



**The Regional Learning Network:
A Model for Improving Maternal
and Newborn Health Care
Outcomes in Uganda**



Save the Children

Key Messages

- **The Regional Learning Network initiative (RLN) was a quality improvement collaborative** piloted by Uganda's Ministry of Health (MOH) in Hoima from 2016 to 2017, with support from Save the Children and the University Research Company (URC). The RLN and referral system linked 14 health facilities, including the Hoima Regional Referral Hospital, with the aim to improve the survival and health of mothers and their babies.
- **Save the Children and URC assessed the extent to which the RLN improved clinical outcomes and processes of care as well as how referral networks and network-building activities functioned** during the course of the project.
- **The assessment found that the RLN improved facility readiness to support essential obstetric and newborn services.** Results showed increased availability of basic newborn care units, reduced frequency of stock-outs of drugs and supplies, and increased health worker knowledge and confidence in key competencies, and improved documentation of care.
- **The assessment also saw an increase in the quality and coverage of newborn care practices,** such as early initiation of breastfeeding from 12% to 81%, Kangaroo Mother Care (KMC) Initiation from 7% to 65% and babies weighed at birth from 25% to 100%.
- Health workers and managers found **the skills lab and learning sessions** established by the RLN as the most beneficial of all project activities.
- **The RLN improved communication between facilities** but health worker knowledge on the referral process and guidelines was mixed and needed continued strengthening. Ensuring availability of medical supplies to reduce stock outs will also reduce instances of avoidable referral due to lack of supplies.
- **Key focus areas for improving quality of care include** engaging and investing in local clinical leadership, continuous skills building, and strengthening appropriate communication and referral systems between facilities. Investing in and engaging local clinical leadership on quality improvement initiatives at the start supports sustainability and scalability of the RLN model.



Background

Uganda has made great strides to improve access to facility-based health services for women and children in the past decade. Facility-based deliveries increased from 57% in 2011 to 73% in 2016, and the maternal mortality ratio decreased from 438 to 336 per 100,000 live births over this time period.¹ Yet, mortality for newborns, babies less than 28 days, has been unchanged (at 27 deaths per 1,000 births), possibly highlighting issues around quality of facility-based care.¹

To fulfill Uganda's commitment to ending preventable maternal and newborn deaths, the Ministry of Health (MOH) has prioritized quality improvement (QI) efforts. In 2015, the MOH expressed interest in developing a Regional Learning Network (RLN) model to improve the health and survival of mothers and newborn babies by providing high-quality maternal and newborn health (MNH) care. The RLN was envisioned as a network of health facilities, each including and within the catchment area of a regional referral hospital, linked through a QI and referral system, providing quality MNH care services based on national standards and guidelines. The MOH piloted the RLN in the Hoima Regional Referral Hospital (RRH) catchment area from May 2016 to June 2017, with support from Save the Children's (SC) Saving Newborn Lives Program (SNL) and the University Research Co. (URC). This brief provides information about the RLN as an approach that could be used to advance high-quality MNH care in health facilities.

Methods

Various assessments and small studies, including baseline and endline evaluations, were conducted between May 2016 and June 2017 by URC and SNL. Table 1 presents a summary of the methods, sampling, and analysis undertaken. The main objectives were to 1) assess the extent to which the RLN improved clinical outcomes and processes of care delivery for mothers and newborns; 2) assess how referral networks and network-building activities functioned; and 3) provide recommendations to the MOH and partners for continued facility-based quality improvement programming including referral system - as well as facility network strengthening. More details on these assessments are available in the supplementary files (Web Annex I).

Table 1: Overview of assessment methodology

Objective 1	Components assessed	Facility Readiness <ul style="list-style-type: none"> • Infrastructure and personnel available • Drug and supply availability 	<ul style="list-style-type: none"> • Health workers' newborn care knowledge • Existing QI efforts
		Coverage & Quality of Services <ul style="list-style-type: none"> • Coverage of services • Quality of Care (labor and delivery, newborn, including complications) 	
	Data collection	<ul style="list-style-type: none"> • Self-administered health worker survey • Facility assessment: Key informant interviews, observations, document review 	<ul style="list-style-type: none"> • Document review • Routine health information system (DHIS2)
	Sample	Survey: Health workers (58 baseline, 50 endline) Facilities: 14/14 facilities (baseline); 11-14/14 facilities (endline)	
	Analysis	Quantitative - descriptive	
Objective 2	Components assessed	Referral Network functioning Learning Network functioning	
	Data collection	4 focus group discussions (FGD) and 11 in-depth interviews (IDI)	
	Sample	Purposive sample of health care workers and district management engaged in RLN FGD (21 total participants); 11 IDIs	
	Analysis	Qualitative - inductive and deductive thematic coding	

Hoima Regional Learning Network

The Hoima RLN initiative was a network of 14 MOH health facilities within the catchment of the Hoima RRH in Western Uganda. Facilities were connected through a QI collaborative and referral system to provide quality newborn care based on national standards and guidelines (Figure 1, Appendix II).

