



MENTORING AT FIRST REFERRAL UNITS (FRUS) FOR IMPROVED QUALITY OF EMERGENCY OBSTETRIC AND NEWBORN CARE

In northern Karnataka, higher-level facilities, such as community health centers (CHCs), Taluka and district hospitals (THs, DHs) account for about 40% of institutional deliveries. Most of these facilities are FRUs that are expected to be equipped with staff and facilities to provide emergency obstetric and newborn care (EmONC). FRUs conduct a large proportion of deliveries, in addition to attending to referred complications from Primary Health Centres (PHCs). However only 32% of these higher level facilities offered Caesarean section; 50% conducted assisted deliveries; 32% of providers at such facilities were able to interpret a partograph and only 41% checked for bleeding in post-partum mothers. Hence focusing efforts to quality improvement (QI) in these facilities was needed to enhance MNCH outcomes.

The Sukshema project has demonstrated that onsite mentoring at PHCs led to improvements in quality of care and referrals to higher facilities. Our hypothesis was that improving the quality of care at FRUs (CHCs, THs and DHs), in addition to the PHCs, would lead to further improvements in obstetric and newborn care practices, and contribute to reductions in maternal and neonatal morbidity and mortality.



To test the feasibility of developing a mentoring programme at the FRU level, an intervention was implemented for 12 months in 16 FRUs across eight project districts. This report describes the intervention and documents the process of implementation, highlighting achievements, challenges and opportunities.

INTERVENTION DESIGN

Sukshema's FRU mentoring intervention integrated elements of clinical mentoring with facility-based

quality improvement processes. The intervention specifically focused efforts on the most common maternal and newborn complications (post-partum haemorrhage, hypertensive disorders, sepsis) and three newborn complications (low birth weight, asphyxia, sepsis) in addition to management of normal deliveries and postpartum care. Informed by 'Skills and Drills Intervention Model at FRUs in northern Karnataka and series of consultation with facility staff and government officials, the intervention adopted the following four components:

- Facility based refresher training to bring facility teams up to speed on basic clinical knowledge and skills before initiating the mentoring visits
- Instituting a quality improvement committee (QIC) to oversee improvements in facility systems and infrastructure
- Emergency obstetric and newborn drills to enable facility teams to be prepared for handling an emergency and
- Regular visits by a team of specialists (an Obstetrician and Paediatrician) and two nurse mentors facilitated by the district program specialists to reinforce skills and practices as per the clinical standards.

This multi-disciplinary mentoring team visited each FRU once per month for the first three months. Thereafter, visits took place every two months. The mentoring team provided clinical mentoring to staff nurses and site specialists and team-building and problem-solving support for all FRU staff that support MNCH services.

THE MENTORING TEAM

The nurse mentors for the FRU intervention were drawn from the pool of mentors Sukshema already employed for its PHC mentoring programme and DPS were already project staff. Nurse mentors and DPS received a two-week training at St John's Medical College and Hospital primarily focused on introducing skills that would be required at the FRU level for each of the common maternal and newborn complications. Obstetricians and pediatricians either affiliated with local medical colleges or in major public or private hospitals

were recruited to serve as specialist mentors. The project signed contracts with medical colleges and in some cases with individual specialists to provide a total of up to 18 days of service (e.g. 2 days per FRU mentoring visit) including training time and support to the FRUs they mentor over a 12 month period. These specialist mentors took part in a two-day standardization workshop to ensure that all specialists would follow the same guidelines and approaches during their mentor visits.

TOOLS AND APPROACHES TO SUPPORT MENTORING AND QUALITY IMPROVEMENT

The project developed a set of tools and approaches to support the FRU mentoring intervention. Key approaches and tools are profiled below:

Facility based refresher training. Refresher Trainings were organized for two days for all providers in the FRUs dealing with essential and emergency obstetric and newborn care to refresh their basic knowledge and skills before initiating mentoring visits.

Quality improvement committee. FRUs participating in the intervention were requested to form a QIC comprised of the FRU Chief Medical Officer, doctors and in-charge nurses of obstetric and paediatric units, lab, pharmacy and housekeeping staff. The QIC met once a month and focused on problem-solving around all aspects of the provision of quality MNCH services. The DPS and nurse mentors introduced self-assessment tools and action planning processes to the QIC to promote facility-based quality improvements.

