On-Site Mentoring for Improved Quality of Delivery and Postpartum Care at 24/7 Primary Health Centres

The Story of a Maternal, Newborn and Child Health (MNCH) Mentoring Programme in Northern Karnataka

NATIONAL HEALTH MISSION
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KHPT
Karnataka Health Promotion Trust

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Sukshema

Maternal, Neonatal and Child Health Project

An overview of the On – Site mentoring intervention to institutionalize quality improvement strategy within 24/7 Primary Health Care centers in Karnataka state. The philosophy, design, The philosophy, design, implementation process and results are detailed herein.

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IT/ BT Park, 5th Floor
1-4, Rajajinagar Industrial Area
Behind KSSIDC Administrative Office
Rajajinagar, Bangalore- 560 004
Karnataka, India
Phone: 91-80-40400200
Fax: 91-80-40400300
www.khpt.org

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Government of Karnataka
Department of Health and Family Welfare
National Health Mission

PREFACE

Institutional deliveries in Karnataka have risen over recent years due to the efforts by the state health directorate which were strongly complemented by various innovations and schemes implemented under the National Rural Health Mission (NRHM) such as Janani Suraksha Yojana (JSY) and Janani Shishu Suraksha Karyakram (JSSK), ASHA support, 108 ambulance services, etc. There has been a reduction in maternal and newborn mortality rates (MMR, NMR), but not enough to achieve the proposed state targets. With over 80% of pregnant women now delivering in facilities, it is critical that these deliveries are conducted as per the highest standards for quality of care. To accommodate this rising demand, government had prioritized upgradation of Primary Health Centres into 24/7 facilities to provide delivery services in rural areas and reduce the burden on district and larger hospitals enabling them to function more appropriately as first referral units (FRU) to provide emergency care. To achieve good quality of services provided in public health facilities it is important that the service providers working at these facilities are proficient in skills and practices that are appropriate particularly with reference to pregnant women, mothers and new-borns. To facilitate this, the need for dedicated teams to improve and monitor quality is crucial.

As a part of technical assistance to NRHM, Karnataka Health Promotion Trust and its consortium of partners developed an innovative nurse mentor led quality improvement program after detailed situation assessment and consultations with government. It was pilot tested in Bellary and Gulbarga during 2012-2013 where trained Nurse Mentors worked with 24/7 primary health centres (PHCs) staff to improve the quality of delivery and postpartum care. The mentoring programme integrated elements of clinical mentoring with facility-based quality improvement processes. Another critical component of the intervention was the use of revised case sheets by the staff that helped them in multiple ways, i.e. as job aid to adhere to standard practices, as a simple case documentation tool and as a tool to monitor and audit quality of care. The intervention results showed marked improvements in facility readiness and provider preparedness to deal with institutional deliveries and associated complications. Subsequently the program was scaled up in the remaining high priority districts of northern Karnataka and further taken up both within and outside the country.

As a part of this intervention, several technical products and training material were developed; they consist of 1) process documentation of the intervention that details the process of planning, implementing and monitoring the mentoring program, 2) Facilitator/ Trainer and Participant manuals. These materials have as annexures within them, various tools including the case sheets that were implemented under this initiative. We sincerely hope that these resources will be found useful by program managers in terms of gaining an in-depth understanding of the intervention and replicating it in their respective contexts.

Smt. Sowjanya, I.A.S
Mission Director
National Health mission

Sri.P.S.Vastrad, I.A.S
Commissioner
Dept. of Health & Family welfare

Sri. Atul Kumar Tiwari, IAS
Principal Secretary,
Dept. of Health & Family welfare

Report at a Glance

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List of Acronyms

AMMA	:	Assess and diagnose, manage, measure, advocate(quality improvement approach)
AMTSL	:	Active management of third stage of labour
ANC	:	Antenatal care
ARS	:	Arogya Raksha Samithi meetings
ASHA	:	Accredited social health activist
AWW	:	Anganwadi worker
AYUSH	:	Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy
BEmOC	:	Basic emergency obstetric care
CC	:	Community coordinator
CI	:	Community intervention
CPG	:	Clinical practice guidelines
DCM	:	District coordination manager
DCS	:	District community specialist
DHO	:	District health officer
DPMO	:	District program management officer
DPS	:	District programme specialist
DRHO	:	District reproductive health officer
EDD	:	Estimated date of delivery
FRU	:	First referral unit
GoK	:	Government of Karnataka
GP	:	Gram Panchayat (village council)
IFA	:	Iron and folic acid
IMR	:	Infant mortality rate
IUD	:	Intrauterine device
JHA	:	Junior health assistant
JSSK	:	Janani Shishu Suraksha Karyakram
JSY	:	Janani Suraksha Yojana
M&E	:	Monitoring and evaluation
MCTS	:	Mother and Child Tracking System
MIS	:	Management information system
MMR	:	Maternal mortality rate
MNCH	:	Maternal, newborn, and child health
MO	:	Medical officer
MOIC	:	Medical officer in charge
NGO	:	Nongovernmental organization
NRHM	:	National Rural Health Mission
NSSK	:	Navjaat Shishu Suraksha Karyakram
OPD	:	Outpatient department
OSCE	:	Objective structured clinical examination
PAC	:	Post-abortion care
PDSA	:	Plan Do Study Act (quality improvement approach)
PHC	:	Primary health centre
PI	:	Performance improvement
PIH	:	Pregnancy-induced hypertension
PPH	:	Postpartum haemmorhage
PQI	:	Performance and quality improvement
PROM	:	Premature rupture of membranes
QI	:	Quality improvement
RP	:	Resource person
SBA	:	Skilled birth attendant
SJMC	:	St John's Medical College
THO	:	Taluka health officer
TT	:	Tetanus toxoid
VHSNC	:	Village Health, Sanitation and Nutrition Committee
VIMS	:	Vijayanagar Institute of Medical Sciences, Bellary
WISN	:	Workload Indicators of Staffing Need
WHO	:	World Health Organization

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The authors appreciate the support provided by numerous individuals over an extended period of time to allow documentation of this important innovation. Special thanks to Dr B.M. Ramesh, former Project Director of Sukshema Project, for recognizing the importance of documenting the mentoring programme so others can learn from this activity and for the guidance provided throughout. Thanks to Anna Schurmann for helping to structure the project's knowledge management strategy and to Baneen Karachiwala who provided independent observation and interviews of the first mentor training. The dedication of project staff—including several Bangalore-based technical leaders, support staff, and district programme specialists who coordinated numerous field visits to several districts—ensured high-quality observations at primary health centres and insightful interviews with those implementing the intervention. These staff include Dr Swaroop, Dr Mahantesh, Dr Seema, Dr B. Pavan, Dr Nazia Shekhaji, and Laxshmi C. We thank the team from St John's Research Institute that included Dr Prem Mony, Maryann Washington, Dr Annamma Thomas, Dr Swarnarekha Bhat, Dr Suman Rao and other consultants for their support in the trainings and handholding visits and for sharing their experiences that have informed the process document. We appreciate the support of clinical consultants from University of Manitoba, Lisa Avery and Maryanne Crockett for their support during the design of the program. We also acknowledge the efforts of Dr Sudarshan and Dr Nagaraj from Karuna Trust for their support to the implementation of the program. Appreciation is extended to Arin Kar, Deputy Director of Monitoring and Evaluation, for providing data support and to H.L. Mohan, Director of Community Interventions and Somshekar Hawaldhar, Deputy Director of the community intervention component for contributing to the discussion on program coordination. Special appreciation is also due to the nurse mentors for their enthusiastic participation in interviews and focus groups, and for facilitating the ability to observe their work in action. We thank the many primary health centre staff and district government officials who met with us to share their candid views about the mentoring programme. Finally, we thank Stephen Moses, Professor and Head of Community Health Sciences of Dr James Blanchard, Director, Centre for Global Public Health, University of Manitoba for their valuable reviews and inputs.

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.

Facilitate identification and consistent adoption of best practices and innovations arising from the project at the state and national levels.

Executive Summary

This report tells the story of an innovative nurse mentoring programme to improve maternal and newborn care in northern Karnataka. It documents the process and experience of implementing the mentoring intervention, shares intervention results, and concludes with lessons learned and recommendations. Information is derived from qualitative and quantitative sources including extensive interviews, site visits and observations over a 2-year period. We hope it helps others who are interested in learning from the experience to develop similar approaches in India or elsewhere to improve maternal and newborn care.

Context, Evidence and Intervention Overview

In India, too many women and infants die from causes that are both preventable and easily treatable. Evidence points to the critical importance of ensuring high-quality care during labour, delivery, and the immediate postpartum and newborn period for saving maternal and newborn lives. This is the window in which more than half of maternal and newborn deaths take place. The ability of providers to manage normal deliveries according to best practice guidelines and to identify, manage and refer those patients with maternal and newborn complications can have a direct impact on maternal and newborn health outcomes.

The Sukshema project developed a mentoring intervention designed specifically to improve the quality of facility-based maternal and newborn care in 24/7 primary health care centres (PHCs) in Northern Karnataka. By providing on-site mentoring for improved clinical care and service delivery, the project hypothesised that the quality of services and continuity of care would improve and that women and newborns would have better health outcomes.

Findings from situation analysis in project districts and evidence review

A situation analysis in eight project districts in 2011 revealed the need to both improve provider competence in managing maternal and newborn care and to address facility-level factors such as drug stock-outs and lack of infrastructure. The analysis showed that providers did not follow best practices such as active management of third stage of labour (AMTSL), use of partograph, or essential newborn care. Labour augmentation (not a recommended practice) was found to be very common. PHCs in particular often lacked the drugs and equipment to provide delivery services. The situation analysis also revealed a weak referral and follow-up system.

In designing the mentoring intervention, the Sukshema project reviewed findings from similar interventions across a variety of settings and clinical areas. The evidence suggested that a mentoring intervention should include components focused on on-the-job provider training and support, user-friendly clinical job aids, and team-based approaches to quality improvement.

Overview of intervention design

The Sukshema Project's maternal, newborn, and child health (MNCH) mentoring intervention integrates elements of on-site clinical mentoring with facility-based quality improvement processes to support PHCs' abilities to deliver critical maternal and newborn care services. The project employed a new cadre of full-time nurse mentors who were each responsible for mentoring staff in six to eight 24/7 PHCs. Since staff nurses are responsible for labour and delivery services in PHCs, Sukshema opted for a peer mentoring model and thus hired and trained qualified staff nurses to be mentors.

Project Approaches and Tools

The Sukshema project introduced a quality improvement approach backed by tools to assess and track quality improvements.

AMMA quality improvement approach

Sukshema developed and promoted a quality improvement framework called AMMA that means "mother" in Kannada. PHC teams were encouraged to use this quality improvement approach with individual patients and at the facility level.

ASSESS:Assess and diagnose quality gaps or problems

MEASURE:Measure progress in resolving problems and quality gaps

MANAGE:Manage solutions to address problems

ADVOCATE:Advocate for clients' and providers' rights to quality services

At the same time, the project introduced several tools such as case sheets, self-assessment tools, and action planning tools to operationalise quality improvement.

Case sheet. A key innovation of the mentoring intervention was the introduction of a newly developed case sheet for PHC providers that incorporated the AMMA approach. The case sheet served as a clinical record, a job aid and a teaching tool. The case sheet guided providers through the critical steps of patient assessment, labour monitoring and postnatal care and included a simplified partograph to monitor labour (Assess and diagnose). The case sheet directed providers to complication case sheets that provided details on how to manage and refer maternal and newborn complications (Manage). Providers used the case sheet to make clinical decisions aligned with SBA guidelines for PHCs. Mentors also used the case sheet to conduct case audits and monitor changes in compliance with SBA guidelines and as a teaching tool (Measure). Discussions about the case sheet led to wider discussions of how to improve quality of care for patients (Advocate).

Case Sheet Components for 24/7 PHCs	
Case sheet for normal labour and delivery	**Supplemental complication case sheets**
Section 1 : Initial assessment Section 2 : Labour monitoring (including simplified partograph) Section 3 : Delivery notes Section 4 : Postpartum period Outcome sheet	A : Prolonged/obstructed labour B : Preeclampsia/eclampsia C : Antepartum haemorrhage D : Infection/sepsis E : Premature rupture of membranes F : Postpartum haemorrhage G : Newborn complications H : Other complications

Self-assessment tools and action planning. The Sukshema project developed self-assessment tools that mentors used with PHC teams to assess quality of care, identify gaps and examine causes of those gaps (Assess and diagnose). The self-assessment checklist included questions for PHC teams to discuss and to decide whether the quality standard is met or whether there might be an opportunity for improvement. The checklists focused on patient and provider rights as critical aspects of quality. PHC teams prepared an action plan based on these assessments (Manage). Follow-up meetings with staff allowed for assessment of progress towards goals (Measure) and provided a forum for discussions about how to improve quality along the continuum of care (Advocate).

In addition to these tools, mentors brought mannequins, flip charts and other teaching aids to the sites to provide skills practice.

Hiring and Training Mentors

Recruitment and hiring

The Sukshema project team crafted a 3-tiered hiring strategy to identify the best candidates to be mentors. Because of the varied skills that mentors needed to possess, it was thought that a conventional hiring process of screening curricula vitae and interviewing candidates might not be sufficient to fully assess a candidate's capacities for the position. The project's need to hire many candidates at once also offered opportunities for more creative group-based assessment processes. The process followed for identifying and recruiting mentors worked well. The candidates that were ultimately selected were the best performers on various assessments and evaluations.

Training

The Sukshema project developed a 5-week induction training programme to equip mentors with the knowledge and skills needed to carry out their responsibilities. A combination of KHPT staff and faculty from St Johns Medical College (SJMC) trained mentors at SJMC in these skills. The training covered the following topics:

- Introduction and practice applying self-assessment and quality improvement approaches
- Skilled birth attendance (SBA) clinical content and hands-on training focused on skills to provide routine care, identify and manage complications, and make timely referrals
- Exposure to PHC-level systems such as drug supply, referral, infection control, record-keeping and use of tools to help improve PHC systems
- Field visits to PHCs to practically apply the skills and tools.

The project also provided ongoing capacity-building of mentors using a combination of on-the-job support, refresher trainings and clinical postings.

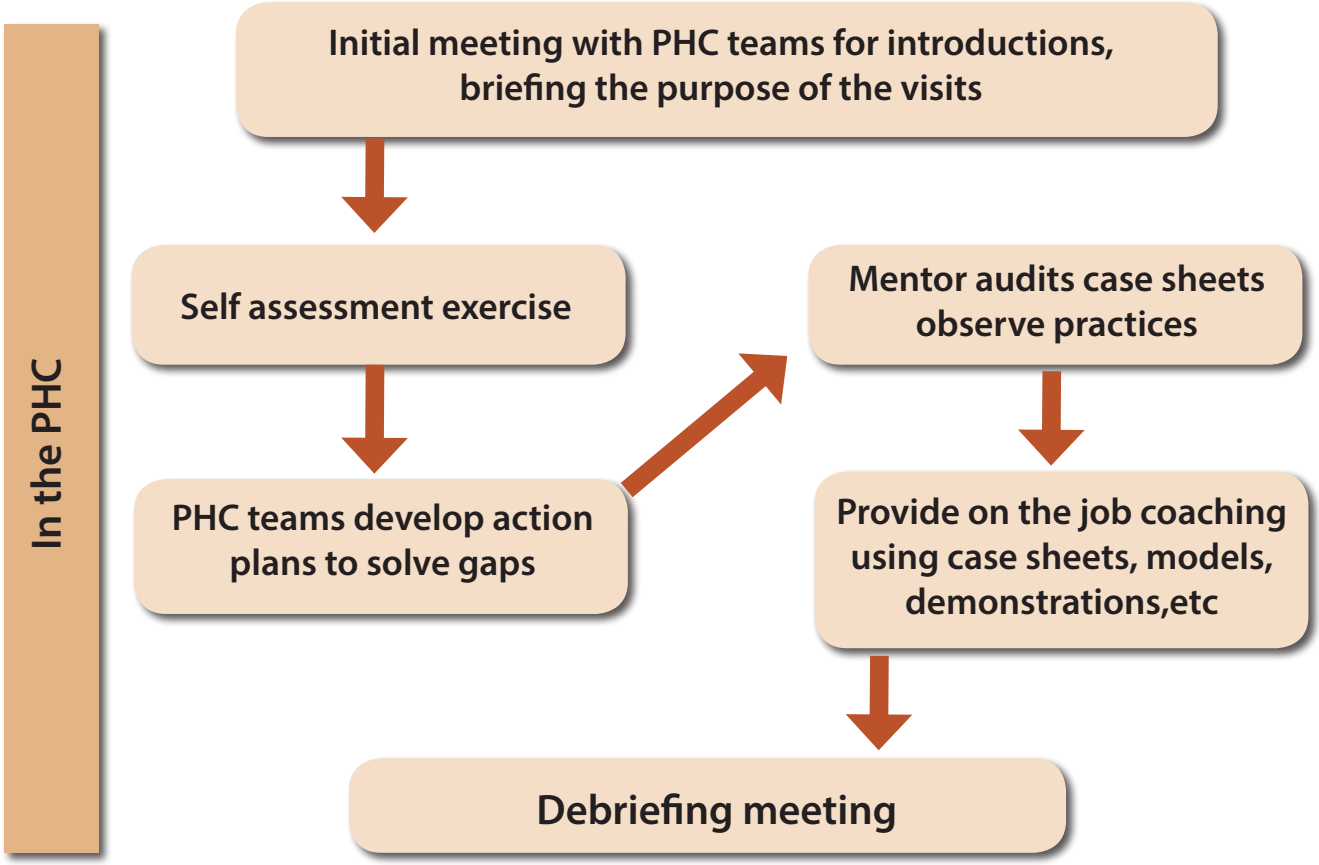
Mentor Visits in Pilot Districts

The project piloted and evaluated the mentoring programme in Bellary and Gulbarga districts with 11 mentors and 54 intervention PHCs in August 2012.

Structure of mentor visits

In the pilot districts, mentors were assigned six PHCs for mentoring and visited their assigned PHCs once a month initially and at longer intervals thereafter for a total of six visits a year. Each visit was expected to last two days, but later visits lasted 3-4 days. The time was extended to enable mentors to complete planned tasks, which was not always possible in a two-day visit given high outpatient loads and provider availability.

Flow of a typical mentor's visit



The structure for the first mentor visit focused on establishing rapport and initiating the team-based quality improvement approaches through use of some of the self-assessment tools and development of an initial action plan. In subsequent visits, mentors continued to support PHC teams in using the self-assessment tools and developing and revisiting action plans, and provided individualised support to staff nurses on maternal and newborn topics. Mentors facilitated team-based problem-solving to address specific quality gaps such as equipment and supply logistics, infection prevention practices, referral practices, record-keeping, teamwork and staff attention to patient rights. Mentors also strengthened staff nurse SBA skills through teaching, case reviews, case studies, demonstrations and modeling bedside patient care. All mentor visits included a review of the action plan, a case sheet audit and teaching.

Pilot district successes

Mentors in the pilot districts were able to work effectively with PHC teams to enact quality improvement processes and strengthen provider skills. Highlights include:

- ***Rapport with PHC teams.*** Mentors expressed and demonstrated confidence in building rapport with PHC teams and carrying out the mentoring visits.
- ***Support for team-based quality improvement process.*** The PHC staff were willing to engage with the mentors in quality improvement sessions. PHC teams remarked that they had rarely come together as a team before mentoring and welcomed the opportunity to do so. In some PHCs, teams initiated their own reviews and resolved their own problems in between mentor visits.
- ***Value of self-assessment tools and action plans.*** Mentors found that PHC teams were able to use the self-assessment tools and that these tools helped teams identify where they had problems.
- ***Action plans addressed system strengthening.*** Mentors noted that the process of reviewing and developing action plans was well entrenched as part of the mentoring visits.
- ***Use of teaching models.*** The training models provided to the mentors were used effectively to carry out demonstrations. Staff nurses appreciated the opportunity to practice with newborn and pelvic models.
- ***Case sheet acceptance and use.*** Mentors indicated that with continued encouragement staff became more accustomed to the case sheet and appreciated its value as a job aid. Some staff initially resisted using the case sheet, perceiving it as a time-consuming documentation burden. Promoting consistent and correct use of the case sheet was a major undertaking for the mentors in all visits.
- ***Opportunities for patient-focused teaching.*** Mentors and project staff reported that they encountered pregnant women and recently delivered women in the PHCs so they had the opportunity to provide bedside teaching and demonstration.
- ***Customised support.*** Mentors had a keen understanding of their PHCs and individual staff nurses and were able to objectively assess their strengths and shortcomings and develop individualised plans to support nurses.
- ***Sustaining relationships with PHC teams.*** Mentors became sources of support even between visits. Staff calledmentors between mentoring visits to tell them about complications or ask for information.

Pilot district challenges

Mentors encountered some circumstances that made it more difficult for the mentoring programme to achieve its objective of improving maternal and newborn care. Some of these challenges include:

- ***PHC leadership engagement.*** Mentors found it more difficult to facilitate change in PHCs that did not have a full-time medical officer or a medical officer who was engaged in providing strong leadership and support of the PHC teams. In these facilities, it was harder for the mentors to inspire a sense of team work and mutual accountability.
- ***High-volume PHCs.*** At some PHCs with high delivery and outpatient department volumes, it was hard for mentors to get time with staff. In busy PHCs, mentors found it difficult to retain the attention and focus of staff to provide teaching. Busy nurses sometimes had to deal with many patients and were less likely to fill out case sheets or follow expected protocols.
- ***Staff turnover, motivation, and abilities.*** Mentors also reported that there was a degree of staff turnover and they often had to bring new nurses up to speed. Another issue was that it was harder to consistently engage and have time with staff nurses who lived some distance from the PHC. Other challenges included staff with poor attitudes or those who were slow learners.

PHC quality improvements

The use of team-based quality improvement processes combined with ongoing mentor support generated improvements in the quality of care in PHCs. Observations and mentor and PHC team interviews highlightednotable improvements:

- ***Increased availability of drugs and supplies.*** Mentors and PHC teams remarked that most pilot PHCs now had essential medicines and medical officers were very supportive about getting needed drugs and supplies, usually using untied funds. Vitamin K, which was not available at all when the intervention began, was present in most PHCs. PHCs had acquired autoclaves, delivery sets and other equipment as needed.
- ***Improved organisation of labour room.*** Mentors observed marked improvements in the organisation of the labour room and its equipment, including separation of waste and increased cleanliness. Many PHCs now had kits readily available for emergencies. Many had posted guidelines on the walls and a list of essential drugs.
- ***Decreased labour augmentation.*** Mentors reported that nurses were no longer performing labour augmentation in most cases. Mentors observed that some senior nurses were reluctant to change practices.
- ***Improved adherence to SBA guidelines for normal deliveries.*** Mentors had been able to assist and observe deliveries and were thus able to assess how well nurses were handling normal deliveries and complications. They reported that increasingly nurses were following the SBA guidelines, including using the partograph, practising AMTSL and providing improved general clinical care.

- ***Increased capacity and confidence to manage maternal and newborn complications.*** Nurses reported that they were now more comfortable and confident in handling maternal complications and were using the case sheets for guidance. Some mentors noted that nurses still needed some support in pre-referral patient management.
- ***Improved referral processes.*** Mentors and PHC teams reported that their referral processes were more systematic since the mentoring programme started. PHCs were now more likely to have referral directories and to call referral facilities in advance and follow up on patient outcomes.

Areas that were slower to improve include:

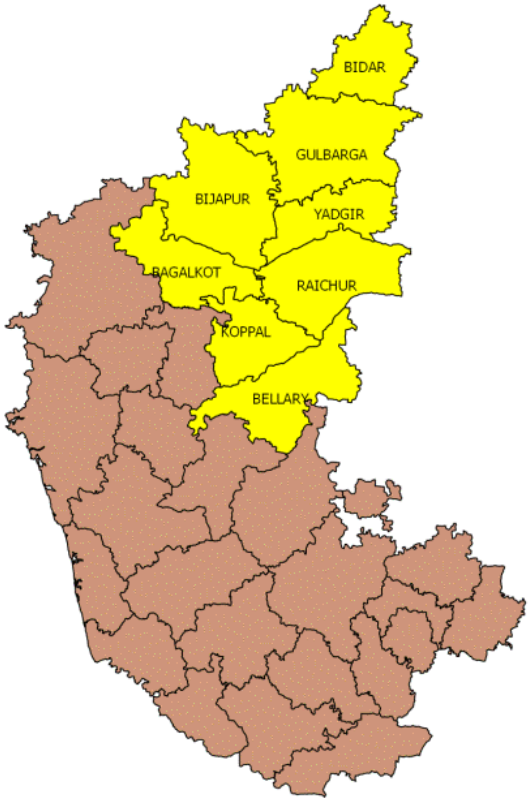
- ***Infection prevention.*** While labour rooms were cleaner and sterilization had improved, there was still scope for improvement. PHC teams and mentors remarked that Group-D staff (who are responsible for general hygiene and cleanliness) were resistant to change.
- ***Inadequate postpartum care.*** Mentors reported that nurses did not properly monitor patients after delivery at the recommended intervals of every 15 minutes for two hours. Often this proved difficult for the nurses attending to other outpatient department functions. Mentors noted that the postpartum care section of the case sheet was often incomplete or incorrectly filled out.
- ***Understaffing.*** The blanket policy of three nurses for every 24/7 PHC results in staff in PHCs with high patient loads being overstretched and often unable to give sufficient time and attention to women in labour or during the postnatal period.

Scaling Up Mentoring Programme

The mentoring programme was extended to the other six Sukshema districts starting in October 2012, and in September 2013 it was expanded further to include all PHCs in the pilot districts. As of July 2013, the mentoring programme covered 385 24/7 PHCs with a total of 53 mentors.

Programme refinements

The project made some changes to the mentoring programme design in the scale-up districts based on learning from the pilot districts. In the scale-up districts, each mentor was expected to cover 7-8 PHCs with three days set aside for each PHC visit from the start. Additionally, the project decided to intensify the mentoring support in high-volume PHCs and lessen the frequency and duration of mentor visits to PHCs that consistently reported low delivery loads. Data indicated that 20 high-volume PHCs accounted for 19% of all PHC deliveries in the eight districts. For these high-volume PHCs, two experienced mentors together visited the PHC for three days every month.



Mentors in scale-up districts followed the established process for planning and carrying out PHC visits, which included preparatory work, periodic reviews after each mentor had conducted 1-2 PHC visits and a final review once each round of PHC visits was complete.

Lessons learned

Lessons learned in the scale-up districts emphasised the importance of creating an enabling environment, orienting providers to case sheets in advance of the intervention and the need to further strengthen referral processes. The high-volume PHC strategy worked well for PHCs in all districts. The pace and nature of quality improvements also followed a consistent pattern among PHCs, with improvements in the labour room and drug supplies being some of the first signs of quality improvement. Practices that were more resistant to change included infection prevention and postnatal care.

The scale-up experience demonstrated that the intervention could be replicated and applied in other districts. Systematically using the approaches and tools developed to implement the intervention resulted in a smooth and efficient implementation process and in just a five-month period the mentoring programme was extended to all eight project districts. Overall, mentors in these districts observed similar levels of staff engagement and improvement in their PHCs.

Managing the Mentoring Programme

The Sukshema project developed a management structure and management processes to oversee implementation of the mentoring intervention. Overall guidance and support came from a core technical team based in Bangalore, consisting of the technical lead, quality improvement specialist and clinical specialist. These individuals routinely visited the project districts, advised on management processes and anticipated and provided troubleshooting as issues arose. At the district level, a district programme specialist (DPS) based in each district was responsible for managing and monitoring the mentoring intervention in that district. These individuals had a Master's in Public Health degree with a medical background (e.g., ayurvedic). As the principal liaison with district health officials, the DPS routinely informed them about the intervention and system-level issues that needed district-level attention. The Sukshema team also developed a set of tools to assist mentors in planning their mentoring visits and to assist DPSs in carrying out their supervisory and reporting responsibilities. A monitoring information system was also established to track intervention indicators.

Voices of PHC and District Staff

Interviews were conducted with four PHC teams and one District Health Officer (DHO) in May 2013 in pilot districts and with three PHC teams in scale-up districts and another DHO in October 2013 and April 2014 to assess their understanding of the mentoring programme and their own assessments of improvements since the programme began.

Nurses pointed out how mentors were helping them be more systematic and thorough in providing care. As one nurse stated, "We didn't know much before and now the mentor tells us how to do each thing and explains why we do these things. The mentor reminds us about things we forget." Nurses and other PHC staff praised the professionalism and interpersonal skills of the mentors. "Mentors are very helpful and relaxed. Even if we are rude or stressed because we are busy they don't react and are always at ease with us which helps ease the tension. A MO stated, Mentors are very good and cooperative.

Some PHCs had fully embraced the approaches the mentors used to strengthen systems. Several nurses interviewed appreciated the case sheet. Nurses and medical officers nevertheless pointed out the challenges in filling out the case sheet, especially when staff were busy.

PHC teams also appreciated the mentoring programme for contributing to facility-level improvements. They commented on how the mentoring programme had helped them with managing stocks and coordinating with each other to ensure they had the drugs and supplies they needed. PHC teams described many improvements in their operations and their quality of care since the start of the mentoring programme.

Nurses and medical officers felt the mentoring programme should continue. A MO noted, *"There is so much workload here that things sometimes fall behind so it is good to have the mentors to remind us and to keep coming often."* A nurse valued the intervention *"because mentors come with new information and they provide access to experts."* A DHO commented that nurses in PHCs rarely have someone available who can monitor their skills and support them and he felt that the mentoring programme was filling this important gap.