The aim of the Hoima RLN was to improve the survival and health of mothers and babies in the region. The initiative had three objectives: 1) employ QI methodology, including a training lab based at the regional referral hospital to address critical gaps in providing high-quality MNH care; 2) produce new knowledge and learning on best approaches to improve MNH care; and 3) share and document learning with other Regional Referral Hospitals and lower-level facilities. The two different partners supported different elements of the initiatives. URC carried out QI activities focusing on the care around time of birth using plan-do-study-act (PDSA) cycles, clinical coaching, and a hands-on skills lab. SNL conducted network-building activities, such as facility-level maternal-perinatal death audits, district-level use of the RMNCH scorecard trainings, media engagement, district coordination meetings, and facility-level data quality assessments.

Description of activities undertaken by the RLN

The first step in setting up the RLN included identifying facilities and building stakeholder support. The next step was implementing start-up activities, such as trainings, orientations and hiring new staff, as well as setting up a skills lab, procuring supplies and forming or strengthening teams. Figure 2 provides the timeline of activities and details. Details about each activity are provided in this section.

Figure 1: Overview of the Regional Learning Network

A Network of

- 14 government facilities in 6 Districts
- 1 Regional Referral Hospital (RRH)
- 4 District Hospitals
- 6 Health Center IV (HC IV)
- 3 Health Center III (HC III)
- Referral and Top down support

QI Collaborative & learning

Led by URC

- 16 MNH QI teams
- Bi-weekly coaching visits
- Rapid PDSA Cycles
- Monitoring monthly indicators
- Quarterly Learning Session
- Training center/skills lab
- Mentorship
- National standards and guidelines

Network-building

Led by Save the Children

- Maternal perinatal death surveillance and response
- RMNCH scorecards
- District coordination meetings
- Quarterly Data Quality Assessments
- Media engagement

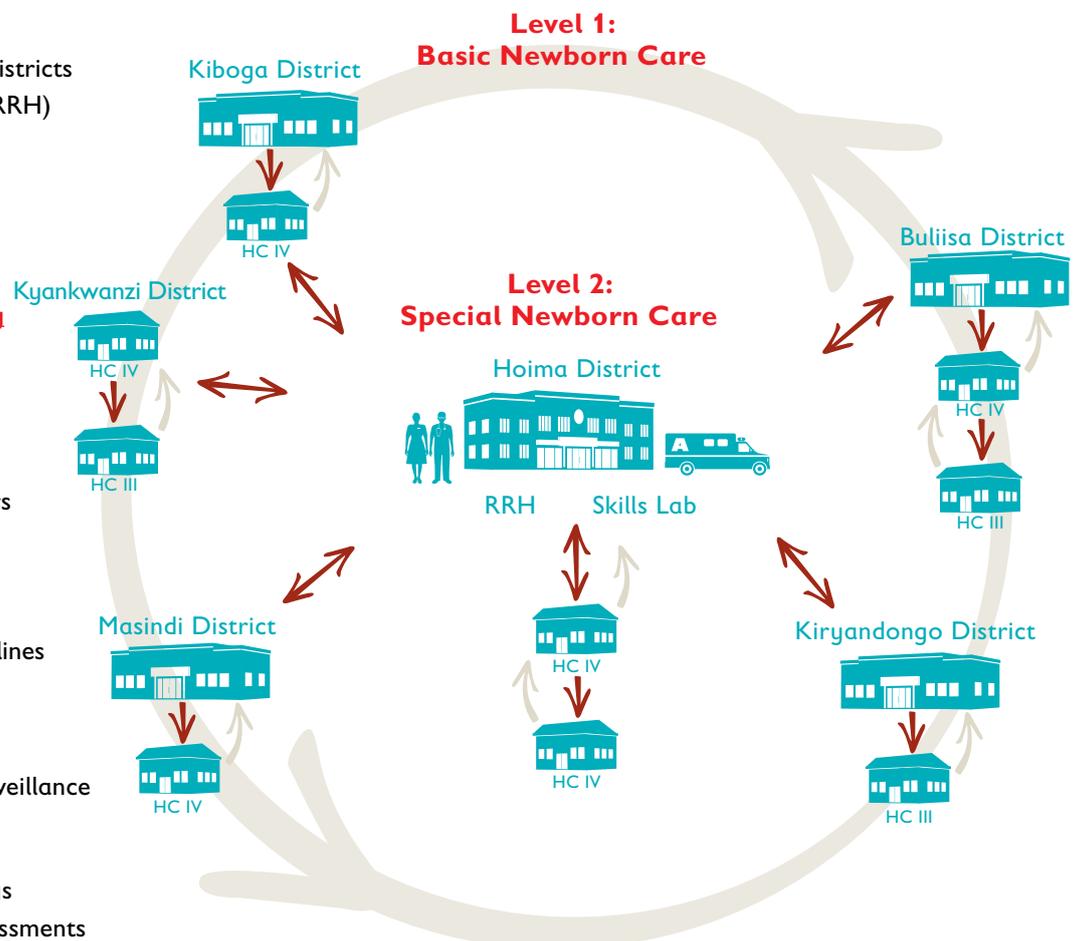


Figure 2: Timeline for Establishing the Regional Learning Network

December 2014 – September 2015

- MOH expressed interest in RLN
- Conceptualization of RLN by SC and MOH
- Concept shared and vetted with partners
- SC and MOH partner with URC