Self assessment tools. Checklists based on FRU standards of care were used by the QIC to assess whether they were complying with FRU guidelines. These tools were specific to the different stations that an FRU is supposed to have. Each tool required the QIC to evaluate the services, equipment, drugs and supplies and protocols for each station. QIC were expected to visit these areas

once a month and check off if elements are present or missing.

The eight stations that are assessed include:

- Examination/OPD Room/Area
- Pre Delivery Observation Room/Service Area
- Labour Room
- New Born Care Corner/Newborn Stabilization Unit (NBSU)
- Post-Delivery Room/Area (Till 2 Hrs after Delivery)
- Post Natal Care Ward (>2 Hrs to 48 Hrs after Delivery)
- Eclampsia Room
- Obstetric Operating Theatre (OT)/Blood Storage/Laboratory/Pharmacy

Revised case sheets. As in the PHC mentoring intervention a case sheet was introduced that served as a job aid, medical record and teaching tool. The basic case sheet, called a delivery record, was specifically designed for use in FRUs. Complication case sheets were expanded to reflect the treatment guidelines expected at the FRU level.

Detailed guidance was given on how to manage these complications. In addition, the complication case sheet offered guidance and check points that informed providers' actions in varied circumstances at any given time in an FRU given that specialists were not always available. Complication case sheets were developed for the following conditions:

- Maternal complications
- Newborn complications
- Pregnancy induced hypertension/pre-eclampsia/eclampsia
- Birth asphyxia
- Postpartum haemorrhage
- Newborn sepsis
- Sepsis
- Low birth weight
- Other (e.g., anaemia, premature rupture of membranes, obstructed labour, cardiac)

Emergency drills. Drills are exercises intended to help FRU staff find out how prepared they are for handling emergencies. These are scripted role plays simulating real life situations for which FRU staff should be prepared. All efforts are made



Photo: Specialist conduct drills and discuss effective management of complications



Photo: Specialist / Mentor facilitate skill development through skill stations

to have the drills be as realistic as possible. Each mentoring visit included an obstetric and newborn emergency drill directed by the specialist mentor. The emergencies covered include pregnancy induced hypertension (PIH)/eclampsia, postpartum haemorrhage (PPH) and newborn complications including birth asphyxia. The drills took place in the labour ward so providers could assess how they would handle an emergency situation with the resources and staff at hand. The entire session lasted for about 45 minutes to an hour including the debriefing session.

Skill stations. The mentoring team also introduced skill stations to expand training of FRU nurses. They would set up these skill stations in either a meeting hall or labor room depending on the skill. The skills station demonstrations used supplies and equipment readily available at the FRU and in some cases used the pelvic model and newborn mannequin that each mentor carried with her to the site. Mentors would use a specific set of skill stations aligned with the complications that were the topic of that particular visit. In total there

were 21 skill stations. Mentors ensured that all nurses participated in all skill stations during their visits.

Table 1. Complication/Skill stations

<p>Birth asphyxia</p> <ol style="list-style-type: none"> 1. How to prepare NBCC - prepared before delivering a baby 2. How to check if a Ambu bag is working 3. How to perform initial steps of resuscitation 4. How to perform bag and mask ventilation 5. How to perform chest compression
<p>Care of low birth weight infant</p> <ol style="list-style-type: none"> 1. How to weigh newborn 2. How to perform Kangaroo Mother Care (KMC) 3. How to assess oxygen saturation 4. How to wrap newborn 5. How to measure temperature 6. How to use radiant warmer
<p>Pregnancy Induced Hypertension, Preeclampsia, Eclampsia</p> <ol style="list-style-type: none"> 1. How to measure BP accurately 2. How to conduct and interpret proteinuria test by dipstick method 3. How to prepare loading dose of IM and IV of MgSO4 4. How to assess patellar reflex
<p>Postpartum Haemorrhage (PPH)</p> <ol style="list-style-type: none"> 1. How to diagnose PPH based on blood loss 2. How to administer O2 to a woman in sepsis/shock 3. How to perform controlled cord traction 4. How to exam placenta for its completeness 5. How to perform uterine massage till uterus is hard 6. How to perform Hb test using Sahli's hemoglobinometer

SCHEDULE AND STRUCTURE OF MENTOR VISITS

The project team prepared a mentoring visit plan that outlined topics to be covered in each mentoring visit (table 2). These topics were in addition to addressing need-based clinical and system issues that mentors observed during their visits or were included in action plans.