Coordination with Community Intervention

Sukshema project's community intervention is designed to work on community-level issues through building the capacity of accredited social health activists (ASHAs), Anganwadi workers (AWWs) and junior health assistants (JHAs) to improve birth preparedness and maternal and newborn practices at the community level. The community intervention and mentoring programme coordinated together in each district to see how they complement each other in ensuring MNCH care continuum across levels of care. Each district held coordination meetings including the full community and mentoring teams and developed joint action plans. Infrastructure issues were a common concern that mentors and community coordinators tried to join forces to resolve. Other issues they discussed included preventing home births, encouraging women to come to the facility earlier in labour, follow up in the community after mothers and babies are discharged from the facilities.

The linkages between the two programme components evolved somewhat organically as the two teams got to know one another and found ways to work together. As the project moves into its final year, it will be important to develop clear guidance on what role mentors can play in extending AMMA to the community level and how this relates to the community intervention.

Intervention Results and Costs

A more quantitative assessment of the mentoring programme's achievements was based on monitoring indicators and the pilot district evaluation findings.

Management information system (MIS) findings

According to MIS data, the use of case sheets increased overtime. As of March 2014, nurses had completely filled out a case sheet for more than 65% of all PHC arrivals compared to12% in January 2013. The most frequently occurring complications related to prolonged labour, premature rupture of membranes or pregnancy-induced hypertension/preeclampsia. The use of complication case sheets was also improving: the proportion of complication case sheets filled out as a proportion of total referrals reported (derived from the referral registers) was 42% in March 2014 up from 5% in January 2013.

Endline evaluation findings

The project corroborated its qualitative findings with an endline evaluation of the mentoring programme and its impact on knowledge, skills and facility readiness to provide maternal and newborn services. PHCs in Bellary and Gulbarga were randomly assigned to either intervention or control groups. The endline study involved facility audits, provider interviews and interviews with postpartum women in the month after delivery in 2012 and again in 2013.

In terms of knowledge of management of labour and delivery, intervention and control sites both improved over the one-year period. There were improvements overall in knowledge of how to identify prematurity, AMTSL, eclampsia, sepsis, postpartum haemorrhage, obstructed labour, and foetal distress and how to manage neonatal resuscitation. On almost every indicator, the intervention sites performed statistically significantly better than the control sites. Post-delivery issues improved overall but there was little actual difference between intervention and control

sites, especially when the practices reported by staff were compared with postpartum client interviews.

PHCs were much better equipped in 2013 than in 2012. Again, there were improvements overall in both types of sites; however, the intervention sites outdid the control sites and in many cases the differences were highly statistically significant. The biggest differences were observed with respect to drug availability and adherence to referral protocols; here, intervention sites were far better equipped to manage all emergencies than were control sites in 2013.

Mentoring was not able to affect more systemic problems such as staff shortages, the physical state of PHCs,or services such as food, water, and linens for postpartum women within the year's time.

Cost

The total start-up and annual cost of the intervention was 2,71,03,453 INR (467,301 USD) for all eight districts. This translates to 3,387,932 INR (58,413 USD) per district and 511,386 INR (8,817 USD) per mentor per year.

Summary of Achievements and Challenges

Qualitative and quantitative information were all consistent in suggesting that the mentoring programme has been successful in improving many aspects of clinical care and helping PHCs be better equipped and supplied to provide MNCH services. Key improvements are summarised below:

Clinical improvements	Physical improvements	Management improvements
Knowledge and skills	Availability of drugs and supplies	Greater teamwork
Diagnosis and management of complications	Labour room organisation	Use of self-assessment tools
Improved referral processes	Infection prevention in labour room	Action plans
Use of case sheet		Use of untied funds

Major lessons learned are listed below and are elaborated on in the full report:

1. The best mentors combine strong clinical and communication skills.
2. A focused training programme combined with a strong system for ongoing training and support can prepare a capable and effective mentoring workforce.
3. Self-assessment processes and team-based action planning are required to improve quality.
4. The case sheet is a helpful tool but requires time and support to operationalize.
5. Data use can drive programme improvements on many levels.
6. PHC leadership is a critical factor in improving quality.

7. High-volume PHCs require the most support.
8. The DHO's role is vital to catalyse mentoring programme impact.
9. Integration with government reporting forms and systems is needed for new formats.
10. Extending mentoring to JHAs could reinforce linkages to community-based services.

Challenges that the mentoring programme cannot address stem from root causes that are at the community or system levels. The solutions will need to be addressed at these levels. For example, the issue of inadequate staffing or strengthening referral facilities requires district or state-level action. Behaviours such as untimely care-seeking and short postnatal stays will require dialogue at the community level through ASHAs and local village leaders.

Overall, however, the mentoring programme is proving to be an effective intervention to improve the maternal and newborn services in PHCs. Mentors have been able to support PHC teams to identify and address quality gaps and to increase the capacity and confidence of staff nurses. In many PHCs, nurses say they are now providing care according to SBA guidelines and are better able to handle maternal and newborn complications. Facilities are also better organised, equipped and supplied to deliver quality services. If scaled up to other PHCs or even higher-level facilities, the mentoring programme can be an important contributor to reducing maternal and newborn mortality.

Introduction

In India, too many women and infants die from causes that are preventable or easily treatable. For women, preventable and treatable causes of maternal death include haemorrhage, hypertensive disorders, sepsis, obstructed labour and unsafe abortion; for newborns, causes of neonatal death include preterm birth, low birth weight, sepsis and asphyxia. Evidence points to the critical importance of ensuring high-quality care during labour, delivery and the immediate postpartum and newborn period for saving maternal and newborn lives. This is the window in which more than half of maternal and newborn deaths take place. The ability of providers to manage normal deliveries according to best practice guidelines and to identify, manage and refer patients with maternal and newborn complications can have a direct impact on maternal and newborn health outcomes.

The Sukshema project developed a mentoring intervention designed specifically to improve the quality of facility-based maternal and newborn care in 24/7 primary health centres (PHCs) in Northern Karnataka. By providing on-site mentoring for improved clinical care and service delivery, the project hypothesized that the quality of services and continuity of care would improve and that women and newborns would have better health outcomes. The pilot phase of the intervention was rolled out and evaluated in two of the project's eight districts (Bellary and Gulbarga) from August 2012–August 2013. Scale-up to the other six project districts began in November 2012 and reached full scale by March 2013.

Organization of Report

This report contributes to Objective 4 of the Sukshema project—Facilitate identification and consistent adoption of best practices and innovations arising from the project at the state and national levels—by documenting the process and experience of implementing the mentoring intervention. In essence, this document tells the story of this innovative mentoring approach. We hope it helps others learn from the experience and stimulates interest in developing similar approaches in India or elsewhere to improve maternal and newborn care.

The document is structured in ten sections as follows.

Section 1 begins with the context in which the project operated and outlines the rationale for establishing a mentoring programme. It offers a brief description of the mentoring programme and reviews the evidence about mentoring and other quality improvement approaches that informed the intervention design.

Section 2 describes the approaches and tools that were developed specifically for the mentoring programme. A separately available toolkit includes all the tools and training materials developed.

Section 3 focuses on the hiring and training of mentors, including a detailed description of the initial training programme and the ongoing capacity-building support the project provided to mentors.

Section 4 documents the first year of the mentoring intervention in the two pilot districts by recounting the experiences derived from each round of mentor visits. In the first year, each PHC in the intervention districts received six mentor visits.

Section 5 discusses how and when the mentoring programme was scaled up to the remaining project districts and to all PHCs in the pilot districts. It highlights modifications that were made in the original programme design as this scale-up took place. This includes more use of data to drive programme reviews anddevelopment of tailored visit strategies based on PHC volumes. It highlights mentors' experience in working with PHCs in the scale-up districts, pointing out where the experiences were similar or differed somewhat from the experiences of mentors in the pilot districts.

Section 6 describes the management processes and tools the project developed to support implementation of the mentoring programme and points out some of the challenges encountered and lessons learned.

Section 7 shares comments from PHC staff and district-level officials about the mentoring programme and how it has improved services. These comments are based on interviews with PHC teams during site visits to their PHCs.

Section 8 focuses on the coordination of the mentoring programme with the other major element of the Sukshema project known as the community intervention (CI). This aspect of the project worked at the community level with frontline workers. It should be noted that these two project componentshad worked synergistically to only a limited extent at the time of the writing of this report because the CI had a longer scale-up period than the mentoring programme.

Section 9 introduces quantitative data from project monitoring and evaluation research to provide a data-driven look at the intervention. It is noteworthy that the data largely corroborate the qualitative findings derived from observations and interviews.

Section 10 offers a summary of the major findings from the mentoring programme, recapping the most notable achievements and pointing out persistent challenges, especially those that require system or community-level solutions.

Methodology and Data Sources

This report is the culmination of an intentional and intensive effort to document the process of designing, implementing and managing the mentoring programme. The major sources of data for describing the process include data from observations and field visits; focus group discussions with participants; interviews with project staff, consultants and mentors; and interviews with PHC teams and district officials. A senior technical advisor, not directly involved in the day-to-day operations of the mentoring programme, carried out most of the observations, interviews and focus group discussions. The technical advisor developed tools for recording observations, as well as interview and focus group guides and prepared notes from each observation, interview and focus group discussion. This report also includes information gleaned from trip reports from other project consultants participating in trainings, district-level meetings or visits to PHCs, as appropriate.

Data for the process documentation were collected over a 24-month period. The primary sources of information were:

- 8 focus groups with 55 participants
- 24 PHC staff interviews in four districts
- 12 observations of mentor visits in five districts

Process documentation started with observations and interviews of the mentor training in July 2012. Subsequently, the senior technical advisor visited the pilot districts in September 2012 and May 2013, meeting both times with all 11 mentors and district-based project staff and visiting six different PHCs to observe mentors and interview PHC staff. A follow-up visit took place in April 2014 in Bellary and Gulbarga to meet again with mentors in both districts.

Documentation of the intervention in the scale-up districts included two site visits and interviews with mentors and programme staff in Bidar District in May 2013 and four site visits and mentor focus group discussions in Koppal and Raichur districts in October 2013. Additional information was obtained through visits toGulbarga (to new PHCs) and Yadgir districts in April 2014, including mentor focus groups, provider interviews and three site visits to PHCs.

In addition to the qualitative information obtained through observations and interviews, this report draws on selected quantitative data from the project's monitoring and management information system (MIS) data and the endline evaluation carried out in the pilot districts (Section 9).

Chapter 1 Context, Evidence and Programme Overview

In designing the mentoring component of the Sukshema project, the Sukshema team drew on the latest evidence on maternal and newborn mortality, findings from an assessment of the maternal, newborn and child health (MNCH) situation in the eight Sukshema districts and a review of proven capacity building and quality improvement approaches in other contexts.

The mentoring intervention was designed specifically to improve the quality of facility-based maternal and newborn care. Ensuring high-quality care during labour, delivery and the immediate postpartum and newborn period can contribute to reduced maternal and newborn mortality rates (MMR and IMR).

The focus on facility-level maternal and newborn services also recognizes the recent success of the Janani Suraksha Yojana (JSY) scheme in Northern Karnataka, which has led to an increase in facility-based deliveries. With over 80% of pregnant women now delivering in facilities, it is critical that all delivery sites be able to provide quality care. To accommodate this rising demand, the government is prioritizing upgrading primary health centres into 24/7 facilities to provide delivery services in rural areas. This will reduce the burden on district and larger hospitals, enabling them to function more appropriately as first referral units (FRUs). Therefore, the mentoring intervention specifically targeted the 24/7 PHC level to prioritize support for PHCs as they take on these expanded functions.

Findings from Situation Analysis in Project Districts

The Sukshema project carried out a situation analysis in eight project districtsin 2011 to assess the capacity of health facilities to deliver maternal and newborn services. The situation analysis revealed the need to improve provider competence in managing maternal and new born care and address facility-level factors such as drug stockouts and lack of infrastructure, which create barriers to providing quality MNCH services.

Gaps in service provider knowledge and skills

In PHCs in project districts, 63% of staff nurses had participated in the government of Karnataka's (GoK's) 21-day skilled birth attendance (SBA) training programme and 12% of medical officers had received 10 days of training in basic emergency obstetric care (BEmOC). Even among these trained providers, knowledge was inadequate. In an assessment of intranatal care knowledge, less than 70% of staff nurses knew that active management of the third stage of labour (AMTSL) was essential for all deliveries, and only 28% knew the proper steps in AMTSL. For postnatal care,

providers scored only 52% on knowledge questions, and on observation, their practice was correct in just 31% of provider-client interactions. Over half or more of providers failed to demonstrate competency in MNCH topics. The situation analysis also found that there were no mechanisms in place for follow-up of staff after training to ensure good clinical practice and maintenance of skills or to facilitate solving system-level problems that compromise providers' ability to deliver high-quality services.

Gaps in drugs and equipment

The situation analysis identified extensive facility-level gaps at all levels but especially at PHCs, which often lacked the drugs and equipment to provide delivery services. Many facilities did not have equipment or procedures in place for infection prevention. Supplies of case sheets, referral forms and partographs were also inadequate. Many essential drugs were unavailable at the time of the survey, such as magnesium sulphate, essential for the management of eclampsia. Oxytocin used for AMTSL was not available in many of the facilities.

Gaps in referral processes

The situation analysis found weak referral processes and poor follow-through once referrals were made, compromising the provision of a continuum of care for mothers and newborns. Providers did not know how to screen for complications or how to detect complications early. They also did not know how to manage cases once a complication was identified. Referral protocols were lacking when a mother or newborn did require referral to a higher-level facility. Only about one in four PHCs had a referral chart displayed or referral slips available and slightly more than half maintained a referral register. More importantly, practices to ensure the continuum of care—including communication with referral facility, stabilization and timely transport and patient follow-up—were not being followed in most cases.

Areas for improvement

In summary, the assessment identified gaps impeding delivery of quality MNCH services and highlighted the following areas for improvement:

- Adopt a comprehensive focus on "quality," includinga focus on infrastructure and competency issues
- Develop follow-up support systems for MNCH providers (beyond one-time trainings) to sustain skills and competencies
- Promote use of job aids, checklists and protocols related to management of critical services
- Address gaps in facility-level systems such as referral, documentation, infection control and supply chain systems
- Create a supportive work environment in facilities by fostering practices such as self-evaluation, team work, task shifting and attention to patient rights and dignity.

Overview of On-Site Mentoring Intervention

In light of the situation analysis findings, the Sukshema project developed a mentoring programme to address many of the quality-related gaps. Sukshema's MNCH mentoring intervention integrates elements of clinical mentoring with facility-based quality improvement processes to support PHCs to deliver critical maternal and newborn care services. The project employed a new cadre of full-time nurse mentors to mentor staff in designated 24/7 PHCs. Each mentor was responsible for mentoring staff at five to eight PHCs. Typically, nurse mentors visited their designated PHCs six times in the first year. The nurse mentors spent two to three days at the PHC to provide clinical mentoring to staff nurses and team-building and problem-solving support for all PHC staff. After receiving mentor support for one year, mentors adjusted the frequency of their visit schedule based on the clinical volume of the PHC and the level of performance improvement still required. In this way, some high-volume PHCs received more frequent visits while PHCs with lower or no delivery loads received a visit once a quarter.

Mentors used tools and techniques such as observations, PHC staff self-assessment checklists, clinical audits and patient interviews as aids to identify quality gaps needing to be addressed. They upgraded PHC provider skills through case reviews, confidential reviews of maternal and child morbidity and mortality (and near-miss cases), mini-lectures, demonstrations, modeling of good practice and bedside case discussions.

In addition to clinical mentoring of providers, the mentors worked with PHC teams to focus on problem-solving around all aspects of the provision of quality MNCH services. Mentors introduced self-assessment and action planning processes to promote facility-based quality improvements. Mentors also encouraged PHC staff to work as a team to address specific problem areas such as (but not limited to) equipment and supply logistics; infection prevention practices; referral practices; record keeping; staff support; teamwork; and staff attention to patient rights to information, respect, dignity and friendly services.

Nurse mentors and facility teams specifically promoted interventions to improve referral processes and ensure continuity of care for referred cases. This included using case sheets to identify cases needing referral, ensuring updated referral service charts and a documented referral plan for each facility, more effectively using referral registers and cards, improving provider communications with referral facilities and improving communications with community-based junior health assistants (JHAs) and accredited social health activists (ASHAs) upon discharge to ensure proper follow-up.

The Sukshema project trained nurse mentors in clinical competencies and in how to mentor staff in clinical skills and service delivery quality improvement. Each mentor was provided with a kit of training materials and models to use during the PHCvisits. The project also developed specific tools (including self-assessments and action plan templates) to facilitate implementation and monitoring of quality improvement activities. Finally, the project introduced a case sheet to help PHC staff better manage maternal and newborn complications.

Phase 1 involved launching the mentoring intervention in a subset of 24/7 PHCs in two pilot districts—Bellary and Gulbarga. The pilot included 54 PHCs in the intervention group and 54 in a control group that enabled the project to evaluate the contribution of the mentoring programme after one year. The project recruited and trained a total of 11 mentors to provide support to 54 intervention PHCs in the two districts. The project also had a mandate to scale up the mentoring intervention in the other six project districts (Phase 2), which entailed training and employing another 45-50 nurse mentors. Once the evaluation was completed in the pilot districts, the mentoring programme was also extended to all PHCs in Bellary and Gulbarga districts. The mentoring intervention was intentionally implemented across all districts to derive lessons about implementing the intervention at scale.

Collaboration with the National Rural Health Mission

It was anticipated that if the mentoring intervention proved successful, the GoK would establish a nurse mentor cadre within the government system and institutionalize the intervention in other districts in the state. Because the mentoring intervention was designed with government scale-up in mind, collaboration with the GoK at both the state and district levels was essential. Throughout the developmentof the intervention, therefore, the Sukshema team met with mission leadership at the National Rural Health Mission (NHRM) and the State Directorate of Health and Family Welfare. The mission director approved the piloting of the mentoring intervention and sent a government circular to the two pilot districts in March 2012 to inform them about the intervention. Sukshema's technical leadership also met periodically with the deputy director for training within the State Institute of Health and Family Welfareto review the intervention design and share updates at key junctures. Frequent turnover of leadership at the state level made this coordination and buy-in from the government more challenging.

Mentoring and Quality Improvement Interventions

In designing the mentoring intervention, the Sukshema project reviewed findings from similar interventions across a variety of settings and clinical areas. The findings suggested that a mentoring intervention should include components focused on on-the-job provider training and support, user-friendly clinical job aids and team-based approaches to quality improvement.

Mentoring interventions.

Published literature on the application of maternal and newborn health mentoring programmes at scale in low and middle-income countries is limited. Mentoring programmes have been established to improve delivery of HIV/AIDS care; projects of this type in India, Uganda (Bitarakwate 2009), Zambia (Morris et al. 2009) and Botswana (Workneh et al. 2012) have documented improvements in service quality. In Senegal (IntraHealth International n.d.) a mentoring programme known as Tutorat strengthened nurse and midwife competence in family planning counseling, skilled birth attendance and post-abortion care (PAC). In Jharkhand, India (Vistaar Project 2012) introduction of a supportive supervision programme in which medical officers provided support to auxiliary nurse midwives trained as SBAs contributed to improved use of AMTSL and partographs and increased access to drugs and supplies. In Ethiopia (Hartwig et al. 2008) a mentoring programme aimed at health centre managers reported improvement in management skills of hospital leaders in several management domains.

Quality improvement interventions.

The evidence review found several examples of team-based approaches to quality improvement that contributed to facility-level improvements as measured by quality indicators. For example, an evaluation of COPE (a team-based quality improvement approach) for child health in Kenya and Guinea examined changes in quality over a 15-month period at eight intervention and eight control sites and concluded that on almost every quality indicator, the intervention sites performed significantly better than the control sites, with most problems solved without outside assistance (Bradley & Igras 2005). Health care collaboratives, in which coaches support quality teams from several facilities to address identified quality gaps, have also improved services. In Uganda, this approach was used in two districts to improve the provision of newborn resuscitation at government health centres (Tawfik 2012). In Malawi, health facility teams implemented a performance and quality improvement (PQI) intervention over a 3-year period to improve reproductive health (Rawlins et al. 2013). Intervention facilities were more likely than comparison facilities to have the needed infrastructure, equipment, supplies, and systems in place to offer reproductive health services. Observed quality of care also was significantly higher at intervention than comparison facilities for postnatal care and family planning.

Clinical guideline interventions.

Evidence supports the value of usable clinical checklists and guidelines. Checklist-based interventions can aid management of complex or neglected tasks and have been shown to reduce harm in health care. A pilot, pre-post-intervention study was conducted in a subdistrict-level birth centre in Karnataka, India between July and December 2010 to evaluate changes in maternal and newborn health practices (Spector et al. 2012). This followed the introduction of the WHO Safe Childbirth Checklist programme, a childbirth safety programme for institutional births incorporating a 29-item checklist. Delivery of essential childbirth-related care practices at each birth event increased from an average of 10 of 29 practices at baseline (95% CI 9.4, 10.1) to an average of 25 of 29 practices afterwards (95% CI 24.6, 25.3; $p<0.001$). Other research explored use of clinical practice guidelines (CPGs) for maternal health in Burkina Faso, Ghana, and Tanzania (Baker et al. 2012). In all three countries, the use of CPGs by health workers in practice was perceived to be limited. The cross-country study suggested the need to prioritise the format of guidelines to increase their usability and applicability.

Chapter 2

Project Tools and Approaches

The project first set forth a framework for improving quality of care and developed a set of tools and approaches to operationalize the framework. The quality improvement principles that guided the development of the quality improvement approach included a focus on patient and provider rights and the promotion of team-based problem-solving using self-assessment tools and action planning.

AMMA Approach

The project designed a quality improvement framework called AMMA, which means "mother" in Kannada. The acronym stands for Assess and diagnose, Manage, Measure and Advocate. AMMA adapts quality improvement approaches such as Plan Do Study Act (PDSA) and performance improvement (PI), both of which focus on a quality cycle. AMMA offers a similar quality cycle, using an acronym that is meaningful in the local context so that the cycle is easy to remember and use.

ASSESS: Assess and diagnose quality gaps

MANAGE: Manage solutions to address gaps

MEASURE: Measure progress in closing gaps

ADVOCATE: Advocate for clients' and providers' rights to quality services

The AMMA approach is integrated into all Sukshema project activities. The Sukshema team developed a matrix (next page) that shows how the AMMA approach can be used at the facility, provider, system and community levels. The intent was that AMMA would unite clinical and nonclinical perspectives and function as the "mantra" for the mentors and PHC teams in their efforts to improve the quality of care at the PHCs.

The AMMA Approach: Assess and diagnose, Manage, Measure, Advocate: Role of Nurse Mentors				
	Focus year 1		Focus year 2	
	PHC functioning	Individual staff clinical competencies	Community linkages	System linkages
ASSESS AND DIAGNOSE quality gaps	Assess and diagnose functioning of PHC (identification of gaps against PHC standards and patient/provider rights, root cause analysis using quality improvement [QI] tools) Examples: -Shortage of magnesiumsulphate -Client records incomplete -Staff absenteeism	Assess and diagnose women in labour and in the postpartum period and newborns, using case sheet and other tools Examples: -AMTSL procedures not followed	Assess and diagnose community-based MNCH services and linkages to facility—identify gaps and opportunities for improvement Examples: -Low ASHA coverage (pregnant women) -Women reaching PHC too late	Assess and diagnose gaps that require district-level action Examples: -Drug stockouts -Lack of equipment -Staff vacancies
MANAGE solutions to address gaps	Manage the solutions (develop a realistic action plan)	Manage appropriately women and babies with and without complications	Manage appropriately how services can be in sync before labour (preparation for labour), when coming to the PHC, and post-delivery (care and support)	Manage the solutions (develop action plan, raise issues at district-level review meetings)
MEASURE progress	Measure progress (action plan, record reviews, audits)	Measure progress using case sheets, registers, partographs	Measure progress (review microplanning tools, Mother and Child Tracking System [MCTS] data, ASHA performance reviews, rapid assessments); jointly examine cases coming appropriately and inappropriately to the PHC and utilization of services	Measure progress (action plan, resolution of problems by district)
ADVOCATE for client andprovider rights to quality services	Advocate for quality improvement (create a positive, can-do environment, improve linkages, increase client satisfaction)	Advocate for quality improvement (create a safe and patient-centered environment for women and babies, ensure timely referrals)	Advocate for quality improvement (ensure continuum of care from home to facility and back for mothers and newborns)	Advocate for quality improvement (encourage accountability and action at system level)

Assessment Tools

In addition to the overall AMMA framework, the project designed tools to assess quality at both the patient and facility levels. For assessing quality issues at the facility level, the project developed self-assessment guides that mentors used with PHC teams to assess quality of care and identify gaps. These guides were based on patient and provider rights to quality health care. Some of these tools were adapted from baseline quality assessments, while others were adapted from other projects. In all, there were eight self-assessment guidelines, listed in the following table.

Self-Assessment Guides for PHCs	
A	Clients' rights to safe and competent care
B	Providers' rights to supplies, equipment, and infrastructure
C	Clients' rights to access services and continuity of care
D	Clients' rights to infection-free services
E	Providers' rights to information, training, and development
F	Clients' rights to privacy, confidentiality, dignity, comfort, and expression of opinion
G	Clients' rights to information and informed choice
H	Providers' rights to facilitative supervision and management

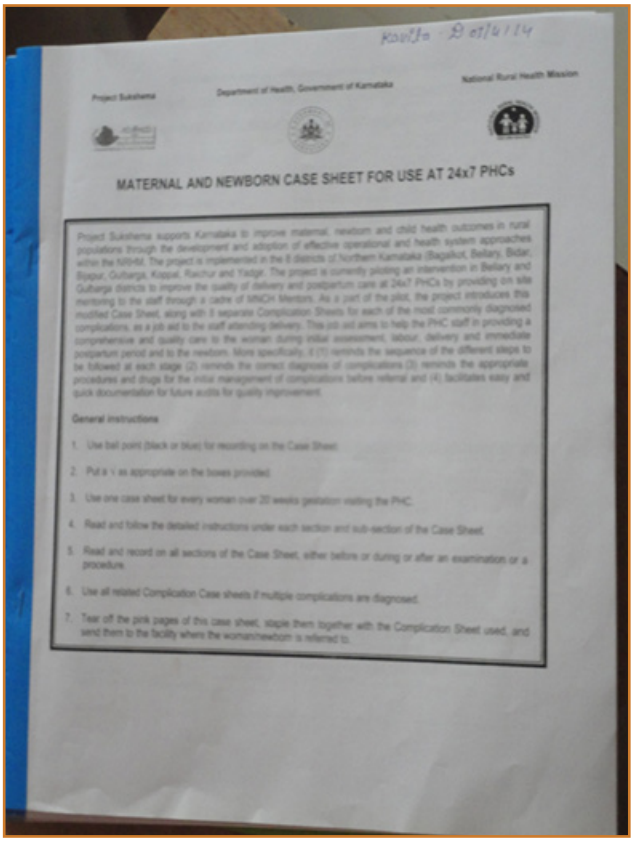
Each self-assessment guide asks a series of questions related to quality standards that PHC teams review to assess their own performance against quality standards. If the answer to a question is "yes," then the standard is considered met, while a "no" response indicates a problem to be solved. Providers also used a record review and patient interview guide as input into the self-assessment process. Section 4 describes lessons learned about how the tools were received by PHC teams in more detail.

Case Sheets

Up-to-date, accurate, and comprehensive patient records facilitate case management and clinical decision-making and referral. The project situational analysis revealed, however, that patient records were not well maintained. For example, out of 1,038 case sheets reviewed as part of the assessment, only six had a complete delivery note. Among 593 case sheetsinvolving eclampsia across the eight project districts, only 146 (25%) were complete enough to enable a clinical review of how the cases were managed. In an audit of referral records at PHCs, only 55% had time of admission, 55% had time of referral and only 8% mentioned the name of the person accompanying the referred patient. Clinical outcomes were only documented in 9% of referrals.

During the situational analysis, the Sukshema project also found that providers did notperceive the government case sheet format to be helpful as a decision-making tool for clinical care. The government case sheet included many questions that required written responses but that providers were less likely to complete, perceiving the questions as more of a reporting burden than a helpful process. Moreover, the case sheet formatprovidedno guidance on case management.

Given the findings of poor provider knowledge of and adherence to SBA guidelines, the Sukshema project recognised an opportunity for developing a new case sheet that could serve as a clinical record, a job aid, and a teaching tool. The project hypothesised that providers would find value in using the tool to help them follow recommended guidelines and support their clinical decision-making.


MATERNAL AND NEWBORN CASE SHEET FOR USE AT 24x7 PHCs

The project designed the case sheets to function as a job aid to provide guidance to providers on the components of care to be followed. As a teaching tool, the revised case sheets helped mentors focus discussions on compliance with clinical guidelines, opportunities for improving case management and identification of cases when something may have gone wrong and ascertaining what could have been done instead. Creating acase sheet mechanism for retrospective case reviews was especially important given that mentors were not present during all cases and needed to be able to refer to case sheets to provide teaching. The revised case sheet also served as a tool for mentors and programme staff to monitor changes in the quality of care provided at PHCs.

The Sukshema technical team led the development of this tool in consultation with other Sukshema staff and clinicians from University of Manitoba and St John's Medical College (SJMC) . Developers referred to existing case sheets, SBA guidelines, Navjaat Shishu Suraksha Karyakram(NSSK) guidelines, Indian Public Health Standards guidelines and BEMOC guidelines to prepare the content and flow of the draft case sheet.