April 2016 – August 2016

- Scoping visits
- Baseline assessment
- District Entry and Coordination meetings
- Formation of QI Teams
- Clinical Training
- Re-organization of maternity wards
- Partner and citizen engagement (midwife dialogue, media dialogue, open dialogue between women and health workers)
- Radio talk shows
- RMNCH scorecard orientations and trainings
- Initiated data quality assessments

February 2017 - June 2017

- 3rd and 4th Learning Sessions
- Quarterly mentorship visits
- Quarterly data quality assessments
- Quarterly RMNCH Planning and Coordination meeting
- RLN feedback and closeout district meetings
- Endline Assessments

October 2015 – March 2016

- Lead consultant identified and recruited
- Contracts and MOUs finalized
- Partner engagement (national, regional and district level stakeholder meetings)

September 2016 – January 2017

- 1st and 2nd Learning Sessions
- Quarterly mentorship visits
- Quarterly data quality assessments
- Quarterly RMNCH Planning and Coordination meeting
- Radio talk shows
- RMNCH scorecard orientations and trainings (continued)
- Engagement with members of parliament
- MPDSR training
- Exchange visits



Activities to establish an enabling environment

Partnership/Collaboration

- The MOH approached SNL, which then reached out to URC, to support the pilot RLN.
- **Stakeholder support** was built by holding **consultation meetings** with relevant individuals (i.e. district authorities and Members of Parliament), sharing RLN goals and objectives, and ensuring agreement on the process.

Infrastructure, Commodities and Staffing

- **Informal scoping visits** helped identify health facilities, map how services were organized and profile how facilities were linked.
- **Internal re-organization of maternity wards** helped ensure designated space for KMC and newborn special care units, space for filing patient records, and wall clocks.
- Necessary **equipment and supplies were procured** for maternity wards and newborn special care units.
- A **respected leader was identified to oversee the process**, provide technical oversight, serve as the liaison between RLN and MOH, and be an advocate for policy change.
- A **skills lab was set up** at the Hoima RRH for hands-on, supervised MNH practice, conducting MPDSR and data collection (see “How to guide” in supplementary files, Web Annex III).
- **Three local clinicians were hired by URC** to serve as quality improvement and clinical mentors and coaches for all 14 facilities; clinicians were based in three separate districts.

Skills Development, Mentorship, and Data

- **Training was conducted for district leaders and health facility technical staff** on RMNCH scorecard and Sharpened Plan for RMNCH to identify areas of clinical weakness and devise strategies to improve performance (see “How to guide” in supplementary files, Web Annex III).
- **35 facility-based midwives received orientation** on the RLN, identifying potential champions and opportunities for advocacy.
- **District coaches were trained** with skills for long-term coaching, use of data collection tools, reporting, and newborn resuscitation, ensuring continuity of RLN activities after project completion.
- **Media engagement workshops were carried out** with journalists and media houses operating in Hoima to strengthen media advocacy and reporting on MNH issues in a responsible, technically accurate manner (see “How to guide” in supplementary files, Web Annex III).
- **Quality Improvement teams** were established at the 14 participating facilities and team members (midwives, medical/clinical/records officers, nurses, and lab technicians) were oriented on elements of the RLN, their roles, and QI basics.
- **National Newborn care standards and guidelines** were disseminated and used.



Activities to enable ongoing processes

Partnership/Collaboration

- **Exchange learning visits** carried out for health workers from eight RLN facilities to Jinja RRH and Busesa HC IV in Eastern Uganda, encouraging practical learning & sharing of experiences on maternal and newborn care.
- **Network-building activities** implemented to build relationships between leaders and providers in health facilities, reviewing data and creating a culture of knowledge sharing; the project used existing quarterly **district coordination meetings** to share RLN facility reports from each district, enable joint planning and problem solving, and foster information sharing about various health programs in the districts.

Infrastructure, Commodities and Staffing

- **The new cadre of mentors**, consisting of district coaches and mentor midwives, traveled and worked together with URC staff, mentoring providers in the health centers, simultaneously building capacity for mentorship (see “How to guide” in supplementary files, Web Annex III).