Table 3 (page 5) summarizes the expected structure of each day of the mentor visit. The mentoring team had discretion in making adjustments to the sequencing of activities as required based on the particular circumstances of each FRU.

After the third mentor visit the decision was made to extend the duration of the mentor visit from six days to as many days as needed for each FRU to enable mentors to reach all nurses in a facility. In total the project contributed 2,031 days of mentor team support across all FRUs.

MANAGEMENT

The management support was provided by the district program specialists and technical managers of the project at the state level. The district staff played an active role in introducing the mentors to the facilities, facilitating QIC meetings and in following up with the facility leadership in resolving issues. The technical managers and a Deputy Director, Quality Improvement supported the field teams during preparations and planning for the visits. They also reviewed the implementation through field visits and review meetings. The Director, Quality Improvement provided the required technical stewardship. Clinical support

Table 2. Schedule of Topics to be Covered, FRU Mentor Visits

Visit	Clinical topics-maternal	Clinical topics-newborn	System topics
1 and 4	Eclampsia	Birth asphyxia	Documentation Infection control
2 and 5	Postpartum haemorrhage (PPH)	Low birth weight (LBW)	Supply chain
3 and 6	Maternal sepsis	Newborn sepsis	Referral system

Table 3. Structure of Typical FRU Mentor Visit

Day 1 & 2	Nurse mentors	<ul style="list-style-type: none"> • Reinforce rapport • Be available as additional support staff in the delivery and postnatal wards • Encourage QIC to review and support implementation of action plans (with DPS)
Day 3	Specialist Mentor (Obstetrician) Nurse Mentors and DPS	<ul style="list-style-type: none"> • Specialist mentor interaction with FRU specialists and nurse mentors and observations of practices, site tours, and case sheet audits • Conduct emergency drill exercise • Provide support based on need through <ul style="list-style-type: none"> - Skill stations - Demonstrations - Case studies and protocols/guidelines - Case sheet reviews • Debrief with FRU nurses and specialists to appreciate good work and summarize clinical action points
Day 4	Specialist Mentor (Pediatrician), Nurse Mentors, DPS	
Day 5, 6 and all subsequent days	Nurse mentors	<ul style="list-style-type: none"> • Conduct skills stations (Visit 3-6) • Complete any pending tasks from days 1 through 4 • Provide additional support staff in delivery and postnatal rooms (including night duty nurses) • Review with CMO or QIC next steps and follow up visit plans • Alternate overnight shifts by nurse mentors • Catch up rounds with all FRU MNCH nurses

through training and field support was provided by the experts from St John’s Medical College and Hospital.

ACHIEVEMENTS

Two to three months into the intervention, many improvements were already visible in the FRUs and continued improvements were observed over the duration of the intervention. Highlights based on site visits and interviews with mentors and FRU staff are noted:

Labour room equipment and supplies. Many of the improvements related to better equipped and organized labour rooms. All labour rooms had designated and equipped newborn care corners and emergency drug kits. Mentors and FRU staff related how labour rooms were now equipped with up to eight delivery sets so that instruments could be properly sterilized and autoclaved. Some FRUs acquired BP and stethoscopes for exclusive use in the in labour room.

Drugs. Drug indenting and supplies had substantially improved since the mentoring



Photo: Well stocked & organized pharmacy

program began. Mentors stated that all FRUs had improved indenting. They noted that before staff were indenting randomly and didn’t keep adequate buffer stock. FRU nurses explained how they were now indenting against a checklist which they posted on the labour room wall with quantities calculated. Mentors stated that drugs were in stock

in the labour rooms according to the essential drug list that the project had supplied to post on the labour room wall.

