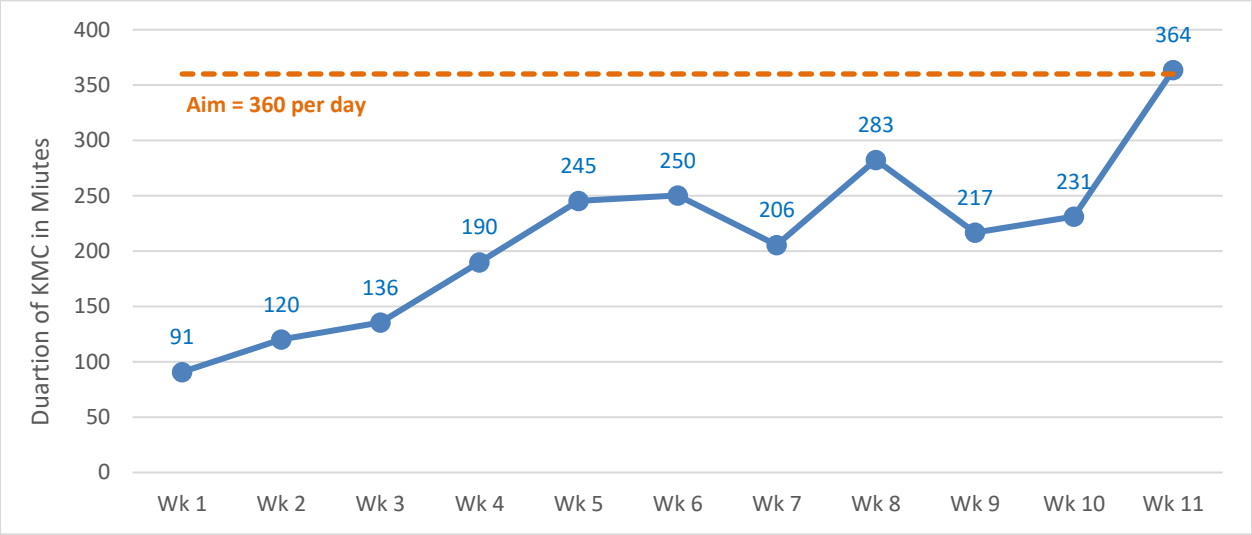
[3] The name Kangaroo Mother Care itself puts the responsibility on the mother to provide skin-to-skin contact, but inside the guidelines it is written anybody can provide care. Frequently, while mothers have been asked to do this job, the involvement of fathers or other relatives has been hardly explored. Moreover, even the nurses and other hospital staff are often not aware that skin-to-skin care can be provided by caregivers other than the mother. However, through the application of improvement methods to KMC, hospital staff at GDH began encouraging fathers and relatives to support mothers.

Based upon the analysis, the team developed and tested various change ideas as follows:

- Pediatricians taught nurses about the benefits and techniques of KMC.
- Nurses provided frequent counseling to mothers whenever they visited their newborn at the SNCU for breastfeeding
- GDH allocated a separate room for providing KMC.
- Hospital staff, mainly nurses, encouraged and counseled fathers, grandmothers, and other relatives to provide KMC to the baby.
- Nurses used smart phones and computers placed in the SNCU to show mothers and fathers videos of KMC, downloaded by the pediatrician from the government website, to teach them the right technique of providing skin-to-skin care.
- GDH engaged champion fathers and mothers – those who had applied KMC successfully – to encourage and counsel other parents.
- Nurses reviewed KMC duration data each shift to find out the actual causes of the low duration of KMC.

Results

Figure 1. Average number of minutes that babies were provided KMC per day in SNCU (by week)



Conclusion

With the involvement of fathers and other relatives, the average duration of KMC received by babies in Ganesh Das Hospital SNCU increased from an average of 1 hour per day to six hours per day over the course of the intervention. Throughout India, KMC caregivers are primarily mothers; however, the study revealed that fathers, along with other relatives, are seemingly interested in providing skin-to-skin care and participated actively in improving the health of their newborns. This will not only help the baby in early recovery, but also helped the parents to share caretaking responsibilities and increase the bonding between the father and baby; thus, improving the caregiving environment for their child. Both maternal and paternal care are equally important for the survival of preterm and low birth weight babies and the success of this intervention means the hospital team is trying to encourage more fathers to do the same.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or the United States Government.

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Using quality improvement to address asepsis during intravenous procedures among neonates at Swami Dayanand Hospital, Delhi

Summary

In May 2016, the USAID ASSIST Project began collaborating with the neonatal intensive care unit (NICU) at Swami Dayanand Hospital to increase the capacity of their staff to improve the quality of care in that department. The Swami Dayanand NICU serves around 120 infants per month, and many of these babies require intravenous (IV) procedures as part of their medical treatment. However, at the start of the improvement intervention, there were no standard protocols in place for any of the IV procedures being performed in the NICU and, therefore, the risk of infection was quite high. The quality improvement team, as their initial aim, decided to improve the use of aseptic technique while performing IV procedures in the NICU from 0% to 30% within four weeks. When the team met this aim, they continued and expanded their efforts. By using QI approaches, SDH achieved asepsis in 80% of phlebotomy and cannulation procedures carried out in the NICU within three months and initiated improvement work on central venous lines.

Background

Swami Dayanand Hospital (SDH) is a tertiary level care hospital that serves a population of 300,000 and performs 7,000 deliveries every year. The 15-bed neonatal intensive care unit (NICU) has a bed occupancy rate of 50% and is staffed by five pediatricians, six general doctors, 12 nurses, and two paramedical staff who provide around-the-clock services for the 120 newborn infants admitted on average per month. SDH had previously used quality improvement (QI) approaches to improve hand hygiene in other departments. The positive results of this work, as well as the positive results that other local hospitals had demonstrated through their QI efforts, motivated SDH NICU to try quality improvement methods to improve care of neonates in the NICU.

Intervention

In early May 2016, a senior consultant in the NICU requested that staff from the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project help train the NICU staff on using an improvement approach to address gaps in care. After this on-site training, the staff formed a QI team that consisted of two senior consultants – one of whom held the role of team leader – two senior residents, two junior residents, two staff nurses, and two technicians. The team decided, as their first aim, to improve the use of aseptic technique while performing intravenous (IV) procedures in the NICU from 0% to 30% within four weeks.

JUNE 2017

This case study was authored by Nigel Livesley, Ankur Sooden, and Parika Pahwa of University Research Co., LLC (URC) and Surender Bisht of Swami Dayanand Hospital for the United States Agency for International Development (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 authors would like to recognize Dr. ML Jaipal, Medical Superintendent, and the entire team of the Neonate Intensive Care Unit (NICU) of Swami Dayanand Hospital for their support of the improvement work described in this case. The USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T. H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

The team identified three common IV procedures being performed in the NICU:

- **phlebotomy**, which is a simple, quick blood draw;
- **cannulation**, a technique used for venous access for blood sampling and administration of fluids, medication, nutrition or any other blood products (not recommended for longer than two days); and,
- **central lines**, a procedure done in very sick babies who need an infusion of fluids, medicine, etc. for a longer period of time, usually several weeks or more. (This is a more complicated IV procedure, and chances of infection are very high.)

The team realized that there were no standard protocols in place for any of the IV procedures being performed in the NICU, and they worried that the risk of asepsis was, therefore, quite high.

Of the three IV procedures identified, phlebotomy was done in the largest numbers and seemed the easiest to fix. As a first step, the team decided to review the available literature to develop an appropriate asepsis protocol for phlebotomy. The team also agreed to record the number of blood samples taken during the following day shift to get a more accurate idea of how many of these procedures occurred in the NICU per day. The team also prepared a checklist to allow them to measure which steps of the protocol were carried out in each blood sampling procedure.

The team tested the draft protocol by trying it out in all blood samples taken in the next morning shift. Team members also thought to pre-arrange the sampling tray so that all the necessary items required to perform aseptic procedures were easily available. Discussion regarding the items to be kept in the tray happened via WhatsApp, and one of the team members volunteered to get it ready for the next morning shift.

Within a week of starting the QI intervention, the team had collected four days' worth of data and found that, on average, eight blood samples were being taken each day. They had also finalized the asepsis protocol and developed an accompanying checklist that measured: 1) the availability of equipment and supplies in the phlebotomy (blood sampling) tray and 2) provider adherence to the key process steps. A team member prepared a drop box in which to collect the completed checklists.

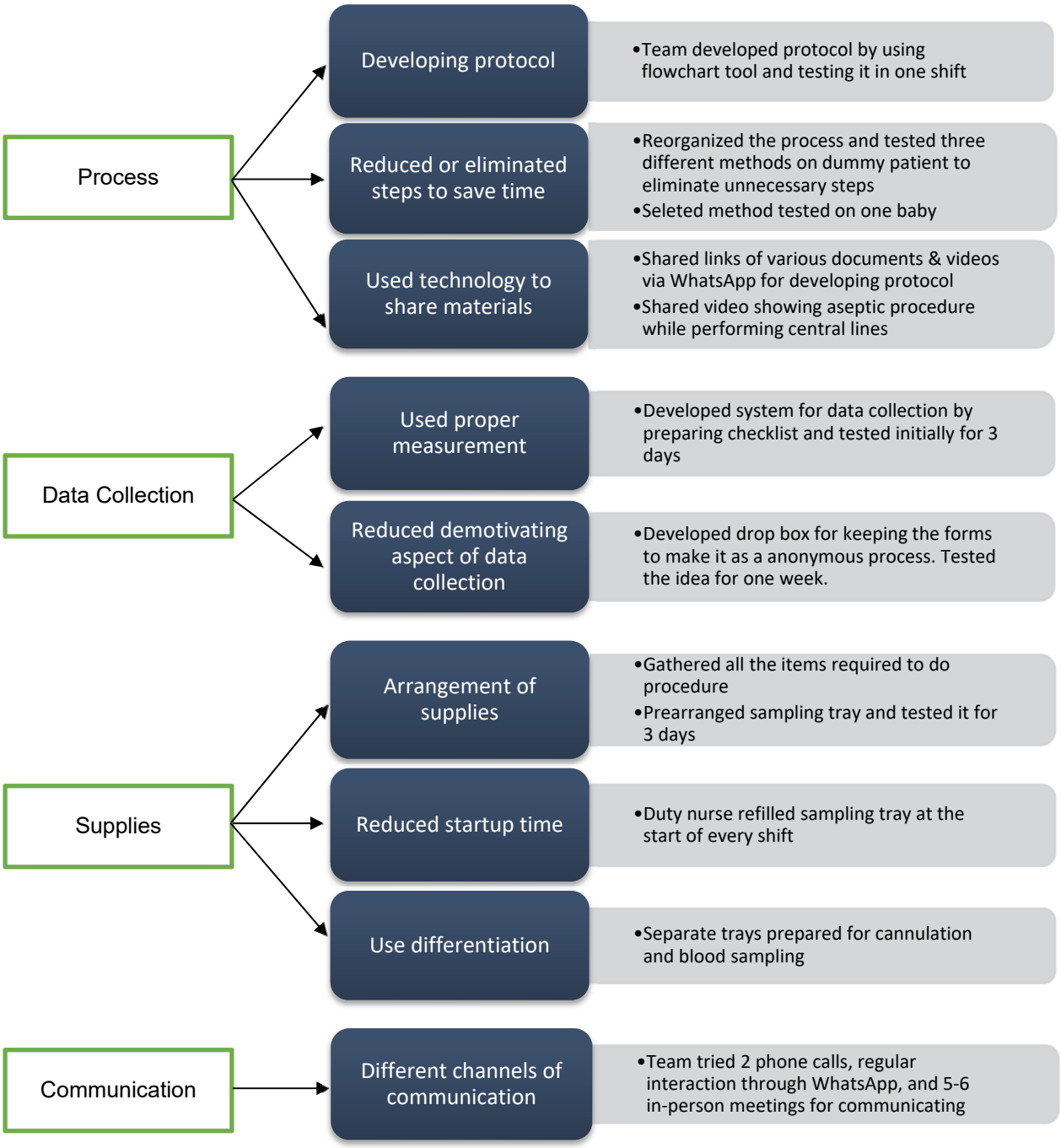
They planned to test the new protocol among all the babies requiring phlebotomy during the day shift for the next three days to learn:

- How easy or difficult is it to complete the checklist?
- What is the current performance level on each different step of the asepsis protocol?
- Are the current items in the tray sufficient to do the new procedure?
- Are there any negative, unintended effects of the new process for drawing blood samples?

A plan-do-study-act (PDSA) cycle is a process by which quality improvement teams can organize and try out a given change and then reflect on the usefulness of that change prior to implementing it on a larger scale. Together, the team reviewed the results of the changes they had tested through conducting PDSA cycles and observed that out of the 10 blood samples taken over the previous three days, the checklist was filled in eight cases, and the aseptic process adhered to in seven of the eight (87%) documented cases. These results were shared and discussed via WhatsApp, and the team leader and coach both expressed appreciation for the efforts taken. The coach asked about the lessons learnt from the PDSA cycles and next steps to be taken.

Over the course of several weeks, the team tried out various changes through 16 PDSA cycles that addressed steps in the blood sampling process, data collection, supplies, and communication among team members. **Figure 1** lists the changes tested and relates them to generic change concepts that have proven effective as strategies for improvement of any process.

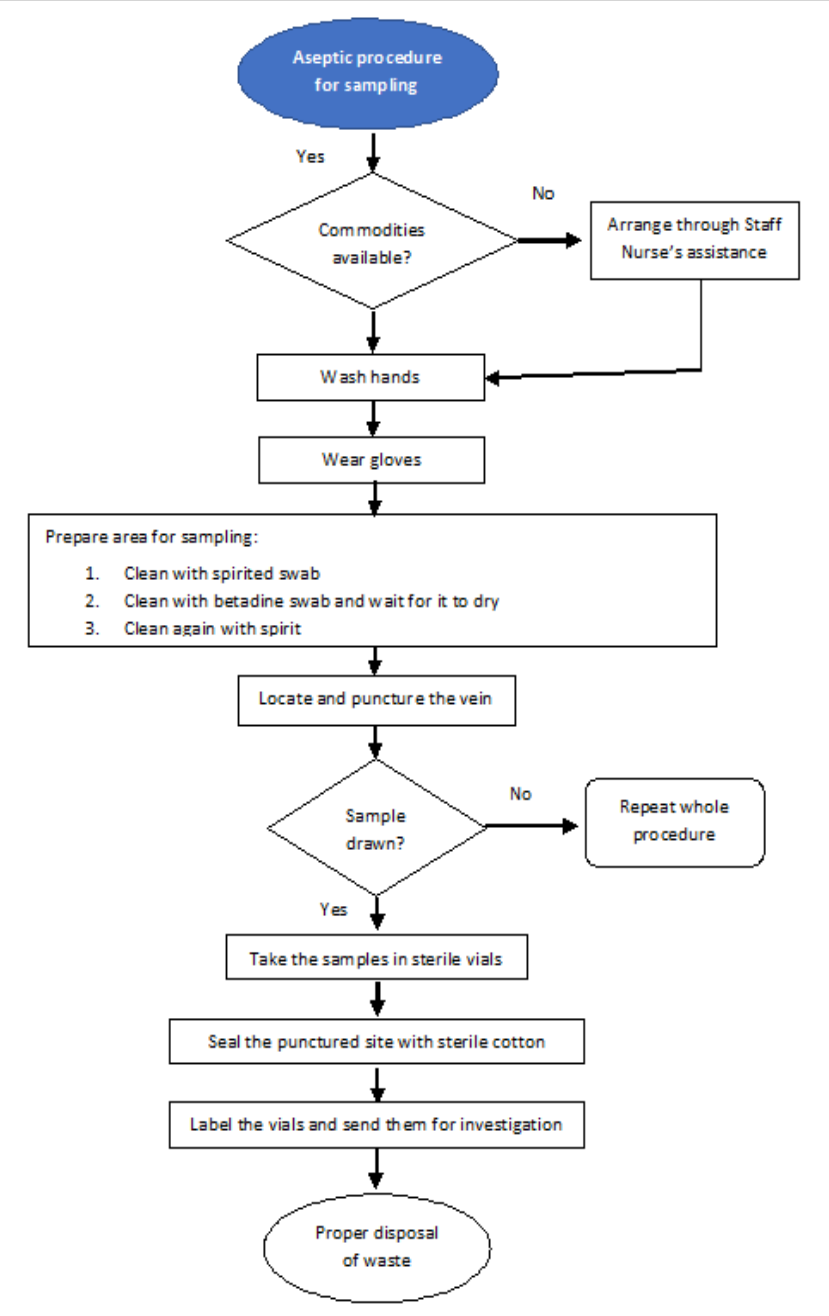
Figure 1. Nine change concepts and 16 PDSA cycles tried in this QI project



Despite repeated requests for information from the coach and team leader, no one replied about what they learned from the tests, so the coach planned a visit to the hospital. In the meeting, all the team members were very satisfied with the results and performance obtained and decided to continue to apply the new aseptic protocol (shown in **Figure 2**) and fill the checklist (shown in **Figure 3**) for all the samples taken. The team also thought of expanding their work from simple phlebotomy to cannulation and decided to test changes to the cannulation procedure over the next few days. The team leader requested first to get data on the number of cannulations performed daily.

The next week, the QI coach visited the hospital and helped the team to review their data from the previous week. One team member shared the previous day's data showing that phlebotomy was carried out in seven babies and cannulation in two babies. However, they observed that there were some checklists in which "no" was marked for all the steps of process. Some of the team members revealed that this could not be possible as the supplies were available at all times last week, so staff *should* have been able to do the procedure. At that time, the team realized that some staff were simply marking all "no" on the checklist without regard and this likely indicated some resistance among staff to the new process. The team could not figure out for certain why there was resistance to the new process, but they thought that perhaps there were some unnecessary steps in the process and that people were unhappy with these extra steps. The team decided to try to make the process easier for people to do.

Figure 2: Asepsis protocol for phlebotomy (blood sampling)



At the meeting, the coach asked the QI team members to suggest which steps of the aseptic process they thought NICU staff found difficult to do, but the team was not able to guess. As an analysis exercise, the coach suggested that they test all the steps on a dummy patient. One of the team members volunteered to do that and realized that removing the unsterile lid of the jar to pick cotton was difficult to do. The team then discussed possible solutions for this and decided to test three different ideas on the dummy patient to identify the easiest method for picking cotton from jar. The three ideas were:

1) Sanitizing hands before opening the cotton bowl instead of washing hands
2) Using forceps to pick cotton from jar
3) Shaking the container to drop the cotton buds

After testing all three ideas on the dummy patient, the team felt that the most convenient solution was to sanitize the hands before opening the cotton bowl. Using forceps required yet another procedure to maintain the sterility of the forceps, and shaking the container caused the lid of the jar to fall onto the tray, making it cumbersome to arrange and identify the items in the tray. They decided to test this option the following day on one baby.

Figure 3: Asepsis protocol checklist

Equipment Required			
Sr No	Item/equipment in the tray	Circle the correct choice	
1	Regular water supply	Yes	No
2	Soap	Yes	No
3	Gloves	Yes	No
4	Isopropyl alcohol (Spirit)	Yes	No
5	Povidone-iodine (Betadine)	Yes	No
6	Autoclaves clean sterile cotton in autoclaved bowl with cap	Yes	No
7	Needles or butterfly needles (for cultures)	Yes	No
Process Steps			
1	Wash hands as per WHO 2009 guidelines posted over hand washing area (Time required 40-60 sec)	Yes	No
2	Wear gloves and spread the sterile paper of gloves for keeping open sterile needles and sterile 3 cotton gauges (1 soaked with betadine and 2 soaked with spirit)	Yes	No
3	Prepare or choose skin site (the smallest possible area)	Yes	No
4	Swab with alcohol first, allow it to dry (remove organic material, thus improving bactericidal action of local antiseptic, povidone iodine on live microorganisms)	Yes	No
5	Swab with iodine on site and keep it for at least 1 min or allow it to dry	Yes	No
6	Wipe off with alcohol again (especially in neonates due to risk of iodine toxicity or burns)	Yes	No
7	Now prick with needle	Yes	No

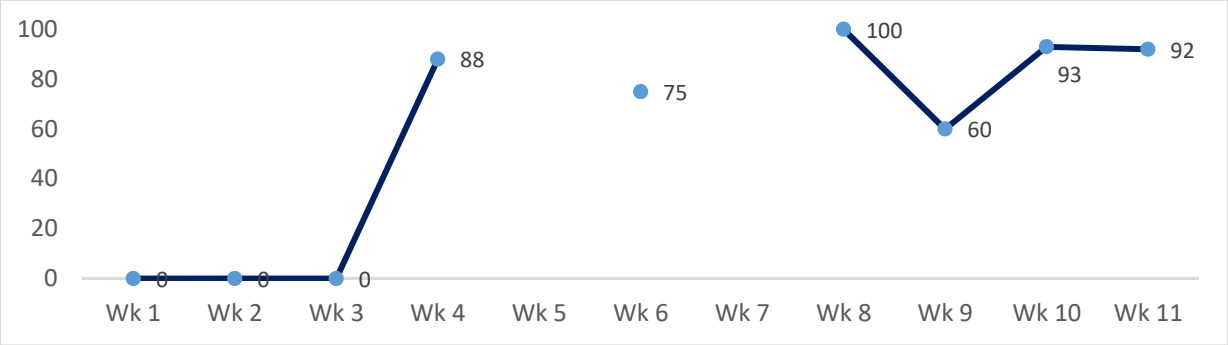
The team member who tested this revealed that sanitizing one's hands before opening the cotton bowl is possible to do and it did not greatly increase the difficulty of taking a blood sample. The team decided to continue to test this new change over next three days. They also continued to have staff fill the checklist during blood sampling and cannulation procedures. They wanted to study whether the new process would be feasible to do by everyone in all different kinds of situations. This message was communicated to all the team members via WhatsApp.