Skills Development, Mentorship and Data

- **Clinical skills built with frontline health workers** from the RLN facilities managing pregnant women, deliveries and newborn babies. There were five trainings in total, each with 35 health workers participating in the five-day program.
- **Mentorship schematic developed and implemented**, including 4-6/quarter visits to the RLN facilities by URC team and the RLN lead. During the visits, mentors attended the QI team meetings, reviewed PDSA project plans, coached staff in QI methodology, and reviewed clinical concepts and cases as needed.
- **Four learning sessions** were conducted and brought together key staff from all 14 facilities to share data, experiences and best practices, and to build relationships, leading to greater comfort in contacting each other for referrals and clinical guidance. (see “How to guide” in supplementary files, Web Annex III).
- SC conducted a five-day training in **Maternal-Perinatal Death Surveillance Review (MPDSR)** for staff at the HC III and IV, as well as hospitals. Audit reports were shared with the DHO for facility-level improvements.
- SC and MOH partnered with six districts to orient key district personnel on the use of the **RMNCH Scorecard** and monitoring district performance with selected RMNCH indicators. Quarterly trainings were conducted with the in-charges of lower health units, religious and district executive leaders, and some implementing partners.
- SC and MOH's regional performance monitoring team downloaded six key MNH indicators from DHIS and conducted **Quarterly Data Quality Assessments (DQA)**, verifying data by examining registers and documenting processes at the facility level; following this process, feedback on data quality was given to facilities and extra mentoring initiated where needed.



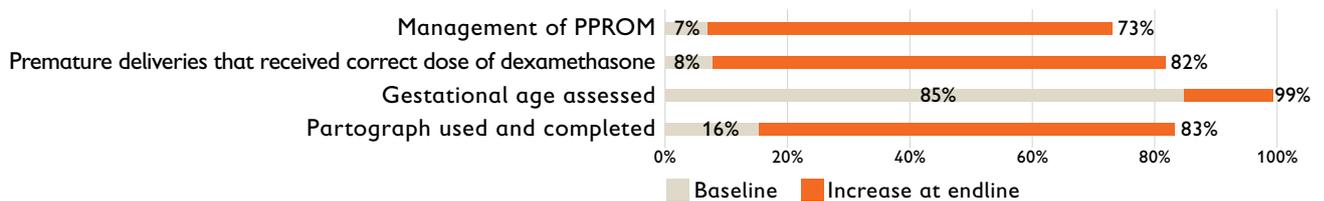
Results

This section presents the key findings of both the improved health services as well as the learnings from the network functions introduced through the RLN.

Quality and coverage of services

Key changes assessed found improvements in the quality and coverage of health services through enhanced documentation and service delivery. Figure 3 shows an increase in the quality of care documented from baseline to endline across four initiatives implemented as part of labor care. The greatest improvement in documentation was seen in record keeping on how premature deliveries were managed (74% increase in number of cases documented).

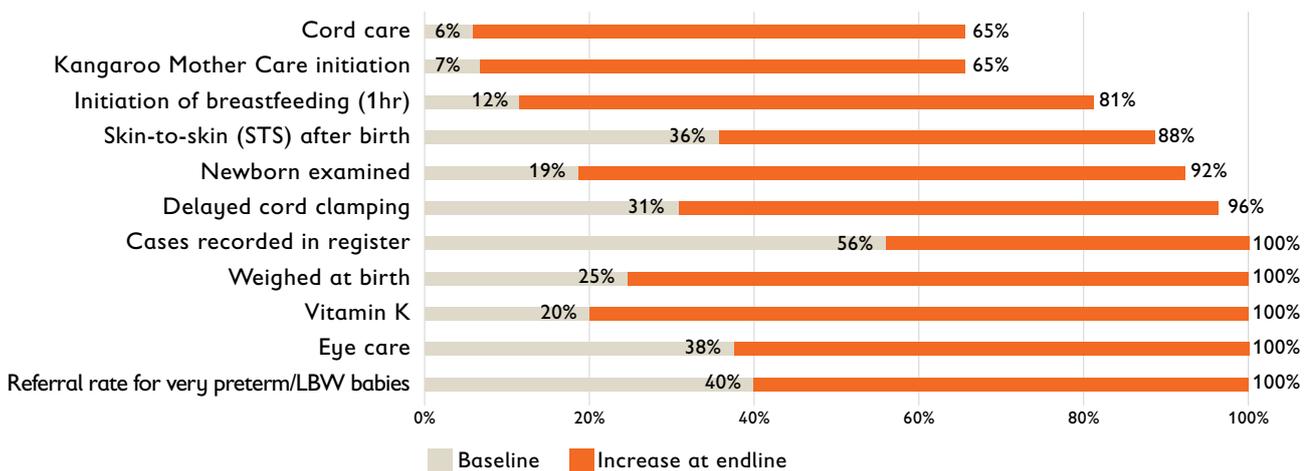
Figure 3: Increase in quality of care documented, May 2016 – June 2017



Source: Documentation review. Note: Preterm premature rupture of the membranes (PPROM).

Figure 4 shows marked increase in the coverage of eleven essential newborn care practices from baseline to endline through structured observation, with the greatest improvement in provision of Vitamin K (80% percentage point increase).