Infection control. Infection prevention protocols had improved. Mentors explained that in some cases staff knew what was to be done but weren't doing it while in other cases staff didn't even know the protocols. Some FRUs did not have color coded bins for waste segregation. Mentors showed staff nurses and Group D staff how to prepare and use chlorine solution. Staff were also advised on the need to autoclave all instruments and this had become a common practice. Prior to mentoring staff had only been sterilizing instruments but not autoclaving them.

In one FRU staff explained how they were maintaining cleanliness now through cleaning the labour room 3-4 times a day where before they only cleaned it twice a day. They noted they had improved waste disposal.

All FRUs are expected to have a sepsis room to isolate and treat infectious cases. This only existed in a few FRUs, however, where staff were able to designate a room for this use.

Improved management of normal labour and complications. The mentors and FRU staff concurred that knowledge, skills and practice in providing MNCH services had improved. As one CMO stated, "Before mentoring, staff were not knowing guidelines or how to handle complications. Now they are much more informed and competent to provide care." Mentors were able to cite examples of treatment protocols that had improved once staff were updated on guidelines. Over the course of the intervention mentors found nurses had more confidence in handling complications. As one nurse explained, "We used to manage cases earlier but now we are doing [it] more systematically."

Postnatal care counselling. Mentors encouraged FRU nurses to institute more standardized and consistent postnatal counseling. Several FRUs were assigned staff to do PNC counselling. For example, in one FRU the mentor

advised that one nurse per shift spend one hour doing PNC counselling to reach all women. Staff used the Home Based Family Focused Counseling (HBFFC) tool the project had developed for its community intervention. Lack of staff is a major challenge when it comes to providing PNC care. In some FRUs staff stated that it was hard for them to find time to do PNC counseling

Improved documentation. Mentors and nurses found that documentation practices had improved. Much of this was attributable to the introduction and reinforcement of the case sheet. However, mentors also noted that documentation of parturition registers and referral registers had also improved as well as documentation of QIC meeting proceedings. FRU staff also noted improved documentation as an outcome of the mentoring programme. The quality and completeness of documentation continues to be a concern. Mentors and the monitoring and evaluation team noted that nurses are likely to start a delivery record for nearly all patients but do not fully complete it in a proportion of cases.

Improved cleanliness and patient amenities. The community element of the FRU intervention initially focused efforts around cleanliness and hygiene as that was an issue most readily



Photo: Nurse washing hands in labour ward

acceptable and responded to an identified need. In this way the team was also able to leverage the interest created through the Swachh Bharat Abhiyaan launched by the Prime Minister in October 2014. Table 4 highlights a range of activities and improvements that had been accomplished through community participation and strengthening ARS.

Table 4. Activities to support enabling environment at community level

Activities to support enabling environment at community level	Number of FRUs
Cleaning campaign/established cleaning day	12
Drinking water improved/available	8
Toilet facility available	9
Positive media coverage	7
ARS meeting held	4

CHALLENGES

Change takes time and the mentors and site visits confirmed some challenges that may be difficult to address in the short term. After one year of the intervention, mentors and FRU staff pointed out persistent challenges. These are highlighted below:

FRU leadership. Leadership is a key factor in the ability of the facilities to make improvements and achieve compliance with guidelines. Observations and mentor interviews confirmed that the leadership in some FRUs was very proactive and embraced the concepts of quality improvement and were supportive of the mentors' assistance. In other FRUs the CMOs were ambivalent about wanting to make improvements or did not act on the recommendations articulated in the action plans. Some mentors expressed frustration at their inability to bring about improvements when the FRU leadership or staff were engaging in corrupt practices. Turnover among CMOs is also common and the mentoring team would need to build relationships each time there was a leadership change.

Lack of specialists. One characteristic common across all FRUs was the dearth of specialists in the facilities. FRUs are expected to have 24/7 coverage by obstetricians, anesthetists and pediatricians (or

at least medical officers with supplemental training to perform C-sections) to provide EmONC. Very few FRUs meet this guideline. Among the 16 FRUs included in this intervention none had the required number of specialists.