Several considerations guided the design of the new case sheet to enhance its appeal to providers including that it:

1. Be comprehensive, covering all stages of labour, delivery and postpartum and newborn care (note: it does not cover antenatal care visits)
2. Follow the logical sequence of patient arrival, initial assessment, admission, labour monitoring and delivery, postnatal care, newborn care and discharge
3. Be consistent and include clear instructions
4. Comply with the SBA and NSSK guidelines in terms of recommended management protocols
5. Provide clear guidance onrecommended drugs, dosage and administration
6. Provide reminders for providers on when to ask for certain information
7. Include an easy-to-plot and interpret revised partograph suitable for PHCs
8. Provide a summary at each stage to help providers take decisions
9. Minimize requirements for writing by using tick marks
10. Ensure a format that is useful for conducting case audits.

The final case sheet is nine pages long for normal labour and delivery. As providers identify markers for complications, they are referred to more detailed case sheets that provide guidelines for more accurately diagnosing and treating maternal complications. The supplemental case sheets (each 1-2 pages long) cover management of eclampsia, postpartum haemorrhage (PPH), prolonged or obstructed labour and other complications. The case sheets for complications give detailed guidance on care protocols, including drug and dosage guidelines that help providers comply with the recommended management regimens (see text box).

Case Sheet Outline for 24/7 PHCs
Case sheet for normal labour and delivery
Section 1: Initial assessment
Section 2: Labour monitoring (including simplified partograph)
Section 3: Delivery notes
Section 4: Postpartum period
Outcomes sheet
Supplemental complication case sheets
A:Prolonged/obstructed labour
B: Preeclampsia/eclampsia
C: Antepartum haemorrhage
D: Infection/sepsis
E: Premature rupture of membranes
F: Postpartum haemorrhage
G: Newborn complications
H: Other complications

After obtaining approval from the NRHM director, the project field-tested the revised case sheet in the pilot districts. Prior to starting the mentoring intervention, the Sukshema team hosted a 3-day training with staff nurses in all intervention and control PHCs and a 1-day session with medical officers to introduce the case sheet and provide them with copies to use in their PHCs.

We note some of the key lessons learned from development of the case sheet below. (Lessons pertaining to the case sheets' utilization in PHCs are included in the later discussion of mentor visits.)

- The new case sheet followed a logical sequence for diagnosis and management of cases and provided readily accessible guidelines for managing complications and referrals in an effort to offer a tool perceived as a valuable job aid rather than a tedious paperwork requirement.
- The inclusion of complication case sheets was especially important because PHC providers do not routinely encounter complications, making it difficult to readily remember care protocols. Because prior assessments had indicated that providers didn't always know how to detect and manage complications orwhen to refer, the case sheet was also designed to support improved referral practices.
- Development of the case sheet proved to be an educational process for the Sukshema team. The process uncovered areas in which the team needed to reach agreement on the best guidance to provide, especially when source guidelines were not specific or disagreed or when guidelines did not comply with the best available international evidence. These deliberations helped ensure a detailed and comprehensive tool uniquely suited to PHCs.
- The Sukshema project was able to adapt existing tools to better suit the PHC context. The case sheet included a simplified partograph, based on the WHO partograph but adapted to be useful at the PHC level.
- The case sheet also provided guidance on the type of knowledge and skills providers should have to manage cases, which informed the subsequent content of the mentor training.

Chapter 3

Hiring and Training Mentors

The process for hiring and training mentors proceeded after the project finalized its tools and approaches and determined that the mentoring intervention would largely focus on building the competence of staff nurses as skilled birth attendants. Staff nurses were chosen as the recipients of mentoring because Sukshema assessments of maternity services at PHCs indicated that staff nurses are the primary cadres responsible for providing labour, delivery, postpartum, and newborn care services. Medical officers (in charge of the PHCs) only assist in labour and delivery as needed.

Sukshema employed innovative strategies to hire mentors and train them to perform their roles. Hiring nurse mentors entailed (1) identifying what cadres to use as mentors, (2) recruiting mentors, (3) hiring mentors, and (4) training mentors.

Determining Mentor Cadre

In designing the mentoring intervention, one of the first critical decisions was to determine the profile of the mentors. At a minimum, mentors had to be qualified health care providers. The project decided to employ nurses as mentors for the following reasons:

- ***Peer mentoring:*** Because of the focus on staff nurses as the recipients of mentoring, Sukshema used a peer mentoring approach involving nurses as mentors. The project hypothesized that a peer would be a more effective mentor than a medical officer or a specialist physician. This design was similar to other mentoring interventions, including the SAMASTHAmentoring programme established by KHPT and SJMC for HIV/AIDS care in Karnataka that engaged doctorsto mentor other doctors.
- ***Recruitment:*** Another consideration was that it can be very difficult to recruit medical officers for the areas in which the project works (as evidenced by the number of PHCs in these districts that do not have the required number of qualified medical officers). It was considered easier to recruit nurses for the positions.
- ***Retention:*** The project anticipated that turnover among skilled nurses would be less than among medical officers. (Experience working with medical officers as technical support specialists in the Key Clinic private franchise model in Southern India found high levels of attrition as medical officers often left for other opportunities, including postgraduate work.)
- ***Cost-effectiveness:*** Utilizing nurses as mentors presented some cost advantages over medical officers because of the nurses' lower salaries. This could become an important consideration in the overall cost of operating this programme at scale within the government system.

- ***Gender considerations:*** Finally, using nurses—who are most often women—as mentors contributed to the project's aim of furthering the empowerment of female health workers in the health care system.

Recruitment Process

The project team crafted a three-tier hiring strategy to identify the best mentor candidates. Because of the varied skills that mentors needed to possess, the team viewed a conventional hiring process of screening curricula vita eand interviewing candidates as possibly insufficient to fully assess candidates' capacities for the position. The project's need to hire many candidates at once also offered opportunities for more creative group-based candidate assessment processes. Information on each level of the hiring process is presented below.

First level of screening

After placing local advertisements in leading newspapers and posting position openings in nursing colleges and hospitals, the project received 48 applications. Of the 48 applicants, the project's senior management team selected 22 candidates based on age, sex, and duration of clinical and teaching/training experience. Nurses above 50 years, males and those who had less clinical and teaching experience were omitted from this first list.

Second level of screening

District programme specialists (DPS) conducted telephone interviews with the 22 candidates selected after the first round of screening. This was felt to be an important step, as the DPS directly supervise the nurse mentors.

Preferred Mentor Qualifications

- √ Nursing background with more than five years of experience conducting deliveries and handling newborns, preferably at secondary or tertiary-care-level facilities
- √ Fluency in written and spoken English and local language(Kannada)
- √ Prior teaching and/or training experience
- √ Knowledge and experience working in government health systems
- √ Good training and mentoring abilities
- √ Good communication and leadership skills
- √ Empathic attitude
- √ Team facilitation skills
- √ Working knowledge of MS Word, Excel, PowerPoint and the Internet
- √ Locally based
- √ Female candidates preferred
- √ Willingness and ability to travel to PHCs at least 50% of the time

Third level of screening

The Sukshema project organized a two-day residential workshop for candidates that included an orientation to the project and the position, an exercise involving a group discussion a knowledge test and a problem-solving exercise. Participants were also asked to prepare and present a technical session. At the end of the second day, each candidate had a one-on-one interview. Assessors used checklists to aid in objective scoring of the candidates across different competencies. After the two-day residential workshop, the project offered positions to 13 of the 22 candidates.

Hiring Mentors

Nurse mentors reported to work in pilot districts on 20th June 2012. The district team provided a general induction for seven days to orient mentors to the project. Mentors also toured PHCs and FRU hospitals to gain a better understanding of the environment in which they would be working and the travel involved in the job.

After the induction period, four candidates dropped out after consulting with their families about the job requirements. To achieve the target number of mentors, the project team quickly identified other candidates from prior rounds of screening and interviewed them by phone. In the end, the project hired 11 mentors for the two pilot districts, including five for Bellary and six for Gulbarga. This provided for two more mentors than required for the intervention to accommodate turnover or non-performance issues. In the pilot districts, the ratio of mentors to PHCs was one mentor for 4-6 PHCs. (Only half of the PHCs were included in the intervention during the pilot phase.) In the scale-up districts, the project anticipated a ratio closer to 1:10, operating under the assumption that the mentoring process would be worked out and efficiencies achieved. In practice, the project has ended up with about one mentor for every eight PHCs across each district.

Hiring successes

The process for identifying and recruiting mentors worked well. The candidates that were ultimately selected were the best performers on various assessments and evaluations. The project learned two useful lessons about maximizing hiring success:

- ***Induction period:*** Having a week long induction period prior to initiating the formal five-week job training proved valuable because it gave candidates additional time to learn about the job responsibilities. Although four candidates dropped outafter the induction week, it was preferable that they drop out before rather than after the five-week training.
- ***Thorough screening:*** When the four candidates dropped out, the project team was able to identify and interview additional candidates. These candidates were somewhat weaker than those identified through the full three-tier screening process, which validates the value of the more extensive screening process. Once on the job, the weaker candidates were teamed with stronger mentors to improve their competency until they could function independently.

Hiring challenges

The pool of qualified candidates was limited becausefew nurseswith midwifery training were available in the project districts. The project identified several additional challenges:

- ***Lack of relevant experience:*** Many of the applicants were recent nursing school graduates who had worked in government or private clinics but had limited experience in labour and delivery. In their previous employment, many mentors had not had an opportunity to conduct deliveries nor did they have much clinical practice in their basic training.
- ***Commitment:*** More experienced or retired nurses who applied for the position were often ineligible because they were either unable or unwilling to undertake the amount of travel needed and were less open to learning and teaching others about the latest SBA guidelines.
- ***Intensive hiring process:*** The process was effective in identifying strong candidates but required a substantial level of engagement from senior project staff that could prove difficult to replicate in a government system at scale.

Training Nurse Mentors

This aspect of the intervention included developing the initial training course and training nurse mentors.

Determining training content

Sukshema developed an induction training whose content and length were based on the learning objectives for the mentors. Mentors needed to become skilled in quality improvement principles, mentoring approaches, clinical skills and systems strengthening. In addition, they had to learn how to conduct mentoring visits to PHCs and understand monitoring, evaluation and reporting functions.

A variety of considerations shaped the training content and duration. First, it was apparent that mentors' limited clinical experience would necessitate substantial clinical training. Lack of clinical practice was also one of the short comings of the government's standard 21-day SBA training. Therefore, the training included over 100 hours for ward rotations for clinical observation and practice.

Second, the project's focus on the intrapartum period meant that mentors needed to be especially competent in managing labour and delivery and maternal and newborn complications. The training, therefore, did not focus on antenatal care (ANC) or home-based practices.

Third, mentors needed to be well grounded in the concepts of quality improvement, patient and provider rights and teaching and communication skills. Because these topics are not covered in basic nurse training, the training needed to allow adequate time to build this capacity.

Finally, mentors needed time to practice their communication and mentoring skills in a work setting similar to a PHC. Therefore, the training included site visits to nearby maternity homes where mentors practiced working with clinic staff to carry out self-assessments.

Given the multiple objectives of the training, the project team determined that five weeks were needed to include all the required components. The Sukshema team prepared a detailed agenda for the induction training, summarized below.

Week	Topics covered
1	Quality improvement approach (AMMA) Principles and tools in MNCH mentoring Project philosophies
2	Clinical obstetrics: intrapartum and postpartum care Ward postings in ANC, labour room and postnatal
3	Clinical neonatology: essential newborn care and neonatal resuscitation Ward postings in labour room, postnatal and neonatal
4	Obstetrics and neonatal postings at St John's Medical College and St Philomena's hospitals Site visits and practice sessions at 2 PHCs
5	Systems strengthening (infection control, referral, essential drugs, supply chain management) Managing mentor visits: what to cover and when Evaluation

Training manuals and materials

The team developed a mentor's manual to form the basis of the induction training content as well as serve as a field handbook. The team also developed a facilitator's guide specifically for trainers that outlined how to deliver sessions, including extensive use of participatory processes. As of April 2014, finalization of these manuals was being completed.

The training manual opens with an introduction of the AMMA concept and the role of mentors in applying this approach at the facility and provider levels. Next, it delves into clinical content and practice. It also includes the case sheet, self-assessment tools and other tools that mentors use in their work. Other training materials include copies of the Government of India SBA guidelines and a kit of teaching aids (including a pelvic model, newborn model, bag and mask and other medical supplies needed for demonstrations). The mentors were also equipped with laminated posters, flip charts and teaching videos on discs that they could use at the PHCs.

Standardizing the training curriculum

The curriculum development team worked from a standard template that guided writers to:

- Not simply list what should be done and how to do it but also focus on why guidelines are important.
- Include not only what to do but also what not to do. Each session contained a list of do's and don'ts.
- Provide examples of how a particular skill can be imparted through different mentoring techniques (for example, case audits, case studies, demonstrations).

Mentor training in pilot districts

The five-week training for the pilot district mentors took place in Bangalore from July 9 to August 9th 2012 at SJMC and Cand also used St Philomena's hospital for some clinical sessions and nearby private maternity homes for site visits. Seven lead trainers from KHPT and SJMC conducted the training. Additionally, 21 SJMC faculty members supported the training programme by delivering sessions and serving as preceptors during ward postings.

All mentors successfully completed the 5-week induction training programme. In addition to the 11 mentors hired, nine DPS from all Sukshema districts took part in the entire training to become familiar with the intervention because they were responsible for supervising the mentoring intervention's implementation.

Interviews with mentors and trainers and independent observations provided an understanding of how participants received the training programme and whe ther it accomplished its intentions. In addition, test scores provided a measure of competency achieved. Key findings address participants' understanding of project objectives, the training design, the participatory nature of the training, tailored training, field visits, adequacy of the training and competency as assessed by testing.

Understanding of project objectives. Mentors clearly understood that the ultimate goal of the Sukshema project was to help reduce maternal and neonatal mortality through improving the quality of care in PHCs. According to one mentor, "The purpose of the training is to make the participants understand the process of mentoring and the qualities of a mentor. This is important because when they go into the PHC, they should have better skills and knowledge than the PHC staff, they should know to communicate well and plan their activities according to the needs of the PHC."

Training design. According to many trainers and trainees, the flow of the training programme worked well. The introduction to quality improvement, the AMMA approach and the competencies required of mentors in the first week provided the context for mentors to then engage with the clinical content in the subsequent weeks. The last week was an opportunity to bring back the focus to MNCH quality by addressing system-level issues. Mentors also appreciated being given reading materials in advance so they could be prepared for the sessions.

Participatory training approach. Mentors appreciated the interactive nature of the training. Trainers engaged trainees through sessions that included role plays, videos, demonstrations, case studies, group discussions and bedside clinics. Extensive use of mannequins, case sheets and other training aids enabled trainees to practice what they were learning. Mentors especially liked the opportunity to practice skills through skill stations and in ward rotations. As one mentor summed up, "Before, we didn't know anything. We learned how to interact with medical officers and nurses. We learned clinical skills." Sessions encouraged participants to ask questions and take part in large and small group discussions. The observer and trainers observed that many mentors gained confidence over the course of the training and became enthusiastic, engaged and vocal participants.

Trainer demonstrating using a pelvic model

Tailoring training to learner's needs. Because the mentors came to the training with different knowledge and skill levels, the trainers had to adapt to ensure that everyone picked up both the content and skills. Gaps between theory and practice were most noticeable. Trainers frequently and effectively used questioning to assess trainees' knowledge and tailor their teaching accordingly. Trainers also adjusted by using Kannada for the sessions because mentors were more comfortable in that language. The doctor trainers were very patient with the participants and were willing to explain and demonstrate techniques repeatedly without any hesitation.The training observer noted that trainers gave participants individual attention and were very proactive within group exercises about making sure that participants had understood the practical part (such as plotting the partograph). As one mentor stated, "The methods of group discussions were very helpful in the theory sessions since we get to brainstorm about different issues and discuss them in detail. With regard to the clinical skills, the demonstrations via teaching aids is good too, as we get to practice our skills. "Trainers observed that some mentors who had limited experience in conducting deliveries had strong communication and leadership skills that they were able to apply in some of the non clinical training activities.

Field visits. Mentors gained confidence from visiting PHCs and conducting meetings to introduce self-assessment tools. These practice sessions alleviated many concerns or fears that mentors had about the difficulty of establishing rapport with the PHC team and using the tools.

Adequacy of training. Some of the mentors who were interviewed expressed apprehension about whether the PHC staff would accept them as mentors. Trainers also worried that the level of clinical competence would not be adequate for mentors to provide clinical guidance. It became evident that the five-week training did not provide for enough skills practice and that many mentors needed to reinforce their clinical skills.

Test scores. Test scores provided a measure of the training's effectiveness in imparting knowledge and skills. The pre- and post-test scores for mentors indicated gains in knowledge levels. The mean pre-test score for the mentors was 48%, which increased to 74% among those mentors who completed both tests. Scores for post-tests ranged from 45% to 88%.

An observer also evaluated mentors on several objective structured clinical examinations (OSCEs) in which the observer marks off whether the mentor hascorrectly completed all steps involved in the demonstrations. The chart below depicts the relative performance of mentors on obstetric and newborn OSCEs. Many mentors were able to demonstrate a level of proficiency at the 70% or higher level for obstetrics and at the 50%-60% level for neonatal OSCEs.

Range	Obstetric OSCE scores	Newborn OSCE scores
40%-49%	-	3
50%-59%	-	7
60%-69%	2	3
70%-79%	6	-
80%-89%	5	-
Total*	13	13

Lessons Learned: Induction Training

The nurse mentor induction training for the pilot districts generated several lessons about what worked well and about challenges and opportunities for improvement when scaling up the training to other districts.

Training successes

Training design and methodology. Trainers and mentors appreciated the design of the training programme, with its use of participatory processes and practice sessions. Many mentors commented that the training materials were helpful for their learning. Curriculum developers referred to standardised guidance to develop the training content, emphasising participatory learning approaches that helped provide a certain level of consistency and integration of the training content.

Reinforcement of project objectives and quality improvement. The Sukshema technical director and QI specialist were present throughout the training and led morning and afternoon recap sessions. This helped link the different sessions and learnings together, enabling them to reinforce the AMMA concept and bring the focus back to how participants could apply their new knowledge and skills in their mentoring interactions with the PHCs. Mentors developed a good understanding of quality improvement and the mentoring process.

Training challenges and opportunities for improvement

Curriculum. The curriculum development team perceived unrealised opportunities to integrate the training segments to better reinforce each other and the overall objectives of the intervention. For example, there was little reference to the AMMA framework in the clinical and system-level segments, even though the process of assessment and management is central to clinical teaching.

Structured training of trainers. Having many different trainers made it more difficult to ensure that all trainers fully understood the purpose of the training and how each session reinforced the overall objectives. For example, in ward rounds it would have been desirable for preceptors to not only provide clinical content to mentors but also demonstrate mentoring skills themselves and link back to the overall aim of quality improvement. This did not always happen, as some preceptors were not focused on demonstrating mentoring skills and were not aware of the AMMA framework. Including a more formalised training of trainers before the commencement of mentor training would connect trainers to the overall purpose of the training, ensure trainer's familiarity with the full training content, and facilitate opportunities for reinforcing learning across training sessions.

Sequence of clinical rotations. The clinical portion of the training was intentionally designed to cover theory and practice on mannequins in the morning, with afternoon clinical sessions in the wards to reinforce the morning learning. However, the two-hour segment in the wards was not always sufficient to observe or treat patients on the topics covered. One mentor commented that the sequencing of training would be better if participants learned theory before undertaking clinical rotations, but the schedule did not always allow for this. This mentor noted,

"When we came in at the beginning of the day we did not know much about the subject, but by the end of the session, the trainer had taken us through all the theory and we understood everything. In addition, we saw some of these processes in the ward the previous day (normal delivery, preparation of labour room), so we did have an idea of what the trainer was teaching us. I like to be taught the theory first as then we are aware of what to look out for in the practical session."

Basic clinical skills. Mentors' lack of basic clinical skills created challenges in ensuring their competency as mentors. Clinical trainers expected to be able to provide a refresher training that would build on the mentors' basic nursing training and on-the-job experience. Instead, they often had to cover fundamental topics because mentors lackeda basic level of knowledge and clinical expertise. In the clinical ward rotations, some participants seemed very unsure of how to carry out clinical processes such as abdominal exams. Some mentors struggled with calculations (such as calculating gestational age from the fundal height), while others were unable to explain concepts to a doctor when asked. Trainers were surprised that they had to cover basic skills with trainees who were already certified nurses, some of whom had even undergone the government's 21-day SBA training.

Clinical practice opportunities. The training did not provide adequate opportunities for mentors to practice delivering babies. Mentors were not allowed to directly conduct deliveries in St John's Medical College. Moreover, because SJMC largely provides tertiary obstetric services, it did not offer good examples of the cases typically encountered in PHCs. Although trainers arranged to use another clinical site (St Philomena) that provided normal deliveries, the delivery load was low so mentors still did not get to attend deliveries.

One month following the training, the project arranged for a one-week clinical rotation for mentors. Mentors were assigned to one of three hospitals to conduct deliveries, but the delivery loads were not sufficient to give every mentor an opportunity for skills practice, and hospital staff wanted to be sure of the mentors' skills before entrusting them with deliveries. In the end, few mentors were able to deliver babies—and that only towards the end of the week when providers at the facilities felt comfortable in letting them do so.

Ongoing Training

During both the pilot phase and the scale-up to all project districts, the project has provided for ongoing capacity-building of mentors beyond the initial five-week training, using clinical postings, on-the-job support and refresher trainings.

Clinical postings

In response to the identified need and request from mentors that they have more clinical experience, the project sought to build in a 5-day clinical posting every quarter for all mentors. Finding adequate clinical training sites to provide mentors with practicum training in labour and delivery posed a significant challenge. Hospitals that did not know the mentors or their competencies were reluctant to allow trainees to practice their skills. It sometimes took several days of observation for the clinical staff to gain enough confidence in the mentor's knowledge to entrust them with patient care, yet by that time the week's posting was nearly over.

Initially, Sukshema arranged with the Vijayanagar Institute of Medical Sciences (VIMS) Medical College in Bellary to provide practicum training for mentors in the pilot districts. The mentors had a one-week rotation in the labour room seven months after they started serving as mentors. During the posting, each mentor conducted an average offour deliveries by themselves and assisted in more than ten. In general, the VIMS postings met the objective of increasing clinical experience. One mentor indicated that the posting at VIMS "was very good as we did a lot of deliveries and were able to practice episiotomies and suturing, so we now feel more confident in helping nurses at the PHC in these skills. " The hospital proved to be a good place to see many complicated obstetric cases, providing mentors with a better understanding of the presentation and management of these complications.

Some practices in the VIMS hospital went against the guidelines for PHCs or followed different guidelines altogether, which was of some concern to mentors. The lack of compliance with infection control protocols at the hospital, including lack of water in the labour room, did not present a good example for infection prevention.

In the scale-up districts, all mentors were sent in batches to VIMS and a government hospital in Bijapur, until the VIMS leadership changed and no longer wanted to provide a clinical practice venue. The project team then identified additional training sites for practicum training (and continues to evaluate practice site options at present). One training site, Gulbarga General Hospital, worked well due to its high volume of

Mentor feedback on VIMS clinical postings

We were happy with the exposure to the deliveries that we could conduct. The exposure to complicated and 'bad' obstetric cases (like severe PPH, eclampsia, IUD), though upsetting, was clinically relevant and a new experience. The hospital had different infection control practices, which were not what we had been taught. We wish someone was there to supervise us continuously. The newborn care is not concentrated on and no one would listen to us when we told them. We don't know why we had to do stuff other than deliveries like putting an IV line or drawing blood. But overall we gained experience and confidence and could do quite a number of procedures in addition to deliveries. We also now know how difficult it might be for the staff nurse to fill the case sheet during busy days.

deliveries and appreciation from the nurses at the facility for the mentor's support in assisting with deliveries. At that hospital, mentors also reported that they were able to update district hospital nurses' knowledge and skills pertaining to partograph use, AMTSL procedures and other protocols. Mentors conducted at least five deliveries independently and assisted in many more. A District Program Specialist at Gulbarga General Hospital noted that the head of the obstetrics and gynaecology department—not initially enthusiastic about having mentors posted at the hospital—ended up thanking the project because the mentors were so knowledgeable and helpful. This department head also indicated her willingness to allow mentors from other districts to use the facility for future practicum training.

Clinical posting results were less successful in another district where the project placed mentors in a busy taluka (sub-district) level first referral unit. Because this FRU lacked equipment, drugs, and supplies and did not have good infection control practices, it was not a good environment for refreshing mentors' clinical skills.

On-the-job support

Roughly two months after the five-week training in the pilot districts, two different 2-person SJMC teams travelled to each pilot district for a support session and on-the-job capacity-building for the mentors. Each team consisted of a neonatologist and an obstetrics nurse. On the first day of the two-day visit, the SJMC staff each accompanied one mentor to a PHC for a mentoring visit. Other mentors were divided up to also attend one of the mentoring visits as observers and learners. At the end of the day, SJMC staff provided feedback to mentors on what they were doing well and areas for improvement. On the second day, the SJMC team provided training and demonstrations to the mentors in a classroom setting. These support visits have since continued every four months in the pilot and scale-up districts.

Refresher training

The project also sponsored refresher trainings for mentors, with the experience in the pilot districts providing information about how best to do this. In the pilot districts, mentors participated in a two-day refresher training in Bangalore in January 2013 carried out by Sukshema staff and consultants. The objective of the refresher training was to provide opportunities for mentors to use case studies and demonstrations to build their capacity in clinical mentoring techniques. As described by one mentor, "The [refresher] training showed us how to introduce case studies as a mentoring approach, how to evaluate case sheets and pre-referral management."

Mentors also participated in a second two-day refresher course in May 2013 in Bangalore. The course was designed based on input from the mentors regarding the topics to be covered. In particular, mentors requested more guidance on what to do in situations that were not clearly covered by the SBA guidelines and information abouttopics including prolonged and/or obstructed labour, pregnancy-induced hypertension (PIH), gestational diabetes, obstetric procedures, and newborn complications. Mentors were also able to practice suturing skills. Mentors reported that this training was helpful in addressing doubts and covering other complications. The project subsequently extended this type of refresher training to mentors in the scale-up districts, sometimes combined with on-the-job training during PHC visits.

Summary

The project's hiring and training approaches for developing this new cadre of nurse mentors have contributed to the development of a motivated and well-performing mentor workforce. Because the skills available among nurses interested and qualified for the mentor role were generally limited, continual efforts were required to build mentors' capacities and confidence over time. The five-week induction training imparted basic knowledge and skills, but mentors also needed continuous reinforcement and skill-building through on-the-job support and clinical postings. Recognizing the intensity and frequency of the training required to support mentors will be an important consideration in determining how this programme can be scaled up with in a government system that typically does not deliver this type of continuous professional development.

Chapter 4

Mentor Visits in Pilot Districts

This section documents the first year of implementation of the mentoring programme in the 54 intervention PHCs in the pilot districts. Specifically, this section recounts what happened during each round of mentor visits and highlights successes, challenges, and lessons learned.

Schedule of Mentor Visits

Each mentor was responsible for providing mentorship at 4-6 PHCs. The initial expectation was that mentors would visit their assigned PHCs once a month for the first three visits, after two months for the fourth visit and quarterly there after. Each visit was expected to last two days. Between visits, mentors' duties included completing trip reports, periodically checking in by phone with the PHC site coordinator and participating in team meetings and continuing education.

The schedule for the mentor visits was influenced by the Sukshema team leaders prior experience in the SAMASTHA project, in which they observed that PHC staff and facility processes seemed to show improvements after four visits. After selecting four as the minimum number of visits required, the duration of the Sukshema project and the need to scale up the intervention in all eight project districts influenced the upper limit of how many visits might be expected in a year, given that the project would have just one year to reach the same level of intensity in the remaining districts. The overall concept was to have six visits per year, concentrating the first four visits over a five-month period and scheduling the later visits over longer intervals. The greater frequency of visits during the early stages was intended to facilitate rapport and allow mentors to conduct initial assessments and develop action plans. After the fourth visit, the quarterly mentoring visits would focus more on maintaining improvements.

Allowing two days for each mentoring visit was expected to ensure adequate time to address PHC-level issues and conduct provider mentoring. Based on mentor feedback and observations, however, the project team determined that two days were not enough to provide sufficient opportunity to interact with all staff nurses in the context of staff nurses' rotating shifts, their need to attend to patients, and other factors. From the third visit onwards, mentors spentthree days at each PHC. The schedule and duration of mentor visits in the pilot phase are outlined below.

Visit	When conducted	Duration of visit
First mentor visit	Aug-Sept 2012	2 days
Second mentor visit	Oct 2012	2 days
Third mentor visit	Dec 2012-Jan 2013	2-3 days
Fourth mentor visit	Feb – Mar 2013	3 days
Fifth mentor visit	April – May 2013	3 days
Sixth mentor visit	Jun-Jul 2013	3 days

Sukshema developed guidelines for mentors on how to carry out clinical mentoring, including discussion of teaching and/or mentoring techniques. The guidelines also included session plans for the first six mentoring visits and provided a bulleted list of content to cover in each session.

First Mentor Visit

Structure of visit

In the first PHC visit, mentors were expected to build rapport with PHC teams, initiate use of self-assessment tools and support PHC teams in developing an action plan to outline steps for correcting problems identified in the self-assessments, the primary outcome from the first meeting. The mentors were not expected to do much clinical mentoring in this first visit, delaying clinical mentoring until the mentors themselves had had a chance to gain more clinical experience.