Figure 4: Increased coverage of newborn care practices, May 2016 – June 2017



Source: Structured observations of essential newborn care at facilities.

Changes in mortality

The outcome indicators tracked were early institutional neonatal mortality and stillbirths and both demonstrated fluctuation in rates during implementation. Between October 2016 and April 2017, the average early institutional NMR reduced from 1.0% to 0.5% and the stillbirth rate reduced from 3.0% to 1.4%. Small numbers and huge variation across facilities prevent any determination of causal relationships between the RLN efforts and mortality reductions, but show the likely benefits of improved documentation and data capture and use.

Facility readiness and strengthened health workforce

Start-up activities ensured key drugs and equipment were in place with increases across all items throughout the implementation period (Figure 5). Staff reported that the RLN brought major improvements in health worker skills around acquisition, equipment, communication and referral (Quote 1). A critical challenge identified was the need for more supplies at lower level facilities to reduce unnecessary referrals (Quotes 2 and 3).

Quote 1:

“A lot has changed...many facilities did not have equipment for the newborn...health workers lacked knowledge on how to care for these babies and I think that has changed a lot. We have received equipment and now the health workers know how to use them.” (IDI, Quality Improvement Officer)

Quote 2:

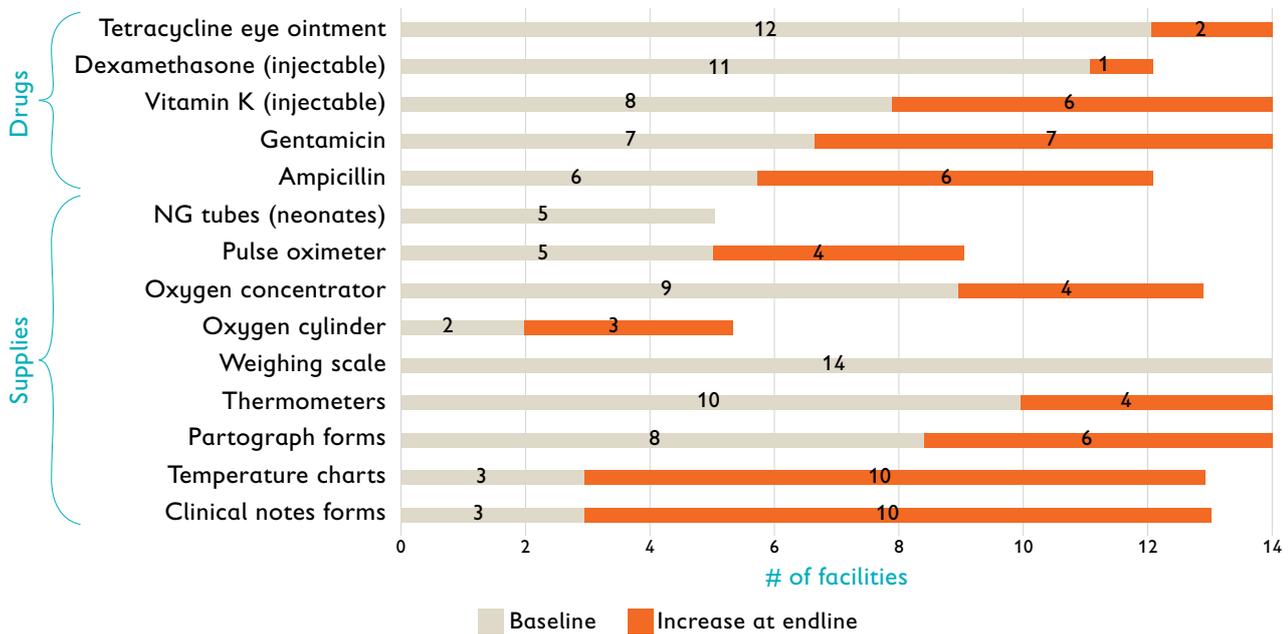
“... sometimes we refer patients to Hoima just because of stock out, for instance, the stock out from the most valuable commodity – blood; and that is the reason for referral.” (IDI, provider)

Quote 3:

“You cannot fuel that ambulance or even where there are cries not even the regional referral has enough fuel. So it’s the fuel. So the problem is fuel.” (FGD, provider)



Figure 5: Availability of supplies and key drugs improved between baseline and endline



Source: Facility assessment (observation and key informant interviews). Note: NG= Nasogastric; no stock-outs in prior two months.

The clinical training program trained 185 frontline health workers, drawn from different facilities within the RLN through clinical mentorship and skills building sessions. Midwives reported that the increased availability of up-to-date MNH information in the form of flip-charts, job aids and wall charts went a long way to increasing their confidence and thus, their ability to provide quality care. The health worker knowledge baseline and endline survey found mixed results across clinical MNH guidelines, management and the referral process.