Table 5. Specialist availability in FRUs (as of Nov. 2015)

Specialty availability	Number of FRUs
OB-Gyn	12
EMOC trained MBBS	6
Pediatrician	8
Anesthesiologist or MBBS with LSAS	7

Staff shortages. Beyond specialists many FRUs do not have the required number of nurses or other positions as well. For example, one FRU had 58 sanctioned posts but only 19 staff. Staffing levels ran the gamut among the 16 FRUs. The two largest FRUs (DHs in Bijapur and Bagalkot) had 74 and 89 total staff nurses while at the other extreme some FRUs had just 9 nurses in the entire facility.

Lack of water and sanitation. Basic infrastructure such as water and sanitation is not available in some of the FRUs. Some facilities lack running water and must fill plastic barrels to have access to water in the labour room. Many facilities had no public toilets or drinking water available for patients or visitors. In some cases the DCS was able to advocate that these larger infrastructure issues be taken up through re-activating the ARS.

Inadequate space and layout of facilities. Beyond the basic requirements of water and sanitation, the facilities designated as FRUs are not necessarily well designed to meet the guidelines called for by the government. FRU teams attempted to reorganize space to designate special rooms as per MNH guidelines for level 3 facilities. The functionality of these rooms was uneven among facilities. Many of the labour rooms observed were small with multiple beds and limited or no provision for privacy.

The number of FRUs that had designated units is noted in table 6. The labour room and newborn care corner were the most likely units to be compliant with guidelines.

Lack of interest and effective platforms for addressing community issues. Many CMOs were reluctant to encourage greater community engagement. Often the community can be critical of the FRU and blame health care providers. As one CMO noted, “community members’ expectations are too much.” It took time to build an atmosphere of trust with the CMO when it came to community level issues. In order to gain the trust of the CMO and strengthen community ownership of the facility the team learned that it was best to take a gradual approach first establishing an enabling environment for more community engagement. Attempts to strengthen ARS from the outset met with resistance from CMOs who considered the project team to be interfering. The teams had to convince the CMOs that they were sincerely interested in improving the reputation and standing of FRU in the community, and not criticizing it or its leadership. They had to demonstrate to the CMOs that the community and existing accountability structures like ARS could be a force for good.

Table 6. Status of MNCH Units in FRUs

Unit	Number of FRUs	Percent
Pre observation room	12	75%
Labour room	16	100%
Newborn care corner	16	100%
Sepsis room	8	50%
Eclampsia room	3	19%
Newborn stabilization unit	10	63%
Postnatal ward	16	100%
Obstetric operating theatre	15	94%
Blood storage	9	56%

WHAT THE DATA SAY

The project developed a varied set of monitoring approaches to assess the implementation of the FRU mentoring program. Two field investigators spent five days each month in each FRU and carried out case sheet audits, reviewed registers and collected data, observed labour and delivery cases, and conducted patient interviews. The findings from these monitoring approaches confirmed the feedback received from mentors and FRU providers. Highlights are below:

Case Sheet Uptake. Case sheet uptake is an important indicator which reflects acceptance of the case sheets by the staff. Among all women arriving in labour case sheets were completed for 42% of cases by Aug-Oct compared to 31% six months earlier.

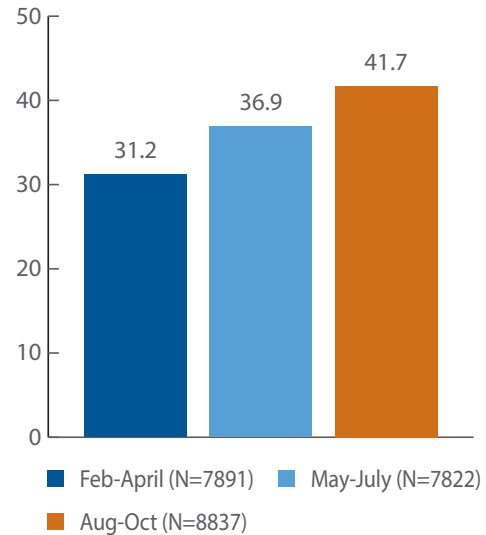


Figure 1. Use of delivery case sheets

Staff Clinical Practices as Documented in Case Sheet Audits. Case sheet audits measured the quality of care provided as documented in the case sheet. On many indicators critical to effective post partum practices FRU staff recorded substantially higher compliance with guidelines by the end of the intervention than early in the intervention period as shown in Figure 2 (page 9).