First Mentoring Visit
1. Introduce herself to medical officer (MO) or medical officer in charge (MOIC)
2. Facilitate PHC team meeting to introduce AMMA concept and discuss patient and provider rights
3. Help PHC staff fill out self-assessment tools A, B, & C and conduct case sheet audit and client interviews
4. Observe patient care in PHC and provide clinical support as needed
5. Facilitate team meeting to develop action plan

With few exceptions, the mentors were able to take the PHC teams through the first set of assessment tools and the case sheet audit. Mentors supported PHC staff to carry out client interviews as well. After completing the self-assessment tools, mentors met with the PHC teams to develop an action plan. This usually happened at the end of day 1 or during day 2 when the team could reconvene. In two instances, mentors were unable to complete the action plan with the PHC team at the end of the visit because the MO was not available to sign off on it.

During the first visit, mentors also spent some time with staff in patient care and provided guidance on clinical practices where able. Mentors observed current practices and identified gaps to focus on in subsequent visits.

To facilitate communication between mentoring visits, mentors worked with the PHC teams to identify a site coordinator for each PHC. This coordinator became the mentor's point of contact for any follow-up and scheduling of future visits. The site coordinator could be anyone who showed interest in the position. In the pilot district PHCs, site coordinators were staff nurses, pharmacists, or lab technicians. Medical officers were not chosen as site coordinators.

First visit successes

According to interviews with mentors and project staff and observations of visits, many aspects of the first mentor visit went well.

Rapport with PHC teams. Establishing rapport with PHC teams happened more easily than might have been expected. Mentors expressed and demonstrated confidence in building rapport with PHC teams and carrying out the mentoring visits. In some cases they confronted initial resistance and had to prove their credibility. For example, one mentor shared how the MO asked her technical questions for 45 minutes and communicated his satisfaction with the mentor's knowledge by then instructing his staff to learn from her. In another example, nurses asked the mentor about her background and on learning that she was a staff nurse referred to her as "sister." By the end of the day, after appreciating her level of knowledge, the nurses started referring to her as "madam."

Many of the staff nurses in PHCs are young recent graduates (hired contractually) who are aware of their lack of experience and are happy to receive additional support. In one direct observation, it was clear that the PHC team appreciated the support provided through the mentoring programme. They seemed to enjoy meeting together as a team and working in small groups. The staff interacted well with each other and a cordial supportive tone permeated the meeting.

Flexibility and responsiveness. Mentors were able to work with and around clinic activities to mentor PHC teams. For example, if the outpatient department was busy, onestaff nursemight attend patients while the mentor worked with the other staff nurses called in for the visit. Mentors were usually able to find times when nearly all staff could sit together for assessment and action planning processes.

Mentor conducts group meeting

Quality improvement.

PHC teams were willing to engage with mentors in QI sessions. Typically, the first session lasted two hours and involved all staff, including the MO, nurses, pharmacists, lab technicians, and Group-D support staff (i.e., housekeeping). PHC teams remarked that they rarely met as a team and welcomed the chance to do so. At times it was difficult to engage the Group-D staff in larger discussions, but they participated in small group work.

Self-assessment tools and action plans. Mentors found that PHC teams were able to use the self-assessment tools and that these tools helped teams identify where they had problems. As one mentor noted, "Most of the staff at the PHC claimed they know everything, but after administration of self-assessment tools, they found gaps in knowledge." Several mentors described how PHC staff used the tools to identify a lack of knowledge about how to diagnose and manage maternal complications. The mentors ensured that the areas marked with an X on the self-assessment checklists (indicating a gap) were included in the PHC action plan. One of the quality assessment tools—the client interview guide—did not provide useful information. First, providers were somewhat uncomfortable in administering the survey to patients. Secondly, patients generally indicated that they had no complaints or suggestions for improving the PHC. This response could have been an indicator of low expectations for PHC services as much as an expression of satisfaction. Mentors recommended that the tool be translated into the local language to make it easier to use, which was subsequently done.

Ability to identify gaps. In addition to PHC team members, mentors themselves were able to identify existing shortcomings in providing quality MNCH care. Mentors reported finding gaps common to many PHCs including:

- Wide spread practice of labour augmentation
- Lack of drugs, especially magnesium sulphate and vitamin K
- Incorrect and incomplete case sheets
- Lack of toilets and running water in some PHCs
- Shortage and absence of staff in some PHCs
- Poor infection control and injection practices
- Inadequate referral processes

Direct patient interaction. One of the initial unanswered questions about the mentoring programme was whether mentors would be able to participate in direct patient care given that deliveries might not happen during mentor visits. (This was the experience during the baseline data collection process.) Fortunately, mentors were able to directly observe and assist in patient care with women in labour or in postnatal wards, which provided an unmatched opportunity for teaching and mentoring. All mentors observed deliveries during their first and subsequent mentoring visits, including deliveries involving complications, and were able to support staff nurses to manage them. In the first visit, each mentor was able to attend 2-3 normal deliveries during the course of visits to all her PHCs combined and several mentors encountered women and newborns with complications.

First visit challenges

PHC leadership engagement. The mentors' experiences in initiating an effective first PHC visit depended in part on the level of engagement of the MO. In several instances, the medical officers were very supportive of the intention of the mentoring intervention and took immediate action to resolve problems identified through the self-assessments and team meetings. For example, several MOs used untied funds to replenish drug supplies during or within days of the mentors' visits. Another MO acquired cord clamps that the assessment identified as lacking. In other instances, however, the MOs did not participate fully in the PHC team meetings or were absent during the development of the action plan. In some PHCs there was no medical officer in place, and PHC management was assigned to an MO in charge of another PHC in the area. These MOs often did not focus much attention on the additional PHC.

Mentors' assistance in direct patient care

During their first PHC visits, mentors were able to provide several types of direct and immediate support to staff nurses:

- A mother presented with preeclampsia and the staff nurse did not know how to handle the complication, so the mentor demonstrated how to provide an injection of magnesium sulphate.
- A newborn required resuscitation, and the mentor demonstrated how to use the bag and mask to resuscitate the newborn.
- A mother presented with anaemia, and the mentor was able to guide the staff on appropriate steps to follow.

Patient expectations versus clinical best practice. Labour augmentation was a common practice. Staff nurses indicated that patients often insisted on it and they found it difficult to comply with the guidelines as a result.

Mentoring skills. Observations of first visits suggested that mentors needed help developing their skills in applying different adult learning methodologies. Although mentors were doing an admirable job given their limited experience as trainers, it was clear that their performance in facilitating group discussions and effectively using teaching aids could be enhanced. Mentors also needed help building stronger communication skills. For example, several observers commented that mentors talked fast and did not pause to assess nurses' understanding or encourage questions. Observations concluded that mentors also needed more support and specific guidance on how to convey the AMMA concept of quality improvement to the PHC teams. Mentors explained that PHC teams did not seem to grasp the concept of AMMA.

Case sheets. In conducting audits of case sheets in the first visit, mentors observed that PHC staff were not always using case sheets and when used staff were not completely or correctly filling the sheets out. In one PHC, staff members were unaware of the complication sheets that form part of the case sheet tool. In other cases, staff only filled out the labour section but did not complete the history or outcomes sections. Some providers either complained about the length of the case sheet or reported that they were too busy to fill it out. Mentors attempted to convey the importance of the case sheet to providers but acknowledged that this needed to be an ongoing process.

Second Mentor Visit

Structure of visit

The second visit took place one month after the first visit. The intended structure of the second two-day visit is outlined below. Mentors prepared for this second visit by performing demonstrations with models in front of their colleagues to sharpen their training skills.

Second Mentoring Visit
1. Review first visit action plans and progress
2. Facilitate completion by PHC team of remaining self-assessment tools (D-H)
3. Develop an on-site training plan
4. Complete case sheet audit checklist
5. Conduct training with models, demonstrations, case sheets, and videos

Interviews with mentors who had conducted a second PHC visit in Bellary in late September 2012 found that the second mentoring visit took place as planned. Mentors worked around the ongoing clinic operations to meet with the PHC teams when convenient and to cover the content of the visit. Mentors reported that PHCs had made progress on the action plans developed in the previous visit. As one mentor noted, "In the second visit they were implementing things properly that had been X marks in self-assessment in the first visit." In one observation, the PHC team had not been able to procure the drugs and supplies identified as lacking in the action plan but indicated their intention to do so now that funds had become available. In another PHC, the mentor noted that staff nurses had not been using the radiant warmer or using slippers in the labour room in her first visit but now were doing so. One mentor recounted her second mentoring visit as follows:

> *"In one PHC it was busy and a delivery was happening so I guided all three staff nurses on how to conduct delivery and do AMTSL. The woman came in at 7cm so we had the PHC team meeting after the initial assessment and then we all moved back to the labour room when she reached 10 cm. The nurses had wanted to do augmentation because it was not progressing, but I said 'Remember what we talked about last time' and so convinced them not to do it. I advised the nurse to put the baby on the mother after delivery for breast crawl. The staff said, 'It worked so well we will do it like this from now on.'The nurses were using the case sheet and partograph while attending the delivery. They also did the first two hours monitoring correctly."*

The Story of a Second Mentoring Visit

When the mentor arrived for the first day of her second mentoring visit at a PHC in Bellary District, a delivery had taken place just 30 minutes before. She immediately took the opportunity to show staff nurses how to do breastfeeding initiation and post-delivery assessment. "I called all staff nurses together and told them how to do it. How they should wash hands, wrap baby, position and attachment for breastfeeding. I used case sheet to show how to do monitoring."

Next a woman arrived with premature rupture of membranes (PROM), which requires referral. The mentor explained, "I taught the nurses how to do initial management through the case sheet. They called the ambulance right away and it arrived sooner than expected while the nurse was still doing stabilization. The ambulance staff got angry telling the nurses to bring patient." The mentor went out to the ambulance, brought the ambulance nurse in, made him observe the patient, and explained her situation so that he would know the condition of the patient he would be transferring. The mentor explained how the ambulance nurse asked, "Who are you?" When she explained she was a mentor, he settled down. "I told him what he needed to understand about the patient," she related.

After lunch, the lady health visitor and medical officer went out for the ASHA monthly meeting that takes place just outside the clinic with 18-20 ASHAs. The mentor took the opportunity to address the ASHAs for 45 minutes. "I asked them about what they do during antenatal care and stressed on need for TT [tetanus toxoid shots] and medicine [iron and folic acid tablets or IFA]. I spoke about the importance of institutional delivery and 48 hours stay and the importance of their responsibility after delivery. I reviewed the home visit schedule with them and told them to educate mothers about looking for danger signs and the importance of breastfeeding."

The PHC was very busy that day as the MO had been absent for two days. There were many patients in addition to the ASHA meeting. As a result, the PHC team was not able to assemble for a team meeting with the mentor until late in the day at 4:45 p.m. She went on to recount, "We discussed on the last action plan that had 6 points and reviewed it. They had implemented all things in the action plan." The mentor then gave out the remaining self-assessment tools, with one person working on each tool. "I told them to think for the whole staff as you fill out." The mentor moved into the action planning phase after the self-assessment process. Some of the items identified with an X on the self-assessment tools were taken care of immediately. The mentor explained that the puncture-proof container had rusted, so the MO suggested a new way to dispose of sharps. The PHC team also filled up the referral directory (another item identified as missing in the self-assessment). Other items in the new action plan included syringes for vitamin K, training on corticosteroids, and training on newborn resuscitation.

On the second day of the visit, there were no deliveries.The mentor used the time to provide training on newborn resuscitation, demonstrating with the doll. Staff nurses then performed demonstrations in return. The mentor also taught staff about phases and stages of labour and assessing for pelvic adequacy, demonstrating on the pelvic model. Nurses again did return demonstrations.

Second visit successes

Teaching models.Mentors used training models effectively to carry out demonstrations. Staff nurses appreciated the opportunity to practice with the newborn and pelvic models. While some staff were initially reluctant to demonstrate with models themselves, many mentors reported encouraging nearly all staff to do return demonstrations. One mentor noted, "I was able to tell them about stages of labour using the pelvic model and overall they could understand but one nurse didn't know anatomy parts so getting her to talk and do return demonstration was hard." Another mentor explained that while staff knew some things about stages of labour, there wereknowledge gaps that the demonstrations with the pelvic model helped address. She noted, "They knew pieces but not the whole picture."

Nurse practicing newborn resuscitation on doll

Judgement in identifying gaps. Mentors added items to the PHC action plan based on their own observations of needed improvements. As one mentor noted, "I reviewed case sheets and found seven referrals for newborn resuscitation in the previous month, so we included training on newborn resuscitation in the action plan. The mentor explained that six items on the action plan came from the self-assessment tools and she added two based on her own observations.

Improved use of case sheets. Mentors who made second visits remarked that case sheet use had improved since the first visit. All nurses in one PHC were using case sheets, including the partograph. At the second visit, the mentor found only three gaps: incorrect use of partograph, not filling out complication case sheets fully and not completing or providing all counseling before discharge.

In another PHC, this mentor reported that nurses were filling out case sheets through delivery but not usingthe case sheet as a job aid for providing postnatal and newborn care following delivery.

Increased practice of AMTSL. By the time of the second visit, mentors reported that staff nurses seemed to better understand and practice AMTSL. In at least one PHC, nurses also indicated that they were no longer providing augmentation. However, the nurses avoided confronting women and their relatives with an explanation of why augmentation was risky by instead starting an IV with saline. One nurse even shared how the pregnant woman attributed her increased contractions to the drug working (which was only a saline drip).

Second visit challenges

Overcrowding. In one observation of a mentor's second visit, the PHC patient ward was overflowing because a tubectomy camp was in session. The overcrowding compromised the quality of care for women coming for delivery and discouraged staying at the facility for 48 hours post-delivery.

Patient volume. At some PHCs with high delivery loads, it was hard for mentors to get time with staff. In other PHCs with low patient volumes, staff were available but opportunities for bedside mentoring and demonstration on patients were few.

Lack of compliance with care protocols. Mentors reported confusion among some staff nurses on following protocols and poor compliance with waste management and pre-referral guidelines.

Third Mentor Visit

Structure of visit

The third mentor visits took place one and a half months after the second mentor visit. The third mentor visit focused on clinical practice. The structure of the visit was as follows:

Third Mentoring Visit

1. Meet with PHC team to review progress on action plan since second visit.
2. Conduct audit of 10 case sheets of normal deliveries and all complications and review with staff nurses to provide guidance on proper use and documentation of case sheets. Assess any improvements from earlier visits in the use of the case sheet.
3. Provide clinical mentoring as per the training plan developed by the mentors for PHC staff, covering the following topics:
   - Antepartum and postpartum haemorrhage
   - Premature rupture of membranes
   - Prolonged and obstructed labour
   - Low birth weight
   - Newborn asphyxia

Mentor reviewing case sheets and registers with nurse

Third visit successes

Technical knowledge and rapport. According to project staff who observed the third mentoring visit, mentors demonstrated sound theoretical knowledge of skilled birth attendance. At this point, mentors were very familiar with the case sheet and able to guide PHC staff through its use. Mentors continued to display good rapport with PHC staff, especially nurses. "Staff nurses seem happy that we are coming," noted one mentor.

Teaching skills. Mentors seemed comfortable teaching in a classroom setting and using flip charts and other classroom teaching aids. However, project staff observed that mentors required additional skills-building support to use other teaching methodologies such as case studies, bedside demonstrations, mentoring during deliveries, case audits, and discussions.

Improved PHC practices. Mentors perceivedimproved practices in some PHCs. For example, in one PHC (visited in November and again in January), improvements were observed in the organisation of the labour room and equipment as well as inoverall cleanliness. Project staff also reported increased availability of drugs and supplies. Mentors noted that AMTSL was being widely practised while the practice of labour augmentation had diminished. Nurses were more routinely giving vitamin K and using radiant warmers for newborns.

Mentorship between visits. One mentor noted, "Whenever nurses or MO see a complication they are calling us and we advise them to follow the guidance on the complication case sheet.

This level of interaction between mentor visits is very encouraging as it indicates that PHC staff were more aware of the need to manage complications and were seeking assistance on how to do so.

Case sheet acceptance and use. Mentors indicated that staff were becoming more used to the case sheet but nurses still were not always using it as intended. Many nurses wereei ther not filling out the case sheet or filling it in after delivery. According to mentors interviewed, some nurses saw the case sheet as a job aid, while others saw it mainly as something they were supposed to fill out. "These nurses come up with many excuses for why they don't fill it." Nurses in busy PHCs found it hard to find time to complete the case sheet.

Mentors saw completed complication case sheets for many complications, including prolonged labour, PPH, PIH, and preeclampsia. Use of complication case sheet H (for everything else) was also frequent. Mentors reported finding 1-2 complication case sheets per PHC since the second visit. In some instances, the complication had led to referral while in other cases the complication was managed at the facility.

Organization of drugs in labour room

Patient-focused teaching. Mentors and project staff reported that encounters with pregnant women and recently delivered women in the PHCs offered opportunities to provide bedside teaching and demonstration. For example, in a 1-day PHC visit to a clinic in Bellary, the clinical project consultant and two mentors were able to interact with a woman in labour, a woman in the postpartum period, and a woman in the active stage of labour and demonstrate correct SBA practices with the staff nurse on duty.

Two mentors interviewed about their third visit experience shared that they encountered five maternal patients in four of the 11 PHCs they visited. One mentor reported working with nurses as they saw antenatal patients to demonstrate how to do an abdominal exam.

One mentor was able to guide PHC staff on how to manage a referral for a newborn suffering from intrauterine growth retardation. "I showed nurses how to use the complication sheet and how to refer including the need to call the FRU and how to counsel family members about the referral and follow-up." Another mentor recounted her experience in identifying and referring a mother suffering from anaemia:

"In one PHC I found a case of anaemia. A mother delivered after 15 minutes. I asked staff if they did all the monitoring and they said yes and that all parameters were normal. The mother looked pale and was restless and unable to feed her baby. I advised them to do a blood test and found her Hb [hemoglobin] levels at 4.5. Also BP reading fell and her pulse was high so nurses started IV and prepared for referral to a higher-level facility for blood transfusion."

When asked whether staff would have recognized this complication without her intervention, the mentor responded that staff attitudes were that anaemia was common and not a cause for concern. The mentor brought all staff together to review how to manage such cases.

Availability of drugs and supplies. Mentors observed that most PHCs had essential MNCH medicines and MOs had been very supportive in getting needed drugs and supplies. Vitamin K, which was not available when the intervention began, was present in most PHCs by the time of the third visit. On the other hand, some PHCs continued to lack equipment and supplies. In one busy PHC, there was no episiotomy kit and nurses resorted to the unsafe practice of using a blade to remove stitches. Another PHC in this district continued to lack running water, which contributed to a low delivery load. The mentor suggested some stop-gap measures, but actions by the district would be required for a more sustainable solution.

Mentor assists nurse to use case sheet

Third visit challenges

Busy PHCs. Some PHCs were very busy, and mentors found it difficult to retain the attention and focus of staff to provide teaching under these conditions. Two mentors interviewed reported that six of their 11 PHCs were always very busy. Nurses had to treat many patients and were less apt to fill out case sheets or follow expected protocols during these times. In busy PHCs, mentors also could not interact with most nurses at the same time and had to repeat their teaching on an individual level whenever a staff nurse was free. Teaching also got disrupted. This situation was exacerbated when tubectomy camps or other "campaigns" were taking place because all staff tended to be fully engaged in those efforts with less time for other patient care. In busy PHCs, management encouraged mentors to extend their third mentoring visits to three or four days rather than the two-day duration of previous mentor visits to ensure completion of the visit's planned agenda. Extending the visit also enabled mentors to reach more staff since in some cases all staff were not available in the initial two days. One mentor related meeting with staff until 8:00 p.m. or 9:00 p.m. to cover the visit topics and other issues.

Postpartum care. Mentors reported that nurses did not monitor patients after delivery at the recommended intervals of every 15 minutes for two hours. One observer noted that the newborn care component of the case sheets also was not used as often as the other parts of the case sheet.

Referral practices. PHC staff and mentors noted that referrals were some times hard to manage because there were not good FRUs to refer to and ambulances were not always available. Mentors reported that families also sometimes resisted referral. Nurses did not always contact the FRU in advance when referring a patient.

Infection prevention. Mentors observed that by the third visit, labour roomswere cleaner and sterilization had improved. Some PHCs had acquired autoclaves. Still, there was considerable scope for improvement. Some PHCs reported doing sterilization but when mentors checked, the autoclave was not working. Waste management and waste segregation remained problems.

Sense of teamwork. Mentors explained that some PHCs were still in the process of adopting a more team-focused approach to their work. In one PHC, a mentor reported that staff seemed to blame each other rather than work as a team to address a problem. Although some drugs were not available,the nurse did not ask the pharmacist to address the situation because of the perception that he would nothelp. Mentors explained the value of teamwork, but the prevailing culture worked against this in some PHCs.

Pace of change. Another challenge was managing mentors' expectations about the pace of change in PHCs. Because some practices and behaviours were deeply entrenched and resistant to change, there was a risk that mentors could become discouraged if they did not see results from their efforts. Some mentors expressed their suspicion that nurses performed according to expectations only when the mentors were present, citing the example of continuing inappropriate use of labour augmentation in mentors' absence.

Fourth Mentor Visit

Structure of visit

As in previous visits, mentors prepared for their teaching topics one week in advance of conducting the visits. They also met again as a team after the first round of fourth visits to review the visits, share experiences and make any adjustments needed before carrying out the remainder of the fourth mentor visits. Mentors in one district related that they practised doing role plays and processing case studies that were then included in fourth visits. In order to have sufficient time to work with the PHC teams, these and subsequent mentor visits were formally extended to three days (compared to visits 1-3 which took place over two days). In a few cases, mentors visited for four days. It took about six weeks for all PHCs to be visited.

Mentors reported that fourth visits went according to plan. They typically started off with a group meeting to review the PHC's action plan and readminister the self-assessment tools (A-C) used in the first visit. During the fourth visit, mentors also carried out demonstrations and return demonstrations with nurses using real patients whenever available. All mentoring visits included a discussion on the complications based on the case sheet audit.

Fourth Mentoring Visit

1. Work with PHC teams to revisit the self-assessment tools (A-C)
2. Provide mentoring and demonstrations on the following clinical topics:
   - Preterm labour
   - Pregnancy-induced hypertension, preeclampsia, and eclampsia
   - Maternal sepsis
   - Newborn sepsis
   - Infection control
3. Collect case sheet data and review case sheets with staff nurses

Fourth visit successes

Sustained quality improvements. Mentors noted that previous improvements such as maintaining drugs and supplies, improving the labour room, managing referrals, using case sheets and discontinuing labour augmentation were being continued. These changes had taken hold with in the PHCs.

Comfort level with self-assessment tools. In this visit, mentors again facilitated the self-assessment process with PHC teams and reported that PHC staff were now very comfortable and adept in using the tools and understanding their purpose. As one mentor summarised, "In the first visits PHC staff found them somewhat difficult to understand but by fourth visit they were very comfortable using the tools again and it was much easier to convince them to do the assessment." Mentors noted that there were many fewer "X" marks after completing the self-assessment tools during the fourth visit because earlier issues had been addressed. For example, PHC staff indicated greater comfort in handling complications whereas this had been identified as a gap in early visits. Likewise, drug and supply shortfalls had largely been addressed. Areas still needing attention (common to many PHCs) included use of corticosteroids, procuring an O-size mask for ambu-bag and proper preparation and use of chlorine cleaning solutions. Mentors also noted that staff were still deficient in providing timely and complete postnatal care counseling.

Mentor explains case sheet to nurses

Action planning. Mentors noted that the process of reviewing and developing action plans was well entrenched by the fourth visit and staff had taken ownership of the process. In some PHCs, staff were identifying gaps and writing out the action plans on their own.

Use of case sheet. Mentors reported that PHCs were doing better using case sheets by the fourth visit. About half of PHCs were filling out case sheets correctly although still not in a timely manner, often completing them after delivery. The postnatal care portion of the case sheet was the most often incomplete. The PHCs that were not completely filling out the case sheetwere either short-staffed (one PHC had only one staff nurse) or had high patient loads and very busy staff. Staff understanding and appreciation of case sheets had improvedby the fourth visit,with staff telling mentors that it had been useful in improving their knowledge. There wasa change in attitude among most staff nurses from the early visits where they perceived case sheets to be a documentation burden.

Delivery guidelines. During the fourth visits, mentors were able to assist and observe deliveries and assess how well nurses were handling normal deliveries and complications. At one extreme, a mentor visited a PHC that had seven deliveries in an 8-hour period. Another mentor observed four deliveries in two PHCs, including two cases that required referral. Mentors indicated that they did not need to give much support to nurses for normal deliveries and the nurses performed all steps correctly. No labour augmentation took place. Mentors also observed that nurses demonstrated their ability to support mothers in initiating breastfeeding.

Management of maternal and newborn complications. According to mentors, PHC nurses seemed much more comfortable and confident in handling maternal and newborn complications and referrals. Mentors who attended deliveries in the fourth visit noted that even for complications nurses were able to handle the cases and followed referral protocols. One mentor noted that nurses followed the referral protocol (calling the referral facility and filling out the referral form) but needed support in pre-referral patient management.

Observation and assessment of newborn complications was harder for mentors to assess, especially in low-volume facilities. Two mentors were not able to observe newborn resuscitation with a real baby. Another observed and assisted, giving the nurse 65% marks for following correct procedures.

Referral processes. Mentors and PHC teams reported that referral processes were more systematic since the mentoring programme started. According to mentors, most PHCs had posted referral directories and nurses were calling referral facilities in advance. Nurses were also tracking the outcomes of the referrals, either through communication with patients or ASHAs. Mentors also noted that staff nurses were better able to identify cases to be referred. Previously, nurses referred "blindly" without first diagnosing the likely complications or preparing the patient for referral.

Using case sheets

"Case sheets are elaborate and informative and help nurses know what to do on the spot and take decisions. The mentor forces us to fill case sheets. Now we are filling 6 out of every 10 cases. Nurses and the medical officer use complication case sheets for 15-20 referrals per month. Case sheet helps with referrals and saves time because it provides all needed information to send to the referral facility. It is especially important when referring to VIMS because the person you talk to on phone about referral may not be on duty by the time the patient arrives."

—Bellary medical officer

Fourth visit challenges

PHC leadership. Especially in PHCs with inadequate leadership (either no medical officer in charge or managed remotely by a medical officer from another PHC), it proved difficult to encourage a sense of teamwork. It was also hard to convene the full team in PHCs that had high volumes. Mentors estimated that 40% of their PHCs had inadequate teamwork. PHCs that embraced the concept of teamwork from the beginning were more likely to continue this approach.

Root cause analysis. Part of the self-assessment and action planning process was an analysis of root causes intended to help PHC teams solve long-term problems and build a culture focused on quality improvement. However, the approach proved challenging to use in a meaningful way with some PHC teams. One mentor asked PHC teams during the fourth visit why they did n't use root cause analysis and the PHC staff responded, "I forgot." This was different from earlier visits when PHC staff often answered, "I don't know how." By the time of the fourth visit, PHC teams knew what to do but did not always do it.

Mentors used root cause analysis to problem-solve with staff, for example, using "why why why" analysis to address lack of night security. A mentor used this approach to assess why a PHC was not keeping its labour room clean. She noted that the root cause often identified by staff was the poor attitude of the Group-D staff. Another mentor explained that when she asked "why why why" too often, it resulted in staff blaming each other or fighting amongst themselves.

Organized labour room

Infection prevention. Infection prevention continued to be an issue. While staff nurses sometimes had improved instrument sterilization, problems persisted with general hygiene and cleanliness, typically the responsibility of Group-D staff. "In one PHC the MO is fed up with the Group-D staff and told me do whatever you can do to improve things," noted one mentor.

Post-delivery stay. Mentors indicated that the duration of post-delivery stays had not increased much in any of the PHCs over the course of the mentoring intervention. Even when PHCs provided food, mothers were not staying the recommended 48 hours. Women often went home early to observe rituals and cultural practices in their communities. When mentors asked patient swhy they did not stay, patients pointed to the lack of toilets, running water, and night time security at PHCs and not having someone to look after their children at home. Patients also reported not seeing the need to stay at the facility.

Fifth Mentor Visit

Structure of visit

In the fifth visits, mentors continued to work with PHC teams and staff nurses (see table on next page). In one district, the mentor team reviewed fourth visit findings to plan the focus for the fifth visits. Mentors particularly prioritized the need to target slow learners and new staff. They also determined the need to focus on system issues, especially lab tests and planned to highlight how to make practical use of the AMMA approach.

Fifth Mentoring Visit
1. Work with PHC teams to revisit remaining self-assessment tools (D-H) 2. Provide mentoring and demonstrations on the following clinical topics: - Monitoring of labour, delivery and the postpartum period - Antepartum and postpartum haemorrhage - Premature rupture of membranes and prolonged or obstructed labour - Low birth weight - Newborn asphyxia 3. Collect case sheet data and review case sheets with staff nurses

Fifth visit successes

Understanding of PHCs and staff. By the fifth visit, mentors had a keen understanding of their PHCs and individual staff nurses and were able to objectively assess facility and provider strengths and shortcomings. Mentors readily classified PHCs as "good," "average," or "poor" and were able to back up their assessment based on PHC performance relative to guidelines and use of the case sheet. As one mentor explained, "Good PHCs include nurses whose knowledge and skills have improved; they are handling complications and referrals and doing a good job filling case sheets correctly and completely. Average PHCs have nurses who are not confident in filling the complication case sheets and managing complications. Mentors also noted that PHC performance was worse when the medical officer was not supportive or when the PHC team included nurses who were slow learners or had poor attitudes or newly posted nurses who had not been mentored previously. When asked to assess their PHCs, nearly all mentors said they had two to three good PHCs, two average and usually at least one poor PHC that had not demonstrated much improvement. It is noteworthy that mentors were able to maintain this level of objectivity and understand that poor performance did not reflect so much on their mentorship skills as on circumstances beyond their control.