Strengthen network functions and referral processes

Health workers and managers reported benefiting most from the skills lab and learning sessions (Quote 4). The district coordination committees were reported to help identify innovative solutions for addressing health system barriers such as delays, supplies and infrastructure as well as minimizing unnecessary duplication of services in the districts (Quote 5). Health worker perceptions varied about the benefit of the network activities in improving quality of care. For some, the RLN activities were thought to improve communication between health facilities about referrals, though this viewpoint was not uniformly shared among health workers across the network.

Quote 4:

“The learning sessions have helped us greatly in attitude change of the health workers. There are some things which we used to think are very impossible they cannot happen. But when you go and find it working elsewhere you greatly change your attitude as a health worker.”
(IDI, District Health Management Team member)

Quote 5:

“District authorities are trying very hard to... get that ambulance. So, the district authority, the district technical arm; they are beginning to realize that the sooner the referral is then also the lives of the babies could be saved.” (IDI, Assistant District Health Officer)

Summary of main lessons learned

- **Efforts put into network and relationship building, as well as mentorship and information to increase health worker confidence,** led to improvement in knowledge of referral conditions and reduction in the number of unnecessary referrals made to Hoima RRH from lower level facilities.
- **The different assessments revealed some disconnect between regional and district level leadership and frontline health workers' perceptions;** overall, people perceived the RLN to be effective at improving communication, strengthening health worker knowledge and fostering a culture of learning, district governance, and use of data for accountability.
- **While the RLN improved quality of care processes, clinical outcomes and shared learning, longer term investment is needed** to ensure sustainability and address gaps in leadership and frontline workers' perception of project goals and achievements.

The RLN led to better knowledge of conditions for referral and a reduction in the number of unnecessary referrals made to Hoima RRH from those facilities (Quote 6). There was an increase in health worker knowledge of indications for newborn referral to higher-level care (43% to 80%). Respondents believed this resulted from the RLN network and relationship building, as well as mentorship.

Quote 6:

“So now the midwives know how to refer, where to refer and when to refer and it is in good timing. So knowledge of the health workers is very paramount, it can reduce all unnecessary referrals. (IDI, In-charge maternity ward)”

Foster use of data for accountability

Respondents reported that data quality assessments (DQA) helped to highlight and guide improvements in data management, and strengthening the system overall; facility staff thought they improved their own performance (Quote 7). Health workers reported that the MPDSR process and the RMNCH scorecard enabled them to devise strategies to improve performance and accountability. District managers reported that work is needed to improve uptake and use of the scorecard, especially at facility level. The District Coordination Meetings were thought to play a role in accountability by improving monitoring and evaluation, involving different stakeholders and helping ensure facilities were equipped (Quote 8). Finally, the media trainings were perceived to strengthen the ability to report on maternal and newborn health with timely and accurate facility- and district-level data.

Quote 7:

“So this program of quality data assessments has improved us really; improving our performance of being able to monitor our activities and also produce data that can be presented.” (IDI, Maternity in Charge)”

Quote 8:

“Now the leaders know what is happening in the health facilities and...they know really what is happening in the health facilities...and they tell people to utilize their facilities because services are improving.” (IDI, Assistant District Health Officer)”

Examples of change

The RLN sought to improve clinical interventions with targeted activities. This section provides three examples of change to demonstrate the impact of the RLN: gestational age assessment, neonatal resuscitation and KMC. Each example provides the goals, the change tested, and the results of these changes. Different data sources were used to show the results, and are marked accordingly: (a) routine health information system, (b) facility assessment with observations, and (c) baseline and endline surveys.

Gestational Age Assessment

Goals:

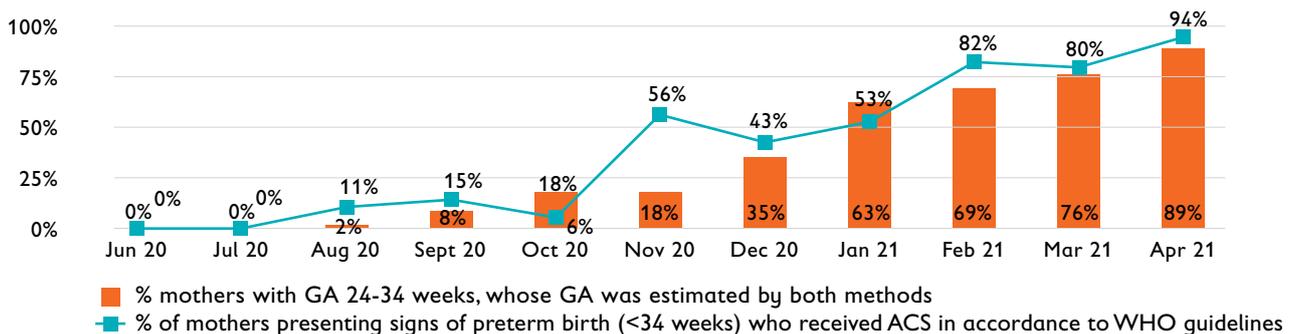
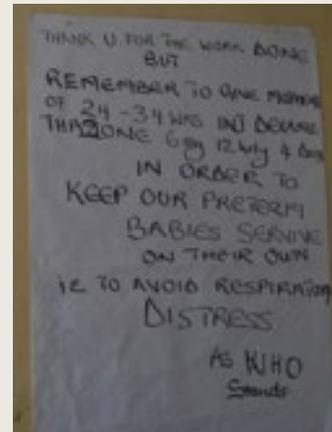
- Health workers are able to improve gestational age measurement by comparing fundal height and last menstrual period, and then correctly administer antenatal corticosteroids, if required

