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MINISTRY OF HEALTH

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Maternal and Child Survival Program

Scaling up practice improvement for labor management and immediate newborn care in Rwanda

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Scaling up an Integrated Practice Improvement Package for Newborns

In 2011, Rwanda's Ministry of Health (MoH) introduced a resuscitation program known as Helping Babies Breathe (HBB) to manage newborns with birth asphyxia as part of its in-service and pre-service midwifery training. Evidence has shown that HBB can substantially reduce newborn mortality and reports of fresh (intrapartum) stillbirths when done in a research setting.[1] The question was whether Rwanda could duplicate these results on a large scale in routine practice across the entire country. Initial experiences after the 2011 trainings were not as encouraging as hoped. Data from the 2015 national neonatal death audit revealed that birth asphyxia remained the leading cause of newborn death in the country, accounting for about 38% of all newborn deaths. Moreover, these deaths continued to occur despite the fact that most newborns born with asphyxia should have benefitted from an effective HBB intervention, given that over 90% of Rwandan women give birth in facilities.

At this point, the MoH decided to take decisive action to improve newborn outcomes at health facilities, using new and emerging lessons on strategies to better foster and sustain change in health providers' clinical practices in maternity wards. These integrated strategies aimed to improve provider capacity to prevent and manage birth asphyxia cases, as well as to maintain newly acquired skills. Such skills include management of labor using the partogaph, provision of essential newborn care (ENC) for all babies, and improved newborn resuscitation for babies born with asphyxia using HBB methods. The MoH, in close collaboration with the US Agency for International Development's (USAID's) flagship Maternal and Child Survival Program (MCSP), implemented three integrated strategies to reduce newborn death due to asphyxia in 10 districts: enhanced **provider capacity building** through low-dose, high-frequency (LDHF) training, followed by **mentoring** and **focused quality improvement (QI) activities**.

Rolling Out the Strategy

With funding from USAID, MCSP assisted the MoH in rolling out the integrated practice improvement package (**Figure 1**)—through a phased approach—starting in four districts in Phase I and adding six districts in Phase II. Phase I districts (Musanze, Rwamagana, Kamonyi, and Ngoma) began implementing the package in mid-2016 and shared results and lessons during a national stakeholder workshop in December 2016. During this workshop, districts and partners made recommendations that guided further improvements in the Phase I districts, as well as informed roll-out of the package in the Phase II districts (Nyabihu, Nyaruguru, Gatsibo, Nyagatare, Nyamagabe, and Nabihu).

[1] Msemo G, Massawe A, Mmbando N et. al. 2013. Newborn mortality and fresh stillbirth rates in Tanzania after helping babies breathe training. *Pediatrics.*131(2): e353–360. doi: 10.1542/peds.2012-1795. Epub 2013 Jan 21.

The Integrated Practice Improvement Package to Reduce Newborn Asphyxia is composed of three integrated strategies: 1) LDHF capacity building that delivers clinical content to health care providers during short, targeted training activities in facilities; 2) regular mentoring visits from district-based providers to engage with facility providers to identify knowledge gaps and reinforce high quality ENC/HBB practices; and 3) focused QI activities to improve outcome indicators and facility readiness, including plan-do-study-act (PDSA) cycles,[2] QI supervision, use of QI checklists, and use of data packages and key indicators plotted over time (Figure 1). Together, these three strategies are designed to improve provider skills, knowledge, and practices for managing labor and providing ENC/HBB services to babies. **Figure 2** shows the logic model and expected outcomes of the practice improvement package. Over the course of 18 months, MCSP measured key indicators of success across the 10 implementation districts, including clinical outcome indicators and newborn morbidity and mortality.