Tailored support for new nurses. In cases where new staff nurses had joined or nurses had returned after leave, some mentors intentionally planned their visits to have more time with these nurses. One mentor went a day early to one PHC to work one-on-one with the new nurse on staff.

Teaching skills. Observation of a mentor visit and reports from mentors themselves indicated that mentors increasingly provided bedside mentoring and tailored their teaching to nurses' specific needs. In previous visits, mentors had often provided demonstrations, but now they ensured that nurses did the demonstrations first and then guided them as needed. In one observation, a mentor had three occasions to work with a nurse to help a patient initiate breastfeeding and persisted in coaching until they were successful. In another case, the mentor helped the nurse to manage the referral process when a baby was not feeding.

Case sheets as primary clinical teaching tool. Mentors indicated that they had to spend considerable time with staff in early visits to help them understand and use the case sheet. They had integrated the case sheet into many of their subsequent mentoring activities, using it to review the case sheet audit with staff, do case reviews, and provide a focus for discussions, especially of complications. "We are using case sheet to teach topics more than just explaining it." Mentors estimated that at least one day of their three-day mentoring visit was devoted to case sheet activities. In one observed delivery, the mentor supported the nurse to go through the case sheet thoroughly. The nurse took the mother's history, carried out the physical exam, filled in the partograph, conducted the delivery and managed the third stage according to all the procedures in the case sheet and filled it in as she went along. It was also apparent that this was easier to do because the mentor was there to assist in small tasks during the delivery; it would have been more difficult for the nurse to fill out the case sheet and conduct the delivery if she was alone asis often the case.

Communication among PHCs. Mentors shared several examples of how medical officers had communicated with each other to resolve problems. In one case, the PHC team had repeatedly failed to get an O-size mask. The mentor recalled that one of her colleague's PHC had managed to procure a mask and contacted her for the information to share with her PHC. The MO at that PHC said," You just give my number to that other MO directly and I will tell him how to get the mask and since I know the supplier well I can be sure it is delivered directly to his PHC." Another mentor reported that one of her PHCs needed an adjustable light, and she told the MO about another PHC that had one. Because the MO knew the other MO, he called him directly to get information on where to get the light.

Contact between mentor visits. The strength of the mentoring relationship was evident in the mentor-staff interactions that took place between visits. Mentors reported receiving a call from one of their PHCs nearly every day. "We have a good relationship with staff so they freely call." They called with questions about how to calculate gestational age, or asked about a particular complication. Mentors noted that nurses were now seeking information and wanted to know more about topics not covered in the case sheet or SBA guidelines. A few mentors indicated they while received fewer calls between the fourth and fifth visits than during the early days of the programme, the questions they received at this juncture were more complex. In addition, nurses often called mentors after they had managed and referred a complication to confirm that they had done so properly.

Complication management. In recounting their fifth visits, mentors shared that PHC staff were now using most complication case sheets and noted this as an improvement since the fourth visits.

Fifth visit challenges

Persistent problems. In the fifth visit, PHC teams used self-assessment tools D-H. Although the assessments identified fewer gaps, some issues remained that were common to many PHCs:

- Providing nourishing food for patients
- Infection prevention (this was more often identified and added to the action plan by the mentor than by the PHC team itself)
- Incomplete referral directory and contact details
- Night security for staff and patients.

Patient-centred care. Nurses' interpersonal communication with patients was slower to change than their clinical performance. In one observation, the nurse did not interact with the patient in the labour room except to ask history questions on the case sheet even as the mother was experiencing contractions. She did not scold or slap the patient but neither did she talk to the patient during delivery, explain the progress of labour, or comfort her.

Staff resistance to mentor support. Mentors noted that even at the fifth visit, nurses welcomed mentor support. "By fifth visits they are happy and still look forward to us coming." There were exceptions, however. One mentor said two PHCs were somewhat resistant to further visits (and not necessarily the busy PHCs). An other shared that nurses were happy to participate if they were on duty, but if she called to say she was coming they wouldn't come if they were not on duty. One mentor reported that staff at one PHC were tired of her visits and saw her as a burden. "They have so much work, they say,' We are tired, please come another time." This particular PHC (rated poor) had high volume, lacked an in-charge MO and lab tech and had a nursing staff that lived so far away that they were less willing to remain to interact with the mentor. Although the mentor went at night to meet them when they had more time, they usually wanted to leave to get back to their families. The medical officer did not provide any leadership to encourage their participation.

Medical officer and staff nurses with mentor

Understaffing and staff turnover. Several mentors had one to two PHCs that were very busy in part because of staffing issues and it was often these PHCs where improvements in clinical care were less obvious. For example, one PHC had only one staff nurse because two others had been asked to resign due to retroactive withdrawal of the authority to hire them on contract at the district level. Mentors also reported that PHC staff came and went and they frequently had to bring new team members up to speed. In one PHC, impressively, a recently returned nurse demonstrated a high level of knowledge and skills because her colleagues who had been present for the earlier mentoring visits updated her, but this did not always happen, especially when nurses were not on duty together.

Static number of deliveries. At the fifth visit, improved quality had not yet translated into improved volume, although there continued to be wide variation in patient volume among PHCs. In the pilot districts, 85% of all 24/7 PHCs had fewer than 20 deliveries a month, while five had 40 or more. Quality of care may have been less in those facilities dealing with high volume.

Compliance with postnatal care guidelines. Mentors and nurses both stated that it was difficult to comply with the guidelines for postnatal care check-ups at 15 minute intervals. This was identified as a challenge early on in the programme and continued to be so nine months later. One mentor saw five postpartum mothers during her fifth visits and observed that nurses were missing many messages in their postnatal counseling. She demonstrated how to do postnatal care and used the case sheet to remember all messages, but staff found it hard to do in high-volume facilities. Nurses also did not always have the case sheet with them when checking on mothers. Mentors estimated that only about half of their PHCs gave postnatal care messages correctly and they expressed some frustration about the inefficacy of reminders in promoting improved practices in this area. As one mentor commented, "Just reminding staff to give messages is not enough."

Staff attitudes. Some nurses resisted receiving support from mentors and had poor attitudes and practices. This was especially true of older government nurses. For example, in one observation the senior nurse did not participate in the mentor meeting with nurses even though she was at the site. The mentor tried to assist her in a delivery, but the senior nurse did labour augmentation and left the mother just after delivery without giving breastfeeding support or other postnatal care. The mentor had made many attempts over multiple visits to work with this nurse, but she was not interested in changing her practices.

Facility locations and upgrades. PHCs that were soon to relocate to new facilities were more reluctant to invest in equipment or focus much on quality improvement, preferring to wait until they shifted facilities. Three PHCs in Bellary were due to become higher-level community health centres with newer and bigger facilities (although not necessarily staff increases). One PHC in Gulbarga was in a badly rundown facility but moving in five months to a new health center. In this case, the MO was willing to spend funds on drugs and movable equipment and supplies to improve the quality of services in the interim.

Linkages to appropriate referral facilities. While complication management and referrals had improved, mentors found that staff were automatically referring patients to the next highest-level facility even if that facility did not have the capability to provide the care required. Many taluka hospitals were not able to provide the advanced care that they were supposed to be able to provide because they lacked specialty staff. One mentor had problems because three of her six

PHCs were closer to referral facilities where patients could safely travel but would not receive their benefit from the government's JSY programme. In another PHC, the closest FRU was in a different district, but that hospital informed the PHC that they did not want their patients. Finally, in some cases PHCs referred directly to the district hospital for Caesarean sections or PPH, but patients resisted and wanted to go to the closer taluka hospital.

Two Mentors Recount A Fifth Mentor Visit

Mentor A described her fifth visit to a PHC that she considered as a "good" performer. She started on day one discussing the previous action plan with the entire PHC team, with the exception of the lab technician, who was on leave. She talked about client and provider rights and spoke about the AMMA approach. She worked with nurses to fill out the self-assessment tools. "By the fifth visit there were far fewer X marks. Staff also noted that supply issues had improved, saying "Earlier we used to discuss with MO about missing supplies but he didn't do anything, but now when we tell him supplies are lacking he gets them."

Mentor A also completed the case sheet audit and discussed gaps with the nurses.

On Day 2, Mentor A covered the fifth visit clinical session over a 3-hour period. She used examples taken from the case sheet and presented case scenarios when covering the topics. She continued the clinical session in the afternoon, but there were frequent interruptions as the nurses had to attend the OPD. All three nurses participated in the second day.

On the third day, Mentor A worked with the one nurse on duty. She looked at the referral register and saw that four cases had been referred, but only two had case sheets. She reviewed the lab room and discussed supplies. She also spent time with a postnatal patient in the ward, visiting the patient by herself at first to ask her what she had been told in terms of postnatal counseling, and then visiting the patient again with the nurse to demonstrate and fill in gaps that the nurse had missed. "I would give the nurse 50% marks for postpartum counseling. She missed some messages about danger signs."

Mentor B described her fifth mentoring visit to a low-volume PHC which she rated as "good." She met with the full PHC team and reviewed the action plan from the previous visit, which was kept at the PHC. The team went through self-assessment tools D-H. She shared, "The first time, staff said 'What a headache,' but second time they have used them they say it is very helpful and 'We can fill them out.' The PHC teams reported improvements and in this round they found nothing left to improve. Next she discussed clinical topics with the nurses and the in-charge doctor. During the review she used the pelvic model and doll to demonstrate prolonged and obstructed labour and showed a video on stages of labour.

On the second day, Mentor B observed a nurse attending a delivery. "I give her 80% marks. She did most things right but forgot to put the baby on the mother after delivery." The nurse filled out the case sheet and partograph. The mentor assisted as needed, including showing her correct attachment for breastfeeding, discussing eye care and demonstrating how to wrap the baby. "The nurse did 70% and I did 30%." She also observed the nurse perform postnatal checks every 30 minutes. The mentor demonstrated how to do an abdominal exam on an ANC patient. She also spoke with Group-D staff and the night Dai (unskilled traditional birth attendant) on waste management.

Sixth Mentor Visit

Structure of visit

The sixth mentor visits took place from June to July 2013 in both districts. In addition to covering the items listed below, mentors focused on encouraging PHC staff to internalize and sustain quality improvement processes on their own.

Sixth Mentoring Visit

1. Work with PHC teams to review and develop action plan
2. Conduct case sheet audits
3. Discuss clinical topics and system-level issues with a focus on:
   - Infection prevention
   - Lab tests
4. Carry out demonstrations and observe return demonstrations of episiotomy suturing

Nurse shows Madilu kit of baby supplies provided by government to BPL women

Sixth visit successes

Regular action planning. During the observations, it was noted that one PHC team had action plans organized in a file and referred to them to report on progress against activities listed. The PHC team indicated that they met every two weeks to review the action plan.

Staff-initiated solutions. In one PHC, staff made their own charts with postnatal care messages that they posted above the observation bed so they would remember messages. They wrote the chart in Kannada so that literate patients could also read and understand it. In their self-assessment process they also identified additional equipment to procure not mentioned in the tools, such as a fan and a refrigerator for the labour room; this is an indicator of the extent to which staff in this facility embraced the quality improvement process.

A Busy Day for a Mentor during aSixthMentor Visit

The day started with a PHC team meeting with all staff (including Group-D staff) to review the PHC's action plan and patient and provider rights. All participants actively engaged in the discussions and responded to the mentor's questions.

The mentor then supported the nurses to do demonstrations of newborn resuscitation and pelvic examination using models in the labour room, which was clean and well organized. The nurses performed all procedures well.

Next the mentor and nurses went to the lab to have the lab technician teach them how to do a haemoglobin test, whichwas something the nurses had asked for previously. The lab technician demonstrated how to do the test. In the preceding year, the nurses in this PHC had seen two severe anaemia cases.

Mentor explains episiotomy procedure to staff nurses

The next activity involved practising suturing after episiotomy on a piece of foam. One nurse demonstrated the suturing technique while another nurse assisted and the mentor provided guidance as needed. The nurses said that about 20%-30% of cases required episiotomy.

The mentor next asked nurses to review a case study that required them to plot information on a partograph, which they did correctly.

Finally the nurses and labour room Group-D staff demonstrated preparation of a chlorine solution, donning mask, apron, and utility gloves to do so and describing steps in the process. Nurses worked as a team in filling the bucket with the required amount of water and the mentor gave instructions to the Group-D staff on how to use the solution to clean the labour room.

The first day's visit ended in the early afternoon upon request of the nurses as they had managed six deliveries in the previous 36 hours without any rest. (This PHC typically has 15-20 deliveries/month). Despite their fatigue, the nurses enthusiastically participated in all demonstrations and conveyed a sincere desire to improve service quality. They were proud of the improvements they had made in their PHC.

Mentor Visits Summary and Conclusions

In its first year of implementation, the mentoring programme rolled out much as expected. Mentors were able to keep to their visit schedules, cover the content planned for each visit and support providers on the job and through group-based problem-solving. Mentors grew into their role, demonstrating increasing levels of technical competence and self-assurance in carrying out their responsibilities. Mentors also built strong relationships with PHC teams. The project learned more about the differences between PHCs and incorporated these learnings into the scale-up, which is described in the next section.

Nurse mentors at a PHC visit in Gulbarga District

Chapter 5 Scaling Up the Mentoring Programme

The project extended the mentoring programme to the other six Sukshema districts starting in October 2012. In July 2013, the intervention expanded further to include all PHCs in the pilot districts. As of July 2013, the mentoring programme covered 284 PHCs (24/7) with a total of 53 mentors. The scale-up of the mentoring programme followed a similar process as in the two pilot districts. This section briefly describes the scale-up process and highlights where modifications were made to the pilot design. The section concludes with a discussion of how the programme has fared in the scale-up districts.

Mentor Recruitment and Training

The project recruited mentors for the six scale-up districts and the expanded coverage in the pilot districts based on the same qualifications as in the pilot districts. The project hired 1-2 more mentors per district than required to accommodate staff turnover. The hiring process was shortened to two days but continued to include group-based activities to help the project team assess the suitability of candidates. To respond to the challenge in the pilot districts of mentors having to travel to distant PHCs, the project was more explicit in the scale-up districts about requiring mentors to live closer to their PHCs and hired only mentors who were already living in those areas or were willing to relocate outside the district capital.

Mentors in the scale-up districts also underwent a five-week induction training in three batches at St John's Medical College with the same trainers who trained the pilot district mentors. The training schedule was as follows:

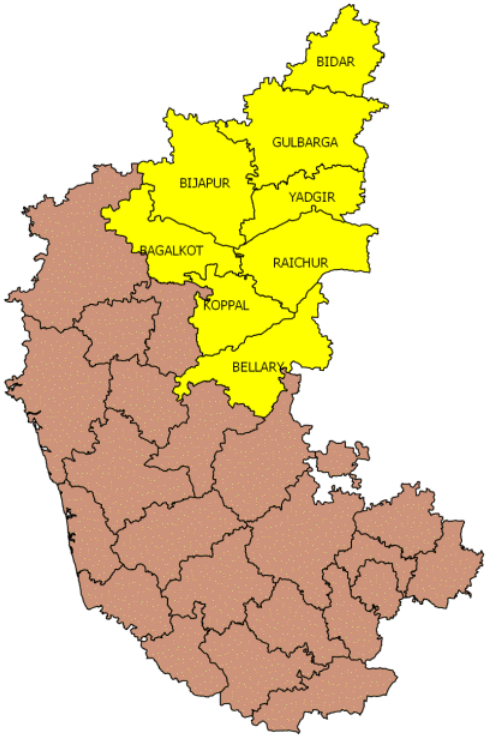
District	Number of Mentors Trained	Dates Trained
Bidar	8	Oct 2012
Yadgir	5	Oct 2012
Bijapur	6	Nov 2012
Raichur	7	Nov 2012
Bagalkot	6	Jan 2013
Koppal	7	Jan 2013
Bellary	7	Sept 2013
Gulbarga	5	Sept 2013

The scale-up district induction training did not include a practical session on visiting PHCs and facilitating the team-building and self-assessment process. Instead, mentors in the first scale-up batch went to Gulbarga and carried out this exercise in PHCs with the Gulbarga mentors. In the other training batches this was not done due to the need to scale up the programme rapidly.

Following the induction training, mentors were immediately posted to clinical settings for further clinical experience. This modification to the training was in response to the pilot district experience, in which mentors expressed the desire for more hands-on clinical practice than they were able to get in a tertiary teaching hospital. Scale-up district mentors were posted to a mission hospital in Mysore and were able to do some procedures and deliveries to enhance their clinical skills. Even with this modification, mentors said that during their 7-day posting they were mostly able to observe rather than conduct deliveries.

Mentor Visit sin Scale-Up Districts

The project made some changes to the programme design based on lessons from the pilot districts. In the scale-up districts, each mentor was expected to cover 7-8 PHCs, with three days set aside for each PHC visit from the start. (In some cases, the first visit was still structured as a two-day visit to introduce the programme.) The other change was that mentors visited the PHCs every two months rather than clumping early visits closer together. Mentors followed the same visit plan and content as for the pilot districts. The table indicates the start date of the programme in each district and the number of PHCsper district.The intervention covered in total 385 PHCs that provide 30% of total deliveries in northern Karnataka. By December 2013, all scale-up PHCs had received at least six visits.



District	Month mentoring intervention started	Number of PHCs
Bagalkot	Feb 2013	39
Bellary	Pilot Aug 2012 Scale-up Aug 2013	55
Bidar	Nov 2012	44
Bijapur	Dec 2013	34
Gulbarga	Pilot Aug 2012 Scale-up Aug 2013	81
Koppal	Feb 2013	42
Raichur	Dec 2012	48
Yadgir	Nov 2012	42

Tailoring visit schedule according to PHC delivery volume

With the project scale-up of mentoring to all PHCs, the wide variation in PHC patient volume became even more apparent. Given the project's goal of achieving measurable impact at a population level, the project team decided to intensify the mentoring support in high-volume PHCs and lessen the frequency and duration of mentor visits to PHCs that consistently reported low delivery loads.

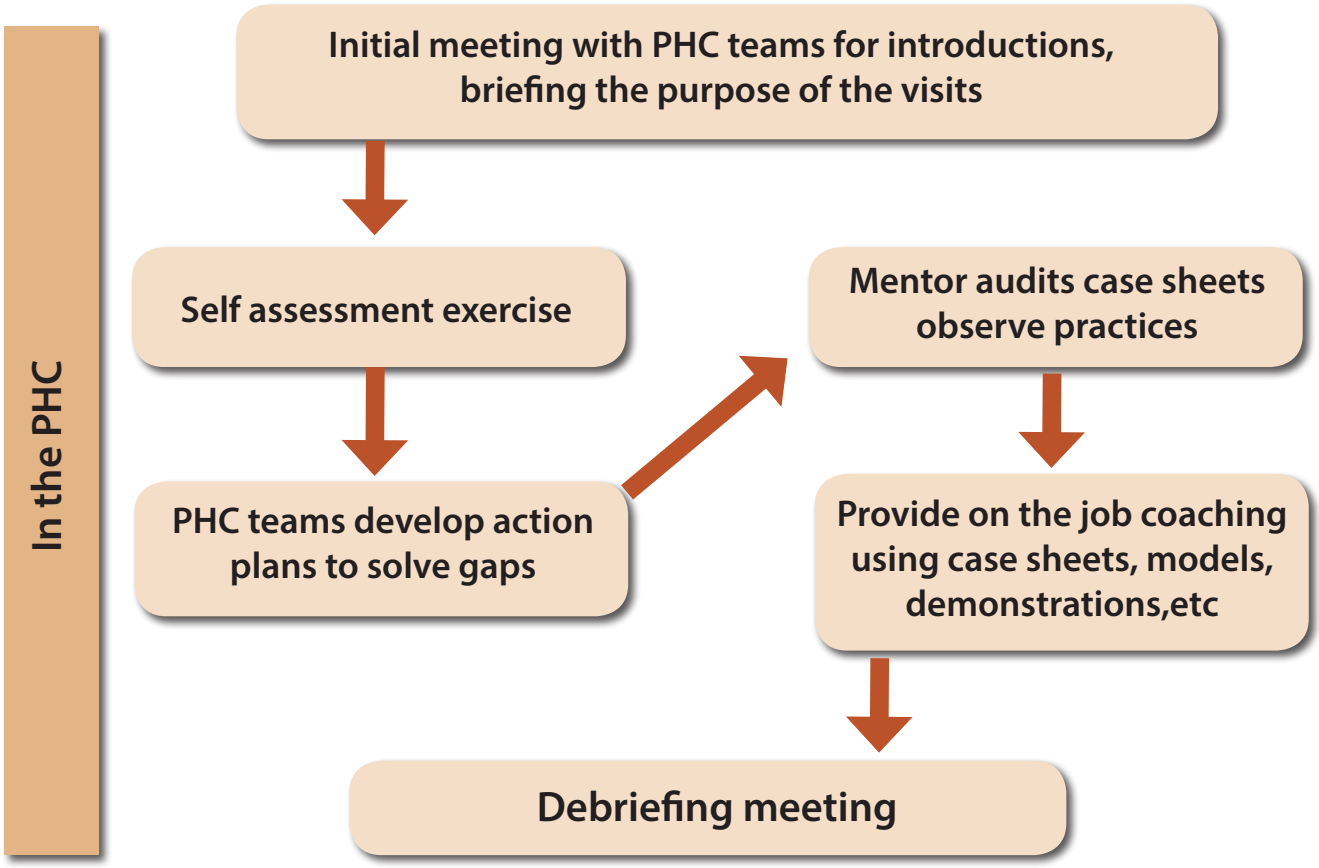
The distribution of PHCs by delivery load is shown below for each district and conveys the wide variation that existed. Data indicated 20 high-volume PHCs accounted for 19% of all PHC deliveries in the eight districts. High-volume PHCs (Category A) had at least 40 deliveries per month. PHCs classified as Category B facilities handled 20 to 39 monthly deliveries and low-volume PHCs (Category C) had 19 or fewer monthly deliveries.

24/7 PHCs: Deliveries per month by district						
District	Category C: 0-19		Category B: 20-39		Category A: > 40	
	PHCs	Deliveries	PHCs	Deliveries	PHCs	Deliveries
Bellary	39	411	12	319	4	209
Gulbarga	71	569	9	221	1	60
Bidar	36	238	8	190	0	0
Yadgir	26	283	11	284	5	312
Raichur	36	389	10	265	2	120
Koppal	32	297	5	121	5	226
Bagalkot	33	350	5	110	1	45
Bijapur	25	264	7	200	2	88
Total	298	2800	67	1710	20	1060
%	77.4	50.3	17.4	30.7	5.2	19.0

Under the revised visit schedule, two experienced mentors together visitedCategory A (high volume) PHCs for three days every month. For category B PHCs, visits continued at three days every two months, but the project specifically assigned more experienced and well performing mentors to those PHCs. Low-volume facilities also receiveda mentor visit every two months, but the duration of the visit could be less at the mentor's discretion. After one year, these low-volume PHCs moved to a once-a-quarter mentor visit. In the scale-up districts,a few PHCs were found to be conducting no deliveries for various reasons (e.g., staff shortages, limited infrastructure). In those PHCs, mentors visited for one day every quarter to determine whether they had resumed conducting deliveries.

The flow chart below illustrates the general structure of a standard mentor visit. Mentors modified the sequence of activities as needed to adjust to the workflow of the PHCs on any given visit.

Flow of a typical mentor's visit



Scale-up districts followed the established process for planning and carrying out PHC visits, which included preparatory work, periodic reviews after each mentor had conducted 1-2 PHCvisits, and a final review once each round of PHC visits was complete. Interviews with mentors in the three scale-up districts visited indicated that visits proceeded as planned, including use of a team approach, completion of self-assessment tools, development of action plans, clinical mentoring demonstrations, and case sheet reviews.

Lessons Learned: Programme Scale-Up

Intentionally creating an enabling environment

The project learned from its experience in the scale-up districts that engendering interest in the programme requires more orientation and direct engagement with district leaders. It is important to put effort into introducing the mentoring programme through official channels, from the district health officer (DHO) level on down to the PHC level, which will create a more conducive environment for mentors to initiate the programme and also builds support for using the case sheet.

In the pilot districts, medical officers and nurses were aware of the mentoring programme because they had participated in a refresher training (3 days for nurses, 1 day for MOs) in which

the mentoring programme and the case sheet were introduced. This refresher training was part of the evaluation design for the pilot districts and was not, therefore, replicated in the scale-up districts. The Sukshema team had also made frequent visits to the pilot districts before and during the initial rollout of the mentoring programme. As a result, district leadership and PHCs were likely more aware of the project from the start.

In the scale-up districts, the DPS and the central team had briefed district program me managers on the mentoring programme and they in turn were expected to brief the MOs in their districts. The DPS also had brief phone calls with each MO to announce the mentor visits, but these short conversations may not have been sufficient to effectively communicate the aims of the project or the project's collaboration with the government in the mentoring effort. During the Sukshema project scale-up, there was also major turnover in the DPS positions,and the new district programme specialists may not have been as well known to district leaders.

As a result, mentors in the scale-up districts seemed to encounter more difficulties inestablishing rapport and credibility than in the pilot districts. In two scale-up districts, mentors reported the difficulty of initially establishing rapport with PHC teams. In Bidar District, several mentors noted that they faced skepticism from PHC staff because of the project's status as a nongovernmental organization (NGO) project. Nearly all mentors stated that "In the first visit nobody accepted us. PHC staff reportedly were suspicious that mentors were coming from an NGO and feared they were there to inspect their performance and report back to the district. PHC staff also commented that NGOs were not there for the long term. "The whole first visit was a struggle to build rapport,"a mentor commented. Another mentor said that "Nurses weren't giving time and before they used to try to escape and give excuses when we wanted to meet with them." Several mentors explained that they also had to spend time explaining the Sukshema project and its objectives. One mentor noted, "Though I told them, not all were clear about the project and did not take it seriously." They had to explain the project again in subsequent visits.

Mentor conducting PHC team meeting

In Koppal District, most mentors said at least some of their PHCs were not welcoming. I met with the MO and he told me, Why you have come?" The staff didn't listen or cooperate. They said,' We have work to do, we can't come for your meeting.'They said,' Why all these tools you have brought? Why this case sheet it is so long?" Another mentor stated that her PHCs made her wait for more than an hour before they would see her and also told her, "Don't waste my time." This response was by no means universal, however and some mentors indicated that other PHC staff were more willing to try the mentoring process. Some staff seemed to appreciate the mentor because it was the first time someone was showing interest in their work.

Mentors in Raichur District did not raise as many concerns about rapport building. Several mentors said of their first visit there that they were initially anxious and scared but generally found the PHC staff to be welcoming and they were able to quickly establish good rapport in most cases. They attributed this to the advance preparation with the DHO. The district monitoring and evaluation (M&E) specialist in Raichur (who had been with the project since its inception) arranged a meeting of mentors and the DHO before the firstmentor visit. The DHO then prepared a letter for each Taluka Health Officer (THO), which mentors delivered in a meeting. THOs spoke to all MOs before the mentors' visits. The M&E specialist also called each MO and informed them that mentors would be coming. Additionally, after the second round of visits, all mentors also attended the monthly MO meeting to explain the mentoring programme and case sheet, which built support among MOs to encourage their staff to cooperate with the mentors.

Gaining case sheet acceptance

Since medical officers and nurses had not been previously introduced to the case sheet in the scale-up districts, mentors had to explain the tool and win PHC staff over to its value. Mentors introduced the case sheet in the first visit (often on day 2). One mentor stated, "I explained that this is a good way to document things" and outlined other benefits and tried to convince them of the importance of the case sheet. As in the pilot districts, PHC staff initially said the sheet was long and often perceived it as a reporting requirement rather than a job aid. In the second visit, mentors observed that nurses were filling out the case sheet but seeing perceiving it more as a documentation process. "They were simply filling the case sheet rather than using the case sheet," explained one mentor. By the third visit, nurses were more convinced of its value and were using case sheets as they saw patients. Nurses and medical officers "are saying it is useful." Mentors reported that some nurses saw the complications case sheet as a duplication of effort since they were also filling out a referral register.

Mentor conducting case sheet audit with nurses in scale-upPHC

Supporting high-volume PHCsto advance quality improvement

The high-volume PHC strategy succeeded in providing more support to busy PHCs. Having two mentors visit a PHC at the same time allowed them to divide up the responsibilities and they were better able to reach out to busy PHC staff. Mentors reported observing improvements in staff performance after the high-volume PHC strategy was implemented. The more frequent visits also were helpful in encouraging staff to use the case sheets and complication case sheets more often. Observations confirmed that mentors were differentiating their support, with one mentor working closely with the nurse on duty while the second mentor took teaching sessions with the other off-duty nurses. This division of labor also allowed for more one-on-one teaching. For example, in one session each mentor sat separately with a staff nurse to review the case sheets each nurse had handled.

Two mentors working one-on-one with nurses during visit to high- volume PHC

PHC staff valued the extra attention they received from the mentors. Interviews with nurses and medical officers in two of three high-volume facilities visited found that staff were happy to have more frequent mentor support, and having two mentors at a time allowed staff nurses to more fully participate. One nurse stated, "Earlier we didn't give importance to the mentor as we were very busy and it was hard to give attention. Now one mentor can help with OPD and labour and the other mentor can teach so it works much better." The other PHC had only two staff nurses overwhelmed by a delivery load of 70 per month, so the additional interactions with the mentors, while helpful, were also considered burdensome. One nurse who had just finished a 12-hour night shift and delivered three babies was unwilling to join the mentors for the second day of the mentoring visit. These nurses were working in an under-resourced PHC with little to no support from the MO, resulting in limited motivation to improve their practices.