Change tested:

1. Secured a pregnancy wheel & tape measure on admissions for easy accessibility and calculation of GA and measuring fundal height
2. Opened separate file folder/box to place charts for mothers with signs of preterm labor started on dexamethasone
3. Developed and displayed job aids on administration of dexamethasone injectable
4. Integrated signs of preterm birth in the routine antenatal health talks

Results:

- Of the 275 deliveries sampled, all but 4 were assessed for gestational age. Of the 134 women who delivered prematurely (less than 34 weeks GA), only 7 (6%) were not assessed for gestational age. Of these women, 82% (110/134) received the correct dosage of antenatal corticosteroids (dexamethasone 6 mg every 12 hours for 48 hours). The remainder of women did not receive ACS at all (10%), or there was no documentation of ACS provision in clinical records (6%). (b)
- The figure shows the increase in GA estimation and appropriate administering of ACS (a)
- The photos show examples of the availability of supplies and job aids



Neonatal Resuscitation

Goals:

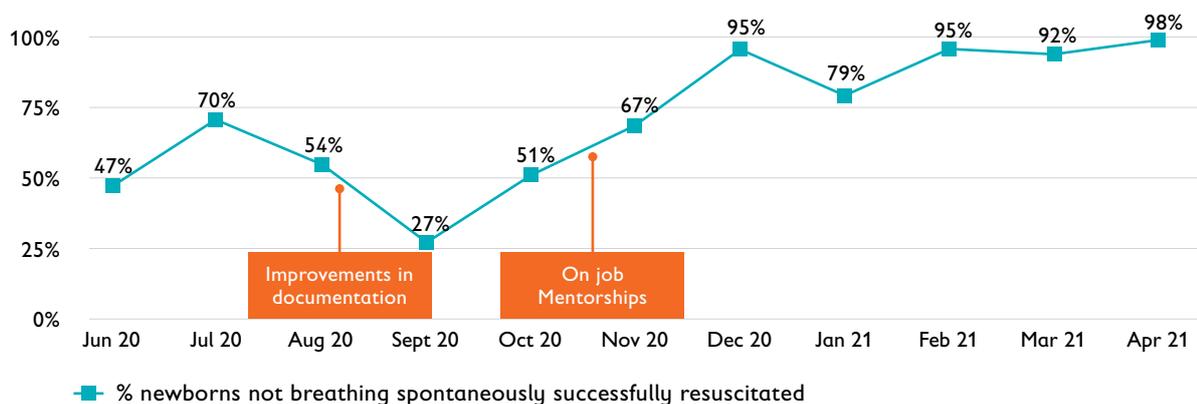
- Facilities equipped with a bag and mask, and penguin sucker
- Medical professionals can intervene with stimulation and/or suction, bag and mask if baby is not breathing

Change tested:

1. Identified and established a fully equipped resuscitation area
2. Ensured neonatal resuscitation skills development through skills lab
3. Developed and displayed job aids to serve as reminders

Results:

- The surveys results show an increase in facility readiness, including appropriate place for resuscitation of newborns with birth asphyxia within the delivery room (21% 100%) and the availability of functional bags and masks (71% 100%) (c)
- The figure shows an increase in successful resuscitation of newborns not breathing spontaneously (47% → 98%) (a)
- The photo shows an example of a fully equipped resuscitation area with job aids



Kangaroo Mother Care

Goals:

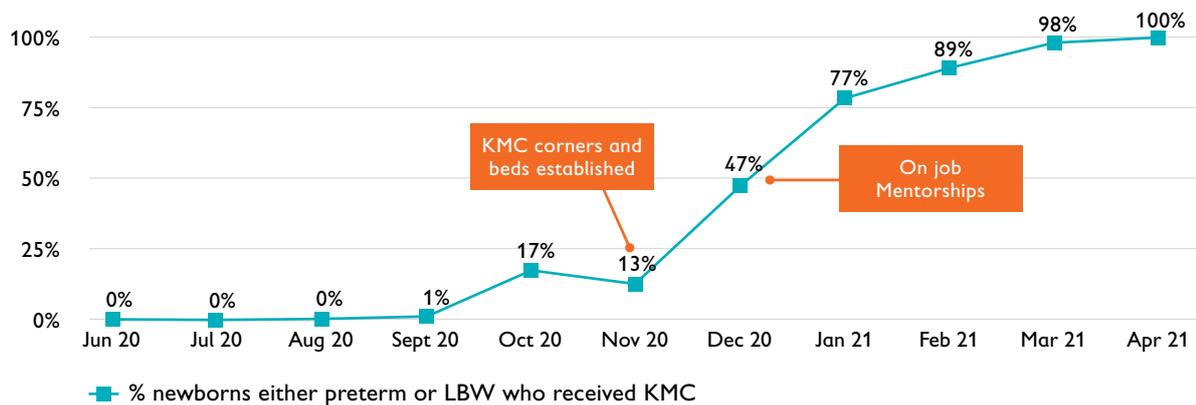
- Facilities equipped with either a bed, room or corner designated for kangaroo mother care practice
- Newborns, either preterm or LBW, received KMC