Figure 1. Components of the integrated practice improvement package to reduce newborn asphyxia

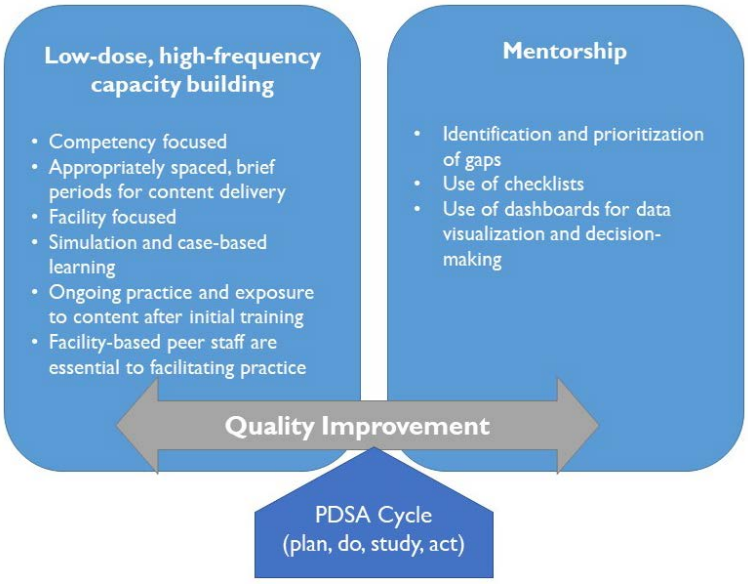
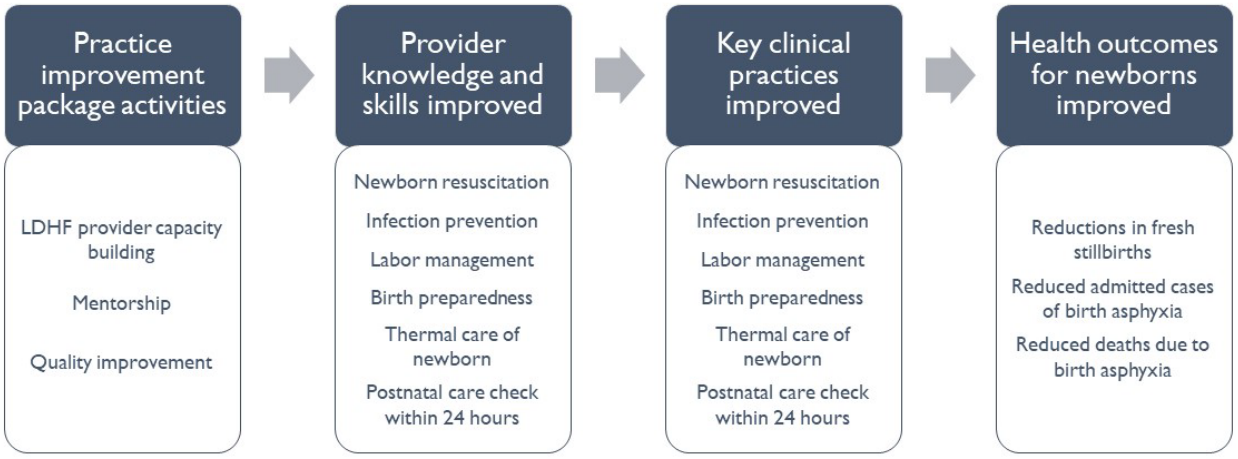


Figure 2. Practice improvement package logic model



Key Results

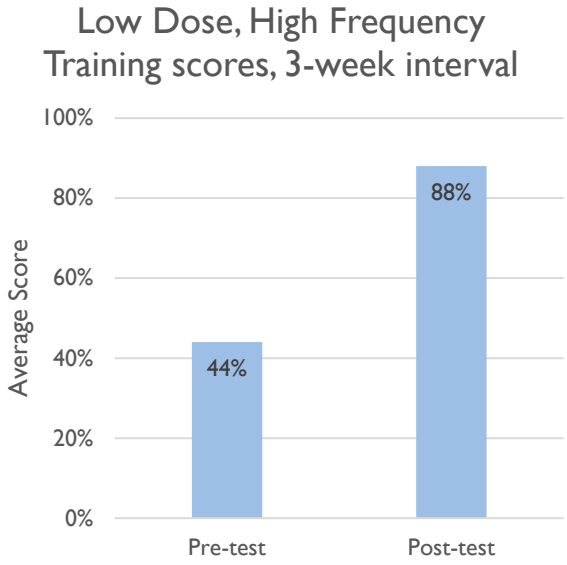
By the end of Phase II, 583 health care providers in 10 districts had been trained in labor management and ENC/HBB using the LDHF approach; these providers also received an average of at least three mentoring visits. In addition, each district had at least four trained mentors. Aditional results on several key indicators are presented below.