Consistent pattern of PHC quality improvement

As in the pilot districts, mentors and PHC staff in the scale-up districts pointed to improvements in the labour room and drug supplies as some of the first signs of quality improvement. Many of these improvements were instituted by the third or fourth visit. Most notably, the organization of

labour rooms had improved, with less congestion and greater cleanliness. Rusty delivery sets had been replaced with new instruments and radiant warmers had been replaced or repaired. PHCs had oxygen and generators available.

In both the scale-up and pilot districts, similar practices were resistant to change and mentors identified comparable factors in the work environment that compromised the provision of patient-centred quality care in both types of districts. Mentors noted that infection prevention practices remained deficient even after multiple visits. Postnatal care was also not practiced to standards. Other challenges influencing the provision of high-quality care related to patient attitudes and behaviours, including delays in coming to the health facility (i.e., waiting until labour is in advanced stages), patient resistance to skin-to-skin contact immediately following birth and an unwillingness to remain in the facility for 48 hours.

Missed opportunity for bettermanagement of complications

Site visits in the scale-up districts in December 2013 (after all PHCs had received at least six mentor visits) found that many nurses and some mentors had a poor understanding of certain complications. This could have been remedied through greater utilization of the complication case sheets. In particular, nurses and some mentors had trouble distinguishing between prolonged labour, false labour and non-progress of labour. In a review of one PROM case, a woman was referred soon after she arrived whereas according to guidelines she could have been observed for up to 12 hours in the PHC and been delivered there; this was a potentially unnecessary referral. Nurses in one PHC also demonstrated limited knowledge of how to manage PIH, preeclampsia, and eclampsia. In one observation, a mentor discussed a case sheet and found that a nurse had misdiagnosed preeclampsia as severe PIH because she had not done a proteinuria test. The mentor clarified the correct procedures for diagnosis and management of these conditions.

Mentors commented that nurses were reluctant to use complication case sheets if they didn't understand them. High delivery load PHCs did not use the complication case sheets despite continual reinforcement by the mentors. Some PHCs also had their own one-page referral sheet, which had much the same information as the Sukshema case sheet (but did not include pre-referral management) and nurses tended to use this form instead. Finally, if a woman presented with

Radiant warmer and case sheets on display in labour room

multiple complications, nurses did not know which complication case sheet to fill out and/or did not want to fill out multiple complication case sheets.

Inadequate referral management and recording practices

As evidenced by the variable number of complication case sheets filled out, the tracking of referrals was uneven across PHCs. In one PHC, the mentor discovered in her conversations with the nurses that seven referrals had taken place but there were no completed complication case sheets. Without the case sheet data, it was difficult to discern whether these referrals were managed properly. Although the aim of the case sheets and the continued emphasis on referral management and follow-up was to reduce staff automatically referring patients without any assessment, also known as "gate" referrals, improvement in this area remained a work in progress even after numerous mentor visits. Mentors offered several possible reasons why nurses might refer normal deliveries out of the PHC, including referring patients who asked a lot of questions (thereby threatening the nurses' standing), not wanting to be disturbed at night and laziness. Some nurses are lazy, mentors explained. Patients coming in without any of the lab investigations usually done during ANC might also be referred rather than the nurses doing the tests them selves. Mentors in Bijapur pointed out that sometimes ambulance drivers took referred patients to the next nearest PHC rather than to the FRU. In other instances, patients objected to being referred. All of these examples point to the complexities of effectively managing referrals and indicate that clinical and community practices both need to change.

Critical role of medical officer support for evidence-based practices

Observations and staff interactions in some PHCs found that MOs were not always on board with the latest SBA guidelines. Mentors pointed out that some MOs continued to encourage labour augmentation and/or were unwilling to discourage nurses from practicing it. Similarly, some MOs objected to the use of vitamin K and would not allow nurses to administer it. Mentors also observed MO concerns about the use of magnesium sulphate. Mentors further explained that AYUSH doctors did not want to give injections and asked mentors to do so. All of these instances underscore the need to orient MOs on the latest guidelines and convince them of the need to follow them. The one-day MO refresher training that was part of the intervention in the pilot districts may be a required element of the intervention.

Scale-Up Summary and Conclusions

The scale-up experiencede monstrated that the mentoring intervention can be replicated and applied in other districts in a fairly short time. Systematically using the approaches and tools developed to implement the intervention resulted in a smooth and efficient implementation process. In just a five-month period, the mentoring programme was extended to all eight project districts. Overall, mentors in these districts observed levels of staff engagement and improvement in their PHCs similar to those observed in the pilot districts.

Chapter 6 Managing the Mentoring Programme

The Sukshema project developed a management structure and management processes to oversee implementation of the mentoring intervention, described in this section.

Management Structure

A core technical team based in Bangalore provided overall guidance and support. The team consisted of the technical lead, QI specialist and clinical specialist. These individuals routinely visited the project districts, advised on management processes and anticipated and resolved issues as they arose. Project consultants also periodically conducted site visits and offered advice.

At the district level, a district programme specialist was responsible for the mentoring intervention in each district. These individuals, who had a master's in public health degree with ayurvedic medicine backgrounds, had some understanding of clinical issues and working with clinicians.

The district programmespecialistswere expected to:

- Screen and recruit mentors
- Establish the master visit schedule
- Support mentors in carrying out their duties
- Observe mentor performance during mentor visits
- Resolve problems
- Hold district-level mentor review meetings
- Review and summarise mentor trip reports
- Coordinate field visits for staff, trainers, consultants and other visitors
- Interface with district officials and report to Sukshema leadership about the mentoring intervention

The DPS also coordinated with other district-based project staff, including the M&E officer and the district community specialist (DCS). These positions all sat within the government district health offices.

Management Tools

The Sukshema team developed a set of tools to assist mentors in planning their mentoring visits and assist district programme specialists in carrying out their supervisory and reporting responsibilities.

Tools	Description	Purpose
Nurse Mentor Tools		
Checklist for nurse mentor to guide her in managing the mentor visits	List of steps to follow to prepare for and implement nurse mentor visits	Provides guidance so mentors don't forget any important steps
Mentoring trip report	Template to record individuals met at each mentoring visit, activities undertaken and observations	Enables nurse mentor to record each visit to use as reference in planning future visits
PHC summary profile	Summary sheet for mentor to capture basic data on PHC, including service statistics and staffing details; portions to be updated monthly	Serves as a quick reference for mentors on a particular PHC, kept in her PHC file; allows mentor to record changes observed in utilization indicators over time
Clinical mentoring guide for nurse mentors	Guidelines on how to carry out clinical mentoring, including teaching techniques to use and session plan for first six visits, with bulleted list of content to cover in each session	Intended to help mentors structure the clinical mentoring component of their visit to ensure it covers all critical topics and that all mentors are covering similar topics in the same visits
Onsite mentoring plan for PHC staff for 2012-2013	Checklist to keep track of which staff at each PHC have been mentored on specific MNCH topics	Helps mentors keep track of which staff they have mentored and on which topics; can be used to identify future mentoring needs at the individual provider level
Case sheet audit checklist	Reporting form to collect data from audit of 10 randomly collected case sheets and all complication case sheets,to be completed at each mentoring visit	Helps mentor: assess whether improvements are reported based on mentoring provided, identify knowledge and skill gaps to cover in mentoring sessions, and document trends in managing complications
Chart on essential MNCH drugs at 24/7PHC	List of first and second-line drugs and dosages to be used for various MNCH conditions as suggested by the current guidelines	Ready guide for mentors to refer to when advising providers

District Project Specialist Tools		
Planning implementation and monitoring intervention matrix	List of activities DPS should do to support mentor at each stage of planning, implementing and monitoring mentor visits, with alist of all tools to be used at each stage for mentors and DPS	Helps DPS and mentors understand how their activities support each other
Monthly summary report of mentoring visits	Matrix that summarizes findings from all visits for each mentor, completed monthly after review of mentor trip reports	Standard format to summarize data from all mentor trip reports
Field visit checklist	Supervisory checklist used when observing the activities of the nurse mentor	Allows central team to more easily monitor district-level support to the mentors during field visits
Meeting notes template	A format that captures the proceedings of the planning/review meetings	Helps the central team to monitor and guide the district-level meetings

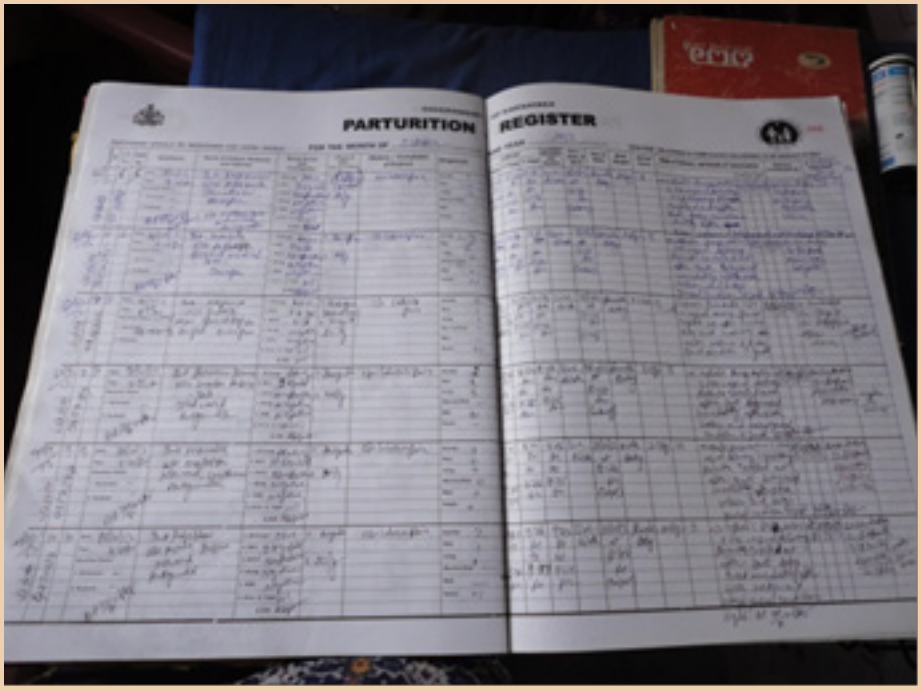
Monitoring Processes

To support project management with data for decision-making, the project established a monitoring information system (MIS). The MIS was used to track key indicators to measure how the PHCs were adapting tools and improving performance. The key sources of monitoring data derived from case sheet summaries that the mentors prepared during each of their visits. Mentors submitted the completed case sheet summary to the district project data entry officer after each visitand the officer then entered it into the project database. The Sukshema M&E team prepared monthly reports on key indicators for all districts. Mentors received individualized reports that presented indicator data for all their PHCs over time. The project team also expanded monitoring information to include collecting and analyzing data from case sheet audits and conducting periodic clinical observations and facility audits. Monitoring data are presented in Section 9.

Sources of Project Monitoring Data

Mentors collected data from PHCs at each visit, drawing information from the parturition register, referral register and case sheets. First, they counted the number of case sheets that had been filled out since the last visit. They also counted the number of pregnant women who arrived at the PHC in labour from the parturition register over this same period. If a patient was listed in the parturition register but there was no corresponding case sheet, the mentor took the data directly from the register. Mentors recorded the maternal and newborn outcomes from the case sheets and reconciled this with data included in the parturition and referral registers, adding in any data from either source to develop as complete a record as possible of the labour and delivery service statistics for the PHC. They also reviewed the referral registry to identify pregnant women or newborns who may have been referred

but for whom there was no case sheet. Finally, they asked staff nurses about any deaths or still births that may have occurred, because these were not always reported in the official registers. They recorded information on the case sheet summary.



In this manner, mentors collected information on the following:

- Number of pregnant women at more than 20 weeks gestation who arrive at the PHC and whether or not they were in labour
- Number of women sent home healthy (after delivery)
- Number of mothers or newborns referred (including indication of the complication for which they were referred, if applicable)
- Number of maternal or newborn deaths and number of still births.

It typically took 1-2 hours for mentors to review the registers and case sheets and fill out the case sheet summary.

Review Meetings

The project established a routine meeting structure to manage the intervention and share monitoring and other programmatic information. The DPS coordinated these meetings with the support of the M&E officers.

District team meetings

After seeing the need for coordination and information sharing, the project established a standard set of review meetings in each district. Before the start of each new round of mentor visits, the DPS and mentors met as a group to review the objectives of the specific mentor visit, practised

role plays and demonstration sessions and reviewed findings from previous visits to establish priorities and problem-solve. Thereafter, the mentors gathered for a management review meeting one day per week. During this meeting they dealt with logistics, travel arrangements, reporting, and other management tasks. After all mentorshad completed a full round of mentor visits (e.g. all mentors completed fourth mentor visit to all PHCs), the team got together again to review their experiences and discuss challenges and how to resolve them. The technical team from Sukshema participated in these larger review meetings, eitherin person or via Skype, in addition to the DPS, M&E specialist and mentors. This meeting provided an opportunity to identify issues needing to be taken up at the district or higher level. In districts where Sukshema's community intervention had also been scaled up, project staff managing this intervention component also took part in the larger review meeting.

Internal review meetings

In addition to the district team meetings, the Sukshema project periodically held internal review meetings that included senior project leadership and project technical advisors. The project held its first internal review meeting with mentors and DPSs in September 2012 in Hospet after most first visits to PHCs were over. The Sukshema leadership and technical staff participated in this review. Each DPS made a presentation of activities to date and each mentor made a presentation on their experience and observations thus far. The technical team introduced some of the management tools described above during this session.

A second internal review meeting took place in November 2012 in Gangavati, when most of the second mentor visits were over. The Sukshema project participants conducted site visits with mentors the day before the review meeting. In the review meeting, the team discussed input from the district review meetings and how to provide opportunities for more clinical practice for the mentors.

In February 2013, leadership organized a five-day technical review involving international and local technical advisors from the Sukshema consortium. Participants were introduced to the interventions and the monitoring and evaluation framework on the first day and then traveled in smaller groups to four pilot districts (Bellary and Gulbarga for mentoring and Bagalkot and Koppal for community interventions) to conduct PHC and community site visits. The full group came together in Hospet for a final day to share observations and recommendations.

District review meetings

The project team at the district level was expected to interact with the district health office on a regular basis. In October 2012 (three months after the start of the intervention)the DPS and mentors in each pilot district held a district review meeting with the DHO, district reproductive health officer (RCHO), district programme officer, district programme management officer (DPMO), and others to provide an update on the status of the mentoring intervention in their districts. Each meeting lasted two to three hours during which the DPS provided highlights of the mentoring programme and shared recent data.

Subsequently, the district teams were expected to meet with the DHO about once a quarter to share findings from the mentoring programme, raise issues that might require a district-level response(such as procurement or staffing) and solicit input and recommendations from the DHO. Instituting periodic meetings with the DHO did not happen as smoothly in the scale-up districts

because of DPS staff turnover. In all districts, DPS and M&E specialists also tried to attend the monthly district medical officer meetings, although they rarely presented at this forum.

Lessons Learned: Managing the Mentoring Programme

Management structure

Any form of scale-up of the intervention within the government system will require a level of supervisory staff and a point person to coordinate and oversee the mentoring programme. The project learned from the DPS role about needed supervisory structures. The role of the DPS as an objective yet supportive supervisor for mentors and a link with the DHO was vital for the intervention Success at scale.

DPS turnover

The project experienced considerable staff turnover in the DPS position in all districts. Since the project started in January 2010, most districts have had three different DPSs. This turnover creates challenges in developing leadership and management capacity at the district level and establishing consistent relationships with district officials. There does not appear to be an underlying reason for the high level of turnover; rather, a variety of factors contributed, including DPS leaving to join government or for personal reasons.

Management capacity-building

Because of the unanticipated DPS turnover, the project had to develop a DPS management training session to ensure that they have the requisite quality improvement and clinical knowledge and management skills to carry out their responsibilities. New DPS participated ina 3-day induction training and were then placed in the field to shadow another DPS for 1-2 weeks before taking on their responsibilities.

Mentor retention

Turnover in the mentor position occurred regularly. The job can be especially demanding for unmarried women (who have to contend with family objections) and for married women with young children. Because the mentors are young, some leave the position upon marriage or childbirth. On the other hand, despite the demands of the job (including working 12-14-hour days because of the travel required), project staff indicated that few mentors had resigned for work reasons, other than a few who were not performing well. Never the less, by December 2013, only three of the original 11 nurse mentors remained with the project.

Using data to the fullest potential

The project had to adjust the types of data collected to hone in on key data for programme management and improvement. Initially, for example, the project intended to input all data from case sheets and self-assessment tools, but this was burdensome and the data were not useful. The project then focused on selected key indicators and adjusted the case sheet audit form to capture discrete information. With these revisions, mentors delved deeper into specific information fields within the case sheet rather than just reviewing them for completeness. This was intended to help the project systematically and quantitatively track shortcomings and improvements in managing complications and referrals. Similarly, the project made greater use of utilization data to target resources to high-volume PHCs.

Chapter 7

Voices of PHC and District Staff

Interviews were conducted with four PHC teams and one DHO in May 2013 in the pilotdistricts and with PHC teams and another DHO in scale-up districts in October 2013 and April 2014 to assess their understanding of the mentoring programme and their own assessments of improvements since the programme began.

Purpose of Mentoring Programme

PHC teams conveyed a correct understanding of the purpose of the mentoring programme and appreciated its focus on improving the quality of maternal and newborn health. As a DHO noted," Apart from SBA training, nurses have no exposure to new information and the mentors provide that. MOs are not able to provide this level of support because they look after many other programmes." He noted that nurses in PHCs rarely have someone available who can monitor their skills and support them and felt that the mentoring programmewas filling this important gap.

Medical officers described the purpose of the mentoring programmeas improving quality and knowledge and helping nurses. They also acknowledged the role mentors played in supporting the PHC teams to ensure they have all the drugs, equipment and supplies required. As one MO stated, "There are things we can't concentrate on so mentors help us get these things done." He went on to describe how they were short of umbilical clamps and vitamin K, "So mentor told us to get them."

Value of Mentoring Programme

In the words of one medical officer,"Mentoring has been really good for us." Another MO stated,"I am very happy with mentoring. We have made a lot of changes since mentors have come and sisters' knowledge has increased and they have learned more skills." PHC teams praised the mentoring programme for increasing the knowledge and skills of nurses. One MO said," I have noticed theoretical and practical improvements in nurses." An MO in another facility summed it up this way: "Before we got training but implementation was lacking. This is a

good thing because it is skilled oriented and helps with implementation. It is different from other training programmes."

Nurses in particular pointed out how mentors were helping them be more systematic and thorough in providing care. As one nurse stated, "We didn't know much before and now the mentor tells us how to do each thing and explains why we do these things. The mentor reminds us about things we forget." A recurring message from nurses was that "Mentoring has helped in better understanding in a stepwise manner how to conduct deliveries. Having someone explain these steps is very beneficial." A nurse in another PHC similarly stated:

> *"We were doing our work before but now we are doing it in step by step process, for example, how to properly refer a patient, how to do history taking. Before we did not know about partograph. We also learned how to maintain drugs so we don't run out of stock and how to keep complication kits."*

Another nurse in a high-volume PHC explained it this way: "Before we were a little bit careless. The labour room was not arranged properly and we had not refreshed our knowledge. Now we have arranged the labour room and know what drugs to keep there." Staff in one PHC, while appreciating the mentor support, remarked that it was hard to always find time for the mentor, especially when only one nurse was on duty or the OPD was busy. Nonetheless, nurses and other PHC staff praised the professionalism and interpersonal skills of the mentors. "Mentors are very helpful and relaxed. Even if we are rude or stressed because we are busy they don't react and are always at ease with us which helps ease the tension. "An MO stated, "Mentors are very good and cooperative."

Some PHCs fully embraced the approaches the mentors used to strengthen systems, and several nurses appreciated the case sheet. One nurse stated, "The case sheet is like an Ob-Gyn for us. We don't need to consult the MO if the case sheet is there since it guides on every step and even says the dosage of drugs to use." The case sheet helped with diagnosis, referral and initial management. Describing its benefits, a nurse stated: The NRHM case sheet doesn't go into much depth. The complication case sheets are helpful.

Nurses and medical officers nevertheless pointed out the challenges in filling out the case sheet, especially when staff were busy. In a high-volume PHC, nurses explained that it was easiest to fill out the case sheet on the morning shift when two nurses were on duty. One MO recommended shortening the case sheet since "the case sheet is helpful but it is tedious work for staff."

One nurse explained initial hesitation to manage complications but noted that the case sheet made it possible to manage cases. She gave an example of a PPH case recently managed and referred. One nurse commented, "Earlier we forgot to ask about presenting complaints but we do so more easily now with the case sheet." Another nurse shared how she received a call from an Ob-Gyn at a referral hospital praising her for administering magnesium sulphate before referring the patient. Still another nurse stated, "Now we are more confident to manage complications

and do referrals. Before, we had knowledge but not confidence." She explained that they would refer without any initial management. "Now we manage and inform the referral facility and do follow-up."

PHC teams also appreciated the mentoring programme for contributing to facility-level improvements. They commented on how the mentoring programme had helped them with managing stocks and coordinating with each other to ensure needed drugs and supplies. One medical office noted, "Mentors discuss with sisters about case sheets and tells us about missing drugs and supplies." A nurse noted, "Mentoring is very helpful because whatever doubts we have mentors can clear." One nurse appreciated the team-based approach remarking, "We are like a family."

PHC staff commented on how the self-assessment tools had been helpful in alerting them to gaps, while the action planning process helped them focus on solutions and be accountable for solving problems. One nurse stated, "Many things we have learned from mentoring we can now do ourselves like using self-assessment tools and action plans and having group meetings." One nurse stated, "The mentoring programme has contributed to improved knowledge and better team work." This was not universal, however, and nurses in one high-volume facility complained that their medical officer was not interested in improving quality and would not attend group meetings or address drug and supply shortages or other issues identified. She noted, "Nobody bothers about us. We ask pharmacist and MO for supplies and nothing happens. They don't agree to sit together to solve problems."

When probed about mentor's role in strengthening systems, the DHO shared that mentors could help with infection prevention and waste disposal issues and "should give regular feedback to improve bad practices."

Nearly all PHC teams interviewed indicated that, since they had focused on identifying problems, they were able to solve most of the problems themselves. A medical officer stated, "Most problems that are identified we can address ourselves because I have autonomy to use untied funds." Several medical officers pointed to improvements they had made with these funds, such as posters printed and displayed on labour room walls and signage that showed contact information for referral facilities, in addition to the purchase of autoclaves, instruments, and other equipment.

Finally, PHC leaders appreciated the ability to learn from the mentors and from mentors' experience with other PHCs. One medical officer explained, "I feel proud of my PHC if the mentor shares information with others and I learn ideas from other PHCs."

Improvements Attributable to Mentoring Programme

PHC teams described many improvements in their operations and their quality of care since the start of the mentoring programme.

Improved maternal care

PHC teams said they were doing better diagnosis for mothers and newborns. One medical officer said that nurses were now well prepared to do deliveries on their own where earlier he would support them as needed. Nurses and medical officers indicated that they have stopped labour augmentation.

Improved newborn care

Nurses indicated they were paying more attention to newborn care under the mentors' tutelage. "We now do immediate breastfeeding, (which we didn't do before mentoring), give information, talk more about immunization, give Vit. K. Nurses also stated that theynow knew how to determine if a baby is preterm and how to use the referral case sheet. A medical officer noted that newborn resuscitation had improved.

Drugs and supplies

PHC teams said they were more aware of what drugs to stock and were more systematic in ensuring drugs and supplies were always available. One nurse noted, "Drug supply is good now and we know what drugs to have in labour room and how to administer them." Another PHC team commented on the better coordination with pharmacists for drugs. PHC teams also noted improvements in the availability of lab tests in the labour room.

Better referral systems

As one nurse stated, "How we do referrals has improved. We now assess cases for referral and call the ambulance and fill the referral case sheet."

Improved labour rooms

In several of the PHCs visited, staff took pride in pointing out improvements they had made especially in the labour room. The labour rooms were well organized and supplies were readily available and labeled. Staff also said they had improved infection control.

Support for Mentoring Programme

Stakeholders were asked if they thought the mentoring programme is something that should be continued or if they favored more of a time-bound design in which the PHC would no longer need the support of a mentor. All those interviewed thoughtthe programmewas good and should continue. One medical officer explained, "Monitoring is required so we don't forget to do things and mentoring helps with this."

One nurse explained the value of the mentoring programme over refresher trainings:" In refresher training you get lots of books and one-time training, then it finishes while mentoring is a continuous process and provides for ongoing discussion." The nurses felt the mentoring programme should continue "because mentors come with new information and they provide access to experts." An MO noted, "There is so much workload here that things sometimes fall behind so it is good to have the mentors to remind us and to keep coming often."

Chapter 8 Coordination with Community Intervention

The Sukshema project's community intervention is designed to work on community-level issues through building the capacity of JHAs, ASHAs, and Angan wadi workers (AWWs) to improve birth preparedness and maternal and newborn practices at the community level. A separate process document is available describing this intervention and a brief overview is provided in the text box below.

Over view of Community Intervention

The community intervention focuses on improving the management and delivery of outreach services, strengthening demand-side management and fostering mutual accountability to promote healthy maternal and newborn care practices. A DCS oversees a team of community coordinators (CCs) who are placed at the taluka level. The CCs provide support to district resource persons (RPs) who are identified from the community to act as leaders and trainers for community health workers. (Note: In the pilot phase of the community intervention in Bagalkot and Koppal, RPs were project staff, but this was modified during scale-up to enlist community members as RPs to increase sustainability and build local capacity.)The project trains the RPs, who in turn train ASHAs, AWWs, and JHAs. The project has provided these frontline health workers with a variety of tools to improve their effectiveness in reaching out to pregnant and recently delivered women and newborns as well as community leaders. These tools include an ASHA diary that features counseling messages and a community demand list for enumerating and tracking pregnant women, a home-based maternal and newborn care tool to support family-focused counseling and sub-centre monitoring tools that community members use to assess the status of maternal and newborn services in their communities. CCs and RPs attend monthly meetings known as Arogya Mantapa that are held at the village level. Additionally, CCs attend Arogya Raksha Samithi (ARS)meetings and interact with the THO about the programme and any issues thatarise. As of April 2014, RPs were being trained in all project districtsto reach over 22,000 frontline health workers within the eight project districts.

The community intervention began in Koppal and Bagalkot districts in August 2012 and was modified and introduced in the remaining districts in January 2014. In Koppal and Bagalkot districts, the project introduced mentoring in February 2013, meaning that mentors and community staff in those districts had a longer history of both components being in place. As of April 2014, the project was rolling out the community intervention component in the six scale-up districts. Once initiation of the community intervention, the district teams began to learn about each other's interventions and explore opportunities for coordination.

To assess the level of coordination between the mentoring and community interventions, mentors, CCs and RPs in Koppal District were interviewed in October 2013. Project staff collected qualitative information on district-level coordination again in April 2014 in Gulbarga and Yadgir districts where the restructured community intervention was still being scaled up. This included focus group discussions with mentors and community teams in one district and observation of a district-level coordination meeting in another.

Early Stages of Coordination

As of October 2013 the level of coordination between the two different project interventions was still in the early stages in Koppal and other districts. Mentors were asked to describe the community intervention. Collectively, they were able to name the key components, but no single mentor was able to readily describe it. Features they mentioned included the Arogya Mantapa meetings, the ASHA diaries, the RPs who work with ASHAs and JHAs and key chain counseling cards. Two mentors had seen ASHAs with their diaries.

Mentors met the community team in February 2013 when they were first hired and again in August 2013. It required extensive probing to get them to recall this meeting, but they described that they shared information about what each group was doing and discussed how they could support each other. One example given was getting CCs and RPs to help with access to ARS meeting funds.

Mentors reported that they engaged at the community level through ASHAs as opportunities arose. All mentors had attended ASHA monthly meetings if they happened to be taking place during their mentor visit. One mentor had attended five ASHA monthly meetings while others had attended 2-3. Mentors participated in the meetings and discussed with ASHAs the importance of follow-up as indicated in the case sheets, treatment of anaemia, baby wrapping and birth preparedness, including encouraging mothers to come with clean cloths and encouraging ASHAs to review the expected date of delivery (EDD) and visit women close to the EDD.

Mentors initially said they only interacted with RPs or CCs during ASHA monthly meetings. Some mentors checked in with the RP when they were going to a PHC in their area for any updates.

Mentors had also met with individual RPs to help resolve issues at PHCs. One RP contacted a mentor to set up a meeting with the MO of a PHC to discuss the high percent of home births. The RP reported that after having worked with the community, the PHC had gone from five to 10 deliveries per month. The RP also advocated with the MO to release funds for drugs.

A mentor met with an RP about home births with ASHAs and the RP taught ASHAs how to calculate the EDD so they could reach out to pregnant women on time. Still another mentor related how she and the RP met with the MO to discuss supplies; slowly, the MO came around to get needed supplies. Another mentor shared an example of a PHC that had no electricity. She raised the issue with the community team, who then discussed it with the MO and staff nurse and got electricity working again.

Mentors and CCs discuss PHC challenges

District Coordination Evolution

By April 2014, the project leadership was more intentional about promoting coordination and introduced a meeting platform call the district coordination meeting in which teams from the mentoring and community intervention components met once a month in each district. This meeting included the DPS, M&E specialist, DCS, district community mentor, CCs and mentors. RPs were not present in this forum, which was for project staff only. In some districts, facilitation of the meeting rotated among the DPS, DCS and M&E officer. The project also tried for a short time to appoint a central team member to serve as a district coordination manager (DCM) for each district, although having eight individuals serving in this capacity for eight districts created challenges in standardising approaches.