The following week, the team leader met with team members to discuss recently tested changes and to review the data. The data showed that checklists were being filled for only 25% of IV procedures, but of the filled checklists, adherence to the new aseptic process was 92%. Team members suggested some reasons why the checklists were not being completed, such as preoccupied staff, forgetfulness, staff on leave, and instances where practitioners had filled the checklist, but not submitted it in the drop box. The team also observed that during last week, tray supplies were inadequate. After the discussion, the team decided that the following actions should be taken:

- Plan to have the duty nurse refill the trays at the start of every shift
- Separate the trays for cannulation and blood sampling and identify a specific space for keeping those trays
- Record the number of cannulas used and check patient notes to ascertain the number of procedures and compare it with number of forms filled
- Set a target to achieve asepsis in at least 50% of cannulation procedures

In early July, the QI team met in person to review the data and discuss their performance (see **Figure 4**). They observed that checklists were completed in almost all procedures and asepsis steps were adhered to in almost all cases. Given the improvement they observed from the data, the team decided to share lessons learnt with other doctors and nurses, celebrate their success, and expand the intervention to the last IV procedure: central venous lines.

Figure 4: Percentage of IV procedures performed with aseptic technique



In addition, the team leader wanted to ensure that they were able to sustain their performance after the end of the improvement intervention, and so he posed this challenge to the rest of the QI team. The team decided on the following actions, via WhatsApp, to sustain the improvement process:

- The QI team will post the asepsis protocol on several notice boards in different locations;
- Separate orientations will be planned to demonstrate the protocol to newcomers;
- The nursing staff was designated to ensure supplies in trays. A substitution plan was also developed for days when the designated nurse would be on leave or off duty.

Conclusion

Hospital-acquired infections are a major risk in the newborn intensive care unit (NICU). Prior to the improvement intervention, the staff in the NICU of Swami Dayanand Hospital were not confident that the aseptic measures taken in the unit were sufficient to prevent infection and therefore avoided placing central venous lines. By using QI approaches, SDH achieved asepsis in 80% of phlebotomy and cannulation procedures carried out in the NICU within three months and even expanded the work to central lines.

In addition to the improvement in asepsis, the team also observed that repeated pricks for IV procedures and umbilical arterials, as well as repeated pricks for sampling, had decreased. The team believes that until practitioners started collecting and using data to measure improvement, they did not realize how often repeated pricks were occurring. Now that they have the information, they are more conscious that it is occurring – and, consequently, more careful.

The QI coach and team leader were also impressed with how use of the messaging application, WhatsApp, provided the team with a simple mode of communication through which they and the other team members could share their ideas and thoughts at any time and speedily take next actions.

As a result of the effort, the QI team members, as well as the whole unit staff, are more confident, motivated, and looking forward to taking up more QI projects for the improvement of their facility.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or the United States Government.

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Setting Up a Self-Sustaining Quality Improvement Network in India

Summary

In May 2016, Kalawati Saran Children's Hospital (KSCH) began using QI approaches to improve maternal and newborn care in their facility. This approach was very helpful for them in improving processes of care, and they achieved impressive results in outcomes in a short period of time. Motivated by the good results at their facility, the QI team at KSCH wanted to introduce this methodology to clinicians in other institutions across north India. They identified two main challenges to spreading QI: 1) lack of a mechanism to support people learning QI to communicate and share experiences, and 2) lack of funding to support workshops or travel. KSCH overcame these challenges by leveraging virtual communication technology to link and formalize their own extensive but informal network of contacts and by partnering with the USAID ASSIST Project to support some of the costs to initiate the network. This case study describes the efforts undertaken to establish a self-sustaining network of quality improvement practitioners to implement and spread QI approaches throughout hospitals in India.

Background

India has made substantial improvements in delivering better care to mothers and newborns. Between 2001-03 and 2011-13, the maternal mortality rate (MMR) decreased from 301 per 100,000 live births to 167 per 100,000 deliveries, and the neonatal mortality rate (NMR) decreased from 40 per 1000 live births to 29 per 1000 live births.[1,2]

The country is planning to do even better, and under the United Nation's Sustainable Development Goals, India aims to reduce the MMR to 70 per 100,000 live births and the infant mortality rate to less than 10 per 1000 by 2030. The India Newborn Action Plan (INAP) also aims to achieve single digit neonatal mortality and still birth rates by 2030.[3]

These reductions, while achievable, will require new ways of working. One new potential approach is the use of quality improvement (QI) methods. QI is a management approach that provides health workers with tools and skills to analyse and solve problems at the service delivery level without waiting for additional resources. Over four hundred facilities have successfully used QI methods to reduce perinatal mortality by more than 15% between 2014 and 2015.[4] The learning from this work led WHO SEARO to develop a new QI training approach.[5]

Individual and Institutional Champions

Kalawati Saran Children's Hospital (KSCH) is an academic hospital that is developing the capacity to support others to use QI methods. KSCH is one of the largest tertiary care hospitals in India. The department of neonatology caters to a load of over 15,000 deliveries and over 2500 NICU admissions per year. It is a National Centre of Eminence, a recognition given by the Government of India based on the

AUGUST 2017

This case study was authored by Mahtab Singh and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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. URC's global partners for ASSIST include: EnCompass LLC; FHI 360; Harvard T. H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

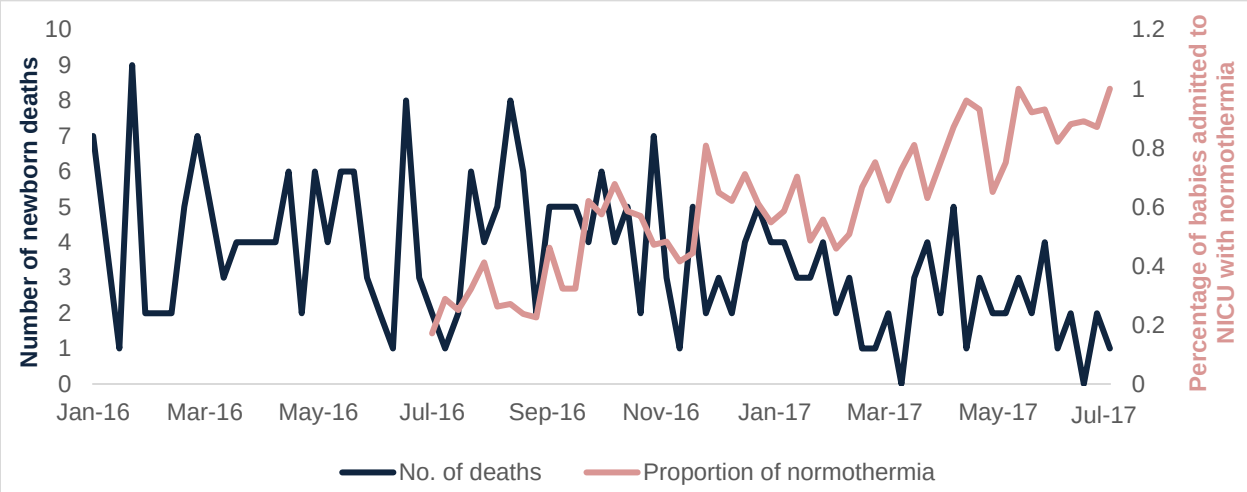
institution's contributions in various health programs, and serves as the resource centre for many national programs and initiatives of the Government of India.

KSCH started using QI approaches in May 2016. Dr Vikram Datta, director professor of neonatology, was nominated by the Government of India to attend a WHO regional meeting on QI methods. During this workshop, he learned the fundamental principles of QI. Previously, Professor Datta had developed and used quality assurance (QA) approaches as the Secretary for the National Neonatology Forum of India.

This experience led him to believe that, while QA was useful for ensuring sick newborn care units (SNCU) were properly equipped, a different approach was required to make sure that babies receive the right processes of care. During the regional QI training workshop, he realized that what he was learning could be directly applied to improve patient care in his department and across India. He then started planning a QI project.

After returning to KSCH, Professor Datta worked with staff in his unit, facility leadership and advisors from the USAID ASSIST project to use QI methods to prevent hypothermia after delivery and improve hand hygiene. Over the next 12 months, the QI team was able to increase the percentage of neonates admitted to the NICU with normothermia from 30% to 96%. **Figure 1** below shows the increasing proportion of babies admitted to the NICU with a healthy, normal body temperature (normothermia), and a corresponding 39% reduction in newborn mortality in the unit.

Figure 1: Percentage (%) of babies admitted to NICU who were normothermic and number of newborn deaths



Spreading QI approaches

Motivated by the good results at their facility, the QI team staff at KSCH wanted to introduce this methodology to clinicians in other institutions across north India. They identified two main challenges to spreading QI. First, there was no existing mechanism to help people learning QI to communicate and support each other. Second, they did not have funding to support workshops or travel.

KSCH developed different strategies to overcome these challenges. The team used their own extensive contacts to identify motivated individuals and facilities that they believed would be interested in not just learning QI methods but using them to solve real problems for newborns. This group already existed as part of an informal network. The KSCH team believed that bringing them together to learn about QI as a group, and then keeping them connected over emails and WhatsApp, would lead to a self-sustaining and supportive network of QI practitioners. Secondly, they partnered with ASSIST to support some of the costs to initiate the network.

The first event in October 2016 was a one-and-a-half-day-long workshop in New Delhi to learn the fundamental skills of QI and to develop a QI project. ASSIST supported the cost of the venue and provided staff to help with the training; participants funded their own travel and accommodation. KSCH invited staff from 17 public, private and academic medical facilities to learn QI approaches and prepare their QI projects to deliver better care to newborns. Together, these facilities provide services to 42,450 deliveries per year. After the workshop, staff returned to their facilities, and nine facilities started QI projects. **Table 1** below shows the aim and results of the QI projects undertaken by the initial nine facilities.

Why did health care providers decide to use their spare time and resources to learn about QI?

- QI was a new innovation and they wanted to learn more
- They wanted to provide better care to their patients
- Good reputation of KSCH: 'If it's good enough for KSCH, it's good enough for us'
- Being associated with the USAID ASSIST Project was attractive

Table 1: Aim and results of initial QI projects undertaken by nine facilities

No.	Name of facility	Type of facility	Aim	Results
1	Max Super Speciality Hospital, Patparganj Delhi	Private corporate	Reduce nasal trauma in neonates with breathing difficulty on C-PAP	Improvement work in process
2	UCMS & GTB Hospital, Delhi	Public academic	Reduce neonatal hypothermia at admission to NICU Initiate breastfeeding within one hour of delivery	Hypothermia reduced from 47% to 19% Initiation of breastfeeding in first hour increased from 23% to 80%
3	Deogiri Children's Hospital, Aurangabad	Private	Improve filling of preterm growth monitoring chart	Filling of growth monitoring chart improved from 20% to 100%
4	Sita Ram Bhartia Institute of Science and Research, Delhi	Private Academic	Improve use of 25% dextrose as analgesia before sampling in neonates	Use of dextrose increased from 20% to 100%
5	ESI Hospital, Rohini Delhi	Public	Initiate breastfeeding within one hour of delivery	Initiation of breastfeeding in first hour increased from from 27% to 90%
6	NBCC Bareilly, Uttar Pradesh	Private	Reduce proportion of babies with hypothermia at time of admission in NICU	Hypothermia reduced from 70% to 0%
7	LNJP Hospital, Delhi	Public academic	Increase breast milk output in first week (Team started by improving proper technique for expression of breast milk.)	More than 70% mothers started using right technique for expression of breast milk
8	Safdarjang Hospital, New Delhi	Public academic	Improve essential newborn care (ENBC) Increase kangaroo mother care (KMC) hours	Improvement work in process
9	Hindu Rao Hospital, Delhi	Public academic	Improving hand hygiene practices	Improvement work in process

By the first quarter of 2017, this network created a WhatsApp group and started sharing some lessons and challenges they were learning while undertaking their QI work. By this time, 12 participating facilities had undertaken one or two QI projects. It was strongly felt that another face-to-face meeting would be beneficial to share learning.

In March 2017, the network met in-person for a day. Staff from these facilities shared the results of their QI projects and learned from the experiences of each other. This peer-to-peer learning was found to be very valuable. This meeting served as a platform for extensive cross learning and mutual exchange of ideas pertaining to the QI process. This meeting served to further strengthen the network in north and central India.

Improving pain management in the private sector

Sitaram Bhartia Institute of Science and Research, Delhi is a 70-bedded multispecialty private hospital in South Delhi with a monthly delivery load of 75 to 90. When they started the QI project, only 20% of babies receiving intravenous sampling were given 25% oral dextrose as analgesia prior to the procedure. The team tested a couple of simple changes, like preparing a 'dextrose tray' in advance and ensuring availability of 25% dextrose at point of use. This allowed the team to ensure that 100% of babies were receiving appropriate pain control. To make the changes part of the system, the hospital issued a new protocol of giving 25% dextrose to all babies before intravenous sampling.

At the concluding session, it was unanimously decided by the teams to self-sustain this initiative in north India. Three hospitals volunteered to coordinate and arrange such future meetings at their facilities every quarter. University College of Medical Sciences, and associated Guru Teg Bahadur Hospital, Lady Hardinge Medical College and KSCH, and Swami Dayanand Hospital agreed to fund and organize the subsequent three meetings. The network members also decided to develop their own website dedicated to supporting the sharing of experiences in using QI and for helping others learn about QI methods. Some members also volunteered to learn how to mentor new QI teams in different facilities. The network's goal is to build a more formal structure for spreading the use of QI approaches across India. The hospitals who have not yet completed a QI project are still in the network and attend the meetings. As they learn more from the network, we anticipate that they too will use QI methods.

Participants from the QI network met to share lessons and experiences. *Photo credit: Ankur Sooden, URC.*

Building institutional capacity to support QI

During their QI project, KSCH staff recognized an additional challenge for using QI methods. Under the current system, hospitals do not have structures in place to support QI. For example, hospitals do not have systems to train more people in QI and provide hands-on support in helping people learn how to use QI skills. They also lack management structures to keep track of what QI work is happening around the hospital and to spread learning. The KSCH team was concerned that this could impair the ability of clinicians to sustain and spread improvements.

To address this, the leadership of KSCH – coordinated by Professor Datta and Professor Kumar, head of the department of paediatrics – formed a 'Quality Improvement Cell', which was approved by the Director of Lady Hardinge Medical College. This QI Cell has a mandate to support other departments in the hospital to use QI approaches and institutionalize the use of improvement methods in the hospital. The other objective of this cell is to create a pool of local resources for mentoring and coaching activities for new teams in the hospital and other areas in the country as well. The first activity undertaken by the QI Cell was to train 60 KSCH staff from four other departments on QI approaches in the month of May 2017. To the best of our knowledge, KSCH is the first public facility in India to form a QI Cell to institutionalize the use of QI methods.

Conclusion

QI is an evidence-based approach that can be used by front-line workers to deliver better care without additional resources. QI teams in India have been successful in using these approaches to save lives, but there is limited capacity in the country to spread the use of these methods. KSCH has demonstrated an ability to not only use QI approaches in their own facility but also to spread QI through their existing networks. A continued focus on building the QI skills of individual champions and strengthening institutions to act as QI resources will help India reduce newborn mortality. KSCH is well placed act as such a resource centre.

References:

[1] National Health Mission Components: RMNCH+A. nhm.gov.in. http://nhm.gov.in/nrhm-components/rmnch-a/maternal-health/background.html. Updated February 3, 2015. Accessed August 7, 2017.

[2] SRS Statistical Report 2012. www.censusindia.gov.in. http://www.censusindia.gov.in/vital_statistics/SRS_Reports_2012.html. Accessed August 7, 2017.

[3] *India Newborn Action Plan (INAP)*. New Delhi, India: Government of India, Ministry of Health and Family Welfare, Child Health Division; 2014. https://www.newbornwhocc.org/INAP_Final.pdf. Accessed August 7, 2017.

[4] Livesley N. What we learned while improving care for 180,000 babies annually in India. USAID ASSIST Project website. https://www.usaidassist.org/blog/what-we-learned-while-improving-care-180000-babies-annually-india. Published May 15, 2017. Accessed August 7, 2017.

[5] Deorari A, Mehta R, and Livesley N. Point of Care Quality Improvement: Improving the Quality of Care for Mothers and Newborns in Health Facilities. New Delhi, India: World Health Organization, Regional Office for South-East Asia, 2017. https://www.usaidassist.org/resources/POCQI-manuals. Published February 23, 2017. Accessed August 7, 2017.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or United States Government.

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Reducing cost and improving quality of care for high-risk babies in Karnataka, India

Summary

In November 2016, the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project collaborated with Lady Hardinge Medical College, National Neonatology Forum (NNF) Karnataka Branch, and Ovum Hospital to support 27 public, private, and academic medical facilities from Karnataka, Kerala, and Tamil Nadu to conduct a workshop to support the development of quality improvement (QI) projects related to neonatal health. One of the participating facilities faced an issue in its neonatal intensive care unit (NICU). All high-risk babies admitted to this NICU undergo at least one brain scan and heart scan if there are medical indications. While the NICU was staffed with neonatologists who were trained in conducting such scans, the scans were always done by external consultants. Although there were benefits to having specialists perform these tests, certain limitations existed. First, external consultants were not always available when scans were needed urgently to make medical decisions. Second, external consultants added to the cost of care for patients' families. Therefore, the QI team at this NICU set an aim to reduce the use of external radiologists and cardiologists for routine brain and heart scans; thus, reducing the cost of performing scans and improving the quality of care by making test results more rapidly available to inform timely medical decisions.

Background

In November 2016, the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project collaborated with Lady Hardinge Medical College, National Neonatology Forum (NNF) Karnataka Branch, and Ovum Hospital to support 27 public, private, and academic medical facilities from Karnataka, Kerala, and Tamil Nadu to develop QI projects related to neonatal health. As part of this effort, ASSIST staff conducted a two-day workshop in Bangalore on the Point of Care Quality Improvement (POCQI) methodology.[1] The four steps of POCQI were discussed in detail during these two days: 1) identify a problem, form a team and write an aim statement; 2) analyze the problem and measure the quality of care; 3) develop and test changes; and 4) sustain the improvements. The groups of participants from different facilities were taught how to use QI methods and plan their first quality improvement project.

STEPS IN QUALITY IMPROVEMENT

STEP 1: IDENTIFY A PROBLEM, FORM A TEAM AND WRITE AN AIM STATEMENT

STEP 2: ANALYZE AND MEASURE QUALITY OF CARE

STEP 3: DEVELOP AND TEST CHANGES

STEP 4: SUSTAIN IMPROVEMENTS

One of the facilities that participated in this workshop has a newborn intensive care unit (NICU) caring for sick newborns born primarily in Karnataka and neighboring states as well as high-risk babies referred from the Middle East region, Mauritius and even countries in Africa like Nigeria. All high-risk babies admitted to the NICU undergo at least one brain scan and heart scan (echocardiogram) if

SEPTEMBER 2017

This case study was authored by Venkatesh HA and Ravi Swami of Manipal Hospitals and Mahtab Singh and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T. H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

there are medical indications. The brain scan is done to identify brain damage due to bleeding or inadequate blood supply; the heart scan (echocardiogram) is done to identify problems with the heart and blood vessels. While the NICU was staffed with in-house neonatologists who were capable of doing the brain and heart scans, these scans were always done by external consultants – radiologists and cardiologists, respectively. Although there were benefits to having these specialists perform these tests, certain limitations existed. First, there were occasions when scans were needed urgently to make medical decisions and external consultants were not available. Second, using external consultants added substantially to the financial cost of care for patients' families.

Members of the NICU team wanted to improve the timeliness and availability of brain and heart scan reports to speed up medical decisions and also to reduce the costs of conducting these scans. Therefore, the QI team at this NICU set an aim to reduce the use of external radiologists and cardiologists for routine brain and heart scans; hence, reducing the cost of performing scans and improving the quality of care by making test results more rapidly available to inform timely medical decisions. Instead of using external consultants for routine scans of high-risk babies, the neonatologists in the NICU would perform the required brain and heart scan on admission. External consultants would continue to be called for detailed assessment and confirmation if the neonatologist identified a problem, such as a congenital malformation of the brain or heart.

Problem analysis

To address their aim the team leader, a neonatologist in the NICU, formed a quality improvement team that included another neonatologist in the unit, a staff nurse, and a patient care coordinator. The team used the 5 Whys approach to understand why so many external consultants were being used even though the neonatologists were trained and capable of performing brain and heart scans themselves. The 5 Whys is an interrogative approach to analyze the underlying cause of a problem through asking a series of progressive "why" questions. While the approach typically involves asking five "why" questions, sometimes analyzing a problem requires asking "why" more than five times, or fewer than five times.

Q. Why do external consultants always come to do tests?

A. External consultant are called when a medical decision has been made to obtain a scan.

Q. Why is the call always given to external consultants?

A. The person responsible for placing the call always does that.

Q. Why does he place a call to external consultants only?

A. As per the existing process in the department.

The team realized that external consultants were being called after a medical decision was made to order a brain or heart scan simply because existing policies stipulated that a specialist should be called.