[2] The Plan, Do, Study, Act (PDSA) cycle is a management process for quality improvement. The Institute for Healthcare Improvement defines a PDSA cycle as "shorthand for testing a change by developing a plan to test the change (Plan), carrying out the test (Do), observing and learning from the consequences (Study), and determining what modifications should be made to the test (Act)." www.ihi.org/resources/Pages/Tools/PlanDoStudyActWorksheet.aspx

Provider knowledge and skills improved

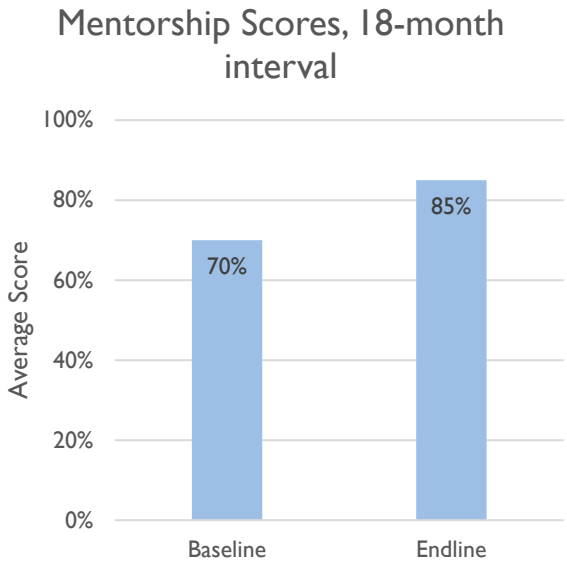
Providers' knowledge and skills improved during three weeks of LDHF training, as shown by the pre- and post-training scores **(Figure 3)**.

Figure 3. Improvements in provider knowledge after three weeks of LDHF training



They also retained and further improved these skills over an 18-month period, as shown by the baseline and endline mentorship scores, which are based on a standardized checklist used to observe and measure provider practices, skills, and knowledge **(Figure 4)**.

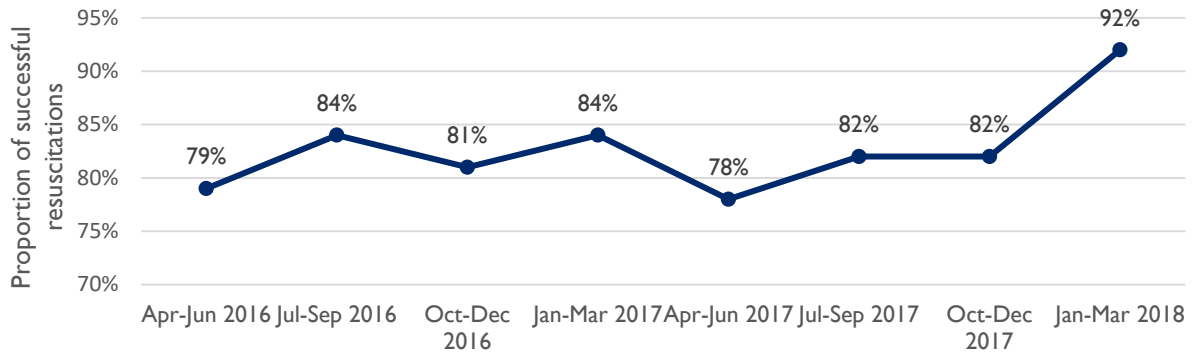
Figure 4. Improvements in mentorship scores after 18 months of mentorship visits



Key clinical practices improved

From April 2016 through December 2017, providers maintained successful newborn resuscitation levels of between 78% and 84% of babies who did not cry at birth **(Figure 5)**. The data shown in Figure 5, drawn from the routine health information system, show a gradual improvement in the percentage of live newborns not breathing at birth who were successfully resuscitated. Part of the integrated practice improvement package focused on improving provider's skills in correctly diagnosing asphyxiated newborns who will be more difficult or impossible to resuscitate. Challenges in accurately identifying and treating these more difficult cases of birth asphyxia are likely the reason for not seeing an even greater improvement in successful resuscitation. After analyzing the results for the first seven-quarters of implementation of the practice improvement package, the MoH and MCSP identified limitations in the quality of the data and implemented strategies to improve the quality. Such strategies included clarifying the indicator definitions and training health care providers to more accurately diagnose asphyxiation among live births, as opposed to stillbirths that cannot be resuscitated. Starting in January 2018, these strategies have resulted in higher quality, more accurate data on the number of live births, the number of stillbirths, and the number of asphyxiated live babies at birth. Such improvements in data quality will allow for more accurate tracking of the effect of the practice improvement package as Rwanda continues to scale up to all 30 districts over the next two years.