Staff Clinical Practices as Documented in Observations. Clinical observations were used to measure actual practice and give further insight into provider practices beyond their documentation compliance. Providers improved their performance related to several key quality indicators the longer the mentoring intervention went on. For example the proportion of providers who followed all three components of AMTSL increased from 57% in Feb-Jun time period to 80% in the Jul-Nov time period (Figure 3, page 9).

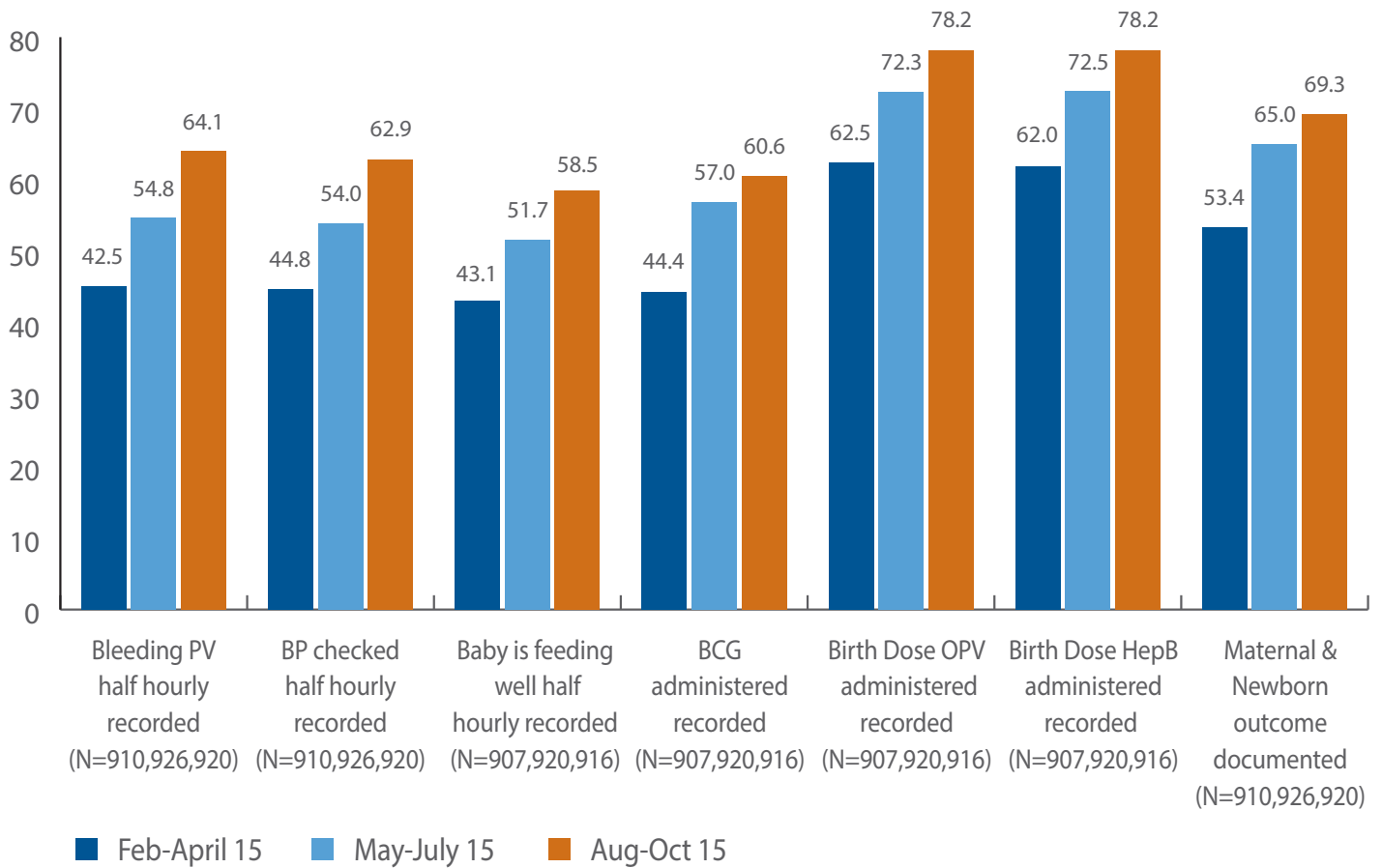


Figure 2. Post Partum Practices As Recorded in Case Sheets