Change tested:

1. Designated rooms/corners /cubicles with beds reserved for mothers practicing KMC
2. Documentation in treatment chart/ newborn register existing columns
3. Peer to peer mentorship sessions on KMC
4. Appropriate counselling of families KMC
5. Involving care takers and fathers to support mother with kangaroo care

Results:

- The survey results show an increase in the increased proportion of health workers that could correctly name all components of KMC (31% → 62%) (c)
- The figure shows the increase of the increased proportion of newborns either preterm or LBW who received KMC, see figure (0% → 100%) (a)
- The photo shows a designated room for KMC



Conclusion

The RLN demonstrated improvements in clinical outcomes, care processes, and shared learning. The assessments revealed some differing perceptions between regional and district leadership and frontline health workers; however, overall, respondents perceived the RLN to be effective at improving communication, strengthening health worker knowledge and fostering a culture of learning and use of data for accountability. Implementation for one year was not sufficient to demonstrate mortality reductions or fully institutionalize the principles of the RLN to all engaged, especially among frontline health workers.

Longer-term investments are needed to facilitate and document the processes and outcomes, including the institutionalization and sustainability of a RLN. The sustainability of the RLN ought to be achievable by building on what has been established with additional support from the Uganda MOH and implementation partners. As an enabling environment has already been established in Hoima, including the skills lab at Hoima RRH and initial facility readiness, further mentorship and supportive supervision should be prioritized. The new district coaches and midwife mentors have been equipped to lead on mentorship and supportive supervision, but do require support to travel to the different facilities and need allocated time for this work. The quarterly regional learning sessions would also add value as this was the most valued network-building activity. The use of the skills lab by all MNH staff at the district, HCIV and HC III levels should also be maintained.

The lessons learned and best practices provided in this brief can provide useful insight to other health facilities seeking to improve MNH care in similar settings. Some key recommendations should be considered for MOH and other partners seeking to establish or strengthen regional referral networks.

Key recommendations

for Ministries of Health and implementing partners looking to establish a Regional Learning Network:

- Engage and invest in local clinical leadership to ensure sustainability and scalability.
 - Such models rely on visionary leaders with the ability to mentor junior providers and influence senior health officials and national policy formulation; they need opportunities to build their analytical skills, including publishing, attending conferences and leading QI initiatives.
- Provide continuous opportunities for health workers to improve clinical and QI skills e.g. a skills-building lab at the Referral Hospital available to all staff in region.
 - This will reduce staff attrition and shortage of health workers overall. Supportive supervision of QI processes ensures practical application of skills lab learning.
- Ensure availability of appropriate communication, referral systems, supplies, commodities, and infrastructure to support essential obstetric and newborn services.
- District level buy-in, as well as leadership and governance, is invaluable for national expansion. By enabling joint planning, District Coordination Committees can address health system barriers.
- Provide longer term investment to ensure sustainability and address gaps in perceptions of project goals and achievements between Ministry-level leadership and frontline workers.
- Ensure sustained resources for quality improvement efforts.
 - As quality improvement is as much about process as outcomes, it is not intended to be a one-off or intermittent activity and thus requires sustained investment of resources.

Reference

Uganda Bureau of Statistics (UBOS) and ICF. 2018. Uganda Demographic and Health Survey 2016. Kampala, Uganda and Rockville, Maryland, USA: UBOS and ICF.

Appendices

Available online at www.healthynewbornnetwork.org/resource/Uganda-RLN

Appendix I: Hoima Regional Learning Network (RLN) Conceptual framework

Appendix II: Details of assessment methods

Appendix III: How-to guides

- Mentorship
- Establishing and functionalizing skills labs
- Learning Sessions
- RMNCH scorecards
- Media engagement

Appendix IV: URC endline report

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For almost two decades, Save the Children's Saving Newborn Lives (SNL) program—a globally recognized leader in newborn health and respected voice in countries—has sought to reach the world's most vulnerable newborns and help them survive the first month of life. SNL seeks to reduce global neonatal mortality by providing catalytic inputs to develop packages of effective, evidence-based newborn care interventions and to implement these innovations at scale.



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