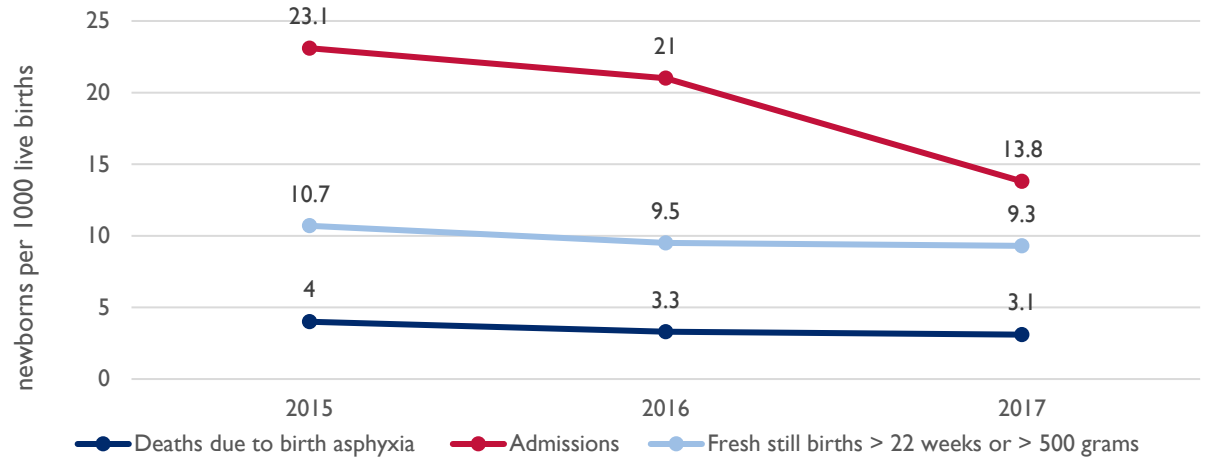
Figure 5. Proportion of successful resuscitations among live babies who did not cry at birth



Health outcomes for newborns improved

From 2015 to 2017, the proportion of newborns who were admitted for asphyxia fell by 40.3% and the proportion of stillbirths among all births decreased by 13.1% due to improvements in labor management. The proportion of newborns who died from birth asphyxia decreased by 22.5% as a result of improvements in diagnosing and managing live babies born with asphyxia **(Figure 6)**.

Figure 6. Newborn and labor monitoring and resuscitation outcomes



Key Lessons for Achieving and Sustaining Improvement

The integrated strategies of LDHF training, followed by mentorship and focused QI activities, resulted in the improved knowledge and skills of providers, which they applied in their respective maternity wards. In turn, rates of stillbirths and deaths from birth asphyxia have fallen across all 10 districts. These impressive results were achieved in an environment of routine practice, demonstrating the approach's effectiveness outside of a research setting. Cost analyses have also shown that the cost of implementing this integrated approach is well within the district budgets allocated for health care. To ensure successful national scale-up, MCSP has identified the following recommendations to drive the process forward.

Share experiences to inform scale-up efforts

As the MoH prepared to expand ENC/HBB practice improvement from four to 10 districts with MCSP assistance, a stakeholder workshop was convened with participants from all 10 districts in December 2016, including health leaders and managers from the MoH and district hospitals, technical assistance organizations, and donors. Phase I districts presented their preliminary results, key innovations, and challenges of implementing the new approach. Participants developed a plan to support the achievement of widespread and sustained impact on reducing birth asphyxia across all public health facilities (where over 80% of births occur in the covered districts). The plan laid out 25 key actions, including both operationally-focused actions to be taken by managers and leaders at the district level, and more strategically-focused actions to be taken by leaders at the national level.