According to project staff, the district coordination meetings tended to vary from district to district. In Gulbarga, the two teams met together seven times between September 2013 and April 2014. These joint meetings helped build a sense of connectedness among project staff. As one mentor noted, "Earlier we used to think these people were with another project [referring to CCs] but now we realize that we work together." In joint meetings, participants discussed problems they saw in their PHC service areas. They reviewed indicators from the mentoring program and quarterly community-based tracking surveys that the project carries out. During the meetings, mentors and CCs jointly prepared action plans for their PHCs and district-level staff (DCS, DPS, DCM, M&E specialist) prepared separate action plans. They also made plans to do joint visits to PHCs. Mentors did not have any interaction with the RPs in the scale-up districts.

Coordination was complex because mentors and CCs serve different areas. CCs work in only one taluka, while many mentors work with PHCs in 3-4 different talukas (especially after the restructuring of the mentor assignments based on PHC volume). Each CC had 7-8 PHCs in their taluka and each mentor looked after eight PHCs. CCs had to coordinate with 2-3 different mentors to cover all the PHCs in their taluka and mentors likewise needed to interact with multiple CCs to cover all the PHCs in their portfolio.

Challenges and solutions identified through joint action planning

- Lack of MO support. Several MOs spend only a few hours each day at their PHC. No solution proposed.
- Transportation including drop-back services. Explore use of Janani Shishu Suraksha Karyakram (JSSK) funds to provide this service.
- Lack of drinking water. Acquire or repair water filters in PHC through action planning process. CCs will let community know when water is available.
- Lack of meals, especially in remote locations with no catering service. Encourage MO to contract with dai or other community member to provide food.
- Home births: 3-6 in PHC service areas each month. Mentors to find out more about these home births and why they occurred and share with CC to intervene with ASHAs in specific villages.
- Arriving at PHC fully dilated (especially migrants). Find out more about the migrant population and its health-seeking patterns. Support villages to recruit more ASHAs where there is a shortage.
- Poor referral practices. In one PHC, for example, the MO referred 50% of women to his private clinic. No solutions proposed.
- Severe anaemia. Promote IFA at the community level.
- Lack of supplies. CC and mentor to meet MO together to share community's concerns.
- Lack of PNC ward. Encourage MO to get drapes and curtain off a portion of the general ward for PNC patients.

In Gulbarga, while CCs and mentors scheduled joint visits, they often found it difficult to actually conduct them. Instead they informed each other when they were to make a visit. Among those interviewed in last six months, mentors had conducted about 1-2 joint visits with CCs out of 24, while CCs reportedly made 3-4 joint visits with mentors. In some cases, the visits were actually planned as joint visits, but in many other cases it happened by more by coincidence (i.e., CCs were visiting a PHC at the same time as the mentor).

CC presents assessment of PHCs in district coordination meeting

An observation of a district coordination meeting yielded more insights into the coordination efforts. In Yadgir, the district community intervention and mentor teams sat together for a full day to discuss issues for each PHC. Mentors were asked to think of PHC-specific issues that CCs could help with and CCs were asked to bring forward information they had heard in the community about the PHCs. CCs presented data they had collected on PHCs obtained through their participation in ARS meetings in each PHC. In some cases, information obtained from ARS was not accurate, which pointed out the need to better inform the community about PHC services and staff. In this coordination meeting, mentors and CCs worked in groups by taluka to go through each PHC and developa joint action plan. The sidebar on the previous page provides a sample of the various challenges encountered.

Examples of Coordination

One CC related a story to illustrate coordination. During his visit to a PHC to attend an ASHA monthly meeting, he learned that the PHC's delivery volume was low. ASHAs were complaining about the PHC because staff had stopped giving drugs to speed up labour, so they were now referring women to another PHC that still practised labour augmentation. The CC tried to explain to them why labour augmentation was not a good practice. He then informed the mentor who counseled staff nurses at that PHC to stop labour augmentation.

Another example of how the two programme components tried to support each other was when mentors and CCs identified low-volume PHCs and worked together to see if they could increase deliveries. In one PHC, the mentor identified that hardly any deliveries were coming from certain subcentres and informed the CC. The CC learned from the RP that ASHAs in that area were not referring women to that PHC but referred instead to a nearby CHC. The CC met with the RP and

told them to advise ASHAs to counsel mothers to come to the PHC for deliveries. This type of intervention also happened in three other PHCs. Interestingly, CCs stated that deliveries had increased in the three PHCs, although mentors and programme monitoring data did not show any noticeable increase. Nevertheless, this promising example illustrates how CCs and mentors worked together to identify a challenge and take action to try to resolve it.

Infrastructure issues were a common concern that mentors and CCs tried to join forces to resolve. For example, in Gulbarga, participants identified water as a problem in five PHCs. The mentors and CCs prepared a joint action plan to address this issue. The plan required the CCs to meet with the president of the village health, sanitation and nutrition committee (VHSNC) (the same as the head of the Gram Panchayat [GP] village council) to raise awareness of water problems and ask the GPs to address it. Water problems were fixed in four of the PHCs.

In another case, a CC and mentor carried out a joint visit that included holding a session with ASHAs, JHAs, and nurses to discuss maternal and newborn complications, the importance of raising awareness of complications, and the importance of encouraging women to come to the PHC.

Lessons Learned: Community Intervention Linkages

The linkages between the two programme components evolved somewhat organically as the two teams got to know each other and found ways to work together. As the project moves into its final year, it will be important to develop clear guidance on what role mentors can play in extending AMMA to the community level and how this relates to the community intervention. Mentors' ad hoc participation in ASHA monthly meetings and collaboration with CCs have been interesting examples of how this support could be more intentionally provided in the future.

Sufficient time for coordination meetings

The effort to hold monthly district coordination meetings between the full mentoring team and community teams has heightened the need to promote coordination and integration of activities. Based on observation of the Yadgir District coordination meeting, mentors and community teams working together were able to identify system, PHC, and community-level gaps and worked together to come up with possible actions to resolve the gaps. Given that it took about 30 minutes per PHC to have a full enough discussion to identify problems and discuss solutions, it will require adequate time to facilitate this level of coordination.

With the myriad challenges the teams face, it would be helpful to provide resources that allow DPS and DCS to share strategies that CCs and mentors can suggest to address challenges. These cadres also need to be well informed about what can be done through JSSK (such as drop-back transport), ARS funds and untied funds so they can propose these as options to PHCs as required. Sharing successes across the project could also stimulate district teams to come up with creative approaches suited to their environments.

Teams prepare action plans for joint efforts

Stronger ties withTHOs

THOs represent the level in which the mentoring and community interventions can come together to ensure integration of efforts and strengthen systems. Moreover, because PHCs report to THOs, the THOs' support for the mentoring programme is important. CCs meet with THOs about community intervention efforts, but mentors did not have interaction at the THO level. In some cases, THOs can actually be an impediment to PHC improvement, so it is important to find ways to engage with them to bring about a change in attitude. THO-level issues that could be addressed through direct interaction could include staff allocation decisions, accountability, transport issues, supplies, or other factors that affect all PHCs in a taluka. At the same time, it is critical that no project staff be seen as blaming any staff or directly reporting performance issues to the THOs, which would jeopardise their credibility and trust with the PHC staff.

Action plans highlight problems, root causes, solutions, responsibilities, and timelines

Chapter 9

Intervention Results and Costs

The process documentation qualitatively conveyed that the mentoring intervention has contributed to quality improvement in the PHCs. This section summarises the more quantitative assessment of intervention achievements based on monitoring indicators and the pilot district evaluation findings. In addition, information on the cost of implementing the intervention is provided.

Monitoring Data

Data derived through the MIS developed by the project for programme monitoring purposes confirmed findings from the qualitative process documentation. Highlights through March 2014 include findings about variations in delivery load and use of case sheets.

Variations in delivery load

PHCs accounted for around 20%-30% of the total facility-level deliveries in the project districts. The number of deliveries at individual PHCs ranges widely, however, with each district having a few very high-volume PHCs (more than 40 deliveries per month) and most PHCs reporting 20 or fewer deliveries per month. Around 75% of all 385 facilities in the project districts had low volumes, while 5% accounted for 20% of all deliveries. The medium-volume PHCs (with 21-40 deliveries per month) generated 35% of all deliveries.

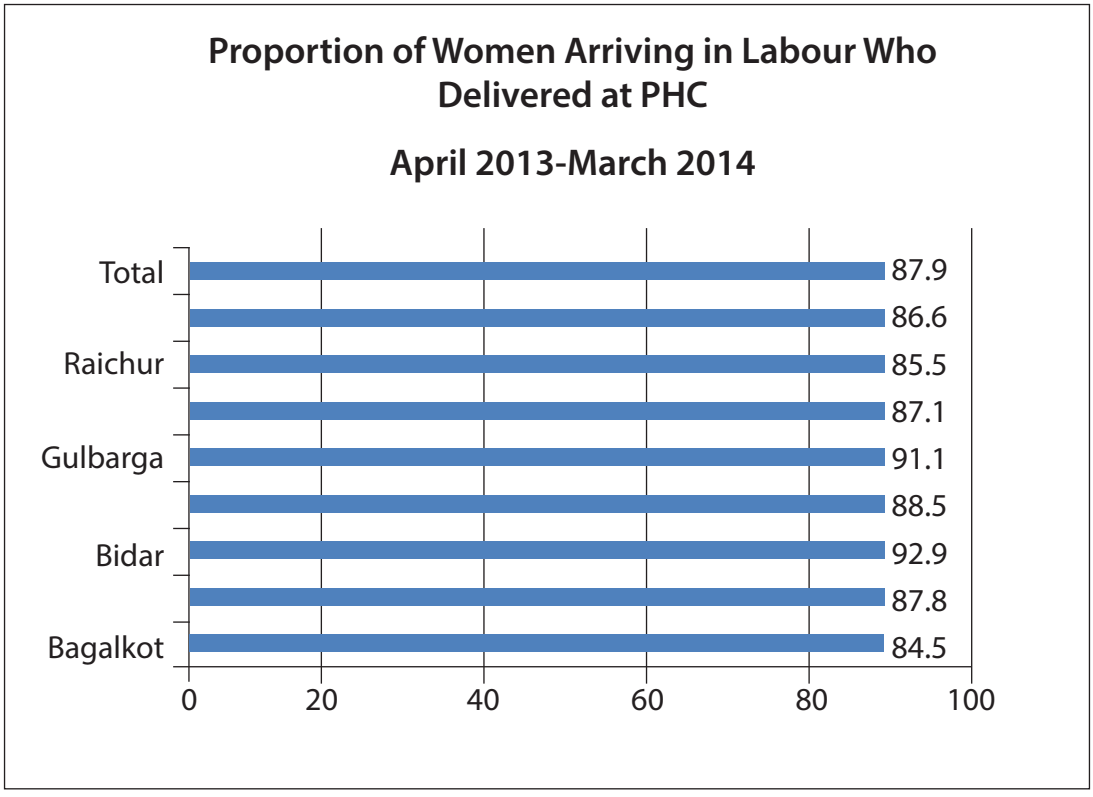
Use of case sheets

According to the MIS data, the use of case sheets has been increasing overtime. As of March 2014, nurses had completely filled out a case sheet for 65% of all PHC arrivals. This compares to just 12% in January 2013. Case sheet use was highest in Bellary and Gulbarga as would be expected, since these were the pilot districts where the mentoring programme had been going on the longest. The inclusion of control group PHCs since September 2013 led to a fall in case sheet utilization rates. In the meantime, some scale-up districts like Bidar and Bijapur showed considerable improvement in use of cases sheets. The proportion of normal case sheets filled as a percent of total arrivals ranged from 51% in Bagalkot to 92% in Bidar as ofMarch 2014.

The use of complication case sheets was not as prevalent. Ideally, any woman or newborn referred from a PHC should have a completed complication case sheet that identifies the nature of the complication and records vital information for the referral facility. The proportion of complication case sheets filled out as a proportion of total referrals reported (derived from the referral and parturition registers) was 42% in March 2014, well below the expected proportion, but nonetheless representing a slow and steady increase from the 5% documented in January 2013. The proportion of complication case sheets filled out as a subset of total referrals ranged from 19% in Bagalkot to 67% in Bidar in March 2014.

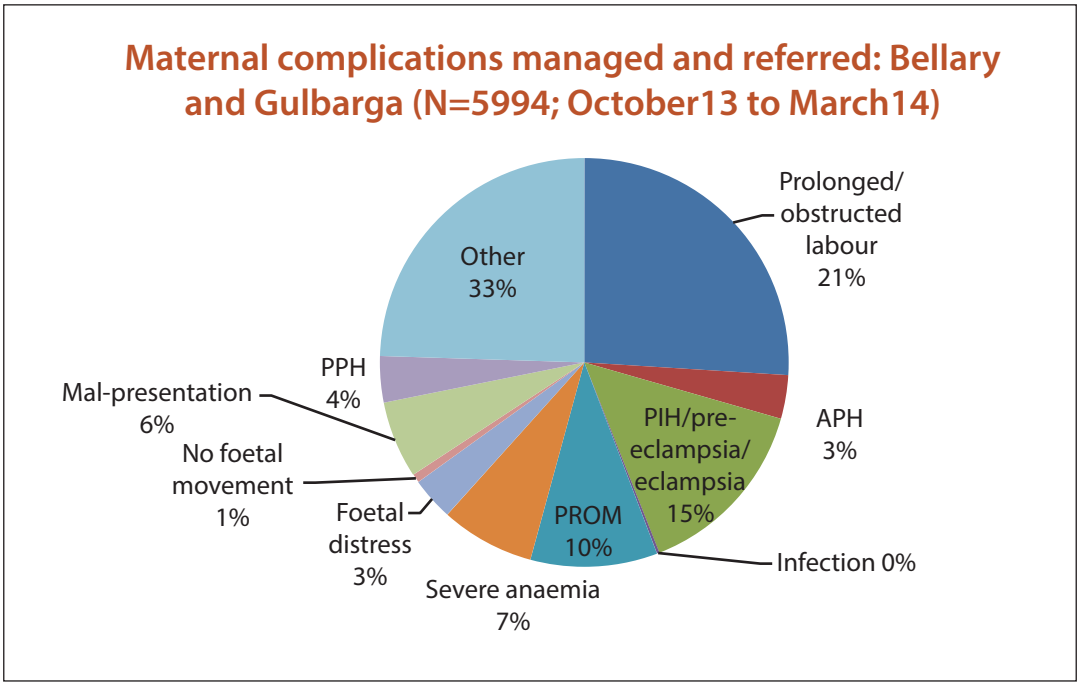
The number of deliveries as a percent of total arrivals in labour averaged 86% across all districts, suggesting that 14% of women who arrived at the PHC in labour were referred on for being diagnosed with any complication. It is possible that some PHC staff referred women who could presumably be handled at the PHC. Another reason might be because some women who come to PHCs had a pre-existing condition that required them to seek higher-level care, including a previous Caesarean section, twins, hypertension, diabetes, or some other risk factor that may have been detected during ANC. Women with these conditions may have come to the PHC for delivery and been told by staff to go on to a FRU.

Overall 88% of women who arrived in labour delivered at the PHCs. Bidar and Gulbarga districts reported the highest proportion of women who arrived in labour at the PHC and subsequently delivered there. The proportion was lowest in Bagalkot and Raichur. A Raichur mentor explained that two PHCs were quick to refer women who might have otherwise delivered at the PHC. She attributed this to a nurse at one PHC who had a bad outcome that upset the community, with the result that nurses there tended to refer cases if the MO was not present.

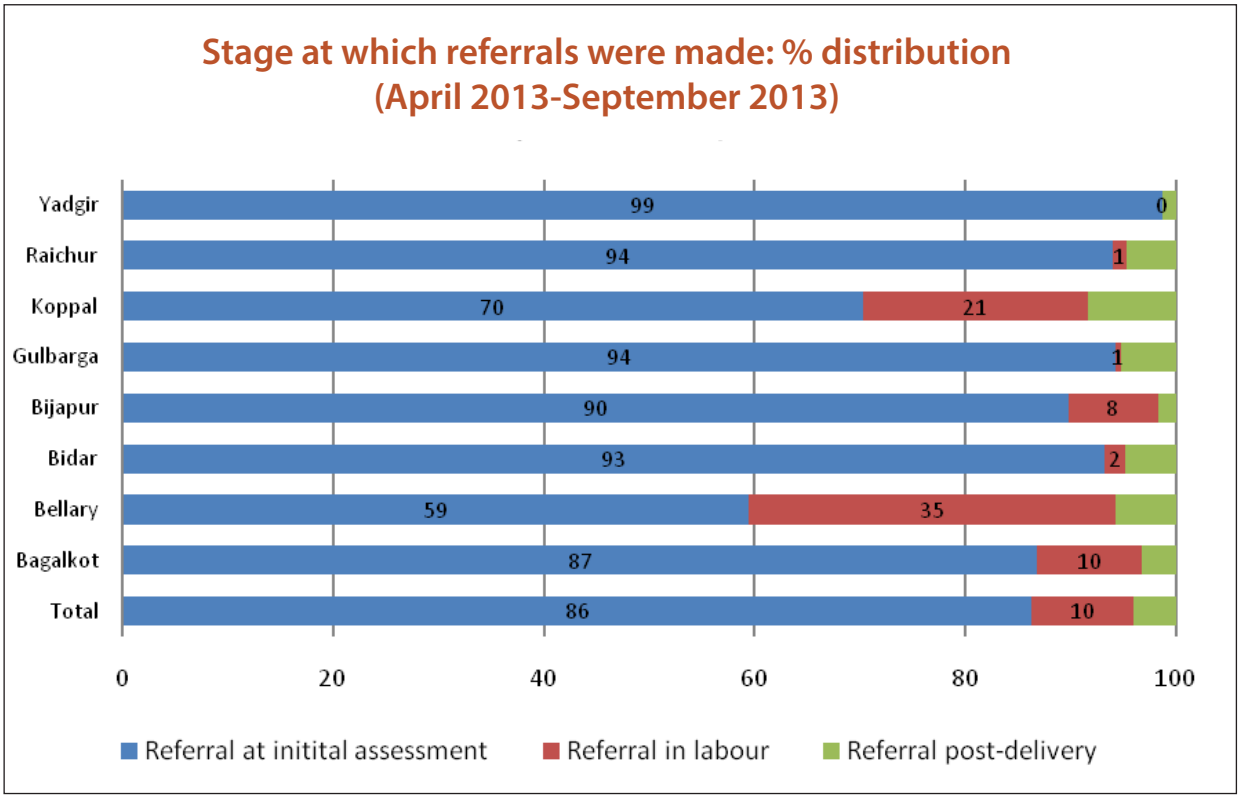


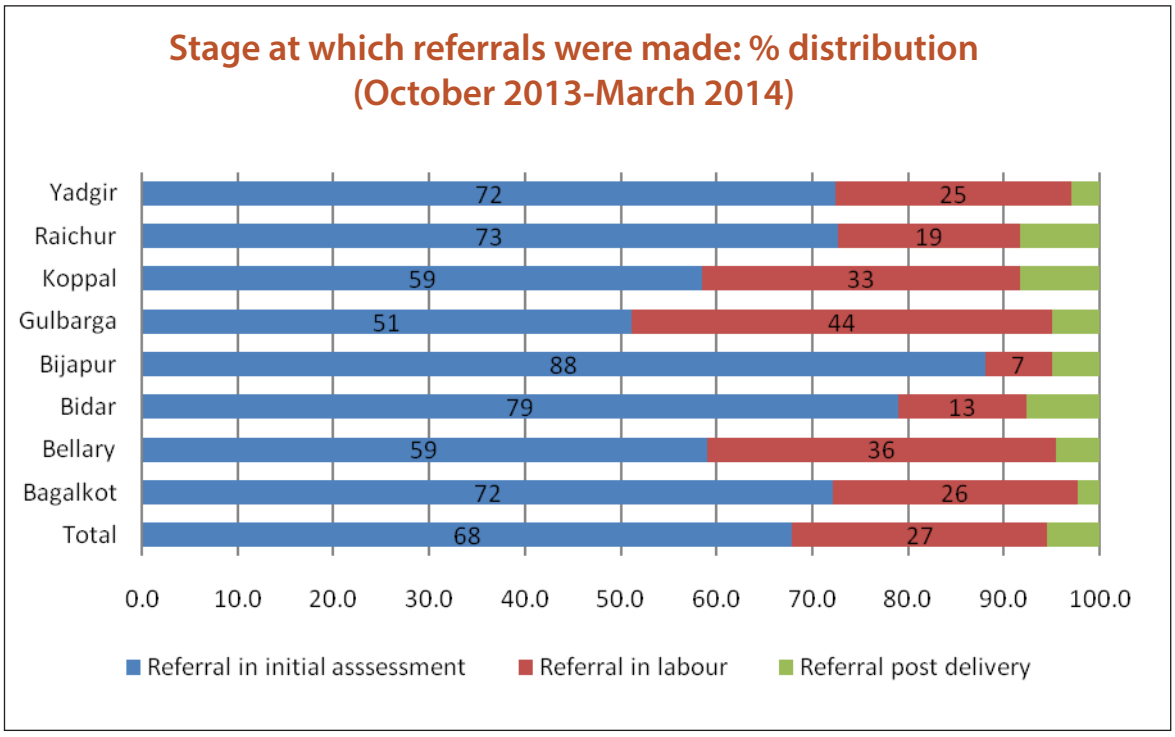
Of the total arrivals in labour, the maternal complications identified increased by one percentage point from 12% to around 13% during 2013.

According to the monitoring data, the most frequently occurring complications related to prolonged labour, PROM, or PIH/preeclampsia. While these were among the most common maternal complications, it was somewhat surprising that there was less identification of PPH. This could be partially explained by providers now routinely practicing AMTSL. The most commonly reported newborn complications were asphyxia and low birth weight across all project districts (data not shown).

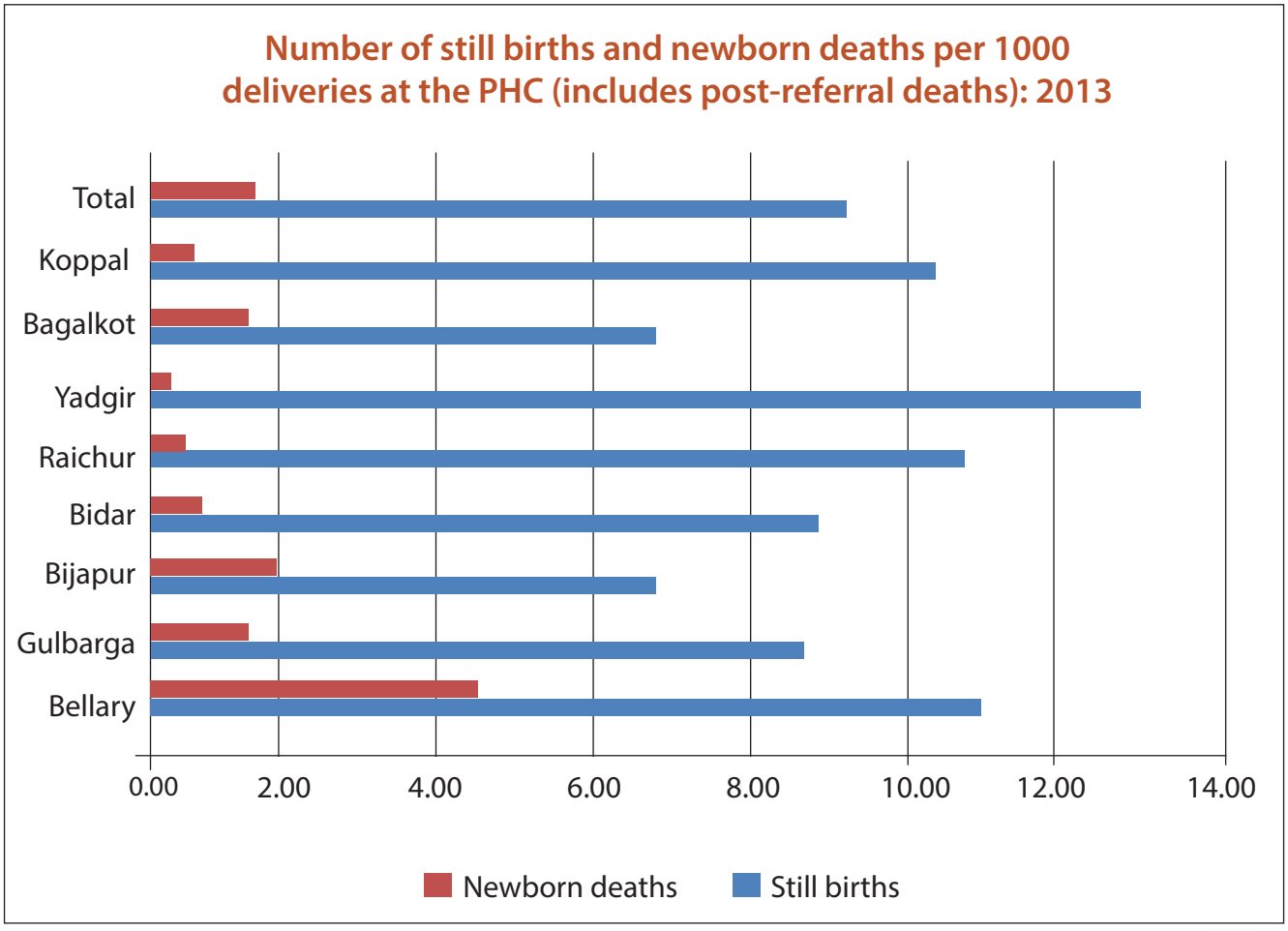


The monitoring data also indicate that staff were learning how to properly diagnose complications and were less likely to refer during initial assessment. From April 2013 to September 2013, 86% of referrals occurred during the initial assessment period. This proportion had dropped to 68% in the subsequent six-month period. The data attest to a decline in 'gate' referrals, i.e. nurses simply referring patients as soon as they arrive without assessment, diagnosis or management. The improvement was seen across all project districts.



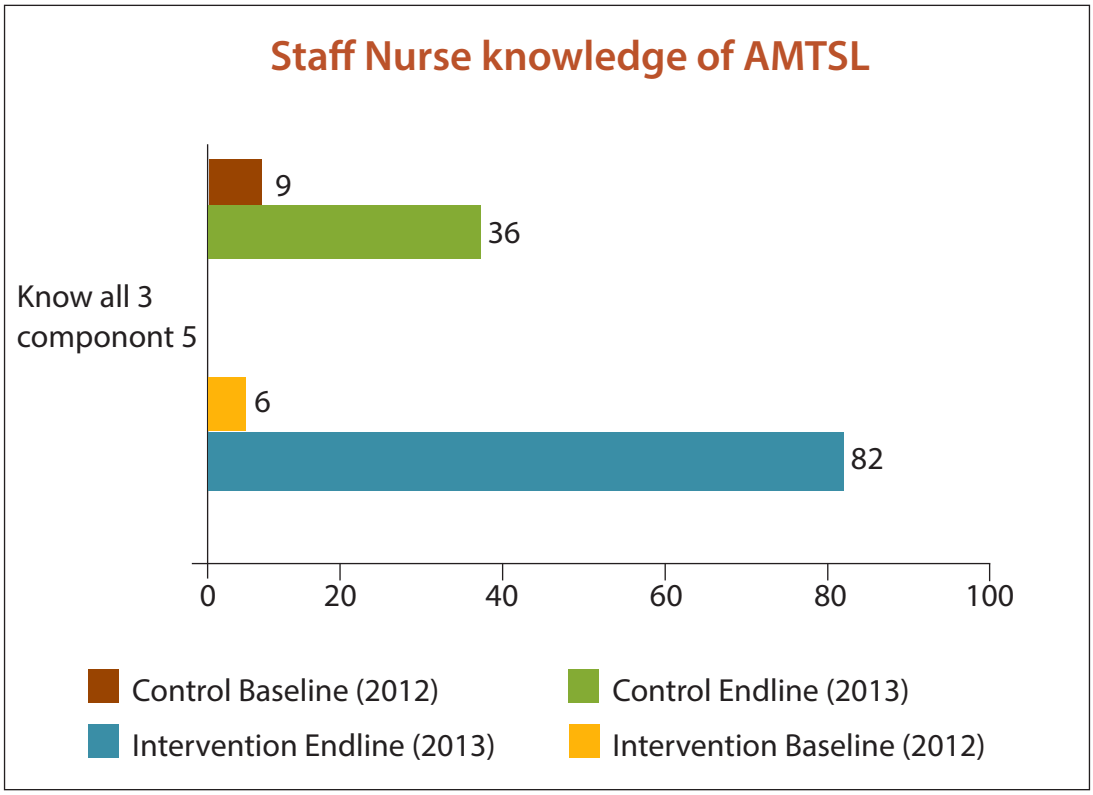


The number of still births reported was 9.7per 1,000 births. Newborn death data is less reliable as providers will sometimes classify newborn deaths as still births.