Quality Improvement Team Members

Team leader:

- Dr Venkatesh H A, neonatologist, NICU

Other team members:

- Dr Ravi Swamy, neonatologist, NICU
- Beulah Unis, staff nurse, NICU
- Pushpavalli Gopalakrishna, patient care coordinator

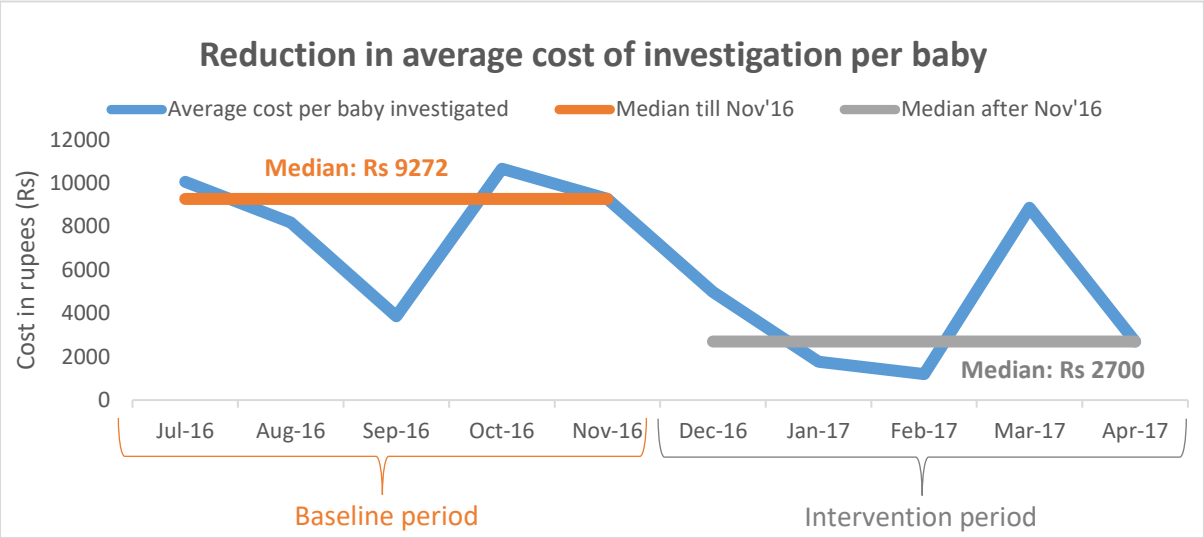
Implementation of the QI work

The team decided to test a change to the existing policy such that external consultants were only contacted if neonatologists requested the consultation. As a quick assessment, the QI team initially compared the results of scans for two babies done by the neonatologists to scans done by the radiologists and cardiologists; results were similar. The test was then scaled up to all babies admitted under these two neonatologists; results were still comparable. The team shared the results with all in the department, and a new protocol was written to call the external consultants only in cases when the neonatologists requested the consultation. This ensured that families were not burdened by the consultation fee charged by radiologists and cardiologists when it was not necessary.

Results

The total cost of a brain scan and echocardiogram for babies admitted under the above two neonatologists was taken at the time of discharge of the baby. The amount was calculated from the payment accounts. For both the baseline period and intervention period, data was collected by the patient care coordinator, and the median average expense per baby calculated. The results are shown in **Figure 1**.

Figure 1. Reduction in average cost per baby to conduct brain and heart scan upon admission to NICU (Jul 2016 – Apr 2017)

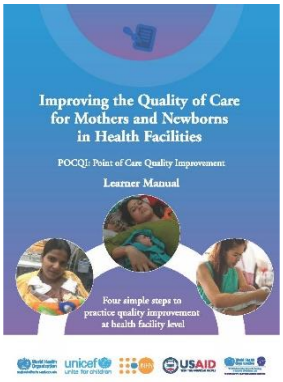


A reduction in cost per baby of ₹6572 rupees (USD$102.10) was observed during the intervention period compared with the baseline period. An average worker in India makes 448 rupees per day; therefore, this amount is the equivalent of 14.6 days of labor for the average worker.

In addition, this change reduced turnaround time for getting the results from these investigations, providing NICU staff with timely test results for critical medical decisions. For example, the new protocol allowed staff to quickly identify and initiate treatment for a baby with a vascular malformation in the brain; other instances included drainage of pericardial effusion for a patient that occurred around 3 am (when an external consultant would not be available) and proper management of a hemodynamically significant patent ductus arteriosus during medical treatment.

Learning and way forward

This is a unique example how a neonatal unit used quality improvement methods to reduce the cost of care to the patients while improving the timeliness and quality of care. This effort not only helped the patients, but also improved the efficiency of the unit's operations.



References

[1] Deorari A, Mehta R, and Livesley N. Point of Care Quality Improvement: Improving the Quality of Care for Mothers and Newborns in Health Facilities. New Delhi, India: World Health Organization, Regional Office for South-East Asia, 2017. https://www.usaidassist.org/resources/POCQI-manuals

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or the United States Government.

USAID
FROM THE AMERICAN PEOPLE

USAID
ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Reducing the radiological exposure of neonates and cost of care in the Neonatal Intensive Care Unit at a private hospital in Bangalore, India

Summary

Ovum Hospital is a private, for-profit maternity hospital in Bangalore. Ovum provides 24-hour maternal and pediatric care and admits an average of 25 babies to the Neonatal Intensive Care Unit (NICU) per month. Neonatologists and nurses at the hospital were concerned that newborns were being exposed to unnecessary X-rays. In November 2016, staff from Ovum Hospital attended a two-day workshop on quality improvement approaches (QI) conducted by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project. During the workshop, teams prepared a real-life quality improvement project that they could implement in their facility. The Ovum Hospital team decided to reduce X-ray exposure of neonates. They identified two factors contributing to this problem. First, many babies had to undergo repeat radiological examination when the quality of the original examination was poor. Second, X-ray examinations were being done routinely to locate the tip of umbilical venous/arterial cannulas (UVC/UAC) when ultrasounds could be used instead. By analyzing the root causes of these problems, they were able to devise and implement effective changes to the procedures and processes of care in the NICU to reduce unnecessary X-ray examinations; thus, reducing radiation exposure and the cost of care for high-risk infants.

Background

Ovum Hospital is a 40-bed private, for-profit maternity hospital in Bangalore. Ovum provides 24-hour maternal and pediatric care and admits an average of 25 babies to the Neonatal Intensive Care Unit (NICU) per month. The neonatologists and nurses at the hospital were concerned that newborns were being exposed to unnecessary X-rays. They identified two factors contributing to this problem. First, many babies had to undergo repeat radiological examination when the quality of the original examination was poor. Second, X-ray examinations were being done routinely to locate the tip of umbilical venous/arterial cannulas (UVC/UAC). Umblical venous/arterial cannulation in high-risk neonates is done to help in the administration of medication and parenteral nutrition and frequent blood sampling. The clinicians need to locate the tip of catheter to ensure that it is just above or at the level of the diaphragm. It is also recommended that the catheter be out of the heart chambers and not in the liver lobes. Ensuring correct placement of the tip of umbilical venous/arterial cannulas (UVC/UAC) helps to avoid medical complications that can arise from incorrect placement.

The hospital does not have an in-house radiologist or radiology department but uses portable X-ray and point-of-care (POC) ultrasonography machines. Neonates admitted to the NICU have an X-ray taken by nurses using portable machines, when indicated. The films are then sent to another facility to be read by a radiologist. In October 2016, the radiologist requested that 37% of X-rays be repeated because of technical problems. In addition, babies with UVC/UAC received routine X-rays to locate

OCTOBER 2017

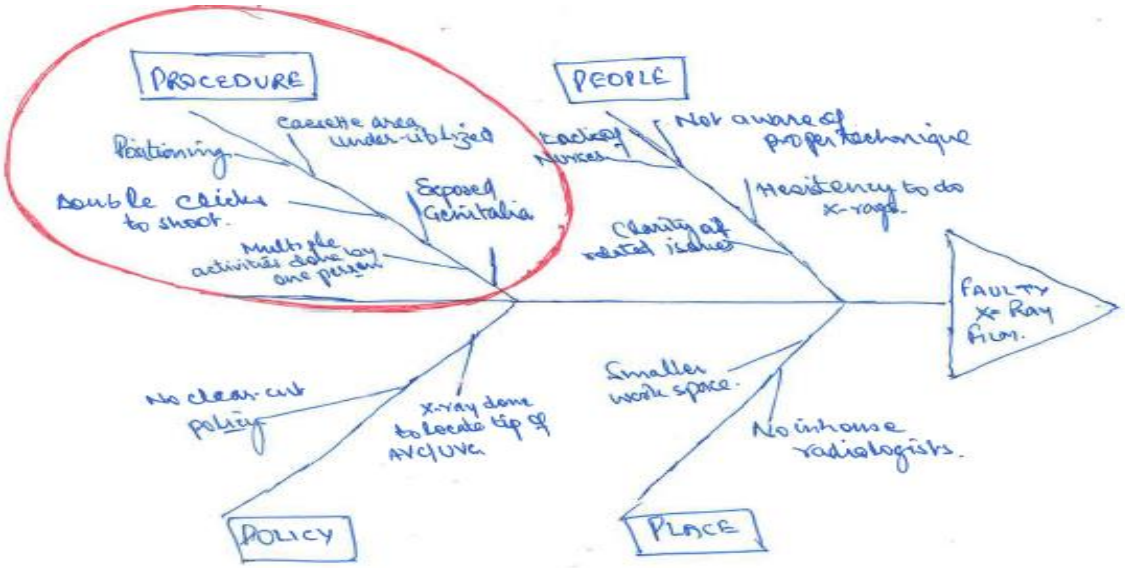
This case study was authored by Praveen Venkatgiri, Vidheya Venkatesh, and Priya Subramani Rao of Ovum Hospital, Bangalore and Mahtab Singh and Nigel Livesley of University Research Co., LLC (URC) for the United States Agency for International Development (USAID) Applying Science to Strengthen and Improve 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 USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T. H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

the tip of the cannulas even though ultrasound is a safer and faster method. All investigations (100%) done to locate cannula tips were conducted using X-rays.

In November 2016, the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project conducted a two-day workshop in Bangalore to train teams from 27 public, private, and academic medical facilities across South India in QI approaches. All the teams learned how to select a problem to work on, identify gaps in care, set an aim, and begin developing and testing process changes to improve care. In addition to learning improvement approaches and theory, all teams also prepared a real-life quality improvement project that they could implement in their facility. The Ovum Hospital team decided to reduce X-ray exposure of neonates.

Problem analysis

The team used a fishbone analysis to identify factors that led to repeat X-rays.



Fishbone diagram that QI team at Ovum Hospital, Bangalore created to analyze problem.

The fishbone analysis helped the team realize that the person taking the X-ray was responsible for multiple tasks, including positioning the baby, positioning the X-ray machine, and taking the X-ray image. The baby often moved while the machine was being positioned and the picture taken, which led to poor quality images.

Implementation of the QI work

How the team reduced the number of repeated X-ray examinations:

Based on the analysis, the team decided to change how they conducted the X-ray examination:

- **Involve an extra person in taking the X-ray:** To fix the problem of poor quality films due to one person doing multiple activities, the team decided to try including one more person in the process of taking an X-ray to hold the baby still. At any point during a shift, three or more staff nurses were on duty. So, the team discussed the possibility of using two staff nurses to take the X-ray film. Initially, people who were not previously involved in taking X-ray films were very hesitant to help because they were afraid of being exposed to radiation. The neonatologist explained to one of the staff nurses how she could avoid radiation exposure by wearing a lead apron. The nurse got ready to test the idea of providing extra help to hold the baby stable in two cases. One extra lead apron was requisitioned from the hospital stores and used while the test was done for the two babies. The quality of the films was good in both cases. It was also observed that involving one extra staff nurse did not make any other activity suffer. The team shared the results with all the remaining staff nurses and decided to adopt the change for a week involving all the staff nurses in every shift. After one week, when all the films were of good quality, the staff nurses involved in the process were further trained

by the neonatologist in how to conduct and support an X-ray examination. A new departmental protocol was established that two staff nurses should be involved in taking an X-ray film: one to conduct the procedure while the other holds the baby still.

- **Provide on-the-job training of nurses who were not technically skilled in conducting X-ray examinations:** By working with more experienced staff, nurses learned how to position the baby and how to use the personal protective and X-ray equipment. Later, all the staff nurses received a formal, one-day training by a radiography technician on how to take an X-ray film.

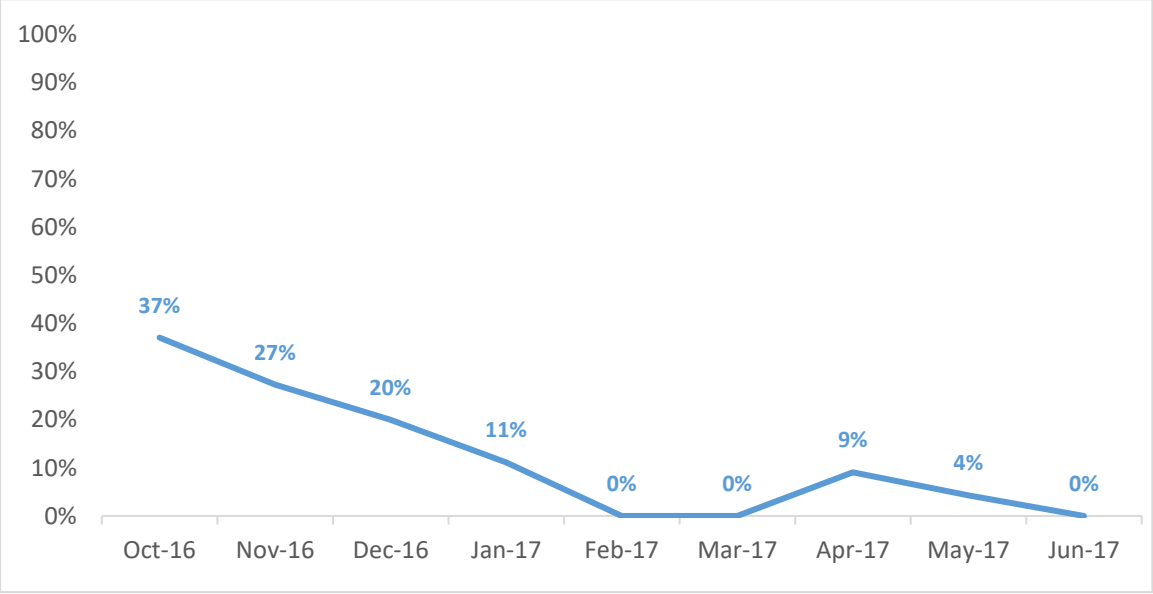
How the team reduced X-rays done to locate the tip of UVC/UAC cannulas:

- **Use of point of care ultrasonography to locate the tip of UVC/AVC:** Staff in the NICU also used X-rays to locate the tip of the UVC/UAC in babies when this was required. It was routinely used because it was possible to do in the absence of neonatologists. The team discussed with neonatologists using point-of-care ultrasonography when they were present in the facility. They decided to switch to the easier, faster, and more cost-effective method of point-of-care ultrasonography. The neonatologist tested the idea on one baby; it worked as well as using X-rays, so they made this unit policy.

Results

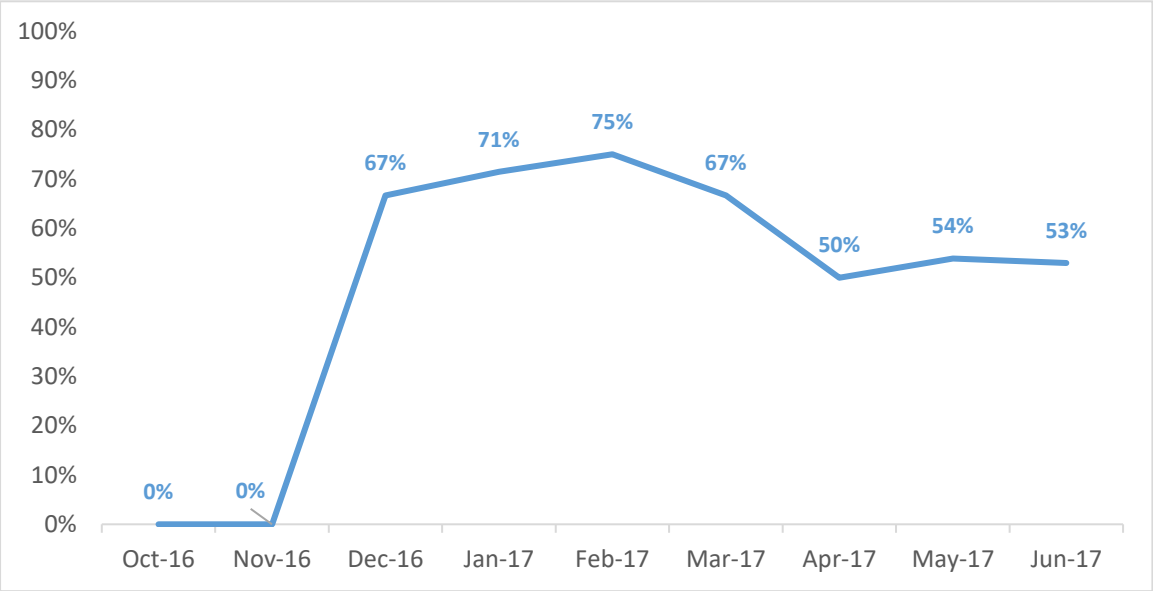
At baseline in October 2016, 37% of babies were exposed to duplicate X-rays; by February 2017, this had decreased to 0% (see **Figure 1)**. Some X-rays had to be repeated in April and May due to the image being contaminated by artefacts, like jewellery, but no X-rays had to be repeated due to poor image quality between February and June.

Figure 1. Percentage of babies with duplicate X-ray performed



The percentage of UVC/UAC tips being located using ultrasonography, and therefore not requiring X-ray examination, increased from 0% in October 2016 to 67% in December 2016 and has been sustained at that level since then (see **Figure 2**). The team was not able to completely eliminate the use of X-rays to locate the tip of the UVC/UAC because the neonatologists trained in doing the ultrasonography were sometimes not available, and so facility staff would have to locate the tip by X-ray examination instead.

Figure 2. Percentage of babies for whom ultrasonography was performed to locate the tip of catheter instead of X-ray



By utilizing the available human resources and modifying the existing process of taking X-ray film, the team avoided exposing 239 infants to unnecessary X-ray examinations and the resulting radiation exposure. In addition to preventing radiation exposure (210 babies who did not have repeated X-ray examination and 29 who did not have X-ray examination for locating the tip of UVC/UAC cannula), this quality improvement effort led to a savings to the parents of Rs 445 (USD $7.41) per baby requiring a diagnostic X-ray and Rs 254 (USD $4.23) per baby requiring a UVC/UAC. Given that the average daily income in India is Rs 448 (USD $7.46), this saves a considerable sum for most families.

Conclusion

This improvement project is a pioneering effort by a private institution in India to reduce X-ray exposure to babies and contain medical costs using QI methods. The hospital is now using improvement approaches to address other problems.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or the United States Government.

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project
University Research Co., LLC • 5404 Wisconsin Avenue, Suite 800 • Chevy Chase, MD 20815-3594 • USA
Alps Building, 1st Floor • 56 Janpath • New Delhi 110001 • India
www.usaidassist.org • assist-info@urc-chs.com

CASE STUDY

Improving Uptake of Intermittent Preventive Therapy in Pregnancy (IPTp) at Rachuonyo Sub County Hospital in Homa Bay County

Summary

The use of Sulfadoxine Pyrimethamine (SP), commonly known as fansider in pregnant women without malaria has been shown to provide requisite protection against the disease in malaria endemic regions. A dose of SP is given to women at 16 weeks' gestation, four weeks apart as a directly observed therapy during antenatal clinic (ANC). Greater therapeutic benefits are realized with more intermittent preventive treatment in pregnancy (IPTp) doses. In Kenya, momentum is gaining towards pregnant women receiving three or more doses of IPTp. Rachuonyo Sub County Hospital formed a quality improvement team in November 2016. Following a brainstorming and multi-voting exercise, they settled on improving IPTp uptake. A baseline assessment was done, followed by process mapping, root cause analysis, and development of change ideas to address poor IPTp uptake. Deming's Plan–Do–Study–Act (PDSA) cycle was followed during implementation, and by closely tying their performance to the prioritized countermeasures, the team has since improved uptake of both IPTp 1 and IPTp 3 or more from baseline median of 45% to uptakes greater than 90%.

Background

Rachuonyo Sub County Hospital (RSCH) is situated in Kasipul Sub County in Homa Bay County in Kenya. The facility serves a catchment population of 41,739 people. The hospital offers basic and emergency, curative and preventive services; among them maternal and child health services.

The USAID Applying Science to Strengthen and Improve Systems project (ASSIST), with funding from the President's Malaria Initiative (PMI), began supporting quality improvement (QI) with a focus on preventing malaria in pregnancy in Homa Bay County in November 2016. RSCH is a high malaria caseload facility and was selected, along with seven other facilities, for initial implementation of malaria QI within the county. ASSIST is currently implementing malaria QI activities in 45 facilities across five counties in Western Kenya, a malaria endemic lake region.

Implementation

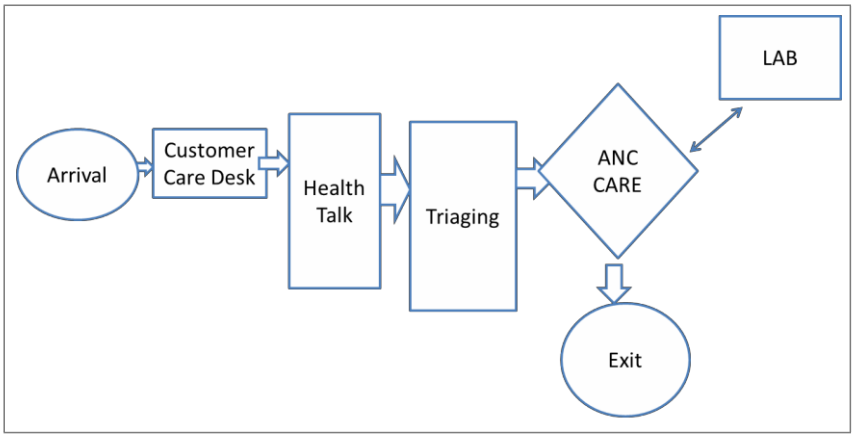
RSCH formed a quality improvement team (QIT) in November 2016. The QIT members were trained in quality improvement by ASSIST in the same month using the Kenya Quality Model for Health curriculum. The QIT comprised of a maternal and child health (MCH) nurse, an outpatient department clinical officer, a laboratory technologist, a pharmacist, a records officer, and the sub county malaria control coordinator.