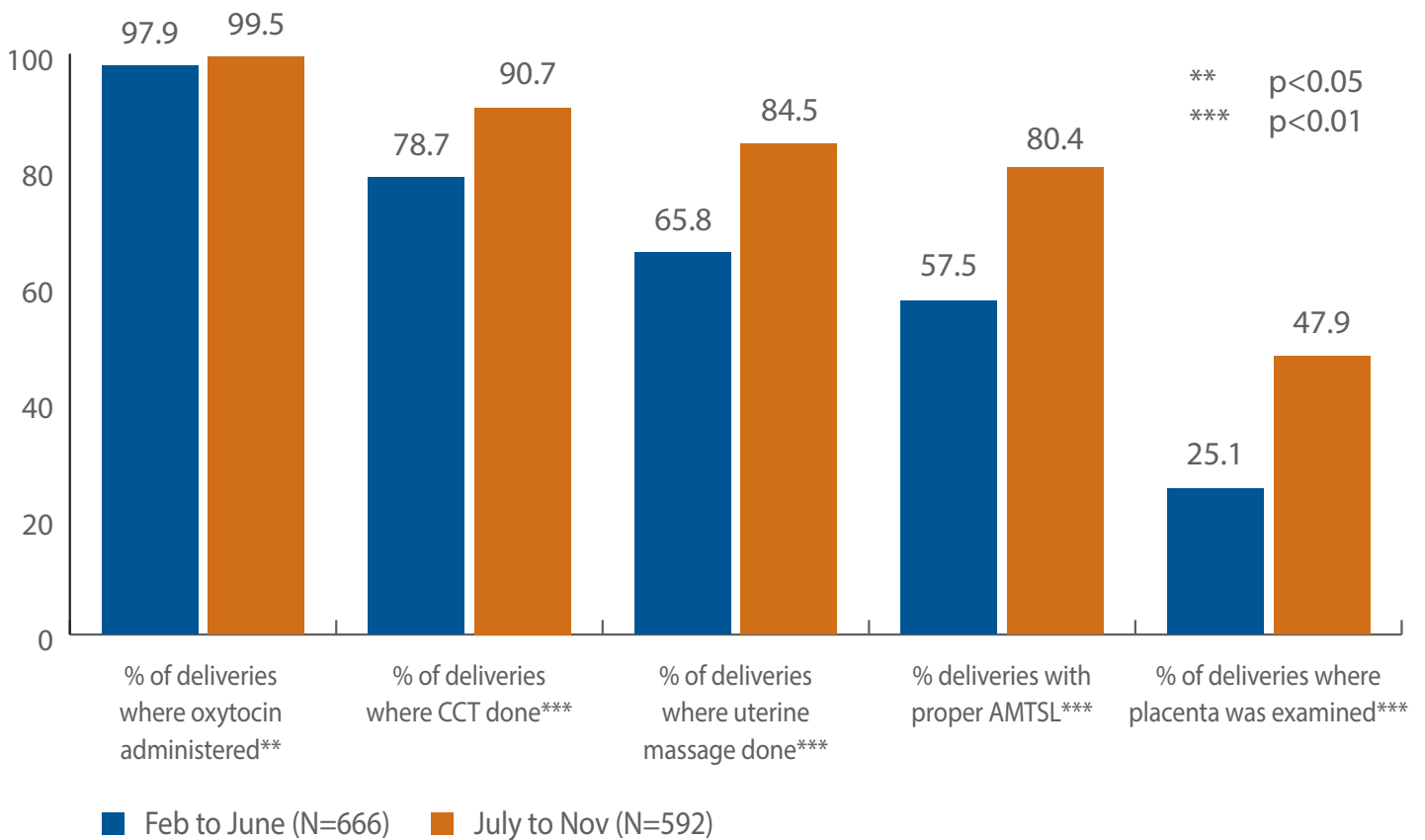


Figure 3. Staff Clinical Practices as Documented in Observations

THE WAY FORWARD: OPPORTUNITIES FOR SUSTAINABILITY

The Sukshema project has developed tools and approaches that could be adopted by the government or outsourced to medical colleges or other institutions that might be interested in replicating and sustaining the mentoring programme. Additionally, elements of the mentoring programme are being incorporated in recent Government of India (GOI) guidelines that call for the establishment of skill labs and training of