A key recommendation from the stakeholder workshop was to initiate "experience-sharing" meetings every six months to focus on what works well and what challenges remain, and to discuss solutions to these challenges that could be replicated in additional districts. Experience sharing was seen as a sound bottom-up approach that put districts with the most experience in providing and managing services in a position to inform other districts at different phases of implementation. These sessions consequently contributed to wide dissemination and implementation of best practices, ultimately resulting in increased use and quality of ENC/HBB services. Some of the key innovations and improvements that participants identified are shown in Box 1. These sorts of improvements are key to maintaining the quality of the intervention as it is scaled up.

Box 1. Key innovations to improve practice

- Using of "Red Files" or "Farde Rouge" and clear handover in neonatology for cases that require close monitoring (every 15 minutes by a nurse/midwife and every 30 minutes by a medical doctor)
- Strengthening peer mentorship by trained providers at the health center level
- Organizing monthly practice sessions using mannequins to maintain resuscitation skills for providers working in maternity and neonatology
- Conducting newborn death audits and linking findings with action plans for improvement
- Using mentors as role models and not planning mentorship visits after night duties
- Creating sub-teams known as "ISIBO" for specific technical areas (maternity, neonatology, and comprehensive emergency obstetric and newborn care) that meet regularly to discuss day-to-day status of implementation of QI action plans developed by maternity and neonatology services
- Task shifting of postnatal care to nurses/midwives and including the postnatal care pre-discharge checklist in medical file

Track and act on key data using facility and district dashboards

To quickly improve and then maintain levels of quality while expanding services, it is vital for health care providers at the facility and district levels to collect data during implementation. Data should be presented in a graphical format on a publicly displayed "dashboard" and reviewed by staff on a regular basis to make sure that the process is on track and, if not, to help plan key corrective actions in a timely manner. During implementation in the 10 initial districts, MCSP collected data on key indicators and visualized them on such dashboards. These indicators included: average mentee score (target > 80); facility readiness (presence of clean bag and mask in the resuscitation area); resuscitation outcomes; and a data-driven action plan (i.e., a plan developed specifically to address problem areas identified in the dashboard). After reviewing all available data in December 2018, the MoH, the Newborn Sub-Committee of the Maternal and Child Health Technical Work Group (Newborn Sub-Committee), and MCSP enacted strategies to improve data quality as the practice improvement package is scaled up to additional districts. Such strategies will not only improve the accuracy of key indicators and track progress during scale-up, but will also contribute to improved diagnosis and care of asphyxiated newborns.

Engage with leaders and managers at all levels to prioritize the intervention

Having updated key data available is only effective when decision makers regularly view and use this information. During scale-up from Phase I to Phase II districts and throughout the QI process, focal people were identified and appointed at the facility and district levels to continuously monitor the intervention's data. At the national level, where many competing priorities can dilute the focus on one specific intervention, it is important to identify a team to manage and lead the scale-up process. The MoH leads this group, with support from the Newborn Sub-Committee and members from key partner organizations who are well-positioned to identify needs for assistance at the district level.

Conclusion and Next Steps

The Government of Rwanda (GoR) has made strides toward national coverage of the integrated practice improvement package by: encouraging coordination and experience sharing among technical assistance organizations, donors, and health leaders at national and district levels; embracing the use of data dashboards to monitor and maintain progress; and using a flexible planning and adaptive management process.

With the help of partners, the GoR has already successfully built on the experience of the nationwide 2011 training in HBB. This initial training, while an important first step, was not achieving the desired impact, as evidenced by the persistence of birth asphyxia as the number one cause of newborn death. Working with MCSP and other partners, the GoR has rapidly rolled out an integrated set of strategies—embedded into its overall plans for improvement in access, utilization, and quality of health services—to both prevent and manage cases of newborn asphyxia. The public facilities in the 10 (out of 30 total) districts supported in this initiative cover between 25% and 30% of all births in the country. Already, in only two years, the results have been dramatic. In these 10 districts, provider practices have improved; deaths from birth asphyxia have dropped by 22.5%; and overall institutional newborn mortality has dropped from 2.4% to 1.3%. Clearly then, this initiative is already contributing to the fact that newborn asphyxia is no longer the number one cause of newborn death nationwide.

The GoR is committed to scaling up integrated practice improvement for newborn care, in phases, to all remaining districts in the country. , the GoR has included the three integrated strategies (LDHF capacity building, mentoring, and focused QI activities) in the fourth Health Sector Strategic Plan for 2018–2024 and in the District Health Strategic Plan to drive progress to national scale.

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