MAY 2017

This case study was authored by Maero Lutta, Nicholas Sewe, Linda Chebet, Alex Muturi and Prisca Muange, of University Research Co., LLC (URC) and produced for review by the United States Agency for International Development (USAID) by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, funded by 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. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T.H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

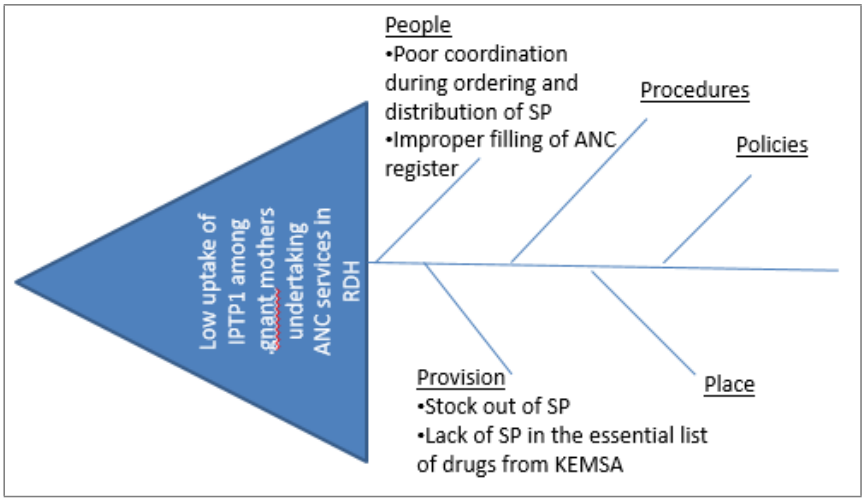
The clinical officer served as the coach while the MCH nurse as deputy coach. To select an improvement area, the QIT with the support of ASSIST's Improvement Advisor conducted a situation analysis of malaria in pregnancy indicators, brainstormed and multivoted settling on improving IPTp uptake. Uptake of IPTp 1 (given to eligible pregnant women for the first time in that pregnancy) was taken as the outcome measure, while IPTp 3 or more (third or more SP dose given in subsequent ANC visits) as the balancing measure.

Figure 1. Process map drawn by the team to show client flow in ANC



To address the performance gap, the team in December 2016, discussed and accepted their previous client flow (**Figure 1**), and went head on to determining the root causes of poor IPTp 1 uptake among their ANC clients. A fish bone diagram (**Figure 2**) was used to identify the root causes in questions.

Figure 2. Fish bone diagram used by the team



Change ideas (countermeasures) for the root causes were then identified through brainstorming (summarized in **Table 1**). To ensure that the QIT tackled the change ideas systematically, to enable them conclusively address the problem and its root causes, a decision

Table 1. Change ideas as highlighted by the team

Root Cause	Change idea
Stock out of SP	•Budget allocation for SP. •Supervision of Rural Health facilities and redistribution of SP. •Creating a proper system favorable for ordering and distribution of SP. •Ensuring the availability of SP in the KEMSA list of essential drugs.
Improper Filling of ANC Register	On job Training Of MCH staff on register filling

matrix was used to prioritize the countermeasures (**Table 2**). A work plan was then developed to guide implementation.

Fortnight QIT meetings were convened and reviews (study) of the previous work plans and latest data on the IPTp uptake done. Decision (-Act) on whether to modify, change, or disregard previous changes would then be made. Another fortnight plan would be drawn reflecting the latest decision and members would disperse to implement (-Do) again. However, the team did not meet twice in December 2016 because of an ongoing national health worker strike. A coaches review meeting was held for the county in mid-January 2017 and subsequently every two months. ASSIST supported the team to conduct continuous medical education sessions (CMEs) in quality improvement twice in a quarter. A joint ASSIST and county coaching visit was held in February, April, and May. A harvest meeting for the county was held in April 2017 to share lessons and progress on the improvement projects being implemented by the teams in the county.

The first small test of change by the team was on providing on-job-training (OJT) to MCH staffs in properly filling the ANC register in the first and second week of March 2017 by the coach and deputy coach. This was followed by a county level facilitative supervision targeting documentation, reporting, and quantification of malaria commodities in the third week of March 2017. The facilitative supervision realized excess months of stock of SP in facilities in the sub county, and thus RSCH benefited from a redistribution exercise done in the same month of March 2017. In May 2017, new staff were deployed to support the MCH, and the coach again provided OJT on documentation of ANC register and on the benefits of good MIP care and support.

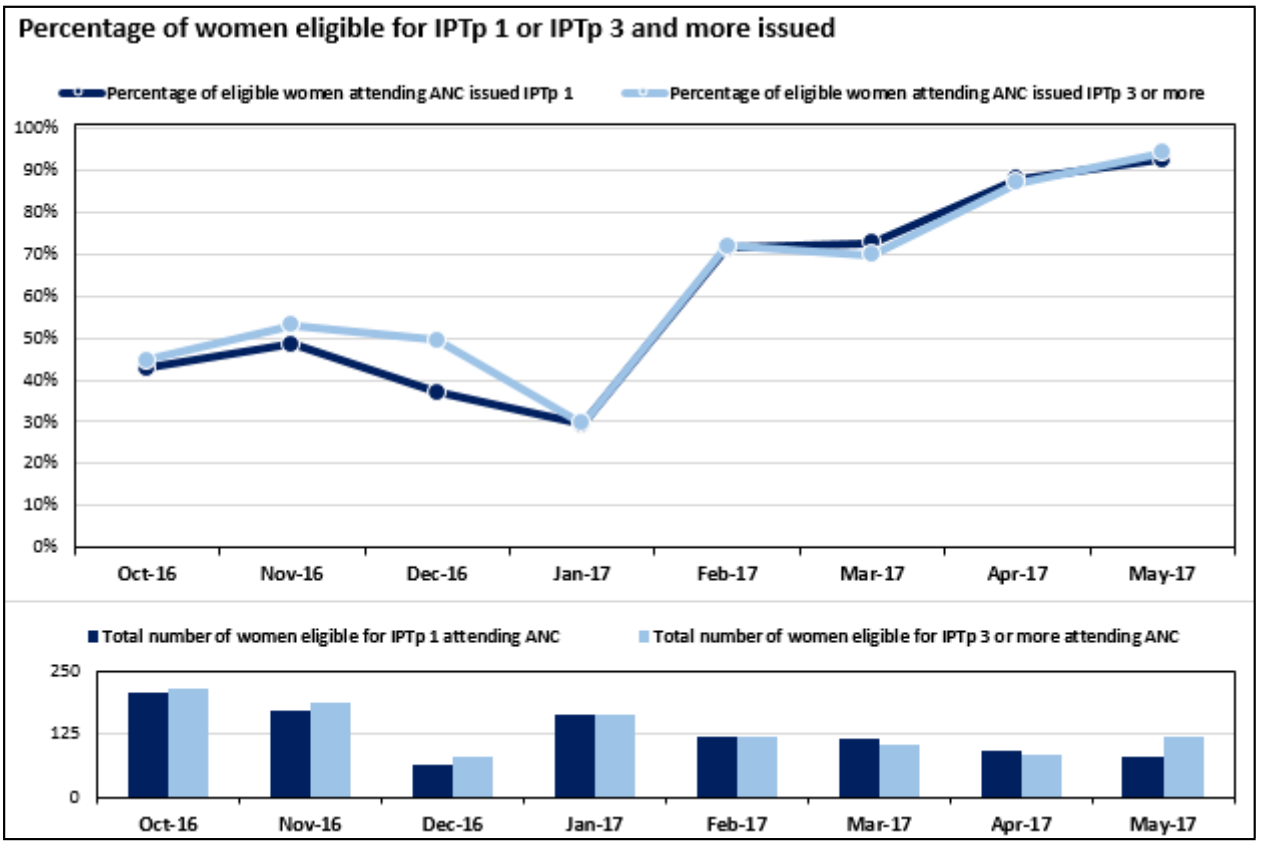
Table 2. Prioritization of change ideas / countermeasures

Change Idea	Importance	Scope Control	Chances of success	Total score
Budget Allocation for SP	3	1	3	7
Supervision and Redistribution Of SP	3	3	3	9
Bringing on Board Sub county pharmacist with the aim of having SP in KEMSA essential list of drugs	3	1	1	5
On job Training of MCH staffs on proper Register filling	4	3	4	11

Results

IPTp 1 uptake more than doubled the baseline median of 42% (October to December 2016) after three months of implementation (April 2017) and is a progressive high above 90%. An equivalent increase was also achieved with IPTp 3 or more (see **Figure 3** comparing IPTp 1 and IPTp 3 or more uptake).

Figure 3. Comparing Uptake of IPTp 1 and IPTp 3 or more



Lessons Learned

By working as a team to improve IPTp 1, the team realized that an equivalent measure of effort translates into improving new area of focus—IPTp 3 or more. Further, heightened county and sub county level support and coordination was realized amidst this improvement work that enabled the team to tackle factors beyond SP shortages.

Next Steps

This team is seeking to ensure that all women eligible for IPTp are issued with the drug. Consideration is also being made on improving early ANC onset as a process measure, with a concentration on increasing the number of eligible women accessing IPTp 3 or more.

CASE STUDY

Improving screening and management of malaria in pregnancy during first Antenatal Clinic Visit at Rongo Sub-County Hospital, Migori, Kenya

Summary

Rongo Sub-County Hospital formed a work improvement team (WIT) in November 2016 to improve malaria case management. They reviewed their malaria data to look for gaps for the first time and quickly saw that pregnant women were not routinely getting screened for malaria at their first antenatal care (ANC) visit which was compounded by poor documentation for those who were screened. The WIT developed a number of changes to test, which included: on the job training of staff on malaria in pregnancy, development and use of a malaria in pregnancy cascade tool, redesigning patient flow, client health talks on effects of malaria in pregnancy and importance of screening, and case management. Through these efforts, within 6 weeks, 100% of their first ANC visits had been screened for malaria. The team has been able to maintain this performance to date.

Background

Rongo Sub-County Hospital in Migori County provides preventive and curative services through outpatient and inpatient departments. There are an estimated 1,160 pregnant women within the facility catchment area. An average of 60 first ante-natal care (ANC) clients are attended to monthly in the Maternal Child Health (MCH) Clinic.

The USAID Applying Science to Strengthen and Improve Systems project (ASSIST), with funding from the President's Malaria Initiative (PMI), began supporting quality improvement (QI) with a focus on screening and management of malaria in pregnancy in Migori County in November 2016. Rongo Sub-County Hospital is a high malaria case load facility and was selected, along with nine other facilities, for initial implementation of malaria QI within the county. ASSIST is currently implementing malaria QI activities in 45 facilities across five counties in Kenya.

Implementation

The hospital formed a work improvement team (WIT) in November 2016 following a training from ASSIST on QI and malaria case management. The WIT included the nursing officer in charge of the MCH Clinic, nurses within the department, clinician in charge of the out-patient department, the facility pharmacist, laboratory technologist, and the two staff from health records department. The WIT was supported by a QI coach who is a clinician within the facility.

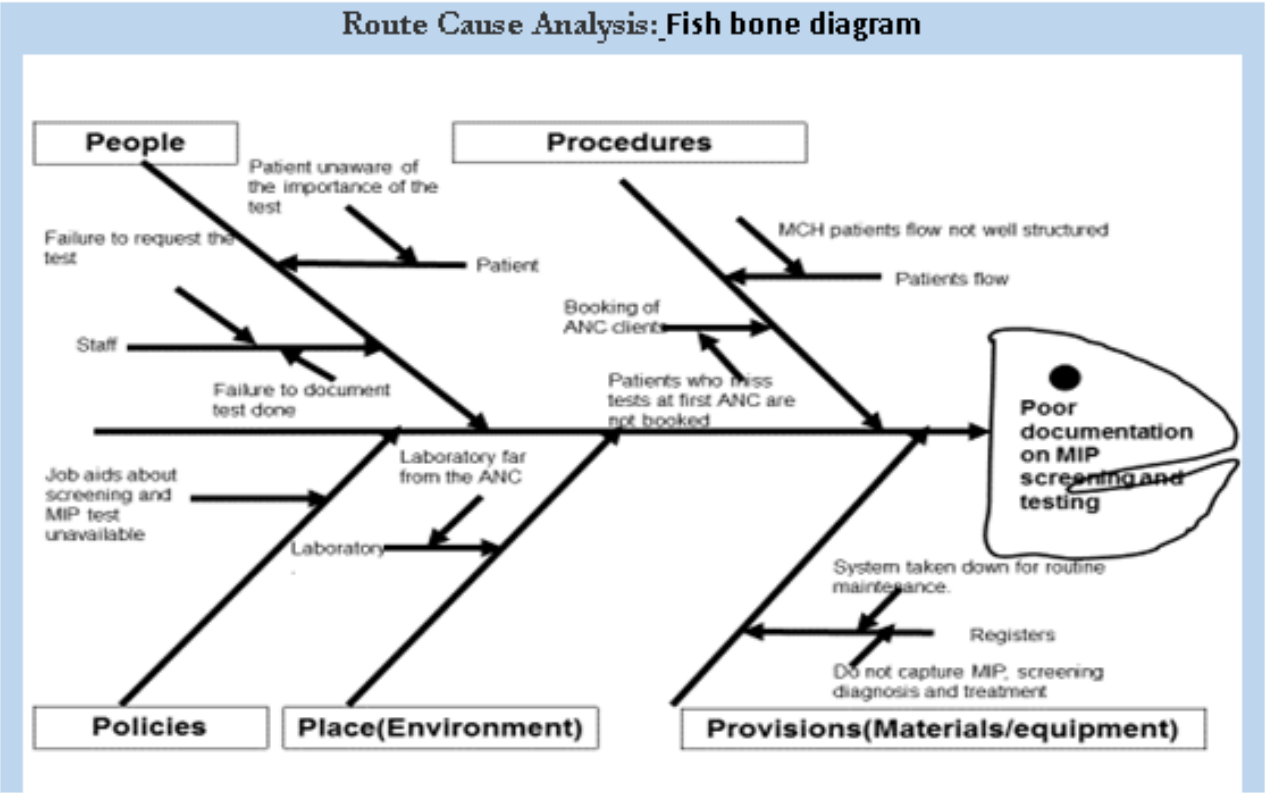
MAY 2017

This case study was authored by Nicholas Sewe, Maero Lutta, Alex Muturi and Prisca Muange, of University Research Co., LLC (URC) and produced for review by the United States Agency for International Development (USAID) by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, funded by 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. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T.H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

In order to identify gaps, the team, together with their QI coach and ASSIST QI Officer, reviewed their data on screening of pregnant women at first ANC visit for malaria; testing for those who are symptomatic during subsequent visits; and treatment of confirmed malaria cases. They realised that screening of pregnant women for malaria during first ANC visit was low and documentation of malaria screening for those who had been screened was poor. Mothers who were symptomatic were also referred to the out-patient department (OPD) for clinical consultation then to the laboratory for testing which led to drop outs along the cascade.

The WIT conducted a fishbone analysis the first week of January 2017 to determine root causes of these gaps and developed changes to test to improve documentation, screening, and treatment of confirmed malaria cases (Figure 1). They began testing changes the following week.

Figure 1: Fishbone diagram used for root cause analysis by WIT at Rongo Sub-County Hospital



The WIT decided their first change would be to have the coach provide on the job training and mentorship to the staff in the facility on malaria screening and case management in pregnancy and documentation of results in the ANC register.

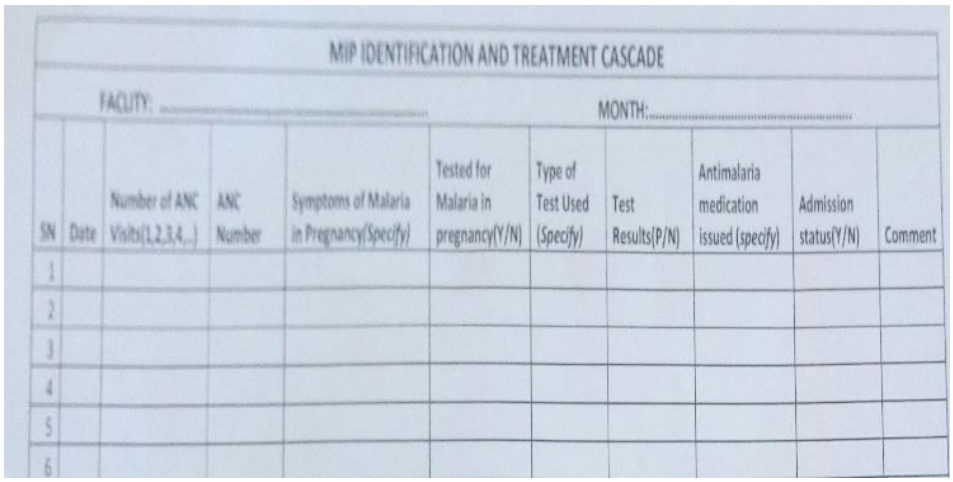
The pharmacist provided mentorship on commodity forecasting and quantification and timely ordering of rapid diagnostic tests (RDTs) and antimalarials to prevent any stock outs.

To increase client awareness, the facility began discussing the effects of malaria in pregnancy and the importance of screening, testing, and treatment for malaria during the morning health talks at the MCH Clinic

The WIT redesigned the patient flow to reduce leaks along the cascade. This ensured that the symptomatic pregnant women were attended to at the ANC clinic instead of being referred to the OPD.

The team also developed a cascade template that would be used to ensure and monitor if all first ANC clients were screened symptomatic cases tested and confirmed cases treated appropriately (Figure 2). They monitored their data on a weekly basis and began to see improvements.

Figure 2: Malaria in pregnancy identification and treatment cascade template created by the WIT



MIP IDENTIFICATION AND TREATMENT CASCADE

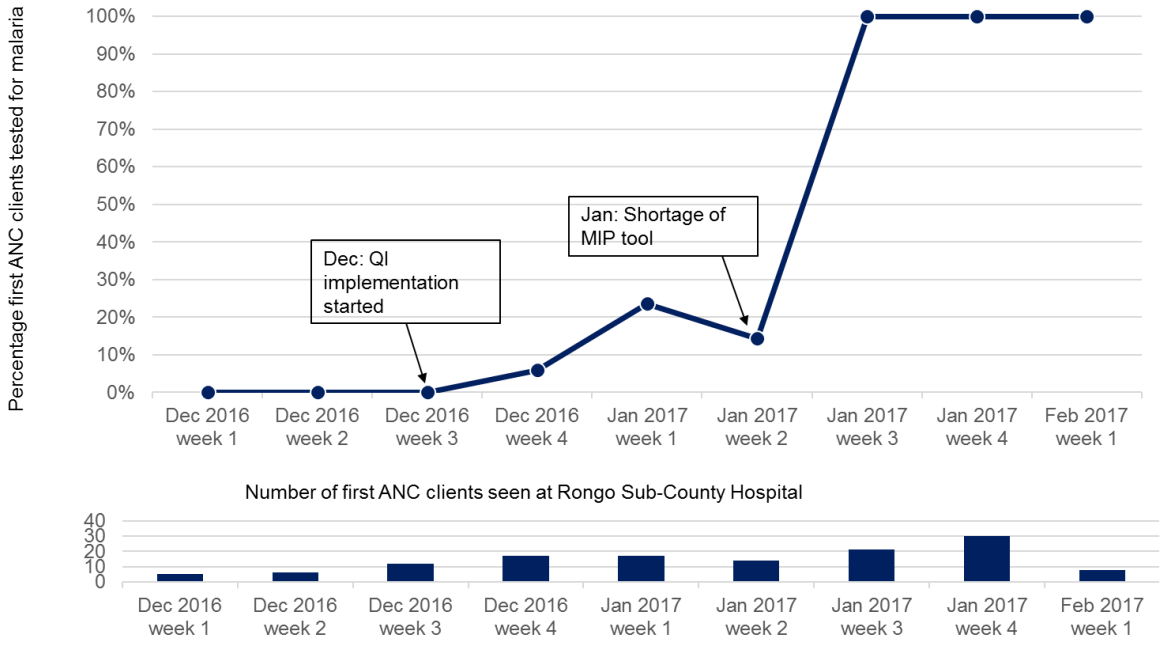
FACILITY: ..... MONTH: .....

SN	Date	Number of ANC Visits(1,2,3,4...)	ANC Number	Symptoms of Malaria in Pregnancy(Specify)	Tested for Malaria in pregnancy(Y/N)	Type of Test Used (Specify)	Test Results(P/N)	Antimalaria medication issued (specify)	Admission status(Y/N)	Comment
1										
2										
3										
4										
5										
6										

Results

Since the WIT began testing changes, the number of first ANC women who are screened for malaria has greatly improved (Figure 3). 100% of all first ANC clients are now screened for malaria. Three pregnant women have been confirmed to have malaria since the team began their QI project and all have been treated as per the national guidelines.

Figure 3: Malaria screening among first ANC visits at Rongo Sub-County Hospital, Migori County (Dec 2016-Feb 2017)



Lessons Learned

The Rongo WIT attributes their success to teamwork and support from the hospital administration. The WIT is very clear that the marked improvement in malaria screening and case management among pregnant women at the facility required a team effort from all departments and hospital leadership. Consistent data reviews are also necessary and teams need to meet frequently to discuss gaps and changes. The WIT also recognizes that staff need to be open to change, embrace the malaria case management guidelines, and stay up to date on technical issues through regular continuing medical education.

Changes tested

- Design and use of a malaria in pregnancy cascade tool
- On job training of health workers on malaria in pregnancy
- Timely ordering of RDT's and antimalarials
- Morning health talks with women

Next Steps

While it is mandatory to screen for malaria during ANC visit in the lake endemic region, there are challenges with access particularly in high volume (tier 3 onward) facilities. High volume facilities have user fees that cut out eligible clients who cannot afford them. In the lower tier facilities, lack of operational laboratories or lack of malaria RDTs prevent them from consistently screening women for malaria during ANC. These are some of the challenges to be surmounted. However, encouraged by what they have achieved, the WIT is exploring other areas of care they can improve together. They are now exploring new malaria in pregnancy indicators for improvement.