nurse mentors to provide on-site mentoring support to trained staff in maternal and newborn care. The most recent national quality assurance guidelines also include aspects of setting up quality improvement committees within facilities, and use of self-assessment and action planning for addressing systems gaps—the same approaches that we found useful in the mentoring intervention. These developments are timely and acknowledge the need for quality improvement processes and on-site support in enhancing provider skills and performance and, ultimately, health outcomes. Growing recognition among India's health experts on the need for strengthening the capacities of nurses and midwives through ongoing support and mentorship and a focus on quality improvement offers promise for sustaining these interventions within the existing government health system.

VOICES FROM FRU STAFF

In informal interviews, FRU staff expressed strong appreciation for the mentoring programme. They welcomed the mentors' support, style of interaction and knowledge and skills they imparted. One CMO noted "Mentors are doing their job nicely." Training and re-training are needed and mentors provide this.

Nurses at one FRU explained, "The value of mentoring is the hands on guidance mentors provide. They are not finding fault. They observe and they advise." They shared that "Mentors can have friendship bond with nurses." These nurses indicated that they had learned a lot from mentors and mentioned topics such as PPH, PIH and baby care. While all the staff nurses had been trained in SBA, NSSK, and IMNCI, they explained "In training only lectures are given while here practically we do these skills with the nurse mentors to support us." The nurses seemed eager and willing learners. As evidence they shared how they call the nurse mentors between visits when they have questions or need guidance.



FRU leadership and specialists appreciated that their staff were getting this support. As one CMO (a surgeon) mentioned, "Mentors have trained up nurses and now labor room is taken care of same



as OT.” Another CMO valued that the training is taking place in their own facility rather than in a training site. “Government trainings have been going on for last 5-8 years but providers are not practicing. Nobody was there to help them.” He noted that staff had been trained so many times in how to plot a partograph but they were not doing it until the mentors came along and supported them to do so. Now they are regularly plotting. An OB specialist remarked on how the mentors bring an outside expert perspective to the FRU and this may carry more weight with the nurses. She stated “It can be beneficial to have outsiders come in to do training and tell us how to improve as it gets more attention. We have been telling these same things internally but it doesn’t take off. When someone from outside comes it is more of an impetus to make the changes.”

Nearly all FRU staff interviewed concurred that the mentoring programme had contributed to improvements in the FRU. One CMO said, “Definitely there is improvement because of mentoring.”

Authors: Elizabeth Fischer, Troy Cunningham, Prem Mony, Arin Kar, Mohan H L, Krishnamurthy J.

Funded by the Bill & Melinda Gates Foundation, the Sukshema project supports the Government of Karnataka to develop and implement strategies to improve maternal, newborn, and child health (MNCH) in alignment with the Government of India National Rural Health Mission (NRHM). The project is implemented by Karnataka Health Promotion Trust in collaboration with University of Manitoba, St John’s Medical College, IntraHealth International, and Karuna Trust. The six-year project started in September 2011.

The goal of Sukshema is to:

Develop and adopt effective operational and health system approaches within the NRHM to support the state of Karnataka and India to improve maternal, newborn, and child health outcomes in rural populations.

To achieve this goal, the project integrated and aligned key aspects of the Foundation’s MNCH strategy with the NRHM in eight districts in northern Karnataka, with the following four key objectives:

1. Enable expanded availability and accessibility of critical MNCH interventions for rural populations.
2. Enable improvement in the quality of MNCH services for rural populations.
3. Enable expanded utilization and population coverage of critical MNCH services for rural populations.
4. Facilitate identification and consistent adoption of best practices and innovations arising from the project at the state and national levels.