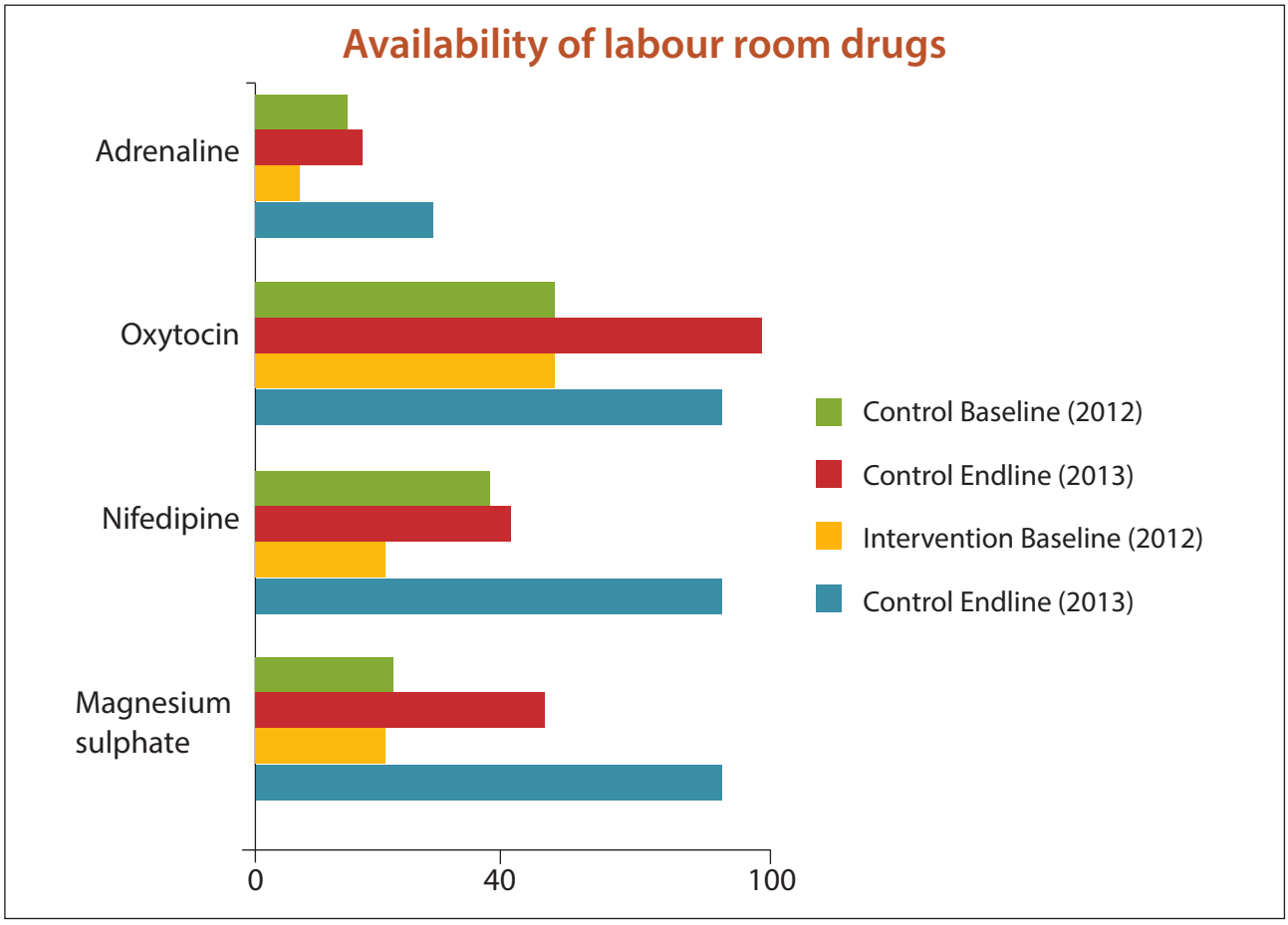
Pilot District Endline Evaluation

Sukshema undertook a baseline and endline evaluation of the mentoring programme and its impact on knowledge, skills and facility readiness to provide maternal and newborn services. PHCs in Bellary and Gulbarga were randomly assigned to either intervention or control groups. The study involved facility audits, provider interviews and interviews with postpartum women in the month after delivery in 2012 and again in 2013. Findings related to changes in PHC services, provider knowledge, and practices (as verified by clients) over a period of one year are highlighted below. A full evaluation report is available separately.



In terms of knowledge of management of labour and delivery, there were improvements in both intervention and control sites over the one-year period. There were improvements overall in knowledge of how to identify prematurity, AMTSL, eclampsia, sepsis, PPH, obstructed labour and foetal distress and in knowledge of how to manage neonatal resuscitation. However, on almost every indicator, the intervention sites performed statistically significantly better than the control sites (see chart above).

Furthermore, intervention site staff not only performed better in terms of identification of complications but knew significantly more about how to manage those complications.



In terms of post-delivery issues such as provision of information to mothers about mother and baby danger signs, reports of what vaccines should be given before discharge, cord care and important information for clients such as breastfeeding advice, there were improvements overall but little actual difference between intervention and control sites, especially when the practices reported by staff were compared with postpartum client interviews. It is difficult to explain why this might have occurred, but it may be that the mentors had not had enough time to focus on such issues in the short time available.

Consistent with the perceptions of mentors and PHC staff, PHCs were much better equipped in 2013 than in 2012. Again, there were improvements overall in both types of sites, probably due to the increasing strength of the NRHM programme and the district health department offices. Laboratories improved overall, but staff in intervention sites were more capable of managing exams like syphilis, HIV and proteinuria testing in 2013. Labour rooms also appeared to be better equipped in 2013; for every piece of equipment, the intervention sites outdid the control sites, and in many cases the differences were highly statistically significant. The biggest differences were observed with respect to drug availability; here, intervention sites were far better equipped to manage all emergencies than were control sites in 2013 (see figure on previous page). The team self-assessment approach of involving all PHC staff in problem solving and action planning appears to have led to an ability to find solutions to longstanding drug shortage issues.

Beyond improvements in the labour room, the endline data suggest that mentoring was not able to affect more systemic problems such as staff shortages, the physical state of the PHCs, or services such as food, water and linens for postpartum women. The postpartum women interviewed in

2013 appeared overall much less satisfied with these comfort issues than those interviewed in 2012. This may have impacted length of postpartum stay, which actually fell in 2013, although lower staffing levels in 2013 might also have played a part. The number of medical officers in the study PHCs fell from 103 in 2012 to 95 in 2013 and by then 17 of 108 PHCs had no doctor at all, up from 11 in 2012. There was also a reduction in the number of skilled nurses working in the 108 facilities, from 321 to 307.

Furthermore, government financial incentives appeared to be less available everywhere in 2013, while ad hoc payments to nurses appeared to have increased, especially in intervention sites. ASHA services also appeared to have been reduced in 2013. These are results over just 12 months, however and the project expected continued mentoring in the second year and the addition of the Sukshema community intervention in the pilot districts to help resolve some of these issues.

Cost Analysis of Mentoring Programme

As a part of the evaluation, the costs of developing and implementing the mentoring programme were analysed. The costing methodology considered start-up and annual costs involved in implementing the programme in the eight districts. Appendix A presents details of the costing analysis.

The total costs for the mentoring programme were categorized into start-up and annual (recurring) costs. The start-up costs included costs incurred for capital expenditures and for conducting induction training for mentors and district staff. These formed 12% of the total intervention costs (31,18,000 INR or 53,759 USD). The annual costs included the staff salaries and travel, communication and printing, and events such as refresher trainings, clinical postings and review meetings. These annual costs amounted to 2,39,85,453 INR (413,542 USD). The total start-up and annual cost of the intervention with an added 5% contingency was 2,71,03,453 INR (467,301 USD) for all eight districts. This translates to 3,387,932 INR (58,413 USD) per district and 511,386 INR (8,817 USD) per mentor per year.

Summary

While knowledge of labour and delivery and supplies of drugs and equipment improved overall in both intervention and control sites, there were clear advantages observed in intervention sites where mentoring had taken place. Fewer differences could be seen with respect to postpartum and newborn care or ASHA services in the community.

These results must be interpreted within the context PHC staff's poor baseline knowledge, the fairly brief contact time with mentors over the year and the introduction of in-depth new concepts such as self-assessment, team-building, and problem-solving.In this context, the project's evaluation indicates that the project achievements are worthy of replication. The data demonstrate that PHC staff can improve their knowledge to a certain level through training, and that PHCs can become better equipped through an improved logistics system. The data also demonstrate that mentoring takes this knowledge to a different level, making staff feel supported and motivated to take action to resolve longstanding drug and equipment supply issues and fostering more competence and confidence to handle maternal and newborn care.

Chapter 10 Summary of Mentoring Programme Achievements and Challenges

Mentoring Programme Achievements

The qualitative and quantitative information was consistent in suggesting that the mentoring programme has been successful in improving many aspects of clinical care and helping PHCs to be better equipped and supplied to provide MNCH services. Major clinical, physical and management improvements are summarized below.

Clinical improvements	Physical improvements	Management improvements
Knowledge and skills Diagnosis and management of complications Improved referral processes Use of case sheet	Availability of drugs and supplies Labour room organisation Infection prevention in labour room	Greater teamwork Use of self-assessment tools Action plans Use of untied funds

Lessons Learned: Mentoring Programme

While lessons learned are numerous and documented throughout the report, major learnings are recapped below.

The best mentors combine strong clinical and communication skills. The project learned that while clinical skills can be taught, communication skills are harder to instill. It is, therefore, critical that the hiring process focus on recruiting candidates who are outgoing and enjoy interacting with people and supporting them to perform.

A focused training programme combined with a strong system for ongoing training and support can prepare a capable and effective mentoring workforce. The 5-week training programme was sufficient to impart the basic skills required to be a mentor, but the mentors also needed continual on-the-job support and reinforcement through clinical practice and refresher trainings to fully develop their skills.

Self-assessment processes and team-based action planning are required to achieve quality improvement. The PHCs (especially those with supportive MOs in charge) embraced the concept of quality improvement and owned their role in working as a team to proactively identify and resolve problems. The teamwork process enabled PHC staff to see how everyone contributes to quality and how staff are dependent on each other. These achievements (noted in preceding sections) would not have been as pronounced if the intervention had focused only on clinical mentoring and had not included team-based quality improvement processes.

The case sheet is a helpful tool but requires time and support to integrate into standard operating procedures. Mentors' ability to improve nurse's skills would be less without the case sheet, which provides a record of care to which both mentors and nurses can refer. It also provides a rich source of data to monitor key trends such as management of complications, referrals and patient outcomes. Many staff nurses found the case sheet to be a useful job aid, but because it represented a new procedure and initially appeared to be complex and time-consuming, it became apparent that consistent and continual support were required to encourage its use. If the case sheet is adopted by the Government of Karnataka or others for use at scale, it will be important to build in support structures to help providers use it as intended. It will not be sufficient to simply distribute the case sheet and expect providers to use it without adequate training and support.

Data use can drive programme improvements on many levels. The mentoring programme generated data that can be analysed to discern larger trends of interest to programme planners and policy-makers. Issues that are common to many PHCs can be identified and strategies tailored to respond to these needs. For example, by analysing delivery volume over time, the project was able to restructure mentor support to focus more attention on high-volume PHCs. By tracking complication case sheets, information on the incidence of different complications and how they were being managed helped pinpoint where further improvements were required. At the PHC level, mentors can assess the performance of their PHCs on key indicators over time and direct their efforts where the need for improvements is greatest.

PHC leadership is a critical factor in improving quality. Mentors noted that the greatest improvements tended to occur in facilities that had strongly dedicated medical officers who were supportive of quality improvement. The ability of the mentoring programme to improve quality of care at PHCs where the medical officer is indifferent to improving quality is severely limited. The absence of MOs in many facilities and part-time management by partially deputed MOs in other PHCs is a serious issue that needs to be addressed for the programme to achieve its full potential.

High-volume PHCs require the most support. The frequency and intensity of interaction with mentors seems to contribute to improved knowledge and skills. This prompted the project to increase the duration of the mentor visit overtime and to provide additional support to high-volume PHCs to allow sufficient interactions with PHC staff to take place. In PHCs with low to moderate volumes (10-20 deliveries per month), a single mentor was generally able to work closely with nurses in the 3-day visit.

The DHO's role is vital to catalyse mentoring programme impact. The DHO is in a unique position to assess and act on the many issues that mentors bring forward about PHC performance and challenges. Through the district review meetings, DHOs learned of problems and tried to address them. For example, in Bellary after the DPS and mentors repeatedly raised the issue of staffing shortages at high-volume PHCs, the DHO instituted a staff allocation system that deployed nurses from low-volume PHCs to busier PHCs. However, while the DHOs seemed to appreciate the mentors and the PHC improvements brought about by mentors, they did not yet appear to view the mentors as part of their system nor were they thinking in terms of how the mentors might provide more systematic support. One district, for example, enacted a new infection prevention programme using liquid disinfection, but thementors only learned of this when they visited the PHCs. In an ideal scenario, district authorities could enlist mentors to support PHC staff in

implementing new policies such as this one. Mentors, too, commented that DHOs were willing to give feedback on specific PHCs but had not come to appreciate mentors as part of the support system nor recognised their potential to support districts in implementing programmes.

In busy PHCs, high patient loads compete for nurse's time to attend to postnatal mothers

Integration with government reporting forms and systems is needed to build support for new reporting formats. The field visits found that PHC staff face considerable reporting burdens. Further, confusion is introduced when multiple forms are in use. For example, mentors explained how the government partograph is different from the Sukshema partograph in how it is filled out. When the project is introducing new tools, it is especially important to make sure thatthese efforts are well coordinated with the district's own reporting processes. The DHO needs to communicate to PHC teams that he supports the introduction of any new formats. Otherwise the project risks increasing the onus on nurses to fill out multiple forms (government and project) or generating confusion among PHC teams about which forms to use. It is also important to be specific with nurses and MOs about why the new tools are being introduced. For example In relation to case sheets, the new format was rolled out in consultations with state and district officials, with appropriate permissions and circulars. In the pilot districts case sheets were also formally introduced through the nurse and MO training as well. In the scale up districts this level of introduction did not happen which may have caused some confusion among staff about formats to use. While Sukshema project did little in the way of automating any of the tools or introducing mobile applications, this is also something that could be considered in the future to minimise reporting burdens and maximise the ability to collect and analyse data.

Extending mentoring to JHAs could reinforce linkages to community-based services. JHAs link facilities and communitiesdue to their role in providing ANC services, supporting ASHAs and participating in community-level health committees. Mentors could extend support to these workers during their PHC visits to increase their clinical and counseling skills to support antenatal and postnatal care and birth planning.

Mentoring programmes have a more limited capacity to address challenges stemming from system-level and community-level causes. Issues that the mentoring programme has not been able to fully address include improving length of postpartum stay, encouraging earlier arrivals, strengthening PHC leadership, addressing staff shortages and improving the quality of services

at FRUs. Mentors have limited ability to directly act on these issues but can advocate with DHOs and coordinate with the community intervention to bring attention to these issues / challenges.

System-level recommendations

System-level recommendations focus on improving staffing and the quality of services available at referral facilities.

Match staffing levels to service utilization. The blanket policy of three nurses for every 24/7 PHC results in staff in PHCs with high patient loads being overstretched and often unable to give sufficient time and attention to women in labour or during the postnatal period. Strategies to address this could include increasing staff at busy PHCs and having two nurses on duty at a time. Another option could be task shifting to have more JHAs in the PHC during busy times. Tools such as the World Health Organization's (WHO's)Workload Indicators of Staffing Needs (WISN) might help identify staffing requirements aligned to patient load.

Improve capacity of FRUs to handle complications and referrals. While PHC nurses reported that they had improved the management of referrals at the PHC level, the quality of care at FRUs is often inadequate. Without improvements at the FRU level, the ability to decrease maternal and infant mortality will be limited. This was also apparent from the project's experience in working with referral hospitals for mentors' clinical postings. The mentoring programme could be adapted as a model for improving quality of care in FRUs.

A DHO's thoughts on the mentoring programme and referrals

"The mentoring programme is limited in its impact because of its focus on 24/7 PHCs. I am concerned that talukahospital staff are not skilled to handle complications and if this doesn't change there will be no use in improving the skills at the PHCs in diagnosing and referring cases if they don't get good care once referred."

Encourage 48-hour postpartum stays at PHCs for proper postnatal care. This will require providing security, water, food, toilets and other amenities, while convincing mothers and family members of the importance of 48-hour monitoring and ensuring that staff provide this level of monitoring. This will also require staff to provide good patient-centred care during the 48-hour stay so that patients perceive the benefit of remaining in the facility. It is ironic that women manage to stay in the facility for five days for a tubectomy but do not remain for 48 hours after delivery.

Some barriers to improved maternal and newborn outcomes derive from social norms and practices in communities. Community-level engagement will be required to bring about behaviour changes to benefit mothers and children. Areas to focus on through community-level interventions include reinforcing linkages with community-based providers, promoting earlier arrival at PHCs and essential newborn care and addressing gender biases.

Ensure strong linkages with community-based providers. Even if women stay for 48 hours and certainly if they leave prior to that, effective community-level follow-up by ASHAs and JHAs is required to monitor mothers and newborns. Nurses may inform ASHAs or JHAs that a mother has been discharged (so they can do follow-up visits), but mentors reported that this only happens if a woman lives in the PHC catchment area but not if she has migrated into the area for delivery. A review of case sheets suggests that linkages to community-based care could be improved; the endline data indicated that interactions with frontline workers diminished in the pilot districts, making it vital to engage in concerted and sustained efforts to improve the situation.

Promote arrival earlier in labour. Case sheet reviews and interviews indicate that mothers, especially second gravida or more, come to PHCs when in advanced active labour and often fully dilatated. Mentors say some mothers do this because they fear that if they come earlier they will be automatically referred. This late arrival limits the opportunity to monitor the progress of labour or to identify and manage complications. Community actions to promote timely arrival at facilities will be needed through improved counselling by ASHAs and JHAs.

Address gender biases. Gender biases continue to prevail at the community level. For example, in one observation a mother initially refused to breastfeed her girl baby since she was depressed that she had had a second girl child. Mobilising communities to support families and combat harmful gender biases could potentially help in these cases.

Promoting essential newborn care. Community messaging can emphasise the importance of essential newborn care, including early and exclusive breastfeeding, Kangaroo Mother Care,and other proven practices. Mentors and nurses indicated that patients sometimes resist these practices even when counselled on them. Promotion of social norms that support these behaviours would likely encourage women and their caregivers to adopt these practices.

Conclusion

The mentoring programme is proving to be an effective intervention to improve the quality of maternal and newborn services in primary health centres. The programme has been well implemented at scale in a short period of time and staff have been accepting of mentors and the guidance they provide.

Mentors have been able to support PHC teams to identify and address quality gaps and to increase the capacity and confidence of staff nurses. PHC staff also reportpositive developments since the programme began. In many PHCs, nurses say they are now providing care according to SBA guidelines and are better able to handle maternal and newborn complications. Facilities are also better organized, equipped and supplied to deliver quality services.

Mentors work within a complex system of benefits and rewards, apathy and altruism, presence and scarcity of funds, and sometimes broken systems and yet the triumphant human spirit shines through as committed health workers and the mentors that support them strive to provide quality services. Political will and responsibility of senior personnel at the district, block and PHC levels count immeasurably towards this success. If scaled up to other PHCs or even higher-level facilities, this type of mentoring programme can become an important strategy to reduce maternal and newborn mortality.

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Appendix A. Cost Analysis of Mentoring Programme

Background

An on-site mentoring intervention for 24/7 primary health centres (PHCs) using a cadre of nurse mentors was piloted and scaled up within the context of the Sukshema project in the eight districts of northern Karnataka from 2012 to 2014. As a part of programmatic evaluation, the costs of developing and implementing the programme were analysed. This report describes the start-up and annual costs involved in implementing the programme in the eight districts. At the end of the report, the costs are computed for a single district and for a single mentor so that programme implementers may be able to appreciate the budgetary implications in their own context.

Costing Considerations

- The actual expenditure for implementing the programme in eight districts during the year 2013-14 was considered for the cost analysis.
- The costs are largely related to staff (salaries, travel, per-diems), capital and material costs (laptops, manuals, etc) and events (training, refreshers, review meetings). The description follows the same order.
- The costs are mentioned both in Indian rupees (INR) and at US dollar rates (USD) considering the exchange rate of 58 INR per USD.
- The costs are finally categorised into one-time and recurring costs. One-time costs include expenditures that were made once during the time of intervention such as initial induction training and capital costs, whereas the recurring costs include expenditures that recur regularly such as staff salaries, travel, review meetings, etc.

Costing Details

Recurring staff-related costs

The Sukshema project used a dedicated cadre of nurse mentors for providing on-site mentoring to the PHCs of northern Karnataka. They were supported and supervised by a programme officer called a district programme specialist(DPS) in each district; the DPSs were supervised by two central-level technical managers. The two managers reported to the quality improvement (QI) specialist who was the overall lead for implementing the intervention. Clinical and technical support was provided by the clinical consultants from St John's Medical College (SJMC) through trainings and handholding support in the field. While the clinical consultants supported the project part-time, the project also employed a full-time training coordinator based out of SJMC to run the trainings and coordinate the handholding visits. This part of the cost analysis includes staff salaries, their travel, accommodation and per diems.

Salaries and travel costs of nurse mentors. The Sukshema project employed 53 nurse mentors to cover 385 24/7 PHCs in the eight project districts. Of these, 48 had general nurse midwifery training (GNM), four had Bachelors in Science degrees (BSc) and one had a Masters in Science degree (MSc) in nursing. The annual salaries offered to them ranged between 1,44000 INR (2,483 USD) and 216,000 INR (3,724 USD) depending on their qualifications and experience; hence an average salary of 180,000 INR (3,103 USD) per mentor per year was considered for costing purposes. The total cost of salaries for 53 nurse mentors for one year was 95, 40, 000 INR (164,483 USD). The mentors travelled to the facilities for 12-15 days a month. They used the routine public transport which cost about 3000 INR per month per mentor. This translates to 19, 08, 000 INR (32,897 USD) in travel costs for all 53 mentors annually.

Salaries and travel costs of management and clinical support team. The 8 district programme specialists, 2 technical managers and one QI specialist (the team leader) formed the management team that was involved in the day-to-day implementation of the programme. The DPSs were medical doctors with master's degrees in public health (MPH); they were each offered an average annual salary of 3.6 lakhs INR (6207 USD) for a programme total of 28.8 Lakhs (49,655 USD). The technical managers were clinicians with postgraduate training in community medicine or public health; they had additional responsibilities related to coordinating and supporting other programme components, thus only 70% and 80% of their time, respectively, was costed in the analysis. The monitoring and evaluation (M&E) support was provided by eight district M&E specialists (one for each district) and one M&E manager. They supported collection, compilation, and analysis of on-site mentoring data for programme planning by the management team. Since they were involved in other M&E activities, 20% of their time was costed for this analysis. The training coordinator's chief responsibility was to coordinate manual development and implement trainings for nurse mentors, which required 50% of her time on this aspect of the programme. The part-time clinicians supported manual development, conduct of trainings and handholding the mentors in the field. Under this section, only their time related to travel for handholding the nurse mentors is costed. Their time for trainings is costed under the events section.

The DPS travelled for 10 days in the field to supervise and monitor mentoring visits and for this a vehicle was hired at the rate of 2000 INR (35 USD) per day. The visitors to the field (management and clinical teams) accompanied the DPS in the same vehicle and hence the vehicle costs are not separately costed for the visitors. However, travel between Bangalore and the district, accommodation and per diems are costed considering that the QI specialist travelled for 5 days a month, the managers about 8 days a month each and the clinical team members (in pairs) for 2 days every two months. The total costs of salary and travel for management and clinical support teams was 91,08,812 INR (157,048 USD). The total staff costs sum up to 2,05,56,812 (354,428 USD)

Capital and material costs

This includes the costs incurred in purchasing laptops for staff, communications, and development of technical materials (case sheets and manuals). The management team (QI specialist, technical managers, and DPS) were provided with laptops and internet data cards that were costed at 50,000 INR (862 USD) for each person. Additionally, telephone and internet expenses of 1500 INR (26 USD) were incurred by each staff person every month. The printing of case sheets and manuals cost 10,85,000 (18,707 USD). The total cost under this component sums up to 1833000 INR (31603 USD).

Event costs

This includes the costs incurred towards conducting the initial induction training for nurse mentors, the clinical refreshers and postings and review and planning meetings. The initial induction training for 53 nurse mentors was conducted at St Johns Medical College and Hospital, Bangalore in four separate batches with each batch lasting for 30 days. The training costs include costs for venue, accommodation, travel allowance, clinical postings, training kits and the trainers' fees. The total cost incurred to train four batches of mentors from 8 districts was 22.24 lakhs INR (42,069 USD). Six to nine months after the initial training, a clinical refresher training (3 days) was held to reinforce skills and clinical postings (5 days) were arranged to provide opportunities for the mentors to conduct deliveries in a hospital setting. This cost 663,000 INR (11,431 USD).

In the beginning of the programme, the DPSs and M&E specialists received a 3-day training on how to manage and monitor the nurse mentor programme in the field which cost in total 128,000 INR (2,207 USD) for travel, accommodation and per diems. This training helped them to support and supervise the mentors in the field through planning and review meetings, field support and M&E activities. In the districts, the DPSs held planning and review meetings with mentors every week to assist the mentors in completing documentation as well as to review their previous visits and plan for the subsequent visits. These meetings cost 1, 92, 000 INR (3,310 USD) for all eight districts in a year charged at the rate of 2000 INR per month per district. The total expenditure on these events was 34,23,000 INR (59,017 USD).

Total programme costs

The total costs are categorized into start-up and annual (recurring) costs. The start-up costs include costs incurred for capital expenditures and for conducting induction training for mentors and district staff, which form 12% of the total intervention costs (3,118,000 INR or 53,759 USD). The annual costs include the staff salaries and travel, communication and printing, and events such as refresher trainings, clinical postings and review meetings; this amounts to 2,39,85,453 INR (413,542 USD). The total start-up and annual cost of the intervention with an added 5% contingency was 2,71,03,453 (467,301 USD) for all eight districts. This translates to 3,387,932 INR (58,413 USD) per district and 511,386 INR (8,817 USD) per mentor per year.

Cost analysis of mentoring programme in eight districts of northern Karnataka								
Category	Sub category	Unit cost (INR)	No of units	Percentage time/ No of trips	No of months	Total costs (INR)	Total costs (USD)	Remarks
Staff costs								
Nurse mentors	salary	15000	53	1	12	9540000	164483	
	travel	3000	53	1	12	1908000	32897	
Management team								
District program specialist	salary	30000	8	1	12	2880000	49655	
	travel	20000	8	1	12	1920000	33103	
District M&E specialist	salary	30000	8	0.2	12	576000	9931	20% of time costed
Technical Manager	salary	50000	2	0.8	12	960000	16552	80% time costed
	travel	14000	2	1	12	336000	5793	1400 INR for 8 days trip a month; includes travel accommodation and per diems
Quality Improvement specialist	salary	110811	1	0.7	12	930812	16048	70% time costed
	travel	9500	1	1	12	114000	1966	9500 INR for 8 days trip a month; includes travel accommodation and per diems
M&E specialist	salary	55000	1	0.2	12	132000	2276	20% time costed
Clinical support team								
Training coordinator	salary	50000	1	0.5	12	300000	5172	
Clinical consultants	consultancy	2500	8	4	6	480000	8276	4 mandays (2 consultants for 2 days) every two months for each district
	travel	5000	8	2	6	480000	8276	5000 INR includes travel, accommodation and per diems for one consultant per trip OF two days
Total Staff Costs						20556812	354428	

Cost analysis of mentoring programme in eight districts of northern Karnataka								
Category	Sub category	Unit cost (INR)	No of units	Percentage time/ No of trips	No of months	Total costs (INR)	Total costs (USD)	Remarks
Capital and material costs								
Laptops		50000	11			550000	9483	50000 INR per laptop for 8 DPSs, 2 managers and QI specialist
comunication		1500	11	1	12	198000	3414	1500 INR per person for 8 DPSs, 2 managers and QI specialist
Printing						1085000	18707	costs of printing 72000 case sheets and 100 manuals during the year; actuals considered
Total capital and material costs						1833000	31603	
Event costs								
Induction training for mentors	Mentor costs	550000	4			2200000	37931	4 batches were conducted. Actuals are considered. Each batch lasting 30 days of training costed 550000 INR and includes venue, food, hotels, clinical postings, travel, training kits
	Trainers costs	1000	2	30	4	240000	4138	the trainers from St Johns were consultants @ Rs 1000 for their session per day; each day, about 2 trainers were involved apart from the training coordinator; each training lasted 30 days and we had 4 batches
Training for district staff		8000	16	1	1	128000	2207	The DPSs and M&E specialists from each district were trained which costed 8000 INR per staff that includes travel, accommdation and per diems; the training was done in-house.
Clinical refresher for mentors	Mentor costs	5000	53	1	1	265000	4569	Each mentor recieved a clinical refresher during the year. This was conducted in 3 batches for 3 days each to cover 53 mentors; it costed 5000 INR per mentor that includes travel, accommodation and perdiems.
	Trainers costs	1000	3	3	3	27000	466	1000 INR per session per trainer per day; 3 trainers for each of the 3 days in 3 batches of refresher training
Clinical postings for mentors		7000	53	1	1	371000	6397	Each mentors attended 5 days of postings in a year; for each mentor it costed 7000 INR that includes the travel, accommodation and perdiems
Plannning and review meetings		2000	8	1	12	192000	3310	2000 INR per month per district (roughly 500 INR for each weekly meeting)
Total Event costs						3423000	59017	

Cost analysis of mentoring programme in eight districts of northern Karnataka								
Category	Sub category	Unit cost (INR)	No of units	Percentage time/ No of trips	No of months	Total costs (INR)	Total costs (USD)	Remarks
Total Costs						25812812	445048	Sum of total staff, total capital and total event costs
Contingency costs @ 5 % total costs						1290641	22252	
Total Intervention costs						27103453	467301	
Costs per district						3387932	58413	
Costs per mentor						511386	8817	
Start up costs						3118000	53759	
Annual / recurring costs						23985453	413542	

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