CASE STUDY

Gender integration in quality improvement: Increasing access to health services for women in rural Mali

Summary

Anemia is one of the leading contributors to infant and maternal mortality and morbidity in Mali. The causes of anemia are many and complex, but are influenced by social norms and cultural beliefs as well as lack of access to health and social services. It is in this context that USAID, through the USAID ASSIST Project in Mali, is supporting sites and communities in the Bougouni Health District in the Sikasso Region to reduce the incidence of anemia among pregnant women and children under five years old. This case study describes how addressing gender-related issues contributed to anemia prevention at the community level.

Community committees were formed, supported, and coached regularly to find ways to prevent anemia and get more pregnant women and children into care to address suspected anemia. After identifying and considering gender issues affecting anemia, community committees developed change ideas to address those issues and improve access to health care and land. The committees drew on members of women's groups as well as male health workers and community agents to conduct outreach activities targeting mothers-in-law and husbands for education on the importance of pregnant women attending antenatal services during their first trimester. In addition, these community committees successfully advocated for village leaders to set aside land to grow iron-rich foods for pregnant women and children at risk of anemia. The different change ideas tested by committees translated into a 72% increase in the rate of prenatal consultation in the first trimester of pregnancy within 12 months, and the acquisition of about half a hectare of land by community groups to cultivate foods rich in iron and vitamin A for pregnant women and children under five.

Background

Anemia is one of the leading contributors to infant mortality and morbidity in Mali. Severe anemia is responsible for 28% of maternal deaths and 53% of deaths of children under five years old. Similarly, malnutrition and micronutrient deficiencies (iron, iodine, and vitamin A) are thought to contribute to half of these deaths. The Sikasso Region has the highest recorded number of infants with anemia in Mali. According to various experts, the high prevalence of anemia in Sikasso is linked to lack of nutritional knowledge and the low utilization of health services due to barriers to accessibility and low quality care.

According to surveys conducted in the districts of Kadiolo, Bougouni, and Sikasso of Sikasso Region, fewer than a third of pregnant women were aware of the symptoms, causes, and consequences of anemia. This was particularly true in rural Bougouni District, where use of antenatal care (ANC) services by pregnant women in facilities and in outreach was found to be low, especially ANC in the first trimester.

AUGUST 2016

This case study was authored by Lazare Coulibaly, Aboubakar Dokan Kone, Aba Dorintie, Abdoulaye Sylla, Ibrahima Kamate, and Houleymata Diarra of University Research Co., LLC (URC) and produced for review by the United States Agency for International Development (USAID) by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, funded by the American people through USAID's Bureau for Global Health, Office of Health System. The project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T.H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

In 2013, the Ministry of Health (MOH) of Mali asked for USAID ASSIST support for interventions to reduce the prevalence of anemia among pregnant women and children under five years in Bougouni, addressing barriers at both the facility and community levels. At the facility-level, the project supported the MOH to improve screening for anemia and increase the proportion of pregnant women and children under five years who received nutritional supplements and deworming in 25 health centers. The community-level intervention sought to increase early antenatal care, awareness of anemia prevention and good nutritional practices, and identification of children with signs of anemia.

In Mali, villages often have organized women's groups that support specific activities and social events. Community volunteers known as *relais* and who are mostly male also exist in many rural communities to support health promotion and mobilization. ASSIST supported health facility workers, community health agents (ASC), and *relais* to train women's groups about anemia in 54 of the 492 villages of Bouguoni health district and establish community committees made up of the health agents and community group representatives to support anemia reduction. After the training, these groups were able to recognize the signs and consequences of anemia and encourage members to take actions to prevent anemia.

In June 2015, ASSIST conducted a gender analysis in Mali which identified that family members, particularly husbands and mothers-in-law, have a strong influence on women's access to health services. It also identified access to cultivable land as a challenge for women to improve their nutritional status as well as that of their children. To address these issues, ASSIST supported the community committees to implement innovative activities to strengthen decision-making power and access to health care and land to improve pregnant women's living conditions.

Improving anemia prevention

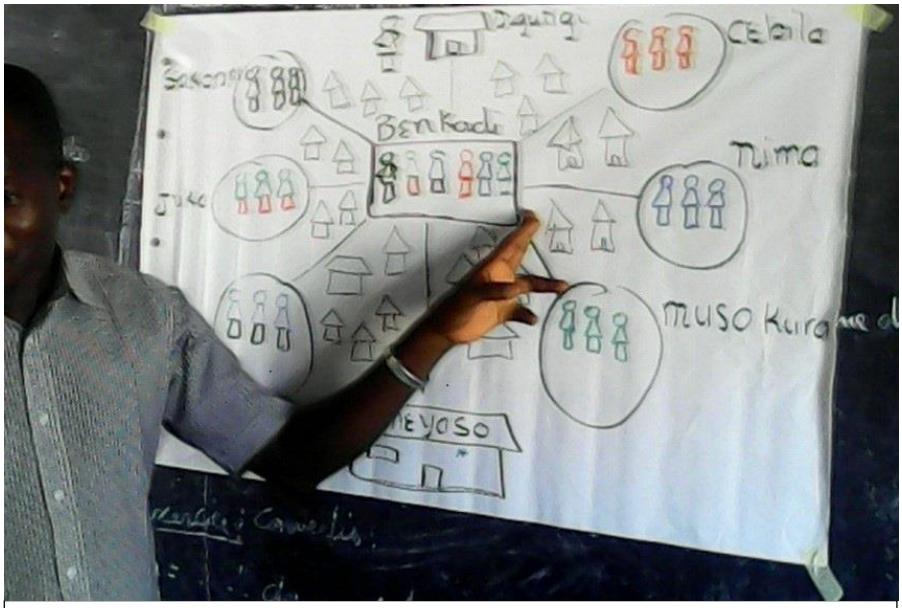
To address issues identified in the gender analysis, ASSIST worked closely with community leaders and stakeholders (including community development committees, ASC, *relais*, and women's groups) as well as government officials in charge of social issues and gender empowerment in the Bougouni district. First, community improvement committees were formed in selected villages, mostly made up of representatives from women's groups. ASSIST supported and coached these committees regularly, which were also assisted by ASCs and *relais*. Men were also recruited for the committees to help in educating village leaders, husbands, and mothers-in-law on the importance of pregnant women attending antenatal care in their first trimester of pregnancy and to help them understand the close connection between seeking care at the health facility and better health of mothers and children. The community committees also advocated for village leaders to set aside plots of land for community members to use to produce iron-rich foods for pregnant women and children at risk of anemia.

A village-based community committee meets. *Photo by Ibrahima Kamate, URC.*

After women's groups were trained about anemia, the community QI committees developed their own change ideas to improve pregnant women's access to health services and land. These ideas built upon existing values of community solidarity and sought to strengthen women's empowerment. With access to

land to garden for nutrient-rich food, women had the opportunity to increase their family's consumption of nutritious food and sell surplus food. The women had control over the food and money from selling the surplus, increasing their autonomy and ability to access health services. Among the ideas tested, those that provide effective include the following:

- Using the village chief as a facilitator to sensitize heads of families on the importance of timely health care for pregnant women.
- Using *relais* and mothers in the community to check whether pregnant women were taking iron and folic acid as prescribed at the health center.
- Including village heads in the learning sessions where representatives of community committees came together to share their progress.
- Establishing community gardens in order to make foods rich in iron and vitamin A available for pregnant women and children under five.



A trainer explains to community coaches the creative scheme of a community health committee to support the prevention of anemia in Bougouni.
Photo by Ibrahima Kamaté, URC.

Results

The different change ideas tested by the community committees led to the following key results:

- The number of antenatal visits in the first trimester of pregnancy increased from 2,664 in July 2014 to 3,714 in August 2015. This represented an increase in the proportion of women who attended their first ANC visit in the first trimester of pregnancy from about 23% in July 2014 to 32% in August 2015.
- 87% of *relais* said husbands and mothers-in-law in their communities were encouraging pregnant women to take iron and folic acid during meals.
- 20 of the 56 community committees each acquired about half a hectare of land from community leaders to grow foods rich in iron and vitamin A; all of these prioritized access to the harvest for pregnant women and mothers of children under five.
- Chiefs in all of the villages with community improvement committees supported the work by actions such as the following:
    - Encouraging women to go for the first antenatal visit in the first trimester of pregnancy
    - Engaging youth to put up fences around community gardens
    - Installing wells for watering community gardens
    - Facilitating the acquisition of seeds for community gardens
    - Mobilizing heads of household and mothers-in-law to support women's actions.

Next Steps

This case study highlights how communities integrated gender considerations into improvement activities to improve maternal and child health. The change ideas and lessons learned have been shared with health authorities and other communities in Bougouni District through various learning and training

sessions. ASSIST is currently working with community groups in other villages to support integrating gender considerations into improvement activities. Some 195 community groups in 39 villages of Bougouni have so far been part of the process, and this experience is now being applied in three more districts of Sikasso: Kolondièba, Kadiolo, and Yanfolila.

Addressing gender-based issues is new in Mali because it represents a fundamental challenge to the traditional lack of empowerment of women in rural areas. But by leveraging social norms and existing community structures to support family health, the project was able to engage community decision makers--who are mostly men—with members of women's groups and community health workers to jointly solve issues affecting the health of women and young children.

This case study shows that integrating gender issues into maternal and child health improvement activities can lead to better outcomes.

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project

University Research Co., LLC • 7200 Wisconsin Avenue, Suite 600 • Bethesda, MD 20814 • USA

CASE STUDY

Reducing the gender-related immunization gap in two districts of Mopti Region in Mali

Summary

The USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project works to improve health services quality and outcomes by strengthening the productivity and performance of the health workforce for a sustainable response. This includes providing assistance for district management to support quality immunization services, strengthening community-facility linkages, and integrating gender considerations to improve health service delivery as well as access and use of health services. ASSIST was asked to work in two districts of Mopti Region as a demonstration, in order to increase complete immunization for children under one year and especially increase acceptance of immunization for girls as recommended by the national immunization program plan.

The immunization improvement activities integrated gender from the beginning. The goals were to improve immunization rates for boys and girls, and to reach equal rates of immunization for both sexes. To ensure ownership and engagement of actors for this intervention, a regional pool of 18 trained improvement coaches and ASSIST staff have continuously supported quality improvement teams to implement all activities at district level.

ASSIST trained 54 providers and 52 immunization agents and conducted 15 integrated coaching visits and four learning sessions. These actors implemented supportive communication activities with social development and women's welfare representatives. As a result, access to immunization improved for male and female infants < one year in the two districts. The gap between male and female infants was reduced from 23% in October 2016 to 9% in August 2017, and the percentage of both male and female infants completing all vaccinations increased from 41% to 83% for males and from 18% to 74% for females.

Background

With funding from the government and various partners, the national immunization program in Mali has made progress in improving the quality of immunization services at health centers and during outreach activities. With 60% coverage for immunization in the country (2015), most of the districts and regions have access to immunization services at the health center, and during outreach activities and campaigns for the population. In 2016, coverage per vaccine was: Penta 3 (diphtheria, tetanus, pertussis, hepatitis B and Haemophilus influenzae type b): 94%; Chickenpox (VAR): 91%, Tetanus Toxoid 2 (VAT2): 67%. Yet, efforts to communicate with communities about vaccine safety and benefits were felt to be insufficient. For example, in central and northern Mali, hesitancy among communities about vaccination and negative beliefs have reduced access to vaccination, especially for girls. To demonstrate a model that could address the root cause of this situation and reduce gender inequalities, the Ministry of Health (MoH)

NOVEMBER 2017

This case study was authored by Lazare Coulibaly, Aboubakar Dokan Kone, Aba Dorintie, Abdoulaye Sylla, Ibrahima Kamate, Houleymata Diarra, and Mayssa el Khazen of University Research Co., LLC (URC) and produced for review by the United States Agency for International Development (USAID) by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, funded by the American people through USAID's Bureau for Global Health, Office of Health System. The project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T.H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

agreed to collaborate with ASSIST to develop an approach to improving equitable vaccination coverage that could be scaled up to facilitate girls' access to vaccines in the central Region of Mopti.

ASSIST worked to improve health services quality and outcomes by strengthening the productivity and performance of the health workforce for a sustainable response. This includes providing assistance for district management to support quality immunization services, strengthening community-facility linkages, and integrating gender considerations to improve health service delivery as well as access and use of health services. ASSIST supported health workers and managers to improve compliance with evidence-based guidelines to achieve better patient outcomes and worked at all levels of the health system to develop capacity to collect and analyze data on quality of services delivered. After the evaluation of the national immunization program, USAID/Mali and the Mali MoH asked ASSIST to include immunization in its quality improvement work as a health systems strengthening project. ASSIST was tasked to work in two districts of Mopti Region as a demonstration, in order to increase complete immunization for children under one year. In particular, USAID and the MoH asked ASSIST to focus on gender issues reducing girls' immunization rate, because in this region, only 59% of children under one received complete vaccination, but with a stark gender gap: among those fully immunized, only 31% were girls, and 69% were boys.

In the two targeted districts, ASSIST directly supported immunization and child health providers in activities to improve compliance with clinical standards for immunizations and community involvement to promote girls' access to immunization services.

Methodology to improve immunization of boys and girls

In January 2017, ASSIST designed an innovative implementation strategy for the pilot immunization improvement intervention combining facility-based efforts with strong efforts to increase community participation. The immunization improvement activity utilized a comprehensive design process to link improvement objectives with national health system strengthening initiatives led by the Global Alliance for Vaccines and Immunization (GAVI). By using this design, ASSIST intentionally planned for scale-up and sustainability of the improvement effort for the immunization activity. Hence, approaches to improve immunization and integration of gender were piloted and best practices were packaged for scale-up in the country.

The immunization improvement activities, which consisted of training, coaching, and data validation, integrated gender from the outset. A desk review on gender issues related to immunization in the targeted districts was initiated which was the followed with the collection and analysis of sex-disaggregated immunization data. Before the implementation of activities, in January-February 2017, 31 Community members were then interviewed in order to understand their feelings about immunization for boys and girls. Based on these findings, ASSIST identified activities to be implemented to improve services. The intervention worked to improve the completion of the immunization schedule for children under one year with a focus on documenting and reducing the gap between male and female completion of the immunization schedule, which was directly tied to boys' and girls' access to vaccination. The goals were to improve immunization rates for both boys and girls and to reach equal rates of immunization for both sexes. To ensure ownership and sustainability of this intervention, a regional pool of improvement coaches was trained, including districts health management team's coaches from targeted districts. From February to August 2017, a total of 18 coaches and ASSIST staff supported quality improvement teams of community health centers and district quality improvement teams to integrate gender considerations in their efforts to improve the vaccination process.

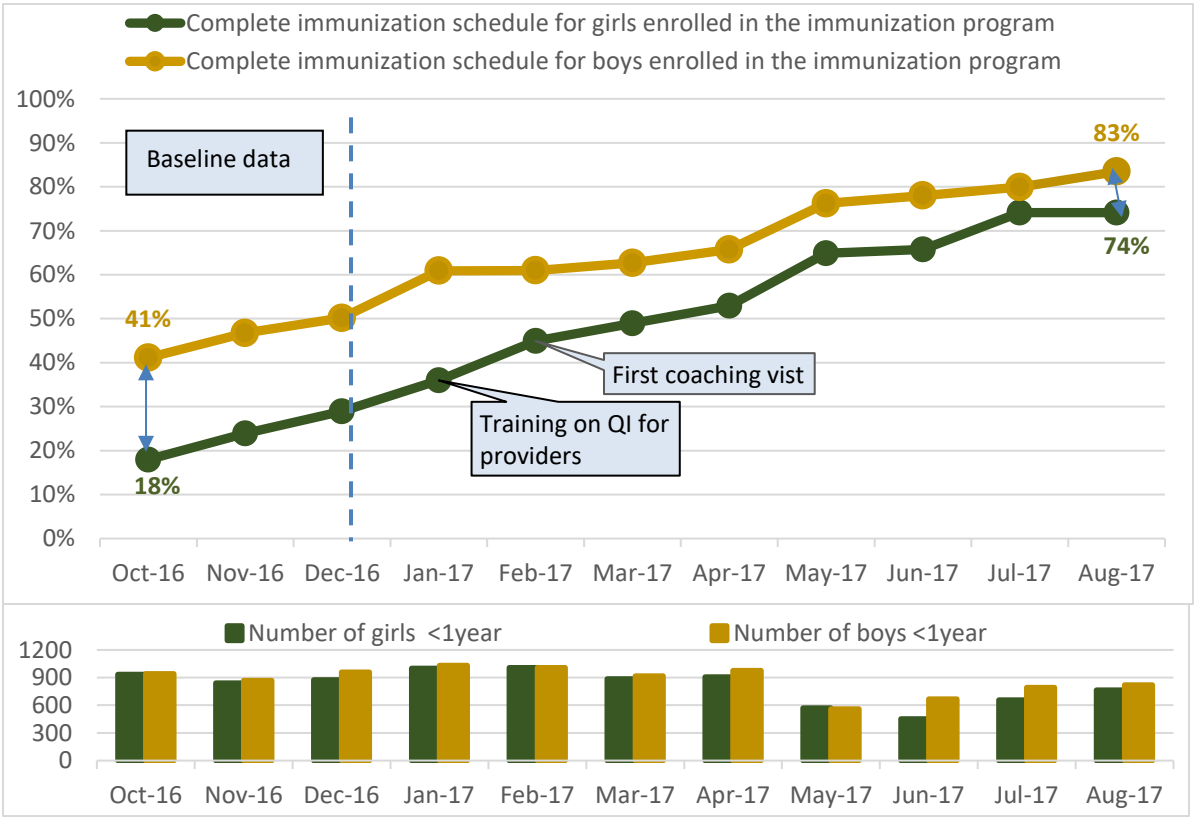
To achieve results, 54 providers and 52 immunization agents were trained and coaching visits and learning sessions were conducted to support the community health center and district improvement teams. Technical experts from the MoH Social Development and Women's Welfare departments, who promote and support health services provision at all level of the system, also supported the design of

communication activities in communities in the targeted districts. During the design of the intervention, ASSIST learned that community members often associate or equate vaccination with family planning for infant girls. Because of this erroneous belief, girls are not brought to the health center for immunization nor brought to immunization outreach activities, and thus do not benefit from immunization services. To address these concerns, communication activities included group discussions at community health centers and at the village level (homes, or Chief of village house) to promote vaccine safety and vaccination for girls and clarify rumors that kept parents from completing their daughters' vaccination schedules.

Results

In the six-month implementation of the intervention, access to immunizations improved for male and female infants under one year in the two districts of Mopti Region. The intervention has worked on both access to immunization services at the health center by increasing outreach activities focused on immunization agents and matrons (community health centers staff). Matrons are responsible for maternity and all community-level outreach activities for pregnant women. Immunization agents are responsible for all vaccination activities at the community health centers and during outreach activities. The completion of all vaccinations, the organization of outreach immunization activities, and the documentation of immunization services were challenging in the targeted region. **Figure 1** shows the percentage of male and female infants under one year receiving all required vaccinations for their age in 44 sites of two districts in Mopti Region which also shows a reduction in gender gap in completing all vaccination. From January through August 2017, the gap between male and female infants was reduced from 23% in October 2016 to 9% in August 2017, and the percentage of both male and female infants completing all vaccinations increased from 41% to 83% for males, and 18% to 74% for females.

Figure 1: Percentage of complete vaccination for infants (under one year), by sex, 44 sites, 2 districts of Mopti Region (Oct 2016- Aug 2017)



Lessons Learned

There were five key points of learning from the immunization improvement activities:

1. Immunization agents and matrons from the community health centers can be engaged to make improvement and measure gains in service quality: immunization agents delivering facility-based immunization services can rapidly improve quality with an improvement approach that engages them in analyzing and acting on gaps in compliance with immunization standards. Many changes can be made with existing resources in a rapid time period, once providers are engaged in the improvement process and are supported by districts and regional health management teams.
2. A multi-profile improvement team made up of district health staff, social development and women's welfare representatives, and ASSIST technical staff proved to be an effective strategy for building the capacity of both site-level and community actors to support improvement in immunization service delivery.
3. Regular ongoing monitoring and evaluation of intervention processes helps teams understand and analyze barriers to quality of services and test change ideas to determine whether these result in better care quality. Sharing lessons learned and results enables many potentially effective changes to be tested at the same time in multiple locations and allows rapid spread of better care practices.
4. Addressing communities' fears and beliefs to overcome gaps related to gender: with the introduction of community-level activities, ASSIST and district staff took time to discuss the best solutions to the challenges communities were facing with local partners. Because of this process, husbands and heads of families were targeted for sensitization messages and mobilization around access to immunization for girls and the benefit for girls' health outcomes. Locally designed solutions yield innovative ways of addressing challenges that are based more on the resources readily available within the community.
5. Integrating gender from the beginning of an activity is key: ASSIST conducted a country-wide, general gender analysis in 2015. For this intervention, the project built on that knowledge by conducting research on gender issues particular to immunization. In addition to conducting a desk review of gender issues relevant to immunization, ASSIST interviewed local community members to learn how gender affected immunization in Mopti, and collected and analyzed data by sex from the beginning of the activity. By integrating gender from the beginning, ASSIST was able to rapidly identify and address the gender gap in immunization rates for infants under one year old in only six months.

Conclusion

Through this pilot, ASSIST built gender into the improvement process from the beginning, by identifying gender-related barriers that can affect immunization interventions in the two intervention districts. By integrating gender and promoting gender equality in the initial design of the immunization improvement activity and acknowledging how outputs can differently affect boys and girls, the activity significantly contributed to reduce the gender gap and increase access to immunization services for girls as well as boys in the villages. This case study demonstrates how integrating gender adds value to the process of quality improvement and improves communities' acceptance of solutions.

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project

University Research Co., LLC • 5404 Wisconsin Avenue, Suite 800 • Chevy Chase, MD 20815 • USA

CASE STUDY

Strengthening integrated family planning/maternal and neonatal health postpartum services and associated health system functions in Niger

Summary

Family planning (FP) is known to be one of the highest impact interventions for reducing maternal and child mortality, yet in Niger, there is a high unmet demand for family planning services. With support from the Ministry of Public Health and the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, improvement teams in two hospitals and 14 health centers in Niger incorporated client-centered family planning services in their routine postpartum care, with an eye towards improving client choice and adherence to the selected FP method. By introducing innovative changes affecting both providers and clients that stimulated interest in FP methods, health facilities in both urban and rural areas in Niger rapidly increased the proportion of women who received FP counseling as part of routine postpartum care, from 9% in December 2013 to 86% in August 2014. The 16 facilities also made gains in increasing the percentage of women discharged with a modern FP method of choice (from 0% in December 2013 to 31% in August 2014) and in increasing the percentage of couples counseled for FP (from 0% in December 2013 to 9.4% in August 2014). The work demonstrated the feasibility and value of integrating postpartum family planning (PPFP) in routine post-delivery care with women and couples by tackling cultural barriers and raising awareness among providers on missed opportunities to address PPFP.

Background

Family planning (FP) is known to be one of the highest impact interventions for reducing maternal and child mortality. However, unmet demand for family planning services remains high in many countries, resulting in a failure to achieve healthy timing and spacing of pregnancies (HTSP) and indirectly contributing to high rates of maternal and child mortality.

In 2013-2015, the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project worked with the Ministry of Public Health (MOPH) in Niger to promote HTSP via improved integration of FP counseling and services into routine public and private sector maternal and child health (MNCH) services in 16 facilities in three districts (two urban and one rural). The intervention was implemented before the recent update of WHO Medical Eligibility Criteria for Contraceptive Use.

Baseline data collected in June-July 2013 from 28 facilities demonstrated significant gaps in the quality of postpartum FP services, including:

- Weak counseling and knowledge about HTSP
- Lack of choice of FP method
- Low availability of long-acting reversible contraceptives
- Low integration of FP into key maternal and child health services
- Poor commodity availability related to weak procurement and supply chain management

SEPTEMBER 2016

This case study was authored by Maina Boucar, Sabou Djibrina, Zakari Saley, and Mayssa el Khazen of University Research Co., LLC (URC) and produced by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, funded by the American people through USAID's Bureau for Global Health, Office of Health Systems. The USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T. H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

- Low provider competency and confidence regarding FP methods
- Lack of community interventions targeted towards male partners.

Working with 16 quality improvement (QI) teams in two hospitals and 14 health centers, ASSIST promoted client-centered FP services to improve client choice and adherence with the FP methods chosen. The intervention also contributed to the reduction of unmet need for FP and achieving healthy timing and spacing of pregnancies.

Intervention to improve PPFP

In 2013, ASSIST began working with the Niger MOPH to apply improvement approaches to strengthen postpartum FP services in 16 primary and secondary maternities in three districts (two urban districts in Niamey, the capital city, and one rural district, Birnin Konni, in the Tahoua Region). The intervention, supported with Cross-Bureau family planning funds through the USAID Office of Health Systems, also sought to generate learning that could be applied in other settings and USAID priority countries to help governments, implementing partners, and other stakeholders strengthen client-centered, effective, and safe postpartum FP counseling and services.

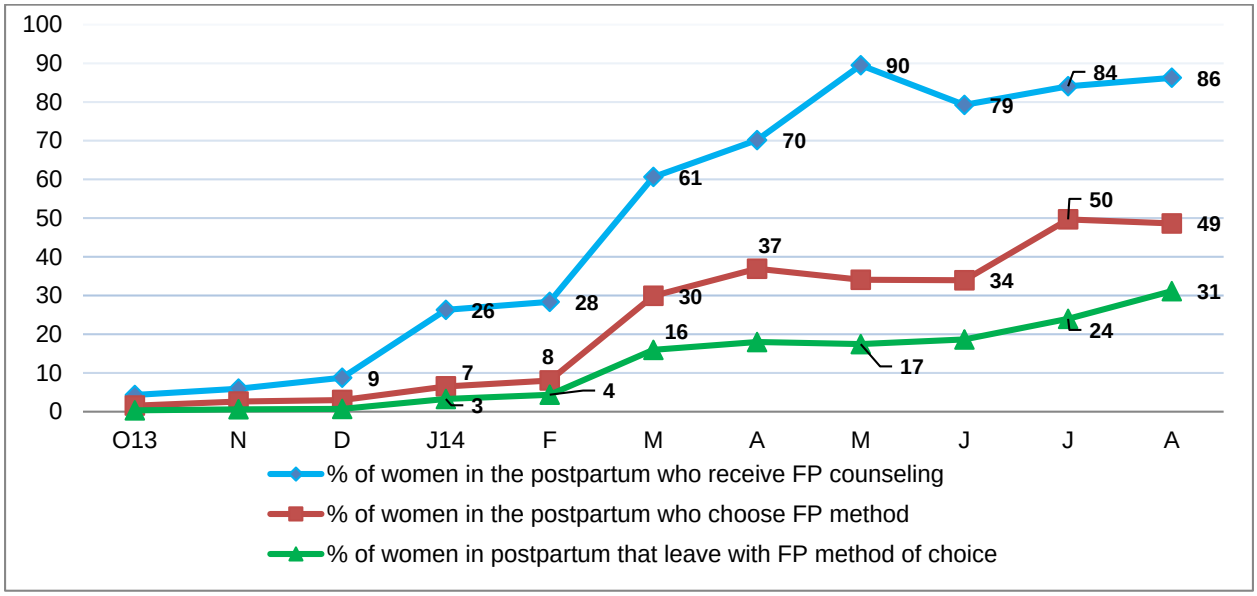
To implement this demonstration project, ASSIST and the MOPH implemented the following activities:

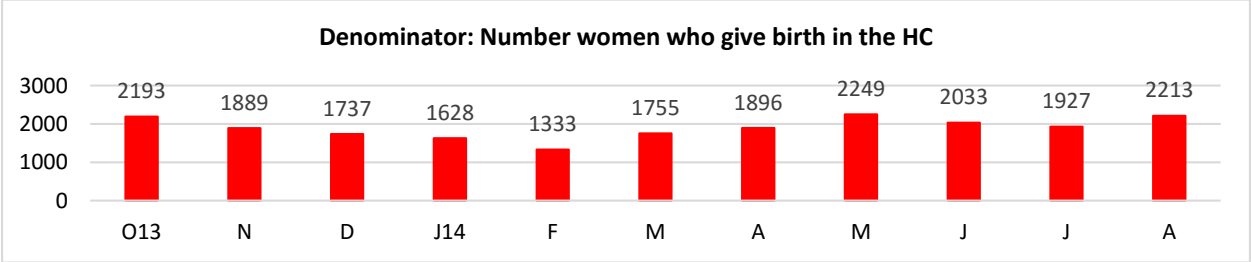
- Worked with reproductive health and FP experts from the MOPH to adapt and update national PPFP standards. Based on these reviews, several products were developed: baseline assessment protocol and tools; provisional improvement aims and indicators; and plans for training/refresher training, learning sessions, coaches' meetings, and coaching visits to support the facility-level improvement teams.
- Conducted a baseline assessment of the quality of PPFP services in 28 health facilities in the three health districts. The health facilities consisted of one Regional Hospital (CHR), one district hospital, three private clinics, and 23 peripheral facilities. As noted above, the baseline assessment demonstrated significant gaps in the quality of postpartum FP services.
- Set improvement aims and developed indicators to measure outcomes. Given the quality gaps identified in the baseline assessment, the following aims were developed in collaboration with MOPH experts:
    - Improve women's informed choice of preferred FP method by improving quality of PPFP counseling and provider-client interaction;
    - Increase the percentage of postpartum women discharged with their FP method of choice by integrating FP services into routine immediate and extended postpartum care;
    - Increase couple involvement in FP counseling to increase uptake, sustain adherence, and improve couple satisfaction with FP services; and
    - Improve safety of FP services by improving adherence with FP method medical eligibility criteria.
- Launched the improvement effort by forming improvement teams in the 16 intervention sites and supported them to test ideas to find the most suitable changes to yield improvement. Teams began improvement work in January 2014. ASSIST support for the intervention ended in March 2015.

Results

After health facility improvement teams began testing change ideas, the sites were able to rapidly improve the integration of FP counseling into routine postpartum care for women, from 9% coverage with PPFP counseling in December 2013 to 86% in August 2014 (**Figure 1**).

Figure 1: Percentage of women counseled for PPFP, selecting a modern PPFP method, and discharged with modern PPFP method of choice, 16 sites, Niamey and Konni districts, Niger (Oct 2013-Aug 2014)





The 16 facilities also increased the percentage of postpartum women discharged with a modern FP method of choice (from 0% in December 2013 to 31% in August 2014) and increased the percentage of couples counseled on FP (from 0% in December 2013 to 9.4% in August 2014). Progress was more gradual for method provision due to the system constraints identified in the baseline assessment, including lack of FP commodities, and for couples counseling due to a lack of provider skill and motivation to counsel couples in place of mothers alone. Additionally, few male partners accompanied pregnant women to the facility or attended discharge. However, by encouraging women to invite their male partners to their discharge and encouraging providers to include PPFP couples counseling as part of the general counseling on nutrition and maternal and newborn health, the percentage of all pregnant women delivering at the facility whose partners came and received couples counseling on FP increased from 0% to 9.4% in eight months.

Key changes made by facility teams

- Acquired essential equipment
- Created a special space for counseling
- Conducted systematic counseling to all postpartum women
- Conducted refresher training for providers on HTSP
- Provided clear job descriptions for providers
- Rotated midwives and assigned one in charge
- Documented counseling in the partograph form
- Encouraged mothers to invite male partners for discharge and FP counseling
- Counseled community leaders in FP and HTSP
- Engaged traditional birth attendants as village counselors

Managers and providers were also supported to apply improvement approaches to identify and overcome critical system barriers that impeded delivery of high-quality PPFP services. For example, improvement teams in the 16 facilities used local data to identify gaps in provider performance and the supply chain. They tracked provider performance as they introduced changes such as observation of simulated FP counseling using a simple checklist.

The project demonstrated that even in a severely resource-constrained environment, gains are possible when managers and front-line providers work together to solve local system challenges and make changes to care delivery processes to implement best practices to reduce preventable child and maternal mortality.

The intervention yielded sizeable gains in PPFP counseling and services in a short period of time. Implementation of improvement activities required innovative changes affecting providers, clients, and couples.

Family planning group counseling session. *Photo by Zakari Saley, URC*

The work highlighted the need to develop an explicit government policy on PPFP and demonstrated the feasibility and value of integrating FP into routine postpartum care with women and couples, tackling cultural barriers, and raising awareness among providers on missed opportunities to address PPFP. The work also made clear that gender norms and roles influenced client and provider expectations of PPFP services.

Way Forward

The results have shown that through small improvement changes one can obtain significant results in PPFP. In Niger, the environment is very receptive to PPFP: essential FP inputs are in place, and providers are aware of this opportunity. This work showed that interactions between providers and clients can be strengthened and that counselling couples on the benefits of healthy timing and spacing of pregnancies in the postpartum period is feasible. It is also vital to involve community leaders in discussing culturally sensitive topics such as birth spacing and sexual education in order to alleviate misunderstanding and create greater tolerance for them. It is equally important to come up with a routine intervention process and support it with tools and job aids. Finally, simply educating health workers about missed opportunities for PPFP proved to be a powerful motivator in these facilities.

We recommend that the MOPH:

- Integrate PPFP into district, regional, and national strategies and plans.
- Plan the scale-up of PPFP best practices within target districts and regions.
- Engage clients, providers, and managers in defining and testing changes to PPFP care processes.
- Develop simple mixed method approaches to improve PPFP service delivery. This includes qualitative measures that regularly capture client experience, expectations, and priorities.
- Gain greater understanding of gender issues influencing client and provider expectations of PPFP services through gender analysis and asking clients, partners, and providers for their views.

This case study was made possible by the support of the American people through USAID. The contents of this case study are the sole responsibility of URC and do not necessarily reflect the views of USAID or the United States Government.

UGANDANS AND AMERICANS IN PARTNERSHIP TO FIGHT HIV/AIDS
PEPFAR

USAID FROM THE AMERICAN PEOPLE

USAID ASSIST Project
Applying Science to Strengthen and Improve Systems

CASE STUDY

Organizing for obstetric emergencies: How Kabarole Hospital in Western Uganda is saving mothers' lives

With support from the United States Agency for International Development (USAID) and the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), Kabarole Hospital in Midwestern Uganda is saving mothers' lives by implementing evidence-based practices for the management of obstetric emergencies like eclampsia, a condition where the woman's blood pressure rises to life-threatening levels. Using quality improvement (QI) methods to examine how they organized care for obstetric emergencies, the QI team at this private, faith-based hospital has made sustainable changes to ensure the availability of life-saving interventions and skilled care whenever they are needed.

Kabarole Hospital is a private, not-for-profit general hospital found in Kabarole District, Midwestern Uganda. The hospital handles approximately 80 deliveries each month. A baseline assessment conducted by USAID ASSIST in April 2013 identified that there were no improvement activities in the maternity department; improvement activities were limited to the HIV clinic. A training was organised in May 2013 where 3 maternity staff were trained in the basics of quality improvement.

After the training, the staff formed a QI team in June 2013 and started analysing their processes of care using data. The team recognised it was facing a challenge of handling cases of mothers with eclampsia, which was among the leading causes of maternal deaths in the hospital. From January to June 2013, the hospital delivered 650 mothers, of which 3 resulted in maternal deaths, 2 of these from eclampsia.

The hospital lacked a functional blood pressure machine and as such was not monitoring blood pressure for all the mothers coming in labor. Urine dipstick testing was only conducted in the laboratory for mothers where blood pressure is taken and found to be elevated. Hypertensive drugs could not be easily accessed in the labour suite for use when they were needed, hence the hospital was not well prepared to handle eclamptic cases when they came in as emergencies. The hospital maternal health QI team acknowledged they needed to change how care was organised to be able to prevent such a tragedy as losing a mother to obstetric complications.

In July 2013, the hospital was invited to send a team from its Maternal and Child Health (MCH) Department to a learning session with QI teams from 19 other health units from four districts that was convened by the USAID ASSIST Project in collaboration with the District Health Management Teams and other U.S. Government-funded implementing partners. At the meeting, teams learned how to use quality improvement methods to look critically at how they were providing care for women with eclampsia and other obstetric complications to see what things they could change to make care better. The learning session also provided teams the opportunity to learn about changes that other teams had already tried out to improve their obstetric complications care.

What did the Kabarole QI team do?

After the July QI learning session, the QI team at the hospital decided to try a number of changes to solve this problem. First, in early August, they instituted **daily review meetings** in the maternity department,

JANUARY 2014

This case study was authored by Paul Isabirye of University Research Co., LLC (URC) in collaboration with Sr. Abesiga Monica, Senior Nursing Officer and QI team leader at Kabarole 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.

conducted every morning from 8:00-9:00am attended by the night and day shift midwives, medical officers, and representatives of the administration. This meeting provided the whole maternity team the opportunity to discuss what transpired in the last 24 hours on the ward, with a focus on the management of any complicated cases on ward. They also looked at data from the maternity register to assess performance and address existing gaps.

By mid August, the team had identified skills gaps among certain maternal and child health staff in emergency management and response. The team decided to conduct **on-the-job training** for MCH Department staff on how to care for a patient with eclamptic fits, especially when a doctor is not available on ward, on preparing an emergency pack and the contents that should be in the pack, and the importance of having the emergency pack ready and available all the time. In the 3rd week of August, the labour ward received 2 mothers in a period of one week who had eclampsia, Both mothers received hands-on care from the trained health workers and were managed successfully.

However, by the end of August, they realised this had not completely addressed the hospital's emergency response. The team decided to make a complete **eclampsia pack** which contained: Magnesium sulphate, Hydralazine, Nifedine, sterile water for injection, syringes, cannulae, strapping, infusion-giving sets, naso-gastric tubes, gauze, cotton, urethral catheter, IV normal saline, urine bag, surgical gloves, injectable diazepam, and specimen bottles for lab tests. This pack is well-labelled and placed in the emergency area ready to handle eclamptic cases. The pack is replenished as soon as it is used up by the midwife who handled the eclamptic case.

Left: Eclamptic pack kept in the labor suite at Kabarole Hospital, ready for use. Right: Contents of an eclamptic pack. Photos by Dr. Paul Isabirye, URC.

By early September 2013, the hospital had seen improvements in how obstetric complication cases were being managed, but the QI team found that there was still low involvement of some MCH staff in the improvement effort. They decided there was a need to **engage the facility administration** in quality improvement activities. The MCH QI team met with the Hospital Administrator to orient her on the value of the quality improvement work and brief her on which changes the team was working on to address the existing challenges. The team received full support of the administration in terms of encouragement to hold meetings and mobilize staff and resources to implement their changes. The team has since seen full involvement of all staff, including medical officers, early reporting of all staff on duty, and handling of complications as a team.

During the period of July- December 2013, the hospital delivered 519 mothers; 15 mothers had pregnancy-induced hypertension, and all were managed successfully with no fatalities. Sr. Monica reports, "The Kabarole MNCH QI team is currently institutionalizing routine assessment and appropriate management of these hypertensive disorders using emergency packs. The monthly coaching visits and quarterly learning sessions by the USAID ASSIST Project have helped us to attain faster improvements in a period of only six months."

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.

UGANDANS AND AMERICANS IN PARTNERSHIP TO FIGHT HIV/AIDS
PEPFAR

USAID FROM THE AMERICAN PEOPLE

USAID ASSIST Project
Applying Science to Strengthen and Improve Systems

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 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

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.

Midwife demonstrating newborn care to a new mother before discharge. *Photo by Dr. Paul Isabirye, URC.*

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.

UGANDANS AND AMERICANS IN PARTNERSHIP TO FIGHT HIV/AIDS
PEPFAR

USAID
FROM THE AMERICAN PEOPLE

USAID ASSIST PROJECT
Applying Science to Strengthen and Improve Systems

CASE STUDY

Addressing Myths and Misconceptions to Increase the Uptake of Contraceptives: The experience of Bukuuku Health Center IV

With support from the United States Agency for International Development (USAID) and the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), 18 health facilities in Western Uganda are preventing unintended and high-risk pregnancies and reducing maternal and new-born mortality by increasing the uptake of modern family planning methods. With support from USAID ASSIST and implementing partners, the facilities applied improvement methods to systematically address barriers to the supply of and demand for family planning. The case study describes the experience of Bukuuku Health Center IV, which made changes at both the facility and community levels to ensure that women in the community had accurate information about contraceptive options and that family planning services were more accessible. In just four months, the improvement team increased the proportion of women at immunization clinics who were counselled on family planning from 38% in March 2014 to 93% in July 2014, and they have sustained this high level of coverage for the past nine months. The proportion of counselled women who left the facility with their chosen family planning method rose from 17% in March 2014 to 38% by July 2014 and continued rising, reaching 79% by March 2015.

Background

Globally, family planning (FP) is recognized as a key life-saving intervention for mothers and their children, reducing unintended and high-risk pregnancies and contributing to lower maternal and infant mortality (WHO 2012). In Uganda, only 26% of married women of reproductive age (15-49 years) are using a modern family planning method, and the unmet need is 34% (UDHS 2011). Perceived side effects, inadequate knowledge on contraceptive methods, fears, and misinformation are some of the reasons women cite for not using contraceptives. Factual information to address myths and misconceptions was therefore expected to have a positive effect on contraceptive uptake.

To address the high unmet need and increase the uptake of family planning among women in districts supported by the PEPFAR-supported Saving Mothers Giving Life (SMGL) initiative, the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project worked in partnership with 17 USG implementing partners and the Ministry of Health to apply improvement methods to integrate and improve the quality of family planning services as part of maternal and child health services.

Baseline Assessment

USAID ASSIST and implementing partners conducted an assessment of the quality of FP services at the Maternal Child Health (MCH) departments at 18 participating sites in January 2014. Results revealed that

APRIL 2015

This case study was produced for review by the United States Agency for International Development (USAID) by University Research Co., LLC (URC) and authored by Rosette Birungi and John Byabagambi of URC. The authors would like to acknowledge the contributions of Rebecca Balinja, Enrolled Midwife at Bukuuku HCIV, Reproductive Health Uganda, PACE, and Marie Stopes Uganda towards achieving these results and the editorial support provided by Angella Kigonya and Tamara Nsubuga-Nyombi of URC. The case study was prepared by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, made possible by the generous support of the American people through USAID. The work of the USAID ASSIST Project in Uganda is supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). 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 USAID ASSIST, please visit www.usaidassist.org or write assist-info@urc-chs.com.

health workers and mothers have a number of misconceptions affecting uptake of family planning methods. These included the following comments:

- *"FP contraceptives cause cancer of the cervix, uterine fibroids, absence of menstruation that may result into blood collecting somewhere in the body, which may burst leading to death."*
- *"The implants can move through blood stream and pierce the heart leading to death."*
- *"The IUD pierces the penis during sexual intercourse."*

Across the 18 sites, contraceptive prevalence found to be 7.8%.

Findings of the assessment were communicated to participating sites by the ASSIST quality improvement officer and the regional and district coaches during coaching visits in February 2014. Health care workers at Bukuuku Health Center IV (HCIV), one of the participating sites, appreciated that the major reason for low contraceptive use was misinformation about contraceptives and fear of side effects. With guidance from the coaches about the functions of a quality improvement (QI) team, they formed a QI team of seven members. The members of the team and their roles are shown in Figure 1.

Figure 1. Bukuuku HCIV improvement team members and roles

Enrolled midwife (Team leader)
Enrolled midwife (Counselor)
Nursing officer/midwife (Dispensing contraceptives)
Nursing officer/midwife (Managing side effects)
Nursing officer (Counselling and HIV testing)
Community volunteer (Sensitising the community)
Nursing assistant (Registering clients)

The team decided to focus on addressing the myths and misconceptions among mothers who attend MCH clinics. The coaching team facilitated a brainstorming session with the facility QI team in which they identified changes to test, prioritized them, and developed plans of action to address the various myths and misconceptions surrounding the use of contraceptives.

Interventions to Improve FP Uptake at Bukuuku HCIV

Facility interventions

*In March 2014, the team began conducting health education sessions targeted at addressing specific misconception*s. During the initial education sessions following the coaching visit, midwives asked mothers about their thoughts on FP and contraceptive use and recorded these various responses. A duty roster was drawn and the team fixed a specific date on which they would address each misconception as noted from the responses. Given that midwives, by virtue of their training, mainly focus on maternal, newborn, and child health, they were assigned the role of health education and counselling.

In the last week of March 2014, the team started asking individuals who have used FP contraceptives before to share experiences. These were either Village Health Team members (VHTs) or women that had been using contraceptives (peer mothers) and are able to speak the widely used local language, Rutooro. FP use improved from 17% in March to 31% in April.

In May 2014, the team translated education messages into Rutooro and wrote them on flip charts. These charts were displayed at the waiting area for mothers to read as they waited to be attended to. They were also displayed in the health education and counselling room for the provider to look at for reference during counselling sessions. By the end of June 2014, contraceptive use had improved to 52%.

Community interventions

From July 2014, the team started conducting community sensitization and mobilization, done by both the VHTs and midwives, focusing on addressing the myths and misconceptions. They targeted various gatherings, such as the worship centres, village meetings, market places, and immunisation outreaches.

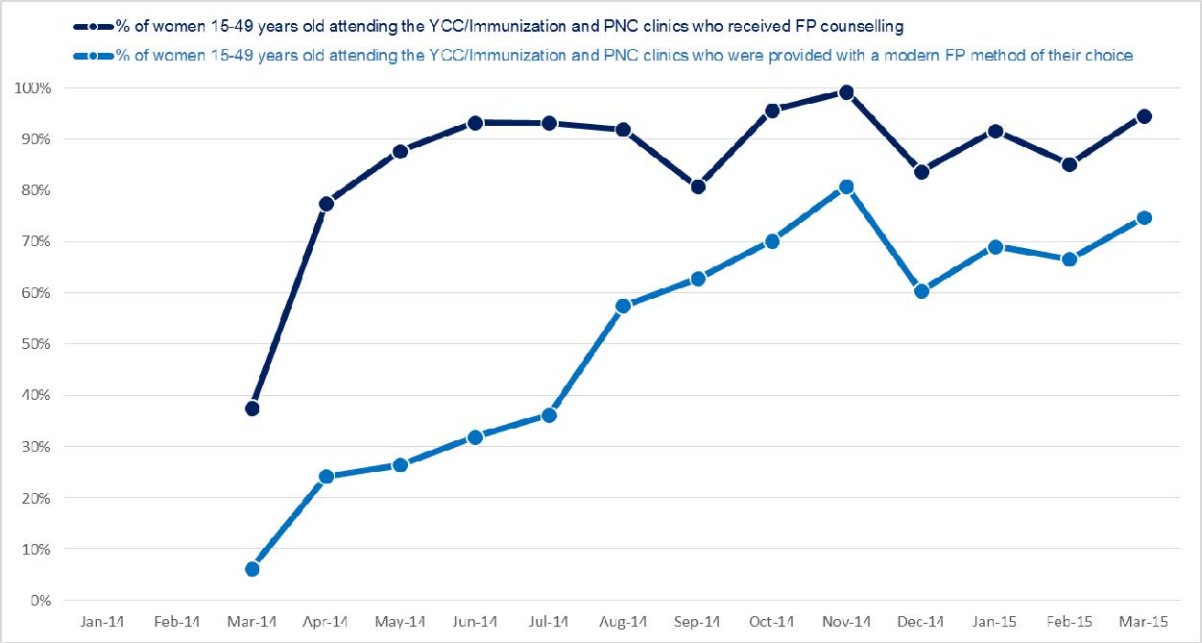
In addition, the VHTs conducted home visits for follow-up of clients who received contraceptives and continued counselling. During sensitization sessions, VHTs gave testimonies and experiences about using contraceptives, while the midwife talked about the benefits of FP, where to access FP services, and what to do in case of side effects. By the end of August, women who were provided with a modern FP contraceptive had improved to 63%.

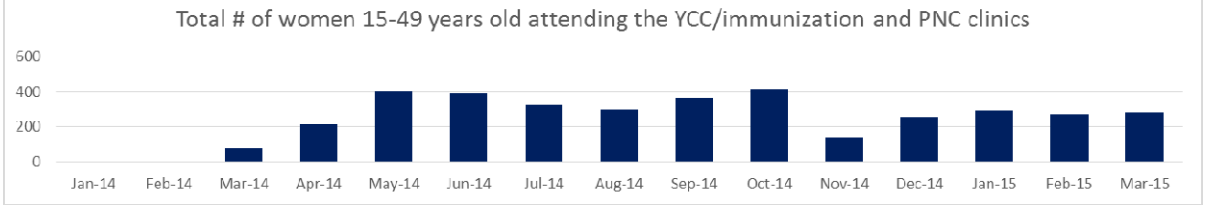
From August 2014 onwards, short-term family planning methods like tablets/pills, injectable Depo-Provera, and condoms were provided during outreaches. Clients due for refills were provided with appropriate methods so that women who could not reach the facility due to lack of transport and other reasons were still being served; uptake of contraceptives increased to 78% in September 2014.

In addition to these actions to improve community awareness and understanding of modern family planning methods, the Bukuuku team also steps to build the skills of staff to provide contraceptives. They attached the midwives to the two existing FP implementing partners, PACE and Marie Stopes Uganda, for on-job training and mentorship on provision of contraceptives, including long-term methods. During FP camps and outreaches, IP staff worked with specific midwives to show them the process for delivery of high-quality FP counselling and services.

Results

The figure below shows how the coverage with family planning counselling of women of reproductive age coming for immunization at the MCH Department of Bukuuku HCIV, steadily increased, from 38% in March 2014 to 95% in March 2015. Importantly, the proportion of these counselled women who left the health center with their chosen family method has also increased notably, from 17% in March 2014 to 79% in March 2015.





Conclusion

Applying continuous quality improvement methodology to systematically address the gaps which affected the uptake of contraceptive use amongst clients led to increased uptake of contraception. The improvement team at Bukuuku demonstrated that by applying one of the key principles of QI, which is listening to and involving clients to identify factors affecting contraceptive uptake, they could attain desired results relatively quickly and sustain them.

CASE STUDY

Increasing the Enrollment of Malnourished Clients on Ready-to-use Therapeutic Foods at Kitgum General Hospital, Northern Uganda

Summary

Hospitals throughout Uganda treat severely malnourished children without medical complications through outpatient therapeutic care programs using ready-to-use therapeutic food (RUTF). During a baseline assessment at Kitgum Hospital in Northern Uganda, facility staff realized that only 60% of its identified malnourished clients at different service points were being appropriately treated for malnutrition using RUTF. A quality improvement team in the hospital identified gaps and tested several interventions to improve the enrollment and treatment of eligible clients with RUTF. They gradually improved enrollment from 30% in June 2015 to maintaining 100% enrollment through April 2016. Enrollment increased due to: 1) use of non-clinical staff to dispense RUTF at different points, and 2) physically escorting identified malnourished clients to reduce the number of malnourished clients getting lost within the health facility when referred to the RUTF dispensing points.

Background

According to the Uganda Demographic Health Survey (UDHS, 2011), 33% of children under the age of five are stunted, 5% are wasted, 14% are underweight, and 60% of child mortality is associated with underlying malnutrition. Micronutrient malnutrition or "hidden hunger" is also common in Uganda, with 23% of women aged 15-49 years and half of Ugandan children 6-59 months being anemic. Hospitals throughout Uganda treat severely malnourished children without medical complications through outpatient therapeutic care (OTC) programs using ready-to-use therapeutic food (RUTF). Cases of moderate acute malnutrition (MAM) with HIV/TB are also treated in the OTC according to the national protocol under the nutrition assessment, counseling, and support (NACS) procedure that stipulates timely detection, referral, and early treatment of clients before the health condition becomes severe or onset of complications.

During a baseline assessment at Kitgum Hospital, which is one of the 11 nutrition collaborative improvement sites that are currently implementing nutrition quality improvement (QI) work supported by USAID ASSIST, staff realized that only 60% of identified malnourished clients at different service points, including the ART clinic, were being appropriately treated for malnutrition using RUTF. The team identified gaps and tested several interventions to improve the enrollment and treatment of eligible clients with RUTF.

Kitgum Nutrition Department QI Team Members

1. Hospital nutritionist
2. Health facility nutrition focal person
3. In-charge ART clinic
4. Nursing officer

Improvement Process

Kitgum Hospital's QI team was a large team that was implementing other improvement projects than nutrition. The nutrition department decided to form its own QI team and was supported by ASSIST to form their own team mainly through coaching, mentoring, and providing the materials and tools needed by the team. The four-person team was able to establish team roles during an ASSIST-led coaching session.

JUNE 2016

This case study was authored by Amos Ndungutse, Pamela Ddongo, Tamara Nsubuga-Nyombi, Esther Karamagi, and Mirwais Rahimzai of University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID). It was prepared by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, made possible through the generous support of the American people through USAID and with funding support from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). We would like to acknowledge contribution from Kitgum district health office, USAID Production for Improved Nutrition (PIN) Project, UNICEF, and Jacqueline Calnan of USAID Uganda. The USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T. H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

The team assessed baseline data for the previous three months and found a 40% gap in enrolling eligible malnourished clients on RUTF. The team identified the following causes leading to this gap in enrollment:

1. Identified eligible clients were getting lost within the health facility when referred from the ART clinic to the RUTF dispensing point
2. Some clients decided not to go the RUTF dispensing point because of stigma attached to RUTF
3. Frequent RUTF stock-outs at the facility
4. Trained health workers who dispense RUTF were not always available at the dispensing point

The nutrition department's QI team developed this improvement objective*: to increase the percentage of eligible malnourished clients enrolled in the OTC program from 60% in March 2015 to 85% by the end of August 2015.* They tested the following changes to attain the improvement objective:

1. Mentor linkage facilitators and engage them to dispense RUTF
2. Identify and escort clients to RUTF dispensing points
3. Create new RUTF dispensing points other than the pharmacy

On a monthly basis, the QI team collected and reviewed data to monitor their progress and make changes in their service delivery to ensure improvements. ASSIST also supported the QI team during monthly coaching and mentorship visits.

Results

Following the first nutrition collaborative learning session in June 2015, the team learned and began testing best practices from other facilities. They gradually improved enrollment from 30% in June 2015 to 70% in July 2015. However in August 2015, they reported only a two percent increase in enrollment and decided to test the following changes to improve further:

- Create more dispensing points for RUTF in the outpatient department, the pediatric ward, and the antenatal clinic. They previously had one dispensing point and one staff, in whose absence clients wouldn't receive RUTF.
- Mentor and engage linkage facilitators to dispense RUTF due to the limited number of health workers.

In September 2016, the QI team saw an improvement from 93% to 100% in enrollment. The OTC program continued to maintain this performance through April 2016, as shown in **Figure 1**. Likewise, the treatment cure rates of clients malnourished who received therapeutic feeds increased from 63% (April 2015) to 92% (April 2016), also seen in **Figure 1** below. **Figure 2** shows the enrollment of malnourished clients on RUTF in 11 other nutrition collaborative sites in comparison to Kitgum Hospital's progress.

Figure 1: Percentage of malnourished clients enrolled on therapeutic foods vs their treatment cure rates, Kitgum Hospital, Northern Uganda

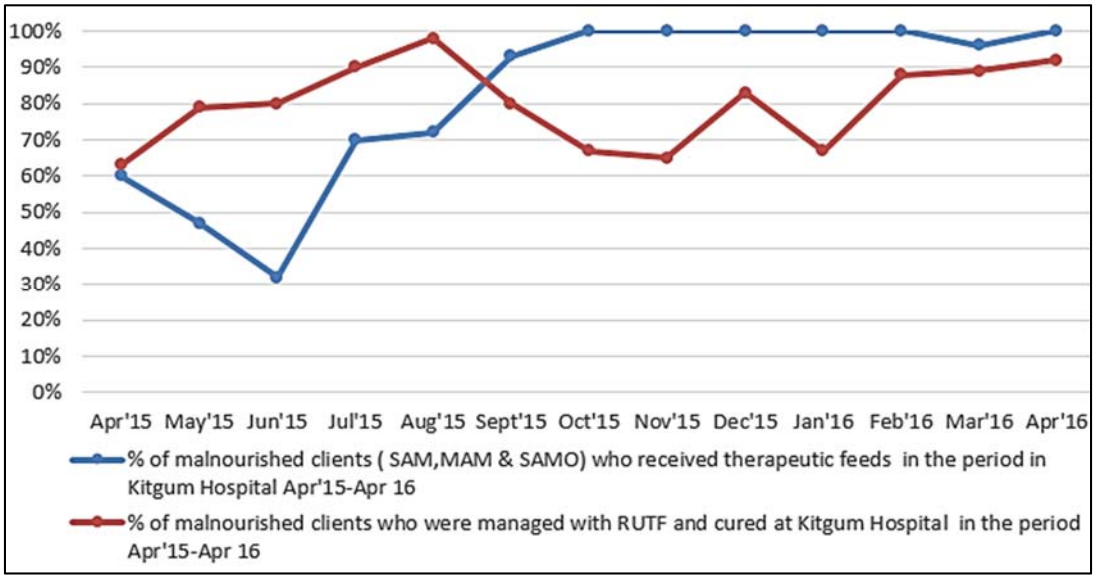
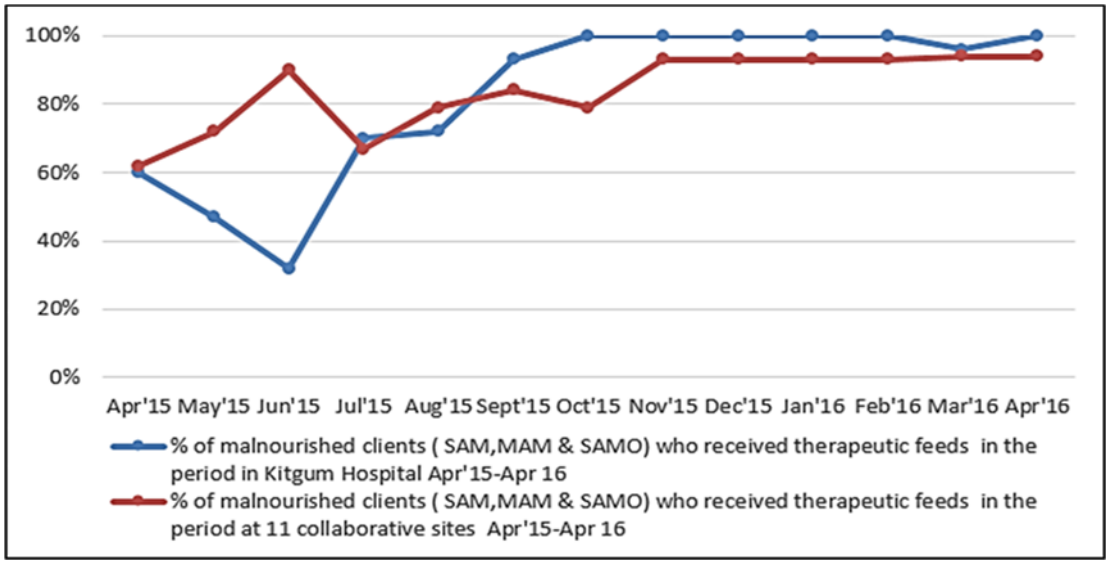


Figure 2: Percentage of enrolled malnourished client therapeutic foods at Kitgum Hospital vs 11 nutrition collaborative sites in Northern Uganda



Lessons Learned

- Creating more dispensing points for RUTF within the health facility improves the enrollment of malnourished clients on RUTF
- Timely ordering of RUTF is key to avoiding stock-outs of RUTF
- Use of linkage facilitators to dispense RUTF improves the enrollment of malnourished clients on RUTF, especially in clinics with few staff
- Physically escorting identified malnourished clients to RUTF dispensing points can improve RUTF enrollment of malnourished clients.

Conclusion

All malnourished clients who are eligible to receive RUTF should be enrolled in the outpatient therapeutic care program and follow treatment according to the MOH's national protocol. Health facilities with heavy workload due to low staffing levels should mentor and use non-clinical staff such as linkage facilitators to dispense RUTF at different dispensing points. These changes are key for successful enrollment of eligible malnourished clients. Having clinical or non-clinical staff physically escort identified malnourished clients will also reduce the number of the identified malnourished getting lost within the health facility when referred to RUTF dispensing points.

This study is made possible by the support of the American people through the United States Agency for International Development (USAID). The contents of this study are the sole responsibility of University Research Co., LLC and do not necessarily reflect the views of USAID or the United States Government.

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project

University Research Co., LLC •

Uganda: Plot 40 Ntinda II Road, Kampala

USA: 7200 Wisconsin Avenue, Suite 600 • Bethesda, MD 20814

CASE STUDY

Functionalizing a Hospital Maternal and Perinatal Death Review (MPDR) Committee: An Experience of Anaka Hospital in Nwoya District, Northern Uganda

Uganda's maternal mortality rate is 438/100,000 live births with most of the maternal deaths resulting from hemorrhage and obstructed labor, while the neonatal mortality rate is 27/1,000 live births with the majority of deaths resulting from infections, birth asphyxia, birth injuries, and complications of prematurity. The Saving Mothers Giving Life (SMGL) Initiative, a partnership between the US and Uganda governments was launched to accelerate a reduction of maternal and newborn mortality rates in selected districts of Northern and Western Uganda. In Northern Uganda, 6 districts with the highest maternal and newborn mortality rates were supported to implement high-impact, low-cost interventions in reducing maternal and newborn deaths at 118 health facilities. In Anaka Hospital, one of the SMGL-supported health facilities in Nwoya district, there was no functional MPDR Committee. 75% of perinatal deaths were being audited and the perinatal death rate was at 30/1,000 live births. In March 2015, ASSIST through SMGL supported the formation & functionalization of the MPDR quality improvement (QI) committee. ASSIST supplied the MPDR policy and books. The committee assigned a focal person to coordinate review meetings. The team scheduled weekly MPDR meetings. The assigned maternity wards sorted the death files and stored them separately. The committee supported lower health facilities, including health center IIIs. The percentage of perinatal deaths audited increased from 75% to 100% by December 2015. The perinatal mortality rate reduced to 0/1,000 live birth in June 2016 across the 4 health facilities in Nwoya district.

Background

The institutional maternal mortality rate in northern Uganda was estimated to be 143/100,000 in 2013/14 (*Annual Health Sector Report*), while the newborn mortality rate was estimated to be 31/100,000, with both being above the national averages. The Ministry of Health (MOH) conceptualized the MPDR audits as one of the solutions to reducing the high mortality rates. Both health facilities and regional level facilities are mandated to conduct these audits as a key component in identifying gaps within and outside the facility where these deaths take place, and to immediately inform process changes and community interventions to address these gaps.

The MPDR is a qualitative, in-depth investigation of the causes and circumstances surrounding a small number of maternal deaths occurring at selected health facilities and communities.[1] The MOH stipulated that on occurrence of either a maternal or perinatal death, a short message system (SMS) notification message must be sent to the MOH through an electronic system, MTRAC, within 24 hours

[1] http://www.health.go.ug/MoH/docs/MPDR-Guidelines.pdf.

JULY 2017

This case study was authored by Damasco Wamboya, Carolyne Oleo, Alex Muhereza, Judith Aloyo, Paul Isabirye, Dinah Amongin, Esther Karamagi and Mirwais Rahimzai of University Research Co., LLC (URC). We would like to acknowledge the contribution of the maternal and newborn health quality Improvement team at Anaka Hospital in Nwoya. It was produced by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, funded by 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. URC's global partners for USAID ASSIST include: Encompass LLC; FHI 360; Harvard T.H Chan School of Public Health; HEALHTQUAL International; Institute for Healthcare Improvement; Initiatives Inc.; Johns Hopkins University Center for Communication Programs; and WI-HER. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

by a staff member who was present. In addition, a MPDR audit must be conducted by a selected MPDR committee within 7 days.

The MPDR process was one of the key preventative high impact interventions that USAID Applying Science to Strengthen and Improve Systems project (ASSIST) supported health facilities institutionalized under the Saving Mothers Giving Life (SMGL) project that began in February 2016. SMGL was geared at reducing maternal and perinatal deaths across 20 high-volume health facilities and 98 scale-up sites in 6 districts in northern Uganda.

Anaka General Hospital is the main referral facility of Nwoya district offering comprehensive emergency obstetric and newborn care services. The facility conducts 1,317 deliveries per annum. With the start of SMGL in Nwoya district and at this facility, the maternal, newborn and child health (MNCH) health care providers were trained in essential obstetric and newborn care, including maternal and perinatal death review processes.

A March 2015 baseline assessment conducted by ASSIST indicated that despite an average of 5 perinatal deaths monthly and a 30/1,000 perinatal death ratio, there was no functional MPDR committee; all deaths were being audited by a senior midwife who wouldn't routinely report to the district or notify the MOH within the stipulated time period.

Box 1: Anaka Hospital MPDR Team Composition:

1. Medical Superintendent
2. Medical Officer In Charge
3. Principal Nursing Officer/ Matron
4. Hospital Administrator
5. Dispenser
6. Laboratory Technician
7. Anesthetist Officer
8. Record Assistant
9. Community Health Dept. In Charge
10. Maternity In Charge
11. MNCH Staff

Improvement Process

ASSIST began SMGL interventional support at the hospital in June 2015 where it formed a quality improvement team in the maternity department. Ona monthly basis, through coaching and mentorship visits, the team spread best practices in reducing maternal and perinatal deaths, including increased correct partograph usage to monitor the labor process, active management of the third stage of labor, improved newborn resuscitation skills and the provision of the essential newborn care package. Despite these changes, perinatal death rates were not dropping drastically.

During a coaching visit to the facility in October 2015, ASSIST supported the maternity team to form the MPDR committee (**box 1** on the right) following the MOH policy guidelines. Barriers identified by the new committee included: stock out of MPDR books, that death files were being mixed with other files and couldn't be easily identified, staff taking these reviews as critique, blaming and punitive sessions which couldn't be responded to positively, and a lack of a schedule for these meetings. The committee also came up with the following responsibilities for themselves: notify the MOH within 24 hours of death and audit within 7 days, prepare and organize the MPDR meetings, identify key avoidable factors and recommend appropriate solutions, mobilize resources to implement recommended actions, synthesize findings and give feedback to the District Health Office and follow up on recommendations to ensure appropriate actions are taken.

Box 2: Interventions to Improve MPDR:

- Form the MPDR committee
- Supply the MPDR forms and books (by ASSIST)
- Assign a focal person (a maternity ward staff) to coordinate the MPDR meetings
- Schedule a day (Thursday) within a week for the MPDR meetings
- Sort the death files and store them separately (by the facility)
- Support the lower health facilities to conduct their own audits (by the facility)

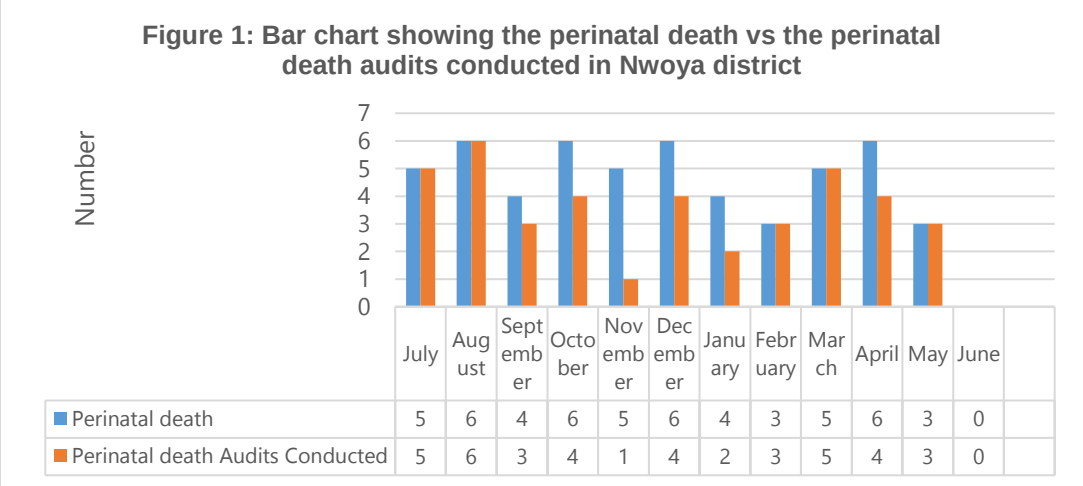
An improvement objective for the committee was to increase the percentage of maternal and perinatal death that are audited from 75% in September 2015 to 100% by December 2015. The health facility team tested the following changes (**box 2**) to attain the improvement objective.

The MPDR committee also agreed to support 3 high-volume health center IIIs on site, including Kochgoma HCIII, Alero HCIII, and Purongo HCIII, to conduct any perinatal audits in the event that they occurred. They began a process where the health center IIIs would inform the MPDR focal person, who mobilizes the hospital audit team, to visit that health facility. The reports from these audits would then be shared with the DHO and the district biostatistician who inputs them into the DHIS2 (the national health information reporting system).

Results

On a monthly basis, the team collected and reviewed data to monitor their progress. By June 2016, 100% of perinatal death audits were conducted as shown in **Figure 1**. The commonest cause of death was birth asphyxia due to delay to make a decision to go for skilled birth attendant and eventually delay to reach the facility, poor resuscitation skills for the asphyxiated newborns, and late referrals from the lower health facilities to Anaka hospital. The Audit committee set up recommendations which included setting up Helping Babies Breathe skills lab where midwives would practice and learn how to resuscitate under the supervision of an expert midwife, the committee also went and audited the cases that died at lower health facilities and the focal person for the committee trained the staff there in resuscitation skills and monitoring of mothers in labor using a partograph. This improvement in staff skills in newborn resuscitation and labor monitoring improved timely management of labor related complications and led to a reduced rate of perinatal death from 30/1,000 live births to 0/1,000 live births in 4 facilities in Nwoya district in northern Uganda during the same intervention period, as shown in **Figure 2**.

Figure 1: Perinatal death compared to perinatal death audits, Nwoya district (July 2015-June 2016)



According to the team, listed below are the most effective changes that brought about improvement;

- Selecting the MPDR focal person, who is also the in-charge maternity unit, as the second person to be in charge of the ambulance fuel. (This saw an improvement in response to referrals from lower health facilities to the hospital from 2 hours to an average of 1 hour response time).
- Having well-equipped and ready to use resuscitation trays in the labor suite, these should contain: an ambubag, penquin sucker, a thermometer, stethoscope, different size

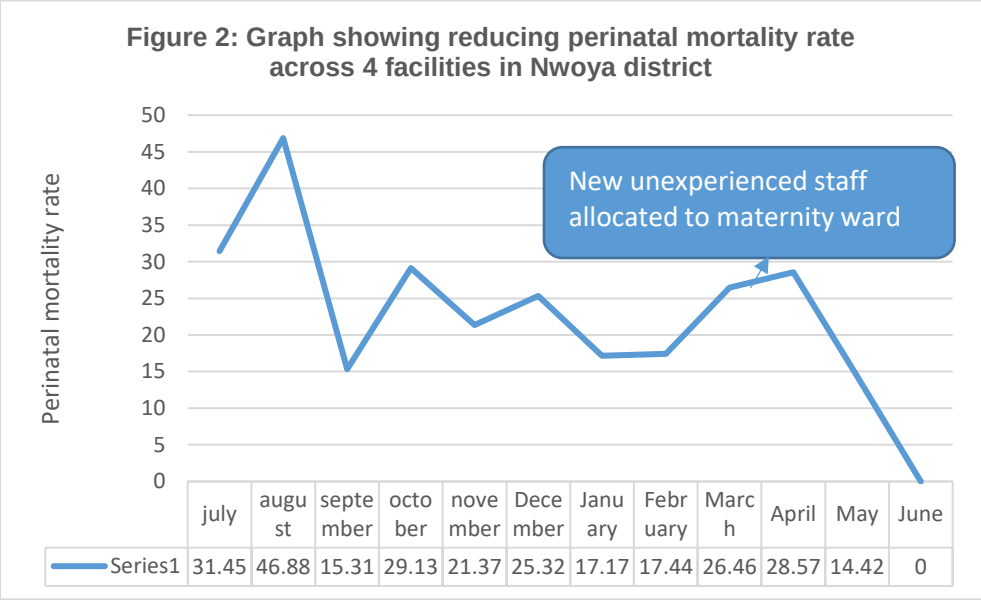
Bright Spot:

The MPDR team identified a Traditional Birth attendant (TBA) in Alero sub-county who was deterring the mothers. Through ASSIST, the community team engaged her to change her role from delivering mothers to referring them to the health facility. She has also been incorporated into the Village Health Team system of her village. Since January 2016, she no longer delivers mothers and instead she escorts them to Alero health center III.

nose masks, adrenaline injection, dextrose 10%, a cannula and IV giving set.

- Starting up the HBB skills lab for staff to continuously improve their skills.
- Screening all pregnant women for syphilis during their ANC visits to curb macerated still birth rates.

Figure 2: Reduction in perinatal mortality rate, 4 facilites, Nwoya district (July 2015-June 2016)



Lessons Learned

1. Assigning a focal person to coordinate members for the MPDR meetings greatly improves the MPDR processes.
2. Sorting of death files increases the efficiency of the MPDR meetings.
3. Scheduling of the day within a week to have the meetings held improves MPDR.
4. Supporting lower health facilities to conduct MPDR audits reduces delays in referral of complicated deliveries that may predispose both mothers and newborns to mortality.

Conclusion

All maternal and perinatal deaths should be audited to identify avoidable causes of death that can then be addressed to prevent and reduce the deaths. Assigning the focal person to coordinate the MPDR meetings improves the MPDR processes. Sorting the files of the deaths improves the efficiency and therefore reduces the time taken to retrieve the files for the audit. These changes are key for successfully improving the MPDR processes in a similar setting. Scheduling a day for MPDR meetings also creates awareness amongst the team and keeps them reminded of the meetings.

DISCLAIMER: This study is made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this study are the sole responsibility of University Research Co., LLC and do not necessarily reflect the views of USAID or the United States Government.

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project

University Research Co., LLC

Uganda: Plot 40 Ntinda II Road, Kampala

USA: 5404 Wisconsin Avenue, Suite 800, Chevy Chase, MD 20815

CASE STUDY

Improving New-born Resuscitation Outcomes through the Establishment of Helping Babies Breathe (HBB) Skills Labs at Pope John Paul's Hospital Aber (PJPHA) in Oyam District, Mid-Northern Uganda

Birth asphyxia is a major cause of neonatal mortality in Uganda and similarly at Pope John Paul's Hospital Aber (PJPHA). At PJHPA, during baseline assessment, 0% of the babies born with birth asphyxia were successfully resuscitated (discharged alive) in November 2015 and the pre-discharge neonatal mortality rate was high at 26.9/1,000 live births. A quality improvement (QI) team in the hospital identified gaps and tested several changes to reduce neonatal deaths due to birth asphyxia. Successful neonatal resuscitation improved from 0% in November 2015 to 80% in February 2016 and correspondingly, pre-discharge NMR reduced from 26.9/1,000 live births to 11.0/1,000 live births. The improvement was due to: 1) establishment of HBB skills lab to continuously improve the neonatal resuscitation knowledge and skills among care providers 2) Assignment of a focal person and the posting of reminders to maintain emergency preparedness for timely initiation of neonatal resuscitation.

Background

The USAID Applying Science to Strengthen and Improve Systems project (ASSIST) Maternal Newborn Child Health (MNCH) project supports 16 districts in mid-northern Uganda to reduce maternal and neonatal mortality using lessons learned from the Saving Mothers Giving Life (SMGL) collaborative. Birth asphyxia, the failure to establish breathing at birth (*World Health Organization*), is one of the leading causes of neonatal mortality in Uganda contributing up to 27% of all neonatal deaths (*World Health Statistics 2014).* HBB is an intervention that is known to reduce neonatal mortality due to birth asphyxia. A study conducted in Uganda by the USAID ASSIST Project in 2016 revealed inadequate newborn resuscitation knowledge and skills among care providers; only 6% of care providers met the minimum skills requirement for resuscitation with a bag and mask (essential & basic breathing aid equipment for newborn resuscitation). During the baseline assessment by USAID ASSIST in November 2015 at PJPHA, 0% of the babies born with birth asphyxia were successfully resuscitated (discharged alive) and as a result, the pre-discharge neonatal mortality rate (P re-discharge NMR) was high at 26.9/1,000 live births, which is above the national neonatal mortality rate of 23/1,000 live births (*World Health Statistics 2014)*.

QI work supported by USAID ASSIST at PJPHA started with the formation of a QI team comprising of maternity ward staff who subsequently started a QI team project to reduce neonatal mortality due to birth asphyxia. The teams identified gaps and tested several changes to reduce newborn deaths due to birth asphyxia.

JULY 2017

This case study was authored by Hellen Kyokutamba, Robert Mutumba, Pamela Ddongo, Paul Isabirye, Dinah Amongin and Esther Karamagi of University Research Co., LLC (URC). It was produced by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, funded by 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. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard T.H Chane School of Public Health; HEALTHQUAL International; Institute for Healthcare Improvement; Initiatives Inc.; Johns Hopkins University Center for Communication Programs; and WI-HER, LLC. For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

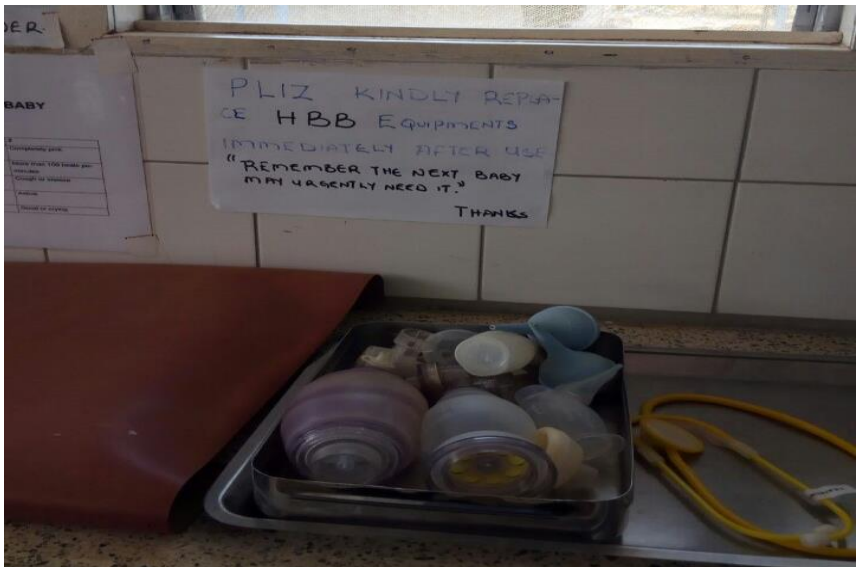
Improvement Process

In November 2015, the QI team comprised of midwives, the maternity ward in-charge, doctors, and the hospital medical superintendent started an improvement project to increase the percentage of babies born with birth asphyxia who are successfully resuscitated. Through a brainstorming session, the team identified gaps with neonatal resuscitation. The gaps identified as causes of newborn deaths due to birth asphyxia were:

1. Lack of a newborn resuscitation area in the labour suit/operating theatre.
2. Lack of emergency preparedness to initiate new born resuscitation in a timely manner.
3. Newborn resuscitation skills and knowledge gaps among health workers (identified as the major cause of newborn deaths due to birth asphyxia).

The QI team tested changes to improve outcomes of babies born with birth asphyxia. The team started with setting up and labelling newborn resuscitation corners as a specific point in the labour suit and theatre with HBB action plans and resuscitation equipment (Ambu bag and bulb syringe).

Following the establishment of the resuscitation corner, the QI team noticed that the resuscitation equipment was usually absent from the corner when needed to successfully resuscitate within the 'Golden Minute'; the critical first minute after birth during which resuscitation should be initiated for optimal outcomes (if not initiated a newborn's survival is unlikely). The team then decided to maintain emergency preparedness by assigning a focal person (midwife) the responsibility of ensuring that the resuscitation equipment is always replaced after use at the resuscitation corner. Reminders were also put up at the resuscitation corner for the equipment to be replaced after every use.



Reminder at the HBB corner to replace the used resuscitation equipment. Photo by Hellen Kyokutamba

In addition, the QI team established an HBB skills lab for the care providers to continuously practice newborn resuscitation and improve their skills. To establish an HBB skills lab:

a) USAID ASSIST supported the maternity ward staff to retrieve their Neonatalie kit (a training infant mannequin responsive to resuscitation stimuli) from the hospital stores, and supplied them with an HBB action plan, learner's work books, and flip charts.

b) A midwife was assigned the role of identifying an area at the maternity ward where neonatal resuscitation could be routinely practiced. A corner of the maternity admission room was identified and labelled 'HBB skills lab corner.' The Neonatalie kit, learner's work books, flip charts, and the HBB action plan were kept together and displayed at this corner.

c) A schedule and tool to guide, monitor, and improve the practice sessions of newborn resuscitation was designed and used at every session.

d) The maternity ward staff met every week at the HBB skills lab corner to practice and improve their neonatal resuscitation skills and knowledge using the Neonatalie Kit, HBB action plan, learner's work

HBB Skills Lab Corner and midwives Having an HBB Skills Session Photos by Hellen Kyokutamba

book, and flip chart. The staff also shared their experiences and audited the neonatal deaths that occurred due to birth asphyxia during these sessions.

e) The midwives and other caregivers continued to independently practice neonatal resuscitation at the HBB skills lab corner on a daily basis when on duty.

On a monthly basis, the QI team supported by USAID ASSIST collected and reviewed data to monitor progress and make changes to ensure reduced deaths due to birth asphyxia.

Tested Changes to Improve Successful Neonatal Resuscitation:

a) **Setting up HBB corners at the maternity ward and Theatre.**
b) **Maintaining emergency preparedness to perform neonatal resuscitation by assigning a focal person to monitor replacement of the resuscitation equipment after use and putting up reminders for all midwives to always replace used equipment at the HBB corner.**
c) **Establishing an HBB skills lab for the care providers to continuously practice and improve neonatal resuscitation skills and knowledge.**

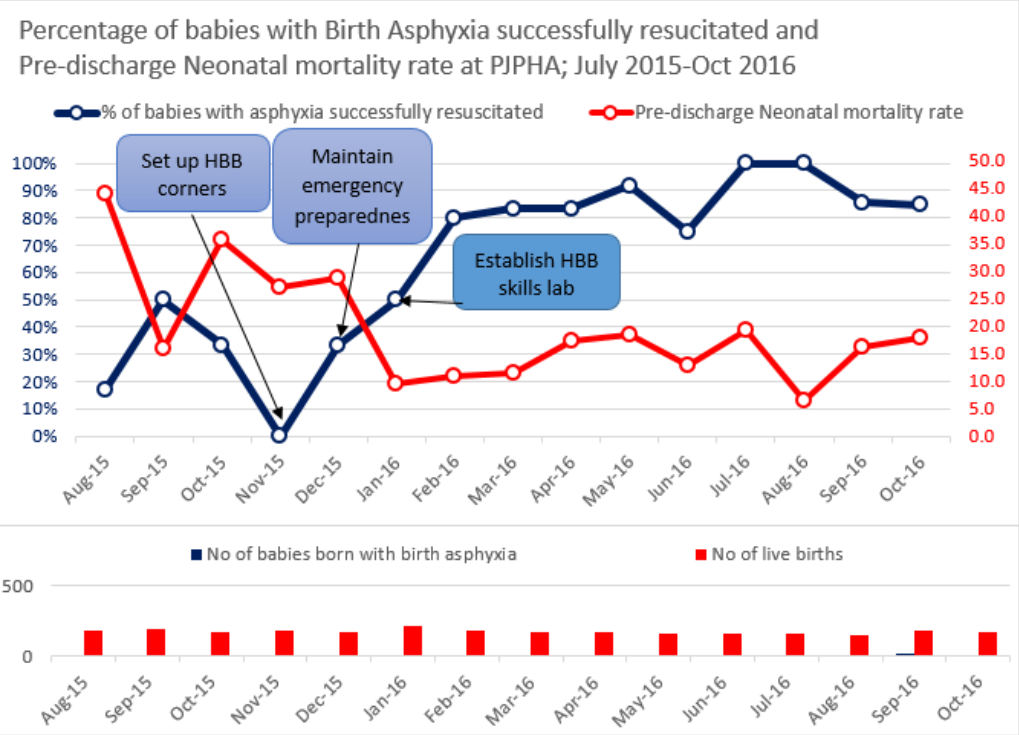
Results

After the establishment of newborn resuscitation corners, the percentage of babies with asphyxia successfully resuscitated increased form 0% in November 2015 to 33% in December 2015. Through maintenance of emergency preparedness, the successful resuscitation further increased to 50% in January 2016. The percentage of newborn babies who are successfully resuscitated improved from 50% in January 2016 to 80% in February 2016 following the establishment of HBB skills lab and has continuously improved to be sustained above 80%.

As a referral centre, PJPHA receives up to 20% of late referrals. As such, cases of severe birth asphyxia that are not successfully resuscitated account for the margin of 10-20% of babies who are not successfully resuscitated. The neonatal mortality rate reduced correspondingly from 26.9/1,000 live births in November 2015 to 11.0/1,000 live births in February 2016.

The maternity ward staff are continuing to maintain these changes and sustain the performance. Figure 1 illustrates the progress and results with successful resuscitation of babies born with birth asphyxia.

Figure 1: Improvement in the percentage of babies with birth asphyxia successfully resuscitated and pre-discharge neonatal mortality rate, PJPHA (July 2015-October 2016)



Lessons Learned

1. Establishment of HBB skills labs continuously improves the skills and knowledge of health workers in neonatal resuscitation.
2. The setting up of neonatal resuscitation areas at the labour wards and theatres improves timeliness of initiation of resuscitation of babies born with birth asphyxia.
3. Appointment of a focal person to maintain emergency preparedness and display of reminders to replace used resuscitation equipment improves the timeliness and outcomes of neonatal resuscitation.

Conclusion

Health workers should continuously improve their neonatal resuscitation skills and knowledge through the establishment of HBB skills labs. Neonatal resuscitation areas should be established at all labour wards and theatres, emergency preparedness maintained for timeliness of initiation of resuscitation and improved outcomes of babies born with birth asphyxia.

DISCLAIMER: This study is made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this study are the sole responsibility of University Research Co., LLC and do not necessarily reflect the views of USAID or the United States Government.

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project

University Research Co., LLC

Uganda: Plot 40 Ntinda II Road, Kampala

USA: 5404 Wisconsin Avenue, Suite 800, Chevy Chase, MD 20815

USAID APPLYING SCIENCE TO STRENGTHEN AND IMPROVE SYSTEMS PROJECT

University Research Co., LLC
5404 Wisconsin Avenue, Suite 800
Chevy Chase, MD 20815

Tel: (301) 654-8338
Fax: (301) 941-8427
www.usaidassist.org